



ENVIRONMENTAL
PROTECTION
98 AUG 25 PM 11:02

August 5, 1998
Project 20805-123.005

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

Re: Quarterly Groundwater Monitoring Report, First Quarter 1998, for ARCO Service Station
No. 2035, located at 1001 San Pablo Avenue, San Pablo, California

Dear Mr. Supple:

Pinnacle Environmental Solutions, a division of EMCON (Pinnacle), is submitting the attached report which presents the results of the first quarter 1998 groundwater monitoring program at ARCO Products Company (ARCO) Service Station No. 2035, located at 1001 San Pablo Avenue, San Pablo, California (see Figure 1). Pertinent site features, including existing monitoring and groundwater extraction wells, are shown in Figure 2.

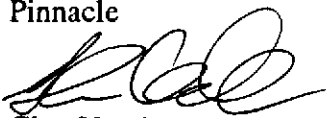
LIMITATIONS

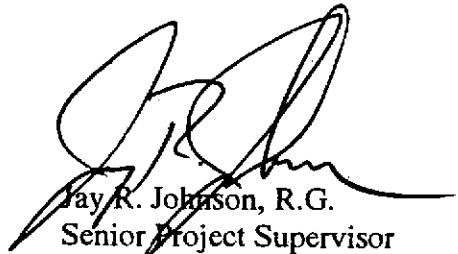
No monitoring event is thorough enough to describe all geologic and hydrogeologic conditions of interest at a given site. If conditions have not been identified during the monitoring event, results should not be construed as a guarantee of the absence of such conditions at the site, but rather as the product of the scope and limitations of work performed during the monitoring event.

Please call if you have questions.

Sincerely,

Pinnacle


Glen VanderVeen
Project Manager


Jay R. Johnson, R.G.
Senior Project Supervisor

Attachment: Quarterly Groundwater Monitoring Report, First Quarter 1998

cc: Barney Chan, ACHCSA



Date: August 5, 1998

ARCO QUARTERLY REPORT

Station No.: 2035 Address: 1001 San Pablo Avenue, San Pablo, California
Pinnacle Project No.: 20805-123.005
ARCO Environmental Engineer/Phone No.: Paul Supple /(510) 299-8891
Pinnacle Project Manager/Phone No.: Glen VanderVeen /(510) 977-9020
Primary Agency/Regulatory ID No.: ACHCSA /Barney Chan

WORK PERFORMED THIS QUARTER (First - 1998):

1. Prepared and submitted quarterly report for fourth quarter 1997.
2. Performed quarterly groundwater monitoring and sampling for first quarter 1998.

WORK PROPOSED FOR NEXT QUARTER (Second - 1998):

1. Prepare and submit quarterly report for first quarter 1998.
2. Perform quarterly groundwater monitoring and sampling for second quarter 1998.
3. Restart SVE system and continue operation if hydrocarbon concentrations in extracted vapor warrant.

QUARTERLY MONITORING:

Current Phase of Project: Quarterly Groundwater Monitoring and Operation and Maintenance of Remediation Systems
The SVE system was shut down on August 12, 1996, because of low TVHg and benzene concentrations in extracted soil vapor.
The groundwater treatment system was shut down on August 8, 1996, because of low TPHG concentrations in extracted groundwater.

Frequency of Sampling: Annual (First Quarter): MW-5
Quarterly: MW-1 through MW-4, MW-6, RW-1

Frequency of Monitoring: Quarterly (groundwater), Monthly (SVE)

Is Floating Product (FP) Present On-site: Yes No

Cumulative FP Recovered to Date : 27.9 gallons, Wells AS-1, AS-2, RW-1, VW-1, VW-2, and VW-7

FP Recovered This Quarter : None

Bulk Soil Removed to Date : 605 cubic yards of TPH impacted soil

Bulk Soil Removed This Quarter : None

Water Wells or Surface Waters,
within 2000 ft., impacted by site: None

Current Remediation Techniques: Biosparging in RW-1

Average Depth to Groundwater: 7.69 feet

Groundwater Gradient (Average): 0.031 ft/ft toward west

SVE QUARTERLY OPERATION AND PERFORMANCE:

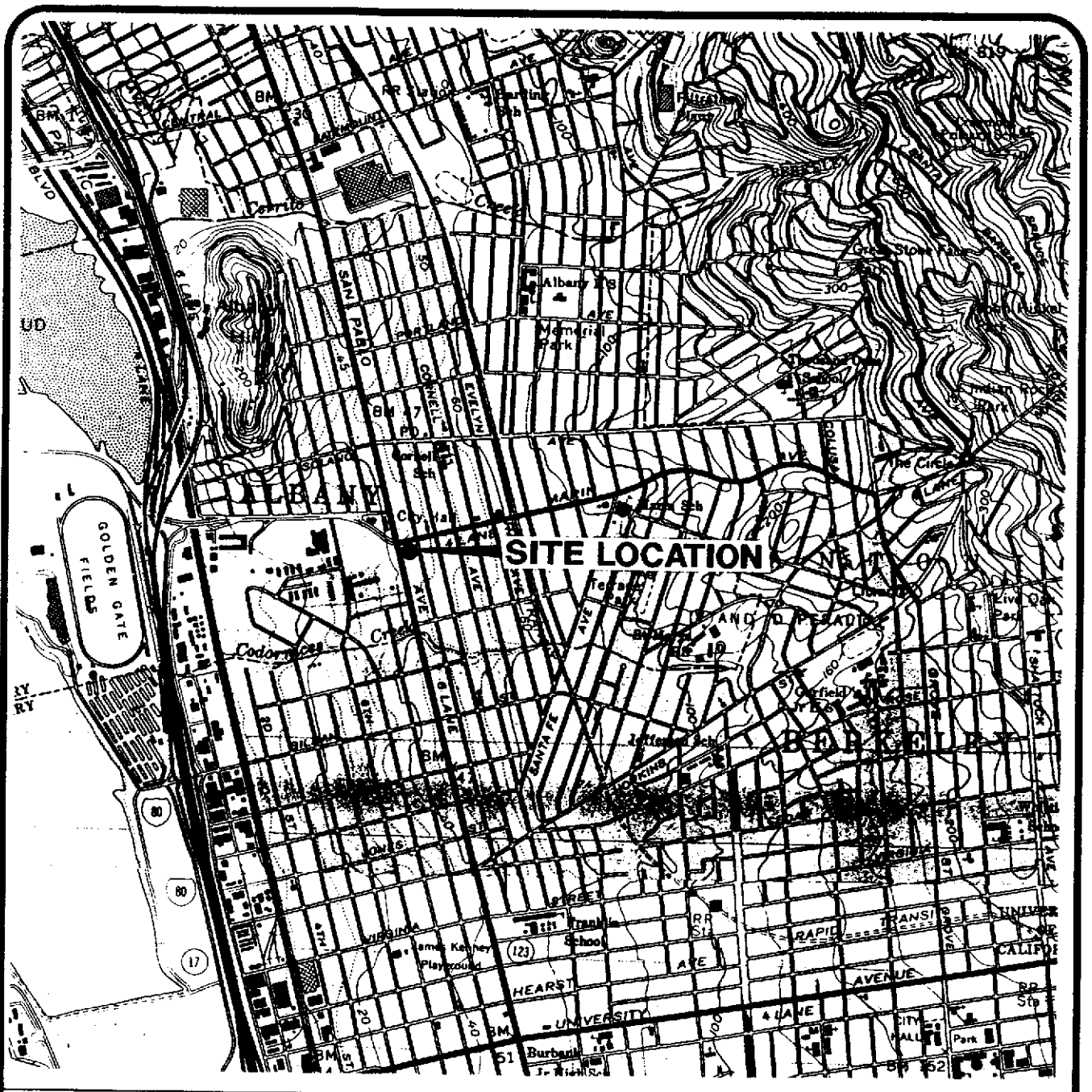
Equipment Inventory:	Therm Tech Model VAC-10 Thermal/Catalytic Oxidizer
Operating Mode:	Catalytic Oxidation
BAAQMD Permit #:	10931
TPH Conc. End of Period (lab):	NA (Not Applicable)
Benzene Conc. End of Period (lab):	NA
SVE Flowrate End of Period:	NA
Total HC Recovered This Period:	0 pounds
Total HC Recovered to Date:	3016.5 pounds
Utility Usage	
Electric (KWH):	810 KWH
Gas (Therms):	0 Therm
Operating Hours This Period (SVE):	0 hours
Operating Hours to Date (SVE):	7211.1 hours
Percent Operational (SVE):	0%
Operating Hours This Period (GWE):	0.0 hours
Percent Operational (GWE):	0.0%
Unit Maintenance:	Routine monthly maintenance
Number of Auto Shut Downs:	0
Destruction Efficiency Permit Requirement:	90%
Percent TPH Conversion:	NA
Average Stack Temperature:	NA
Average SVE Source Flow:	NA
Average SVE Process Flow:	NA
Average Source Vacuum:	NA

DISCUSSION:

The SVE system has been shut down since August 12, 1996, because of relatively low gasoline concentrations in the influent vapor stream. The SVE system was not in operation during the first quarter, and may be restarted in the second quarter of 1998 if hydrocarbons concentrations and groundwater levels warrant. Currently bubbling air at low flow rates of 2 cfm in well RW-1 to introduce dissolved oxygen into groundwater to promote biodegradation of hydrocarbons in the vicinity of RW-1.

ATTACHMENTS:

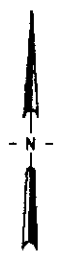
- Figure 1 - Site Location
- Figure 2 - Groundwater Analytical Summary Map
- Figure 3 - Groundwater Elevation Contour Map
- Table 1 - Groundwater Monitoring Data, First Quarter 1998
- Table 2 - Historical Groundwater Elevation and Analytical Data, Petroleum Hydrocarbons and Their Constituents
- Table 3 - Historical Groundwater Elevation Data, Shell Station
- Appendix A - Certified Analytical Reports, Chain-of-Custody Documentation, and Field Data Sheets



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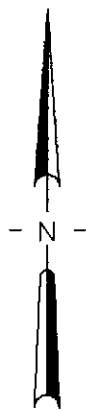


Base map from USGS 7.5' Quad. Maps:
 Oakland West and Richmond, California.
 Photorevised 1980.



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FIGURE 1
 ARCO PRODUCTS COMPANY
 SERVICE STATION 2035, 1001 SAN PABLO AVE.
 ALBANY, CALIFORNIA
**QUARTERLY GROUNDWATER MONITORING
 SITE LOCATION**



SHELL STATION

SIDEWALK

MARIN AVENUE

SAN PABLO AVENUE

Manhole

DRIVEWAY

STATION BUILDING

Service island (Typ.)

NEW TANK PIT

Former gasoline storage tank pit

Remediation compound

Former waste-oil tank

APPROXIMATE PROPERTY LINE

EXPLANATION

- ⊙ Groundwater monitoring well
- ⊗ Recovery well
- Vapor extraction well
- ⊙ Air sparge well
- CO Existing sewer cleanout
- Subgrade groundwater remediation piping route
- (1800/540) Concentration of total petroleum hydrocarbons, as gasoline (TPHG) and benzene in groundwater (ug/L); water samples were collected on 2/20/98
- ND Not detected at or above the method reporting limit for TPHG (50 ug/L) or benzene (0.5 ug/L)
- < Method reporting limit raised due to high analyte concentration requiring sample dilution or matrix interference

MW-6 (<100/<1)

RW-1 (3800/1000)

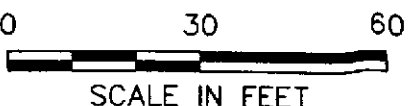
MW-1 (1800/540)

MW-3 (<200/<2)

MW-5 (ND/ND)

MW-4 (<2,000/<20)

MW-2 (ND/0.5)



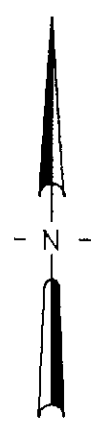
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1" 1/2" 0" 1"

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FIGURE 2
 ARCO PRODUCTS COMPANY
 SERVICE STATION 2035, 1001 SAN PABLO AVE.
 ALBANY, CALIFORNIA
GROUNDWATER ANALYTICAL SUMMARY
 1ST QUARTER 1998



SHELL STATION

SIDEWALK

MARIN AVENUE

SAN PABLO AVENUE

SIDEWALK

MW-8
(29.56)

30.0

31.0

32.0

RW-1
(32.84)

MW-2
(32.69)

0.031

33.0

MW-4
(33.55)

Service island (Typ.)

NEW TANK PIT

APPROXIMATE PROPERTY LINE

STATION BUILDING

MW-1
(34.49)

34.0

MW-3
(33.96)

35.0

MW-5
(35.17)

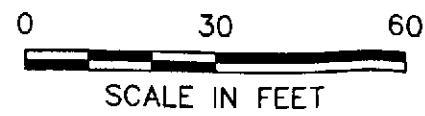
Former gasoline storage tank pit

Remediation compound

Former waste-oil tank

EXPLANATION

- ⊙ Groundwater monitoring well
- (34.49) Groundwater elevation (Ft.-MSL); measured 2/20/98
- ? - - - Groundwater elevation contour (Ft.-MSL)
- ← Approximate direction of groundwater flow showing gradient



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FIGURE 3
ARCO PRODUCTS COMPANY
SERVICE STA. 2035, 1001 SAN PABLO AVE.
ALBANY, CALIFORNIA
GROUNDWATER ELEVATION CONTOURS
1ST QUARTER 1998

**Table 1
Groundwater Monitoring Data
First Quarter 1998**

**ARCO Service Station No. 2035
1001 San Pablo Avenue, Albany, California**

Well Designation	Water Level Field Date	Top of Casing Elevation ft-MSL	Depth to Water feet	Groundwater Elevation ft-MSL	Floating Product Thickness feet	Groundwater Flow Direction MWN	Hydraulic Gradient ft/ft	Water Sample Field Date	TPHG LUFT Method µg/L	Benzene EPA 8020 µg/L	Toluene EPA 8020 µg/L	Ethylbenzene EPA 8020 µg/L	Total Xylenes EPA 8020 µg/L	MTBE EPA 8020 µg/L	MTBE EPA 8240 µg/L	Oil and Grease SM 5520B&F µg/L	Oil and Grease SM 5520C µg/L	Oil and Grease SM 5520F µg/L	TRPH EPA 418.1 mg/L	TPHD LUFT Method µg/L	
MW-1	02-20-98	41.41	6.92	34.49	ND	W	0.031	02-20-98	1800	540	7	27	31	46	--	--	--	--	--	--	--
MW-2	02-20-98	40.38	7.69	32.69	ND	W	0.031	02-20-98	<50	0.5	<0.5	<0.5	<0.5	12	--	--	--	--	--	--	--
MW-3	02-20-98	41.44	7.48	33.96	ND	W	0.031	02-20-98	<200 [^]	<2 [^]	5	<2 [^]	8	140	--	--	--	--	<0.5	--	--
MW-4	02-20-98	40.33	6.78	33.55	ND	W	0.031	02-20-98	<2000 [^]	<20 [^]	<20 [^]	<20 [^]	<20 [^]	3300	--	--	--	--	--	--	--
MW-5	02-20-98	41.84	6.67	35.17	ND	W	0.031	02-20-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	--	--	--	--
MW-6	02-20-98	40.13	10.57	29.56	ND	W	0.031	02-20-98	<100 [^]	<1 [^]	<1 [^]	<1 [^]	<1 [^]	95	--	--	--	--	--	--	--
RW-1	02-20-98	40.33	7.49	32.84	ND	W	0.031	02-20-98	3800	1000	85	64	220	950	--	--	--	--	--	--	--

ft-MSL: elevation in feet, relative to mean sea level

MWN: ground-water flow direction and gradient apply to the entire monitoring well network

ft/ft: foot per foot

TPHG: total petroleum hydrocarbons as gasoline, California DHS LUFT Method

µg/L: micrograms per liter

EPA: United States Environmental Protection Agency

MTBE: Methyl tert-butyl ether

SM: standard method

TRPH: total recoverable petroleum hydrocarbons

mg/L: milligrams per liter

TPHD: total petroleum hydrocarbons as diesel, California DHS LUFT Method

ND: none detected

W: west

[^]: method reporting limit was raised due to: (1) high analyte concentration requiring sample dilution, or (2) matrix interference

--: not analyzed or not applicable

Table 2
Historical Groundwater Elevation and Analytical Data
Petroleum Hydrocarbons and Their Constituents
1995 - Present*

ARCO Service Station NO. 2035
1001 San Pablo Avenue, Albany, California

Well Designation	Water Level Field Date	Top of Casing Elevation ft-MSL	Depth to Water feet	Groundwater Elevation ft-MSL	Floating Product Thickness feet	Groundwater Flow Direction MWN	Hydraulic Gradient ft/ft	Water Sample Field Date	TPHG LUFT Method µg/L	Benzene EPA 8020 µg/L	Toluene EPA 8020 µg/L	Ethylbenzene EPA 8020 µg/L	Total Xylenes EPA 8020 µg/L	MTBE EPA 8020 µg/L	MTBE EPA 8240 µg/L	Oil and Grease SM 5520B&F µg/L	Oil and Grease SM 5520C µg/L	Oil and Grease SM 5520F µg/L	TRPH EPA 418.1 µg/L	TPHD LUFT Method µg/L
MW-1	03-24-95	41.41	6.21	35.20	ND	NW	0.037	03-24-95	8800	3600	<50	62	99	--	--	--	--	--	--	--
MW-1	05-24-95	41.41	9.37	32.04	ND	WNW	0.013	05-24-95	4800	2000	<20	52	<20	--	--	--	--	--	--	--
MW-1	08-22-95	41.41	10.30	31.11	ND	SW	0.012	08-22-95	780	310	<2.5	12	<2.5	14	--	--	--	--	--	--
MW-1	11-09-95	41.41	12.25	29.16	ND	WSW	0.01	11-09-95	58	14	<0.5	<0.5	<0.5	--	--	--	--	--	--	--
MW-1	02-27-96	41.41	9.08	32.33	ND	SW	0.009	02-27-96	2700	930	12	18	32	51	--	--	--	--	--	--
MW-1	04-22-96	41.41	9.11	32.30	ND	WSW	0.014	04-22-96	2700	1000	<10	22	<10	<60	--	--	--	--	--	--
MW-1	08-15-96	41.41	10.37	31.04	ND	SW	0.011	08-15-96	300	52	<0.5	0.9	<0.5	22	--	--	--	--	--	--
MW-1	12-10-96	41.41	8.79	32.62	ND	WSW	0.023	12-10-96	270	63	0.7	<0.5	1	25	--	--	--	--	--	--
MW-1	03-27-97	41.41	9.80	31.61	ND	WSW	0.026	03-27-97	1500	610	<5^	15	7	56	--	--	--	--	--	--
MW-1	05-22-97	41.41	9.65	31.76	ND	WSW	0.024	05-22-97	110	5.5	<0.5	<0.5	0.7	10	--	--	--	--	--	--
MW-1	09-04-97	41.41	10.22	31.19	ND	W	0.019	09-04-97	180	40	<0.5	1.2	0.5	26	--	--	--	--	--	--
MW-1	11-03-97	41.41	10.68	30.73	ND	SW	0.038	11-03-97	83	8	<0.5	<0.5	<0.5	13	--	--	--	--	--	--
MW-1	02-20-98	41.41	6.92	34.49	ND	W	0.031	02-20-98	1800	540	7	27	31	46	--	--	--	--	--	--
MW-2	03-24-95	40.38	6.96	33.42	ND	NW	0.037	03-24-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--
MW-2	05-24-95	40.38	10.02	30.36	ND	WNW	0.013	05-24-95	Not sampled: well sampled semi-annually, during the first and third quarters											
MW-2	08-22-95	40.38	10.87	29.51	ND	SW	0.012	08-22-95	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	--	--	--
MW-2	11-09-95	40.38	13.12	27.26	ND	WSW	0.01	11-09-95	Not sampled: well sampled semi-annually, during the first and third quarters											
MW-2	02-27-96	40.38	10.25	30.13	ND	SW	0.009	02-27-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	--	--	--
MW-2	04-22-96	40.38	9.98	30.40	ND	WSW	0.014	04-22-96	Not sampled: well sampled semi-annually, during the first and third quarters											
MW-2	08-15-96	40.38	11.10	29.28	ND	SW	0.011	08-15-96	<50	<0.5	<0.5	<0.5	<0.5	4	--	--	--	--	--	--
MW-2	12-10-96	40.38	10.00	30.38	ND	WSW	0.023	12-10-96	Not sampled: well sampled semi-annually, during the first and third quarters											
MW-2	03-27-97	40.38	10.38	30.00	ND	WSW	0.026	03-27-97	<50	<0.5	<0.5	<0.5	<0.5	12	--	--	--	--	--	--
MW-2	05-22-97	40.38	10.65	29.73	ND	WSW	0.024	05-22-97	Not sampled: well sampled semi-annually, during the first and third quarters											
MW-2	09-04-97	40.38	10.87	29.51	ND	W	0.019	09-04-97	<50	<0.5	<0.5	<0.5	<0.5	19	--	--	--	--	--	--
MW-2	11-03-97	40.38	11.25	29.13	ND	SW	0.038	11-03-97	<50	<0.5	<0.5	<0.5	<0.5	18	--	--	--	--	--	--
MW-2	02-20-98	40.38	7.69	32.69	ND	W	0.031	02-20-98	<50	0.5	<0.5	<0.5	<0.5	12	--	--	--	--	--	--

Table 2
Historical Groundwater Elevation and Analytical Data
Petroleum Hydrocarbons and Their Constituents
1995 - Present*

ARCO Service Station NO. 2035
1001 San Pablo Avenue, Albany, California

Well Designation	Water Level Field Date	Top of Casing Elevation	Depth to Water	Groundwater Elevation	Floating Product Thickness	Groundwater Flow Direction	Hydraulic Gradient	Water Sample Field Date	TPHG LUFT Method	Benzene EPA 8020	Toluene EPA 8020	Ethylbenzene EPA 8020	Total Xylenes EPA 8020	MTBE EPA 8020	MTBE EPA 8240	Oil and Grease SM 5520B&F	Oil and Grease SM 5520C	Oil and Grease SM 5520F	TPPH EPA 418.1	TPHD LUFT Method
		ft-MSL	feet	ft-MSL	feet	MWN										ft/ft	µg/L	µg/L		
MW-3	03-24-95	41.44	7.29	34.15	ND	NW	0.037	03-24-95	51	0.8	<0.5	2.4	<0.5	--	--	--	--	--	<500	--
MW-3	05-24-95	41.44	9.53	31.91	ND	WNW	0.013	05-24-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	<500	--
MW-3	08-22-95	41.44	11.19	30.25	ND	SW	0.012	08-22-95	<50	<0.5	<0.5	<0.5	<0.5	79	--	--	--	--	<500	--
MW-3	11-09-95	41.44	12.77	28.67	ND	WSW	0.01	11-09-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	600	--
MW-3	02-27-96	41.44	9.41	32.03	ND	SW	0.009	02-27-96	120	3.6	<0.5	2.2	3.7	90	--	--	--	--	<0.5	--
MW-3	04-22-96	41.44	9.63	31.81	ND	WSW	0.014	04-22-96	<50	<0.5	<0.5	<0.5	<0.5	90	--	--	--	--	--	--
MW-3	08-15-96	41.44	11.12	30.32	ND	SW	0.011	08-15-96	<50	<0.5	<0.5	<0.5	<0.5	54	--	--	--	--	--	--
MW-3	12-10-96	41.44	10.34	31.10	ND	WSW	0.023	12-10-96	71	<0.5	<0.5	<0.5	<0.5	130	--	--	--	--	--	--
MW-3	03-27-97	41.44	10.28	31.16	ND	WSW	0.026	03-27-97	<100^	<1^	<1^	<1^	<1^	170	--	--	--	--	--	--
MW-3	05-22-97	41.44	10.40	31.04	ND	WSW	0.024	05-22-97	<100^	<1^	<1^	<1^	<1^	95	--	--	--	--	--	--
MW-3	09-04-97	41.44	10.75	30.69	ND	W	0.019	09-04-97	<50	<0.5	<0.5	<0.5	<0.5	37	--	--	--	--	--	--
MW-3	11-03-97	41.44	11.44	30.00	ND	SW	0.038	11-03-97	<200^	<2^	<2^	<2^	<2^	130	--	--	--	--	--	--
MW-3	02-20-98	41.44	7.48	33.96	ND	W	0.031	02-20-98	<200^	<2^	5	<2^	8	140	--	--	--	--	<0.5	--
MW-4	03-24-95	40.33	5.92	34.41	ND	NW	0.037	03-24-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--
MW-4	05-24-95	40.33	9.23	31.10	ND	WNW	0.013	05-24-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--
MW-4	08-22-95	40.33	10.61	29.72	ND	SW	0.012	08-22-95	<50	<0.5	<0.5	<0.5	<0.5	99	--	--	--	--	--	--
MW-4	11-09-95	40.33	11.97	28.36	ND	WSW	0.01	11-09-95	<50	<0.5	<0.5	<0.5	<0.5	--	89	--	--	--	--	--
MW-4	02-27-96	40.33	8.84	31.49	ND	SW	0.009	02-27-96	<50	0.8	<0.5	<0.5	<0.5	<3	--	--	--	--	--	--
MW-4	04-22-96	40.33	9.15	31.18	ND	WSW	0.014	04-22-96	Not sampled: well sampled annually, during the first quarter											
MW-4	08-15-96	40.33	10.35	29.98	ND	SW	0.011	08-15-96	Not sampled: well sampled annually, during the first quarter											
MW-4	12-10-96	40.33	8.70	31.63	ND	WSW	0.023	12-10-96	Not sampled: well sampled annually, during the first quarter											
MW-4	03-27-97	40.33	9.75	30.58	ND	WSW	0.026	03-27-97	<5000^	<50^	<50^	<50^	<50^	4200	--	--	--	--	--	--
MW-4	05-22-97	40.33	9.91	30.42	ND	WSW	0.024	05-22-97	Not sampled: well sampled annually, during the first quarter											
MW-4	09-04-97	40.33	10.25	30.08	ND	W	0.019	09-04-97	Not sampled: well sampled annually, during the first quarter											
MW-4	11-03-97	40.33	10.79	29.54	ND	SW	0.038	11-03-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	--	--	--
MW-4	02-20-98	40.33	6.78	33.55	ND	W	0.031	02-20-98	<2000^	<20^	<20^	<20^	<20^	3300	--	--	--	--	--	--

**Table 2
Historical Groundwater Elevation and Analytical Data
Petroleum Hydrocarbons and Their Constituents
1995 - Present***

**ARCO Service Station NO. 2035
1001 San Pablo Avenue, Albany, California**

Well Designation	Water Level Field Date	Top of Casing Elevation ft-MSL	Depth to Water feet	Groundwater Elevation ft-MSL	Floating Product Thickness feet	Groundwater Flow Direction MWN	Hydraulic Gradient ft/ft	Water Sample Field Date	TPHG LUFT Method µg/L	Benzene EPA 8020 µg/L	Toluene EPA 8020 µg/L	Ethylbenzene EPA 8020 µg/L	Total Xylenes EPA 8020 µg/L	MTBE EPA 8020 µg/L	MTBE EPA 8240 µg/L	Oil and Grease SM 5520B&F µg/L	Oil and Grease SM 5520C µg/L	Oil and Grease SM 5520F µg/L	TRPH EPA 418.1 µg/L	TPHD LUFT Method µg/L
MW-5	03-24-95	41.84	6.23	35.61	ND	NW	0.037	03-24-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--
MW-5	05-24-95	41.84	9.61	32.23	ND	WNW	0.013	05-24-95	Not sampled: well sampled annually, during the first quarter											
MW-5	08-22-95	41.84	11.12	30.72	ND	SW	0.012	08-22-95	Not sampled: well sampled annually, during the first quarter											
MW-5	11-09-95	41.84	12.52	29.32	ND	WSW	0.01	11-09-95	Not sampled: well sampled annually, during the first quarter											
MW-5	02-27-96	41.84	9.52	32.32	ND	SW	0.009	02-27-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	--	--	--
MW-5	04-22-96	41.84	9.44	32.40	ND	WSW	0.014	04-22-96	Not sampled: well sampled annually, during the first quarter											
MW-5	08-15-96	41.84	10.83	31.01	ND	SW	0.011	08-15-96	Not sampled: well sampled annually, during the first quarter											
MW-5	12-10-96	41.84	9.20	32.64	ND	WSW	0.023	12-10-96	Not sampled: well sampled annually, during the first quarter											
MW-5	03-27-97	41.84	10.10	31.74	ND	WSW	0.026	03-27-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	--	--	--
MW-5	05-22-97	41.84	10.28	31.56	ND	WSW	0.024	05-22-97	Not sampled: well sampled annually, during the first quarter											
MW-5	09-04-97	41.84	10.73	31.11	ND	W	0.019	09-04-97	Not sampled: well sampled annually, during the first quarter											
MW-5	11-03-97	41.84	11.23	30.61	ND	SW	0.038	11-03-97	Not sampled: well sampled annually, during the first quarter											
MW-5	02-20-98	41.84	6.67	35.17	ND	W	0.031	02-20-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	--	--	--
MW-6	03-24-95	40.13	9.03	31.10	ND	NW	0.037	03-24-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--
MW-6	05-24-95	40.13	12.45	27.68	ND	WNW	0.013	05-24-95	Not sampled: well sampled annually, during the first quarter											
MW-6	08-22-95	40.13	13.32	26.81	ND	SW	0.012	08-22-95	Not sampled: well sampled annually, during the first quarter											
MW-6	11-09-95	40.13	14.13	26.00	ND	WSW	0.01	11-09-95	Not sampled: well sampled annually, during the first quarter											
MW-6	02-27-96	40.13	11.86	28.27	ND	SW	0.009	02-27-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	--	--	--
MW-6	04-22-96	40.13	12.35	27.78	ND	WSW	0.014	04-22-96	Not sampled: well sampled annually, during the first quarter											
MW-6	08-15-96	40.13	13.18	26.95	ND	SW	0.011	08-15-96	Not sampled: well sampled annually, during the first quarter											
MW-6	12-10-96	40.13	11.94	28.19	ND	WSW	0.023	12-10-96	Not sampled: well sampled annually, during the first quarter											
MW-6	03-27-97	40.13	13.10	27.03	ND	WSW	0.026	03-27-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	--	--	--
MW-6	05-22-97	40.13	13.00	27.13	ND	WSW	0.024	05-22-97	Not sampled: well sampled annually, during the first quarter											
MW-6	09-04-97	40.13	13.30	26.83	ND	W	0.019	09-04-97	Not sampled: well sampled annually, during the first quarter											
MW-6	11-03-97	40.13	13.42	26.71	ND	SW	0.038	11-03-97	<50	<0.5	<0.5	<0.5	<0.5	19	--	--	--	--	--	--
MW-6	02-20-98	40.13	10.57	29.56	ND	W	0.031	02-20-98	<100^	<1^	<1^	<1^	<1^	95	--	--	--	--	--	--

Table 2
Historical Groundwater Elevation and Analytical Data
Petroleum Hydrocarbons and Their Constituents
1995 - Present*

ARCO Service Station NO. 2035
1001 San Pablo Avenue, Albany, California

Well Designation	Water Level Field Date	Top of Casing Elevation ft-MSL	Depth to Water feet	Groundwater Elevation ft-MSL	Floating Product Thickness feet	Groundwater Flow Direction MWN	Hydraulic Gradient ft/ft	Water Sample Field Date	TPHG LUFT Method µg/L	Benzene EPA 8020 µg/L	Toluene EPA 8020 µg/L	Ethylbenzene EPA 8020 µg/L	Total Xylenes EPA 8020 µg/L	MTBE EPA 8020 µg/L	MTBE EPA 8240 µg/L	Oil and Grease SM 5520B&F µg/L	Oil and Grease SM 5520C µg/L	Oil and Grease SM 5520F µg/L	TRPH EPA 418.1 µg/L	TPHD LUFT Method µg/L
RW-1	03-24-95	40.33	9.32	31.02**	0.01	NW	0.037	03-24-95	11000	560	660	150	1700	--	--	--	--	--	--	--
RW-1	05-24-95	40.33	9.75	30.60**	0.03	WNW	0.013	05-24-95	Not sampled: well contained floating product											
RW-1	08-22-95	40.33	10.86	29.48**	0.02	SW	0.012	08-22-95	Not sampled: well contained floating product											
RW-1	11-09-95	40.33	20.61	19.72	ND	WSW	0.01	11-09-95	1600	79	46	13	240	--	--	--	--	--	--	--
RW-1	02-27-96	40.33	16.56	23.77	ND	SW	0.009	02-27-96	210	44	7.5	2.5	24	29	--	--	--	--	--	--
RW-1	04-22-96	40.33	9.65	30.68	ND	WSW	0.014	04-22-96	36000	7400	3700	580	3400	<300	--	--	--	--	--	--
RW-1	08-15-96	40.33	10.60	29.73	ND	SW	0.011	08-15-96	1800	31	38	15	150	<30 [^]	--	--	--	--	--	--
RW-1	12-10-96	40.33	8.72	31.61	ND	WSW	0.023	12-10-96	25000	1900	1000	330	3200	<100 [^]	--	--	--	--	--	--
RW-1	03-27-97	40.33	10.33	30.00	ND	WSW	0.026	03-27-97	7200	1900	59	95	240	480	--	--	--	--	--	--
RW-1	05-22-97	40.33	10.10	30.23	ND	WSW	0.024	05-22-97	3000	630	84	45	340	<60 [^]	--	--	--	--	--	--
RW-1	09-04-97	40.33	10.42	29.91	ND	W	0.019	09-04-97	7100	120	55	14	160	<60 [^]	--	--	--	--	--	--
RW-1	11-03-97	40.33	9.10	31.23	ND	SW	0.038	11-03-97	<200 [^]	14	19	3	19	140	--	--	--	--	--	--
RW-1	02-20-98	40.33	7.49	32.84	ND	W	0.031	02-20-98	3800	1000	85	64	220	950	--	--	--	--	--	--

ft-MSL: elevation in feet, relative to mean sea level
MWN: ground-water flow direction and gradient apply to the entire monitoring well network
ft/ft: foot per foot
TPHG: total petroleum hydrocarbons as gasoline, California DHS LUFT Method
µg/L: micrograms per liter
EPA: United States Environmental Protection Agency
MTBE: Methyl tert-butyl ether
SM: standard method
TRPH: total recoverable petroleum hydrocarbons
mg/L: milligrams per liter
TPHD: total petroleum hydrocarbons as diesel, California DHS LUFT Method
ND: none detected
W: west
[^]: method reporting limit was raised due to: (1) high analyte concentration requiring sample dilution, or (2) matrix interference
--: not analyzed or not applicable
*: For previous historical groundwater elevation and analytical data please refer to *Fourth Quarter 1995 Groundwater Monitoring Program Results and Remediation System Performance Evaluation Report, ARCO Service Station 2035, Albany, California*, (EMCON, March 25, 1996).
**: [corrected elevation (Z')] = Z + (h * 0.73); where Z = measured elevation, h = floating product thickness, 0.73 = density ratio of oil to water

Table 3
Historical Groundwater Elevation Data

Shell Station, 999 San Pablo Avenue

Date: 08-14-98

Well Designation	Water Level Field Date	TOC Elevation ft-MSL	Depth to Water feet	Groundwater Elevation ft-MSL	Floating Product Thickness feet
Shell Station					
S-1	12-10-96	42.73	7.56	35.17	ND
S-1	02-20-97	42.73	7.95	34.78	ND
S-1	05-22-97	42.73	8.11	34.62	ND
S-2	12-10-96	40.73	8.57	32.16	ND
S-2	02-20-97	40.73	8.15	32.58	ND
S-2	05-22-97	40.73	8.79	31.94	ND
S-3	12-10-96	41.46	7.96	33.50	ND
S-3	02-20-97	41.46	7.44	34.02	ND
S-3	05-22-97	41.46	7.13	34.33	ND
S-4	12-10-96	41.10	7.04	34.06	ND
S-4	02-20-97	41.10	7.07	34.03	ND
S-4	05-22-97	41.10	6.63	34.47	ND
S-5	12-10-96	39.99	9.10	30.89	ND
S-5	02-20-97	39.99	8.93	31.06	ND
S-5	05-22-97	39.99	10.07	29.93**	0.02
S-6	12-10-96	40.12	6.68	33.44	ND
S-6	02-20-97	40.12	5.70	34.42	ND
S-6	05-22-97	40.12	5.49	34.63	ND
S-7	12-10-96	40.10	9.04	31.06	ND
S-7	02-20-97	40.10	9.60	30.50	ND
S-7	05-22-97	40.10	10.63	29.47	ND

TOC: top of casing

ft-MSL: elevation in feet, relative to mean sea level

ND: none detected

** : [corrected elevation (Z')] = Z + (h * 0.73); where Z = measured elevation, h = floating product thickness, 0.73 = density ratio of oil to water

APPENDIX A

**CERTIFIED ANALYTICAL REPORTS,
CHAIN OF CUSTODY DOCUMENTATION,
AND FIELD DATA SHEETS**



March 5, 1998

Service Request No.: S9800355

Gary Messerotes
EMCON
1921 Ringwood Avenue
San Jose, CA 95131

RE: 20805-123.004/TO#22312.00/2035 ALBANY

Dear Mr. Messerotes:

The following pages contain analytical results for sample(s) received by the laboratory on February 20, 1998. Results of sample analyses are followed by Appendix A which contains sample custody documentation and quality assurance deliverables requested for this project. The work requested has been assigned the Service Request No. listed above. To help expedite our service, please refer to this number when contacting the laboratory.

Analytical results were produced by procedures consistent with Columbia Analytical Services' (CAS) Quality Assurance Manual (with any deviations noted). Signature of this CAS Analytical Report below confirms that pages 2 through 19, following, have been thoroughly reviewed and approved for release in accord with CAS Standard Operating Procedure ADM-DatRev3.

Please feel welcome to contact me should you have questions or further needs.

Sincerely,

A handwritten signature in black ink, appearing to read "Steven L. Green". The signature is fluid and cursive, with the first name being the most prominent.

Steven L. Green
Project Chemist

A handwritten signature in black ink, appearing to read "Bernadette J Cox for". The signature is cursive and somewhat stylized.

Greg Anderson
Regional QA Coordinator

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
TTLIC	Total Threshold Limit Concentration
VOA	Volatile Organic Analyte(s)

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: 20805-123.004/TO#22312.00/2035 ALBANY
Sample Matrix: Water

Service Request: L9800482
Date Collected: 2/20/98
Date Received: 2/20/98

Total Recoverable Petroleum Hydrocarbons (TRPH)

Prep Method: METHOD
Analysis Method: 418.1
Test Notes:

Units: mg/L (ppm)
Basis: NA

Sample Name	Lab Code	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
MW-3(30)	L9800482-001	0.5	1	2/24/98	2/24/98	ND	
Method Blank	L980224-MB	0.5	1	2/24/98	2/24/98	ND	

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: 20805-123.004/TO#22312.00/2035 ALBANY
Sample Matrix: Water

Service Request: S9800355
Date Collected: 2/20/98
Date Received: 2/20/98

BTEX, MTBE and TPH as Gasoline

Sample Name: MW-5(23)
Lab Code: S9800355-001
Test Notes:

Units: ug/L (ppb)
Basis: NA

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	2/21/98	ND	
Benzene	EPA 5030	8020	0.5	1	NA	2/21/98	ND	
Toluene	EPA 5030	8020	0.5	1	NA	2/21/98	ND	
Ethylbenzene	EPA 5030	8020	0.5	1	NA	2/21/98	ND	
Xylenes, Total	EPA 5030	8020	0.5	1	NA	2/21/98	ND	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	1	NA	2/21/98	ND	

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: 20805-123.004/TO#22312.00/2035 ALBANY
Sample Matrix: Water

Service Request: S9800355
Date Collected: 2/20/98
Date Received: 2/20/98

BTEX, MTBE and TPH as Gasoline

Sample Name: MW-4(24)
Lab Code: S9800355-002
Test Notes:

Units: ug/L (ppb)
Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	40	NA	2/25/98	<2000	C1
Benzene	EPA 5030	8020	0.5	40	NA	2/25/98	<20	C1
Toluene	EPA 5030	8020	0.5	40	NA	2/25/98	<20	C1
Ethylbenzene	EPA 5030	8020	0.5	40	NA	2/25/98	<20	C1
Xylenes, Total	EPA 5030	8020	0.5	40	NA	2/25/98	<20	C1
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	40	NA	2/25/98	3300	

C1

The MRL was elevated due to high analyte concentration requiring sample dilution.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: 20805-123.004/TO#22312.00/2035 ALBANY
Sample Matrix: Water

Service Request: S9800355
Date Collected: 2/20/98
Date Received: 2/20/98

BTEX, MTBE and TPH as Gasoline

Sample Name: MW-1(25)
Lab Code: S9800355-003
Test Notes:

Units: ug/L (ppb)
Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	10	NA	2/22/98	1800	
Benzene	EPA 5030	8020	0.5	10	NA	2/22/98	540	
Toluene	EPA 5030	8020	0.5	10	NA	2/22/98	7	
Ethylbenzene	EPA 5030	8020	0.5	10	NA	2/22/98	27	
Xylenes, Total	EPA 5030	8020	0.5	10	NA	2/22/98	31	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	10	NA	2/22/98	46	

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: 20805-123.004/TO#22312.00/2035 ALBANY
Sample Matrix: Water

Service Request: S9800355
Date Collected: 2/20/98
Date Received: 2/20/98

BTEX, MTBE and TPH as Gasoline

Sample Name: MW-2(26)
Lab Code: S9800355-004
Test Notes:

Units: ug/L (ppb)
Basis: NA

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	2/21/98	ND	
Benzene	EPA 5030	8020	0.5	1	NA	2/21/98	0.5	
Toluene	EPA 5030	8020	0.5	1	NA	2/21/98	ND	
Ethylbenzene	EPA 5030	8020	0.5	1	NA	2/21/98	ND	
Xylenes, Total	EPA 5030	8020	0.5	1	NA	2/21/98	ND	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	1	NA	2/21/98	12	

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
 Project: 20805-123.004/TO#22312.00/2035 ALBANY
 Sample Matrix: Water

Service Request: S9800355
 Date Collected: 2/20/98
 Date Received: 2/20/98

BTEX, MTBE and TPH as Gasoline

Sample Name: MW-6(22)
 Lab Code: S9800355-005
 Test Notes:

Units: ug/L (ppb)
 Basis: NA

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	2/22/98	<100	C1
Benzene	EPA 5030	8020	0.5	2	NA	2/22/98	<1	C1
Toluene	EPA 5030	8020	0.5	2	NA	2/22/98	<1	C1
Ethylbenzene	EPA 5030	8020	0.5	2	NA	2/22/98	<1	C1
Xylenes, Total	EPA 5030	8020	0.5	2	NA	2/22/98	<1	C1
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	2	NA	2/22/98	95	

C1 The MRL was elevated due to high analyte concentration requiring sample dilution.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: 20805-123.004/TO#22312.00/2035 ALBANY
Sample Matrix: Water

Service Request: S9800355
Date Collected: 2/20/98
Date Received: 2/20/98

BTEX, MTBE and TPH as Gasoline

Sample Name: MW-3(30)
Lab Code: S9800355-006
Test Notes:

Units: ug/L (ppb)
Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	4	NA	2/21/98	<200	C1
Benzene	EPA 5030	8020	0.5	4	NA	2/21/98	<2	C1
Toluene	EPA 5030	8020	0.5	4	NA	2/21/98	5	
Ethylbenzene	EPA 5030	8020	0.5	4	NA	2/21/98	<2	C1
Xylenes, Total	EPA 5030	8020	0.5	4	NA	2/21/98	8	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	4	NA	2/21/98	140	

C1 The MRL was elevated due to high analyte concentration requiring sample dilution.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: 20805-123.004/TO#22312.00/2035 ALBANY
Sample Matrix: Water

Service Request: S9800355
Date Collected: 2/20/98
Date Received: 2/20/98

BTEX, MTBE and TPH as Gasoline

Sample Name: RW-1(20)
Lab Code: S9800355-007
Test Notes:

Units: ug/L (ppb)
Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	20	NA	2/21/98	3800	
Benzene	EPA 5030	8020	0.5	20	NA	2/21/98	1000	
Toluene	EPA 5030	8020	0.5	20	NA	2/21/98	85	
Ethylbenzene	EPA 5030	8020	0.5	20	NA	2/21/98	64	
Xylenes, Total	EPA 5030	8020	0.5	20	NA	2/21/98	220	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	20	NA	2/21/98	950	

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: 20805-123.004/TO#22312.00/2035 ALBANY
Sample Matrix: Water

Service Request: S9800355
Date Collected: NA
Date Received: NA

BTEX, MTBE and TPH as Gasoline

Sample Name: Method Blank
Lab Code: S980220-WB1
Test Notes:

Units: ug/L (ppb)
Basis: NA

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	2/20/98	ND	
Benzene	EPA 5030	8020	0.5	1	NA	2/20/98	ND	
Toluene	EPA 5030	8020	0.5	1	NA	2/20/98	ND	
Ethylbenzene	EPA 5030	8020	0.5	1	NA	2/20/98	ND	
Xylenes, Total	EPA 5030	8020	0.5	1	NA	2/20/98	ND	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	1	NA	2/20/98	ND	

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: 20805-123.004/TO#22312.00/2035 ALBANY
Sample Matrix: Water

Service Request: S9800355
Date Collected: NA
Date Received: NA

BTEX, MTBE and TPH as Gasoline

Sample Name: Method Blank
Lab Code: S980221-WB1
Test Notes:

Units: ug/L (ppb)
Basis: NA

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	2/21/98	ND	
Benzene	EPA 5030	8020	0.5	1	NA	2/21/98	ND	
Toluene	EPA 5030	8020	0.5	1	NA	2/21/98	ND	
Ethylbenzene	EPA 5030	8020	0.5	1	NA	2/21/98	ND	
Xylenes, Total	EPA 5030	8020	0.5	1	NA	2/21/98	ND	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	1	NA	2/21/98	ND	

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: 20805-123.004/TO#22312.00/2035 ALBANY
Sample Matrix: Water

Service Request: S9800355
Date Collected: NA
Date Received: NA

BTEX, MTBE and TPH as Gasoline

Sample Name: Method Blank
Lab Code: S980225-WB1
Test Notes:

Units: ug/L (ppb)
Basis: NA

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	2/25/98	ND	
Benzene	EPA 5030	8020	0.5	1	NA	2/25/98	ND	
Toluene	EPA 5030	8020	0.5	1	NA	2/25/98	ND	
Ethylbenzene	EPA 5030	8020	0.5	1	NA	2/25/98	ND	
Xylenes, Total	EPA 5030	8020	0.5	1	NA	2/25/98	ND	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	1	NA	2/25/98	ND	

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: 20805-123.004/TO#22312.00/2035 ALBANY
Sample Matrix: Water

Service Request: S9800355
Date Collected: NA
Date Received: NA

BTEX, MTBE and TPH as Gasoline

Sample Name: Method Blank
Lab Code: S980220-WB2
Test Notes:

Units: ug/L (ppb)
Basis: NA

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	2/20/98	ND	
Benzene	EPA 5030	8020	0.5	1	NA	2/20/98	ND	
Toluene	EPA 5030	8020	0.5	1	NA	2/20/98	ND	
Ethylbenzene	EPA 5030	8020	0.5	1	NA	2/20/98	ND	
Xylenes, Total	EPA 5030	8020	0.5	1	NA	2/20/98	ND	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	1	NA	2/20/98	ND	

APPENDIX A

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: 20805-123.004/TO#22312.00/2035 ALBANY
LCS Matrix: Water

Service Request: L9800482
Date Collected: NA
Date Received: NA
Date Extracted: 2/24/98
Date Analyzed: 2/24/98

**Laboratory Control Sample/Duplicate Laboratory Control Sample Summary
 Total Recoverable Petroleum Hydrocarbons (TRPH)**

Sample Name: Duplicate Lab Control Sample **Units:** mg/L (ppm)
Lab Code: L980224-LCS, L980224-DLCS **Basis:** NA
Test Notes: *

Percent Recovery

Analyte	Prep Method	Analysis Method	True Value		Result		Percent Recovery		CAS Acceptance Limits	Relative Percent Difference
			LCS	DLCS	LCS	DLCS	LCS	DLCS		
TRPH	METHOD	418.1	2.08	2.08	1.93	1.93	93	93	75-125	<1

* Sample quantity was insufficient to perform matrix spike and matrix spike duplicate. Three separate, replicate one liter samples are required to analyze sample and spikes.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: 20805-123.004/TO#22312.00/2035 ALBANY
Sample Matrix: Water

Service Request: S9800355
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: 8020 CA/LUFT

Units: PERCENT
Basis: NA

Sample Name	Lab Code	Test Notes	Percent Recovery	
			4-Bromofluorobenzene	a,a,a-Trifluorotoluene
MW-5(23)	S9800355-001		94	97
MW-4(24)	S9800355-002		100	83
MW-1(25)	S9800355-003		96	79
MW-2(26)	S9800355-004		99	104
MW-6(22)	S9800355-005		94	84
MW-3(30)	S9800355-006		116	75 B2
RW-1(20)	S9800355-007		98	80
BATCH QC	S9800356-001MS		101	81
BATCH QC	S9800356-001DMS		96	82
Method Blank	S980220-WB1		97	101
Method Blank	S980221-WB1		96	85
Method Blank	S980225-WB1		100	81
Method Blank	S980220-WB2		96	84

CAS Acceptance Limits: 69-116 69-116

B2 The surrogate used for this sample was 1,4-Difluorobenzene.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
 Project: 20805-123.004/TO#22312.00/2035 ALBANY
 Sample Matrix: Water

Service Request: S9800355
 Date Collected: NA
 Date Received: NA
 Date Extracted: NA
 Date Analyzed: 2/22/98

Matrix Spike/Duplicate Matrix Spike Summary
 BTE

Sample Name: BATCH QC Units: ug/L (ppb)
 Lab Code: S9800356-001MS, S9800356-001DMS Basis: NA
 Test Notes:

Analyte	Prep Method	Analysis Method	MRL	Spike Level		Sample Result	Spike Result		Percent Recovery		CAS Acceptance Limits	Relative Percent Difference
				MS	DMS		MS	DMS	MS	DMS		
Benzene	EPA 5030	8020	0.5	25	25	ND	26	25	104	100	75-135	4
Toluene	EPA 5030	8020	0.5	25	25	ND	26	25	104	100	73-136	4
Ethylbenzene	EPA 5030	8020	0.5	25	25	ND	25	25	100	100	69-142	<1

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: 20805-123.004/TO#22312.00/2035 ALBANY

Service Request: 89800355
Date Analyzed: 2/20/98

**Initial Calibration Verification (ICV) Summary
 BTEX, MTBE and TPH as Gasoline**

Sample Name: ICV **Units:** ug/L (ppb)
Lab Code: ICV1 **Basis:** NA
Test Notes:

ICV Source:

Analyte	Prep Method	Analysis Method	True Value	Result	CAS Percent Recovery		Result Notes
					Acceptance Limits	Percent Recovery	
TPH as Gasoline	EPA 5030	CA/LUFT	250	230	90-110	92	
Benzene	EPA 5030	8020	25	27	85-115	108	
Toluene	EPA 5030	8020	25	27	85-115	108	
Ethylbenzene	EPA 5030	8020	25	26	85-115	104	
Xylenes, Total	EPA 5030	8020	75	77	85-115	103	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	25	23	85-115	92	

EMCON - Groundwater Sampling and Analysis Request Form

PROJECT NAME : ARCO STATION 2035
1001 San Pablo Avenue, Albany

Sampling Project #: 21775-217.003
Reporting Project #: 20805-123.004

DATE REQUESTED : 20-Feb-98

Project Manager: Gary Messerotes

Groundwater Monitoring Instructions	Treatment System Instructions
<p>Quarterly Monitoring - Second Month of the Quarter Perform a water level survey prior to sampling (see ARCO SOP) Well survey points are top of well casings. Purge three (3) casing volumes. You will have to bring a trailer for purge water transport. Well MW-3 may contain floating product. Sample all wells regardless of product per John Young's request. Please use the reporting project number (#20805-123.004) on the chain-of-custody forms, sample containers, and analytical results. Sample ID's on the C-O-C and the sample bottles must include the depth at which the sample was collected [i.e. MW-1 (30)].</p>	<p>Treatment system must be off for one week prior to sampling. On going SVE, sparging and air bubbling are being performed. Bubbler may be on during sampling please be careful not to damage any of the hoses. RW-1 may contain FP please sample this well from the sample port. Lisle Rath Pager# (888) 606-0933</p>

Site Contact: Saaid

Site Phone: (510) 525-1326

Well Locks: ARCO Key

Well ID or Source	Casing Diameter (inches)	Casing Length (feet)	Top Of Screen (feet)	Analyses Requested
MW-5	4.0	25.1	8.5	<p align="center">Water Levels Dissolved Oxygen TPH-Gasoline BTEX MTBE by EPA 8020 (Fill 2- 40ml HCL VOAs)</p>
MW-4	4.0	25.8	8.5	
MW-1	4.0	30.1	15.0	
MW-2	4.0	29.1	20.0	
MW-6	2.0	24.8	8.0 <i>GW 17</i>	
MW-3	4.0	33.5	12.5	
RW-1	6.0	25.4	11.0	
Above wells in indicated order				<p>Add:</p> <p align="center">TRPH (EPA 418.1) (Fill 2- 1liter HCL Glass)</p>
<p>MW-3</p> <p>Above wells in indicated order</p>				
<p>Laboratory Instructions: Please use the EMCON reporting project number (#2805-123.004) on the CAR. Lowest detection limits possible. Normal QA/QC.</p>				
<p>ND = None Detected IP = Intermittent Product</p>				

FIELD REPORT
DEPTH TO WATER / FLOATING PRODUCT SURVEY

PROJECT # : 21775-217.003

STATION ADDRESS : 101 San Pablo Avenue, Albany

DATE : 2/20/98

ARCO STATION # : 2035

FIELD TECHNICIAN : Mike Ross

DAY : Friday

DTW Order	WELL ID	Well Box Seal	Type Of Well Box	Well Box Secure	Lock Number	Type Of Well Cap	FIRST DEPTH TO WATER (feet)	SECOND DEPTH TO WATER (feet)	DEPTH TO FLOATING PRODUCT (feet)	FLOATING PRODUCT THICKNESS (feet)	WELL TOTAL DEPTH (feet)	COMMENTS
1	MW-5	OK	1 3/16	1 3/8	ARCO	LWC	6.67	6.67	NR	NR	24.3	well cap off well water in box
2	MW-4	OK	1 3/16	1/8	ARCO	LWC	6.72	6.78	NR	NR	25.1	water in box T.O.C
3	MW-1	OK	1 5/16	1/8	ARCO	LWC	6.92	6.92	NR	NR	29.6	water in box
4	MW-2	OK	1 5/16	1/8	ARCO	LWC	7.69	7.69	NR	NR	28.7	
5	MW-6	OK	1 5/16	1/8	ARCO	LWC	10.57	10.57	NR	NR	24.3	
6	MW-3	OK	1 5/16	1/8	ARCO	LWC	7.48	7.48	NR	NR	33.0	
7	RW-1	OK	1 5/16	1/8	None	LWC	7.48 7.49	7.49	NR	NR	33.0 25.5	

SURVEY POINTS ARE TOP OF WELL CASINGS

WATER SAMPLE FIELD DATA SHEET

Rev 1/97



OWT

PROJECT NO 21775-217.003
 PURGED BY M. ROSS
 SAMPLED BY M. ROSS

SAMPLE ID MW-1 (25)
 CLIENT NAME ARCO 2035
 LOCATION AUBANY, CA.

TYPE Groundwater Surface Water Leachate Other
 CASING DIAMETER (inches): 2 3 4 5 6 Other

CASING ELEVATION (feet/MSL) NR VOLUME IN CASING (gal.) 14.81
 DEPTH OF WELL (feet) 6.92 CALCULATED PURGE (gal.) 44.45
 DEPTH OF WATER (feet) 29.6 ACTUAL PURGE VOL (gal.) 45.0

DATE PURGED: 2-20-98 END PURGE: 1038
 DATE SAMPLED: 2-20-98 SAMPLING TIME: 1050

TIME (2400 HR)	VOLUME (gal)	pH (units)	E.C. (µmhos/cm@25°C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
<u>1029</u>	<u>15.0</u>	<u>6.54</u>	<u>857</u>	<u>57.8</u>	<u>Yellow</u>	<u>TRACE</u>
<u>1033</u>	<u>30.0</u>	<u>6.63</u>	<u>886</u>	<u>57.4</u>	<u>clr</u>	<u>clr</u>
<u>1038</u>	<u>45.0</u>	<u>6.56</u>	<u>884</u>	<u>60.1</u>	<u>clr</u>	<u>clr</u>

OTHER: DO 3.5 mg/l ODOR: None NR NR
(COBALT 0-100) (NTU 0-200)

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): NR

PURGING EQUIPMENT

2" Bladder Pump Bailer (Teflon)
 Centrifugal Pump Bailer (PVC)
 Submersible Pump Bailer (Stainless Steel)
 Well Wizard™ Dedicated
 Other: _____

SAMPLING EQUIPMENT

2" Bladder Pump Bailer (Teflon)
 Bomb Sampler Bailer (Stainless Steel)
 Dipper Submersible Pump
 Well Wizard™ Dedicated
 Other: DISPOSABLE

WELL INTEGRITY: OK LOCK: ARCO

REMARKS: _____

pH, E.C., Temp. Meter Calibration Date: 2-20-98 Time: 0910 Meter Serial No.: 600112
 E.C. 1000 1 pH 7 1 pH 10 1 pH 4 1
 Temperature °F 60.0 MW-5
 SIGNATURE: M. Ross REVIEWED BY: SA PAGE 1 OF 7

WATER SAMPLE FIELD DATA SHEET

Rev 1/97



OWT

PROJECT NO 21775-217.003
 PURGED BY M. ROSS
 SAMPLED BY M. ROSS

SAMPLE ID MW-2 (26)
 CLIENT NAME ARLO 2035
 LOCATION ALBANY, CA

TYPE Groundwater Surface Water Leachate Other
 CASING DIAMETER (inches) 2 3 4 5 6 Other

CASING ELEVATION (feet/MSL) NR VOLUME IN CASING (gal.) 13.72
 DEPTH OF WELL (feet) 7.69 CALCULATED PURGE (gal.) 41.17
 DEPTH OF WATER (feet) 28.9 ACTUAL PURGE VOL (gal.) 42.0

DATE PURGED: 2-20-98 END PURGE: 1109
 DATE SAMPLED: 2-20-98 SAMPLING TIME: 1120

TIME (2400 HR)	VOLUME (gal)	pH (units)	E.C. (µmhos/cm@25°C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
<u>1103</u>	<u>14.0</u>	<u>6.69</u>	<u>814</u>	<u>58.0</u>	<u>clr</u>	<u>clr</u>
<u>1106</u>	<u>28.0</u>	<u>6.80</u>	<u>820</u>	<u>59.8</u>	<u>clr</u>	<u>clr</u>
<u>1109</u>	<u>42.0</u>	<u>6.79</u>	<u>810</u>	<u>60.3</u>	<u>clr</u>	<u>clr</u>

OTHER: D.O. 2.5 mg/L ODOR: NONE NR NA
(COBALT 0-100) (NTU 0-200)
 FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): NR

PURGING EQUIPMENT	SAMPLING EQUIPMENT
<input type="checkbox"/> 2" Bladder Pump <input checked="" type="checkbox"/> Centrifugal Pump <input type="checkbox"/> Submersible Pump <input type="checkbox"/> Well Wizard™ Other: _____	<input type="checkbox"/> 2" Bladder Pump <input checked="" type="checkbox"/> Bomb Sampler <input type="checkbox"/> Dipper <input type="checkbox"/> Well Wizard™ Other: <u>DISPENSABLE</u>
<input type="checkbox"/> Bailor (Teflon) <input type="checkbox"/> Bailor (PVC) <input type="checkbox"/> Bailor (Stainless Steel) <input type="checkbox"/> Dedicated	<input checked="" type="checkbox"/> Bailor (Teflon) <input type="checkbox"/> Bailor (Stainless Steel) <input type="checkbox"/> Submersible Pump <input type="checkbox"/> Dedicated

WELL INTEGRITY: OK LOCK: ARLO

REMARKS: _____

pH, E.C., Temp. Meter Calibration Date 2-20-98 Time 0910 Meter Serial No. 660112
 E.C. 1000 / pH 7 / pH 10 / pH 4 /
 Temperature °F See MW-5
 SIGNATURE: M. Ross REVIEWED BY: GA PAGE 2 OF 7

WATER SAMPLE FIELD DATA SHEET

Rev 1/97



OWT

PROJECT NO 21775-217.003
 PURGED BY M. ROSS
 SAMPLED BY M. ROSS

SAMPLE ID MW-3 (30)
 CLIENT NAME ARLO 2035
 LOCATION ALBANY, CA

TYPE Groundwater Surface Water Leachate Other
 CASING DIAMETER (inches) 2 3 4 5 6 Other

CASING ELEVATION (feet/MSL) NR VOLUME IN CASING (gal.) 16.67
 DEPTH OF WELL (feet) 33.48 CALCULATED PURGE (gal.) 50.01
 DEPTH OF WATER (feet) 33.0 ACTUAL PURGE VOL (gal.) 50.5

DATE PURGED: 2-20-98 END PURGE: 1144
 DATE SAMPLED: 2-20-98 SAMPLING TIME: 1200

TIME (2400 HR)	VOLUME (gal)	pH (units)	E.C. (µmhos/cm@25°C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
<u>1132</u>	<u>12.0</u>	<u>6.65</u>	<u>706</u>	<u>59.3</u>	<u>clr</u>	<u>clr</u>
<u>1138</u>	<u>34.0</u>	<u>6.96</u>	<u>712</u>	<u>60.1</u>	<u>light brown</u>	<u>mod</u>
<u>1144</u>	<u>50.5</u>	<u>7.06</u>	<u>696</u>	<u>60.7</u>	<u>"</u>	<u>"</u>

OTHER: D.O. 1.0 mg/L ODOR: NONE NR NR
(COBALT 0-100) (NTU 0-200)

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): NR

PURGING EQUIPMENT

2" Bladder Pump Bailer (Teflon)
 Centrifugal Pump Bailer (PVC)
 Submersible Pump Bailer (Stainless Steel)
 Well Wizard™ Dedicated
 Other: _____

SAMPLING EQUIPMENT

2" Bladder Pump Bailer (Teflon)
 Bomb Sampler Bailer (Stainless Steel)
 Dipper Submersible Pump
 Well Wizard™ Dedicated
 Other: Disposable

WELL INTEGRITY: OK LOCK: ARLO

REMARKS: _____

pH, E.C., Temp. Meter Calibration Date: 2-20-98 Time: 0910 Meter Serial No. 600112
 E.C. 1000 / pH 7 / pH 10 / pH 4 /
 Temperature °F See MW-5
 SIGNATURE: M. Ross REVIEWED BY: SA PAGE 3 OF 7

WATER SAMPLE FIELD DATA SHEET

Rev 1/97



PROJECT NO 21775-217.003
 PURGED BY M. Ross
 SAMPLED BY M. Ross

SAMPLE ID MW-4(24)
 CLIENT NAME ARCO 2035
 LOCATION ALBANY, CA

TYPE Groundwater Surface Water Leachate Other
 CASING DIAMETER (inches) 2 3 4 5 6 Other

CASING ELEVATION (feet/MSL) NR VOLUME IN CASING (gal.) 11.96
 DEPTH OF WELL (feet) ~~6.78~~ 25.1 CALCULATED PURGE (gal.) 35.90
 DEPTH OF WATER (feet) 6.78 ACTUAL PURGE VOL (gal.) 23.0

DATE PURGED: 2-20-98 END PURGE: 0952
 DATE SAMPLED: 2-20-98 SAMPLING TIME: 1005

TIME (2400 HR)	VOLUME (gal)	pH (units)	E.C. (µmhos/cm@25°C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
<u>0947</u>	<u>12.0</u>	<u>6.47</u>	<u>526</u>	<u>56.2</u>	<u>Light Blue</u>	<u>TRAP</u>
<u>0950</u>	<u>24.0</u>	<u>6.57</u>	<u>553</u>	<u>58.1</u>	<u>"</u>	<u>"</u>
<u>0952</u>	<u>OR/</u>	<u>@ 28.0</u>	<u>gallons</u>			
<u>1005</u>	<u>Recharge</u>	<u>6.20</u>	<u>570</u>	<u>Steel</u>	<u>"</u>	<u>"</u>

OTHER: D.O. 1.5 mg/L ODOR: NONE NR NR
(COBALT 0-100) (NTU 0-200)

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): NR

PURGING EQUIPMENT

2" Bladder Pump Bailer (Teflon)
 Centrifugal Pump Bailer (PVC)
 Submersible Pump Bailer (Stainless Steel)
 Well Wizard™ Dedicated
 Other: _____

SAMPLING EQUIPMENT

2" Bladder Pump Bailer (Teflon)
 Bomb Sampler Bailer (Stainless Steel)
 Dipper Submersible Pump
 Well Wizard™ Dedicated
 Other: D-SPOSAR

WELL INTEGRITY: OK LOCK: ARCO

REMARKS: _____

pH, E.C., Temp. Meter Calibration Date 2-20-98 Time 0910 Meter Serial No. 600112
 E.C. 1000 _____ pH 7 _____ pH 10 _____ pH 4 _____
 Temperature °F See MW-5
 SIGNATURE M. Ross REVIEWED BY JA PAGE 4 OF 7

WATER SAMPLE FIELD DATA SHEET

Rev. 1/97



OWT

PROJECT NO: 21775-217.003
 PURGED BY: M. ROSS
 SAMPLED BY: M. ROSS

SAMPLE ID: MW-5 (23)
 CLIENT NAME: ARLO 2055
 LOCATION: ALBANY, CA

TYPE: Groundwater Surface Water _____ Leachate _____ Other _____
 CASING DIAMETER (inches): 2 _____ 3 _____ 4 4.5 _____ 6 _____ Other _____

CASING ELEVATION (feet/MSL): NR VOLUME IN CASING (gal.): 11.51
 DEPTH OF WELL (feet): 6.67 CALCULATED PURGE (gal.): 34.55
 DEPTH OF WATER (feet): 24.3 ACTUAL PURGE VOL. (gal.): 28.0

DATE PURGED: 2-20-98 END PURGE: 0923
 DATE SAMPLED: 2-20-98 SAMPLING TIME: 0935

TIME (2400 HR)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm@25°C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
<u>0919</u>	<u>12.0</u>	<u>6.67</u>	<u>675</u>	<u>56.2</u>	<u>Yellow</u>	<u>Trace</u>
<u>0921</u>	<u>24.0</u>	<u>6.28</u>	<u>641</u>	<u>58.2</u>	<u>↓</u>	<u>Trace</u>
<u>0923</u>	<u>Dry</u>	<u>0</u>	<u>2700</u>	<u>Yellow</u>		
<u>0935</u>	<u>Leachate</u>	<u>6.78</u>	<u>640</u>	<u>56.7</u>		

OTHER: R.O. 2-3 mg/L ODOR: None NR NR
(COBALT 0-100) (NTU 0-200)

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): NR

PURGING EQUIPMENT

SAMPLING EQUIPMENT

2" Bladder Pump
 Centrifugal Pump
 Submersible Pump
 Well Wizard™
 Other: _____

Blailer (Teflon)
 Blailer (PVC)
 Blailer (Stainless Steel)
 Dedicated
 2" Bladder Pump Blailer (Teflon)
 Bomb Sampler Blailer (Stainless Steel)
 Dipper Submersible Pump
 Well Wizard™ Dedicated
 Other: Disposal Co

WELL INTEGRITY: OK LOCK: ARLO

REMARKS: _____

pH, E.C., Temp. Meter Calibration Date: 2-20-98 Time: 0910 Meter Serial No.: 600112
 E.C. 1000 (035 / 1000) pH T 700 / 200 pH 10 100 / 1000 pH 4 400 / 400

Temperature °F: 56.3
 SIGNATURE: M. Ross REVIEWED BY: MA PAGE 5 OF 7

WATER SAMPLE FIELD DATA SHEET

Rev 1/97



OWT

PROJECT NO 21775-217.003
 PURGED BY M. ROSS
 SAMPLED BY M. ROSS

SAMPLE ID MW-6(22)
 CLIENT NAME ARIS 2035
 LOCATION ALBANY, CA

TYPE Groundwater Surface Water Leachate Other
 CASING DIAMETER (inches) 2 3 4 4.5 6 Other

CASING ELEVATION (feet/MSL) NR VOLUME IN CASING (gal.) NR
 DEPTH OF WELL (feet) 10.57 CALCULATED PURGE (gal.) NR
 DEPTH OF WATER (feet) 24.3 ACTUAL PURGE VOL (gal.) NR

DATE PURGED: NR END PURGE: NR
 DATE SAMPLED: 2-20-98 SAMPLING TIME: 1300

TIME (2400 HR)	VOLUME (gal)	pH (units)	E.C. (µmhos/cm@25°C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
<u>1300</u>	<u>GRAB</u>	<u>6.96</u>	<u>756</u>	<u>60.7</u>	<u>clr</u>	<u>clr</u>

OTHER: 0.0, 1.5 mg/L ODOR: NONE NR NR
(COBALT 0-100) (NTU 0-200)

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): NR

PURGING EQUIPMENT

2" Bladder Pump Bailer (Teflon)
 Centrifugal Pump Bailer (PVC)
 Submersible Pump Bailer (Stainless Steel)
 Well Wizard™ Dedicated
 Other: NR

SAMPLING EQUIPMENT

2" Bladder Pump Bailer (Teflon)
 Bomb Sampler Bailer (Stainless Steel)
 Dipper Submersible Pump
 Well Wizard™ Dedicated
 Other: NR

WELL INTEGRITY: OK LOCK: NONE

REMARKS: GRAB Sample

pH, E.C., Temp. Meter Calibration Date 2-20-98 Time 0910 Meter Serial No. 600112
 E.C. 1000 1 pH 7 1 pH 10 1 pH 4 1

Temperature °F See MW-5
 SIGNATURE: Mike Ross REVIEWED BY: SA PAGE 6 OF 7

WATER SAMPLE FIELD DATA SHEET

Rev 1/97



OWT

PROJECT NO 21775-217.003
 PURGED BY M. Ross
 SAMPLED BY M. Ross

SAMPLE ID RW-1(20)
 CLIENT NAME ARCO 2035
 LOCATION ALBANY, CA

TYPE Groundwater Surface Water _____ Leachate _____ Other _____
 CASING DIAMETER (inches) 2 _____ 3 _____ 4 _____ 4.5 _____ 6 Other _____

CASING ELEVATION (feet/MSL) NR VOLUME IN CASING (gal.) 25.75
 DEPTH OF WELL (feet) 25.5 CALCULATED PURGE (gal.) 77.26
 DEPTH OF WATER (feet) 7.99 ACTUAL PURGE VOL (gal.) 78.0

DATE PURGED: 3-20-98 END PURGE: 1223
 DATE SAMPLED: 2-20-98 SAMPLING TIME: 1240

TIME (2400 HR)	VOLUME (gal)	pH (units)	E.C. (µmhos/cm@25°C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
<u>1219</u>	<u>26.0</u>	<u>7.05</u>	<u>699</u>	<u>59.9</u>	<u>Clr</u>	<u>Clr</u>
<u>1223</u>	<u>52.0</u>	<u>7.05</u>	<u>972</u>	<u>61.8</u>	<u>Clr</u>	<u>Clr</u>
<u>1228</u>	<u>28.0</u>	<u>6.99</u>	<u>913</u>	<u>62.2</u>	<u>Clr</u>	<u>Clr</u>

OTHER: D.O. 1.5 mg/L ODOR: slight NR NR
(COBALT 0-100) (NTU 0-200)

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): NR

PURGING EQUIPMENT

2" Bladder Pump Bailer (Teflon)
 Centrifugal Pump Bailer (PVC)
 Submersible Pump Bailer (Stainless Steel)
 Well Wizard™ Dedicated
 Other: _____

SAMPLING EQUIPMENT

2" Bladder Pump Bailer (Teflon)
 Bomb Sampler Bailer (Stainless Steel)
 Dipper Submersible Pump
 Well Wizard™ Dedicated
 Other: DISPOSABLE

WELL INTEGRITY: ok LOCK: Normal

REMARKS: _____

pH, E.C., Temp. Meter Calibration Date 2-20-98 Time: 0910 Meter Serial No. 600112
 E.C. 1000 1 pH 7 1 pH 10 1 pH 4 1

Temperature °F _____
 SIGNATURE: M. Ross REVIEWED BY: SA PAGE 7 OF 7

