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December 21, 2001

✓ 744

Mr. Paul Supple  
ARCO Products Company  
P.O. Box 6549  
Moraga, CA 94570

Subject: *Quarterly Groundwater Monitoring Report, Third Quarter 2001*  
ARCO Service Station No. 2111  
1156 Davis Street  
San Leandro, California  
Delta Project No. D000-306

Dear Mr. Supple:

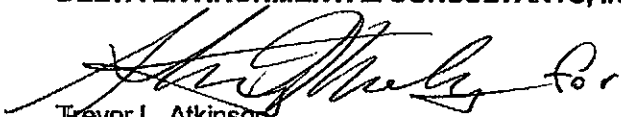
Delta Environmental Consultants, Inc. is submitting the attached report that presents the results of the third quarter 2001 groundwater monitoring at ARCO Products Company Service Station No. 2111 located at 1156 Davis Street, San Leandro, California. The monitoring program complies with the Alameda County Health Care Services Agency requirements regarding underground tank investigations.

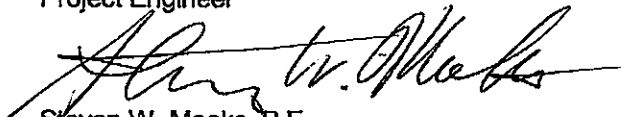
The interpretations contained in this report represent our professional opinions and are based, in part, on information supplied by the client. These opinions are based on currently available information and are arrived at in accordance with currently accepted hydrogeological and engineering practices at this time and location. Other than this, no warranty is implied or intended.

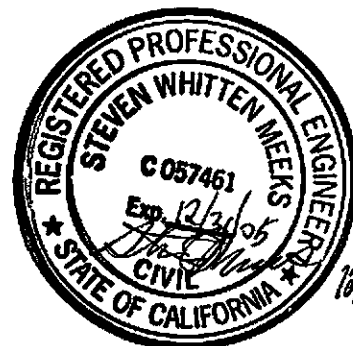
If you have any questions concerning this project, please contact Steven W. Meeks at (916) 536-2613.

Sincerely,

**DELTA ENVIRONMENTAL CONSULTANTS, INC.**

  
Trevor L. Atkinson  
Project Engineer

  
Steven W. Meeks, P.E.  
Project Manager  
California Registered Civil Engineer No. C057461



12/21/01

TLA (LRP009.306.doc)  
Enclosures

cc: Mr. Amir Gholami – Alameda County Health Care Services Agency  
Mr. Mike Bakaldin, San Leandro Fire Department, Hazardous Materials Program

**ARCO QUARTERLY GROUNDWATER MONITORING REPORT**

Station No.: 2111 Address: 1156 Davis Street, San Leandro, CA  
 ARCO Environmental Engineer/Phone No.: Paul Supple 925-299-8891  
 Consulting Co./Contact Person Delta Environmental Consultants, Inc.  
Steven W. Meeks, P.E.  
 Consultant Project No.: D000-306  
 Primary Agency/Regulatory ID No. Alameda County Health Care Services Agency

**WORK PERFORMED THIS QUARTER**

1. Performed quarterly groundwater monitoring and sampling for third quarter 2001
2. Performed quarterly pumping activities from monitoring well MW-2 and MW-7 as approved per ACHCSA letter dated October 12, 2000. Due to scheduling issues with the vacuum truck supplier, the pump out event occurred on October 19, 2001 during the fourth quarter 2001.
3. Prepared and submitted second quarter 2001 groundwater monitoring report.

**WORK PROPOSED FOR NEXT QUARTER**

1. Perform quarterly groundwater monitoring and sampling for fourth quarter 2001.
2. Prepare and submit third quarter 2001 groundwater monitoring report.

**QUARTERLY MONITORING:**

Current Phase of Project	<u>Quarterly groundwater monitoring</u>
Frequency of Groundwater Sampling:	<u>Quarterly: MW-2 through MW-7</u>
Frequency of Groundwater Monitoring:	<u>Quarterly (groundwater)</u>
Is Free Product (FP) Present On-Site:	<u>Yes</u>
FP Recovered this Quarter:	<u>Approximately 0.6 gallon</u>
Cumulative FP Recovered to Date:	<u>Approximately 0.98 gallons</u>
Bulk Soil Removed This Quarter:	<u>None</u>
Bulk Soil Removed to Date:	<u>Unknown</u>
Current Remediation Techniques:	<u>Bailing free product as needed</u>
Approximate Depth to Groundwater:	<u>16.83</u>
Groundwater Gradient:	<u>0.003 ft/ft West-Northwest</u>

**DISCUSSION:**

- Free product was present in the monitoring wells during the monitoring.
- Approximately 5000 gallons of ground water were pumped from MW-2 (see Table 3). MW-7 was not pumped due to low recovery.
- A dual phase extraction test has been tentatively scheduled for this site in 2002. In an effort not to affect the test, the fourth quarter well pump out event has been tentatively rescheduled to occur sometime in the first quarter 2002 period.
- Free Product (LPH) in MW-2 or MW-7 continues to be checked and recovered on a monthly basis by a Delta Technician.

**ATTACHMENTS:**

- Table 1 Groundwater Elevation and Analytical Data
- Table 2 Groundwater Flow Direction and Gradient
- Table 3 LPH Remediation Ground Water Pumpout Recovery Analytical Data
- Figure 1 Groundwater Analytical Summary Map
- Figure 2 Groundwater Elevation Contour Map
- Appendix A Sampling and Analysis Procedures
- Appendix B Historical Groundwater Elevation Analytical Data Table  
Groundwater Flow Direction and Gradient Table
- Appendix C Certified Analytical Reports with Chain-of-Custody Documentation

TABLE 1

## GROUNDWATER ANALYTICAL DATA

ARCO Service Station No. 2111  
1156 Davis Street  
San Leandro, California

Well Number	Date Sampled	Top of Riser Elevation (ft)	Depth to Groundwater (ft)	Groundwater Elevation (ft)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	TPH as Gasoline (µg/L)	MTBE (8020) (µg/L)	MTBE (8260) (µg/L)
MW-1	06/26/00	39.60	16.46	23.14	NA	NA	NA	NA	NA	NA	NA
	07/20/00		16.89	22.71	110	<0.5	<0.5	2.7	360	2,100	NA
	09/19/00		17.62	21.98	76	<0.5	<0.5	2.3	290	1,500	NA
	12/21/00		17.39	22.21	64	2.89	1.31	4.57	257	1,080	1,060
	03/13/01		15.7	23.9	52.5	<5.0	<5.0	<5.0	<500	1,430	1,370
	09/18/01		18.24	21.36	64	7.3	<5.0	52	<500	810	1,100
MW-2	06/26/00	37.99	14.60	23.39 <sup>a</sup>	NA	NA	NA	NA	NA	NA	NA
	07/20/00		15.14	22.85	2,300	18,000	2,500	19,000	95,000	13,000	NA
	09/19/00		15.95	22.04	1,200	6,300	2,000	14,000	63,000	19,000	NA
	12/21/00		15.60	22.39	1,090	2,130	1,160	9,460	45,900	22,400	24,700
	12/21/00 <sup>b</sup>		NM	NC	360	189	213	626	5,010	54,300	89,200
	03/13/01		13.77	23.9	98.1	<5.0	<5.0	6.42	3,650	3,590	3,260
	3/13/2001 <sup>b</sup>		NM	NC	525	466	408	1,460	<20,000	91,700	76,000
	9/18/2001 <sup>a</sup>		16.86	21.13	NS	NS	NS	NS	NS	NS	NS
MW-3	06/26/00	39.32	15.96	23.36	NA	NA	NA	NA	NA	NA	NA
	07/20/00		16.42	22.90	<0.5	<0.5	<0.5	<1.0	<50	130	NA
	09/19/00		17.18	22.14	17	<0.5	1.4	2.4	190	160	NA
	12/21/00		16.97	22.35	17.8	<0.5	2.47	2.5	187	143	125
	03/13/01		15.17	24.15	2.83	<0.5	<0.5	<0.5	72.4	126	122
	09/18/01		17.81	21.51	6.4	<0.5	3.5	1.6	140	110	75
MW-4	06/26/00	38.10	14.59	23.51	NA	NA	NA	NA	NA	NA	NA
	07/20/00		15.04	23.06	7.9	<0.5	<0.5	1.1	97	51	NA
	09/19/00		15.83	22.27	7.0	<0.5	<0.5	<1.0	110	60	NA
	12/21/00		15.59	22.51	5.6	<0.5	1.72	<0.5	120	46.3	48.6
	03/13/01		13.73	24.37	0.796	<0.5	<0.5	<0.5	76	53.7	50.0
	09/18/01		16.50	21.59	<0.5	<0.5	<0.5	<0.5	<50	25	26.0

TABLE 1

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ARCO Service Station No. 2111  
1156 Davis Street  
San Leandro, California

Well Number	Date Sampled	Top of Riser Elevation (ft)	Depth to Groundwater (ft)	Groundwater Elevation (ft)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	TPH as Gasoline (µg/L)	MTBE (8020) (µg/L)	MTBE (8260) (µg/L)
MW-5	06/26/00	37.21	14.27	22.94	NA	NA	NA	NA	NA	NA	NA
	07/20/00		14.69	22.52	<0.5	<0.5	<0.5	<1.0	55	14,000	NA
	09/19/00		15.36	21.85	<0.5	<0.5	<0.5	<1.0	54	13,000	NA
	12/21/00		15.15	22.06	2.51	<0.5	<0.5	0.961	72.9	19,200	21,200
	03/13/01		13.5	23.71	<5	<5	<5	<5	<500	15,900	20,000
	09/18/01		15.94	21.27	<100	<100	<100	<1,000	<10,000	22,000	20,000
MW-6	06/26/00	37.11	13.46	23.65	NA	NA	NA	NA	NA	NA	NA
	07/20/00		13.94	23.17	<0.5	<0.5	<0.5	<1.0	<50	<3.0	NA
	09/19/00		14.41	22.70	<0.5	<0.5	<0.5	<1.0	<50	<3.0	NA
	12/21/00		14.53	22.58	<0.5	<0.5	<0.5	<0.5	<50	<2.5	NA
	03/13/01		12.67	24.44	<0.5	<0.5	<0.5	<0.5	<50	<2.5	NA
	09/18/01		15.42	21.69	<0.5	<0.5	<0.5	<0.5	<50	<2.5	<2.0
MW-7	06/26/00	38.68	14.34	24.34	NA	NA	NA	NA	NA	NA	NA
	07/20/00		15.26	23.42	5.4	<0.5	2.8	5.9	14,000	71,000	NA
	09/19/00		15.70	22.98	420	38	470	220	8,400	5,600	NA
	12/21/00		16.02	22.66	NS <sup>a</sup>	NS <sup>a</sup>	NS <sup>a</sup>	NS <sup>a</sup>	NS <sup>a</sup>	NS <sup>a</sup>	NS <sup>a</sup>
	03/13/01		14.18	24.50	154	63	46.3	127	<2,000	175,000	160,000
	09/18/01		17.02	21.66	1,900	<1,000	<1,000	2,800	<100,000	190,000	370,000

<sup>a</sup> Product sheen noted

<sup>b</sup> Well was sampled after batch extraction event.

TPH = Total Petroleum Hydrocarbons

MTBE = Methyl tertiary butyl ether analyzed by EPA Method 8021B unless otherwise noted

µg/L = Micrograms per liter

NM = Not measured

NC = Not calculated

Note: Please refer to Appendix B for Historical Groundwater Elevation and Analytical Data Tables developed by IT Corporation

**TABLE 2**

**GROUNDWATER FLOW DIRECTION AND GRADIENT**

ARCO Service Station No. 2111  
1156 Davis Street  
San Leandro, California

<b>Date Measured</b>	<b>Average Flow Direction</b>	<b>Average Hydraulic Gradient</b>
07/20/00	West-Northwest	0.006
09/19/00	West-Northwest	0.004
12/21/00	West-Northwest	0.004
03/13/01	West-Northwest	0.005
05/30/01	West-Northwest	0.004
09/18/01	West-Northwest	0.003

Note: Please refer to Appendix B for Historical Groundwater Elevation and Analytical Data  
Tables developed by IT Corporation

TABLE 3

## LPH REMEDIATION GROUNDWATER PUMPOUT RECOVERY ANALYTICAL DATA

ARCO Service Station No. 2111  
1156 Davis Street  
San Leandro, California

Well Number	Date Sampled	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	TPH as Gasoline (µg/L)	MTBE (8020) (µg/L)	MTBE (8260) (µg/L)	Gallons Pumped	Cummulative Gallons
MW-2	09/19/00	1,200	6,300	2,000	14,000	63,000	19,000	NA	2,500	2,500
	12/21/00	1,090	2,130	1,160	9,460	45,900	22,400	24,700	0	2,500
	12/21/00 <sup>a</sup>	360	189	213	626	5,010	54,300	89,200	5,000	7,500
	03/13/01	98.1	<5.0	<5.0	6.42	3,650	3,590	3,260	0	7,500
	03/13/01 <sup>a</sup>	525	466	408	1,460	<20,000	91,700	76,00	5,000	12,500
	10/19/01	780	1200	350	1,600	12,000	29,000	NA	0	17,500
	10/19/01 <sup>a</sup>	200	240	160	480	<10,000	3,000	NA	4,800	22,300
MW-7	09/19/00	420	38	470	720	8,400	5,600	NA	100	100
	12/21/00	NS	NS	NS	NS	NS	NS	NS	0	100
	03/13/01	NS	NS	NS	NS	NS	NS	NS	0	100
	10/19/01	1,100	<1,000	<1,000		<100,000	210,000	NA	0	100
	10/19/01 <sup>a</sup>	<500	<500	<500		<50,000	91,000	NA	200	300

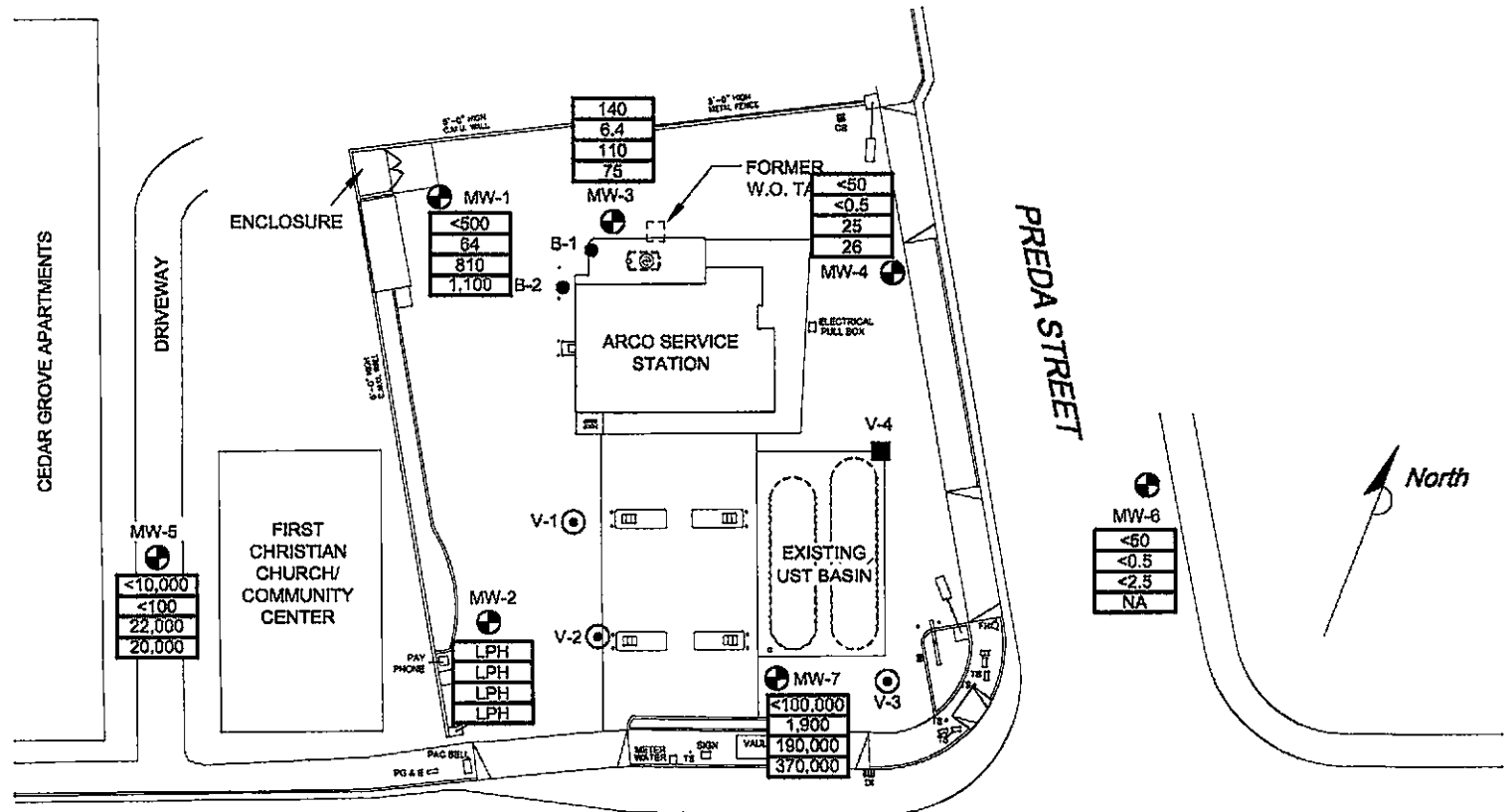
<sup>a</sup> Sampled after purging

TPH = Total Petroleum Hydrocarbons

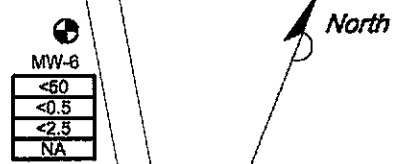
MTBE = Methyl tertiary butyl ether

µg/L = Micrograms per liter

NA = Not Analyzed



DAVIS STREET



LEGEND:

- MW-1 MONITORING WELL LOCATION
- ⊙ V-1 VAPOR EXTRACTION WELL LOCATION
- B-1 SOIL BORING LOCATION
- V-4 DESTROYED WELL LOCATION

<50	TPH AS GASOLINE IN MICROGRAMS PER LITER ( µg/L)
<0.5	BENZENE IN µg/L
<2.5	MTBE IN µg/L BY EPA METHOD 8020
NA	MTBE IN µg/L BY EPA METHOD 8260

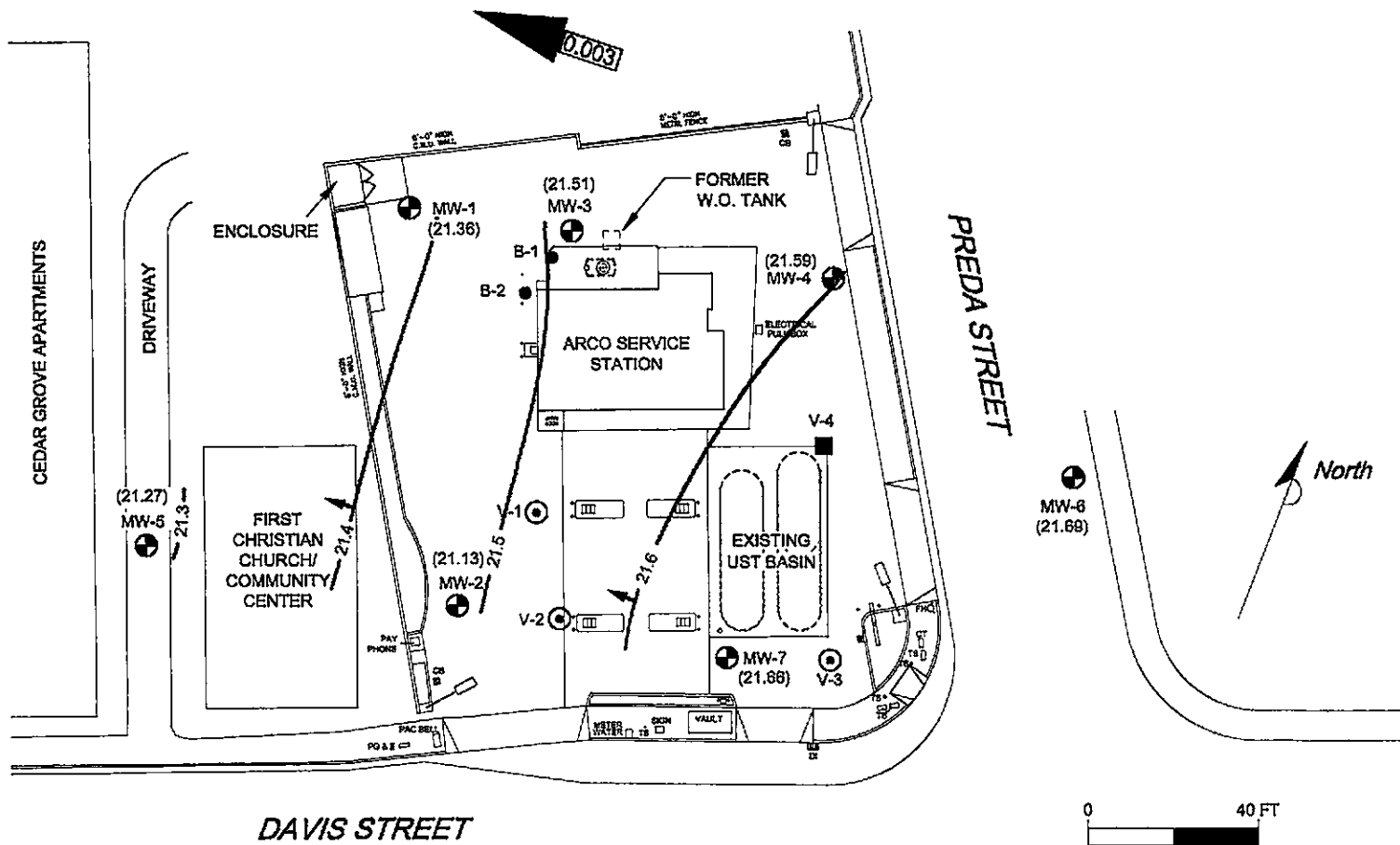
NA NOT ANALYZED/ NOT APPLICABLE

FIGURE 1  
GROUND WATER ANALYTICAL SUMMARY  
THIRD QUARTER 2001 (9/18/01)  
ARCO SERVICE STATION NO. 2111  
1156 DAVIS STREET  
SAN LEANDRO, CALIFORNIA

PROJECT NO. D000-306	DRAWN BY TLA 12/18/01
FILE NO. 2111-1	PREPARED BY TLA
REVISION NO. 1	REVIEWED BY



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**LEGEND:**

- MW-1 MONITORING WELL LOCATION
- V-1 VAPOR EXTRACTION WELL LOCATION
- B-1 SOIL BORING LOCATION
- V-4 DESTROYED WELL LOCATION
- (21.88) GROUND WATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL (MSL)
- 21.5 - WATER TABLE CONTOUR IN FEET ABOVE MSL
- GROUND WATER FLOW DIRECTION
- APPROXIMATE GROUND WATER FLOW GRADIENT

**FIGURE 2**  
**GROUND WATER ELEVATION CONTOUR MAP**  
**THIRD QUARTER 2001 (9/18/01)**  
**ARCO SERVICE STATION NO. 2111**  
**1156 DAVIS STREET**  
**SAN LEANDRO, CALIFORNIA**

PROJECT NO. D000-306	DRAWN BY TLA 12/18/01
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REVISION NO. 1	REVIEWED BY

**Delta**  
Environmental  
Consultants, Inc.

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## **FIELD METHODS AND PROCEDURES**

### **1.0 GROUND WATER AND LIQUID-PHASE HYDROCARBON DEPTH ASSESSMENT**

A water/liquid-phase hydrocarbon (LPH) interface probe was used to assess the thickness of LPH, if present, and a water level indicator was used to measure ground water depth in monitoring wells that did not contain LPH. Depth to ground water was measured from the top of each monitoring well casing. The tip of the water level indicator was subjectively analyzed for LPH sheen. All measurements and physical observations were recorded in the field.

### **2.0 SUBJECTIVE ANALYSIS OF GROUND WATER**

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

### **3.0 MONITORING WELL PURGING AND SAMPLING**

Monitoring wells were purged using a centrifugal pump or disposable bailers until pH, temperature, and conductivity of the purge water had stabilized and a minimum of three to four well volumes of water had been removed. Ground water removed from the wells was stored in 55-gallon barrels at the site. The barrels were labeled with corresponding monitoring well numbers and the date of purging. After purging, ground water levels were allowed to stabilize. A ground water sample was then removed from each of the wells using a dedicated disposable bailer. If the well was purged dry, it was allowed to sufficiently recharge and a sample was collected. Samples were collected in air-tight vials, appropriately labeled, and stored on ice from the time of collection through the time of delivery to the laboratory. A chain-of-custody form was completed to document possession of the samples. Ground water samples were transported to the laboratory and analyzed within the EPA-specified holding times for the requested analyses. Purge water will be collected from the storage barrels in a vacuum truck and transported to an appropriate facility for treatment and/or disposal.

If the depth to groundwater was above the top of screens of the monitoring wells, then the wells were purged. Before sampling occurred, a polyvinyl chloride (PVC) bailer, centrifugal pump, low-flow submersible pump, or Teflon bailer was used to purge standing water in the casing and gravel pack from the monitoring well. Monitoring wells were purged according to the protocol previously stated in the first paragraph of this sub-section. In most monitoring wells, the amount of water purged before sampling was greater than or equal to three casing volumes. Some monitoring wells were expected to be evacuated to dryness after removing fewer than three casing volumes. These low-yield monitoring wells were allowed to recharge for up to 24 hours. Samples were obtained as soon as the monitoring wells recharged to a level sufficient for sample collection. If insufficient water recharged after 24 hours, the monitoring well was recorded as dry for the sampling event.

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

**ARCO Service Station 2111**  
**1156 Davis Street, San Leandro, California**

Well Designation	Water Level Field Date	Top of Casing Elevation ft-MSL	Depth to Water feet	Free Product Thickness feet	Groundwater Elevation ft-MSL	Water Sample Field Date	TPHG LUFT Method µg/L	Benzene EPA 8021B* µg/L	Toluene EPA 8021B* µg/L	Ethylbenzene EPA 8021B* µg/L	Total Xylenes EPA 8021B* µg/L	MTBE EPA 8021B* µg/L	MTBE EPA 8260 µg/L	TRPH EPA 418.1 LUFT Method µg/L	Dissolved Oxygen mg/L	Purged/Not Purged Y/NP
MW-1	08-01-95	39.60	17.45	ND	22.15	08-01-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	
MW-1	12-14-95	39.60	17.09	ND	22.51	12-14-95	<50	<0.5	<0.5	<0.5	<0.5	<5	--	--	--	
MW-1	03-21-96	39.60	14.72	ND	24.88	03-21-96	<50	<0.5	<0.5	<0.5	<0.5	<5	--	--	--	
MW-1	05-24-96	39.60	15.94	ND	23.66	05-24-96	<50	<0.5	<0.5	<0.5	<0.5	<5	--	--	--	
MW-1	08-09-96	39.60	17.89	ND	21.71	08-09-96	<50	<0.5	<0.5	<0.5	<0.5	<5	--	--	--	
MW-1	11-06-96	39.60	18.66	ND	20.94	11-06-96	<50	<0.5	<0.5	<0.5	<0.5	<5	--	--	--	
MW-1	03-24-97	39.60	16.13	ND	23.47	03-24-97	<50	<0.5	<0.5	<0.5	<0.5	<5	--	--	--	
MW-1	05-27-97	39.60	17.23	ND	22.37	05-28-97	<50	<0.5	<0.5	<0.5	<0.5	<5	--	--	--	
MW-1	08-07-97	39.60	18.68	ND	20.92	08-07-97	<50	<0.5	<0.5	<0.5	<0.5	<5	--	--	--	
MW-1	11-10-97	39.60	19.19	ND	20.41	11-10-97	<50	<0.5	<0.5	<0.5	<0.5	<5	--	--	--	
MW-1	02-16-98	39.60	12.61	ND	26.99	02-16-98	<50	<0.5	<0.5	<0.5	<0.5	<5	--	--	--	
MW-1	04-15-98	39.60	14.30	ND	25.30	04-15-98	<50	<0.5	<0.5	<0.5	<0.5	<5	--	--	--	
MW-1	07-24-98	39.60	16.40	ND	23.20	07-24-98	<50	<0.5	<0.5	<0.5	<0.5	<5	--	--	--	
MW-1	10-19-98	39.60	17.90	ND	21.70	10-19-98	<50	<0.5	<0.5	<0.5	<0.5	<5	--	--	--	
MW-1	01-28-99	39.60	16.85	ND	22.75	01-28-99	<20,000	580	<200	<200	320	14,000	--	--	--	
MW-1	06-25-99	39.60	17.35	ND	22.25	06-25-99	730	140	5	3	2	7,700	--	--	0.79	NP
MW-1	08-25-99	39.60	18.20	ND	21.40	08-25-99	390	66	8.5	<2.5	8.6	3,700	--	--	1.56	NP
MW-1	11-10-99	39.60	17.77	ND	21.83	11-10-99	360	70	13	2.2	13	980	--	--	0.30	NP
MW-1	02-09-00	39.60	16.25	ND	23.35	02-09-00	190	4.5	0.9	<0.5	12	3,500	--	--	0.53	NP
MW-2	08-01-95	37.99	15.67	ND	22.32	08-01-95	23,000	1,300	310	500	3,500	--	--	--	--	
MW-2	12-14-95	37.99	15.36	ND	22.63	12-14-95	7,300	900	25	180	1,000	<200	--	--	--	
MW-2	03-21-96	37.99	12.84	ND	25.15	03-21-96	9,600	850	30	280	1,400	250	--	--	--	
MW-2	05-24-96	37.99	14.03	ND	23.96	05-24-96	2,300	300	<5	73	310	<25	--	--	--	
MW-2	08-09-96	37.99	16.10	ND	21.89	08-09-96	2,800	290	6	75	320	50	--	--	--	

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

**ARCO Service Station 2111**  
**1156 Davis Street, San Leandro, California**

Well Designation	Water Level Field Date	Top of Casing Elevation ft-MSL	Depth to Water teet	Free Product Thickness teet	Groundwater Elevation ft-MSL	Water Sample Field Date	TPHG LUFT Method µg/L	Benzene EPA 8021B* µg/L	Toluene EPA 8021B* µg/L	Ethylbenzene EPA 8021B* µg/L	Total Xylenes EPA 8021B* µg/L	MTBE EPA 8021B* µg/L	MTBE EPA 8260 µg/L	TRPH EPA 418.1 LUFT Method µg/L	Dissolved Oxygen mg/L	Purged/Not Purged P/NP
MW-2	11-06-96	37.99	16.98	ND	21.01	11-06-96	750	76	<1	15	51	110	--	--	--	
MW-2	03-24-97	37.99	14.22	ND	23.77	03-24-97	790	18	<1	2	6	280	--	--	--	
MW-2	05-27-97	37.99	15.42	ND	22.57	05-28-97	750	14	<1	<1	10	150	--	--	--	
MW-2	08-07-97	37.99	16.92	ND	21.07	08-07-97	360	31	<2.5	<2.5	15	260	--	--	--	
MW-2	11-10-97	37.99	17.52	ND	20.47	11-10-97	1,300	82	<5	<5	49	550	--	--	--	
MW-2	02-16-98	37.99	12.04	ND	25.95	02-16-98	<2,500	<25	<25	<25	<25	4,200	--	--	--	
MW-2	04-15-98	37.99	12.34	ND	25.65	04-15-98	<10,000	<100	<100	<100	<100	7,300	--	--	--	
MW-2	07-24-98	37.99	14.45	ND	23.54	07-24-98	<2,500	<25	<25	<25	<25	1,500	--	--	--	
MW-2	10-19-98	37.99	16.08	ND	21.91	10-19-98	<1,000	18	<10	<10	<10	1,100	--	--	--	
MW-2	01-28-99	37.99	15.59	0.02	22.41 [1]	01-28-99	160,000	3,000	24,000	4,400	31,000	23,000	--	--	--	
MW-2	06-25-99	37.99	19.20	3.73[4]	21.51 [1]	06-25-99	120,000	6,900	21,000	2,600	19,000	18,000	17,000[3]	--	--	0.49 NP
MW-2	08-25-99	37.99	16.49	0.02	21.51 [1]	08-25-99	92,000	2,200	16,000	3,200	19,000	11,000	9,400[3]	--	--	0.84 NP
MW-2	11-10-99	37.99	16.08	ND	21.91	11-10-99	56,000	2,400	5,900	1,500	10,000	17,000	21,000[3]	--	--	0.41 NP
MW-2	02-09-00	37.99	14.85	ND	23.14	02-09-00	1,700	270	14	17	21	70,000	55,000[3]	--	--	0.97 NP
MW-3	08-01-95	39.32	17.00	ND	22.32	08-01-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	600	76[2]	
MW-3	12-14-95	39.32	16.70	ND	22.62	12-14-95	<50	<0.5	<0.5	<0.5	<0.5	<3	--	<500	<50	
MW-3	03-21-96	39.32	14.17	ND	25.15	03-21-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	<500	<50	
MW-3	05-24-96	39.32	15.30	ND	24.02	05-24-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	<500	<50	
MW-3	08-09-96	39.32	17.58	ND	21.74	08-09-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	<500	--	
MW-3	11-06-96	39.32	18.33	ND	20.99	11-06-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	
MW-3	03-24-97	39.32	15.44	ND	23.88	03-24-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	
MW-3	05-27-97	39.32	16.75	ND	22.57	05-28-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	
MW-3	08-07-97	39.32	18.35	ND	20.97	08-07-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	
MW-3	11-10-97	39.32	18.83	ND	20.49	11-10-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	

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

**ARCO Service Station 2111**  
**1156 Davis Street, San Leandro, California**

Well Designation	Water Level Field Date	Top of Casing Elevation ft-MSL	Depth to Water feet	Free Product Thickness feet	Groundwater Elevation ft-MSL	Water Sample Field Date	TPHG LUFT Method µg/L	Benzene EPA 8021B* µg/L	Toluene EPA 8021B* µg/L	Ethylbenzene EPA 8021B* µg/L	Total Xylenes EPA 8021B* µg/L	MTBE EPA 8021B* µg/L	MTBE EPA 8260 µg/L	TRPH EPA 418.1 LUFT Method µg/L	Dissolved Oxygen mg/L	Purged/Not Purged P/NP
MW-3	02-16-98	39.32	11.99	ND	27.33	02-16-98	<50	<0.5	<0.5	<0.5	<0.5	∅	∅	∅	∅	
MW-3	04-15-98	39.32	13.75	ND	25.57	04-15-98	<50	<0.5	<0.5	<0.5	<0.5	∅	∅	∅	∅	
MW-3	07-24-98	39.32	15.90	ND	23.42	07-24-98	<50	<0.5	<0.5	<0.5	<0.5	∅	∅	∅	∅	
MW-3	10-19-98	39.32	17.45	ND	21.87	10-19-98	<50	<0.5	<0.5	<0.5	<0.5	∅	∅	∅	∅	
MW-3	01-28-99	39.32	16.40	ND	22.92	01-28-99	<100	14	4	<1	6	100	∅	∅	∅	
MW-3	06-25-99	39.32	17.92	ND	21.40	06-25-99	83	9.0	1.4	<0.5	2.5	220	∅	∅	∅	1.11 NP
MW-3	08-25-99	39.32	17.79	ND	21.53	08-25-99	240	41	12	3.7	9.9	160	∅	∅	∅	1.13 NP
MW-3	11-10-99	39.32	17.37	ND	21.95	11-10-99	620	100	9.7	4.1	21	150	∅	∅	∅	0.24 NP
MW-3	02-09-00	39.32	15.77	ND	23.55	02-09-00	<50	<0.5	0.7	<0.5	<1	180	∅	∅	∅	0.62 NP
MW-4	08-01-95	38.10	15.65	ND	22.45	08-01-95	<50	<0.5	<0.5	<0.5	<0.5	∅	∅	∅	∅	
MW-4	12-14-95	38.10	15.35	ND	22.75	12-14-95	<50	<0.5	<0.5	<0.5	<0.5	∅	∅	∅	∅	
MW-4	03-21-96	38.10	12.74	ND	25.36	03-21-96	<50	<0.5	<0.5	<0.5	<0.5	∅	∅	∅	∅	
MW-4	05-24-96	38.10	14.03	ND	24.07	05-24-96	<50	<0.5	<0.5	<0.5	<0.5	∅	∅	∅	∅	
MW-4	08-09-96	38.10	16.10	ND	22.00	08-09-96	<50	<0.5	<0.5	<0.5	<0.5	∅	∅	∅	∅	
MW-4	11-06-96	38.10	17.00	ND	21.10	11-06-96	<50	<0.5	<0.5	<0.5	<0.5	∅	∅	∅	∅	
MW-4	03-24-97	38.10	14.21	ND	23.89	03-24-97	<50	<0.5	<0.5	<0.5	<0.5	∅	∅	∅	∅	
MW-4	05-27-97	38.10	15.38	ND	22.72	05-28-97	<50	<0.5	<0.5	<0.5	<0.5	∅	∅	∅	∅	
MW-4	08-07-97	38.10	16.95	ND	21.15	08-07-97	<50	<0.5	<0.5	<0.5	<0.5	∅	∅	∅	∅	
MW-4	11-10-97	38.10	17.53	ND	20.57	11-10-97	<50	<0.5	<0.5	<0.5	<0.5	∅	∅	∅	∅	
MW-4	02-16-98	38.10	10.65	ND	27.45	02-16-98	<50	<0.5	<0.5	<0.5	<0.5	∅	∅	∅	∅	
MW-4	04-15-98	38.10	12.20	ND	25.90	04-15-98	<50	<0.5	<0.5	<0.5	<0.5	∅	∅	∅	∅	
MW-4	07-24-98	38.10	14.47	ND	23.63	07-24-98	<50	<0.5	<0.5	<0.5	<0.5	∅	∅	∅	∅	
MW-4	10-19-98	38.10	16.20	ND	21.90	10-19-98	<50	<0.5	<0.5	<0.5	<0.5	∅	∅	∅	∅	
MW-4	01-28-99	38.10	15.02	ND	23.08	01-28-99	340	52	5.5	<0.5	74	31	∅	∅	∅	

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

**ARCO Service Station 2111  
1156 Davis Street, San Leandro, California**

Well Designation	Water Level Field Date	Top of Casing Elevation ft-MSL	Depth to Water feet	Free Product Thickness feet	Groundwater Elevation ft-MSL	Water Sample Field Date	TPHG LUFT Method µg/L	Benzene EPA 8021B* µg/L	Toluene EPA 8021B* µg/L	Ethylbenzene EPA 8021B* µg/L	Total Xylenes EPA 8021B* µg/L	MTBE EPA 8021B* µg/L	MTBE EPA 8260 µg/L	TRPH EPA 418.1 LUFT Method µg/L	Dissolved Oxygen mg/L	Purged/Not Purged P/NP
MW-4	06-25-99	38.10	15.57	ND	22.53	06-25-99	510	78	4.1	0.5	18	94	--	--	0.90	NP
MW-4	08-25-99	38.10	16.43	ND	21.67	08-25-99	660	130	21	6.4	39	110	--	--	1.01	NP
MW-4	11-10-99	38.10	16.02	ND	22.08	11-10-99	510	98	5.1	3.1	15	69	--	--	0.28	NP
MW-4	02-09-00	38.10	14.30	ND	23.80	02-09-00	<50	<0.5	0.9	<0.5	<1	55	--	--	0.67	NP
MW-5	03-21-96	37.21	12.60	ND	24.61	03-22-96	<50	<0.5	<0.5	<0.5	<0.5	82	--	--		
MW-5	05-24-96	37.21	13.71	ND	23.50	05-24-96	<50	<0.5	<0.5	<0.5	<0.5	7	--	--		
MW-5	08-09-96	37.21	15.60	ND	21.61	08-09-96	<50	<0.5	<0.5	<0.5	<0.5	8	--	--		
MW-5	11-06-96	37.21	16.36	ND	20.85	11-06-96	<50	<0.5	<0.5	<0.5	<0.5	100	--	--		
MW-5	03-24-97	37.21	13.87	ND	23.34	03-24-97	<50	<0.5	<0.5	<0.5	<0.5	460	--	--		
MW-5	05-27-97	37.21	14.71	ND	22.50	05-28-97	<100	<1	<1	<1	<1	120	--	--		
MW-5	08-07-97	37.21	16.90	ND	20.31	08-07-97	<250	<2.5	<2.5	<2.5	<2.5	250	--	--		
MW-5	11-10-97	37.21	16.88	ND	20.33	11-10-97	<1,000	<10	<10	<10	<10	770	--	--		
MW-5	02-16-98	37.21	10.56	ND	26.65	02-16-98	<200	<2	<2	<2	<2	230	--	--		
MW-5	04-15-98	37.21	12.20	ND	25.01	04-15-98	<500	<5	<5	<5	<5	900	--	--		
MW-5	07-24-98	37.21	14.20	ND	23.01	07-24-98	<500	<5	<5	<5	<5	570	--	--		
MW-5	10-19-98	37.21	15.74	ND	21.47	10-19-98	<250	<2.5	<2.5	<2.5	<2.5	300	--	--		
MW-5	01-28-99	37.21	14.60	ND	22.61	01-28-99	<500	8	<5	<5	<5	290	--	--		
MW-5	06-25-99	37.21	15.10	ND	22.11	06-25-99	<50	<0.5	<0.5	<0.5	<0.5	1,300	--	--	0.76	NP
MW-5	08-25-99	37.21	15.91	ND	21.30	08-25-99	<50	<0.5	<0.5	<0.5	<0.5	6,700	--	--	0.98	NP
MW-5	11-10-99	37.21	15.52	ND	21.69	11-10-99	130	2.0	7.0	1.3	21	5,000	--	--	0.21	NP
MW-5	02-09-00	37.21	14.03	ND	23.18	02-09-00	92	<0.5	0.8	<0.5	1.0	7,900	--	--	0.51	NP
MW-6	03-21-96	37.11	11.55	ND	25.56	03-22-96	<50	<0.5	1.9	<0.5	<0.5	<3	--	--		
MW-6	05-24-96	37.11	12.80	ND	24.31	05-24-96	<50	<0.5	<0.5	<0.5	<0.5	6	--	--		

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**ARCO Service Station 2111  
1156 Davis Street, San Leandro, California**

Well Designation	Water Level Field Date	Top of Casing Elevation ft-MSL	Depth to Water feet	Free Product Thickness feet	Groundwater Elevation ft-MSL	Water Sample Field Date	TPHG LUFT Method µg/L	Benzene EPA 8021B* µg/L	Toluene EPA 8021B* µg/L	Ethylbenzene EPA 8021B* µg/L	Total Xylenes EPA 8021B* µg/L	MTBE EPA 8021B* µg/L	MTBE EPA 8260 µg/L	TRPH EPA 418.1 LUFT Method µg/L	Dissolved Oxygen mg/L	Purged/Not Purged Y/NF
MW-6	08-09-96	37.11	Not surveyed			08-09-96	Not sampled: Car parked on well									
MW-6	11-06-96	37.11	Not surveyed			11-06-96	Not sampled: Car parked on well									
MW-6	03-24-97	37.11	13.06	ND	24.05	03-24-97	<50	<0.5	<0.5	<0.5	<0.5	△	..	..	..	
MW-6	05-27-97	37.11	14.30	ND	22.81	05-28-97	<50	<0.5	<0.5	<0.5	<0.5	△	..	..	..	
MW-6	08-07-97	37.11	16.40	ND	20.71	08-07-97	<50	<0.5	<0.5	<0.5	<0.5	△	..	..	..	
MW-6	11-10-97	37.11	16.53	ND	20.58	11-10-97	<50	<0.5	<0.5	<0.5	<0.5	△	..	..	..	
MW-6	02-16-98	37.11	Not surveyed			02-16-98	Not sampled: Car parked on well									
MW-6	04-15-98	37.11	10.95	ND	26.16	04-15-98	<50	<0.5	<0.5	<0.5	<0.5	△	..	..	..	
MW-6	07-24-98	37.11	13.30	ND	23.81	07-24-98	<50	<0.5	<0.5	<0.5	<0.5	△	..	..	..	
MW-6	10-19-98	37.11	Not surveyed			10-19-98	Not sampled: Car parked on well									
MW-6	01-28-99	37.11	13.92	ND	23.19	01-28-99	<50	<0.5	<0.5	<0.5	<0.5	△	..	..	..	
MW-6	06-25-99	37.11	15.47	ND	21.64	06-25-99	<50	<0.5	<0.5	<0.5	<0.5	△	..	..	..	0.74 NP
MW-6	08-25-99	37.11	15.39	ND	21.72	08-25-99	<50	<0.5	3.4	0.6	3.7	△	..	..	..	0.92 NP
MW-6	11-10-99	37.11	14.92	ND	22.19	11-10-99	<50	<0.5	<0.5	<0.5	<1	△	..	..	..	0.31 NP
MW-6	02-09-00	37.11	13.30	ND	23.81	02-09-00	<50	<0.5	0.9	<0.5	1.3	△	..	..	..	0.79 NP
MW-7	03-21-96	38.68	13.32	ND	25.36	03-22-96	32,000	870	450	970	4,900	280	..	..	..	
MW-7	05-24-96	38.68	14.58	ND	24.10	05-24-96	22,000	570	40	42	1,900	<200[2]	..	..	..	
MW-7	08-09-96	38.68	15.33	ND	23.35	08-09-96	14,000	390	<10	180	470	<200[2]	..	..	..	
MW-7	11-06-96	38.68	16.95	ND	21.73	11-06-96	9,500	440	<10	210	150	<100[2]	..	..	..	
MW-7	03-24-97	38.68	14.65	ND	24.03	03-24-97	6,400	420	<10	260	13	480	..	..	..	
MW-7	05-27-97	38.68	15.58	ND	23.10	05-28-97	5,000	420	<5	230	10	460	..	..	..	
MW-7	08-07-97	38.68	17.10	ND	21.58	08-07-97	3,900	350	<5	200	10	330	..	..	..	
MW-7	11-10-97	38.68	18.05	ND	20.63	11-10-97	5,600	590	10	370	43	540	..	..	..	
MW-7	02-16-98	38.68	12.03	ND	26.65	02-16-98	<5,000	390	<50	<50	61	4,300	..	..	..	

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MW-7	04-15-98	38.68	13.02	ND	25.66	04-15-98	<10,000	<100	<100	<100	<100	8,900	--	--	--	
MW-7	07-24-98	38.68	14.18	ND	24.50	07-24-98	5,800	180	<50	74	<50	4,200	--	--	--	
MW-7	10-19-98	38.68	15.99	ND	22.69	10-19-98	<2,500	54	<25	72	<25	3,000	--	--	--	
MW-7	01-28-99	38.68	15.69	ND	22.99	01-28-99	4,500	560	250	<50	94	6,200	--	--	--	
MW-7	06-25-99	38.68	15.36	ND	23.32	06-25-99	3,900	520	160	46	100	45,000	63,000[3]	--	--	0.56 NP
MW-7	08-25-99	38.68	16.71	ND	21.97	08-25-99	3,400	730	77	51	110	62,000	76,000[3]	--	--	0.90 NP
MW-7	11-10-99	38.68	16.76	ND	21.92	11-10-99	15,000	340	19	13	20	55,000	91,000[3]	--	--	0.37 NP
MW-7	02-09-00	38.68	14.45	0.03	24.25 [1]	02-09-00	Not sampled: free product present									

ft-MSL: elevation in feet, relative to mean sea level  
TPHG: total petroleum hydrocarbons as gasoline, California DHS LUFT Method  
MTBE: Methyl tert-butyl ether  
TRPH: total recoverable petroleum hydrocarbons  
TPHD: total petroleum hydrocarbons as diesel, California DHS LUFT Method  
\*: EPA method 8020 prior to 11/10/99  
EPA: United States Environmental Protection Agency  
µg/L: micrograms per liter  
mg/L: milligrams per liter  
ND: none detected  
--: not available or not analyzed  
<: less than laboratory detection limit stated to the right  
[1]: [corrected elevation (Z')] = Z + (h \* 0.73) where: Z = measured elevation, h = floating product thickness, 0.73 = density ratio of oil to water  
[2]: chromatogram fingerprint is not characteristic of diesel  
[3]: also analyzed for fuel oxygenates  
[4]: this value is suspected to be erroneous based on subsequent check by bailer (following day). See discussion

**Table 2  
Groundwater Flow Direction and Gradient**

**ARCO Service Station 2111  
1156 Davis Street, San Leandro, California**

<b>Date Measured</b>	<b>Average Flow Direction</b>	<b>Average Hydraulic Gradient</b>
08-01-95	NR	NR
12-14-95	West	0.002
03-21-96	West-Southwest	0.005
05-24-96	West	0.003
08-09-96	West-Northwest	0.01
11-06-96	West-Northwest	0.007
03-24-97	West	0.005
05-27-97	North-Northwest	0.006
08-07-97	West	0.009
11-10-97	West	0.002
02-16-98	South-Southwest	0.013
04-15-98	West-Southwest	0.014
07-24-98	Northwest	0.01
10-19-98	West	0.008
01-28-99	Southwest	0.01
06-25-99	North-Northwest	0.017
08-25-99	West-Northwest	0.005
11-10-99	West-Southwest	0.002
<b>02-09-00</b>	<b>West-Northwest</b>	<b>0.015</b>

NR: not recorded





3164 Gold Camp Drive, Suite 200  
 Rancho Cordova, California 95670  
 Direct: (916) 638-2085  
 Fax: (916) 638-8385

Arco Site Address: 1156 Davis Street  
San Leandro, California

Arco Site Number: Arco 2111  
 Delta Project No.: D000-306

Arco Project Manager: Paul Supple

Delta Project PM: Steve Meeks

Site Contact & Phone Number: \_\_\_\_\_

Site Sampled By: Stratus (CH)

Date Sampled: 09/18/01

Water Level Data							Purge Volume Calculations					Sampling Analytes				Sample Record		
Well ID	Time	Depth to Water (feet)	Depth to Product (feet)	Top of Screen Interval (feet)	Total Depth of Well (feet)	Check if Purge Not Required	Casing Water Column (A)	Well Diameter (inches)	Multiplier Value (B)	Three Casing Volumes (gallons)	Actual Water Purged (gallons)	BTEX (8020) VOA	TPH-g (8015M) VOA	MTBE (8020) VOA	Dissolved Oxygen (mg/L)	Sample Frequency (A, S, Q)	Sample I.D.	Sample Time
MW-1	5:21	18.24	N/A	12.5	26.0	<input checked="" type="checkbox"/>	7.76	4 inch	2.0	15.5	NP	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	0.80	Q/2,5,8,11	MW-1	5:25
MW-2	6:07	16.86	16.76	12.0	26.3	<input type="checkbox"/>	9.44	4 inch	2.0	18.9	N/A	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	LPH	Q/2,5,8,11		
MW-3	5:31	17.81	N/A	11.9	26.5	<input checked="" type="checkbox"/>	8.69	4 inch	2.0	17.4	NP	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	0.60	Q/2,5,8,11	MW-3	5:36
MW-4	5:40	16.51	N/A	10.0	21.6	<input checked="" type="checkbox"/>	5.09	4 inch	2.0	10.2	NP	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	1.30	Q/2,5,8,11	MW-4	5:45
MW-5	5:09	15.94	N/A	9.4	23.6	<input checked="" type="checkbox"/>	7.66	2 inch	0.5	3.8	NP	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	1.00	Q/2,5,8,11	MW-5	5:12
MW-6	5:54	15.42	N/A	10.0	24.8	<input checked="" type="checkbox"/>	9.38	2 inch	0.5	4.7	NP	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	1.50	Q/2,5,8,11	MW-6	6:00
MW-7	4:54	17.02	N/A	12.0	26.9	<input checked="" type="checkbox"/>	9.88	4 inch	2.0	19.8	NP	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	1.00	Q/2,5,8,11	MW-7	5:06
						<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
*Use Separate GOC for Sample from MW-5						<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
**Balled 6 gallons of product/water mix from MW-2						<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
						<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
						<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
						<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
						<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
						<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
						<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
						<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				

(A)-Casing Water Column: Depth to Bottom - Depth to Water (B)-Multiplier Values: (2" Well: 0.5) (4" Well: 2.0) (6" Well: 4.4)

Sampling Sequence: Quarterly: MW-6, MW-5, MW-4, MW-3, MW-1, MW-7, MW-2

Sampling Notes: List depth of Sample on C.O.C. [i.e. MW-1(30)]. Make Sure to Note on C.O.C. "Provide Lowest Reporting Limit Available." Original Copies of Field Sampling Sheets are Located in Project File  
 If the water level is below the top of the screen, take a grab sample and check box for NO PURGE (NP). If the water level is above the screen, purge as normal.



3164 Gold Camp Drive, Suite 200  
 Rancho Cordova, California 95670  
 Direct: (916) 638-2085  
 Fax: (916) 638-8385

Arco Site Address: 1156 Davis Street  
San Leandro, California

Arco Site Number: Arco 2111  
 Delta Project No.: D000-306

Arco Project Manager: Paul Supple

Delta Project PM: Steve Meeks

Site Contact & Phone Number: \_\_\_\_\_

Site Sampled By: Stratus (CH)

Date Sampled: 09/18/01

Well ID	Time	Temp °C	pH Units	Sp. Cond.	Gallons	Well ID	Time	Temp °C	pH Units	Sp. Cond.	Gallons	Well ID	Time	Temp °C	pH Units	Sp. Cond.	Gallons
MW-1	NM	18.3	6.30	599	NP												
MW-2	Free Product in Well																
MW-3	NM	18.7	6.30	674	NP												
MW-4	NM	19.1	6.20	729	NP												
MW-5	NM	18.3	6.60	689	NP												
MW-6	NM	19.3	6.40	803	NP												
MW-7	NM	18.4	6.40	1,050	NP												

Notes: NP = NO PURGE

Original Copies of Field Sampling Sheets are Located in Project File

**APPENDIX D**

Certified Analytical Reports  
And  
Chain-of-Custody Documentation



**Sequoia  
Analytical**

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2 October, 2001

Steven Meeks  
Delta Environmental Consultants(Rancho Cordova)  
3164 Gold Camp Drive Ste. 200  
Rancho Cordova, CA 95670

RE: ARCO 2111, San Leandro, CA  
Sequoia Report: S109273

Enclosed are the results of analyses for samples received by the laboratory on 09/18/01 10:30. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Ron Chew  
Client Services Representative

Lito Diaz  
Laboratory Director

CA ELAP Certificate #1624



**Sequoia  
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Delta Environmental Consultants(Rancho Cordova)  
3164 Gold Camp Drive Ste. 200  
Rancho Cordova CA, 95670

Project: ARCO 2111, San Leandro, CA  
Project Number: N/A  
Project Manager: Steven Meeks

**Reported:**  
10/02/01 15:26

**ANALYTICAL REPORT FOR SAMPLES**

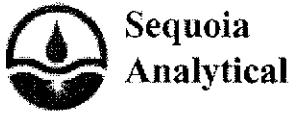
Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW1-18'	S109273-01	Water	09/18/01 05:25	09/18/01 10:30
MW3-17'	S109273-02	Water	09/18/01 05:36	09/18/01 10:30
MW4-16'	S109273-03	Water	09/18/01 05:45	09/18/01 10:30
MW6-15'	S109273-04	Water	09/18/01 06:00	09/18/01 10:30
MW7-17'	S109273-05	Water	09/18/01 05:06	09/18/01 10:30

Sequoia Analytical - Sacramento

Ron Chew, Client Services Representative

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

Page Page 1 of 8



Delta Environmental Consultants(Rancho Cordova)  
 3164 Gold Camp Drive Ste. 200  
 Rancho Cordova CA, 95670

Project: ARCO 2111, San Leandro, CA  
 Project Number: N/A  
 Project Manager: Steven Meeks

Reported:  
 10/02/01 15:26

**MTBE Confirmation by EPA Method 8260B**  
**Sequoia Analytical - Sacramento**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>MW1-18' (S109273-01) Water Sampled: 09/18/01 05:25 Received: 09/18/01 10:30</b>									
Methyl tert-butyl ether	1100	20	ug/l	10	1100001	10/01/01	10/01/01	EPA 8260B	
Surrogate: 1,2-DCA-d4		108 %	60-140		"	"	"	"	
<b>MW3-17' (S109273-02) Water Sampled: 09/18/01 05:36 Received: 09/18/01 10:30</b>									
Methyl tert-butyl ether	75	2.0	ug/l	1	1100001	10/01/01	10/01/01	EPA 8260B	
Surrogate: 1,2-DCA-d4		107 %	60-140		"	"	"	"	
<b>MW4-16' (S109273-03) Water Sampled: 09/18/01 05:45 Received: 09/18/01 10:30</b>									
Methyl tert-butyl ether	26	2.0	ug/l	1	1100001	10/01/01	10/01/01	EPA 8260B	
Surrogate: 1,2-DCA-d4		112 %	60-140		"	"	"	"	
<b>MW7-17' (S109273-05) Water Sampled: 09/18/01 05:06 Received: 09/18/01 10:30</b>									
Methyl tert-butyl ether	370000	2000	ug/l	1000	1100001	10/01/01	10/01/01	EPA 8260B	
Surrogate: 1,2-DCA-d4		112 %	60-140		"	"	"	"	



Delta Environmental Consultants(Rancho Cordova)  
 3164 Gold Camp Drive Ste. 200  
 Rancho Cordova CA, 95670

Project: ARCO 2111, San Leandro, CA  
 Project Number: N/A  
 Project Manager: Steven Meeks

Reported:  
 10/02/01 15:26

**Total Purgeable Hydrocarbon, BTEX and MTBE by DHS LUFT**

**Sequoia Analytical - Sacramento**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>MW1-18' (S109273-01) Water</b> Sampled: 09/18/01 05:25 Received: 09/18/01 10:30									
Purgeable Hydrocarbons	ND	500	ug/l	10	1090275	09/25/01	09/26/01	DHS LUFT	A-01
<b>Benzene</b>	<b>64</b>	5.0	"	"	"	"	"	"	
<b>Toluene</b>	<b>7.3</b>	5.0	"	"	"	"	"	"	
Ethylbenzene	ND	5.0	"	"	"	"	"	"	
Xylenes (total)	52	5.0	"	"	"	"	"	"	
Methyl tert-butyl ether	810	25	"	"	"	"	"	"	
<i>Surrogate: a,a,a-Trifluorotoluene</i>		108 %	60-140		"	"	"	"	
<b>MW3-17' (S109273-02) Water</b> Sampled: 09/18/01 05:36 Received: 09/18/01 10:30									
Purgeable Hydrocarbons	140	50	ug/l	1	1090264	09/21/01	09/21/01	DHS LUFT	
<b>Benzene</b>	<b>6.4</b>	0.50	"	"	"	"	"	"	
Toluene	ND	0.50	"	"	"	"	"	"	
<b>Ethylbenzene</b>	<b>3.5</b>	0.50	"	"	"	"	"	"	
Xylenes (total)	1.6	0.50	"	"	"	"	"	"	
Methyl tert-butyl ether	110	2.5	"	"	"	"	"	"	
<i>Surrogate: a,a,a-Trifluorotoluene</i>		148 %	60-140		"	"	"	"	S-02
<b>MW4-16' (S109273-03) Water</b> Sampled: 09/18/01 05:45 Received: 09/18/01 10:30									
Purgeable Hydrocarbons	ND	50	ug/l	1	1090264	09/21/01	09/21/01	DHS LUFT	
Benzene	ND	0.50	"	"	"	"	"	"	
Toluene	ND	0.50	"	"	"	"	"	"	
Ethylbenzene	ND	0.50	"	"	"	"	"	"	
Xylenes (total)	ND	0.50	"	"	"	"	"	"	
Methyl tert-butyl ether	25	2.5	"	"	"	"	"	"	
<i>Surrogate: a,a,a-Trifluorotoluene</i>		129 %	60-140		"	"	"	"	



Delta Environmental Consultants(Rancho Cordova)  
3164 Gold Camp Drive Ste. 200  
Rancho Cordova CA, 95670

Project: ARCO 2111, San Leandro, CA  
Project Number: N/A  
Project Manager: Steven Meeks

**Reported:**  
10/02/01 15:26

**Total Purgeable Hydrocarbon, BTEX and MTBE by DHS LUFT  
Sequoia Analytical - Sacramento**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>MW6-15' (S109273-04) Water Sampled: 09/18/01 06:00 Received: 09/18/01 10:30</b>									
Purgeable Hydrocarbons	ND	50	ug/l	1	1090264	09/21/01	09/21/01	DHS LUFT	
Benzene	ND	0.50	"	"	"	"	"	"	
Toluene	ND	0.50	"	"	"	"	"	"	
Ethylbenzene	ND	0.50	"	"	"	"	"	"	
Xylenes (total)	ND	0.50	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	2.5	"	"	"	"	"	"	
<i>Surrogate: a,a,a-Trifluorotoluene</i>		131 %	60-140		"	"	"	"	
<b>MW7-17' (S109273-05) Water Sampled: 09/18/01 05:06 Received: 09/18/01 10:30</b>									
Purgeable Hydrocarbons	ND	100000	ug/l	2000	1090275	09/25/01	09/25/01	DHS LUFT	A-01
<b>Benzene</b>	<b>1900</b>	1000	"	"	"	"	"	"	
Toluene	ND	1000	"	"	"	"	"	"	
Ethylbenzene	ND	1000	"	"	"	"	"	"	
<b>Xylenes (total)</b>	<b>2800</b>	1000	"	"	"	"	"	"	
<b>Methyl tert-butyl ether</b>	<b>190000</b>	5000	"	"	"	"	"	"	
<i>Surrogate: a,a,a-Trifluorotoluene</i>		116 %	60-140		"	"	"	"	





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Delta Environmental Consultants(Rancho Cordova) 3164 Gold Camp Drive Ste. 200 Rancho Cordova CA, 95670	Project: ARCO 2111, San Leandro, CA Project Number: N/A Project Manager: Steven Meeks	Reported: 10/02/01 15:26
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**MTBE Confirmation by EPA Method 8260B - Quality Control**  
**Sequoia Analytical - Sacramento**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 1100001 - EPA 5030B [P/T]</b>										
<b>Blank (1100001-BLK1)</b> Prepared & Analyzed: 10/01/01										
Methyl tert-butyl ether	ND	2.0	ug/l							
Surrogate: 1,2-DCA-d4	46.9		"	50.0		93.8	60-140			
<b>LCS (1100001-BS1)</b> Prepared & Analyzed: 10/01/01										
Methyl tert-butyl ether	52.2	2.0	ug/l	50.0		104	70-130			
Surrogate: 1,2-DCA-d4	47.7		"	50.0		95.4	60-140			
<b>Matrix Spike (1100001-MS1)</b> Source: S109280-02 Prepared & Analyzed: 10/01/01										
Methyl tert-butyl ether	53.6	2.0	ug/l	50.0	ND	107	60-140			
Surrogate: 1,2-DCA-d4	49.7		"	50.0		99.4	60-140			
<b>Matrix Spike Dup (1100001-MSD1)</b> Source: S109280-02 Prepared & Analyzed: 10/01/01										
Methyl tert-butyl ether	53.8	2.0	ug/l	50.0	ND	108	60-140	0.372	25	
Surrogate: 1,2-DCA-d4	49.6		"	50.0		99.2	60-140			



Delta Environmental Consultants(Rancho Cordova)  
3164 Gold Camp Drive Ste. 200  
Rancho Cordova CA, 95670

Project: ARCO 2111, San Leandro, CA  
Project Number: N/A  
Project Manager: Steven Meeks

**Reported:**  
10/02/01 15:26

**Total Purgeable Hydrocarbon, BTEX and MTBE by DHS LUFT - Quality Control  
Sequoia Analytical - Sacramento**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch 1090264 - EPA 5030B (P/T)**

**Blank (1090264-BLK1)**

Prepared & Analyzed: 09/21/01

Purgeable Hydrocarbons	ND	50	ug/l							
Benzene	ND	0.50	"							
Toluene	ND	0.50	"							
Ethylbenzene	ND	0.50	"							
Xylenes (total)	ND	0.50	"							
Methyl tert-butyl ether	ND	2.5	"							
<i>Surrogate: a,a,a-Trifluorotoluene</i>	11.5		"	10.0		115	60-140			

**LCS (1090264-BS1)**

Prepared & Analyzed: 09/21/01

Benzene	11.3	0.50	ug/l	10.0		113	70-130			
Toluene	10.4	0.50	"	10.0		104	70-130			
Ethylbenzene	10.2	0.50	"	10.0		102	70-130			
Xylenes (total)	31.8	0.50	"	30.0		106	70-130			
Methyl tert-butyl ether	11.6	2.5	"	10.0		116	70-130			
<i>Surrogate: a,a,a-Trifluorotoluene</i>	13.7		"	10.0		137	60-140			

**Matrix Spike (1090264-MS1)**

Source: S109277-01

Prepared & Analyzed: 09/21/01

Benzene	11.0	0.50	ug/l	10.0	1.4	96.0	60-140			
Toluene	10.3	0.50	"	10.0	2.3	80.0	60-140			
Ethylbenzene	10.1	0.50	"	10.0	ND	101	60-140			
Xylenes (total)	29.7	0.50	"	30.0	2.5	90.7	60-140			
Methyl tert-butyl ether	17.1	2.5	"	10.0	5.3	118	60-140			
<i>Surrogate: a,a,a-Trifluorotoluene</i>	12.9		"	10.0		129	60-140			

**Matrix Spike Dup (1090264-MSD1)**

Source: S109277-01

Prepared & Analyzed: 09/21/01

Benzene	11.1	0.50	ug/l	10.0	1.4	97.0	60-140	0.905	25	
Toluene	10.6	0.50	"	10.0	2.3	83.0	60-140	2.87	25	
Ethylbenzene	10.5	0.50	"	10.0	ND	105	60-140	3.88	25	
Xylenes (total)	32.1	0.50	"	30.0	2.5	98.7	60-140	7.77	25	
Methyl tert-butyl ether	17.5	2.5	"	10.0	5.3	122	60-140	2.31	25	
<i>Surrogate: a,a,a-Trifluorotoluene</i>	12.4		"	10.0		124	60-140			



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Delta Environmental Consultants(Rancho Cordova)  
 3164 Gold Camp Drive Ste. 200  
 Rancho Cordova CA, 95670

Project: ARCO 2111, San Leandro, CA  
 Project Number: N/A  
 Project Manager: Steven Meeks

Reported:  
 10/02/01 15:26

**Total Purgeable Hydrocarbon, BTEX and MTBE by DHS LUFT - Quality Control**  
**Sequoia Analytical - Sacramento**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch 1090275 - EPA 5030B (P/T)**

**Blank (1090275-BLK1)**

Prepared & Analyzed: 09/25/01

Purgeable Hydrocarbons	ND	50	ug/l							
Benzene	ND	0.50	"							
Toluene	ND	0.50	"							
Ethylbenzene	ND	0.50	"							
Xylenes (total)	ND	0.50	"							
Methyl tert-butyl ether	ND	2.5	"							
Surrogate: a,a,a-Trifluorotoluene	11.1		"	10.0		111	60-140			

**LCS (1090275-BS1)**

Prepared & Analyzed: 09/25/01

Benzene	10.2	0.50	ug/l	10.0		102	70-130			
Toluene	10.6	0.50	"	10.0		106	70-130			
Ethylbenzene	10.7	0.50	"	10.0		107	70-130			
Xylenes (total)	29.4	0.50	"	30.0		98.0	70-130			
Methyl tert-butyl ether	11.5	2.5	"	10.0		115	70-130			
Surrogate: a,a,a-Trifluorotoluene	11.2		"	10.0		112	60-140			

**LCS Dup (1090275-BSD1)**

Prepared & Analyzed: 09/25/01

Benzene	10.4	0.50	ug/l	10.0		104	70-130	1.94	25	
Toluene	10.7	0.50	"	10.0		107	70-130	0.939	25	
Ethylbenzene	10.9	0.50	"	10.0		109	70-130	1.85	25	
Xylenes (total)	30.1	0.50	"	30.0		100	70-130	2.35	25	
Methyl tert-butyl ether	11.1	2.5	"	10.0		111	70-130	3.54	25	
Surrogate: a,a,a-Trifluorotoluene	11.1		"	10.0		111	60-140			



Delta Environmental Consultants(Rancho Cordova)  
3164 Gold Camp Drive Ste. 200  
Rancho Cordova CA, 95670

Project: ARCO 2111, San Leandro, CA  
Project Number: N/A  
Project Manager: Steven Meeks

**Reported:**  
10/02/01 15:26

#### Notes and Definitions

- A-01 Sample was diluted due to high levels of MTBE.
- S-02 The surrogate recovery for this sample cannot be accurately quantified due to interference from coeluting organic compounds present in the sample extract.
- DET Analyte DETECTED
- ND Analyte NOT DETECTED at or above the reporting limit
- NR Not Reported
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference





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2 October, 2001

Steven Meeks  
Delta Environmental Consultants(Rancho Cordova)  
3164 Gold Camp Drive Ste. 200  
Rancho Cordova, CA 95670

RE: ARCO 2111, San Leandro, CA  
Sequoia Report: S109274

Enclosed are the results of analyses for samples received by the laboratory on 09/18/01 10:30. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Ron Chew  
Client Services Representative

Lito Diaz  
Laboratory Director

CA ELAP Certificate #1624



Delta Environmental Consultants(Rancho Cordova)  
3164 Gold Camp Drive Ste. 200  
Rancho Cordova CA, 95670

Project: ARCO 2111, San Leandro, CA  
Project Number: N/A  
Project Manager: Steven Meeks

**Reported:**  
10/02/01 15:39

**ANALYTICAL REPORT FOR SAMPLES**

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-5-15'	S109274-01	Water	09/18/01 05:12	09/18/01 10:30

Sequoia Analytical - Sacramento

Ron Chew, Client Services Representative

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*



Delta Environmental Consultants(Rancho Cordova)  
3164 Gold Camp Drive Ste. 200  
Rancho Cordova CA, 95670

Project: ARCO 2111, San Leandro, CA  
Project Number: N/A  
Project Manager: Steven Meeks

**Reported:**  
10/02/01 15:39

**MTBE Confirmation by EPA Method 8260B  
Sequoia Analytical - Sacramento**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>MW-5-15' (S109274-01) Water</b> <b>Sampled: 09/18/01 05:12</b> <b>Received: 09/18/01 10:30</b>									
Methyl tert-butyl ether	20000	400	ug/l	200	1100001	10/01/01	10/01/01	EPA 8260B	
Surrogate: 1,2-DCA-d4		111 %	60-140		"	"	"	"	





Delta Environmental Consultants(Rancho Cordova)  
3164 Gold Camp Drive Ste. 200  
Rancho Cordova CA, 95670

Project: ARCO 2111, San Leandro, CA  
Project Number: N/A  
Project Manager: Steven Meeks

**Reported:**  
10/02/01 15:39

**Total Purgeable Hydrocarbon, BTEX and MTBE by DHS LUFT  
Sequoia Analytical - Sacramento**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>MW-5-15' (S109274-01) Water</b> <b>Sampled: 09/18/01 05:12</b> <b>Received: 09/18/01 10:30</b>									
Purgeable Hydrocarbons	ND	10000	ug/l	200	1090222	09/20/01	09/20/01	DHS LUFT	
Benzene	ND	100	"	"	"	"	"	"	
Toluene	ND	100	"	"	"	"	"	"	
Ethylbenzene	ND	100	"	"	"	"	"	"	
Xylenes (total)	ND	100	"	"	"	"	"	"	
<b>Methyl tert-butyl ether</b>	<b>22000</b>	<b>500</b>	"	"	"	"	"	"	
<i>Surrogate: a,a,a-Trifluorotoluene</i>		95.0 %		60-140	"	"	"	"	



Delta Environmental Consultants(Rancho Cordova) 3164 Gold Camp Drive Ste. 200 Rancho Cordova CA, 95670	Project: ARCO 2111, San Leandro, CA Project Number: N/A Project Manager: Steven Meeks	<b>Reported:</b> 10/02/01 15:39
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**MTBE Confirmation by EPA Method 8260B - Quality Control  
Sequoia Analytical - Sacramento**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 1100001 - EPA 5030B [P/T]</b>										
<b>Blank (1100001-BLK1)</b> Prepared & Analyzed: 10/01/01										
Methyl tert-butyl ether	ND	2.0	ug/l							
Surrogate: 1,2-DCA-d4	46.9		"	50.0		93.8	60-140			
<b>LCS (1100001-BS1)</b> Prepared & Analyzed: 10/01/01										
Methyl tert-butyl ether	52.2	2.0	ug/l	50.0		104	70-130			
Surrogate: 1,2-DCA-d4	47.7		"	50.0		95.4	60-140			
<b>Matrix Spike (1100001-MS1)</b> Source: S109280-02 Prepared & Analyzed: 10/01/01										
Methyl tert-butyl ether	53.6	2.0	ug/l	50.0	ND	107	60-140			
Surrogate: 1,2-DCA-d4	49.7		"	50.0		99.4	60-140			
<b>Matrix Spike Dup (1100001-MSD1)</b> Source: S109280-02 Prepared & Analyzed: 10/01/01										
Methyl tert-butyl ether	53.8	2.0	ug/l	50.0	ND	108	60-140	0.372	25	
Surrogate: 1,2-DCA-d4	49.6		"	50.0		99.2	60-140			



Delta Environmental Consultants(Rancho Cordova)  
3164 Gold Camp Drive Ste. 200  
Rancho Cordova CA, 95670

Project: ARCO 2111, San Leandro, CA  
Project Number: N/A  
Project Manager: Steven Meeks

**Reported:**  
10/02/01 15:39

**Total Purgeable Hydrocarbon, BTEX and MTBE by DHS LUFT - Quality Control  
Sequoia Analytical - Sacramento**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 1090222 - EPA 5030B (P/T)</b>										
<b>Blank (1090222-BLK1)</b> <span style="float:right">Prepared &amp; Analyzed: 09/20/01</span>										
Purgeable Hydrocarbons	ND	50	ug/l							
Benzene	ND	0.50	"							
Toluene	ND	0.50	"							
Ethylbenzene	ND	0.50	"							
Xylenes (total)	ND	0.50	"							
Methyl tert-butyl ether	ND	2.5	"							
<i>Surrogate: a,a,a-Trifluorotoluene</i>	<i>11.4</i>		<i>"</i>	<i>10.0</i>		<i>114</i>	<i>60-140</i>			
<b>LCS (1090222-BS1)</b> <span style="float:right">Prepared &amp; Analyzed: 09/20/01</span>										
Benzene	10.1	0.50	ug/l	10.0		101	70-130			
Toluene	9.77	0.50	"	10.0		97.7	70-130			
Ethylbenzene	9.80	0.50	"	10.0		98.0	70-130			
Xylenes (total)	29.5	0.50	"	30.0		98.3	70-130			
Methyl tert-butyl ether	10.9	2.5	"	10.0		109	70-130			
<i>Surrogate: a,a,a-Trifluorotoluene</i>	<i>11.2</i>		<i>"</i>	<i>10.0</i>		<i>112</i>	<i>60-140</i>			
<b>Matrix Spike (1090222-MS1)</b> <span style="float:right">Source: S109228-08 Prepared &amp; Analyzed: 09/20/01</span>										
Benzene	10.6	0.50	ug/l	10.0	ND	106	60-140			
Toluene	10.3	0.50	"	10.0	ND	103	60-140			
Ethylbenzene	10.4	0.50	"	10.0	ND	104	60-140			
Xylenes (total)	31.1	0.50	"	30.0	ND	104	60-140			
Methyl tert-butyl ether	12.9	2.5	"	10.0	ND	129	60-140			
<i>Surrogate: a,a,a-Trifluorotoluene</i>	<i>11.6</i>		<i>"</i>	<i>10.0</i>		<i>116</i>	<i>60-140</i>			
<b>Matrix Spike Dup (1090222-MSD1)</b> <span style="float:right">Source: S109228-08 Prepared &amp; Analyzed: 09/20/01</span>										
Benzene	10.6	0.50	ug/l	10.0	ND	106	60-140	0.00	25	
Toluene	10.4	0.50	"	10.0	ND	104	60-140	0.966	25	
Ethylbenzene	10.5	0.50	"	10.0	ND	105	60-140	0.957	25	
Xylenes (total)	31.0	0.50	"	30.0	ND	103	60-140	0.322	25	
Methyl tert-butyl ether	13.8	2.5	"	10.0	ND	138	60-140	6.74	25	
<i>Surrogate: a,a,a-Trifluorotoluene</i>	<i>11.1</i>		<i>"</i>	<i>10.0</i>		<i>111</i>	<i>60-140</i>			



Delta Environmental Consultants(Rancho Cordova)  
3164 Gold Camp Drive Ste. 200  
Rancho Cordova CA, 95670

Project: ARCO 2111, San Leandro, CA  
Project Number: N/A  
Project Manager: Steven Meeks

**Reported:**  
10/02/01 15:39

#### Notes and Definitions

DET Analyte DETECTED  
ND Analyte NOT DETECTED at or above the reporting limit  
NR Not Reported  
dry Sample results reported on a dry weight basis  
RPD Relative Percent Difference

**ARCO Products Company**  
Division of Atlantic-Richfield Company

Task Order No. *QM 2711700*

Chain of Custody

ARCO Facility no. *2111* City (Facility) *SAN Leandro* Project manager (Consultant) *Steven Medus* Laboratory name *Seymour*

ARCO engineer *Supple* Telephone no. (ARCO) *916 436 2615* Telephone no. (Consultant) *916 638 8380* Contract number

Consultant name *Delta* Address (Consultant) *3164 Gold Camp DR Rancho Linda* Method of shipment

Sample I.D.	Lab no.	Container no.	Matrix			Preservation		Sampling date	Sampling time	BTEX EPA 8020	BTEX/TPH EPA 8020/8015	TPH Modified 8015 Gas <input type="checkbox"/> Diesel <input type="checkbox"/>	Oil and Grease 413.1 <input type="checkbox"/> 413.2 <input type="checkbox"/>	TPH EPA 418.1/SM503E	EPA 601/8010	EPA 624/8240	EPA 625/8270	TC1P Metals <input type="checkbox"/> VOAC <input type="checkbox"/> VOAC <input type="checkbox"/>	CMM METALS EPA 8010/7000 TLC <input type="checkbox"/> STLC <input type="checkbox"/>	Lead Org./DHS <input type="checkbox"/> Lead EPA 7420/7421 <input type="checkbox"/>	Special detection Limit/reporting	Special QA/QC	
			Soil	Water	Other	Ice	Acid																
<i>Mw 1-18</i>		<i>6</i>	<i>X</i>			<i>X</i>	<i>X</i>	<i>9-18-01</i>	<i>0525</i>	<i>X</i>												<i>S109273-01</i>	
<i>Mw 3-17</i>		<i>6</i>	<i>X</i>			<i>X</i>	<i>X</i>		<i>0536</i>	<i>X</i>												<i>-02</i>	
<i>Mw 4-16</i>		<i>6</i>	<i>X</i>			<i>X</i>	<i>X</i>		<i>0545</i>	<i>X</i>												<i>-03</i>	
<i>Mw 6-15</i>		<i>6</i>	<i>X</i>			<i>X</i>	<i>X</i>		<i>0600</i>	<i>X</i>												<i>-04</i>	
<i>Mw 7-17</i>		<i>6</i>	<i>X</i>			<i>X</i>	<i>X</i>	<i>9-18-01</i>	<i>0506</i>	<i>X</i>												<i>-05</i>	

Remarks  
*TPHE 8015M  
BTEX 8020  
MTBE 8020  
Confirm MTBE  
By 8260*

Condition of sample: *OK* Temperature received: *10C*

Relinquished by sampler *[Signature]* Date *9-18-01* Time *1030* Received by *Monica Gregem* Date *9/18/01* Time *1030*

Relinquished by \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_ Received by \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_

Relinquished by \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_ Received by \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_

Priority Rush  1 Business Day

Rush  2 Business Days

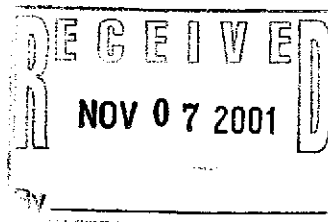
Expedited  5 Business Days

Standard  10 Business Days



# Sequoia Analytical

819 Striker Avenue, Suite 8  
Sacramento, CA 95834  
(916) 921-9600  
FAX (916) 921-0100  
www.sequoialabs.com



November 02 , 2001

Steven Meeks  
Delta Environmental Consultants(Rancho Cordova)  
3164 Gold Camp Drive Ste. 200  
Rancho Cordova, CA 95670  
RE: ARCO 2111, San Leandro, CA / S110299

Enclosed are the results of analyses for samples received by the laboratory on 10/19/01. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Ron Chew  
Client Services Representative

Lito Diaz  
For  
Laboratory Director

CA ELAP Certificate Number 1624





Delta Environmental Consultants(Rancho Cordova  
3164 Gold Camp Drive Ste. 200  
Rancho Cordova CA, 95670

Project: ARCO 2111, San Leandro, CA  
Project Number: N/A  
Project Manager: Steven Meeks

Reported:  
11/02/01 11:27

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BF MW-2	S110299-01	Water	10/19/01 05:32	10/19/01 18:00
AF MW-2	S110299-02	Water	10/19/01 14:15	10/19/01 18:00
BF MW-7	S110299-03	Water	10/19/01 05:30	10/19/01 18:00
AF MW-7	S110299-04	Water	10/19/01 08:30	10/19/01 18:00
TB	S110299-05	Water	10/19/01 00:00	10/19/01 18:00





Delta Environmental Consultants(Rancho Cordova 3164 Gold Camp Drive Ste. 200 Rancho Cordova CA, 95670	Project: ARCO 2111, San Leandro, CA Project Number: N/A Project Manager: Steven Meeks	Reported: 11/02/01 11:27
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**Total Purgeable Hydrocarbon, BTEX and MTBE by DHS LUFT  
Sequoia Analytical - Sacramento**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>BF MW-2 (S110299-01) Water</b> <b>Sampled: 10/19/01 05:32</b> <b>Received: 10/19/01 18:00</b>									
Purgeable Hydrocarbons	12000	10000	ug/l	200	1100287	10/23/01	10/23/01	DHS LUFT	HC-12
Benzene	780	100	"	"	"	"	"	"	
Toluene	1200	100	"	"	"	"	"	"	
Ethylbenzene	350	100	"	"	"	"	"	"	
Xylenes (total)	1600	100	"	"	"	"	"	"	
Methyl tert-butyl ether	29000	500	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		73.1 %		60-140	"	"	"	"	
<b>AF MW-2 (S110299-02) Water</b> <b>Sampled: 10/19/01 14:15</b> <b>Received: 10/19/01 18:00</b>									
Purgeable Hydrocarbons	ND	10000	ug/l	200	1100287	10/23/01	10/23/01	DHS LUFT	
Benzene	200	100	"	"	"	"	"	"	
Toluene	240	100	"	"	"	"	"	"	
Ethylbenzene	160	100	"	"	"	"	"	"	
Xylenes (total)	480	100	"	"	"	"	"	"	
Methyl tert-butyl ether	33000	500	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		77.5 %		60-140	"	"	"	"	
<b>BF MW-7 (S110299-03) Water</b> <b>Sampled: 10/19/01 05:30</b> <b>Received: 10/19/01 18:00</b>									
Purgeable Hydrocarbons	ND	100000	ug/l	2000	1100321	10/25/01	10/25/01	DHS LUFT	
Benzene	1100	1000	"	"	"	"	"	"	
Toluene	ND	1000	"	"	"	"	"	"	
Ethylbenzene	ND	1000	"	"	"	"	"	"	
Xylenes (total)	1300	1000	"	"	"	"	"	"	
Methyl tert-butyl ether	210000	5000	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		103 %		60-140	"	"	"	"	







Delta Environmental Consultants(Rancho Cordova  
3164 Gold Camp Drive Ste. 200  
Rancho Cordova CA, 95670

Project: ARCO 2111, San Leandro, CA  
Project Number: N/A  
Project Manager: Steven Meeks

Reported:  
11/02/01 11:27

**Total Purgeable Hydrocarbon, BTEX and MTBE by DHS LUFT  
Sequoia Analytical - Sacramento**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>AF MW-7 (S110299-04) Water</b> Sampled: 10/19/01 08:30 Received: 10/19/01 18:00									
Purgeable Hydrocarbons	ND	50000	ug/l	1000	1100321	10/25/01	10/25/01	DHS LUFT	
Benzene	ND	500	"	"	"	"	"	"	
Toluene	ND	500	"	"	"	"	"	"	
Ethylbenzene	ND	500	"	"	"	"	"	"	
Xylenes (total)	ND	500	"	"	"	"	"	"	
Methyl tert-butyl ether	91000	2500	"	"	"	"	"	"	
<i>Surrogate: a,a,a-Trifluorotoluene</i>		84.7 %	60-140		"	"	"	"	
<b>TB (S110299-05) Water</b> Sampled: 10/19/01 00:00 Received: 10/19/01 18:00									
Purgeable Hydrocarbons	ND	50	ug/l	1	1100295	10/24/01	10/24/01	DHS LUFT	
Benzene	ND	0.50	"	"	"	"	"	"	
Toluene	ND	0.50	"	"	"	"	"	"	
Ethylbenzene	ND	0.50	"	"	"	"	"	"	
Xylenes (total)	ND	0.50	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	2.5	"	"	"	"	"	"	
<i>Surrogate: a,a,a-Trifluorotoluene</i>		98.4 %	60-140		"	"	"	"	





Delta Environmental Consultants(Rancho Cordova  
3164 Gold Camp Drive Ste. 200  
Rancho Cordova CA, 95670

Project: ARCO 2111, San Leandro, CA  
Project Number: N/A  
Project Manager: Steven Meeks

Reported:  
11/02/01 11:27

## Total Purgeable Hydrocarbon, BTEX and MTBE by DHS LUFT - Quality Control Sequoia Analytical - Sacramento

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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### Batch 1100287 - EPA 5030B (MeOH)

#### Blank (1100287-BLK1)

Prepared & Analyzed: 10/23/01

Purgeable Hydrocarbons	ND	50	ug/l							
Benzene	ND	0.50	"							
Toluene	ND	0.50	"							
Ethylbenzene	ND	0.50	"							
Xylenes (total)	ND	0.50	"							
Methyl tert-butyl ether	ND	2.5	"							
Surrogate: a,a,a-Trifluorotoluene	8.54		"	10.0		85.4	60-140			

#### LCS (1100287-BS1)

Prepared & Analyzed: 10/23/01

Benzene	9.50	0.50	ug/l	10.0		95.0	70-130			
Toluene	9.18	0.50	"	10.0		91.8	70-130			
Ethylbenzene	9.27	0.50	"	10.0		92.7	70-130			
Xylenes (total)	27.6	0.50	"	30.0		92.0	70-130			
Methyl tert-butyl ether	10.3	2.5	"	10.0		103	70-130			
Surrogate: a,a,a-Trifluorotoluene	8.67		"	10.0		86.7	60-140			

### Batch 1100295 - EPA 5030B (P/T)

#### Blank (1100295-BLK1)

Prepared & Analyzed: 10/24/01

Purgeable Hydrocarbons	ND	50	ug/l							
Benzene	ND	0.50	"							
Toluene	ND	0.50	"							
Ethylbenzene	ND	0.50	"							
Xylenes (total)	ND	0.50	"							
Methyl tert-butyl ether	ND	2.5	"							
Surrogate: a,a,a-Trifluorotoluene	7.97		"	10.0		79.7	60-140			





Delta Environmental Consultants(Rancho Cordova  
3164 Gold Camp Drive Ste. 200  
Rancho Cordova CA, 95670

Project: ARCO 2111, San Leandro, CA  
Project Number: N/A  
Project Manager: Steven Meeks

Reported:  
11/02/01 11:27

## Total Purgeable Hydrocarbon, BTEX and MTBE by DHS LUFT - Quality Control Sequoia Analytical - Sacramento

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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### Batch 1100295 - EPA 5030B (P/T)

#### LCS (1100295-BS1)

Prepared & Analyzed: 10/24/01

Benzene	9.76	0.50	ug/l	10.0		97.6	70-130			
Toluene	9.43	0.50	"	10.0		94.3	70-130			
Ethylbenzene	9.40	0.50	"	10.0		94.0	70-130			
Xylenes (total)	28.4	0.50	"	30.0		94.7	70-130			
Methyl tert-butyl ether	12.2	2.5	"	10.0		122	70-130			
Surrogate: a,a,a-Trifluorotoluene	7.92		"	10.0		79.2	60-140			

#### Matrix Spike (1100295-MS1)

Source: S110315-05

Prepared & Analyzed: 10/24/01

Benzene	9.53	0.50	ug/l	10.0	ND	95.3	60-140			
Toluene	9.06	0.50	"	10.0	ND	90.6	60-140			
Ethylbenzene	9.02	0.50	"	10.0	ND	90.2	60-140			
Xylenes (total)	27.4	0.50	"	30.0	ND	91.3	60-140			
Methyl tert-butyl ether	11.5	2.5	"	10.0	ND	115	60-140			
Surrogate: a,a,a-Trifluorotoluene	9.95		"	10.0		99.5	60-140			

#### Matrix Spike Dup (1100295-MSD1)

Source: S110315-05

Prepared & Analyzed: 10/24/01

Benzene	9.86	0.50	ug/l	10.0	ND	98.6	60-140	3.40	25	
Toluene	9.45	0.50	"	10.0	ND	94.5	60-140	4.21	25	
Ethylbenzene	9.47	0.50	"	10.0	ND	94.7	60-140	4.87	25	
Xylenes (total)	28.4	0.50	"	30.0	ND	94.7	60-140	3.58	25	
Methyl tert-butyl ether	19.0	2.5	"	10.0	ND	190	60-140	49.2	25	QM-07
Surrogate: a,a,a-Trifluorotoluene	9.40		"	10.0		94.0	60-140			

### Batch 1100321 - EPA 5030B (P/T)

#### Blank (1100321-BLK1)

Prepared & Analyzed: 10/25/01

Purgeable Hydrocarbons	ND	50	ug/l							
Benzene	ND	0.50	"							
Toluene	ND	0.50	"							
Ethylbenzene	ND	0.50	"							
Xylenes (total)	ND	0.50	"							
Methyl tert-butyl ether	ND	2.5	"							
Surrogate: a,a,a-Trifluorotoluene	8.27		"	10.0		82.7	60-140			





Delta Environmental Consultants(Rancho Cordova  
3164 Gold Camp Drive Ste. 200  
Rancho Cordova CA, 95670

Project: ARCO 2111, San Leandro, CA  
Project Number: N/A  
Project Manager: Steven Meeks

Reported:  
11/02/01 11:27

**Total Purgeable Hydrocarbon, BTEX and MTBE by DHS LUFT - Quality Control  
Sequoia Analytical - Sacramento**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch 1100321 - EPA 5030B (P/T)**

**LCS (1100321-BS1)**

Prepared & Analyzed: 10/25/01

Benzene	9.96	0.50	ug/l	10.0		99.6	70-130			
Toluene	9.20	0.50	"	10.0		92.0	70-130			
Ethylbenzene	8.41	0.50	"	10.0		84.1	70-130			
Xylenes (total)	25.5	0.50	"	30.0		85.0	70-130			
Methyl tert-butyl ether	10.4	2.5	"	10.0		104	70-130			
Surrogate: a,a,a-Trifluorotoluene	11.2		"	10.0		112	60-140			

**Matrix Spike (1100321-MS1)**

Source: S110316-14

Prepared & Analyzed: 10/25/01

Benzene	10.5	0.50	ug/l	10.0	1.6	89.0	60-140			
Toluene	9.35	0.50	"	10.0	0.65	87.0	60-140			
Ethylbenzene	23.2	0.50	"	10.0	15	82.0	60-140			
Xylenes (total)	24.8	0.50	"	30.0	0.52	80.9	60-140			
Methyl tert-butyl ether	37.8	2.5	"	10.0	30	78.0	60-140			
Surrogate: a,a,a-Trifluorotoluene	5.95		"	10.0		59.5	60-140			QM-07

**Matrix Spike Dup (1100321-MSD1)**

Source: S110316-14

Prepared & Analyzed: 10/25/01

Benzene	11.6	0.50	ug/l	10.0	1.6	100	60-140	9.95	25	
Toluene	10.1	0.50	"	10.0	0.65	94.5	60-140	7.71	25	
Ethylbenzene	24.7	0.50	"	10.0	15	97.0	60-140	6.26	25	
Xylenes (total)	27.1	0.50	"	30.0	0.52	88.6	60-140	8.86	25	
Methyl tert-butyl ether	41.6	2.5	"	10.0	30	116	60-140	9.57	25	
Surrogate: a,a,a-Trifluorotoluene	5.85		"	10.0		58.5	60-140			QM-07





Delta Environmental Consultants(Rancho Cordova  
3164 Gold Camp Drive Ste. 200  
Rancho Cordova CA, 95670

Project: ARCO 2111, San Leandro, CA  
Project Number: N/A  
Project Manager: Steven Meeks

Reported:  
11/02/01 11:27

**Notes and Definitions**

- HC-12 Hydrocarbon pattern is present in the requested fuel quantitation range but does not resemble the pattern of the requested fuel.
- QM-07 The spike recovery was outside control limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
- DET Analyte DETECTED
- ND Analyte NOT DETECTED at or above the reporting limit
- NR Not Reported
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference



**ARCO Products Company**

Division of AtlanticRichfieldCompany

Task Order No. **2599300**

**Chain of Custody**

ARCO Facility no. **211** City (Facility) **SAN LEANDRO** Project manager (Consultant) **STEAVE MEERS** Laboratory name **SEQUIOA**

ARCO engineer **PAUL SUPPKE** Telephone no. (ARCO) Telephone no. (Consultant) Fax no. (Consultant) **916-638-8385** Contract number

Consultant name **DELTA** Address (Consultant) **RANCHO CORDOVA**

Sample I.D.	Lab no.	Container no.	Matrix			Preservation		Sampling date	Sampling time	BTEX MTBE EPA 802/EPA 8020	BTEX/TPH EPA M802/8020/8015	TPH Modified 8015 Gas Diesel	Oil and Grease 413.1 413.2	TPH EPA 418.1/SM503E	EPA 801/8010	EPA 824/8240	EPA 825/8270	TCLP Metals VOC YOA	Semi Metals VOC YOA	CMA Metals EPA 810/7000 ITLC STLC	Lead Org./DHS Lead EPA 7420/7421	Method of shipment	
			Soil	Water	Other	Ice	Acid																
BF MW-2	4			X		X	X	10-19-01	5:32	X	X												S110299-01
MF MW-2								11	14:15														-02
MF MW-7								5:30	5:30														-03
MF MW-7								8:30	8:30														-04

Condition of sample: \_\_\_\_\_ Temperature received: \_\_\_\_\_

Relinquished by sampler **JENAL GONZALES** Date **10-19-01** Time **15:50** Received by **[Signature]**

Relinquished by **[Signature]** Date **10/19/01** Time **1800** Received by **Monice Grogan**

Relinquished by \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_ Received by laboratory \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_

Priority Rush 1 Business Day

Rush 2 Business Days

Expedited 5 Business Days

Standard 10 Business Days