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December 21, 2001

FI 3854

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

DEC 31 2001

Subject: *Quarterly Groundwater Monitoring Report, Third Quarter 2001*
ARCO Service Station No. 4494
566 Hegenberger Road
Oakland, California
Project No. D000-319

Dear Mr. Supple:

Delta Environmental Consultants, Inc. is submitting the attached report that presents the results of the third quarter 2001 groundwater monitoring program as ARCO Products Company Service Station No. 4494, located at 566 Hegenberger Road, Oakland, 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,

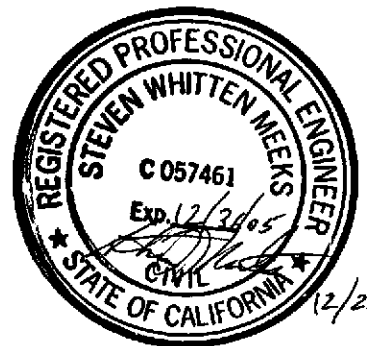
DELTA ENVIRONMENTAL CONSULTANTS, INC.


Trevor L. Atkinson
Project Engineer


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

TLA (LRP006.319.doc)
Enclosures

cc: Mr. Barney Chan – Alameda County Health Care Services



12/21/01

Date: December 21, 2001

ARCO QUARTERLY GROUNDWATER MONITORING REPORT

Station No.: 4494 Address: 566 Hegenberger Road, Oakland, 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.: D000-319
Primary Agency/Regulatory ID No. Alameda County Health Care Services/STID #3854

WORK PERFORMED THIS QUARTER

1. Performed quarterly groundwater monitoring for third quarter 2000.
2. Prepared and submitted quarterly groundwater monitoring report for second quarter 2001.

WORK PROPOSED FOR NEXT QUARTER

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

QUARTERLY MONITORING:

Current Phase of Project	<u>Monitoring</u>
Frequency of Groundwater Sampling:	<u>Quarterly (MW-1, MW-3 to MW-7, RW-1)</u>
Frequency of Groundwater Monitoring:	<u>Quarterly</u>
Is Free Product (FP) Present On-Site:	<u>No</u>
FP Recovered this Quarter:	<u>None</u>
Cumulative FP Recovered to Date:	<u>0.92 feet (volume not available)</u>
Bulk Soil Removed This Quarter:	<u>350 cubic yards</u>
Bulk Soil Removed to Date:	<u>1,550 cubic yards</u>
Current Remediation Techniques:	<u>None</u>
Approximate Depth to Groundwater:	<u>8.11 ft</u>
Groundwater Gradient:	<u>0.020 ft/ft North Northwest</u>

DISCUSSION:

- Analytical results indicate that MW-1 and MW-7 contain MTBE concentrations of 1,800 and 21 micrograms per liter, respectively.
- THP as gasoline was detected in RW-1 at a concentration of 57 µg/L.
- The site is currently scheduled for quarterly monitoring through 2001.

ATTACHMENTS:

- Table 1 Groundwater Elevation and Analytical Data
- Table 2 Ground Flow Direction and Gradient
- Figure 1 Groundwater Analytical Summary Map
- Figure 2 Groundwater Elevation Contour Map
- Appendix A Sampling and Analysis Procedures
- Appendix B Historical Data Tables (Pacific Environmental Group, Inc.)
- Appendix C Certified Analytical Reports with Chain-of-Custody Documentation
- Appendix D Field Sample Sheets

TABLE 1

GROUNDWATER ANALYTICAL DATA

ARCO Service Station 4494
566 Hegenberger Road at Edes Avenue
Oakland, 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 (µg/L)
MW-1	06/20/00	106.10	7.02	99.08	<10	<10	<10	<20	<1,000	14,000/15,000 ^a
	09/28/00		7.07	99.03	<5.0	<5.0	<5.0	<5.0	<500	13000/18,800 ^a
	12/17/00		6.95	99.15	<0.5	<0.5	<0.5	<0.5	<50	10,600
	03/28/01		6.88	99.22	<5.0	<5.0	<5.0	<5.0	<500	16,900
	06/21/01		7.18	98.92	<10	<10	<10	<10	<1,000	3,400
	09/23/01		7.11	98.99	<10	<10	<10	<10	<1,000	2200/1800 ^a
MW-3	06/20/00	106.29	9.18	97.11	<0.5	<0.5	<0.5	<1.0	<50	27/27 ^a
	09/28/00		9.33	96.96	<0.5	<0.5	<0.5	<1.0	<50	4.3/<2.0 ^a
	12/17/00		9.31	96.98	<0.5	<0.5	<0.5	<0.5	<50	<2.5
	03/28/01		9.23	97.06	<0.5	<0.5	<0.5	<0.5	<50	7.42
	06/21/01		9.58	96.71	<0.5	<0.5	<0.5	<0.5	<50	<2.5
	09/23/01		9.76	96.53	<0.5	<0.5	<0.5	<0.5	<50	<2.5
MW-4	06/20/00	107.40	8.49	98.91	<0.5	<0.5	<0.5	<1.0	<50	<10
	09/28/00		8.70	98.70	<0.5	<0.5	<0.5	<1.0	<50	<2.5
	12/17/00		8.53	98.87	<0.5	<0.5	<0.5	<0.5	<50	<2.5
	03/28/01		8.59	98.81	<0.5	<0.5	<0.5	<0.5	<50	<2.5
	06/21/01		8.79	98.61	<0.5	<0.5	<0.5	<0.5	<50	<2.5
	09/23/01		8.67	98.73	<0.5	<0.5	<0.5	<0.5	<50	<2.5
MW-5	06/20/00	105.19	7.65	97.54	<0.5	<0.5	<0.5	<1.0	<50	<10
	09/28/00		6.82	98.37	<0.5	<0.5	<0.5	<1.0	<50	<2.5
	12/17/00		6.5	98.69	<0.5	<0.5	<0.5	<0.5	<50	<2.5
	03/28/01		6.34	98.85	<0.5	<0.5	<0.5	<0.5	<50	<2.5
	06/21/01		7.88	97.31	<0.5	<0.5	<0.5	<0.5	<50	<2.5
	09/23/01		6.98	98.21	<0.5	<0.5	<0.5	<0.5	<50	<2.5

TABLE 1

GROUNDWATER ANALYTICAL DATA

ARCO Service Station 4494
566 Hegenberger Road at Edes Avenue
Oakland, 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 (µg/L)
MW-6	06/20/00	105.07	6.24	98.83	<0.5	<0.5	<0.5	<1.0	<50	<10
	09/28/00		6.45	98.62	<0.5	<0.5	<0.5	<1.0	<50	<2.5
	12/17/00		6.26	98.81	<0.5	<0.5	<0.5	<0.5	<50	<2.5
	03/28/01		6.10	98.97	<0.5	<0.5	<0.5	<0.5	<50	<2.5
	06/21/01		7.68	97.39	<0.5	<0.5	<0.5	<0.5	<50	<2.5
	09/23/01		6.72	98.35	<0.5	<0.5	<0.5	<0.5	<50	<2.5
MW-7	06/20/00	105.52	8.65	96.87	<0.5	<0.5	<0.5	<1.0	<50	13/13 ^a
	09/28/00		8.75	96.77	<0.5	<0.5	<0.5	<1.0	<50	136/261 ^a
	12/17/00		8.62	96.90	<0.5	<0.5	<0.5	<0.5	<50	27.1
	03/28/01		8.66	96.86	<0.5	<0.5	<0.5	<0.5	<50	51.5
	06/21/01		8.84	96.68	<0.5	<0.5	<0.5	<0.5	<50	53
	09/23/01		8.75	96.77	<0.5	<0.5	<0.5	<0.5	<50	35/21 ^a
RW-1	06/20/00	NE	8.21	NC	<0.5	1.1	<0.5	<1.0	<50	<10
	09/28/00		8.28	NC	<0.5	<0.5	<0.5	<1.0	<50	<2.5
	12/17/00		8.29	NC	<0.5	<0.5	<0.5	<0.5	<50	<2.5
	03/28/01		8.16	NC	<0.5	<0.5	<0.5	<0.5	<50	<2.5
	06/21/01		9.37	NC	5.1	<0.5	1.1	3.2	160	<2.5
	09/23/01		8.75	NC	<0.5	<0.5	<0.5	<0.5	57	<2.5

^a Analyzed by EPA Method 8260

TPH = Total Petroleum Hydrocarbons

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

µg/L = Micrograms per liter

NC = Not calculated

NE = Not surveyed/No elevation

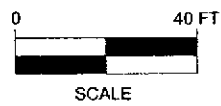
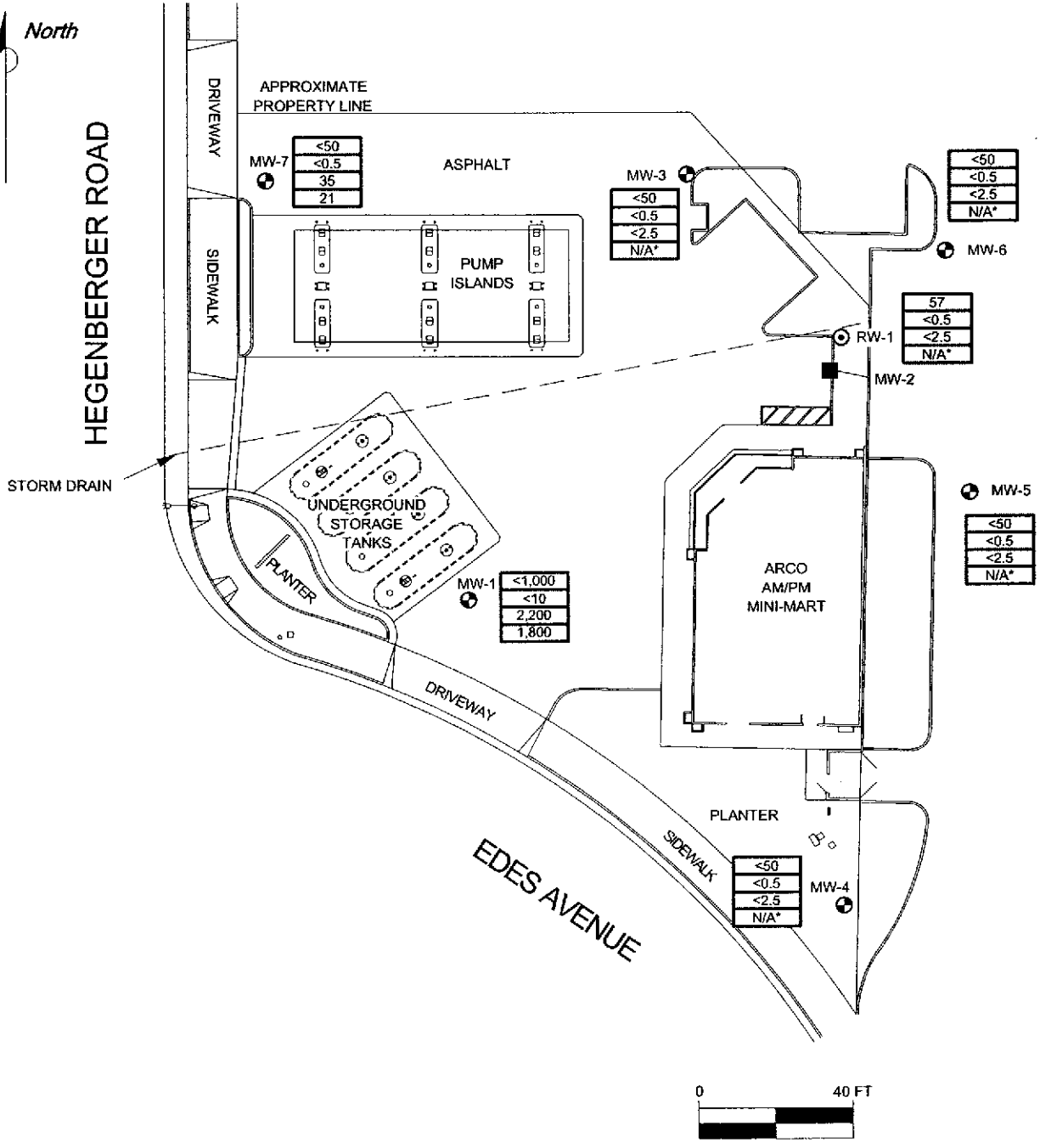
TABLE 2

GROUNDWATER FLOW DIRECTION AND GRADIENT

ARCO Service Station No. 4494
 566 Hegenberger Road at Edes Avenue
 Oakland, California

Date Measured	Average Flow Direction	Average Hydraulic Gradient
06/20/00	North-Northeast	0.015
09/28/00	North	0.018
12/17/00	North-Northwest	0.013
03/28/01	Northwest	0.011
06/21/01	North	0.017
09/23/01	North	0.020

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



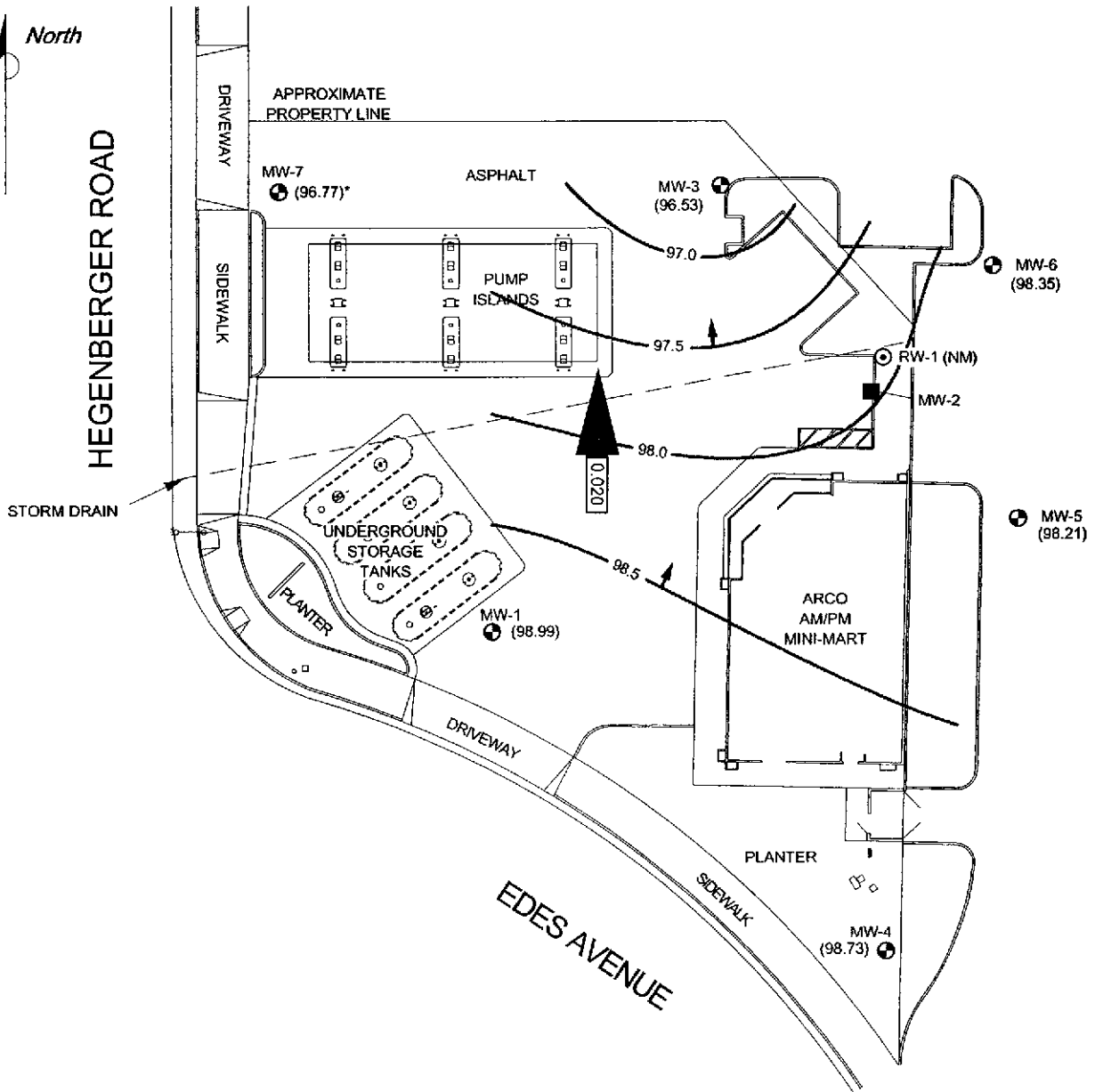
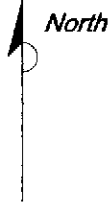
LEGEND:

- MW-7 MONITORING WELL LOCATION
 - RW-1 RECOVERY WELL LOCATION, INSTALLED DURING SLURRY WALL CONSTRUCTION (RESNA-APRIL 1993)
 - MW-2 DESTROYED MONITORING WELL (DECEMBER 1992)
- | | |
|------|---|
| <50 | TPH AS GASOLINE IN MICROGRAMS PER LITER |
| <0.5 | BENZENE IN MICROGRAMS PER LITER |
| <2.5 | MTBE IN MICROGRAMS PER LITER |
| N/A | MTBE CONFIRMED BY EPA METHOD 8260 |
- N/A NOT APPLICABLE

NOTE: SITE MAP ADAPTED FROM RESNA AND TAIT & ASSOCIATES FIGURES. SITE DIMENSIONS AND FACILITY LOCATIONS NOT VERIFIED.

FIGURE 1
GROUND WATER ANALYTICAL SUMMARY
THIRD QUARTER 2001 (9/23/01)
ARCO STATION NO. 4494
566 HEGENBERGER ROAD
OAKLAND, CALIFORNIA

PROJECT NO. D000-319	DRAWN BY TLA 12/20/01
FILE NO. 4494-1	PREPARED BY TLA
REVISION NO. 1	REVIEWED BY



LEGEND:

- MW-7 MONITORING WELL LOCATION
- RW-1 RECOVERY WELL LOCATION, INSTALLED DURING SLURRY WALL CONSTRUCTION (RESNA-APRIL 1993)
- MW-2 DESTROYED MONITORING WELL (DECEMBER 1992)
- (98.99) GROUND WATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL (MSL)
- 98.0 - WATER TABLE CONTOUR IN FEET ABOVE MSL
- GROUND WATER FLOW DIRECTION
- 0.020 APPROXIMATE GROUND WATER FLOW GRADIENT
- WELL(S) NOT USED IN CONTOUR CONSTRUCTION

NOTE: SITE MAP ADAPTED FROM RESNA AND TAIT & ASSOCIATES FIGURES. SITE DIMENSIONS AND FACILITY LOCATIONS NOT VERIFIED.

FIGURE 2
GROUND WATER ELEVATION CONTOUR MAP
THIRD QUARTER 2001 (9/23/01)
ARCO STATION NO. 4494
566 HEGENBERGER ROAD
OAKLAND, CALIFORNIA

PROJECT NO. D000-319	DRAWN BY TLA 12/20/01
FILE NO. 4494-1	PREPARED BY TLA
REVISION NO. 1	REVIEWED BY



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

If the depth to groundwater was above the top of screens of the monitoring wells, then the wells were purged. 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. 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 was collected in storage barrels or tank(s) and transported to an ARCO approved facility for treatment and/or disposal.

APPENDIX B

Historical Data Tables

Pacific Environmental Group, Inc.

Table 2
Liquid Surface Elevation Data

ARCO Service Station 4494
566 Hegenberger Road at Edes Avenue
Oakland, California

Well Number	Date Gauged	Well Elevation (feet, MSL)	Depth to Water (feet, TOC)	Depth to Liquid (feet, TOC)	SPH Thickness (feet)	Liquid Surface Elevation (feet, MSL)
MW-1	06/06/90	105.31	6.65	6.05	0.00	98.66
	08/16/90		7.00	7.00	0.00	98.31
	08/21/90		7.05	7.05	0.00	98.26
	09/07/90		7.24	7.24	0.00	98.07
	11/20/90		7.46	7.46	0.00	97.85
	11/29/90		7.40	7.40	0.00	97.91
	12/19/90		6.99	6.99	0.00	98.32
	01/29/91		7.23	7.23	0.00	98.08
	02/27/91		7.45	7.45	0.00	97.86
	03/07/91		6.96	6.96	0.00	98.35
	03/26/91		6.02	6.02	0.00	99.29
	05/02/91		7.04	7.04	0.00	98.27
	06/27/91		6.71	6.71	0.00	98.60
	07/24/91		6.91	6.91	0.00	98.40
	08/22/91		6.85	6.85	0.00	98.46
	09/30/91		7.04	7.04	0.00	98.27
	10/17/91		7.22	7.22	0.00	98.09
	11/21/91		7.17	7.17	0.00	98.14
	12/18/91		7.46	7.46	0.00	97.85
	01/19/92		7.44	7.44	0.00	97.87
	02/20/92	6.25	6.25	0.00	99.06	
	03/20/92	6.40	6.40	0.00	98.91	
	04/20/92	6.88	6.88	0.00	98.43	
	05/19/92	7.10	7.10	0.00	98.21	
	06/08/92	7.22	7.22	0.00	98.09	
	07/15/92	106.10	7.92	7.92	0.00	97.39
	08/06/92		7.29	7.29	0.00	98.81
	10/29/92		7.34	7.34	0.00	98.76
	11/23/92		8.15	8.15	0.00	97.95
	08/16/93		7.23	7.23	0.00	98.87
	11/17/93		7.51	7.51	0.00	98.59
	02/21/94		6.56	6.56	0.00	99.54
	05/11/94		6.57	6.57	0.00	99.53
08/12/94	7.12		7.12	0.00	98.98	
11/17/94	6.85		6.85	0.00	99.28	
02/22/95	7.35	7.35	0.00	98.75		
05/24/95	7.07	7.07	0.00	99.03		
08/23/95	7.10	7.10	0.00	99.00		
11/17/95	7.72	7.72	0.00	98.38		
MW-2	06/06/90	105.78	9.92*	9.00	0.92	95.86
	08/16/90		NM	NM	0.17	NM
	08/21/90		NM	NM	0.17	NM
	09/07/90		9.34*	9.17	0.17	96.44
	11/20/90		9.20*	9.2	Sheen	96.58
	11/29/90		9.92*	9.92	Sheen	95.86
	12/19/90		8.95	8.95	0/00	96.83
	01/29/91		9.01	9.01	Sheen	96.77
	02/27/91		9.14	9.14	Sheen	96.64
	03/07/91		8.94	8.94	Sheen	96.84
	03/26/91		8.11	8.11	Sheen	97.67
05/02/91	8.72	8.72	0	97.06		

Table 2 (continued)
Liquid Surface Elevation Data

ARCO Service Station 4494
566 Hegenberger Road at Edes Avenue
Oakland, California

Well Number	Date Gauged	Well Elevation (feet, MSL)	Depth to Water (feet, TOC)	Depth to Liquid (feet, TOC)	SPH Thickness (feet)	Liquid Surface Elevation (feet, MSL)	
MW-2	06/27/91		9.20	9.2	Sheen	96.58	
(cont.)	07/24/91		9.25	9.25	0.00	96.53	
	08/22/91		9.20	9.20	0.00	96.58	
	09/30/91		9.31	9.31	Sheen	96.47	
	10/17/91		9.39	9.39	Sheen	96.39	
	11/21/91		9.20	9.2	0	96.58	
	12/18/91		9.23	9.23	Sheen	96.55	
	01/19/92		9.96**	9.96	Skimmer	95.82	
	02/20/92		9.13**	9.13	Skimmer	96.65	
	03/20/92		9.31**	9.31	Skimmer	96.47	
	04/20/92		9.69	9.69	Skimmer	96.09	
	05/19/92		9.92	9.92	Skimmer	95.86	
	06/08/92		9.84	9.84	Skimmer	95.94	
	07/15/92		10.19	10.19	Skimmer	95.59	
	08/06/92	106.57	10.05	10.05	Skimmer	96.52	
	10/29/92		10.00	10.00	Skimmer	96.57	
	11/23/92		9.88	9.87	0.01	96.69	
	12/08/92		-----Well Destroyed-----				
MW-3	08/16/90	105.51	8.87	8.87	0.00	96.64	
	08/21/90		8.85	8.85	0.00	96.66	
	09/07/90		8.98	8.98	0.00	96.53	
	11/20/90		9.10	9.10	0.00	96.41	
	11/29/90		9.05	9.05	0.00	96.46	
	12/19/90		8.67	8.67	0.00	96.84	
	01/29/91		8.96	8.96	0.00	96.55	
	02/27/91		8.71	8.71	0.00	96.80	
	03/07/91		8.49	8.49	0.00	97.02	
	03/26/91		7.65	7.65	0.00	97.86	
	05/02/91		8.62	8.62	0.00	96.89	
	06/27/91		8.94	8.94	0.00	96.57	
	07/24/91		8.96	8.96	0.00	96.55	
	08/22/91		8.92	8.92	0.00	96.59	
	09/30/91		9.04	9.04	0.00	96.47	
	10/17/91		9.12	9.12	0.00	96.39	
	11/21/91		8.92	8.92	0.00	96.59	
	12/18/91		8.97	8.97	0.00	96.54	
	01/19/92		8.69	8.69	0.00	96.82	
	02/20/92		7.78	7.78	0.00	97.73	
	03/20/92		8.15	8.15	0.00	97.36	
	04/20/92		8.57	8.57	0.00	96.94	
	05/19/92		8.76	8.76	0.00	96.75	
	06/08/92		8.74	8.74	0.00	96.77	
	07/15/92		9.12	9.12	0.00	96.39	
	08/06/92	106.29	8.95	8.95	0.00	97.34	
	10/29/92		8.78	8.78	0.00	97.51	
	11/23/92		9.91	9.91	0.00	96.38	
	08/16/93		8.62	8.62	0.00	97.67	
	11/17/93		8.72	8.72	0.00	97.57	
	02/21/94		7.91	7.91	0.00	98.38	
	05/11/94		8.09	8.09	0.00	98.20	

Table 2 (continued)
Liquid Surface Elevation Data

ARCO Service Station 4494
566 Hegenberger Road at Edes Avenue
Oakland, California

Well Number	Date Gauged	Well Elevation (feet, MSL)	Depth to Water (feet, TOC)	Depth to Liquid (feet, TOC)	SPH Thickness (feet)	Liquid Surface Elevation (feet, MSL)
MW-3 (cont.)	08/12/94		8.78	8.78	0.00	97.51
	11/17/94		8.45	8.45	0.00	97.84
	02/22/95		8.95	8.95	0.00	97.34
	05/24/95		8.67	8.67	0.00	97.62
	08/23/95		9.17	9.17	0.00	97.12
	11/17/95		9.39	9.39	0.00	96.90
MW-4	08/16/90	106.61	8.16	8.16	0.00	98.45
	08/21/90		8.22	8.22	0.00	98.39
	09/07/90		8.39	8.39	0.00	98.22
	11/20/90		8.57	8.57	0.00	98.04
	11/29/90		8.53	8.53	0.00	98.08
	12/19/90		8.13	8.13	0.00	98.48
	01/29/91		8.66	8.66	0.00	97.95
	02/27/91		8.44	8.44	0.00	98.17
	03/07/91		8.18	8.18	0.00	98.43
	03/26/91		7.56	7.56	0.00	99.05
	05/02/91		8.25	8.25	0.00	98.36
	06/27/91		7.75	7.75	0.00	98.86
	07/24/91		8.12	8.12	0.00	98.49
	08/22/91		7.98	7.98	0.00	98.63
	09/30/91		8.26	8.26	0.00	98.35
	10/17/91		8.42	8.42	0.00	98.19
	11/21/91		8.65	8.65	0.00	97.96
	12/18/91		8.77	8.77	0.00	97.84
	01/19/92		8.42	8.42	0.00	98.19
	02/20/92		7.60	7.60	0.00	99.01
	03/20/92		7.61	7.61	0.00	99.00
	04/20/92		8.15	8.15	0.00	98.46
	05/19/92		8.14	8.14	0.00	98.47
	06/08/92		8.40	8.40	0.00	98.21
	07/15/92		8.72	8.72	0.00	97.89
	08/06/92	107.40	8.52	8.52	0.00	98.88
	10/29/92		8.63	8.63	0.00	98.77
	11/23/92		8.75	8.75	0.00	98.65
	08/16/93		8.69	8.69	0.00	98.71
	11/17/93		9.11	9.11	0.00	98.29
	02/21/94		8.16	8.16	0.00	99.24
	05/11/94		8.29	8.29	0.00	99.11
08/12/94		8.75	8.75	0.00	98.65	
11/17/94		8.40	8.40	0.00	99.00	
02/22/95		8.72	8.72	0.00	98.68	
05/24/95		8.63	8.63	0.00	98.77	
08/23/95		6.50	6.50	0.00	100.90	
11/17/95		9.15	9.15	0.00	98.25	
MW-5	08/06/92	105.19	7.19	7.19	0.00	98.00
	10/29/92		6.99	6.99	0.00	98.20
	11/23/92		6.90	6.90	0.00	98.29
	08/16/93		7.06	7.06	0.00	98.13
	11/17/93		6.91	6.91	0.00	98.28
	02/21/94		5.52	5.52	0.00	99.67
	05/11/94		6.18	6.18	0.00	99.01
	08/12/94		6.81	6.81	0.00	98.38
	11/17/94		5.38	5.38	0.00	99.81
	02/22/95		6.25	6.25	0.00	98.94

Table 2 (continued)
Liquid Surface Elevation Data

ARCO Service Station 4494
566 Hegenberger Road at Edes Avenue
Oakland, California

Well Number	Date Gauged	Well Elevation (feet, MSL)	Depth to Water (feet, TOC)	Depth to Liquid (feet, TOC)	SPH Thickness (feet)	Liquid Surface Elevation (feet, MSL)	
MW-5 (cont.)	05/24/95		6.30	6.30	0.00	98.89	
	08/23/95		6.90	6.90	0.00	98.29	
	11/17/95		7.02	7.02	0.00	98.17	
MW-6	08/06/92	105.07	7.01	7.01	0.00	98.06	
	10/29/92		6.70	6.70	0.00	98.37	
	11/23/92		6.75	6.75	0.00	98.32	
	08/16/93		6.71	6.71	0.00	98.36	
	11/17/93		6.67	6.67	0.00	98.40	
	02/21/94		5.31	5.31	0.00	99.76	
	05/11/94		5.98	5.98	0.00	99.09	
	08/12/94		6.60	6.60	0.00	98.47	
	11/17/94		5.09	5.09	0.00	99.98	
	02/22/95		5.85	5.85	0.00	99.22	
	05/24/95		5.92	5.92	0.00	99.15	
	08/23/95		6.50	6.50	0.00	98.57	
	11/17/95		6.75	6.75	0.00	98.32	
	08/06/92	105.52	8.28	8.28	0.00	97.24	
	10/29/92		8.62	8.62	0.00	96.90	
11/23/92		8.21	8.21	0.00	97.31		
08/16/93		8.11	8.11	0.00	97.41		
11/17/93		8.11	8.11	0.00	97.41		
02/21/94		7.34	7.34	0.00	98.18		
05/11/94		7.45	7.45	0.00	98.07		
08/12/94		8.13	8.13	0.00	97.39		
11/17/94		7.90	7.90	0.00	97.62		
02/22/95		8.40	8.40	0.00	97.12		
05/24/95		8.29	8.29	0.00	97.23		
08/23/95		8.60	8.60	0.00	96.92		
11/17/95		8.73	8.73	0.00	96.79		
RW-1	08/16/93	NM	-----Well Dry-----				
	11/17/93		-----Well Dry-----				
	02/21/94		7.69	7.69	0.00	NM	
	05/11/94		7.96	7.96	0.00	NM	
	08/12/94		7.58	7.58	0.00	NM	
	11/17/94		7.66	7.66	0.00	NM	
	02/22/95		8.00	8.00	0.00	NM	
	05/24/95		8.10	8.10	0.00	NM	
	08/23/95		8.67	8.67	0.00	NM	
	11/17/95		9.15	9.15	0.00	NM	

MSL = Mean sea level
TOC = Top of casing
* = Separate-phase hydrocarbons present in well.
** = Skimmer installed (12/24/91).
NM = Not measured

Table 3
Groundwater Analytical Data
 Total Petroleum Hydrocarbons
 (TPPH as Gasoline, BTEX Compounds, TEPH as Diesel, and Total Oil and Grease)

ARCO Service Station 4494
 566 Hegenberger Road at Edes Avenue
 Oakland, California

Well Number	Date Sampled	TPPH as Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Xylenes (ppb)	TEPH as Diesel (ppb)	Total Oil and Grease (ppm)	
MW-1	06/19/90	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<5000	
	08/16/90	<20	<0.50	<0.50	<0.50	<0.50	N/A	N/A	
	09/07/90	N/A	N/A	N/A	N/A	N/A	N/A	<5000	
	11/29/90	<50	<0.50	0.7	<0.50	<0.50	N/A	N/A	
	03/07/91	<50	<0.30	<0.30	<0.30	<0.30	N/A	N/A	
	06/27/91	<50	<0.30	<0.30	<0.30	<0.30	N/A	N/A	
	09/30/91	<50	<0.30	<0.30	<0.30	<0.30	N/A	N/A	
	12/18/91	<50	<0.30	<0.30	<0.30	<0.30	N/A	N/A	
	03/20/92	<50	<0.50	<0.50	<0.50	<0.50	N/A	N/A	
	06/08/92	<50	<0.50	<0.50	<0.50	<0.50	N/A	N/A	
	08/06/92	<50	<0.50	<0.50	<0.50	<0.50	N/A	N/A	
	10/29/92	<50	<0.5	<0.5	<0.5	<0.5	N/A	N/A	
	08/16/93	<50	<0.5	<0.5	<0.5	<0.5	N/A	N/A	
	11/17/93	<50	<0.5	<0.5	<0.5	<0.5	N/A	N/A	
	02/22/94	<50	<0.5	<0.5	<0.5	<0.5	N/A	N/A	
	05/11/94	<50	<0.5	<0.5	<0.5	<0.5	N/A	N/A	
	08/12/94	<50	<0.5	<0.5	<0.5	<0.5	N/A	N/A	
	11/17/94	<50	<0.5	<0.5	<0.5	<0.5	N/A	N/A	
	02/22/95	-----Well Sampled Annually-----							
	05/24/95	<50	<0.50	<0.50	<0.50	<0.50	N/A	N/A	
08/23/95	-----Well Sampled Annually-----								
11/17/95	-----Well Sampled Annually-----								
MW-2	06/19/90	-----0.92 foot of Separate-Phase Hydrocarbons-----							
	08/16/90	-----0.17 foot of Separate-Phase Hydrocarbons-----							
	09/07/90	-----Separate-Phase Hydrocarbons-----							
	11/29/90	-----Separate-Phase Hydrocarbons-----							
	03/07/91	-----Separate-Phase Hydrocarbons-----							
	06/27/91	-----Separate-Phase Hydrocarbons-----							
	09/30/91	-----Separate-Phase Hydrocarbons-----							
	12/18/91	-----Separate-Phase Hydrocarbons-----							
	03/20/92	48,000	2,000	580	2,300	7,000	N/A	N/A	
	06/08/92	43,000	2,900	940	240	5,100	N/A	N/A	
08/06/92	78,000	2,500	6,700	2,900	16,000	N/A	N/A		
10/29/92	NS	NS	NS	NS	NS	NS	NS		
12/08/92	-----Well Destroyed-----								
MW-3	06/19/90	<20	<0.50	<0.50	<0.50	<0.50	N/A	N/A	
	08/16/90	N/A	N/A	N/A	N/A	N/A	N/A	<5,000	
	09/07/90	<50	<0.50	<0.50	<0.50	<0.50	N/A	N/A	
	11/29/90	<50	<0.50	<0.50	<0.50	<0.50	N/A	N/A	
	03/07/91	<50	<30	<30	<30	<30	N/A	N/A	
	06/27/91	<30	<30	<30	<30	<30	N/A	N/A	
	09/30/91	<30	<30	<30	<30	<30	N/A	N/A	
	12/18/91	<30	<30	<30	<30	<30	N/A	N/A	
	03/20/92	<50	<0.50	<0.50	<0.50	<0.50	N/A	N/A	
	06/08/92	<50	<0.50	<0.50	<0.50	<0.50	N/A	N/A	
	08/06/92	<50	<0.50	<0.50	<0.50	<0.50	N/A	N/A	
	10/29/92	<50	<0.5	<0.5	<0.5	<0.5	N/A	N/A	
	08/16/93	<50	<0.5	<0.5	<0.5	<0.5	N/A	N/A	
	11/17/93	<50	<0.5	<0.5	<0.5	<0.5	N/A	N/A	

Table 3 (continued)
Groundwater Analytical Data
Total Petroleum Hydrocarbons
(TPPH as Gasoline, BTEX Compounds, TEPH as Diesel, and Total Oil and Grease)

ARCO Service Station 4494
566 Hegenberger Road at Edes Avenue
Oakland, California

Well Number	Date Sampled	TPPH as Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Xylenes (ppb)	TEPH as Diesel (ppb)	Total Oil and Grease (ppm)	
MW-3 (cont.)	02/22/94	<50	<0.5	<0.5	<0.5	<0.5	N/A	N/A	
	05/11/94	<50	<0.5	<0.5	<0.5	<0.5	N/A	N/A	
	08/12/94	<50	<0.5	<0.5	<0.5	<0.5	N/A	N/A	
	11/17/94	<50	<0.5	<0.5	<0.5	<0.5	N/A	N/A	
	02/22/95	-----Well Sampled Annually-----							
	05/24/95	<50	<0.50	<0.50	<0.50	<0.50	N/A	N/A	
	08/23/95	-----Well Sampled Annually-----							
	11/17/95	-----Well Sampled Annually-----							
	MW-4	08/16/90	<20	<0.50	<0.50	<0.50	<0.50	N/A	N/A
		09/07/90	N/A	N/A	N/A	N/A	N/A	N/A	<5,000
11/29/90		<50	<0.50	<0.50	<0.50	<0.50	N/A	N/A	
03/07/91		<50	<0.30	<0.30	<0.30	<0.30	N/A	N/A	
06/27/91		<50	0.75	1.1	<0.30	1.6	N/A	N/A	
09/30/91		<50	<0.30	<0.30	<0.30	<0.30	N/A	N/A	
12/18/91		<50	0.83	1.2	<0.30	0.58	N/A	N/A	
03/20/92		<50	<0.50	<0.50	<0.50	<0.50	N/A	N/A	
06/08/92		<50	<0.50	<0.50	<0.50	<0.50	N/A	N/A	
08/06/92		<50	<0.50	<0.50	<0.50	<0.50	N/A	N/A	
10/29/92		<50	<0.5	<0.5	<0.5	<0.5	N/A	N/A	
08/16/93		<50	<0.5	<0.5	<0.5	<0.5	N/A	N/A	
11/17/93		<50	<0.5	<0.5	<0.5	<0.5	N/A	N/A	
02/22/94		<50	<0.5	<0.5	<0.5	<0.5	N/A	N/A	
05/11/94		<50	<0.5	<0.5	<0.5	<0.5	N/A	N/A	
08/12/94		<50	<0.5	<0.5	<0.5	<0.5	N/A	N/A	
11/17/94		<50	<0.5	<0.5	<0.5	<0.5	N/A	N/A	
02/22/95		-----Well Sampled Annually-----							
05/24/95		<50	<0.50	<0.50	<0.50	<0.50	N/A	N/A	
08/23/95	-----Well Sampled Annually-----								
11/17/95	-----Well Sampled Annually-----								
MW-5	08/06/92	<50	<0.50	<0.50	<0.50	<0.50	N/A	N/A	
	10/29/92	<50	<0.5	<0.5	<0.5	<0.5	N/A	N/A	
	08/16/93	<50	<0.5	<0.5	<0.5	<0.5	N/A	N/A	
	11/17/93	<50	<0.5	<0.5	<0.5	<0.5	N/A	N/A	
	02/22/94	<50	<0.5	<0.5	<0.5	<0.5	N/A	N/A	
	05/11/94	<50	<0.5	<0.5	<0.5	<0.5	N/A	N/A	
	08/12/94	<50	<0.5	<0.5	<0.5	<0.5	N/A	N/A	
	11/17/94	<50	<0.5	<0.5	<0.5	<0.5	N/A	N/A	
	02/22/95	-----Well Sampled Annually-----							
	05/24/95	<50	<0.50	<0.50	<0.50	<0.50	N/A	N/A	
08/23/95	-----Well Sampled Annually-----								
11/17/95	-----Well Sampled Annually-----								
MW-6	08/06/92	<50	<0.50	<0.50	<0.50	<0.50	N/A	N/A	
	10/29/92	<50	<0.5	<0.5	<0.5	<0.5	N/A	N/A	
	08/16/93	<50	<0.5	<0.5	<0.5	<0.5	N/A	N/A	
	11/17/93	<50	<0.5	<0.5	<0.5	<0.5	N/A	N/A	
	02/22/94	<50	<0.5	<0.5	<0.5	<0.5	N/A	N/A	
	05/11/94	<50	<0.5	<0.5	<0.5	<0.5	N/A	N/A	
	08/12/94	<50	<0.5	<0.5	<0.5	<0.5	N/A	N/A	
	11/17/94	<50	<0.5	<0.5	<0.5	<0.5	N/A	N/A	
	02/22/95	-----Well Sampled Annually-----							

Table 3 (continued)
Groundwater Analytical Data
 Total Petroleum Hydrocarbons
 (TPPH as Gasoline, BTEX Compounds, TEPH as Diesel, and Total Oil and Grease)

ARCO Service Station 4494
 566 Hegenberger Road at Edes Avenue
 Oakland, California

Well Number	Date Sampled	TPPH as Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethylbenzene (ppb)	Xylenes (ppb)	TEPH as Diesel (ppb)	Total Oil and Grease (ppm)
MW-6 (cont.)	05/24/95	<50	<0.50	<0.50	<0.50	<0.50	N/A	N/A
	08/23/95	-----Well Sampled Annually-----						
	11/17/95	-----Well Sampled Annually-----						
MW-7	08/06/92	<50	<0.50	<0.50	<0.50	<0.50	N/A	N/A
	10/29/92	<50	<0.5	<0.5	<0.5	<0.5	N/A	N/A
	08/16/93	<50	<0.5	<0.5	<0.5	<0.5	N/A	N/A
	11/17/93	<50	<0.5	<0.5	<0.5	<0.5	N/A	N/A
	02/22/94	<50	<0.5	<0.5	<0.5	<0.5	N/A	N/A
	05/11/94	<50	<0.5	<0.5	<0.5	<0.5	N/A	N/A
	08/12/94	<50	<0.5	<0.5	<0.5	<0.5	N/A	N/A
	11/17/94	<50	<0.5	<0.5	<0.5	<0.5	N/A	N/A
	02/22/95	-----Well Sampled Annually-----						
	05/24/95	<50	<0.50	<0.50	<0.50	<0.50	N/A	N/A
	08/23/95	-----Well Sampled Annually-----						
11/17/95	-----Well Sampled Annually-----							
RW-1	08/16/93	NS	NS	NS	NS	NS	NS	NS
	11/17/93	NS	NS	NS	NS	NS	NS	NS
	02/22/94	280	2,100	19	40	66	N/A	N/A
	05/11/94	3,300	32	28	87	310	N/A	N/A
	08/12/94	4,600	42	59	190	400	N/A	N/A
	11/17/94	1,400	56	21	28	210	N/A	N/A
	02/22/95	8,100	140	<10	550	560	N/A	N/A
	05/24/95	940	53	0.75	11	1.4	N/A	N/A
	08/23/95	620	2.1	2.3	0.67	0.67	N/A	N/A
	11/17/95	1,100	7.6	21	46	180	N/A	N/A

ppb = Parts per billion
 ppm = Parts per million
 N/A = Not applicable
 NS = Not sampled

Table 4
Groundwater Analytical Data
Total Methyl t-Butyl Ether

ARCO Service Station 4494
566 Hegenberger Road at Edes Avenue
Oakland, California

Well Number	Date Sampled	Methyl t-Butyl Ether (ppb)
MW-1	08/23/95	NS
MW-2	08/23/95	NS
MW-3	08/23/95	NS
MW-4	08/23/95	NS
MW-5	08/23/95	NS
MW-6	08/23/95	NS
MW-7	08/23/95	NS
RW-1	08/23/95	13

ppb = Parts per billion
NS = Not sampled
See certified analytical report for detection limit.

APPENDIX C

Certified Analytical Reports
With
Chain-of-Custody



**Sequoia
Analytical**

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

5 October, 2001

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

RE: ARCO 4494, Oakland, CA
Sequoia Report: S109370

Enclosed are the results of analyses for samples received by the laboratory on 09/25/01 09:30. 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 4494, Oakland, CA
Project Number: N/A
Project Manager: Steven Meeks

Reported:
10/05/01 17:09

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-1-7	S109370-01	Water	09/23/01 07:50	09/25/01 09:30
MW-3-9	S109370-02	Water	09/23/01 07:40	09/25/01 09:30
MW-4-8	S109370-03	Water	09/23/01 06:50	09/25/01 09:30
MW-5-6	S109370-04	Water	09/23/01 07:10	09/25/01 09:30
MW-6-6	S109370-05	Water	09/23/01 07:22	09/25/01 09:30
MW-7-8	S109370-06	Water	09/23/01 08:00	09/25/01 09:30
RW-1-8	S109370-07	Water	09/23/01 07:34	09/25/01 09:30
TB	S109370-08	Water	09/23/01 06:00	09/25/01 09:30

Sequoia Analytical - Sacramento

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.

Ron Chew, Client Services Representative

Page Page 1 of 10



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

Project: ARCO 4494, Oakland, CA
Project Number: N/A
Project Manager: Steven Meeks

Reported:
10/05/01 17:09

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

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-1-7 (S109370-01) Water Sampled: 09/23/01 07:50 Received: 09/25/01 09:30									
Methyl tert-butyl ether	1800	40	ug/l	20	1100049	10/04/01	10/04/01	EPA 8260B	
Surrogate: 1,2-DCA-d4		110 %	60-140		"	"	"	"	
MW-7-8 (S109370-06) Water Sampled: 09/23/01 08:00 Received: 09/25/01 09:30									
Methyl tert-butyl ether	21	2.0	ug/l	1	1100049	10/04/01	10/04/01	EPA 8260B	
Surrogate: 1,2-DCA-d4		111 %	60-140		"	"	"	"	
TB (S109370-08) Water Sampled: 09/23/01 06:00 Received: 09/25/01 09:30									
Methyl tert-butyl ether	2.1	2.0	ug/l	1	1100049	10/04/01	10/04/01	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 4494, Oakland, CA
 Project Number: N/A
 Project Manager: Steven Meeks

Reported:
 10/05/01 17:09

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

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-1-7 (S109370-01) Water Sampled: 09/23/01 07:50 Received: 09/25/01 09:30									
Purgeable Hydrocarbons	ND	1000	ug/l	20	1100056	10/03/01	10/03/01	DHS LUFT	
Benzene	ND	10	"	"	"	"	"	"	
Toluene	ND	10	"	"	"	"	"	"	
Ethylbenzene	ND	10	"	"	"	"	"	"	
Xylenes (total)	ND	10	"	"	"	"	"	"	
Methyl tert-butyl ether	2200	50	"	"	"	"	"	"	
<i>Surrogate: a.a.a-Trifluorotoluene</i>		97.1 %	60-140		"	"	"	"	
MW-3-9 (S109370-02) Water Sampled: 09/23/01 07:40 Received: 09/25/01 09:30									
Purgeable Hydrocarbons	ND	50	ug/l	1	1100056	10/03/01	10/03/01	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>		106 %	60-140		"	"	"	"	
MW-4-8 (S109370-03) Water Sampled: 09/23/01 06:50 Received: 09/25/01 09:30									
Purgeable Hydrocarbons	ND	50	ug/l	1	1100055	10/02/01	10/02/01	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>		97.5 %	60-140		"	"	"	"	



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 3164 Gold Camp Drive Ste. 200
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 Project Manager: Steven Meeks

Reported:
 10/05/01 17:09

Total Purgeable Hydrocarbon, BTEX and MTBE by DHS LUFT

Sequoia Analytical - Sacramento

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-5-6 (S109370-04) Water Sampled: 09/23/01 07:10 Received: 09/25/01 09:30									
Purgeable Hydrocarbons	ND	50	ug/l	1	1100056	10/03/01	10/03/01	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>		96.8 %	60-140		"	"	"	"	"
MW-6-6 (S109370-05) Water Sampled: 09/23/01 07:22 Received: 09/25/01 09:30									
Purgeable Hydrocarbons	ND	50	ug/l	1	1100055	10/02/01	10/02/01	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>		85.1 %	60-140		"	"	"	"	"
MW-7-8 (S109370-06) Water Sampled: 09/23/01 08:00 Received: 09/25/01 09:30									
Purgeable Hydrocarbons	ND	50	ug/l	1	1100055	10/02/01	10/03/01	DHS LUFT	
Benzene	ND	0.50	"	"	"	"	"	"	"
Toluene	ND	0.50	"	"	"	"	"	"	"
Ethylbenzene	ND	0.50	"	"	"	"	"	"	"
Xylenes (total)	ND	0.50	"	"	"	"	"	"	"
Methyl tert-butyl ether	35	2.5	"	"	"	"	"	"	"
<i>Surrogate: a,a,a-Trifluorotoluene</i>		97.6 %	60-140		"	"	"	"	"



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 10/05/01 17:09

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

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
RW-1-8 (S109370-07) Water Sampled: 09/23/01 07:34 Received: 09/25/01 09:30									
Purgeable Hydrocarbons	57	50	ug/l	1	1100055	10/02/01	10/03/01	DHS LUFT	A-01
Benzene	ND	0.50	"	"	"	"	"	"	A-01
Toluene	ND	0.50	"	"	"	"	"	"	A-01
Ethylbenzene	ND	0.50	"	"	"	"	"	"	A-01
Xylenes (total)	ND	0.50	"	"	"	"	"	"	A-01
Methyl tert-butyl ether	ND	2.5	"	"	"	"	"	"	A-01
Surrogate: a,a,a-Trifluorotoluene		94.6 %	60-140		"	"	"	"	A-01
TB (S109370-08) Water Sampled: 09/23/01 06:00 Received: 09/25/01 09:30									
Purgeable Hydrocarbons	ND	50	ug/l	1	1100057	10/02/01	10/02/01	DHS LUFT	
Benzene	ND	0.50	"	"	"	"	"	"	
Toluene	1.5	0.50	"	"	"	"	"	"	
Ethylbenzene	ND	0.50	"	"	"	"	"	"	
Xylenes (total)	0.91	0.50	"	"	"	"	"	"	
Methyl tert-butyl ether	3.4	2.5	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		116 %	60-140		"	"	"	"	



**Sequoia
Analytical**

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Reported:
10/05/01 17:09

**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
Batch 1100049 - EPA 5030B [P/T]										
Blank (1100049-BLK1) Prepared & Analyzed: 10/04/01										
Methyl tert-butyl ether	ND	2.0	ug/l							
Surrogate: 1,2-DCA-d4	49.4		"	50.0		98.8	60-140			
LCS (1100049-BS1) Prepared & Analyzed: 10/04/01										
Methyl tert-butyl ether	58.2	2.0	ug/l	50.0		116	70-130			
Surrogate: 1,2-DCA-d4	54.6		"	50.0		109	60-140			
Matrix Spike (1100049-MS1) Source: S109330-01 Prepared & Analyzed: 10/04/01										
Methyl tert-butyl ether	50.3	2.0	ug/l	50.0	ND	101	60-140			
Surrogate: 1,2-DCA-d4	48.1		"	50.0		96.2	60-140			
Matrix Spike Dup (1100049-MSD1) Source: S109330-01 Prepared & Analyzed: 10/04/01										
Methyl tert-butyl ether	51.5	2.0	ug/l	50.0	ND	103	60-140	2.36	25	
Surrogate: 1,2-DCA-d4	49.9		"	50.0		99.8	60-140			



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Reported:
10/05/01 17:09

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
Batch 110055 - EPA 5030B (P/T)										
Blank (110055-BLK1) Prepared & Analyzed: 10/02/01										
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>	<i>10.2</i>		<i>"</i>	<i>10.0</i>		<i>102</i>	<i>60-140</i>			
LCS (110055-BS1) Prepared & Analyzed: 10/02/01										
Benzene	9.87	0.50	ug/l	10.0		98.7	70-130			
Toluene	9.60	0.50	"	10.0		96.0	70-130			
Ethylbenzene	9.31	0.50	"	10.0		93.1	70-130			
Xylenes (total)	28.0	0.50	"	30.0		93.3	70-130			
Methyl tert-butyl ether	12.1	2.5	"	10.0		121	70-130			
<i>Surrogate: a,a,a-Trifluorotoluene</i>	<i>8.28</i>		<i>"</i>	<i>10.0</i>		<i>82.8</i>	<i>60-140</i>			
Matrix Spike (110055-MS1) Source: S109369-06 Prepared & Analyzed: 10/02/01										
Benzene	9.34	0.50	ug/l	10.0	ND	93.4	60-140			
Toluene	10.2	0.50	"	10.0	1.5	87.0	60-140			
Ethylbenzene	9.17	0.50	"	10.0	ND	91.7	60-140			
Xylenes (total)	28.0	0.50	"	30.0	0.86	90.5	60-140			
Methyl tert-butyl ether	12.5	2.5	"	10.0	ND	125	60-140			
<i>Surrogate: a,a,a-Trifluorotoluene</i>	<i>10.1</i>		<i>"</i>	<i>10.0</i>		<i>101</i>	<i>60-140</i>			
Matrix Spike Dup (110055-MSD1) Source: S109369-06 Prepared & Analyzed: 10/02/01										
Benzene	10.0	0.50	ug/l	10.0	ND	100	60-140	6.83	25	
Toluene	10.8	0.50	"	10.0	1.5	93.0	60-140	5.71	25	
Ethylbenzene	9.72	0.50	"	10.0	ND	97.2	60-140	5.82	25	
Xylenes (total)	29.3	0.50	"	30.0	0.86	94.8	60-140	4.54	25	
Methyl tert-butyl ether	12.7	2.5	"	10.0	ND	127	60-140	1.59	25	
<i>Surrogate: a,a,a-Trifluorotoluene</i>	<i>10.4</i>		<i>"</i>	<i>10.0</i>		<i>104</i>	<i>60-140</i>			



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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
Batch 1100056 - EPA 5030B (P/T)										
Blank (1100056-BLK1)										
Prepared & Analyzed: 10/03/01										
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>	9.86		"	10.0		98.6	60-140			
LCS (1100056-BS1)										
Prepared & Analyzed: 10/03/01										
Benzene	9.48	0.50	ug/l	10.0		94.8	70-130			
Toluene	8.96	0.50	"	10.0		89.6	70-130			
Ethylbenzene	8.76	0.50	"	10.0		87.6	70-130			
Xylenes (total)	26.2	0.50	"	30.0		87.3	70-130			
Methyl tert-butyl ether	12.3	2.5	"	10.0		123	70-130			
<i>Surrogate: a,a,a-Trifluorotoluene</i>	9.89		"	10.0		98.9	60-140			
Matrix Spike (1100056-MS1)										
Source: S109407-13 Prepared & Analyzed: 10/03/01										
Benzene	9.70	0.50	ug/l	10.0	ND	97.0	60-140			
Toluene	9.43	0.50	"	10.0	ND	94.3	60-140			
Ethylbenzene	9.27	0.50	"	10.0	ND	92.7	60-140			
Xylenes (total)	27.6	0.50	"	30.0	ND	92.0	60-140			
Methyl tert-butyl ether	11.4	2.5	"	10.0	ND	114	60-140			
<i>Surrogate: a,a,a-Trifluorotoluene</i>	10.2		"	10.0		102	60-140			
Matrix Spike Dup (1100056-MSD1)										
Source: S109407-13 Prepared & Analyzed: 10/03/01										
Benzene	9.81	0.50	ug/l	10.0	ND	98.1	60-140	1.13	25	
Toluene	9.45	0.50	"	10.0	ND	94.5	60-140	0.212	25	
Ethylbenzene	9.21	0.50	"	10.0	ND	92.1	60-140	0.649	25	
Xylenes (total)	27.4	0.50	"	30.0	ND	91.3	60-140	0.727	25	
Methyl tert-butyl ether	11.8	2.5	"	10.0	ND	118	60-140	3.45	25	
<i>Surrogate: a,a,a-Trifluorotoluene</i>	9.06		"	10.0		90.6	60-140			



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10/05/01 17:09

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
Batch 1100057 - EPA 5030B (P/T)										
Blank (1100057-BLK1)										
Prepared & Analyzed: 10/02/01										
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>	9.47		"	10.0		94.7	60-140			
LCS (1100057-BS1)										
Prepared & Analyzed: 10/02/01										
Benzene	10.7	0.50	ug/l	10.0		107	70-130			
Toluene	10.1	0.50	"	10.0		101	70-130			
Ethylbenzene	10.0	0.50	"	10.0		100	70-130			
Xylenes (total)	30.5	0.50	"	30.0		102	70-130			
Methyl tert-butyl ether	11.3	2.5	"	10.0		113	70-130			
<i>Surrogate: a,a,a-Trifluorotoluene</i>	11.3		"	10.0		113	60-140			
Matrix Spike (1100057-MS1)										
Source: S109379-02										
Prepared: 10/02/01 Analyzed: 10/04/01										
Benzene	10.9	0.50	ug/l	10.0	ND	109	60-140			
Toluene	10.1	0.50	"	10.0	ND	101	60-140			
Ethylbenzene	10.4	0.50	"	10.0	ND	104	60-140			
Xylenes (total)	31.6	0.50	"	30.0	ND	105	60-140			
Methyl tert-butyl ether	11.6	2.5	"	10.0	ND	116	60-140			
<i>Surrogate: a,a,a-Trifluorotoluene</i>	12.2		"	10.0		122	60-140			
Matrix Spike Dup (1100057-MSD1)										
Source: S109379-02										
Prepared & Analyzed: 10/02/01										
Benzene	10.7	0.50	ug/l	10.0	ND	107	60-140	1.85	25	
Toluene	10.2	0.50	"	10.0	ND	102	60-140	0.985	25	
Ethylbenzene	10.3	0.50	"	10.0	ND	103	60-140	0.966	25	
Xylenes (total)	31.7	0.50	"	30.0	ND	106	60-140	0.316	25	
Methyl tert-butyl ether	11.1	2.5	"	10.0	ND	111	60-140	4.41	25	
<i>Surrogate: a,a,a-Trifluorotoluene</i>	11.2		"	10.0		112	60-140			



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10/05/01 17:09

Notes and Definitions

A-01 Sample was confirmed on alternate column on 10/04/01.
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



3164 Gold Camp Drive, Suite 200
 Rancho Cordova, California 95670
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Arco Site Address: **556 Hegenberger Road**

Arco Site Number: **4494**

Oakland

Delta Project No.: **D000-319**

Arco Project Manager: **Paul Supple**

Delta Project PM: **Steven W. Meeks**

Site Sampled By: **Doulos**

Date Sampled: **09/23/01**

Site Contact & Phone Number: _____

Water Level Data						Purge Volume Calculations					Sampling Analytes				Sample Record			
Well ID	Time	Depth to Water (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	Confirm MTBE by EPA 8260	Dissolved Oxygen (mg/L)	Sample Frequency (A, S, Q)	Sample I.D.	Sample Time
MW-1	6:24	7.11	13.0	22.7	<input type="checkbox"/>	15.57	4 inch	2.0	31.1	31.2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	0.98	Q/3,6,9,12	MW-1	7:50
MW-3	6:28	9.76	7.0	17.7	<input checked="" type="checkbox"/>	7.91	4 inch	2.0	15.8	NP	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	1.44	Q/3,6,9,12	MW-3	7:40
MW-4	6:20	8.67	7.0	16.3	<input checked="" type="checkbox"/>	7.58	4 inch	2.0	15.2	NP	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	1.74	Q/3,6,9,12	MW-4	6:50
MW-5	6:32	6.98	8.0	16.6	<input type="checkbox"/>	9.66	2 inch	0.5	4.8	5	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	1.06	Q/3,6,9,12	MW-5	7:10
MW-6	6:36	6.72	8.0	17.8	<input type="checkbox"/>	11.09	2 inch	0.5	5.5	5.5	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	1.36	Q/3,6,9,12	MW-6	7:22
MW-7	6:40	8.75	9.0	13.7	<input type="checkbox"/>	4.90	4 inch	2.0	9.8	10.0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	0.66	Q/3,6,9,12	MW-7	8:00
RW-1	6:43	8.75	NM	11.0	<input type="checkbox"/>	2.26	2 inch	0.5	1.1	2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	0.84	Q/3,6,9,12	RW-1	7:34
					<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
Note: Casing for MW-7 damaged due to construction, water level may not be accurate					<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"/>	<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-1, MW-3, MW-4, MW-5, MW-6, MW-7, and RW-1

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: 556 Hegenberger Road

Arco Site Number: 4494

Oakland

Delta Project No.: D000-319

Arco Project Manager: Paul Supple

Delta Project PM: Steven W. Meeks

Site Sampled By: Doulos

Date Sampled: 09/23/01

Site Contact & Phone Number: _____

Well ID	Time	Temp °F	pH Units	Sp. Cond.	Gallons	Well ID	Time	Temp °F	pH Units	Sp. Cond.	Gallons	Well ID	Time	Temp °F	pH Units	Sp. Cond.	Gallons
MW-1	6:53	66.2	7.44	3,390	10												
	6:55	65.4	7.38	3,112	20												
	6:57	65.2	7.31	3,107	30												
Well ID	Time	Temp °F	pH Units	Sp. Cond.	Gallons	Well ID	Time	Temp °F	pH Units	Sp. Cond.	Gallons	Well ID	Time	Temp °F	pH Units	Sp. Cond.	Gallons
MW-3	No Purge Required																
						o constru											
Well ID	Time	Temp °F	pH Units	Sp. Cond.	Gallons	Well ID	Time	Temp °F	pH Units	Sp. Cond.	Gallons	Well ID	Time	Temp °F	pH Units	Sp. Cond.	Gallons
MW-4	No Purge Required																
Well ID	Time	Temp °F	pH Units	Sp. Cond.	Gallons	Well ID	Time	Temp °F	pH Units	Sp. Cond.	Gallons	Well ID	Time	Temp °F	pH Units	Sp. Cond.	Gallons
MW-5	7:01	69.2	7.54	3,732	1												
	7:02	69.1	7.51	3,714	3												
	7:03	68.8	7.49	3,612	5												
Well ID	Time	Temp °F	pH Units	Sp. Cond.	Gallons	Well ID	Time	Temp °F	pH Units	Sp. Cond.	Gallons	Well ID	Time	Temp °F	pH Units	Sp. Cond.	Gallons
MW-6	7:14	70.2	7.52	3,110	1												
	7:15	68.1	7.44	2,990	3												
	7:16	67.9	7.41	2,984	5												
Well ID	Time	Temp °F	pH Units	Sp. Cond.	Gallons	Well ID	Time	Temp °F	pH Units	Sp. Cond.	Gallons	Well ID	Time	Temp °F	pH Units	Sp. Cond.	Gallons
MW-7	7:44	67.7	7.02	4,132	3												
	7:46	66.2	6.94	4,088	6												
	7:48	66.1	6.97	3,922	9												
Well ID	Time	Temp °F	pH Units	Sp. Cond.	Gallons	Well ID	Time	Temp °F	pH Units	Sp. Cond.	Gallons	Well ID	Time	Temp °F	pH Units	Sp. Cond.	Gallons
RW-1	7:27	71.2	7.11	3,942	0.5												
	7:27	69.2	7.02	3,881	1.0												
	7:28	66.1	7.01	3,870	1.5												

Notes: NP = NO PURGE

Original Copies of Field Sampling Sheets are Located in Project File