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OCT 03 2001

September 27, 2001

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

Subject: *Quarterly Groundwater Monitoring Report, Second Quarter 2001*  
ARCO Service Station No. 374  
6407 Telegraph Avenue  
Oakland, California  
Delta Project No. D000-302

Dear Mr. Supple:

Delta Environmental Consultants, Inc. is submitting the attached report that presents the results of the second quarter 2001 groundwater monitoring program at ARCO Service Station No. 374, located at 6407 Telegraph Avenue, Oakland, California. The monitoring program complies with the California Regional Water Quality Control Board 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



9/27/01

TLA (LRP005.302.doc)  
Enclosures

cc: Ms. Susan Hugo – Alameda County Health Care Services  
Mr. John Kaiser – California Regional Water Quality Control Board, San Francisco Bay Region

Providing a Competitive Edge

**ARCO QUARTERLY GROUNDWATER MONITORING REPORT**

Station No.:	374	Address:	6407 Telegraph Avenue, 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.:	D000-302		
Primary Agency/Regulatory ID No.			California Regional Water Quality Control Board San Francisco Bay Region

**WORK PERFORMED THIS QUARTER**

1. Performed quarterly groundwater monitoring for the second quarter 2001.
2. Prepared and submitted quarterly groundwater monitoring report for the first quarter 2001.

**WORK PROPOSED FOR NEXT QUARTER**

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

**QUARTERLY MONITORING:**

Current Phase of Project	Monitoring
Frequency of Groundwater Sampling:	Annual (2 <sup>nd</sup> Quarter): MW-1, MW-2, MW-6 Semi-annual (2 <sup>nd</sup> /4 <sup>th</sup> Quarter): MW-3, MW-4 Quarterly: MW-5
Frequency of Groundwater Monitoring:	Quarterly
Is Free Product (FP) Present On-Site:	No
FP Recovered this Quarter:	None
Cumulative FP Recovered to Date:	None
Bulk Soil Removed This Quarter:	None
Bulk Soil Removed to Date:	None
Current Remediation Techniques:	Intrinsic Bioremediation
Approximate Depth to Groundwater:	7.28 feet
Groundwater Gradient:	0.032 ft/ft toward southwest

**DISCUSSION:**

- Benzene was detected in MW-3 and MW-4 at concentrations of 5.5 micrograms per liter ( $\mu\text{g/L}$ ) and 470  $\mu\text{g/L}$ , respectively.
- TPHg was detected in MW-3 and MW-4 at concentrations of 110  $\mu\text{g/L}$  and 2,800  $\mu\text{g/L}$ , respectively.
- MTBE was detected in MW-3 and MW-4 at concentrations of 2.5  $\mu\text{g/L}$  and 130  $\mu\text{g/L}$ , respectively.

**ATTACHMENTS:**

- Table 1 Groundwater Elevation and Analytical Data
- Table 2 Groundwater 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 Groundwater Elevation Analytical Data Table  
Groundwater Flow Direction and Gradient Table  
Intrinsic Bioremediation Evaluation and Enhancement Data
- Appendix C Certified Analytical Reports with Chain-of-Custody Documentation
- Appendix D Field Data Sheet

TABLE 1

## GROUNDWATER ANALYTICAL DATA

ARCO Service Station 374  
6407 Telegraph 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	6/20/00	158.91	6.86	152.05	NS	NS	NS	NS	NS	NS
	9/28/00		7.50	151.41	NS	NS	NS	NS	NS	NS
	12/17/00		7.49	151.42	NS	NS	NS	NS	NS	NS
	3/23/01		5.90	153.01	<0.5	<0.5	<0.5	<0.5	<50	2,710
	6/21/01		7.45	151.46	NS	NS	NS	NS	NS	NS
MW-2	6/20/00	157.92	7.67	150.25	NS	NS	NS	NS	NS	NS
	9/28/00		8.51	149.41	NS	NS	NS	NS	NS	NS
	12/17/00		8.14	149.78	NS	NS	NS	NS	NS	NS
	3/23/01		7.21	150.71	<0.5	<0.5	<0.5	<0.5	<50	<2.5
	6/21/01		7.99	149.93	NS	NS	NS	NS	NS	NS
MW-3	6/20/00	153.64	6.42	147.22	<0.5	<0.5	<0.5	<1.0	<50	<10
	9/28/00		7.31	146.33	NS	NS	NS	NS	NS	NS
	12/17/00		6.45	147.19	<0.5	<0.5	<0.5	<0.5	<50	<2.5
	3/23/01		6.01	147.63	NS	NS	NS	NS	NS	NS
	6/21/01		6.80	146.84	5.5	<0.5	5.4	4.1	110	2.5
MW-4	6/20/00	156.53	7.50	149.03	5,100	440	1,000	1,700	20,000	<250
	9/28/00		8.20	148.33	NS	NS	NS	NS	NS	NS
	12/17/00		8.11	148.42	1240	<20	27.2	249	4,320	<100
	3/23/01		6.69	149.84	NS	NS	NS	NS	NS	NS
	6/21/01		8.01	148.52	470	16	19	160	2,800	130

TABLE 1

## GROUNDWATER ANALYTICAL DATA

ARCO Service Station 374  
6407 Telegraph 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-5	6/20/00	151.33	7.84	143.49	<0.5	<0.5	<0.5	<1.0	<50	<10
	9/28/00		8.37	142.96	<0.5	<0.5	<0.5	<0.5	<50	<2.5
	12/17/00		8.36	142.97	<0.5	<0.5	<0.5	<0.5	<50	<2.5
	3/23/01		7.55	143.78	<0.5	<0.5	<0.5	<0.5	<50	<2.5
	6/21/01		8.20	143.13	<0.5	<0.5	<0.5	<0.5	<50	<2.5
MW-6	6/20/00	153.84	4.79	149.05	NS	NS	NS	NS	NS	NS
	9/28/00		5.39	148.45	NS	NS	NS	NS	NS	NS
	12/17/00		4.71	149.13	NS	NS	NS	NS	NS	NS
	3/23/01		4.69	149.15	<0.5	<0.5	<0.5	<0.5	<50	<2.5
	6/21/01		5.22	148.62	NS	NS	NS	NS	NS	NS

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

NS = Not sampled

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

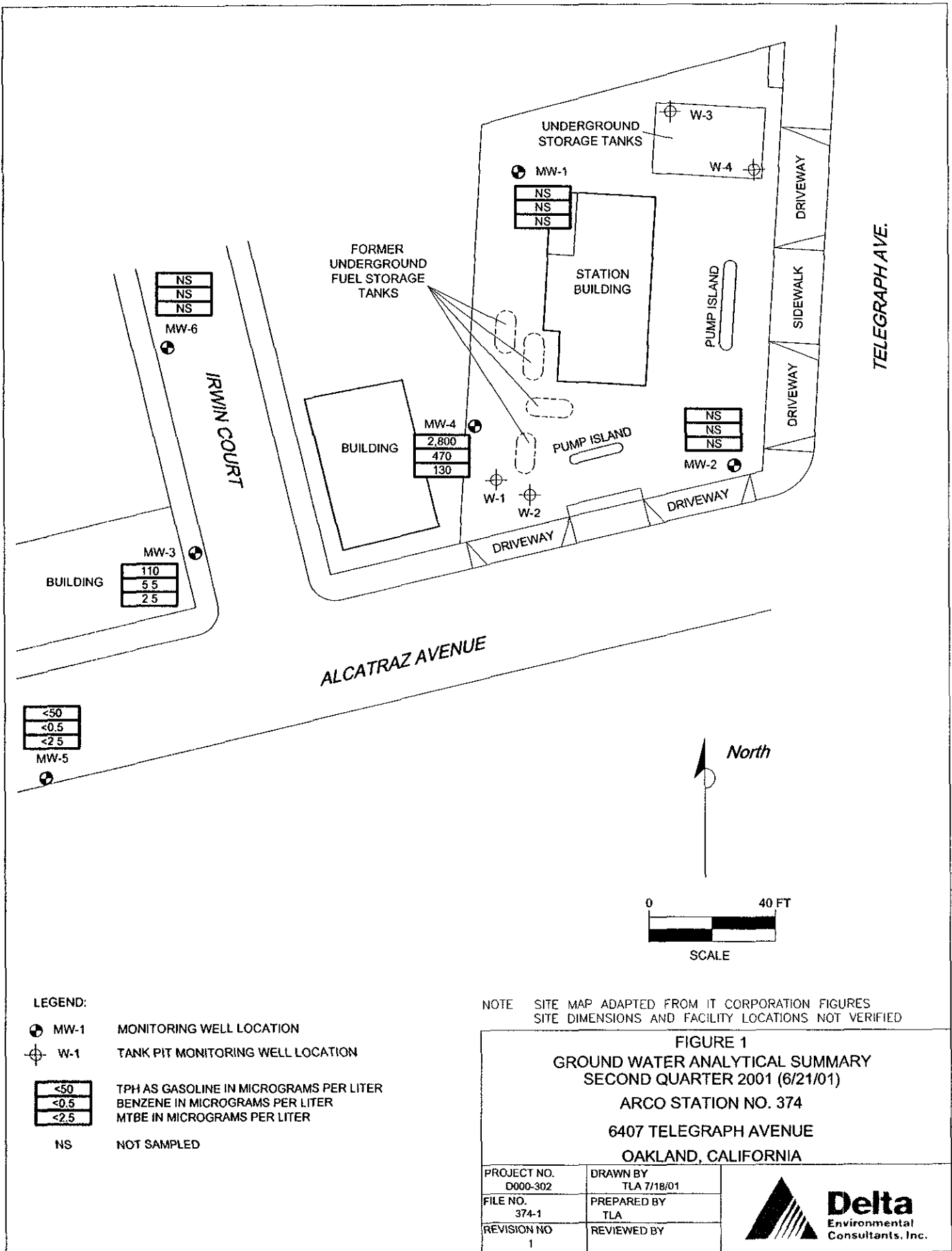
**TABLE 2**

**GROUNDWATER FLOW DIRECTION AND GRADIENT**

ARCO Service Station No. 374  
6407 Telegraph Avenue  
Oakland, California

<u>Date Measured</u>	<u>Average Flow Direction</u>	<u>Average Hydraulic Gradient</u>
06/20/00	Southwest	0.035
09/28/00	Southwest	0.034
12/17/00	Southwest	0.032
03/23/01	Southwest	0.034
06/21/01	Southwest	0.032

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

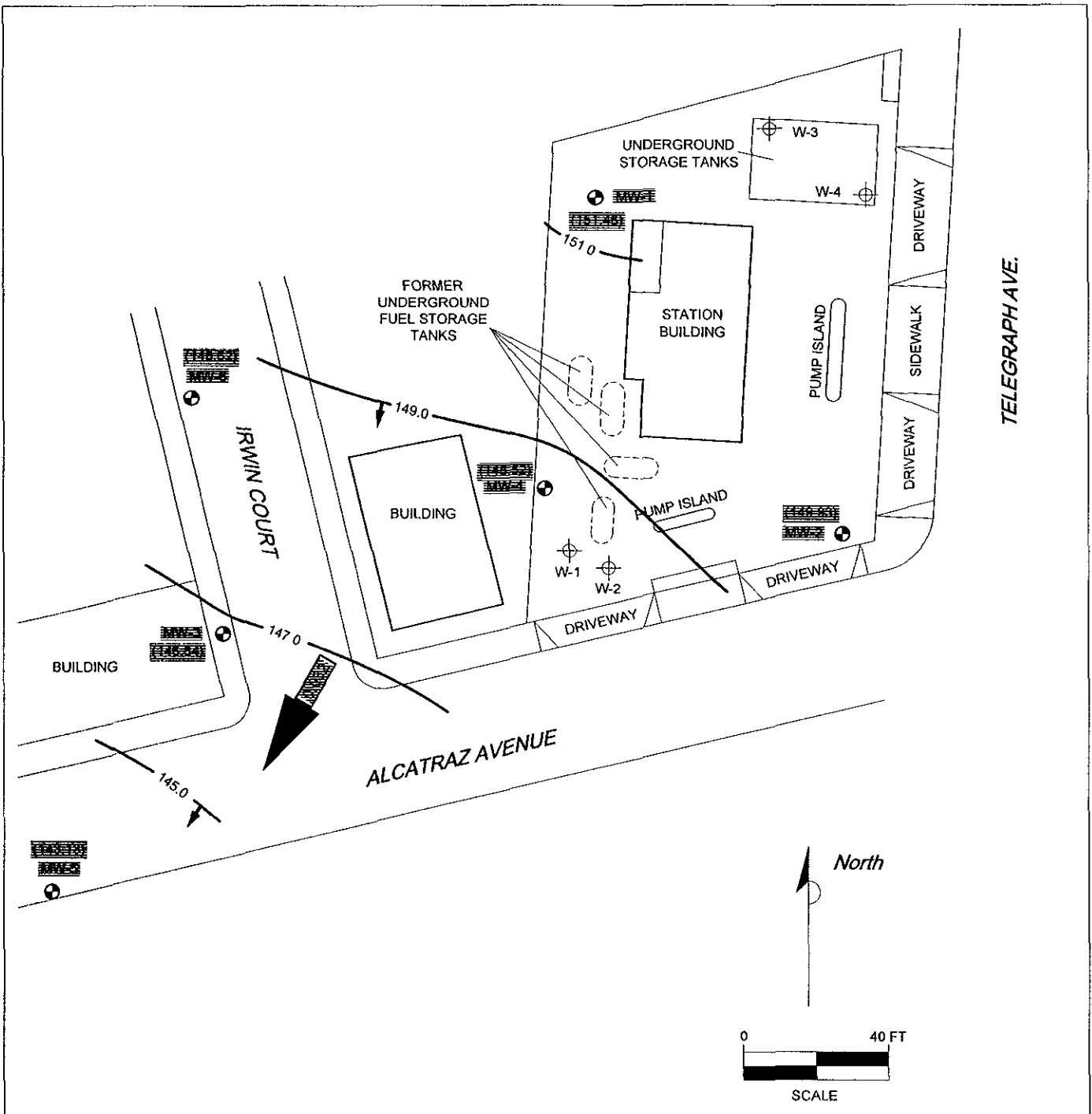


NOTE SITE MAP ADAPTED FROM IT CORPORATION FIGURES  
SITE DIMENSIONS AND FACILITY LOCATIONS NOT VERIFIED






**FIGURE 1**  
**GROUND WATER ANALYTICAL SUMMARY**  
**SECOND QUARTER 2001 (6/21/01)**  
**ARCO STATION NO. 374**  
**6407 TELEGRAPH AVENUE**  
**OAKLAND, CALIFORNIA**

PROJECT NO. D000-302	DRAWN BY TLA 7/18/01
FILE NO. 374-1	PREPARED BY TLA
REVISION NO 1	REVIEWED BY





**LEGEND**

-  MW-1 MONITORING WELL LOCATION
-  W-1 TANK PIT MONITORING WELL LOCATION
- (151.46) GROUND WATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL (MSL)
-  - 151.0 - WATER TABLE CONTOUR IN FEET ABOVE MSL
-  GROUND WATER FLOW DIRECTION
-  APPROXIMATE GROUND WATER FLOW GRADIENT

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

**FIGURE 2**  
**GROUND WATER ELEVATION CONTOUR MAP**  
**SECOND QUARTER 2001 (6/21/01)**  
**ARCO STATION NO. 374**  
**6407 TELEGRAPH AVENUE**  
**OAKLAND, CALIFORNIA**

PROJECT NO D000-302	DRAWN BY TLA 7/18/01
FILE NO 374-1	PREPARED BY TLA
REVISION NO. 1	REVIEWED BY



**APPENDIX A**

Sampling and Analysis Procedures



## **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.

**APPENDIX B**

IT Corporation

Historical Groundwater Elevation and Analytical Data Table  
Groundwater Flow Direction and Gradient Table  
Intrinsic Bioremediation Evaluation and Enhancement Data

**Table 1**  
**Groundwater Elevation and Analytical Data**  
**Total Purgeable Petroleum Hydrocarbons**  
**(TPPH as Gasoline, BTEX Compounds, and MTBE)**

**ARCO Service Station 0374**  
**6407 Telegraph Avenue, Oakland, California**

Well Number	Date Gauged/ Sampled	Well Elevation (feet, MSL)	Depth to Water (feet, TOC)	Groundwater Elevation (feet, MSL)	TPPH as Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl- benzene (ppb)	Total Xylenes (ppb)	MTBE (ppb)	Dissolved Oxygen (ppm)	Purged/ Not Purged (P/NP)
MW-1	01/31/96	158.91	6.34	152.57	Not Sampled: Well Sampled Annually							
MW-1	04/10/96	158.91	5.82	153.09	Not Sampled: Well Sampled Annually							
MW-1	07/16/96	158.91	7.23	151.68	<50	<0.5	<0.5	<0.5	<0.5	340	NM	
MW-1	10/14/96	158.91	8.34	150.57	Not Sampled: Well Sampled Annually							
MW-1	03/27/97	158.91	6.37	152.54	Not Sampled: Well Sampled Annually							
MW-1	05/27/97	158.91	7.30	151.61	Not Sampled: Well Sampled Annually							
MW-1	08/12/97	158.91	8.22	150.69	<50	<0.5	<0.5	<0.5	<0.5	620	NM	
MW-1	11/17/97	158.91	7.98	150.93	Not Sampled: Well Sampled Annually							
MW-1	03/16/98	158.91	4.94	153.97	Not Sampled: Well Sampled Annually							
MW-1	05/12/98	158.91	5.28	153.63	Not Sampled: Well Sampled Annually							
MW-1	07/27/98	158.91	6.84	152.07	<500	<5	<5	<5	<5	580	0.6	P
MW-1	10/15/98	158.91	7.32	151.59	Not Sampled: Well Sampled Annually							
MW-1	02/18/99	158.91	6.28	152.63	Not Sampled: Well Sampled Annually							
MW-1	05/24/99	158.91	6.45	152.46	<50	<0.5	<0.5	<0.5	<0.5	1,300	2.0	NP
MW-1	08/27/99	158.91	7.86	151.05	<50	<0.5	<0.5	<0.5	<0.5	1,500	1.65	NP
MW-1	10/26/99	158.91	8.43	150.48	Not Sampled: Well Sampled Annually							
MW-1	02/03/00	158.91	7.28	151.63	<50	<0.5	<0.5	<0.5	<1	4,000	1.0	NP
MW-2	01/31/96	157.92	6.51	151.41	Not Sampled: Well Sampled Annually							
MW-2	04/10/96	157.92	6.94	150.98	Not Sampled: Well Sampled Annually							
MW-2	07/16/96	157.92	7.73	150.19	<50	1.2	<0.5	<0.5	<0.5	33	NM	
MW-2	10/14/96	157.92	8.35	149.57	Not Sampled: Well Sampled Annually							
MW-2	03/27/97	157.92	7.40	150.52	Not Sampled: Well Sampled Annually							
MW-2	05/27/97	157.92	7.82	150.10	Not Sampled: Well Sampled Annually							
MW-2	08/12/97	157.92	8.29	149.63	<50	<0.5	<0.5	<0.5	<0.5	23	NM	
MW-2	11/17/97	157.92	8.05	149.87	Not Sampled: Well Sampled Annually							
MW-2	03/16/98	157.92	6.45	151.47	Not Sampled: Well Sampled Annually							

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**Groundwater Elevation and Analytical Data**  
**Total Purgeable Petroleum Hydrocarbons**  
**(TPPH as Gasoline, BTEX Compounds, and MTBE)**

**ARCO Service Station 0374**  
**6407 Telegraph Avenue, Oakland, California**

Well Number	Date Gauged/ Sampled	Well Elevation (feet, MSL)	Depth to Water (feet, TOC)	Groundwater Elevation (feet, MSL)	TPPH as Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl- benzene (ppb)	Total Xylenes (ppb)	MTBE (ppb)	Dissolved Oxygen (ppm)	Purged/ Not Purged (P/NP)
MW-2	05/12/98	157.92	6.93	150.99	Not Sampled: Well Sampled Annually							
MW-2	07/27/98	157.92	7.39	150.53	<50	<0.5	<0.5	<0.5	<0.5	<3	0.85	NP
MW-2	10/15/98	157.92	7.67	150.25	Not Sampled: Well Sampled Annually							
MW-2	02/18/99	157.92	6.63	151.29	Not Sampled: Well Sampled Annually							
MW-2	05/24/99	157.92	7.43	150.49	<50	6.3	<0.5	0.7	<0.5	29	3.0	P
MW-2	08/27/99	157.92	8.22	149.70	<50	<0.5	<0.5	<0.5	<0.5	<3	0.95	NP
MW-2	10/26/99	157.92	8.46	149.46	Not Sampled: Well Sampled Annually							
MW-2	02/03/00	157.92	7.75	150.17	<50	<0.5	<0.5	<0.5	<1	<3	1.0	NP
MW-3 *	01/31/96	153.64	7.02	146.62	140	20	0.87	11	14	NA	NM	
MW-3 *	04/10/96	153.64	7.82	145.82	84	2.4	<0.5	1.9	1.1	NA	NM	
MW-3 *	07/16/96	153.64	6.80	146.84	<50	2.2	<0.5	<0.5	<0.5	<2.5	NM	
MW-3 *	10/14/96	153.64	7.67	145.97	<50	1.2	<0.5	<0.5	0.81	2.9	NM	
MW-3 *	03/27/97	153.64	7.62	146.02	<50	0.94	<0.5	0.9	0.63	<2.5	NM	
MW-3 *	05/27/97	153.64	6.72	146.92	Not Sampled: Well Sampled Semiannually							
MW-3 *	08/12/97	153.64	8.20	145.44	<50	<0.5	<0.5	<0.5	<0.5	<2.5	NM	
MW-3 *	11/17/97	153.64	7.64	146.00	Not Sampled: Well Sampled Semiannually							
MW-3 *	03/18/98	153.64	5.14	148.50	<50	<0.5	<0.5	<0.5	<0.5	<3	4.0	P
MW-3 *	05/12/98	153.64	5.53	148.11	Not Sampled: Well Sampled Semiannually							
MW-3 *	07/27/98	153.64	7.63	146.01	74	<0.5	<0.5	<0.5	<0.5	<3	1.7	NP
MW-3 *	10/15/98	153.64	7.46	146.18	Not Sampled: Well Sampled Semiannually							
MW-3 *	02/18/99	153.64	5.85	147.79	Not Sampled							
MW-3 *	05/24/99	153.64	7.00	146.64	<50	<0.5	<0.5	<0.5	<0.5	4	6.0	NP
MW-3 *	08/27/99	153.64	7.16	146.48	<50	<0.5	<0.5	<0.5	<0.5	<3	16.57	NP
MW-3 *	10/26/99	153.64	7.79	145.85	<50	<0.5	<0.5	<0.5	<1	<3	14.86	NP
MW-3 *	02/03/00	153.64	7.11	146.53	<50	<0.5	<0.5	<0.5	<1	<3	1.0	NP

**Table 1**  
**Groundwater Elevation and Analytical Data**  
**Total Purgeable Petroleum Hydrocarbons**  
**(TPPH as Gasoline, BTEX Compounds, and MTBE)**

**ARCO Service Station 0374**  
**6407 Telegraph Avenue, Oakland, California**

Well Number	Date Gauged/ Sampled	Well Elevation (feet, MSL)	Depth to Water (feet, TOC)	Groundwater Elevation (feet, MSL)	TPPH as Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl- benzene (ppb)	Total Xylenes (ppb)	MTBE (ppb)	Dissolved Oxygen (ppm)	Purged/ Not Purged (P/NP)	
MW-4	01/31/96	156.53	5.64	150.89	230	23	2.2	3.7	32	NA	NM		
MW-4	04/10/96	156.53	6.66	149.87	7,300	1,600	350	350	830	NA	NM		
MW-4	07/16/96	156.53	7.73	148.80	5,600	1,100	160	240	520	150	NM		
MW-4	10/14/96	156.53	8.55	147.98	4,500	860	72	160	340	<62	NM		
MW-4	03/27/97	156.53	7.15	149.38	25,000	5,200	760	850	2,600	<250	NM		
MW-4	05/27/97	156.53	7.75	148.78	Not Sampled: Well Sampled Semiannually								
MW-4	08/12/97	156.53	8.46	148.07	4,800	950	40	140	210	170	NM		
MW-4	11/17/97	156.53	8.24	148.29	Not Sampled: Well Sampled Semiannually								
MW-4	03/16/98	156.53	5.32	151.21	<50	<0.5	<0.5	<0.5	<0.5	<3	1.5	P	
MW-4	05/12/98	156.53	6.38	150.15	Not Sampled: Well Sampled Semiannually								
MW-4	07/27/98	156.53	7.36	149.17	21,000	6,100	390	810	1,600	<300	0.5	NP	
MW-4 *	10/15/98	156.53	8.30	148.23	Not Sampled: Well Sampled Semiannually								
MW-4 *	02/18/99	156.53	4.39	152.14	Not Sampled								
MW-4 *	05/24/99	156.53	7.45	149.08	18,000	5,600	350	410	1,300	<300	1.0	NP	
MW-4 *	08/27/99	156.53	8.07	148.46	12,000	3,200	170	490	810	65	1.32	NP	
MW-4 *	10/26/99	156.53	8.72	147.81	12,000	3,100	130	450	680	12	1.39	NP	
MW-4 *	02/03/00	156.53	7.41	149.12	9,300	2,800	96	330	400	73	1.0	NP	
MW-5	01/31/96	151.33	8.64	142.69	<50	<0.5	<0.5	<0.5	<0.5	NA	NM		
MW-5	04/10/96	151.33	N/A	--	<50	<0.5	<0.5	<0.5	<0.5	NA	NM		
MW-5	07/16/96	151.33	8.15	143.18	<50	0.79	1.3	<0.5	<0.5	<2.5	NM		
MW-5	10/14/96	151.33	7.92	143.41	<50	<0.5	<0.5	<0.5	<0.5	<2.5	NM		
MW-5	03/27/97	151.33	7.75	143.58	<50	<0.5	<0.5	<0.5	<0.5	<2.5	NM		
MW-5	05/27/97	151.33	8.16	143.17	<50	<0.5	<0.5	<0.5	<0.5	<2.5	NM		
MW-5	08/12/97	151.33	----- Well Inaccessible -----										
MW-5	11/17/97	151.33	8.75	142.58	<50	<0.5	<0.5	<0.5	<0.5	<2.5	4.0	NP	
MW-5	03/16/98	151.33	6.90	144.43	<50	<0.5	<0.5	<0.5	<0.5	<3	1.5	P	

**Table 1**  
**Groundwater Elevation and Analytical Data**  
**Total Purgeable Petroleum Hydrocarbons**  
**(TPPH as Gasoline, BTEX Compounds, and MTBE)**

**ARCO Service Station 0374**  
**6407 Telegraph Avenue, Oakland, California**

Well Number	Date Gauged/ Sampled	Well Elevation (feet, MSL)	Depth to Water (feet, TOC)	Groundwater Elevation (feet, MSL)	TPPH as Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl- benzene (ppb)	Total Xylenes (ppb)	MTBE (ppb)	Dissolved Oxygen (ppm)	Purged/ Not Purged (P/NP)
MW-5	05/12/98	151.33	7.24	144.09	<50	<0.5	<0.5	<0.5	<0.5	<3	2.2	P
MW-5	07/27/98	151.33	7.91	143.42	<50	<0.5	<0.5	<0.5	<0.5	<3	1.3	P
MW-5	10/15/98	151.33	8.31	143.02	<50	<0.5	<0.5	<0.5	0.6	<3	3.0	P
MW-5	02/18/99	151.33	7.25	144.08	<50	<0.5	<0.5	<0.5	<0.5	<3	2.0	P
MW-5	05/24/99	151.33	7.52	143.81	<50	<0.5	<0.5	<0.5	<0.5	<3	2.0	NP
MW-5	08/27/99	151.33	8.31	143.02	<50	<0.5	<0.5	<0.5	<0.5	<3	2.28	P
MW-5	10/26/99	151.33	8.61	142.72	<50	<0.5	<0.5	<0.5	<1	<3	1.99	P
MW-5	02/03/00	151.33	10.09	141.24	<50	<0.5	<0.5	<0.5	<1	<3	1.0	NP
MW-6	01/31/96	153.84	5.15	148.69	Not Sampled: Well Sampled Annually							
MW-6	04/10/96	153.84	4.58	149.26	Not Sampled: Well Sampled Annually							
MW-6	07/16/96	153.84	4.96	148.88	<50	<0.5	<0.5	<0.5	<0.5	150	NM	
MW-6	10/14/96	153.84	6.15	147.69	Not Sampled: Well Sampled Annually							
MW-6	03/27/97	153.84	4.40	149.44	Not Sampled: Well Sampled Annually							
MW-6	05/27/97	153.84	4.90	148.94	Not Sampled: Well Sampled Annually							
MW-6	08/12/97	153.84	5.43	148.41	<50	<0.5	<0.5	<0.5	<0.5	39	NM	
MW-6	11/17/97	153.84	5.87	147.97	Not Sampled: Well Sampled Annually							
MW-6	03/16/98	153.84	4.52	149.32	Not Sampled: Well Sampled Annually							
MW-6	05/12/98	153.84	4.42	149.42	Not Sampled: Well Sampled Annually							
MW-6	07/27/98	153.84	4.75	149.09	<50	<0.5	<0.5	<0.5	<0.5	18	0.9	P
MW-6	10/15/98	153.84	5.75	148.09	Not Sampled: Well Sampled Annually							
MW-6	02/18/99	153.84	3.93	149.91	Not Sampled: Well Sampled Annually							
MW-6	05/24/99	153.84	4.32	149.52	<50	<0.5	<0.5	<0.5	<0.5	6	2.0	NP
MW-6	08/27/99	153.84	5.72	148.12	<50	<0.5	<0.5	<0.5	<0.5	8	1.02	NP
MW-6	10/26/99	153.84	5.94	147.90	Not Sampled: Well Sampled Annually						2.51	
MW-6	02/03/00	153.84	5.44	148.40	<50	<0.5	<0.5	<0.5	<1	<3	1.0	NP

**Table 1**  
**Groundwater Elevation and Analytical Data**  
**Total Purgeable Petroleum Hydrocarbons**  
**(TPPH as Gasoline, BTEX Compounds, and MTBE)**

**ARCO Service Station 0374**  
**6407 Telegraph Avenue, Oakland, California**

Well Number	Date Gauged/ Sampled	Well Elevation (feet, MSL)	Depth to Water (feet, TOC)	Groundwater Elevation (feet, MSL)	TPPH as Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl- benzene (ppb)	Total Xylenes (ppb)	MTBE (ppb)	Dissolved Oxygen (ppm)	Purged/ Not Purged (P/NP)
<p>MSL = Mean sea level.            TOC = Top of casing.            TPPH = Total purgeable petroleum hydrocarbons by modified EPA method 8015.            BTEX = Benzene, toluene, ethylbenzene, total xylenes by EPA method 8021B. (EPA method 8020 prior to 10/26/99)            MTBE = Methyl tert -Butyl Ether by EPA method 8021B. (EPA method 8020 prior to 10/26/99).            ppb = Parts per billion.            ppm = Parts per million.            &lt; = Less than laboratory detection limit stated to the right.            NA = Not analyzed.            NM = Not measured.            N/A = Not available.            * = ORCs installed in well MW-3 beginning 11/14/95 and in well MW-4 beginning 09/29/98. Please refer to Appendix D for details.</p>												

**Table 2  
Groundwater Flow Direction and Gradient**

**ARCO Service Station 0374  
6407 Telegraph Avenue, Oakland, California**

<b>Date Measured</b>	<b>Average Flow Direction</b>	<b>Average Hydraulic Gradient</b>
01-31-96	Southwest	0.04
04-10-96	Southwest	0.04
07-16-96	Southwest	0.03
10-14-96	Southwest	0.03
03-27-97	Southwest	0.04
05-27-97	Southwest	0.03
08-12-97	Southwest	0.04
11-17-97	Southwest	0.03
03-16-98	Southwest	0.03
05-12-98	Southwest	0.04
07-27-98	Southwest	0.04
10-15-98	Southwest	0.02
02-18-99	Southwest	0.05
05-24-99	Southwest	0.03
08-27-99	Southwest	0.03
10-26-99	Southwest	0.03
<b>02-03-00</b>	<b>Southwest</b>	<b>0.047</b>



**Table D-1**  
**Intrinsic Bioremediation Evaluation and Enhancement Data**

**ARCO Service Station 0374**  
**6407 Telegraph Avenue, Oakland, California**

Well	Date Sampled	Field Analyses					Laboratory Analyses									
		Groundwater Temperature (deg F)	pH (units)	Conductivity (µmhos)	D.O. (mg/L)	Ferrous Iron (mg/L)	Total Alkalinity (mg CaCO <sub>3</sub> /L)	B.O.D. (mg/L)	Carbon Dioxide (mg/L)	C.O.D. (mg/L)	Methane (%)	Nitrate as Nitrate (mg/L)	Nitrite as Nitrite (mg/L)	Sulfate (mg/L)	TPH as Gasoline (µg/L)	Total BTEX (µg/L)
MW-3	11/14/95	** 65.5*	6.76*	508*	7.17	N/A	NS	NS	NS	NS	NS	6.6	<1.0	NS	140	46
MW-3	06/06/96	** 66.2	7.38	700	12.28	N/A	NS	NS	NS	NS	NS	NS	NS	NS	84†	5.4†
MW-3	07/16/96	67.8	7.08	1,010	8.73	0.0	280	1.8	270	44	<0.020	<1.0	NS	78	<50	2.2
MW-3	01/21/97	** 59	N/A	N/A	11.15	0.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
MW-3	08/12/97	** 74.4	6.65	600	6.7	1.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
MW-3	11/17/97	N/A	N/A	N/A	12.0	0.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
MW-3	03/16/98	68.5	7.75	806	4.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	ND	ND
MW-3	05/12/98	NM	NM	NM	NM	NM	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-3	07/27/98	68.1	6.81	904	1.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	74	ND
MW-3	09/29/98	** ORC installed														
MW-3	10/15/98	NM	NM	NM	NM	NM	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-3	02/18/99	NM	NM	NM	NM	NM	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-3	05/24/99	66.2	7.24	799	6.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	ND	ND
MW-3	07/26/99	** ORC installed														
MW-3	08/27/99	69.0	7.97	782	16.57	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	ND	ND
MW-3	10/26/99	66.5	5.93	794	14.86	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	ND	ND
MW-3	02/03/00	62.0	7.42	7,877	1.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	ND	ND
MW-4	07/16/96	69.5	6.72	1,370	3.20	4.20	420	NS	470	NS	0.11	<1.0	NS	18	5,600	2,020
MW-4	03/16/98	66.2	6.89	1,411	1.50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	ND	ND
MW-4	05/12/98	NM	NM	NM	NM	N/A	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-4	07/27/98	70.5	6.34	1,434	0.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	21,000	8,900
MW-4	09/29/98	** ORC installed														
MW-4	10/15/98	NM	NM	NM	NM	NM	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-4	02/18/99	NM	NM	NM	NM	NM	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-4	05/24/99	67.6	6.72	1,509	1.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	18,000	7,660
MW-4	07/26/99	** ORC installed														

**Table D-1**  
**Intrinsic Bioremediation Evaluation and Enhancement Data**

**ARCO Service Station 0374**  
**6407 Telegraph Avenue, Oakland, California**

Well	Date Sampled	<u>Field Analyses</u>					<u>Laboratory Analyses</u>									
		Groundwater Temperature (deg F)	pH (units)	Conductivity (µmhos)	D.O. (mg/L)	Ferrous Iron (mg/L)	Total Alkalinity (mg CaCO <sub>3</sub> /L)	B.O.D. (mg/L)	Carbon Dioxide (mg/L)	C.O.D. (mg/L)	Methane (%)	Nitrate as Nitrate (mg/L)	Nitrite as Nitrite (mg/L)	Sulfate (mg/L)	TPH as Gasoline (µg/L)	Total BTEX (µg/L)
MW-4	08/27/99	70.5	7.09	1,469	1.32	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	12,000	4,670
MW-4	10/26/99	66.8	7.05	1,565	1.39	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	12,000	4,360
MW-4	02/03/00	64.1	7.27	1,506	1.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9,300	3,626
MW-5	07/16/96	70.4	6.85	690	6.80	0.0	170	NS	180	NS	<0.020	<1.0	NS	35	<50	1.1
MW-5	03/16/98	69.5	7.19	584	1.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	ND	ND
MW-5	05/12/98	65.9	7.04	619	2.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	ND	ND
MW-5	07/27/98	73.6	7.39	569	1.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	ND	ND
MW-5	10/15/98	65.8	6.88	626	3.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	ND	0.6
MW-5	02/18/99	63.4	6.98	616	2.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	ND	ND
MW-5	05/24/99	66.7	6.70	591	2.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	ND	ND
MW-5	08/27/99	72.6	7.10	624	2.28	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	ND	ND
MW-5	10/26/99	70.4	5.95	601	1.99	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	ND	ND
MW-5	02/03/00	62.1	7.31	6,072	1.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	ND	ND
MW-6	06/06/96	N/A	N/A	N/A	3.47	N/A	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-6	03/16/98	N/A	N/A	N/A	N/A	N/A	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-6	05/12/98	NM	NM	NM	NM	NM	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-6	07/27/98	70.3	6.67	638	0.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	ND	ND
MW-6	10/15/98	NM	NM	NM	NM	NM	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-6	02/18/99	NM	NM	NM	NM	NM	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-6	05/24/99	65.5	6.62	713	2.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	ND	ND
MW-6	08/27/99	73.0	7.12	589	1.02	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	ND	ND
MW-6	10/26/99	NM	NM	NM	2.51	NM	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-6	02/03/00	61.7	7.32	5,091	1.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	ND	ND

**Table D-1**  
**Intrinsic Bioremediation Evaluation and Enhancement Data**

**ARCO Service Station 0374**  
**6407 Telegraph Avenue, Oakland, California**

Well	Date Sampled	<u>Field Analyses</u>					<u>Laboratory Analyses</u>									
		Groundwater Temperature (deg F)	pH (units)	Conductivity (µmhos)	D.O. (mg/L)	Ferrous Iron (mg/L)	Total Alkalinity (mg CaCO <sub>3</sub> /L)	B.O.D. (mg/L)	Carbon Dioxide (mg/L)	C.O.D. (mg/L)	Methane (%)	Nitrate as Nitrate (mg/L)	Nitrite as Nitrite (mg/L)	Sulfate (mg/L)	TPH as Gasoline (µg/L)	Total BTEX (µg/L)
D.O.	= Dissolved oxygen					µg/L		= Micrograms per liter								
B.O.D	= Biochemical oxygen demand					NM		= not measured								
C.O.D	= Chemical oxygen demand					NS		= Not sampled								
TPPH	= Total purgeable petroleum hydrocarbons					ND		= Not detected								
BTEX	= Benzene, toluene, ethylbenzene, and xylenes					N/A		= Not available								
deg F	= Degrees Fahrenheit					*		Field measurements collected on November 2, 1995.								
µmhos	= Micromhos					**		ORC installed								
mg/L	= Milligrams per liter					†		From April 10, 1996 groundwater monitoring event.								

**APPENDIX C**

Certified Analytical Reports  
And  
Chain-of-Custody Documentation



**Sequoia  
Analytical**

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

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6 July, 2001

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

RE: ARCO 374, Oakland, CA  
Sequoia Report: S106394

Enclosed are the results of analyses for samples received by the laboratory on 06/25/01 13:51. 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 374, Oakland, CA  
Project Number: N/A  
Project Manager: Steven Meeks

**Reported:**  
07/06/01 12:19

**ANALYTICAL REPORT FOR SAMPLES**

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-3-6	S106394-01	Water	06/21/01 21:30	06/25/01 13:51
MW-4-8	S106394-02	Water	06/21/01 21:45	06/25/01 13:51
MW-5-8	S106394-03	Water	06/21/01 21:08	06/25/01 13:51
TB	S106394-04	Water	06/21/01 06:00	06/25/01 13:51

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



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

Project: ARCO 374, Oakland, CA  
 Project Number: N/A  
 Project Manager: Steven Meeks

**Reported:**  
 07/06/01 12:19

**Total Purgeable Hydrocarbons (C6-C12), BTEX and MTBE by DHS LUFT**  
**Sequoia Analytical - Sacramento**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
<b>MW-3-6 (S106394-01) Water</b> <b>Sampled: 06/21/01 21:30</b> <b>Received: 06/25/01 13:51</b>										
Purgeable Hydrocarbons	110	50		ug/l	1	1070046	07/05/01	07/05/01	DHS LUFT	zP-02
Benzene	5.5	0.50		"	"	"	"	"	"	
Toluene	ND	0.50		"	"	"	"	"	"	
Ethylbenzene	5.4	0.50		"	"	"	"	"	"	
Xylenes (total)	4.1	0.50		"	"	"	"	"	"	
Methyl tert-butyl ether	2.5	2.5		"	"	"	"	"	"	
<i>Surrogate: a,a,a-Trifluorotoluene</i>		103 %		60-140		"	"	"	"	
<b>MW-4-8 (S106394-02) Water</b> <b>Sampled: 06/21/01 21:45</b> <b>Received: 06/25/01 13:51</b>										
Purgeable Hydrocarbons	2800	1000		ug/l	20	1070046	07/05/01	07/05/01	DHS LUFT	zP-02
Benzene	470	10		"	"	"	"	"	"	
Toluene	16	10		"	"	"	"	"	"	
Ethylbenzene	19	10		"	"	"	"	"	"	
Xylenes (total)	160	10		"	"	"	"	"	"	
Methyl tert-butyl ether	130	50		"	"	"	"	"	"	
<i>Surrogate: a,a,a-Trifluorotoluene</i>		133 %		60-140		"	"	"	"	
<b>MW-5-8 (S106394-03) Water</b> <b>Sampled: 06/21/01 21:08</b> <b>Received: 06/25/01 13:51</b>										
Purgeable Hydrocarbons	ND	50		ug/l	1	1070029	07/03/01	07/03/01	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>		97.5 %		60-140		"	"	"	"	



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

Project: ARCO 374, Oakland, CA  
Project Number: N/A  
Project Manager: Steven Meeks

Reported:  
07/06/01 12:19

**Total Purgeable Hydrocarbons (C6-C12), BTEX and MTBE by DHS LUFT**

**Sequoia Analytical - Sacramento**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>TB (S106394-04) Water Sampled: 06/21/01 06:00 Received: 06/25/01 13:51</b>									
<b>Purgeable Hydrocarbons</b>	<b>72</b>	<b>50</b>	<b>ug/l</b>	<b>1</b>	<b>1070029</b>	<b>07/03/01</b>	<b>07/03/01</b>	<b>DHS LUFT</b>	<b>zP-02</b>
Benzene	ND	0.50	"	"	"	"	"	"	
Toluene	2.1	0.50	"	"	"	"	"	"	
Ethylbenzene	ND	0.50	"	"	"	"	"	"	
Xylenes (total)	0.53	0.50	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	2.5	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		102 %		60-140		"	"	"	"





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

Project: ARCO 374, Oakland, CA  
Project Number: N/A  
Project Manager: Steven Meeks

Reported:  
07/06/01 12:19

**Total Purgeable Hydrocarbons (C6-C12), 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 1070029 - EPA 5030B (P/T)**

**Blank (1070029-BLK1)**

Prepared & Analyzed: 07/03/01

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	"							

*Surrogate: a,a,a-Trifluorotoluene*      10.1      "      10.0      101      60-140

**LCS (1070029-BS1)**

Prepared & Analyzed: 07/03/01

Benzene	8.17	0.50	ug/l	10.0		81.7	70-130			
Toluene	9.38	0.50	"	10.0		93.8	70-130			
Ethylbenzene	10.0	0.50	"	10.0		100	70-130			
Xylenes (total)	30.2	0.50	"	30.0		101	70-130			
Methyl tert-butyl ether	7.71	2.5	"	10.0		77.1	70-130			

*Surrogate: a,a,a-Trifluorotoluene*      10.4      "      10.0      104      60-140

**Matrix Spike (1070029-MS1)**

Source: S106390-09

Prepared & Analyzed: 07/03/01

Benzene	8.46	0.50	ug/l	10.0	ND	84.6	60-140			
Toluene	8.92	0.50	"	10.0	ND	89.2	60-140			
Ethylbenzene	9.43	0.50	"	10.0	ND	94.3	60-140			
Xylenes (total)	27.7	0.50	"	30.0	ND	92.3	60-140			
Methyl tert-butyl ether	9.49	2.5	"	10.0	ND	94.9	60-140			

*Surrogate: a,a,a-Trifluorotoluene*      9.97      "      10.0      99.7      60-140

**Matrix Spike Dup (1070029-MSD1)**

Source: S106390-09

Prepared & Analyzed: 07/03/01

Benzene	8.66	0.50	ug/l	10.0	ND	86.6	60-140	2.34	25	
Toluene	9.12	0.50	"	10.0	ND	91.2	60-140	2.22	25	
Ethylbenzene	9.51	0.50	"	10.0	ND	95.1	60-140	0.845	25	
Xylenes (total)	27.6	0.50	"	30.0	ND	92.0	60-140	0.362	25	
Methyl tert-butyl ether	9.79	2.5	"	10.0	ND	97.9	60-140	3.11	25	

*Surrogate: a,a,a-Trifluorotoluene*      9.97      "      10.0      99.7      60-140



Delta Environmental Consultants(Rancho Cordova 3164 Gold Camp Drive Ste. 200 Rancho Cordova CA, 95670	Project: ARCO 374, Oakland, CA Project Number: N/A Project Manager: Steven Meeks	Reported: 07/06/01 12:19
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**Total Purgeable Hydrocarbons (C6-C12), 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 1070046 - EPA 5030B (P/T)**

**Blank (1070046-BLK1)**

Prepared & Analyzed: 07/05/01

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*      10.2      "      10.0      102      60-140

**LCS (1070046-BS1)**

Prepared & Analyzed: 07/05/01

Benzene	7.43	0.50	ug/l	10.0		74.3	70-130			
Toluene	9.02	0.50	"	10.0		90.2	70-130			
Ethylbenzene	9.71	0.50	"	10.0		97.1	70-130			
Xylenes (total)	29.4	0.50	"	30.0		98.0	70-130			
Methyl tert-butyl ether	7.96	2.5	"	10.0		79.6	70-130			

*Surrogate: a,a,a-Trifluorotoluene*      10.2      "      10.0      102      60-140

**Matrix Spike (1070046-MS1)**

Source: S106356-03

Prepared & Analyzed: 07/05/01

Benzene	7.22	0.50	ug/l	10.0	ND	72.2	60-140			
Toluene	8.75	0.50	"	10.0	ND	87.5	60-140			
Ethylbenzene	9.53	0.50	"	10.0	ND	95.3	60-140			
Xylenes (total)	27.1	0.50	"	30.0	ND	90.3	60-140			
Methyl tert-butyl ether	7.26	2.5	"	10.0	ND	72.6	60-140			

*Surrogate: a,a,a-Trifluorotoluene*      10.1      "      10.0      101      60-140

**Matrix Spike Dup (1070046-MSD1)**

Source: S106356-03

Prepared & Analyzed: 07/05/01

Benzene	7.29	0.50	ug/l	10.0	ND	72.9	60-140	0.965	25	
Toluene	8.93	0.50	"	10.0	ND	89.3	60-140	2.04	25	
Ethylbenzene	9.69	0.50	"	10.0	ND	96.9	60-140	1.66	25	
Xylenes (total)	28.3	0.50	"	30.0	ND	94.3	60-140	4.33	25	
Methyl tert-butyl ether	7.58	2.5	"	10.0	ND	75.8	60-140	4.31	25	

*Surrogate: a,a,a-Trifluorotoluene*      10.1      "      10.0      101      60-140



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

Project: ARCO 374, Oakland, CA  
Project Number: N/A  
Project Manager: Steven Meeks

Reported:  
07/06/01 12:19

#### Notes and Definitions

zP-02      Chromatogram Pattern: Weathered Gasoline C6-C12

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 Facility no. 374 City (Facility) Oakland Project manager (Consultant) Steve Meeks  
 ARCO engineer Paul Supple Telephone no. (ARCO) Telephone no. (Consultant) 638 2085<sup>716</sup> Fax no. (Consultant) 638 8385

Laboratory name Seprosia  
 Contract number

Consultant name Delta Address (Consultant) Rancho Cordova

Sample I.D.	Lab no.	Container no.	Matrix			Preservation		Sampling date	Sampling time	BTEX EPA 802/803/804/806/807/808 MTBE EPA 149/151/152/153/154/155	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/SM600E	EPA 601/6010	EPA 604/6040	EPA 605/6070	TCLP Metals <input type="checkbox"/> VOA <input type="checkbox"/>	Semi Metals <input type="checkbox"/> VOA <input type="checkbox"/>	CMA Metals EPA 601/7000 TLC <input type="checkbox"/> STLC <input type="checkbox"/>	Lead Org./DHS Lead EPA 7420/7421 <input type="checkbox"/>	
			Soil	Water	Other	Ice	Acid														
MW-3-B		2		X		X	X	6-21-01	2:30	X											
MW-4-B									2:45												
MW-5-B									2:08												
TB									6:00												

Method of shipment

Special detection Limit/reporting

Special QA/QC

Remarks

Lab number

Turnaround time  
 Priority Rush 1 Business Day   
 Rush 2 Business Days   
 Expedited 5 Business Days   
 Standard 10 Business Days

Condition of sample: Temperature received: 6°C

Relinquished by sampler Paul Hansen	Date 6-25-01	Time 1351	Received by Monica Grogan	Date 6-25-01	Time 1351
Relinquished by	Date	Time	Received by	Date	Time
Relinquished by	Date	Time	Received by laboratory	Date	Time

**APPENDIX D**

**Field Data Sheets**



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

Arco Site Address: **6407 Telegraph Avenue**  
**Oakland, California**

Arco Site Number: **374**

Delta Project No.: **D000-302**

Arco Project Manager: **Paul Supple**

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

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

Site Sampled By: **Doulos Environmental**

Date Sampled: **06/21/01**

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	Other	Dissolved Oxygen (mg/L)	Sample Frequency (A, S, Q)	Sample I.D.	Sample Time
MW-1	20:43	7.45	7.0	26.3	<input type="checkbox"/>	18.86	4 inch	2.0	37.7	N/A	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	NM	A/2		
MW-2	20:40	7.99	7.0	25.9	<input type="checkbox"/>	17.89	4 inch	2.0	35.8	N/A	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	NM	A/2		
MW-3	20:34	6.80	7.0	26.5	<input type="checkbox"/>	19.65	4 inch	2.0	39.3	39.4	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1.16	S/5,11	MW-3	21:30
MW-4	20:37	8.01	7.0	26.6	<input checked="" type="checkbox"/>	18.55	4 inch	2.0	37.1	NP	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1.37	S/5,11	MW-4	21:45
MW-5	20:31	8.20	10.0	22.7	<input type="checkbox"/>	14.48	4 inch	2.0	29.0	29	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1.05	Q/2,5,8,11	MW-5	21:08
MW-6	20:47	5.22	5.0	14.5	<input type="checkbox"/>	9.28	4 inch	2.0	18.6	N/A	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	NM	A/2		
Note: Purge Wells if ORC is present					<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"/>				
					<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: Annual: MW-1, MW-2, MW-3; Semi-Annual: MW-3, MW-4 Quarterly: MW-5

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.



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

Site Sampled By: Doulos Environmental

Date Sampled: 06/21/01

Well ID	Time	Temp °F	pH Units	Cond.	Gallons	Well ID	Time	Temp °F	pH Units	Cond.	Gallons	Well ID	Time	Temp °F	pH Units	Cond.	Gallons	
MW-1	Not Sampled																	
MW-2	Not Sampled																	
MW-3	21:14	68.2	7.44	1,104	12													
	21:17	67.3	7.41	1,051	25													
	21:21	67.1	7.36	1,043	37													
MW-4	No purge Required																	
MW-5	20:53	73.1	7.54	1,037	10													
	20:55	69.1	7.44	1,012	20													
	20:58	69.0	7.38	1,003	29													
MW-6	Not Sampled																	

Notes: NP = NO PURGE

Original Copies of Field Sampling Sheets are Located in Project File