Delta
Environmental
Consultants, Inc.

3164 Gold Camp Drive
Suite 200
Rancho Cordova, CA 95670-6021
U.S.A.
916/638-2085
FAX: 916/638-8385

September 20, 2000 R072

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

Subject: *Quarterly Groundwater Monitoring and Remediation System Status Report, Second Quarter 2000*
ARCO Station No. 2169
889 West Grand Avenue
Oakland, California
Delta Project No. D000-311

Dear Mr. Supple:

Delta Environmental Consultants, Inc. is submitting the attached report that presents the results of the second quarter 2000 groundwater monitoring program at ARCO Products Company Service Station No. 2169, located at 889 West Grand Avenue, 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.
Project Manager
California Registered Civil Engineer No. C057461

TLA (*Lrp001.311.doc*)
Enclosures

cc: Ms. Susan Hugo – Alameda County Health Care Services Agency

Date: September 20, 2000

ARCO QUARTERLY GROUNDWATER MONITORING REPORT

Station No.: 2169 Address:	889 West Grand Avenue, Oakland, California
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.:	D000-311
Primary Agency/Regulatory ID No.	Alameda County Health Care Services Agency

WORK PERFORMED THIS QUARTER

1. Quarterly monitoring and sampling for 2nd quarter 2000
2. Evaluated remediation system for operation.

WORK PROPOSED FOR NEXT QUARTER

1. Quarterly monitoring and sampling report for 2nd quarter 2000
2. Quarterly monitoring and sampling for 3rd quarter 2000
3. Conduct monthly O & M site visit for remediation system.

QUARTERLY MONITORING:

Current Phase of Project	Quarterly Groundwater Monitoring and Operation and Maintenance of Remediation Systems
Frequency of Groundwater Sampling:	Annual (1st Quarter): A-3, A-4 Semi-annual (1st/2nd Quarter): A-2, AR-1, AR-2 Quarterly: A-1, A-5, A-6, ADR-1, ADR-2
Frequency of Groundwater Monitoring:	Quarterly (groundwater, Monthly SVE and Biosparging)
Is Free Product (FP) Present On–Site:	No
FP Recovered this Quarter:	None
Cumulative FP Recovered to Date:	4.8 gallons, wells ADR-1 and ADR-2
Bulk Soil Removed This Quarter:	None
Bulk Soil Removed to Date:	2,196 cubic yards of TPH impacted soil
Current Remediation Techniques:	SVE and Biosparging systems
Approximate Depth to Groundwater:	11.37
Groundwater Gradient:	0.004 Northwest

SVE QUARTERLY OPERATION & PERFORMANCE:

Equipment Inventory:	Therm Tech Model VAC-25,250 fm, Termal/Catalytic Oxidizer
Operating Mode:	Catalytic Oxidation
BAAQMD Permit No.:	12119
TPH Conc. at End of Period (lab):	Not applicable
Benzene Conc. at End of Period (lab):	Not applicable
Flow Rate at End of Period:	Not applicable
Hydrocarbons Destroyed This Period:	Not applicable
Hydrocarbons Destroyed to Date:	9009.5 pounds
Utility Usage Electric (kWh):	Not Available
Operating Hours This Period:	2065.13 hours
Percent Operational:	0%
Operating Hours To Date:	10604.97 hours
Unit Maintenance :	Not applicable
Number of Auto Shut Downs:	0
Destruction of Efficiency Permit: Requirements:	98.5% (POC >2,000 ppmv); 97% (POC >200 ppmv); 90% (POC <200 ppmv); waived if outlet POC <1.0 lb/day and benzene <0.02 lb/day
Average Percent TPH Conversion:	Not applicable
Average Stack Temperature	Not applicable
Average Source Flow:	Not applicable
Average Process Flow:	Not applicable
Average Source Vacuum:	Not applicable

(SVE data recreated from data provided by IT Corporation.)

DISCUSSION:

- Due to the lost samples collected on June 26, 2000, the site was resampled on July 20, 2000 for second quarter 2000 monitoring.
- Remediation system was evaluated for operation during the June 26, 2000 site visit.

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
  SVE Operational Uptime Information
  SVE Flow Rates and Analytical Results of Air Samples
  SVE Extraction Rates, Emission Rates, Destruction Efficiency and Mass Removed
- Appendix C Certified Analytical Reports with Chain–of–Custody Documentation
- Appendix D Field Data Sheet

TABLE 1

GROUNDWATER ANALYTICAL DATA

ARCO Service Station No. 2169
889 West Grand 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)
AR-1	07/20/00		11.59	4.02	NA	NA	NA	NA	NA	NA
		15.61	12.06	3.55	<0.5	<0.5	<0.5	<1.0	<50	6
AR-2	07/20/00		11.79	3.49	NA	NA	NA	NA	NA	NA
		15.28	12.07	3.21	<0.5	<0.5	<0.5	<1.0	<50	<3.0
ADR-1	07/20/00	13.95	10.55	3.40	NA	NA	NA	NA	NA	NA
			10.85	3.10	29	<0.5	0.8	<1.0	180	22
ADR-2	07/20/00	14.64	11.22	3.42	NA	NA	NA	NA	NA	NA
			11.60	3.04	410	2.5	540	720	12,000	23
A-1	07/20/00	14.16	10.75	3.41	NA	NA	NA	NA	NA	NA
			11.01	3.15	1,100	28	12	46	3,900	25
A-2	07/20/00	14.55	11.27	3.28	NA	NA	NA	NA	NA	NA
			11.52	3.03	<0.5	<0.5	<0.5	<1.0	<50	<3.0
A-3	07/20/00	15.75	11.98	3.77	NS	NS	NS	NS	NS	NS
			12.21	3.54	NS	NS	NS	NS	NS	NS
A-4	07/20/00	15.25	10.99	4.26	NS	NS	NS	NS	NS	NS
			11.16	4.09	NS	NS	NS	NS	NS	NS
A-5	07/20/00	13.51	10.04	3.47	NA	NA	NA	NA	NA	NA
			10.31	3.20	140	11	<0.5	8.9	730	3.0

TABLE 1

GROUNDWATER ANALYTICAL DATA

ARCO Service Station No. 2169
889 West Grand 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)
A-6	07/20/00	13.51	10.09	3.42	NA	NA	NA	NA	NA	NA
			10.91	2.60	<0.5	<0.5	0.6	2.0	170	6.0

TPH = Total Petroleum Hydrocarbons

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

µg/L = Micrograms per liter

NM = Not measured

NC = Not calculated

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

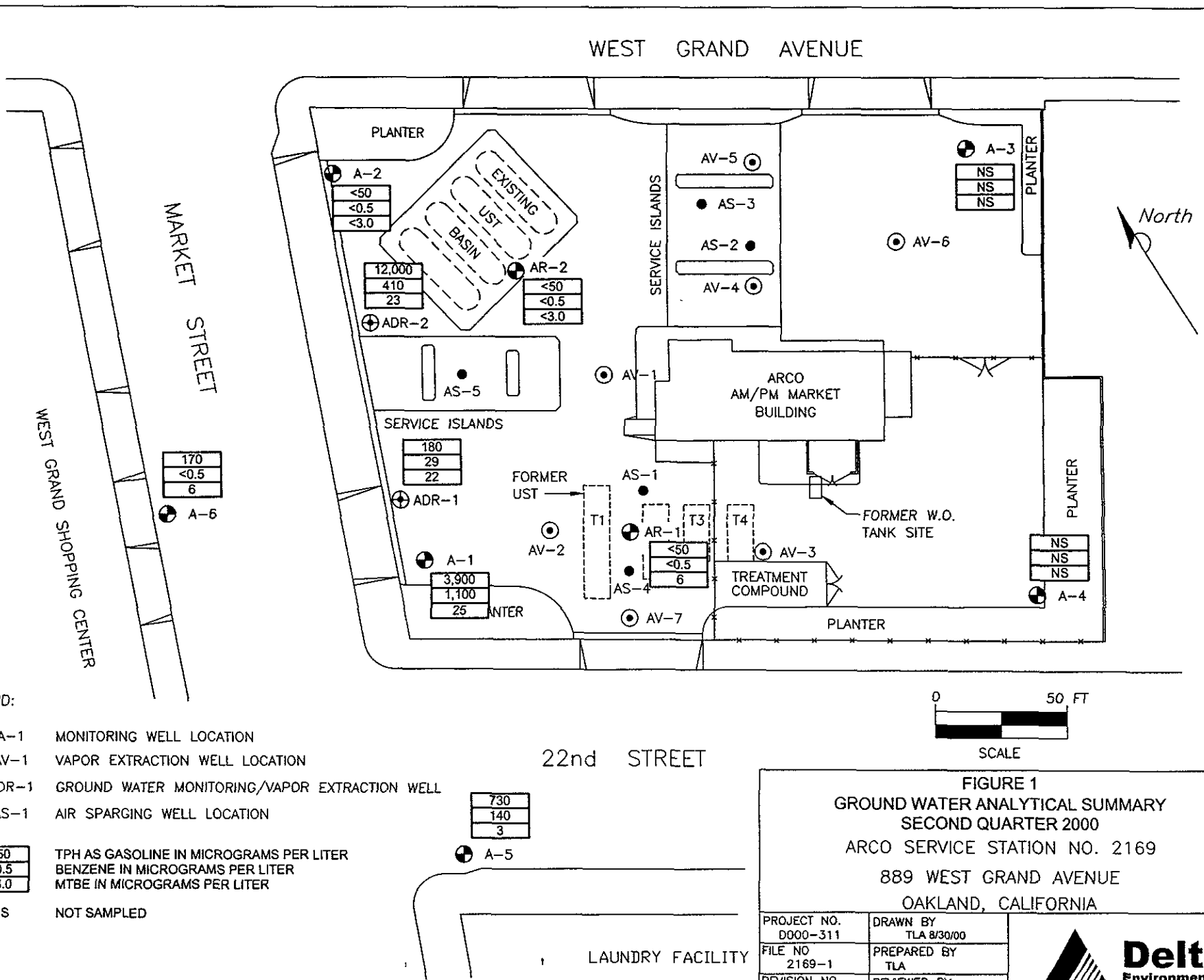
TABLE 2

GROUNDWATER FLOW DIRECTION AND GRADIENT

ARCO Service Station No. 2169
889 West Grand Avenue
Oakland, California

Date Measured	Average Flow Direction	Average Hydraulic Gradient
7/20/00	Northwest	0.004

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



LEGEND:

- A-1 MONITORING WELL LOCATION
- AV-1 VAPOR EXTRACTION WELL LOCATION
- ADR-1 GROUND WATER MONITORING/VAPOR EXTRACTION WELL
- AS-1 AIR SPARGING WELL LOCATION

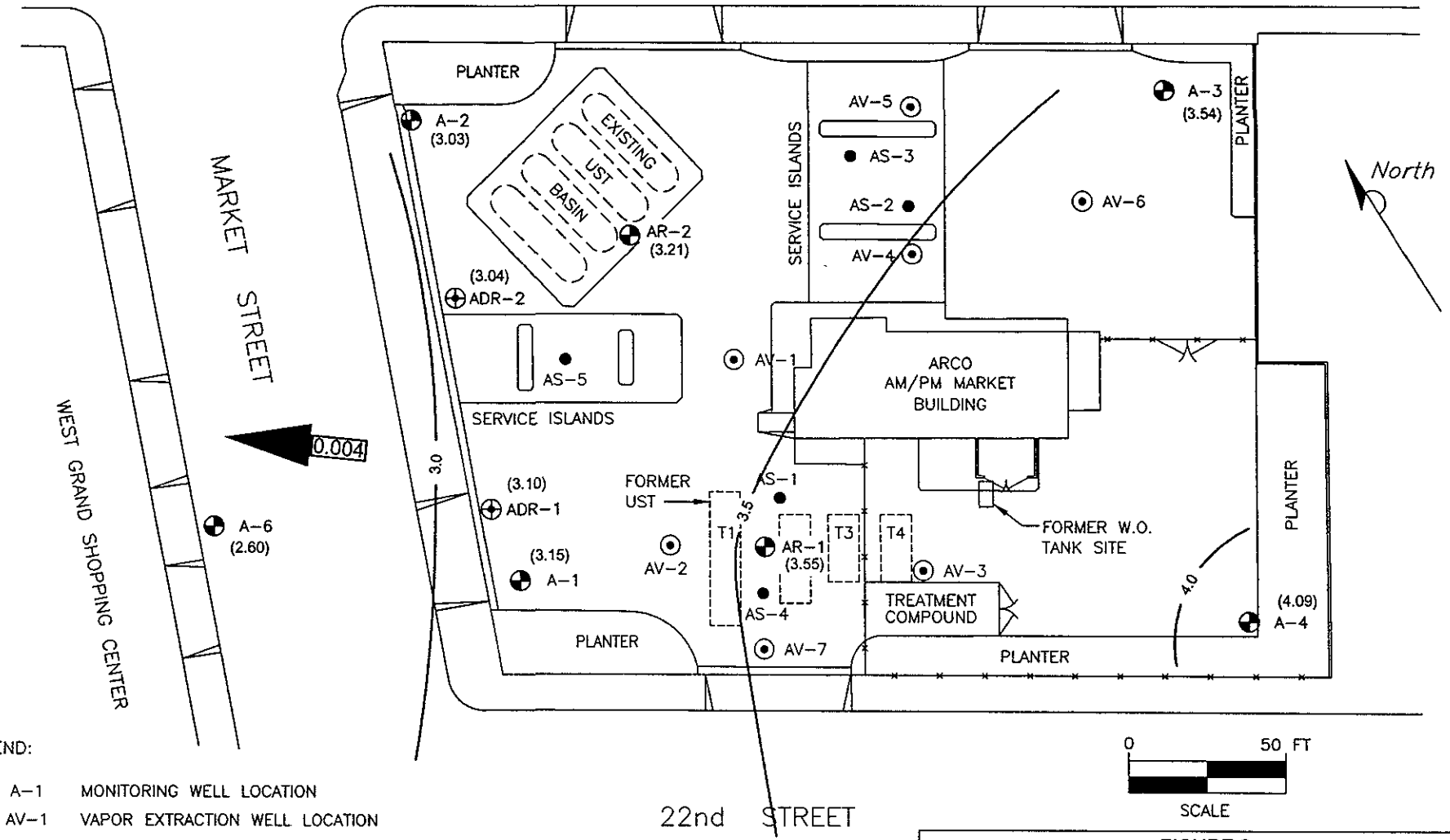
<50	TPH AS GASOLINE IN MICROGRAMS PER LITER
<0.5	BENZENE IN MICROGRAMS PER LITER
<3.0	MTBE IN MICROGRAMS PER LITER
NS	NOT SAMPLED

FIGURE 1
GROUND WATER ANALYTICAL SUMMARY
SECOND QUARTER 2000
ARCO SERVICE STATION NO. 2169
889 WEST GRAND AVENUE
OAKLAND, CALIFORNIA

PROJECT NO. D000-311	DRAWN BY TLA 8/30/00
FILE NO 2169-1	PREPARED BY TLA
REVISION NO. 1	REVIEWED BY

Delta Environmental Consultants, Inc.

\\Sacramento\CAD Files\Sacramento\ARCO\2169\2169-1.dwg



LEGEND:

- A-1 — MONITORING WELL LOCATION
- AV-1 — VAPOR EXTRACTION WELL LOCATION
- ADR-1 — GROUND WATER MONITORING/VAPOR EXTRACTION WELL
- AS-1 — AIR SPARGING WELL LOCATION
- (3.55) — GROUND WATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL (MSL)
- — 3.5 — WATER TABLE CONTOUR IN FEET ABOVE MSL
- GROUND WATER FLOW DIRECTION
- 0.007 — APPROXIMATE GROUND WATER FLOW GRADIENT

FIGURE 2
GROUND WATER ELEVATION CONTOUR MAP
SECOND QUARTER 2000
ARCO SERVICE STATION NO. 2169
889 WEST GRAND AVENUE
OAKLAND, CALIFORNIA

PROJECT NO. D000-311	DRAWN BY TLA 8/31/00
FILE NO. 2169-1	PREPARED BY TLA
REVISION NO. 1	REVIEWED BY

Delta Environmental Consultants, Inc.

\\Sacramento\CAD Files\Sacramento\ARCO\2169\2169-1.dwg

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

Historical Groundwater Elevation and Analytical Data Table,
Groundwater Flow Direction and Gradient Table,
And
Historical Remediation System Data Tables

Table 1
Historical Groundwater Elevation and Analytical Data
Petroleum Hydrocarbons and Their Constituents
1995 - Present***

ARCO Service Station 2169
889 West Grand Avenue, Oakland, California

Well Number	Date Gauged	TOC Elevation (ft-MSL)	Depth to Water (feet)	FP Thickness (feet)	Groundwater Elevation (ft-MSL)	Date Sampled	TPH Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE 8021B* (µg/L)	MTBE 8260 (µg/L)	TPH Diesel (µg/L)	Dissolved Oxygen (mg/L)	Purged/ Not Purged (P/NP)
A-1	03-24-95	14.16	8.10	ND	6.06	03-24-95	1,200	230	39	34	66	--	--	160		
A-1	06-05-95	14.16	11.13	ND	3.03	06-05-95	1,500	310	27	36	76	--	--	710		
A-1	08-17-95	14.16	11.71	ND	2.45	08-18-95	1,600	470	35	48	110	120	--	240		
A-1	12-04-95	14.16	12.28	ND	1.88	12-04-95	1,200	240	17	25	56	--	120	--		
A-1	03-01-96	14.16	8.78	ND	5.38	03-13-96	1,300	300	74	29	73	100	--	--		
A-1	05-29-96	14.16	9.85	ND	4.31	05-29-96	Not sampled: well sampled semi-annually, during the first and third quarters									
A-1	08-29-96	14.16	11.08	ND	3.08	08-29-96	1,200	320	5.9	25	27	110	--	--		
A-1	11-21-96	14.16	10.54	ND	3.62	11-21-96	Not sampled: well sampled semi-annually, during the first and third quarters									
A-1	03-26-97	14.16	10.55	ND	3.61	03-26-97	<50	0.8	<0.5	<0.5	<0.5	64	--	--		
A-1	05-21-97	14.16	11.10	ND	3.06	05-21-97	Not sampled: well sampled semi-annually, during the first and third quarters									
A-1	08-08-97	14.16	11.32	ND	2.84	08-08-97	91	7	<0.5	0.5	3.9	<60	--	--		
A-1	11-18-97	14.16	3.46	ND	10.70	11-18-97	54	<0.5	<0.5	<0.5	0.6	27	--	--		
A-1	02-20-98	14.16	7.10	ND	7.06	02-23-98	590	160	22	15	28	70	--	--		
A-1	05-11-98	14.16	9.87	ND	4.29	05-11-98	280	26	<0.5	0.8	2.3	6	--	--		
A-1	07-30-98	14.16	10.73	ND	3.43	07-30-98	1,000	210	5	<5	38	<30	--	--		
A-1	10-08-98	14.16	11.15	ND	3.01	10-08-98	3,100	740	11	<10	24	<60	--	--		
A-1	02-18-99	14.16	8.00	ND	6.16	02-18-99	510	87	7.1	6.4	13	52	--	--		
A-1	05-26-99	14.16	10.60	ND	3.56	05-26-99	240	26	<0.5	1.2	6.2	34	--	--		
A-1	08-23-99	14.16	11.22	ND	2.94	08-23-99	79	3.9	0.6	<0.5	1.7	38	--	--	0.68	NP
A-1	10-27-99	14.16	11.37	ND	2.79	10-27-99	110	2.2	<0.5	<0.5	<1	25	--	--	0.80	NP
A-1	01-31-00	14.16	9.44	ND	4.72	01-31-00	<50	<0.5	<0.5	<0.5	<1	<3	--	--	1.0	NP
A-2	03-24-95	14.55	8.64	ND	5.91	03-24-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--		
A-2	06-05-95	14.55	11.72	ND	2.83	06-05-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--		
A-2	08-17-95	14.55	12.35	ND	2.20	08-17-95	<50	<0.5	<0.5	<0.5	<0.5	12	--	--		
A-2	12-04-95	14.55	12.74	ND	1.81	12-04-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--		
A-2	03-01-96	14.55	9.34	ND	5.21	03-13-96	<50	<0.5	0.6	<0.5	1.3	<9	--	--		

Table 1
Historical Groundwater Elevation and Analytical Data
Petroleum Hydrocarbons and Their Constituents
1995 - Present***

ARCO Service Station 2169
889 West Grand Avenue, Oakland, California

Well Number	Date Gauged	TOC Elevation (ft-MSL)	Depth to Water (feet)	FP Thickness (feet)	Groundwater Elevation (ft-MSL)	Date Sampled	TPH Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE 8021B* (µg/L)	MTBE 8260 (µg/L)	TPH Diesel (µg/L)	Dissolved Oxygen (mg/L)	Purged/ Not Purged (P/NP)
A-2	05-29-96	14.55	10.40	ND	4.15	05-29-96	<50	<0.5	<0.5	<0.5	<0.5	<20	--	--		
A-2	08-29-96	14.55	11.50	ND	3.05	08-29-96	<50	<0.5	<0.5	<0.5	<0.5	<39	--	--		
A-2	11-21-96	14.55	11.06	ND	3.49	11-21-96	<50	<0.5	<0.5	<0.5	<0.5	<30	--	--		
A-2	03-26-97	14.55	11.12	ND	3.43	03-26-97	<50	<0.5	<0.5	<0.5	<0.5	<20	--	--		
A-2	05-21-97	14.55	11.58	ND	2.97	05-21-97	Not sampled: well sampled semi-annually, during the first and third quarters									
A-2	08-08-97	14.55	11.82	ND	2.73	08-08-97	<50	<0.5	<0.5	<0.5	<0.5	<20	--	--		
A-2	11-18-97	14.55	3.33	ND	11.22	11-18-97	Not sampled: well sampled semi-annually, during the first and third quarters									
A-2	02-20-98	14.55	7.68	ND	6.87	02-20-98	<50	<0.5	<0.5	<0.5	<0.5	17	--	--		
A-2	05-11-98	14.55	10.45	ND	4.10	05-11-98	Not sampled									
A-2	07-30-98	14.55	11.23	ND	3.32	07-30-98	Not sampled: well sampled semi-annually, during the first and second quarters									
A-2	10-08-98	14.55	11.62	ND	2.93	10-08-98	Not sampled: well sampled semi-annually, during the first and second quarters									
A-2	02-18-99	14.55	8.62	ND	5.93	02-18-99	93	<0.5	<0.5	<0.5	<1	26	--	--		
A-2	05-26-99	14.55	11.16	ND	3.39	05-26-99	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--		
A-2	08-23-99	14.55	11.69	ND	2.86	08-23-99	Not sampled: well sampled semi-annually, during the first and second quarters								0.59	
A-2	10-27-99	14.55	11.88	ND	2.67	10-27-99	Not sampled: well sampled semi-annually, during the first and second quarters								0.59	
A-2	01-31-00	14.55	10.17	ND	4.38	01-31-00	<50	<0.5	<0.5	<0.5	<1	<3	--	--	1.0	NP
A-3	03-24-95	15.75	8.83	ND	6.92	03-24-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--		
A-3	06-05-95	15.75	12.44	ND	3.31	06-05-95	Not sampled: well sampled annually									
A-3	08-17-95	15.75	13.04	ND	2.71	08-17-95	Not sampled: well sampled annually									
A-3	12-04-95	15.75	13.57	ND	2.18	12-04-95	Not sampled: well sampled annually									
A-3	03-01-96	15.75	9.90	ND	5.85	03-13-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--		
A-3	05-29-96	15.75	11.08	ND	4.67	05-29-96	Not sampled: well sampled annually									
A-3	08-29-96	15.75	12.38	ND	3.37	08-29-96	Not sampled: well sampled annually									
A-3	11-21-96	15.75	11.86	ND	3.89	11-21-96	Not sampled: well sampled annually									
A-3	03-26-97	15.75	11.81	ND	3.94	03-26-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--		
A-3	05-21-97	15.75	12.35	ND	3.40	05-21-97	Not sampled: well sampled annually									

Table 1
Historical Groundwater Elevation and Analytical Data
Petroleum Hydrocarbons and Their Constituents
1995 - Present***

ARCO Service Station 2169
889 West Grand Avenue, Oakland, California

Well Number	Date Gauged	TOC Elevation (ft-MSL)	Depth to Water (feet)	FP Thickness (feet)	Groundwater Elevation (ft-MSL)	Date Sampled	TPH Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE 8021B* (µg/L)	MTBE 8260 (µg/L)	TPH Diesel (µg/L)	Dissolved Oxygen (mg/L)	Purged/ Not Purged (P/NP)
A-3	08-08-97	15.75	12.62	ND	3.13	08-08-97	Not sampled: well sampled annually									
A-3	11-18-97	15.75	3.75	ND	12.00	11-18-97	Not sampled: well sampled annually									
A-3	02-20-98	15.75	8.06	ND	7.69	02-20-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--		
A-3	05-11-98	15.75	11.19	ND	4.56	05-11-98	Not sampled: well sampled annually									
A-3	07-30-98	15.75	12.05	ND	3.70	07-30-98	Not sampled: well sampled annually									
A-3	10-08-98	15.75	12.43	ND	3.32	10-08-98	Not sampled: well sampled annually									
A-3	02-18-99	15.75	9.05	ND	6.70	02-18-99	Not sampled: well sampled annually									
A-3	05-26-99	15.75	11.93	ND	3.82	05-26-99	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--		
A-3	08-23-99	15.75	12.57	ND	3.18	08-23-99	Not sampled: well sampled annually								0.88	
A-3	10-27-99	15.75	12.65	ND	3.10	10-27-99	Not sampled: well sampled annually									
A-3	01-31-00	15.75	9.55	ND	6.20	01-31-00	<50	<0.5	<0.5	<0.5	<1	9	--	--	1.0	NP
A-4	03-24-95	15.25	7.20	ND	8.05	03-24-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--		
A-4	06-05-95	15.25	11.70	ND	3.55	06-05-95	Not sampled: well sampled annually									
A-4	08-17-95	15.25	12.28	ND	2.97	08-17-95	Not sampled: well sampled annually									
A-4	12-04-95	15.25	12.63	ND	2.62	12-04-95	Not sampled: well sampled annually									
A-4	03-01-96	15.25	8.55	ND	6.70	03-13-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--		
A-4	05-29-96	15.25	10.32	ND	4.93	05-29-96	Not sampled: well sampled annually									
A-4	08-29-96	15.25	11.55	ND	3.70	08-29-96	Not sampled: well sampled annually									
A-4	11-21-96	15.25	10.83	ND	4.42	11-21-96	Not sampled: well sampled annually									
A-4	03-26-97	15.25	10.97	ND	4.28	03-26-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--		
A-4	05-21-97	15.25	11.51	ND	3.74	05-21-97	Not sampled: well sampled annually									
A-4	08-08-97	15.25	11.73	ND	3.52	08-08-97	Not sampled: well sampled annually									
A-4	11-18-97	15.25	4.37	ND	10.88	11-18-97	Not sampled: well sampled annually									
A-4	02-20-98	15.25	6.25	ND	9.00	02-20-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--		
A-4	05-11-98	15.25	10.33	ND	4.92	05-11-98	Not sampled: well sampled annually									
A-4	07-30-98	15.25	11.25	ND	4.00	07-30-98	Not sampled: well sampled annually									

Table 1
Historical Groundwater Elevation and Analytical Data
Petroleum Hydrocarbons and Their Constituents
1995 - Present***

ARCO Service Station 2169
889 West Grand Avenue, Oakland, California

Well Number	Date Gauged	TOC Elevation (ft-MSL)	Depth to Water (feet)	FP Thickness (feet)	Groundwater Elevation (ft-MSL)	Date Sampled	TPH Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE 8021B* (µg/L)	MTBE 8260 (µg/L)	TPH Diesel (µg/L)	Dissolved Oxygen (mg/L)	Purged/ Not Purged (P/NP)
A-4	10-08-98	15.25	11.62	ND	3.63	10-08-98	Not sampled: well sampled annually									
A-4	02-18-99	15.25	7.12	ND	8.13	02-18-99	Not sampled: well sampled annually									
A-4	05-26-99	15.25	11.12	ND	4.13	05-26-99	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--		
A-4	08-23-99	15.25	11.62	ND	3.63	08-23-99	Not sampled: well sampled annually									
A-4	10-27-99	15.25	11.74	ND	3.51	10-27-99	Not sampled: well sampled annually								0.54	
A-4	01-31-00	15.25	9.45	ND	5.80	01-31-00	<50	<0.5	<0.5	<0.5	<1	4	--	--	1.0	NP
A-5	03-24-95	13.51	7.40	ND	6.11	03-24-95	3,300	200	310	130	460	--	--	--		
A-5	06-05-95	13.51	10.43	ND	3.08	06-05-95	57,000	2,700	4,600	1,500	6,800	--	--	--		
A-5	08-17-95	13.51	11.15	ND	2.36	08-18-95	34,000	1,600	2,700	1,100	5,100	<28	--	--		
A-5	12-04-95	13.51	11.42	ND	2.09	12-04-95	61	<0.5	<0.5	<0.5	<0.5	--	--	--		
A-5	03-01-96	13.51	8.11	ND	5.40	03-13-96	11,000	860	960	380	1,600	<100	--	--		
A-5	05-29-96	13.51	9.30	ND	4.21	05-29-96	19,000	1,600	1,900	880	3,300	<100	--	--		
A-5	08-29-96	13.51	10.60	ND	2.91	08-29-96	7,700	490	450	260	990	<30	--	--		
A-5	11-21-96	13.51	10.05	ND	3.46	11-21-96	8,000	450	550	340	1,100	<30	--	--		
A-5	03-26-97	13.51	9.87	ND	3.64	03-26-97	3,100	190	140	130	340	<30	--	--		
A-5	05-21-97	13.51	10.25	ND	3.26	05-21-97	16,000	1,500	900	700	2,700	<120	--	--		
A-5	08-08-97	13.51	10.42	ND	3.09	08-08-97	9,000	690	240	440	1,300	<30	--	--		
A-5	11-18-97	13.51	Not surveyed: well inaccessible													
A-5	02-20-98	13.51	Not surveyed: well inaccessible													
A-5	05-11-98	13.51	Not surveyed: well inaccessible													
A-5	07-30-98	13.51	Not surveyed: well inaccessible													
A-5	10-08-98	13.51	Not surveyed: well inaccessible													
A-5	02-18-99	13.51	7.63	ND	5.88	02-18-99	<50	0.8	<0.5	<0.5	1.5	<10	--	--		
A-5	05-26-99	13.51	9.85	ND	3.66	05-26-99	1,700	240	41	110	330	<12	--	--		
A-5	08-23-99	13.51	10.60	ND	2.91	08-23-99	560	65	3	30	52	<6	--	--	0.73	NP
A-5	10-27-99	13.51	10.72	ND	2.79	10-27-99	480	93	1.0	16	19	<3	--	--	0.65	NP

Table 1
Historical Groundwater Elevation and Analytical Data
Petroleum Hydrocarbons and Their Constituents
1995 - Present***

ARCO Service Station 2169
889 West Grand Avenue, Oakland, California

Well Number	Date Gauged	TOC Elevation (ft-MSL)	Depth to Water (feet)	FP Thickness (feet)	Groundwater Elevation (ft-MSL)	Date Sampled	TPH Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE 8021B* (µg/L)	MTBE 8260 (µg/L)	TPH Diesel (µg/L)	Dissolved Oxygen (mg/L)	Purged/ Not Purged (P/NP)
A-5	01-31-00	13.51	9.37	ND	4.14	01-31-00	Not sampled: well was inaccessible									
A-6	03-24-95	13.51	7.89	ND	5.62	03-24-95	120	<0.5	<1	<0.5	<1.5	--	--	--		
A-6	06-05-95	13.51	10.06	ND	3.45	06-05-95	160	<0.5	<0.6	<0.5	<0.5	--	--	--		
A-6	08-17-95	13.51	11.10	ND	2.41	08-18-95	530	<0.5	<0.5	<2.4	<4.2	6	--	--		
A-6	12-04-95	13.51	11.52	ND	1.99	12-04-95	28,000	1,600	1,800	880	3,600	--	--	--		
A-6	03-01-96	13.51	8.21	ND	5.30	03-13-96	1,400	<3	<15	<7	<10	<20	--	--		
A-6	05-29-96	13.51	9.25	ND	4.26	05-29-96	410	<2	<2	<2	<2	3	--	--		
A-6	08-29-96	13.51	10.52	ND	2.99	08-29-96	80	<0.5	<0.5	<0.5	<0.5	6	--	--		
A-6	11-21-96	13.51	10.54	ND	2.97	11-21-96	62	<0.5	<0.5	<0.5	<0.5	12	--	--		
A-6	03-26-97	13.51	9.93	ND	3.58	03-26-97	110	<0.5	0.8	1	1.4	15	--	--		
A-6	05-21-97	13.51	10.54	ND	2.97	05-21-97	600	0.6	0.6	<2	2.7	<3	--	--		
A-6	08-08-97	13.51	10.77	ND	2.74	08-08-97	850	<0.5	<0.5	6.1	<0.5	<4	--	--		
A-6	11-18-97	13.51	3.41	ND	10.10	11-18-97	690	<1	<1	3	2	7	--	--		
A-6	02-20-98	13.51	6.73	ND	6.78	02-20-98	60	<0.5	0.6	1.3	0.5	4	--	--		
A-6	05-11-98	13.51	9.26	ND	4.25	05-11-98	140	<0.5	0.7	0.6	<0.5	6	--	--		
A-6	07-30-98	13.51	10.12	ND	3.39	07-30-98	910	<2	<2	3	7	34	--	--		
A-6	10-08-98	13.51	10.53	ND	2.98	10-08-98	1,300	<2	4	3	4	21	--	--		
A-6	02-18-99	13.51	7.50	ND	6.01	02-18-99	150	<0.5	<0.5	1.4	1.7	35	--	--		
A-6	05-26-99	13.51	10.00	ND	3.51	05-26-99	100	<0.5	<0.5	<0.5	<0.5	17	--	--		
A-6	08-23-99	13.51	10.70	ND	2.81	08-23-99	98	0.6	<0.5	1.1	4.3	13	--	--	2.42	NP
A-6	10-27-99	13.51	11.00	ND	2.51	10-27-99	<50	<0.5	<0.5	<0.5	<1	7	--	--	13.23	NP
A-6	01-31-00	13.51	9.31	ND	4.20	01-31-00	<50	<0.5	<0.5	<0.5	<1	9	--	--	1.0	NP
AR-1	03-24-95	15.61	7.25	ND	8.36	03-24-95	270	14	0.6	2.5	2.1	--	--	130		
AR-1	06-05-95	15.61	11.37	ND	4.24	06-05-95	190	10	<0.5	0.8	0.5	--	--	580		
AR-1	08-17-95	15.61	12.40	ND	3.21	08-17-95	960	110	12	4.5	150	14	--	<50		

Table 1
Historical Groundwater Elevation and Analytical Data
Petroleum Hydrocarbons and Their Constituents
1995 - Present***

ARCO Service Station 2169
889 West Grand Avenue, Oakland, California

Well Number	Date Gauged	TOC Elevation (ft-MSL)	Depth to Water (feet)	FP Thickness (feet)	Groundwater Elevation (ft-MSL)	Date Sampled	TPH Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE 8021B* (µg/L)	MTBE 8260 (µg/L)	TPH Diesel (µg/L)	Dissolved Oxygen (mg/L)	Purged/ Not Purged (P/NP)
AR-1	12-04-95	15.61	12.90	ND	2.71	12-04-95	<50	1.5	<0.5	<0.5	0.8	--	--	--		
AR-1	03-01-96	15.61	8.19	ND	7.42	03-13-96	150	3.8	0.5	1.4	1.3	<3	--	--		
AR-1	05-29-96	15.61	10.41	ND	5.20	05-29-96	Not sampled: well sampled semi-annually, during the first and third quarters									
AR-1	08-29-96	15.61	12.12	ND	3.49	08-29-96	<50	<0.5	<0.5	<0.5	0.8	<3	--	--		
AR-1	11-21-96	15.61	11.52	ND	4.09	11-21-96	Not sampled: well sampled semi-annually, during the first and third quarters									
AR-1	03-26-97	15.61	11.33	ND	4.28	03-26-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--		
AR-1	05-21-97	15.61	12.02	ND	3.59	05-21-97	Not sampled: well sampled semi-annually, during the first and third quarters									
AR-1	08-08-97	15.61	12.31	ND	3.30	08-08-97	<50	0.7	<0.5	1	<0.5	<3	--	--		
AR-1	11-18-97	15.61	3.97	ND	11.64	11-18-97	Not sampled: well sampled semi-annually, during the first and third quarters									
AR-1	02-20-98	15.61	6.42	ND	9.19	02-23-98	<200	<2	<2	<2	<2	160	--	--		
AR-1	05-11-98	15.61	10.93	ND	4.68	05-11-98	<50	<0.5	<0.5	<0.5	<0.5	4	--	--		
AR-1	07-30-98	15.61	11.82	ND	3.79	07-30-98	<50	<0.5	<0.5	<0.5	<0.5	6	--	--		
AR-1	10-08-98	15.61	12.24	ND	3.37	10-08-98	<50	<0.5	<0.5	<0.5	<0.5	6	--	--		
AR-1	02-18-99	15.61	7.75	ND	7.86	02-18-99	<50	<0.5	<0.5	<0.5	<1.0	<10	--	--		
AR-1	05-26-99	15.61	11.62	ND	3.99	05-26-99	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--		
AR-1	08-23-99	15.61	9.32	ND	6.29	08-23-99	Not sampled: well sampled semi-annually, during the first and second quarters									
AR-1	10-27-99	15.61	12.14	ND	3.47	10-27-99	Not sampled: well sampled semi-annually, during the first and second quarters									
AR-1	01-31-00	15.61	Not surveyed: well inaccessible													
AR-2	03-24-95	15.28	9.13	ND	6.15	03-24-95	<50	6.2	<0.5	<0.5	0.6	--	--	<50		
AR-2	06-05-95	15.28	12.09	ND	3.19	06-05-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	<50		
AR-2	08-17-95	15.28	12.78	ND	2.50	08-18-95	<50	<0.5	<0.5	<0.5	<0.5	4	--	<50		
AR-2	12-04-95	15.28	11.44	ND	3.84	12-13-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--		
AR-2	03-01-96	15.28	9.83	ND	5.45	03-13-96	190	26	2.6	3.3	13	200	--	--		
AR-2	05-29-96	15.28	10.97	ND	4.31	05-29-96	Not sampled: well sampled semi-annually, during the first and third quarters									
AR-2	08-29-96	15.28	12.20	ND	3.08	08-29-96	<50	<0.5	<0.5	<0.5	<0.5	95	--	--		
AR-2	11-21-96	15.28	11.57	ND	3.71	11-21-96	Not sampled: well sampled semi-annually, during the first and third quarters									

Table 1
Historical Groundwater Elevation and Analytical Data
Petroleum Hydrocarbons and Their Constituents
1995 - Present***

ARCO Service Station 2169
889 West Grand Avenue, Oakland, California

Well Number	Date Gauged	TOC Elevation (ft-MSL)	Depth to Water (feet)	FP Thickness (feet)	Groundwater Elevation (ft-MSL)	Date Sampled	TPH Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE 8021B* (µg/L)	MTBE 8260 (µg/L)	TPH Diesel (µg/L)	Dissolved Oxygen (mg/L)	Purged/ Not Purged (P/NP)
AR-2	03-26-97	15.28	11.60	ND	3.68	03-26-97	<50	<0.5	<0.5	<0.5	<0.5	9	--	--		
AR-2	05-21-97	15.28	12.12	ND	3.16	05-21-97	Not sampled: well sampled semi-annually, during the first and third quarters									
AR-2	08-08-97	15.28	12.35	ND	2.93	08-08-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--		
AR-2	11-18-97	15.28	3.48	ND	11.80	11-18-97	Not sampled: well sampled semi-annually, during the first and third quarters									
AR-2	02-20-98	15.28	8.00	ND	7.28	02-20-98	<50	<0.5	<0.5	<0.5	<0.5	43	--	--		
AR-2	05-11-98	15.28	10.97	ND	4.31	05-11-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--		
AR-2	07-30-98	15.28	11.76	ND	3.52	07-30-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--		
AR-2	10-08-98	15.28	12.17	ND	3.11	10-08-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--		
AR-2	02-18-99	15.28	9.17	ND	6.11	02-18-99	<50	<0.5	<0.5	<0.5	<1.0	<10	--	--		
AR-2	05-26-99	15.28	11.72	ND	3.56	05-26-99	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--		
AR-2	08-23-99	15.28	12.31	ND	2.97	08-23-99	Not sampled: well sampled semi-annually, during the first and second quarters								0.61	
AR-2	10-27-99	15.28	12.42	ND	2.86	10-27-99	Not sampled: well sampled semi-annually, during the first and second quarters									
AR-2	01-31-00	15.28	10.31	ND	4.97	01-31-00	Not sampled									
ADR-1	03-24-95	13.95	8.04	0.01	** 5.92	03-24-95	Not sampled: well contained floating product									
ADR-1	06-05-95	13.95	11.02	ND	2.93	06-05-95	23,000	310	420	300	1,900	--	--	13,000		
ADR-1	08-17-95	13.95	11.86	ND	2.09	08-18-95	4,400	150	120	95	620	120	--	4,500		
ADR-1	12-04-95	13.95	10.05	ND	3.90	12-13-95	8,800	100	130	120	990	--	--	--		
ADR-1	03-01-96	13.95	8.76	ND	5.19	03-13-96	89,000	370	1,000	840	8,100	<500	--	--		
ADR-1	05-29-96	13.95	9.74	ND	4.21	05-30-96	27,000	230	380	370	2,700	<100	--	--		
ADR-1	08-29-96	13.95	10.77	ND	3.18	08-29-96	5,300	190	58	76	470	85	--	--		
ADR-1	11-21-96	13.95	10.49	ND	3.46	11-21-96	1,900	82	21	32	270	110	--	--		
ADR-1	03-26-97	13.95	10.37	ND	3.58	03-26-97	1,300	260	6	39	27	95	--	--		
ADR-1	05-21-97	13.95	10.90	ND	3.05	05-21-97	2,100	300	18	37	200	79	--	--		
ADR-1	08-08-97	13.95	11.12	ND	2.83	08-08-97	3,900	620	49	110	470	<200	--	--		
ADR-1	11-18-97	13.95	3.47	ND	10.48	11-18-97	18,000	900	140	360	2,700	<60	--	--		
ADR-1	02-20-98	13.95	Not surveyed: well inaccessible													

Table 1
Historical Groundwater Elevation and Analytical Data
Petroleum Hydrocarbons and Their Constituents
1995 - Present***

ARCO Service Station 2169
889 West Grand Avenue, Oakland, California

Well Number	Date Gauged	TOC Elevation (ft-MSL)	Depth to Water (feet)	FP Thickness (feet)	Groundwater Elevation (ft-MSL)	Date Sampled	TPH Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE 8021B* (µg/L)	MTBE 8260 (µg/L)	TPH Diesel (µg/L)	Dissolved Oxygen (mg/L)	Purged/ Not Purged (P/NP)
ADR-1	05-11-98	13.95	Not surveyed: well inaccessible													
ADR-1	07-30-98	13.95	Not surveyed: well inaccessible													
ADR-1	10-08-98	13.95	Not surveyed: well inaccessible													
ADR-1	02-18-99	13.95	7.80	ND	6.15	02-18-99	200	4.4	<0.5	1.3	1.3	43	--	--		
ADR-1	05-26-99	13.95	10.40	ND	3.55	05-26-99	160	10	<0.5	1.7	1.8	43	--	--		
ADR-1	08-23-99	13.95	10.70	ND	3.25	08-23-99	7,400	310	16	210	970	18	--	--	0.37	NP
ADR-1	10-27-99	13.95	10.82	ND	3.13	10-27-99	5,000	210	6.3	180	490	5	--	--	0.73	NP
ADR-1	01-31-00	13.95	9.21	ND	4.74	01-31-00	290	3.6	<0.5	1.1	<1	26	--	--	1.0	NP
ADR-2	03-24-95	14.64	8.41	>3.00	NR[1]	03-24-95	Not sampled: well contained floating product									
ADR-2	06-05-95	14.64	11.45	>3.00	NR[1]	06-05-95	Not sampled: well contained floating product									
ADR-2	08-17-95	14.64	12.10	0.03	** 2.56	08-17-95	Not sampled: well contained floating product									
ADR-2	12-04-95	14.64	10.93	0.03	** 3.73	12-13-95	Not sampled: well contained floating product									
ADR-2	03-01-96	14.64	8.74	ND	5.90	03-13-96	29,000	1,100	1,200	710	3,800	<500	--	--		
ADR-2	05-29-96	14.64	10.43	ND	4.21	05-29-96	33,000	510	500	470	2,300	120	--	--		
ADR-2	08-29-96	14.64	11.64	ND	3.00	08-29-96	8,000	230	180	150	730	53	--	--		
ADR-2	11-21-96	14.64	11.23	ND	3.41	11-21-96	15,000	630	440	390	2,100	75	--	--		
ADR-2	03-26-97	14.64	11.13	ND	3.51	03-26-97	6,100	320	23	180	400	32	--	--		
ADR-2	05-21-97	14.64	11.64	ND	3.00	05-21-97	6,100	380	22	210	320	<30	--	--		
ADR-2	08-08-97	14.64	11.85	ND	2.79	08-08-97	8,400	380	35	230	910	<30	--	--		
ADR-2	11-18-97	14.64	3.33	ND	11.31	11-18-97	11,000	230	29	300	1,200	<60	--	--		
ADR-2	02-20-98	14.64	7.67	ND	6.97	02-20-98	4,700	320	30	130	360	20	--	--		
ADR-2	05-11-98	14.64	10.47	ND	4.17	05-11-98	Not sampled									
ADR-2	07-30-98	14.64	Not surveyed: well inaccessible													
ADR-2	10-08-98	14.64	11.67	ND	2.97	10-08-98	Not sampled									
ADR-2	02-18-99	14.64	Not surveyed: well inaccessible													
ADR-2	05-26-99	14.64	11.02	ND	3.62	05-26-99	5,900	670	5	340	104	16	--	--		

Table 1
Historical Groundwater Elevation and Analytical Data
Petroleum Hydrocarbons and Their Constituents
1995 - Present***

ARCO Service Station 2169
889 West Grand Avenue, Oakland, California

Well Number	Date Gauged	TOC Elevation (ft-MSL)	Depth to Water (feet)	FP Thickness (feet)	Groundwater Elevation (ft-MSL)	Date Sampled	TPH Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE 8021B* (µg/L)	MTBE 8260 (µg/L)	TPH Diesel (µg/L)	Dissolved Oxygen (mg/L)	Purged/ Not Purged (P/NP)
ADR-2	08-23-99	14.64	9.82	ND	4.82	08-23-99	9,100	570	12	410	1,000	28	--	--	0.50	NP
ADR-2	10-27-99	14.64	9.85	Sheen	4.79	10-27-99	Not sampled: sheen present								0.65	NP
ADR-2	01-31-00	14.64	10.15	ND	4.49	01-31-00	7,700	280	3.4	370	390	23	--	--	2.0	NP

TOC: top of casing
ft-MSL: elevation in feet, relative to mean sea level
TPH: total petroleum hydrocarbons, California DHS LUFT Method
BTEX: benzene, toluene, ethylbenzene, total xylenes by EPA method 8021B. (EPA method 8020 prior to 10/27/99).
MTBE: Methyl tert-butyl ether
µg/L: micrograms per liter
mg/L: milligrams per liter
ND: none detected
NR: not reported, data not available or not measurable
-- : not analyzed or not applicable
<: denotes concentration not present at or above laboratory detection limit stated to the right.
[1]: well contained more than 3 feet of floating product; exact product thickness and groundwater elevation could not be measured
*: EPA method 8020 prior to 10/27/99
**: [corrected elevation (Z')] = Z + (h * 0.73) where: Z = measured elevation, h = floating product thickness, 0.73 = density ratio of oil to water
***: For previous historical groundwater elevation data please refer to *Fourth Quarter 1995 Groundwater Monitoring Program Results and Remediation System Performance Evaluation Report, ARCO Service Station 2169, 889 West Grand Avenue, Oakland, California, (EMCON, March 4, 1996).*

Table 2
Groundwater Flow Direction and Gradient

ARCO Service Station 2169
889 West Grand Avenue, Oakland, California

Date Measured	Average Flow Direction	Average Hydraulic Gradient
03-24-95	Northwest	0.009
06-05-95	Northwest	0.002
08-17-95	West	0.001
12-04-95	North-Northwest	0.002
03-01-96	Northwest	0.003
05-29-96	Northwest	0.002
08-29-96	West	0.002
11-21-96	West-Northwest	0.002
03-26-97	Northwest	0.002
05-21-97	North-Northwest	0.002
08-08-97	North-Northwest	0.002
11-18-97	North-Northwest	0.003
02-20-98	North	0.013
05-11-98	North	0.03
07-30-98	North	0.002
10-08-98	North-Northwest	0.002
02-18-99	Northwest	0.008
05-26-99	North-Northwest	0.003
08-23-99	Variable	Variable
10-27-99	Variable	Variable
01-31-00	**West-Northwest**	**0.006**

Table 3
Soil Vapor Extraction System
Operational Uptime Information (1998 - present)
Arco Service Station No. 2169
889 West Grand Avenue, Oakland, California

Date	Meter (hrs.)	Operation (hrs.)	Period Operation				Cumulative Operation			
			Total (days)	Uptime (days)	Downtime (days)	Uptime (%)	Total (days)	Uptime (days)	Downtime (days)	Uptime (%)
04/01/98[1]	7365.55	6909.60					1399	287.9	1111.1	21%
04/15/98	7365.55	6909.60								
06/22/98	7365.78	6909.83	68	0.0	68.0	0%	1467	287.9	1179.1	20%
08/20/98	7365.78	6909.83	59	0.0	59.0	0%	1526	287.9	1238.1	19%
10/07/98	7366.69	6910.74	48	0.0	48.0	0%	1574	287.9	1286.1	18%
10/08/98	7392.07	6936.12	1	1	0	100%	1575	289.0	1286.0	18%
10/30/98	7752.82	7296.87	22	15.0	7.0	68%	1597	304.0	1293.0	19%
11/18/98	7755.18	7299.23	19	0.1	18.9	1%	1616	304.1	1311.9	19%
11/25/98	7869.69	7413.74	7	4.8	2.2	68%	1623	308.9	1314.1	19%
12/08/98	8182.76	7726.81	13	13.0	0.0	100%	1636	322.0	1314.0	20%
02/05/99	8183.26	7727.31	59	0.0	59.0	0%	1695	322.0	1373.0	19%
03/19/99	8183.56	7727.61	42	0.0	42.0	0%	1737	322.0	1415.0	19%
04/27/99	8183.56	7727.61	39	0.0	39.0	0%	1776	322.0	1454.0	18%
06/21/99	8183.88	7727.93	55	0.0	55.0	0%	1831	322.0	1509.0	18%
06/24/99	8260.48	7804.53	3	3	0	106%	1834	325.2	1508.8	18%
08/19/99	8260.48	7804.53	56	0	56	0%	1890	325.2	1564.8	17%
08/25/99	8360.47	7904.52	6	4	2	69%	1896	329.4	1566.6	17%
09/08/99	8695.25	8239.3	14	14	0	100%	1910	343.3	1566.7	18%
09/09/99	8706.53	8250.58	1	0	1	47%	1911	343.8	1567.2	18%
09/21/99	8994.92	8538.97	12	12	0	100%	1923	355.8	1567.2	19%
10/05/99	9331.19	8875.24	14	14	0	100%	1937	369.8	1567.2	19%
10/19/99	9667.61	9211.66	14	14	0	100%	1951	383.8	1567.2	20%
11/03/99	10026.92	9570.97	15	15	0	100%	1966	398.8	1567.2	20%
11/17/99	10364.01	9908.06	14	14	0	100%	1980	412.8	1567.2	21%
12/01/99	10699.82	10243.87	14	14	0	100%	1994	426.8	1567.2	21%
12/16/99	11059.81	10603.86	15	15	0	100%	2009	441.8	1567.2	22%
01/05/00	11060.05	10604.1	20	0	20	0%	2029	441.8	1587.2	22%

[1] Operational data through 04/01/98 from First Quarter 1998 Quarterly Monitoring Report

Table 4
Soil Vapor Extraction System
Flow Rates and Analytical Results of Air Samples (1998 - present)

Arco Service Station No. 2169
889 West Grand Avenue, Oakland, California

Date	Sample Location	Vacuum (in. H20)	Velocity (fpm)	Flowrate[1] (scfm)	Analyses (ppmv)					
					TPHG	Benzene	Toulene	Ethylbenzene	Xylene	MTBE
10/08/98	Influent	21.2	750	35	190	<0.1	<0.1	<0.1	0.2	
	Effluent[2]		3600	274.2	<5	<0.1	<0.1	<0.1	<0.2	
11/18/98	Influent	21	900	42	83	<0.1	0.4	0.4	0.9	
	Effluent		3300	253.4	<5	<0.1	<0.1	<0.1	<0.2	
12/08/98	Influent	25	1100	51	12	<0.1	0.3	<0.1	0.2	<0.8
	Effluent		3100	238.0	6	<0.1	0.3	<0.1	0.2	<0.8
06/21/99	Influent	40	1000	44	20	0.1	0.1	<0.1	<0.2	<0.8
	Effluent		2500	192.0	<5	<0.1	<0.1	<0.1	<0.2	<0.8
08/19/99	Influent	39.2	800	35	180	6.9	0.9	0.15	0.32	5.5
	Effluent		2800	215.0	<2.4	0.05	<0.013	<0.012	0.03	0.13
09/08/99	Influent	50.2	1500	65	71	0.2	0.2	0.2	0.9	1.1
	Effluent		2300	176.6	<5	<0.1	<0.1	<0.1	<0.2	<0.8
10/05/99	Influent	59	1700	71	42	0.3	<0.1	<0.1	0.3	<0.8
	Effluent		2300	176.6	<5	<0.1	0.1	<0.1	<0.2	<0.8
11/03/99	Influent	50	1700	73	240	<0.1	0.2	0.2	3.9	1.3
	Effluent		2200	168.9	<5	<0.1	<0.1	<0.1	<0.2	<0.8
12/01/99	Influent	50.1	1000	43	180	0.2	0.1	<0.1	2.3	<0.8
	Effluent		1250	96.0	<5	<0.1	0.2	<0.1	<0.2	<0.8

[1] Influent Flow Rate, cfm = (Velocity, fpm)(Influent Pipe Area, sq. ft.)(406.8 in.H20 - Vacuum, in.H20) / (406.8 in.H20)
where Influent Pipe Diameter = 3"
Effluent Flow Rate, cfm = (Velocity, fpm)(Effluent Pipe Area, sq.ft.)[(460° R + 77° F)/(460° R + Vapor Temp F)]
where Effluent (after blower) Pipe Diameter = 4"

[2] Dilution air only

Table 5
Soil Vapor Extraction System
Extraction Rates, Emission Rates, Destruction Efficiency, and Mass Removed
(1998 - present)

Arco Service Station No. 2169
889 West Grand Avenue, Oakland, California

Date End	Extraction Rate from Wellfield[1]		Emission Rate to Atmosphere[2]		Destruction Efficiency[3]		Period Removal[4]		Cumulative Removal	
	TPHG (lbs/day)	Benzene (lbs/day)	TPHG (lbs/day)	Benzene (lbs/day)	TPHG (%)	Benzene (%)	TPHG (lbs)	Benzene (lbs)	TPHG (lbs)	Benzene (lbs)
04/01/98[5]									8582.1	0
10/08/98	2.4351	0.0	<0.5037	<0.0079	Waived		39.5329	0	8621.6	0
11/18/98	1.2772	0.0	<0.4655	<0.0073	Waived		22.7538	0	8644.4	0
12/08/98	0.2233	0.0	0.5248	<0.0068	Waived		0.0104	0	8644.4	0
06/21/99	0.3251	0.0013	<0.3527	<0.0055	Waived		1.0376	0.0041	8645.4	0.0041
08/19/99	2.3459	0.0702	<0.1896	<0.0031	Waived		42.4964	1.2723	8687.9	1.2763
09/08/99	1.6830	0.0037	<0.3245	<0.0051	Waived		21.0150	0.0462	8708.9	1.3226
10/05/99	1.1005	0.0061	<0.3245	<0.0051	Waived		30.8459	0.1721	8739.8	1.4946
11/03/99	6.4514	0.0021	<0.3104	<0.0048	Waived		187.1967	0.0609	8927.0	1.5555
12/01/99	2.8454	0.0025	<0.1763	<0.0028	Waived		82.5210	0.0716	9009.5	1.6272

[1] Extraction Rate, lbs/day = (Influent Flow, cfm)(Influent conc., ppmv)(g/mole)(60 min/hr)(24 hr/day)(28.3 L/cf) / (10^6)(24.45 moles/L)(453.6 g/lb)
where TPHG = 100 g/mole and Benzene = 78.1 g/mole; Influent conc. = 0, if reported as non-detect

[2] Emission Rate, lbs/day = (Effluent Flow, cfm)(Effluent conc., ppmv)(g/mole)(60 min/hr)(24 hr/day)(28.3 L/cf) / (10^6)(24.45 moles/L)(453.6 g/lb)
where TPHG = 100 g/mole and Benzene = 78.1 g/mole; Effluent conc. = Method Reporting Limit, if reported as non-detect

[3] Destruction Efficiency, % = (Extraction Rate - Emission Rate)(100) / (Extraction Rate); "Waived"= if TPHG emissions <1.0 lbs/day and Benzene emissions <0.02 lbs/day

[4] Period Removal, lbs = (Extraction Rate)(Uptime)

[5] Operational data through 4/1/98 from First Quarter 1998 Quarterly Monitoring Report

APPPENDIX C

Certified Analytical Reports
And
Chain-of-Custody Documentation

Columbia Analytical Services INC.
An Employee-Owned Company

AUG 10 2000

August 3, 2000

Service Request No.: S2002055

Mr. Jay Johnson
Delta Environmental Consultants
3164 Gold Camp Dr. Suite 200
Rancho Cordova, CA 95670

RECEIVED
AUG 11 2000
BY

RE: TO#25998.00/RAT8/2169 OAKLAND

Dear Mr. Johnson:

Enclosed are the results of the sample(s) submitted to our laboratory on July 21, 2000. All analyses were performed in accordance with our laboratory's quality assurance program. Results are intended to be considered in their entirety and apply to the sample(s) analyzed. Columbia Analytical Services is not responsible for use of less than the complete report. Signature of this CAS Analytical Report confirms that pages 2 through 17, following, have been thoroughly reviewed and approved for release.

Columbia Analytical Services is certified for environmental analyses by the California Department of Health Services (certificate number: 2352, expiration: January 31, 2001).

If you have any questions, please call me at (408) 748-9700.

Respectfully submitted,

Columbia Analytical Services, Inc.

Greg Jordan
Laboratory Director

COLUMBIA ANALYTICAL SERVICES, Inc.
Acronyms

A2LA	American Association for Laboratory Accreditation
ASTM	American Society for Testing and Materials
BOD	Biochemical Oxygen Demand
BTEX	Benzene, Toluene, Ethylbenzene, Xylenes
CAM	California Assessment Metals
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
COD	Chemical Oxygen Demand
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DLCS	Duplicate Laboratory Control Sample
DMS	Duplicate Matrix Spike
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
IC	Ion Chromatography
ICB	Initial Calibration Blank sample
ICP	Inductively Coupled Plasma atomic emission spectrometry
ICV	Initial Calibration Verification sample
J	Estimated concentration. The value is less than the MRL, but greater than or equal to the MDL. If the value is equal to the MRL, the result is actually <MRL before rounding.
LCS	*Laboratory Control Sample*
LUFT	Leaking Underground Fuel Tank
M	Modified
MBAS	Methylene Blue Active Substances
MCL	Maximum Contaminant Level. The highest permissible concentration of a substance allowed in drinking water as established by the U. S. EPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
MS	Matrix Spike
MTBE	Methyl tert-Butyl Ether
NA	Not Applicable
NAN	Not Analyzed
NC	Not Calculated
NCASI	National Council of the paper industry for Air and Stream Improvement
ND	Not Detected at or above the method reporting/detection limit (MRL/MDL)
NIOSH	National Institute for Occupational Safety and Health
NTU	Nephelometric Turbidity Units
ppb	Parts Per Billion
ppm	Parts Per Million
PQL	Practical Quantitation Limit
QA/QC	Quality Assurance/Quality Control
RCRA	Resource Conservation and Recovery Act
RPD	Relative Percent Difference
SIM	Selected Ion Monitoring
SM	Standard Methods for the Examination of Water and Wastewater, 18th Ed., 1992
STLC	Solubility Threshold Limit Concentration
SW	*Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*, SW-846, 3rd Ed., 1986 and as amended by Updates I, II, IIA, and IIB.
TCLP	Toxicity Characteristic Leaching Procedure
TDS	Total Dissolved Solids
TPH	Total Petroleum Hydrocarbons
tr	Trace level. The concentration of an analyte that is less than the PQL but greater than or equal to the MDL. If the value is equal to the PQL, the result is actually <PQL before rounding.
TRPH	Total Recoverable Petroleum Hydrocarbons
TSS	Total Suspended Solids
TTLC	Total Threshold Limit Concentration
VOA	Volatile Organic Analyte(s)

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	ARCO Products Company	**Service Request:**	S2002055
Project:	TO#25998.00/RAT8/2169 OAKLAND	**Date Collected:**	7/20/00
Sample Matrix:	Water	**Date Received:**	7/21/00

BTEX, MTBE and TPH as Gasoline

Sample Name:	AR-1-12	Units:	ug/L (ppb)
Lab Code:	S2002055-001	Basis:	NA
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	1	NA	7/26/00	ND	
Benzene	EPA 5030	8021B	0.5	1	NA	7/26/00	ND	
Toluene	EPA 5030	8021B	0.5	1	NA	7/26/00	ND	
Ethylbenzene	EPA 5030	8021B	0.5	1	NA	7/26/00	ND	
Xylenes, Total	EPA 5030	8021B	1	1	NA	7/26/00	ND	
Methyl *tert*-Butyl Ether	EPA 5030	8021B	3	1	NA	7/26/00	6	

Approved By: _____ Date: 8/4/00

1S22/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	ARCO Products Company	**Service Request:**	S2002055
Project:	TO#25998.00/RAT8/2169 OAKLAND	**Date Collected:**	7/20/00
Sample Matrix:	Water	**Date Received:**	7/21/00

BTEX, MTBE and TPH as Gasoline

Sample Name:	AR-2-12	Units:	ug/L (ppb)
Lab Code:	S2002055-002	Basis:	NA
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	1	NA	7/25/00	ND	
Benzene	EPA 5030	8021B	0.5	1	NA	7/25/00	ND	
Toluene	EPA 5030	8021B	0.5	1	NA	7/25/00	ND	
Ethylbenzene	EPA 5030	8021B	0.5	1	NA	7/25/00	ND	
Xylenes, Total	EPA 5030	8021B	1	1	NA	7/25/00	ND	
Methyl *tert*-Butyl Ether	EPA 5030	8021B	3	1	NA	7/25/00	ND	

Approved By: _____ Date: 8/4/00

IS22/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	ARCO Products Company	**Service Request:**	S2002055
Project:	TO#25998.00/RAT8/2169 OAKLAND	**Date Collected:**	7/20/00
Sample Matrix:	Water	**Date Received:**	7/21/00

BTEX, MTBE and TPH as Gasoline

Sample Name:	ADR-1-10	Units:	ug/L (ppb)
Lab Code:	S2002055-003	Basis:	NA
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	1	NA	7/27/00	180	
Benzene	EPA 5030	8021B	0.5	1	NA	7/27/00	29	
Toluene	EPA 5030	8021B	0.5	1	NA	7/27/00	ND	
Ethylbenzene	EPA 5030	8021B	0.5	1	NA	7/27/00	0.8	
Xylenes, Total	EPA 5030	8021B	1	1	NA	7/27/00	ND	
Methyl *tert*-Butyl Ether	EPA 5030	8021B	3	1	NA	7/27/00	22	

Approved By: _____ Date: 8/4/00

IS22/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	ARCO Products Company	**Service Request:**	S2002055
Project:	TO#25998.00/RAT8/2169 OAKLAND	**Date Collected:**	7/20/00
Sample Matrix:	Water	**Date Received:**	7/21/00

BTEX, MTBE and TPH as Gasoline

Sample Name:	ADR-2-11	Units:	ug/L (ppb)
Lab Code:	S2002055-004	Basis:	NA
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	2	NA	7/27/00	12000	
Benzene	EPA 5030	8021B	0.5	2	NA	7/27/00	410	
Toluene	EPA 5030	8021B	0.5	2	NA	7/27/00	2.5	
Ethylbenzene	EPA 5030	8021B	0.5	2	NA	7/27/00	540	
Xylenes, Total	EPA 5030	8021B	1	2	NA	7/27/00	720	
Methyl *tert*-Butyl Ether	EPA 5030	8021B	3	2	NA	7/27/00	23	

Approved By: _____ Date: 8/4/00

1S22/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	ARCO Products Company	**Service Request:**	S2002055
Project:	TO#25998.00/RAT8/2169 OAKLAND	**Date Collected:**	7/20/00
Sample Matrix:	Water	**Date Received:**	7/21/00

BTEX, MTBE and TPH as Gasoline

Sample Name:	A-1-11	Units:	ug/L (ppb)
Lab Code:	S2002055-005	Basis:	NA
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	1	NA	7/26/00	3900	
Benzene	EPA 5030	8021B	0.5	20	NA	7/27/00	1100	
Toluene	EPA 5030	8021B	0.5	1	NA	7/26/00	28	
Ethylbenzene	EPA 5030	8021B	0.5	1	NA	7/26/00	12	
Xylenes, Total	EPA 5030	8021B	1	1	NA	7/26/00	46	
Methyl *tert*-Butyl Ether	EPA 5030	8021B	3	1	NA	7/26/00	25	

Approved By: _____ Date: 8/4/00

IS22/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	ARCO Products Company	**Service Request:**	S2002055
Project:	TO#25998.00/RAT8/2169 OAKLAND	**Date Collected:**	7/20/00
Sample Matrix:	Water	**Date Received:**	7/21/00

BTEX, MTBE and TPH as Gasoline

Sample Name:	A-2-11	Units:	ug/L (ppb)
Lab Code:	S2002055-006	Basis:	NA
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	1	NA	7/26/00	ND	
Benzene	EPA 5030	8021B	0.5	1	NA	7/26/00	ND	
Toluene	EPA 5030	8021B	0.5	1	NA	7/26/00	ND	
Ethylbenzene	EPA 5030	8021B	0.5	1	NA	7/26/00	ND	
Xylenes, Total	EPA 5030	8021B	1	1	NA	7/26/00	ND	
Methyl tert-Butyl Ether	EPA 5030	8021B	3	1	NA	7/26/00	ND	

Approved By: Greg Jouth Date: 8/4/00

IS22/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	ARCO Products Company	**Service Request:**	S2002055
Project:	TO#25998.00/RAT8/2169 OAKLAND	**Date Collected:**	7/20/00
Sample Matrix:	Water	**Date Received:**	7/21/00

BTEX, MTBE and TPH as Gasoline

Sample Name:	A-5-10	Units:	ug/L (ppb)
Lab Code:	S2002055-007	Basis:	NA
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	1	NA	7/27/00	730	
Benzene	EPA 5030	8021B	0.5	1	NA	7/27/00	140	
Toluene	EPA 5030	8021B	0.5	1	NA	7/27/00	11	
Ethylbenzene	EPA 5030	8021B	0.5	1	NA	7/27/00	ND	
Xylenes, Total	EPA 5030	8021B	1	1	NA	7/27/00	8.9	
Methyl *tert*-Butyl Ether	EPA 5030	8021B	3	1	NA	7/27/00	3	

Approved By: _____ Date: 8/4/00

IS22/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	ARCO Products Company	**Service Request:**	S2002055
Project:	TO#25998.00/RAT8/2169 OAKLAND	**Date Collected:**	7/20/00
Sample Matrix:	Water	**Date Received:**	7/21/00

BTEX, MTBE and TPH as Gasoline

Sample Name:	A-6-10	Units:	ug/L (ppb)
Lab Code:	S2002055-008	Basis:	NA
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	1	NA	7/26/00	170	
Benzene	EPA 5030	8021B	0.5	1	NA	7/26/00	ND	
Toluene	EPA 5030	8021B	0.5	1	NA	7/26/00	ND	
Ethylbenzene	EPA 5030	8021B	0.5	1	NA	7/26/00	0.6	
Xylenes, Total	EPA 5030	8021B	1	1	NA	7/26/00	2.0	
Methyl *tert*-Butyl Ether	EPA 5030	8021B	3	1	NA	7/26/00	6	

Approved By: Greg Jouh Date: 8/4/00

IS22/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	ARCO Products Company	**Service Request:**	S2002055
Project:	TO#25998.00/RAT8/2169 OAKLAND	**Date Collected:**	7/19/00
Sample Matrix:	Water	**Date Received:**	7/21/00

BTEX, MTBE and TPH as Gasoline

Sample Name:	TB	Units:	ug/L (ppb)
Lab Code:	S2002055-009	Basis:	NA
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	1	NA	7/25/00	ND	
Benzene	EPA 5030	8021B	0.5	1	NA	7/25/00	ND	
Toluene	EPA 5030	8021B	0.5	1	NA	7/25/00	ND	
Ethylbenzene	EPA 5030	8021B	0.5	1	NA	7/25/00	ND	
Xylenes, Total	EPA 5030	8021B	1	1	NA	7/25/00	ND	
Methyl *tert*-Butyl Ether	EPA 5030	8021B	3	1	NA	7/25/00	ND	

Approved By: _____ Date: 8/4/00

1S22/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	ARCO Products Company	**Service Request:**	S2002055
Project:	TO#25998.00/RAT8/2169 OAKLAND	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

BTEX, MTBE and TPH as Gasoline

Sample Name:	Method Blank	Units:	ug/L (ppb)
Lab Code:	S200725-WB1	Basis:	NA
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	1	NA	7/25/00	ND	
Benzene	EPA 5030	8021B	0.5	1	NA	7/25/00	ND	
Toluene	EPA 5030	8021B	0.5	1	NA	7/25/00	ND	
Ethylbenzene	EPA 5030	8021B	0.5	1	NA	7/25/00	ND	
Xylenes, Total	EPA 5030	8021B	1	1	NA	7/25/00	ND	
Methyl *tert*-Butyl Ether	EPA 5030	8021B	3	1	NA	7/25/00	ND	

Approved By: _____ Date: 8/4/00

1S22/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	ARCO Products Company	**Service Request:**	S2002055
Project:	TO#25998.00/RAT8/2169 OAKLAND	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

BTEX, MTBE and TPH as Gasoline

Sample Name:	Method Blank	Units:	ug/L (ppb)
Lab Code:	S200726-WB1	Basis:	NA
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	1	NA	7/26/00	ND	
Benzene	EPA 5030	8021B	0.5	1	NA	7/26/00	ND	
Toluene	EPA 5030	8021B	0.5	1	NA	7/26/00	ND	
Ethylbenzene	EPA 5030	8021B	0.5	1	NA	7/26/00	ND	
Xylenes, Total	EPA 5030	8021B	1	1	NA	7/26/00	ND	
Methyl *tert*-Butyl Ether	EPA 5030	8021B	3	1	NA	7/26/00	ND	

Approved By: _____ Date: 8/4/00

tS22/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	ARCO Products Company	**Service Request:**	S2002055
Project:	TO#25998.00/RAT8/2169 OAKLAND	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

BTEX, MTBE and TPH as Gasoline

Sample Name:	Method Blank	Units:	ug/L (ppb)
Lab Code:	S200727-WB2	Basis:	NA
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	1	NA	7/27/00	ND	
Benzene	EPA 5030	8021B	0.5	1	NA	7/27/00	ND	
Toluene	EPA 5030	8021B	0.5	1	NA	7/27/00	ND	
Ethylbenzene	EPA 5030	8021B	0.5	1	NA	7/27/00	ND	
Xylenes, Total	EPA 5030	8021B	1	1	NA	7/27/00	ND	
Methyl *tert*-Butyl Ether	EPA 5030	8021B	3	1	NA	7/27/00	ND	

Approved By: _____ Date: 8/4/00

1S22/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	ARCO Products Company	**Service Request:**	S2002055
Project:	TO#25998.00/RAT8/2169 OAKLAND	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	NA
		Date Analyzed:	7/25/00

Matrix Spike/Duplicate Matrix Spike Summary
BTEX and TPH as Gasoline

Sample Name:	AR-2-12	Units:	ug/L (ppb)
Lab Code:	S2002055-002MS, S2002055-002DMS	Basis:	NA
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	Spike Level MS	Spike Level DMS	Sample Result	Spike Result MS	Spike Result DMS	Percent Recovery MS	Percent Recovery DMS	CAS Acceptance Limits	Relative Percent Difference
Benzene	EPA 5030	8021B	0.5	25	25	ND	24.6	24.5	98	98	75-135	<1
Toluene	EPA 5030	8021B	0.5	25	25	ND	25.3	25.5	101	102	73-136	<1
Ethylbenzene	EPA 5030	8021B	0.5	25	25	ND	23.8	23.8	95	95	69-142	<1
Gasoline	EPA 5030	CA/LUFT	50	500	500	ND	482	491	96	98	75-135	2

Approved By: _____ Date: 8/4/00

DMS/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	ARCO Products Company	**Service Request:**	S2002055
Project:	TO#25998.00/RAT8/2169 OAKLAND	**Date Collected:**	NA
LCS Matrix:	Water	**Date Received:**	NA
		Date Extracted:	NA
		Date Analyzed:	7/25/00

Laboratory Control Sample Summary
BTEX and TPH as Gasoline

Sample Name:	Lab Control Sample	Units:	ug/L (ppb)
Lab Code:	S200725-LCS	Basis:	NA
Test Notes:			

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Benzene	EPA 5030	8021B	25	24.0	96	75-135	
Toluene	EPA 5030	8021B	25	24.5	98	73-136	
Ethylbenzene	EPA 5030	8021B	25	23.3	93	69-142	
Gasoline	EPA 5030	CA/LUFT	500	497	99	75-135	

Approved By: _____ Date: 8/4/00

LCS/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: TO#25998.00/RAT8/2169 OAKLAND
Sample Matrix: Water

Service Request: S2002055
Date Collected: NA
Date Received: NA
Date Extracted: NA
Date Analyzed: NA

Surrogate Recovery Summary
BTEX, MTBE and TPH as Gasoline

Prep Method: EPA 5030
Analysis Method: 8021B CA/LUFT

Units: PERCENT
Basis: NA

Sample Name	Lab Code	Test Notes	Percent Recovery a,a,a-Trifluorotoluene	Percent Recovery a,a,a-Trifluorotoluene
AR-1-12	S2002055-001		103	105
AR-2-12	S2002055-002		103	107
ADR-1-10	S2002055-003		105	109
ADR-2-11	S2002055-004		95	105
A-1-11	S2002055-005		99	116
A-2-11	S2002055-006		103	106
A-5-10	S2002055-007		104	106
A-6-10	S2002055-008		104	101
TB	S2002055-009		103	105
Method Blank	S200725-WB1		104	99
Method Blank	S200726-WB1		103	103
Method Blank	S200727-WB2		101	109
AR-2-12	S2002055-002MS		102	120
AR-2-12	S2002055-002DMS		102	115
Lab Control Sample	S200725-LCS		101	119

CAS Acceptance Limits: 70-130 70-130

Approved By: _____ Date: 8/5/00

SUR2/020397p

ARCO Products Company
Division of AtlanticRichfieldCompany

Task Order No. 25 99800

Chain of Custody

ARCO Facility no. 2169	City (Facility) OAKLAND	Project manager (Consultant) JAY JOHNSON	Laboratory name Columbia
ARCO engineer PAUL SUPPLE	Telephone no. (ARCO)	Telephone no. (Consultant)	Fax no. (Consultant)
Consultant name STRATUS	Address (Consultant)		Contract number

Method of shipment: Courier

Sample I.D.	Lab no.	Container no.	Matrix: Soil	Matrix: Water	Matrix: Other	Preservation: Ice	Preservation: Acid	Sampling date	Sampling time	BTEX 602/EPA 8020	BTEX/TPH > MTBE EPA M602/8020/8015	TPH Modified 8015 Gas ☐ Diesel ☐	Oil and Grease 413.1 ☐ 413.2 ☐	TPH EPA 418.1/SM503E	EPA 601/8010	EPA 624/8240	EPA 625/8270	TCLP Metals ☐ VOA ☐ Semi ☐	CAM Metals EPA 6010/7000 TTLC ☐ STLC ☐	Lead Org./DHS ☐ Lead EPA 7420/7421 ☐	5 DAY 8-7-00	5 DAY 8/4/00 Cancelled
AR-1-12	1	2		X		X	X	7-20	1100		X										X	
AR-2-12	2								1115													
ADR-1-10	3								1123													
ADR-2-11	4								1130													
A-1-11	5								1140													
A-2-11	6								1155													
A-5-10	7								1209													
A-6-10	8								1228													
TB	9							7-19-00	1000													

Due: 8/4/00

Special detection Limit/reporting

Special QA/QC

Remarks

Lab number: S2002055

Turnaround time

- Priority Rush 1 Business Day ☐
- Rush 2 Business Days ☐
- Expedited 5 Business Days ☐
- Standard 10 Business Days ☒

Condition of sample:		Temperature received:	
Relinquished by sampler: Kyra Brooks	Date 7-21-00 Time 1200	Received by: Derek Zeller	7-21-00 12:00
Relinquished by	Date Time	Received by	
Relinquished by	Date Time	Received by laboratory	Date Time

Distribution: White copy — Laboratory; Canary copy — ARCO Environmental Engineering; Pink copy — Consultant

APC-3292 (2-91)

R11/02-10

APPENDIX D

Field Data Sheets

COPY

DOULOS ENVIRONMENTAL COMPANY
GROUNDWATER/LIQUID LEVEL DATA
(measurements in feet)

Project Address: Arco # 2169
889 West Grande Ave
Oakland CA.

Date: 7-20-00

Project No.:

Recorded by:

Well No	Time	Well Elev. TOC	Depth to Gr. Water	Measured Total Depth	Gr. Water Elevation	Depth to Product	Product Thickness	Comments
AR-1	940		12.06	27.67				D.O. - 1.30
AR-2	945		12.07	28.23				D.O. - 1.48
ADR-1	950		10.85	20.80				DO - 1.62
ADR-2	954		11.60	25.01				D.O - 1.55
A-1	958		11.01					D.O - 1.26
A-2	1004		11.52					D.O - 1.35
A-3	1011		12.21					
A-4	1018		11.16					
A-5	1028		10.31					DO - 0.77
A-6	1036		10.91					D.O - 10.29

Notes:

DOULOS ENVIRONMENTAL COMPANY — SAMPLING INFORMATION SHEET

Client: Arco # 2169 — Sampling Date: 7-20-00

Site: 889 West Grand Ave Oakland CA — Project No.: _____

Well Designation: AR-1

Is setup of traffic control devices required? ~~NO~~ YES time: _____ hours
Is there standing water in well box? ~~NO~~ YES Above TOC Below TOC
Is top of casing cut level? NO ~~YES~~ If no, see remarks
Is well cap sealed and locked? NO ~~YES~~ If no, see remarks
Height of well casing riser (in inches): 18
Well cover type: 8" UV_____ 12" UV_____ 12" EMCO_____ 8" BK_____
12" BK_____ 12" DWP_____ 12" CNI_____ 36" CNI_____ Other 36 SQUARE
General condition of wellhead assembly: Excellent ~~Good~~ Fair Poor

Purging Equipment: N/A 2" disposable bailer _____ Submersible pump
_____ 2" PVC bailer _____ Dedicated bailer
_____ 4" PVC bailer _____ Centrifugal pump

Sampled with: Disposable bailer: X Teflon bailer: _____

Well Diameter: 2"_____ 4"_____ 6" X 8"_____

Purge Vol. Multiplier: 0.16 0.65 1.47 2.61 gal/ft.

Initial Measurement
Time: 940
Depth of well: 27.67
Depth to water: 12.06

Recharge Measurement
Time: N/A
Depth to water: _____

Calculated purge: N/A
Actual purge: _____

Start purge: N/A Sampling time: 11:00

Time	Temp.	E.C.	pH	Turbidity	Volume
		3.62	4.67		

Sample appearance: clear Lock: No

Equipment replaced: (Check all that apply) Note condition of replaced item
2" Locking Cap:_____ Lock #3753:_____ 7/32 Allenhead:_____
4" Locking Cap:_____ Lock-Dolphin:_____ 9/16 Bolt:_____
6" Locking Cap:_____ Pinned Allenhead (DWP):_____

Remarks: _____

Signature: _____

DOULOS ENVIRONMENTAL COMPANY — SAMPLING INFORMATION SHEET

Client: Arco # 2169 — Sampling Date: 7-20-00

Site: 889 West Grand Ave Oakland CA — Project No.: _____

Well Designation: AR-2

Is setup of traffic control devices required? ~~NO~~ YES time: _____ hours
Is there standing water in well box? ~~NO~~ YES Above TOC Below TOC
Is top of casing cut level? NO ~~YES~~ If no, see remarks
Is well cap sealed and locked? NO ~~YES~~ If no, see remarks
Height of well casing riser (in inches): 30
Well cover type: 8" UV_____ 12" UV_____ 12" EMCO_____ 8" BK_____
12" BK_____ 12" DWP_____ 12" CNI_____ 36" CNI ✓ Other_____
General condition of wellhead assembly: Excellent (Good) Fair Poor

Purging Equipment:
N/A 2" disposable bailer
_____ 2" PVC bailer
_____ 4" PVC bailer
_____ Submersible pump
_____ Dedicated bailer
_____ Centrifugal pump

Sampled with: Disposable bailer: X Teflon bailer: _____

Well Diameter: 2"_____ 4" X 6"_____ 8"_____

Purge Vol. Multiplier: 0.16 0.65 1.47 2.61 gal/ft.

Initial Measurement
Time: 945
Depth of well: 28.23
Depth to water: 12.07

Recharge Measurement
Time: _____
Depth to water: N/A

Calculated purge: N/A
Actual purge: N/A

Start purge: N/A Sampling time: 1115

Time	Temp.	E.C.	pH	Turbidity	Volume
		959	422		

Sample appearance: _____ Lock: _____

Equipment replaced: (Check all that apply) Note condition of replaced item
2" Locking Cap:_____ Lock #3753:_____ 7/32 Allenhead:_____
4" Locking Cap:_____ Lock-Dolphin:_____ 9/16 Bolt:_____
6" Locking Cap:_____ Pinned Allenhead (DWP):_____

Remarks: _____

Signature: _____

DOULOS ENVIRONMENTAL COMPANY — SAMPLING INFORMATION SHEET

Client: Arco # 2169 — Sampling Date: 7-20-00

Site: 889 West Grand Ave Oakland CA — Project No.: _____

Well Designation: ADR-1

Is setup of traffic control devices required? (NO) YES — time: _____ hours
Is there standing water in well box? (NO) YES — Above TOC Below TOC
Is top of casing cut level? NO (YES) — If no, see remarks
Is well cap sealed and locked? NO (YES) — If no, see remarks
Height of well casing riser (in inches): 20"
Well cover type: 8" UV_____ 12" UV_____ 12" EMCO_____ 8" BK_____
12" BK_____ 12" DWP_____ 12" CNI_____ 36" CNI X Other_____
General condition of wellhead assembly: Excellent Good Fair Poor

Purging Equipment: N/A 2" disposable bailer — _____ Submersible pump
_____ 2" PVC bailer — _____ Dedicated bailer
_____ 4" PVC bailer — _____ Centrifugal pump

Sampled with: Disposable bailer: X Teflon bailer: _____

Well Diameter: 2"____ 4" X 6"____ 8"____

Purge Vol. Multiplier: 0.16 0.65 1.47 2.61 gal/ft.

Initial Measurement: Time: 950 Depth of well: 20.80 Depth to water: 10.85

Recharge Measurement: Time: _____ Depth to water: _____

Calculated purge: N/A Actual purge: _____

Start purge: N/A Sampling time: 1123

Time	Temp.	E.C.	pH	Turbidity	Volume
		1506	525		

Sample appearance: clear Lock: no

Equipment replaced: (Check all that apply) Note condition of replaced item
2" Locking Cap:_____ Lock #3753:_____ 7/32 Allenhead:_____
4" Locking Cap:_____ Lock-Dolphin:_____ 9/16 Bolt:_____
6" Locking Cap:_____ Pinned Allenhead (DWP):_____

Remarks: _____

Signature: _____

DOULOS ENVIRONMENTAL COMPANY — SAMPLING INFORMATION SHEET

Client: Arco # 2169 — Sampling Date: 7-20-00

Site: 889 West Grand Ave, Oakland CA — Project No.: _____

Well Designation: ADR-2

Is setup of traffic control devices required? ~~NO~~ YES time: _____ hours
Is there standing water in well box? ~~NO~~ ~~YES~~ Above TOC Below TOC
Is top of casing cut level? NO ~~YES~~ If no, see remarks
Is well cap sealed and locked? NO ~~YES~~ If no, see remarks
Height of well casing riser (in inches): 30"
Well cover type: 8" UV_____ 12" UV_____ 12" EMCO_____ 8" BK_____
12" BK_____ 12" DWP_____ 12" CNI_____ 36" CNI Δ Other_____
General condition of wellhead assembly: Excellent Good Fair Poor

Purging Equipment: N/A 2" disposable bailer _____ Submersible pump
_____ 2" PVC bailer _____ Dedicated bailer
_____ 4" PVC bailer _____ Centrifugal pump

Sampled with: Disposable bailer:_____ Teflon bailer:_____

Well Diameter: 2"____ 4"____ 6"____ 8"____

Purge Vol. Multiplier: 0.16 0.65 1.47 2.61 gal/ft.

Initial Measurement: Time: 954 Depth of well: 25.01 Depth to water: 11.60

Recharge Measurement: Time:_____ Depth to water:_____

Calculated purge:_____ Actual purge:_____

Start purge: N/A Sampling time: 1130

Time	Temp.	E.C.	pH	Turbidity	Volume
		1244	5.30		

Sample appearance: clear Lock: Y

Equipment replaced: (Check all that apply) Note condition of replaced item
2" Locking Cap:_____ Lock #3753:_____ 7/32 Allenhead:_____
4" Locking Cap:_____ Lock-Dolphin:_____ 9/16 Bolt:_____
6" Locking Cap:_____ Pinned Allenhead (DWP):_____

Remarks: _____

Signature:

DOULOS ENVIRONMENTAL COMPANY — SAMPLING INFORMATION SHEET

Client: Arco # 2169 — Sampling Date: 7-20-00

Site: 889 West Grand Ave Oakland CA — Project No.: _____

Well Designation: A-1

Is setup of traffic control devices required? ~~NO~~ YES time: _____ hours
Is there standing water in well box? ~~NO~~ YES Above TOC Below TOC
Is top of casing cut level? NO YES If no, see remarks
Is well cap sealed and locked? NO ~~YES~~ If no, see remarks
Height of well casing riser (in inches): 12
Well cover type: 8" UV_____ 12" UV_____ 12" EMCO ✓ 8" BK_____
12" BK_____ 12" DWP_____ 12" CNI_____ 36" CNI_____ Other_____
General condition of wellhead assembly: Excellent Good Fair Poor

Purging Equipment: N/A 2" disposable bailer _____ Submersible pump
_____ 2" PVC bailer _____ Dedicated bailer
_____ 4" PVC bailer _____ Centrifugal pump

Sampled with: Disposable bailer: X Teflon bailer: _____

Well Diameter: 2"_____ 4"_____ 6"_____ 8"_____

Purge Vol. Multiplier: 0.16 0.65 1.47 2.61 gal/ft.

Initial Measurement
Time: _____
Depth of well: _____
Depth to water: 11.01

Recharge Measurement
Time: _____
Depth to water: _____

Calculated purge: _____
Actual purge: _____

Start purge: N/A Sampling time: 1140

Time	Temp.	E.C.	pH	Turbidity	Volume

Sample appearance: clear Lock: ✓

Equipment replaced: (Check all that apply) Note condition of replaced item
2" Locking Cap: _____ Lock #3753: _____ 7/32 Allenhead: _____
4" Locking Cap: _____ Lock-Dolphin: _____ 9/16 Bolt: _____
6" Locking Cap: _____ Pinned Allenhead (DWP): _____

Remarks: _____

Signature:

DOULOS ENVIRONMENTAL COMPANY — SAMPLING INFORMATION SHEET

Client: Arco # 2169 — Sampling Date: 7-20-00

Site: 889 West Grand Ave Oakland CA — Project No.: _____

Well Designation: A-2

Is setup of traffic control devices required? ~~NO~~ YES time: _____ hours
Is there standing water in well box? ~~NO~~ YES Above TOC Below TOC
Is top of casing cut level? NO ~~YES~~ If no, see remarks
Is well cap sealed and locked? NO ~~YES~~ If no, see remarks
Height of well casing riser (in inches): 12"
Well cover type: 8" UV_____ 12" UV_____ 12" EMCO_____ 8" BK_____
12" BK_____ 12" DWP_____ 12" CNI_____ 36" CNI ~~X~~ Other_____
General condition of wellhead assembly: Excellent Good Fair Poor

Purging Equipment:
N/A 2" disposable bailer
_____ 2" PVC bailer
_____ 4" PVC bailer
_____ Submersible pump
_____ Dedicated bailer
_____ Centrifugal pump

Sampled with: Disposable bailer: X Teflon bailer: _____

Well Diameter: 2"_____ 3 4"_____ 6"_____ 8"_____

Purge Vol. Multiplier: 0.16 0.65 1.47 2.61 gal/ft.

Initial Measurement
Time: 1004
Depth of well: _____
Depth to water: 11.52

Recharge Measurement
Time: N/A
Depth to water: _____

Calculated purge: N/A
Actual purge: _____

Start purge: _____ Sampling time: 1155

Time	Temp.	E.C.	pH	Turbidity	Volume

Sample appearance: clear Lock: ~~X~~

Equipment replaced: (Check all that apply) Note condition of replaced item
2" Locking Cap: _____ Lock #3753: _____ 7/32 Allenhead: _____
4" Locking Cap: _____ Lock-Dolphin: _____ 9/16 Bolt: _____
6" Locking Cap: _____ Pinned Allenhead (DWP): _____

Remarks: _____

Signature:

DOULOS ENVIRONMENTAL COMPANY — SAMPLING INFORMATION SHEET

Client: Arco # 2169 — Sampling Date: 7-20-00

Site: 889 West Grand Ave, Oakland CA — Project No.: _____

Well Designation: A-5

Is setup of traffic control devices required? ~~NO~~ YES time: _____ hours
Is there standing water in well box? ~~NO~~ YES Above TOC Below TOC
Is top of casing cut level? NO ~~YES~~ If no, see remarks
Is well cap sealed and locked? NO ~~YES~~ If no, see remarks
Height of well casing riser (in inches): 37
Well cover type: 8" UV_____ 12" UV_____ 12" EMCO_____ 8" BK_____
12" BK_____ 12" DWP_____ 12" CNI_____ 36" CNI_____ ~~other~~ 12" Christy
General condition of wellhead assembly: Excellent (Good) Fair Poor

Purging Equipment:
N/A 2" disposable bailer
_____ 2" PVC bailer
_____ 4" PVC bailer
_____ Submersible pump
_____ Dedicated bailer
_____ Centrifugal pump

Sampled with: Disposable bailer: X Teflon bailer: _____

Well Diameter: 2" X 4" ___ 6" ___ 8" ___

Purge Vol. Multiplier: 0.16 0.65 1.47 2.61 gal/ft.

Initial Measurement: Time: 10:28 Depth of well: _____ Depth to water: 10.31

Recharge Measurement: Time: _____ Depth to water: _____

Calculated purge: _____ Actual purge: _____

Start purge: N/A Sampling time: 12:09

Time	Temp.	E.C.	pH	Turbidity	Volume

Sample appearance: Clear Lock: Master

Equipment replaced: (Check all that apply) Note condition of replaced item
2" Locking Cap: _____ Lock #3753: _____ 7/32 Allenhead: _____
4" Locking Cap: _____ Lock-Dolphin: _____ 9/16 Bolt: _____
6" Locking Cap: _____ Pinned Allenhead (DWP): _____

Remarks: _____

Signature:

DOULOS ENVIRONMENTAL COMPANY — SAMPLING INFORMATION SHEET

Client: Arco # 2169 — Sampling Date: 7-20-00

Site: 889 West Grand Ave Oakland CA — Project No.: _____

Well Designation: A-6

Is setup of traffic control devices required? ~~NO~~ YES time: _____ hours
Is there standing water in well box? ~~NO~~ YES Above TOC Below TOC
Is top of casing cut level? NO ~~YES~~ If no, see remarks
Is well cap sealed and locked? NO ~~YES~~ If no, see remarks
Height of well casing riser (in inches): _____
Well cover type: 8" UV_____ 12" UV_____ 12" EMCO_____ 8" BK_____
12" BK_____ 12" DWP_____ 12" CNI_____ 36" CNI_____ Other_____
General condition of wellhead assembly: Excellent Good Fair Poor

Purging Equipment:
_____2" disposable bailer
_____2" PVC bailer
_____4" PVC bailer
_____Submersible pump
_____Dedicated bailer
_____Centrifugal pump

Sampled with: Disposable bailer: X Teflon bailer: _____

Well Diameter: 2" X 4"____ 6"____ 8"____

Purge Vol. Multiplier: 0.16 0.65 1.47 2.61 gal/ft.

Initial Measurement
Time: 1026
Depth of well: _____
Depth to water: 10.91

Recharge Measurement
Time: N/A
Depth to water: _____

Calculated purge: _____
Actual purge: _____

Start purge: N/A Sampling time: 1228

Time	Temp.	E.C.	pH	Turbidity	Volume

Sample appearance: cloudy Lock: master

Equipment replaced: (Check all that apply) Note condition of replaced item
2" Locking Cap:_____ Lock #3753:_____ 7/32 Allenhead:_____
4" Locking Cap:_____ Lock-Dolphin:_____ 9/16 Bolt:_____
6" Locking Cap:_____ Pinned Allenhead (DWP):_____

Remarks: _____

Signature: _____