

**EMCON**

1921 Ringwood Avenue • San Jose, California 95131-1721 • (408) 453-7300 • Fax (408) 437-9526

APPENDIX 2

Date March 31, 1998Project 20805-132.005

To:

still has elevated mtBE

Ms. Eva Chu

Alameda County Health Care Services Agency

Department of Environmental Health

1131 Harborbay Parkway, Suite 250

Alameda, California 94502-6577

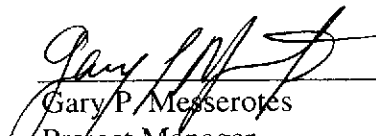
We are enclosing:

Copies	Description
<u>1</u>	<u>Fourth quarter 1997 groundwater monitoring results report,</u>
	<u>ARCO service station 6041, Dublin, California</u>

For your:	<u>X</u>	Use	Sent by:	<u>X</u>	Regular Mail
		Approval			Standard Air
		Review			Courier
		Information			Other:

Comments:

The enclosed groundwater monitoring status report is being sent to you per the request of ARCO Products Company. Please call if you have questions or comments.


Gary P. Messerotes
Project Manager

cc: Copy entire document:Paul Supple, ARCO Products Company
FileCopy transmittal and Table 2:

Scott T. Hooton, BP Oil Company





Date:

March 31, 1998

Re: ARCO Station #

6041 • 7249 Village Parkway • Dublin, CA
Fourth Quarter 1997 Groundwater Monitoring Results

"I declare, that to the best of my knowledge at the present time, that the information and/or recommendations contained in the attached proposal or report are true and correct."

Submitted by:

A handwritten signature in black ink, appearing to read "Paul Supple". The signature is fluid and cursive, with the first name "Paul" and last name "Supple" clearly distinguishable.

Paul Supple
Environmental Engineer

**EMCON**

1921 Ringwood Avenue • San Jose, California 95131-1721 • (408) 453-7300 • Fax (408) 437-9526

March 12, 1998
Project 20805-132.005

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

Re: Fourth quarter 1997 groundwater monitoring results, ARCO service station 6041,
Dublin, California

Dear Mr. Supple:

This letter presents the results of the fourth quarter 1997 groundwater monitoring program at ARCO Products Company (ARCO) service station 6041, 7249 Village Parkway, Dublin, California (Figure 1). The semi-annual monitoring program complies with Alameda County Health Care Services Agency (ACHCSA) requirements regarding underground tank investigations.

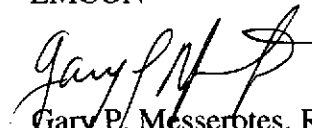
LIMITATIONS

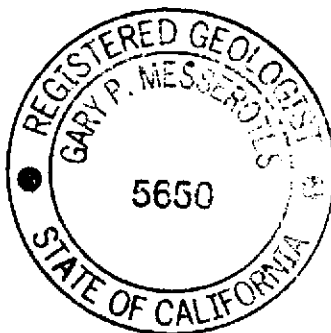
No monitoring event is thorough enough to describe all geologic and hydrogeologic conditions of interest at a given site. If conditions have not been identified during the monitoring event, results should not be construed as a guarantee of the absence of such conditions at the site, but rather as the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

Please call if you have questions.

Sincerely,

EMCON


Gary P. Messerotes, R.G. 5650
Project Manager



EMCON

March 12, 1998

ARCO QUARTERLY REPORT

Station No.: 6041 Address: 7249 Village Parkway, Dublin, California
EMCON Project No. 20805-132.005
ARCO Environmental Engineer/Phone No.: Paul Supple /(510) 299-8891
EMCON Project Manager/Phone No.: Gary P. Messerotes/(408) 453-7300
Primary Agency/Regulatory ID No.: ACHCSA /Eva Chu

WORK PERFORMED THIS QUARTER (Fourth- 1997):

1. Prepared and submitted quarterly groundwater monitoring report for third quarter 1997.
2. Perform quarterly groundwater monitoring and sampling for fourth quarter 1997.

WORK PROPOSED FOR NEXT QUARTER (First- 1998):

1. Prepare and submit quarterly groundwater monitoring report for fourth quarter 1997.
2. Perform quarterly groundwater monitoring and sampling for first quarter 1998.

QUARTERLY MONITORING:

Current Phase of Project: Quarterly Groundwater Monitoring
Is Floating Product (FP) Present On-site: ☐ Yes ☒ No
Bulk Soil Removed to Date : 15 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: None
Average Depth to Groundwater: 10.10 feet
Groundwater Gradient (Average): 0.002 ft/ft toward south-southwest (consistent with past events)

ATTACHED:

- Table 1 - Groundwater Monitoring Data, Fourth Quarter 1997
- Table 2 - Historical Groundwater Elevation and Analytical Data (Petroleum Hydrocarbons and Their Constituents)
- Table 3 - Historical Groundwater Elevation Data (UNOCAL, BP and Shell Stations)
- Figure 1 - Site Location
- Figure 2 - Groundwater Data, Fourth Quarter 1997
- Appendix A - Analytical Results and Chain of Custody Documentation, Fourth Quarter 1997 Groundwater Monitoring Event

cc: Eva Chu, ACHCSA

EMCON

Table 1
Groundwater Monitoring Data
Fourth Quarter 1997

ARCO Service Station 6041
7249 Village Parkway, Dublin, California

Date: 03-09-98

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
MW-1	11-21-97	336.56	11.10	325.46	ND	SSW	0.002	11-21-97	<5000^	<50^	<50^	<50^	<50^	8500	--
MW-2	11-21-97	334.80	9.28	325.52	ND	SSW	0.002	11-21-97	<2000^	<20^	<20^	<20^	<20^	2600	--
MW-3	11-21-97	335.53	10.10	325.43	ND	SSW	0.002	11-21-97	<5000^	<50^	<50^	<50^	<50^	9700	--
MW-4	11-21-97	334.22	8.65	325.57	ND	SSW	0.002	11-21-97	Not sampled; well not part of sampling program						
MW-5	11-21-97	335.87	10.18	325.69	ND	SSW	0.002	11-21-97	Not sampled; well not part of sampling program						
MW-6	11-21-97	335.84	10.31	325.53	ND	SSW	0.002	11-21-97	Not sampled; well not part of sampling program						
VW-2	11-21-97	NR	8.27	NR	ND	SSW	0.002	11-21-97	<200^	3	<2^	<2^	<2^	180	--

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

ND: none detected

NR: not reported; data not available or not measurable

SSW: south-southwest

^: 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 6041
7249 Village Parkway, Dublin, California

Date: 03-09-98

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	TPHC LUFT Method	Benzene EPA 8020	Toluene EPA 8020	Ethylbenzene EPA 8020	Total Xylenes EPA 8020	MTBE EPA 8020	MTBE EPA 8240
		ft-MSL	feet	ft-MSL	feet	MWN	ft/ft		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
MW-1	02-15-95	336.56	8.53	328.03	ND	NR	NR	02-15-95	820	15	<1	5.2	1.4	--	--
MW-1	05-24-95	336.56	9.00	327.56	ND	ESE	0.002	05-24-95	640	12	<1	7.3	<1	--	--
MW-1	08-25-95	336.56	10.30	326.26	ND	NW	0.006	08-25-95	780	2	<1	2	2	2500	--
MW-1	11-28-95	336.56	11.01	325.55	ND	N	0.006	11-28-95	570	2.2	<0.5	1.4	0.9	--	--
MW-1	02-26-96	336.56	7.35	329.21	ND	E	0.012	03-13-96	1100	28	<7	13	7	3400	--
MW-1	05-23-96	336.56	8.73	327.83	ND	FG	FG	05-23-96	560	8.5	<1	1.1	<1	3900	--
MW-1	08-23-96	336.56	10.25	326.31	ND	FG	FG	08-23-96	860	<1	<1	<4	2	5600	--
MW-1	03-21-97	336.56	9.35	327.21	ND	SSE	0.005	03-21-97	520	12	<0.5	2.7	1.5	6200	--
MW-1	08-20-97	336.56	10.75	325.81	ND	SSW	0.001	08-20-97	<5000^	<50^	<50^	<50^	<50^	7400	--
MW-1	11-21-97	336.56	11.10	325.46	ND	SSW	0.002	11-21-97	<5000^	<50^	<50^	<50^	<50^	8500	--
MW-2	02-15-95	334.80	6.75	328.05	ND	NR	NR	02-15-95	730	110	1.7	25	66	--	--
MW-2	05-24-95	334.80	6.88	327.92	ND	ESE	0.002	05-24-95	370	110	<1	17	1.9	--	--
MW-2	08-25-95	334.80	7.91	326.89	ND	NW	0.006	08-25-95	150	6	<1	<1	<1	2700	--
MW-2	11-28-95	334.80	9.06	325.74	ND	N	0.006	11-28-95	<50	<0.5	<0.5	<0.5	0.8	--	--
MW-2	02-26-96	334.80	6.65	328.15	ND	E	0.012	03-13-96	350	66	<0.5	11	1.7	<3	--
MW-2	05-23-96	334.80	6.90	327.90	ND	FG	FG	05-23-96	540	140	<2.5	13	<2.5	4600	--
MW-2	08-23-96	334.80	8.45	326.35	ND	FG	FG	08-23-96	180	0.8	2	0.7	2.6	4000	--
MW-2	03-21-97	334.80	7.28	327.52	ND	SSE	0.005	03-21-97	410	90	<1^	14	4	3800	--
MW-2	08-20-97	334.80	8.87	325.93	ND	SSW	0.001	08-20-97	<5000^	<50^	<50^	<50^	<50^	3100	--
MW-2	11-21-97	334.80	9.28	325.52	ND	SSW	0.002	11-21-97	<2000^	<20^	<20^	<20^	<20^	2600	--

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

ARCO Service Station 6041
7249 Village Parkway, Dublin, California

Date: 03-09-98

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
MW-3	02-15-95	335.53	8.55	326.98	ND	NR	NR	02-15-95	100	14	<0.5	6.3	<0.5	--	--
MW-3	05-24-95	335.53	8.17	327.36	ND	ESE	0.002	05-24-95	110	8	<0.5	2.7	<0.5	--	--
MW-3	08-25-95	335.53	9.27	326.26	ND	NW	0.006	08-25-95	210	3.6	<0.5	2.9	0.6	20000	--
MW-3	11-28-95	335.53	9.91	325.62	ND	N	0.006	11-28-95	81	1.5	<0.5	1.4	<0.5	--	15000
MW-3	02-26-96	335.53	8.42	327.11	ND	E	0.012	03-13-96	16000	1600	1200	300	2000	9500	--
MW-3	05-23-96	335.53	7.70	327.83	ND	FG	FG	05-23-96	6500	690	<10	120	14	8600	--
MW-3	08-23-96	335.53	9.25	326.28	ND	FG	FG	08-23-96	1700	85	2.1	61	5.3	11000	--
MW-3	03-21-97	335.53	8.72	326.81	ND	SSE	0.005	03-21-97	100	2	<1^	1	<1^	6600	--
MW-3	08-20-97	335.53	9.73	325.80	ND	SSW	0.001	08-20-97	<5000^	<50^	<50^	<50^	<50^	7700	--
MW-3	11-21-97	335.53	10.10	325.43	ND	SSW	0.002	11-21-97	<5000^	<50^	<50^	<50^	<50^	9700	--
MW-4	02-15-95	334.22	7.85	326.37	ND	NR	NR	02-15-95	<50	<0.5	<0.5	<0.5	<0.5	--	--
MW-4	05-24-95	334.22	6.68	327.54	ND	ESE	0.002	05-24-95	Not sampled: well sampled semi-annually, during the first and third quarters						
MW-4	08-25-95	334.22	6.93	327.29	ND	NW	0.006	08-25-95	<50	<0.5	<0.5	<0.5	<0.5	<3	--
MW-4	11-28-95	334.22	8.21	326.01	ND	N	0.006	11-28-95	Not sampled: well sampled semi-annually, during the first and third quarters						
MW-4	02-26-96	334.22	6.65	327.57	ND	E	0.012	03-13-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--
MW-4	05-23-96	334.22	6.47	327.75	ND	FG	FG	05-23-96	Not sampled: well sampled semi-annually, during the first and third quarters						
MW-4	08-23-96	334.22	7.66	326.56	ND	FG	FG	08-23-96	Not sampled: well not part of sampling program						
MW-4	03-21-97	334.22	6.84	327.38	ND	SSE	0.005	03-21-97	Not sampled: well not part of sampling program						
MW-4	08-20-97	334.22	8.32	325.90	ND	SSW	0.001	08-20-97	Not sampled: well not part of sampling program						
MW-4	11-21-97	334.22	8.65	325.57	ND	SSW	0.002	11-21-97	Not sampled: well not part of sampling program						

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

ARCO Service Station 6041
7249 Village Parkway, Dublin, California

Date: 03-09-98

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
MW-5	02-15-95	335.87	7.80	328.07	ND	NR	NR	02-15-95	<50	<0.5	<0.5	<0.5	<0.5	--	--
MW-5	05-24-95	335.87	8.10	327.77	ND	ESE	0.002	05-24-95	Not sampled: well sampled annually, during the first quarter						
MW-5	08-25-95	335.87	9.43	326.44	ND	NW	0.006	08-25-95	Not sampled: well sampled annually, during the first quarter						
MW-5	11-28-95	335.87	10.12	325.75	ND	N	0.006	11-28-95	Not sampled: well sampled annually, during the first quarter						
MW-5	02-26-96	335.87	6.73	329.14	ND	E	0.012	03-13-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--
MW-5	05-23-96	335.87	7.87	328.00	ND	FG	FG	05-23-96	Not sampled: well sampled annually, during the first quarter						
MW-5	08-23-96	335.87	9.46	326.41	ND	FG	FG	08-23-96	Not sampled: well not part of sampling program						
MW-5	03-21-97	335.87	8.23	327.64	ND	SSE	0.005	03-21-97	Not sampled: well not part of sampling program						
MW-5	08-20-97	335.87	9.92	325.95	ND	SSW	0.001	08-20-97	Not sampled: well not part of sampling program						
MW-5	11-21-97	335.87	10.18	325.69	ND	SSW	0.002	11-21-97	Not sampled: well not part of sampling program						
MW-6	02-15-95	335.84	7.81	328.03	ND	NR	NR	02-15-95	<50	<0.5	<0.5	<0.5	<0.5	--	--
MW-6	05-24-95	335.84	8.35	327.49	ND	ESE	0.002	05-24-95	Not sampled: well sampled annually, during the first quarter						
MW-6	08-25-95	335.84	9.71	326.13	ND	NW	0.006	08-25-95	Not sampled: well sampled annually, during the first quarter						
MW-6	11-28-95	335.84	10.28	325.56	ND	N	0.006	11-28-95	Not sampled: well sampled annually, during the first quarter						
MW-6	02-26-96	335.84	6.60	329.24	ND	E	0.012	03-13-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--
MW-6	05-23-96	335.84	8.05	327.79	ND	FG	FG	05-23-96	Not sampled: well sampled annually, during the first quarter						
MW-6	08-23-96	335.84	9.58	326.26	ND	FG	FG	08-23-96	Not sampled: well not part of sampling program						
MW-6	03-21-97	335.84	8.39	327.45	ND	SSE	0.005	03-21-97	Not sampled: well not part of sampling program						
MW-6	08-20-97	335.84	9.98	325.86	ND	SSW	0.001	08-20-97	Not sampled: well not part of sampling program						
MW-6	11-21-97	335.84	10.31	325.53	ND	SSW	0.002	11-21-97	Not sampled: well not part of sampling program						
VW-2	03-21-97	NR	8.22	NR	ND	SSE	0.005	03-21-97	150	8.9	<0.5	<0.5	0.6	270	--
VW-2	08-20-97	NR	9.16	NR	ND	SSW	0.001	08-20-97	Not sampled: well not part of sampling program						
VW-2	11-21-97	NR	8.27	NR	ND	SSW	0.002	11-21-97	<200^	3	<2^	<2^	<2^	180	--

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

ARCO Service Station 6041
7249 Village Parkway, Dublin, California

Date: 03-09-98

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
		ft-MSL	feet	ft-MSL	feet	MWN	ft/ft		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L

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

ND: none detected

NR: not reported; data not available or not measurable

SSW: south-southwest

^: 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, ARCO Service Station 6041, Dublin, California*, (EMCON, February 26, 1996).

Table 3
Historical Groundwater Elevation Data

BP Station 1116, 7197 Village Parkway
Former Shell Station, 7194 Amador Valley Boulevard
UNOCAL Station, 7375 Amador Valley Boulevard

Date: 03-10-98

Well Designation	Water Level Field Date	TOC Elevation ft-MSL	Depth to Water feet	Ground- Water Elevation ft-MSL	Comments
BP Station 1116					
MW-1	02-11-94	335.17	8.72	326.45	
MW-1	10-04-94	335.17	9.66	325.51	
MW-1	11-18-94	335.17	Not surveyed		
MW-1	02-15-95	335.17	6.56	328.61	
MW-1	05-24-95	335.17	6.80	328.37	
MW-1	08-25-95	335.17	8.61	326.56	
MW-1	11-28-95	335.17	9.54	325.63	
MW-1	02-26-96	335.17	Not surveyed		
MW-1	05-23-96	335.17	7.13	328.04	
MW-1	08-23-96	335.17	6.71	328.46	
MW-1	12-02-96	335.17	8.58	326.59	
MW-1	03-21-97	335.17	Not surveyed		
MW-1	08-22-97	335.17	8.80	326.37	
MW-1	11-21-97	335.17	Not surveyed		
MW-2	02-11-94	334.58	8.10	326.48	
MW-2	10-04-94	334.58	9.27	325.31	
MW-2	11-18-94	334.58	Not surveyed		
MW-2	02-15-95	334.58	5.97	328.61	
MW-2	05-24-95	334.58	6.50	328.08	
MW-2	08-25-95	334.58	8.30	326.28	
MW-2	11-28-95	334.58	9.05	325.53	
MW-2	02-26-96	334.58	Not surveyed		
MW-2	05-23-96	334.58	6.95	327.63	
MW-2	08-23-96	334.58	6.53	328.05	
MW-2	12-02-96	334.58	8.40	326.18	
MW-2	03-21-97	334.58	Not surveyed		
MW-2	08-22-97	334.58	8.55	326.03	
MW-2	11-21-97	334.58	Not surveyed		
MW-3	02-11-94	335.13	8.60	326.53	
MW-3	10-04-94	335.13	9.81	325.32	
MW-3	11-18-94	335.13	Not surveyed		
MW-3	02-15-95	335.13	6.61	328.52	
MW-3	05-24-95	335.13	6.83	328.30	
MW-3	08-25-95	335.13	8.84	326.29	
MW-3	11-28-95	335.13	8.57	326.56	
MW-3	02-26-96	335.13	Not surveyed		
MW-3	05-23-96	335.13	7.26	327.87	
MW-3	08-23-96	335.13	6.84	328.29	
MW-3	12-02-96	335.13	8.61	326.52	
MW-3	03-21-97	335.13	Not surveyed		
MW-3	08-22-97	335.13	8.97	326.16	
MW-3	11-21-97	335.13	Not surveyed		

Table 3
Historical Groundwater Elevation Data

BP Station 1116, 7197 Village Parkway
Former Shell Station, 7194 Amador Valley Boulevard
UNOCAL Station, 7375 Amador Valley Boulevard

Date: 03-10-98

Well Desig- nation	Water Level Field Date	TOC Elevation ft-MSL	Depth to Water feet	Ground- Water Elevation ft-MSL	Comments
AW-4	02-11-94	333.41	6.84	326.57	
AW-4	10-04-94	333.41	8.04	325.37	
AW-4	11-18-94	333.41	6.80	326.61	
AW-4	02-15-95	333.41	4.91	328.50	
AW-4	05-24-95	333.41	5.32	328.09	
AW-4	08-25-95	333.41	7.22	326.19	
AW-4	11-28-95	333.41	7.81	325.60	
AW-4	02-26-96	333.41	Not surveyed		
AW-4	05-23-96	333.41	5.17	328.24	
AW-4	08-23-96	333.41	4.73	328.68	
AW-4	12-02-96	333.41	6.43	326.98	
AW-4	03-21-97	333.41	Not surveyed		
AW-4	08-22-97	333.41	Not surveyed		
AW-4	11-21-97	333.41	Not surveyed		
AW-5	02-11-94	334.81	8.20	326.61	
AW-5	10-04-94	334.81	8.70	326.11	
AW-5	11-18-94	334.81	8.20	326.61	
AW-5	02-15-95	334.81	6.65	328.16	
AW-5	05-24-95	334.81	7.27	327.54	
AW-5	08-25-95	334.81	8.52	326.29	
AW-5	11-28-95	334.81	9.32	325.49	
AW-5	02-26-96	334.81	7.13	327.68	
AW-5	05-23-96	334.81	8.58	326.23	
AW-5	08-23-96	334.81	8.18	326.63	
AW-5	12-02-96	334.81	7.90	326.91	
AW-5	03-21-97	334.81	Not surveyed		
AW-5	08-22-97	334.81	10.27	324.54	
AW-5	11-21-97	334.81	Not surveyed		
AW-6	02-11-94	334.90	8.04	326.86	
AW-6	10-04-94	334.90	9.33	325.57	
AW-6	11-18-94	334.90	7.17	327.73	
AW-6	02-15-95	334.90	6.19	328.71	
AW-6	05-24-95	334.90	6.87	328.03	
AW-6	08-25-95	334.90	8.29	326.61	
AW-6	11-28-95	334.90	9.20	325.70	
AW-6	02-26-96	334.90	5.78	329.12	
AW-6	05-23-96	334.90	6.94	327.96	
AW-6	08-23-96	334.90	6.50	328.40	
AW-6	12-02-96	334.90	8.46	326.44	
AW-6	03-21-97	334.90	Not surveyed		
AW-6	08-22-97	334.90	8.58	326.32	
AW-6	11-21-97	334.90	Not surveyed		

Table 3
Historical Groundwater Elevation Data

BP Station 1116, 7197 Village Parkway
Former Shell Station, 7194 Amador Valley Boulevard
UNOCAL Station, 7375 Amador Valley Boulevard

Date: 03-10-98

Well Desig- nation	Water Level Field Date	TOC Elevation ft-MSL	Depth to Water feet	Ground- Water Elevation ft-MSL	Comments
Former Shell Station					
MW-1	02-11-94	334.83	8.62	326.21	
MW-1	08-25-94	334.83	9.24	325.59	
MW-1	11-23-94	334.83	8.74	326.09	
MW-1	02-15-95	334.83	6.84	327.99	
MW-1	05-24-95	334.83	7.91	326.92	
MW-1	08-25-95	334.83	8.11	326.72	
MW-1	11-28-95	334.83	Not surveyed: not scheduled for monitoring		
MW-1	02-26-96	334.83	5.60	329.23	
MW-1	05-23-96	334.83	Not surveyed: not scheduled for monitoring		
MW-1	08-23-96	334.83	8.23	326.60	
MW-1	11-22-96	334.83	Not surveyed: not scheduled for monitoring		
MW-1	03-21-97	334.83	Not surveyed: not scheduled for monitoring		
MW-1	11-21-97	334.83	Not surveyed: not scheduled for monitoring		
MW-2	02-11-94	336.96	11.04	325.92	
MW-2	08-25-94	336.96	11.29	325.67	
MW-2	11-23-94	336.96	10.92	326.04	
MW-2	02-15-95	336.96	8.90	328.06	
MW-2	05-24-95	336.96	10.02	326.94	
MW-2	08-25-95	336.96	10.24	326.72	
MW-2	11-28-95	336.96	Not surveyed: not scheduled for monitoring		
MW-2	02-26-96	336.96	7.54	329.42	
MW-2	05-23-96	336.96	Not surveyed: not scheduled for monitoring		
MW-2	08-23-96	336.96	10.29	326.67	
MW-2	11-22-96	336.96	Not surveyed: not scheduled for monitoring		
MW-2	03-21-97	336.96	Not surveyed: not scheduled for monitoring		
MW-2	11-21-97	336.96	Not surveyed: not scheduled for monitoring		
MW-3	02-11-94	336.93	10.68	326.25	
MW-3	08-25-94	336.93	11.30	325.63	
MW-3	11-23-94	336.93	10.48	326.45	
MW-3	02-15-95	336.93	8.35	328.58	
MW-3	05-24-95	336.93	9.67	327.26	
MW-3	08-25-95	336.93	9.36	327.57	
MW-3	11-28-95	336.93	Not surveyed: not scheduled for monitoring		
MW-3	02-26-96	336.93	7.04	329.89	
MW-3	05-23-96	336.93	Not surveyed: not scheduled for monitoring		
MW-3	08-23-96	336.93	10.00	326.93	
MW-3	11-22-96	336.93	Not surveyed: not scheduled for monitoring		
MW-3	03-21-97	336.93	Not surveyed: not scheduled for monitoring		
MW-3	11-21-97	336.93	Not surveyed: not scheduled for monitoring		

Table 3
Historical Groundwater Elevation Data

BP Station 1116, 7197 Village Parkway
Former Shell Station, 7194 Amador Valley Boulevard
UNOCAL Station, 7375 Amador Valley Boulevard

Date: 03-10-98

Well Designation	Water Level Field Date	TOC Elevation ft-MSL	Depth to Water feet	Ground- Water Elevation ft-MSL	Comments
MW-4	02-11-94	337.14	10.71	326.43	
MW-4	08-25-94	337.14	10.84	326.30	
MW-4	11-23-94	337.14	10.78	326.36	
MW-4	02-15-95	337.14	9.49	327.65	
MW-4	05-24-95	337.14	10.73	326.41	
MW-4	08-25-95	337.14	10.22	326.92	
MW-4	11-28-95	337.14	Not surveyed: not scheduled for monitoring		
MW-4	02-26-96	337.14	7.52	329.62	
MW-4	05-23-96	337.14	Not surveyed: not scheduled for monitoring		
MW-4	08-23-96	337.14	9.84	327.30	
MW-4	11-22-96	337.14	Not surveyed: not scheduled for monitoring		
MW-4	03-21-97	337.14	Not surveyed: not scheduled for monitoring		
MW-4	11-21-97	337.14	Not surveyed: not scheduled for monitoring		
MW-5	02-11-94	334.96	8.97	325.99	
MW-5	08-25-94	334.96	9.19	325.77	
MW-5	11-23-94	334.96	8.78	326.18	
MW-5	02-15-95	334.96	6.88	328.08	
MW-5	05-24-95	334.96	8.04	326.92	
MW-5	08-25-95	334.96	8.34	326.62	
MW-5	11-28-95	334.96	Not surveyed: not scheduled for monitoring		
MW-5	02-26-96	334.96	Not surveyed: not scheduled for monitoring		
MW-5	05-23-96	334.96	Not surveyed: not scheduled for monitoring		
MW-5	08-23-96	334.96	Not surveyed: not scheduled for monitoring		
MW-5	11-22-96	334.96	Not surveyed: not scheduled for monitoring		
MW-5	03-21-97	334.96	Not surveyed: not scheduled for monitoring		
MW-5	11-21-97	334.96	Not surveyed: not scheduled for monitoring		
MW-6	02-11-94	335.42	9.02	326.40	
MW-6	08-25-94	335.42	9.79	325.63	
MW-6	11-23-94	335.42	9.20	326.22	
MW-6	02-15-95	335.42	7.36	328.06	
MW-6	05-24-95	335.42	8.80	326.62	
MW-6	08-25-95	335.42	8.50	326.92	
MW-6	11-28-95	335.42	Not surveyed: not scheduled for monitoring		
MW-6	02-26-96	335.42	5.94	329.48	
MW-6	05-23-96	335.42	Not surveyed: not scheduled for monitoring		
MW-6	08-23-96	335.42	8.88	326.54	
MW-6	11-22-96	335.42	Not surveyed: not scheduled for monitoring		
MW-6	03-21-97	335.42	Not surveyed: not scheduled for monitoring		
MW-6	11-21-97	335.42	Not surveyed: not scheduled for monitoring		

Table 3
Historical Groundwater Elevation Data

BP Station 1116, 7197 Village Parkway
Former Shell Station, 7194 Amador Valley Boulevard
UNOCAL Station, 7375 Amador Valley Boulevard

Date: 03-10-98

Well Designation	Water Level Field Date	TOC Elevation ft-MSL	Depth to Water feet	Ground- Water Elevation ft-MSL	Comments
MW-7	02-11-94	333.23	6.12	327.11	
MW-7	08-25-94	333.23	6.76	326.47	
MW-7	11-23-94	333.23	6.75	326.48	
MW-7	02-15-95	333.23	5.40	327.83	
MW-7	05-24-95	333.23	6.82	326.41	
MW-7	08-25-95	333.23	6.46	326.77	
MW-7	11-28-95	333.23	Not surveyed: not scheduled for monitoring		
MW-7	02-26-96	333.23	Not surveyed: not scheduled for monitoring		
MW-7	05-23-96	333.23	Not surveyed: not scheduled for monitoring		
MW-7	08-23-96	333.23	Not surveyed: not scheduled for monitoring		
MW-7	11-22-96	333.23	Not surveyed: not scheduled for monitoring		
MW-7	03-21-97	333.23	Not surveyed: not scheduled for monitoring		
MW-7	11-21-97	333.23	Not surveyed: not scheduled for monitoring		
MW-8	02-11-94	335.80	8.80	327.00	
MW-8	08-25-94	335.80	9.52	326.28	
MW-8	11-23-94	335.80	9.08	326.72	
MW-8	02-15-95	335.80	6.67	329.13	
MW-8	05-24-95	335.80	7.56	328.24	
MW-8	08-25-95	335.80	8.60	327.20	
MW-8	11-28-95	335.80	Not surveyed: not scheduled for monitoring		
MW-8	02-26-96	335.80	Not surveyed: not scheduled for monitoring		
MW-8	05-23-96	335.80	Not surveyed: not scheduled for monitoring		
MW-8	08-23-96	335.80	Not surveyed: not scheduled for monitoring		
MW-8	11-22-96	335.80	Not surveyed: not scheduled for monitoring		
MW-8	03-21-97	335.80	Not surveyed: not scheduled for monitoring		
MW-8	11-21-97	335.80	Not surveyed: not scheduled for monitoring		
MW-9	02-11-94	334.57	8.88	325.69	
MW-9	08-25-94	334.57	8.79	325.78	
MW-9	11-23-94	334.57	8.65	325.92	
MW-9	02-15-95	334.57	7.36	327.21	
MW-9	05-24-95	334.57	7.75	326.82	
MW-9	08-25-95	334.57	7.90	326.67	
MW-9	11-28-95	334.57	Not surveyed: not scheduled for monitoring		
MW-9	02-26-96	334.57	Not surveyed: not scheduled for monitoring		
MW-9	05-23-96	334.57	Not surveyed: not scheduled for monitoring		
MW-9	08-23-96	334.57	Not surveyed: not scheduled for monitoring		
MW-9	11-22-96	334.57	Not surveyed: not scheduled for monitoring		
MW-9	03-21-97	334.57	Not surveyed: not scheduled for monitoring		
MW-9	11-21-97	334.57	Not surveyed: not scheduled for monitoring		

Table 3
Historical Groundwater Elevation Data

BP Station 1116, 7197 Village Parkway
Former Shell Station, 7194 Amador Valley Boulevard
UNOCAL Station, 7375 Amador Valley Boulevard

Date: 03-10-98

Well Desig- nation	Water Level Field Date	TOC Elevation ft-MSL	Depth to Water feet	Ground- Water Elevation ft-MSL	Comments
MW-11	02-11-94	334.20	8.21	325.99	
MW-11	08-25-94	334.20	8.68	325.52	
MW-11	11-23-94	334.20	8.27	325.93	
MW-11	02-15-95	334.20	6.46	327.74	
MW-11	05-24-95	334.20	7.69	326.51	
MW-11	08-25-95	334.20	7.70	326.50	
MW-11	11-28-95	334.20 Not surveyed: not scheduled for monitoring			
MW-11	02-26-96	334.20 Not surveyed: not scheduled for monitoring			
MW-11	05-23-96	334.20 Not surveyed: not scheduled for monitoring			
MW-11	08-23-96	334.20 Not surveyed: not scheduled for monitoring			
MW-11	11-22-96	334.20 Not surveyed: not scheduled for monitoring			
MW-11	03-21-97	334.20 Not surveyed: not scheduled for monitoring			
MW-11	11-21-97	334.20 Not surveyed: not scheduled for monitoring			
MW-12	02-11-94	332.53	7.18	325.35	
MW-12	08-25-94	332.53	7.24	325.29	
MW-12	11-23-94	332.53	7.16	325.37	
MW-12	02-15-95	332.53	5.16	327.37	
MW-12	05-24-95	332.53	6.95	325.58	
MW-12	08-25-95	332.53	5.63	326.90	
MW-12	11-28-95	332.53 Not surveyed: not scheduled for monitoring			
MW-12	02-26-96	332.53 Not surveyed: not scheduled for monitoring			
MW-12	05-23-96	332.53 Not surveyed: not scheduled for monitoring			
MW-12	08-23-96	332.53 Not surveyed: not scheduled for monitoring			
MW-12	11-22-96	332.53 Not surveyed: not scheduled for monitoring			
MW-12	03-21-97	332.53 Not surveyed: not scheduled for monitoring			
MW-12	11-21-97	332.53 Not surveyed: not scheduled for monitoring			
MW-13	02-11-94	335.64	9.12	326.52	
MW-13	08-25-94	335.64	9.32	326.32	
MW-13	11-23-94	335.64	9.37	326.27	
MW-13	02-15-95	335.64	8.42	327.22	
MW-13	05-24-95	335.64	9.90	325.74	
MW-13	08-25-95	335.64	8.32	327.32	
MW-13	11-28-95	335.64 Not surveyed: not scheduled for monitoring			
MW-13	02-26-96	335.64	5.76	329.88	
MW-13	05-23-96	335.64 Not surveyed: not scheduled for monitoring			
MW-13	08-23-96	335.64	8.66	326.98	
MW-13	11-22-96	335.64 Not surveyed: not scheduled for monitoring			
MW-13	03-21-97	335.64 Not surveyed: not scheduled for monitoring			
MW-13	11-21-97	335.64 Not surveyed: not scheduled for monitoring			

Table 3
Historical Groundwater Elevation Data

BP Station 1116, 7197 Village Parkway
Former Shell Station, 7194 Amador Valley Boulevard
UNOCAL Station, 7375 Amador Valley Boulevard

Date: 03-10-98

Well Designation	Water Level Field Date	TOC Elevation ft-MSL	Depth to Water feet	Ground- Water Elevation ft-MSL	Comments
RW-1	08-25-94	336.19	10.56	325.63	
RW-1	11-23-94	336.19	10.07	326.12	
RW-1	02-15-95	336.19	8.20	327.99	
RW-1	05-24-95	336.19	9.66	326.53	
RW-1	08-25-95	336.19	9.37	326.82	
RW-1	11-28-95	336.19 Not surveyed: not scheduled for monitoring			
RW-1	02-26-96	336.19 Not surveyed: not scheduled for monitoring			
RW-1	05-23-96	336.19 Not surveyed: not scheduled for monitoring			
RW-1	08-23-96	336.19 Not surveyed: not scheduled for monitoring			
RW-1	11-22-96	336.19 Not surveyed: not scheduled for monitoring			
RW-1	03-21-97	336.19 Not surveyed: not scheduled for monitoring			
RW-1	11-21-97	336.19 Not surveyed: not scheduled for monitoring			
UNOCAL Station					
MW-1	02-11-94	336.07	9.72	326.35	
MW-1	05-17-94	336.07	9.26	326.81	
MW-1	08-25-94	336.07	10.58	325.49	
MW-1	11-18-94	336.07	9.69	326.38	
MW-1	02-17-95	336.07	7.80	328.27	
MW-1	05-24-95	336.07	8.98	327.09	
MW-1	08-25-95	336.07	9.68	326.39	
MW-1	11-28-95	336.07	10.45	325.62	
MW-1	02-26-96	336.07	6.45	329.62	
MW-1	05-23-96	336.07 Not surveyed: not scheduled for monitoring			
MW-1	08-23-96	336.07 Not surveyed: not scheduled for monitoring			
MW-1	11-22-96	336.07 Not surveyed: not scheduled for monitoring			
MW-1	02-12-97	336.07 Not surveyed: not scheduled for monitoring			
MW-1	11-21-97	336.07 Not surveyed: not scheduled for monitoring			
MW-2	02-11-94	336.78	9.85	326.93	
MW-2	05-17-94	336.78	9.31	327.47	
MW-2	08-25-94	336.78	10.75	326.03	
MW-2	11-18-94	336.78	9.95	326.83	
MW-2	02-17-95	336.78	7.58	329.20	
MW-2	05-24-95	336.78	8.33	328.45	
MW-2	08-25-95	336.78	9.76	327.02	
MW-2	11-28-95	336.78	10.65	326.13	
MW-2	02-26-96	336.78	6.39	330.39	
MW-2	05-23-96	336.78 Not surveyed: not scheduled for monitoring			
MW-2	08-23-96	336.78 Not surveyed: not scheduled for monitoring			
MW-2	11-22-96	336.78 Not surveyed: not scheduled for monitoring			
MW-2	02-12-97	336.78 Not surveyed: not scheduled for monitoring			
MW-2	11-21-97	336.78 Not surveyed: not scheduled for monitoring			

Table 3
Historical Groundwater Elevation Data

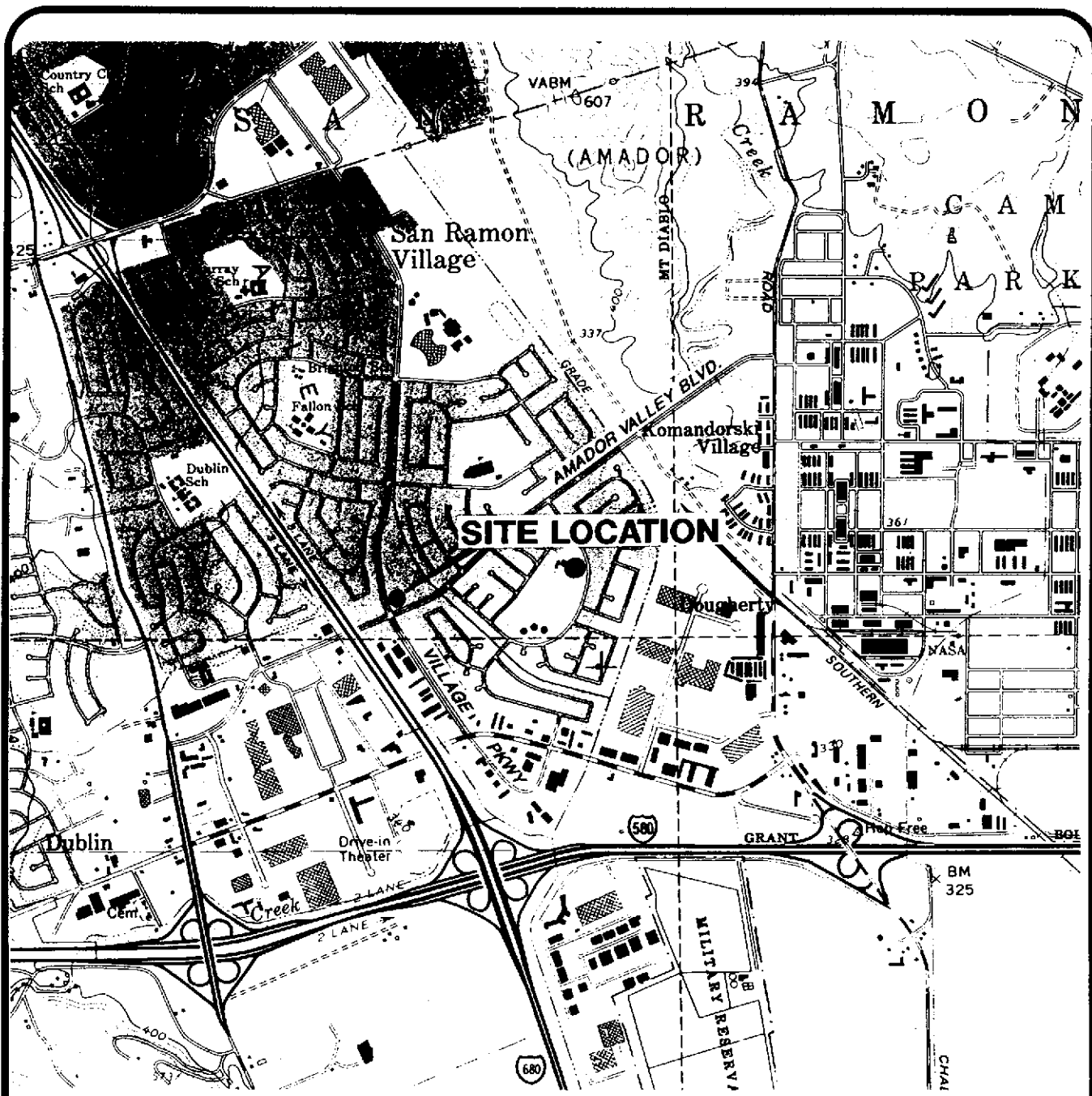
BP Station 1116, 7197 Village Parkway
Former Shell Station, 7194 Amador Valley Boulevard
UNOCAL Station, 7375 Amador Valley Boulevard

Date: 03-10-98

Well Desig- nation	Water Level Field Date	TOC Elevation ft-MSL	Depth to Water feet	Ground- Water Elevation ft-MSL	Comments
MW-3	02-11-94	336.98	10.01	326.97	
MW-3	05-17-94	336.98	9.49	327.49	
MW-3	08-25-94	336.98	10.93	326.05	
MW-3	11-18-94	336.98	10.15	326.83	
MW-3	02-17-95	336.98	7.62	329.36	
MW-3	05-24-95	336.98	8.26	328.72	
MW-3	08-25-95	336.98	10.03	326.95	
MW-3	11-28-95	336.98	10.85	326.13	
MW-3	02-26-96	336.98	6.39	330.59	
MW-3	05-23-96	336.98	Not surveyed: not scheduled for monitoring		
MW-3	08-23-96	336.98	Not surveyed: not scheduled for monitoring		
MW-3	11-22-96	336.98	Not surveyed: not scheduled for monitoring		
MW-3	02-12-97	336.98	Not surveyed: not scheduled for monitoring		
MW-3	11-21-97	336.98	Not surveyed: not scheduled for monitoring		
MW-4	02-11-94	336.43	10.10	326.33	
MW-4	05-17-94	336.43	9.63	326.80	
MW-4	08-25-94	336.43	10.94	325.49	
MW-4	11-18-94	336.43	10.10	326.33	
MW-4	02-17-95	336.43	8.12	328.31	
MW-4	05-24-95	336.43	8.68	327.75	
MW-4	08-25-95	336.43	10.08	326.35	
MW-4	11-28-95	336.43	10.81	325.62	
MW-4	02-26-96	336.43	6.75	329.68	
MW-4	05-23-96	336.43	Not surveyed: not scheduled for monitoring		
MW-4	08-23-96	336.43	Not surveyed: not scheduled for monitoring		
MW-4	11-22-96	336.43	Not surveyed: not scheduled for monitoring		
MW-4	02-12-97	336.43	Not surveyed: not scheduled for monitoring		
MW-4	11-21-97	336.43	Not surveyed: not scheduled for monitoring		
MW-5	02-11-94	335.96	10.08	325.88	
MW-5	05-17-94	335.96	9.24	326.72	
MW-5	08-25-94	335.96	10.43	325.53	
MW-5	11-18-94	335.96	10.09	325.87	
MW-5	02-17-95	335.96	7.76	328.20	
MW-5	05-24-95	335.96	7.98	327.98	
MW-5	08-25-95	335.96	9.57	326.39	
MW-5	11-28-95	335.96	10.33	325.63	
MW-5	02-26-96	335.96	7.15	328.81	
MW-5	05-23-96	335.96	8.65	327.31	
MW-5	08-23-96	335.96	10.02	325.94	
MW-5	11-22-96	335.96	10.16	325.80	
MW-5	02-12-97	335.96	7.18	328.78	
MW-5	11-21-97	335.96	Not surveyed: not scheduled for monitoring		

TOC: top of casing

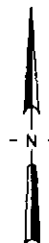
ft-MSL: elevation in feet, relative to mean sea level



Base map from USGS 7.5' Quad. Map:
Dublin, California. Photorevised 1980.

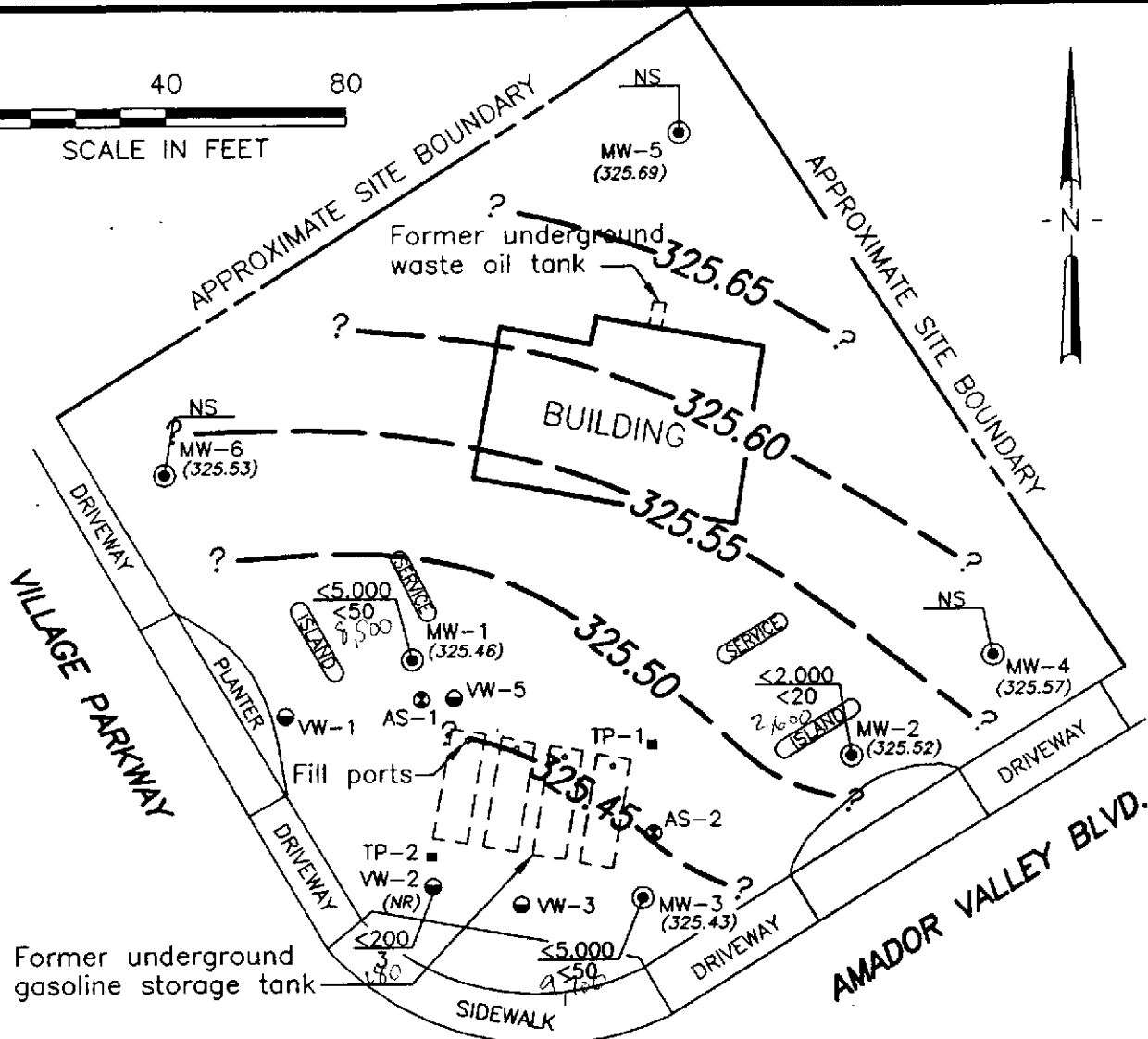
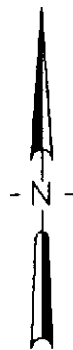
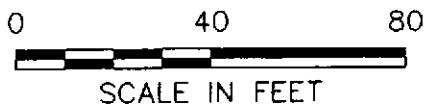


0 2000 4000
SCALE IN FEET



DATE **NOV. 1997**
DWN **KAJ**
APP _____
REV _____
PROJECT NO.
805-132.005

FIGURE 1
ARCO PRODUCTS COMPANY
SERVICE STATION 6041, 7249 VILLAGE PKWY.
DUBLIN, CALIFORNIA
QUARTERLY GROUNDWATER MONITORING
SITE LOCATION



EXPLANATION

- Groundwater monitoring well
- Tank pit observation well
- Vapor extraction well
- ⊕ Air sparge well
- NS Not sampled; not scheduled for chemical analysis
- NR Not recorded
- < Method reporting limit was raised due to high analyte concentration requiring sample dilution or matrix interference

(325.46) Groundwater elevation (Ft.-MSL) measured 11/21/97

? — — — Groundwater elevation contour (Ft.-MSL)

<5,000 — — — TPHG concentration (ug/L); sampled 11/21/97

<50 — — — Benzene concentration (ug/L); sampled 11/21/97

ppb mtd



DATE MAR. 1998
DWN KAJ
APP
REV
PROJECT NO.
805-132.005

FIGURE 2
ARCO PRODUCTS COMPANY
SERVICE STATION 6041, 7249 VILLAGE PKWY
DUBLIN, CALIFORNIA
**QUARTERLY GROUNDWATER MONITORING
GROUNDWATER DATA - 4TH QUARTER 1997**

APPENDIX A

**ANALYTICAL RESULTS AND CHAIN-OF-CUSTODY
DOCUMENTATION, FOURTH QUARTER 1997
GROUNDWATER MONITORING EVENT**



December 9, 1997

Service Request No.: S9702431

Gary Messerotes
EMCON
1921 Ringwood Avenue
San Jose, CA 95131

RE: 20805-132.003/TO#21133.00/6041 DUBLIN

Dear Mr. Messerotes:

The following pages contain analytical results for sample(s) received by the laboratory on November 21, 1997. 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 12, 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 "SLG", written over a horizontal line.

Steven L. Green
Project Chemist

A handwritten signature in black ink, appearing to read "Cristina V. Paylen for", written over a horizontal line.

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

ACRONLST.DOC 7/14/95

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: 20805-132.003/TO#21133.00/6041 DUBLIN
Sample Matrix: Water

Service Request: S9702431
Date Collected: 11/21/97
Date Received: 11/21/97

BTEX, MTBE and TPH as Gasoline

Sample Name: VW-2(9')
Lab Code: S9702431-001
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	4	NA	12/1/97	<200	C1
Benzene	EPA 5030	8020	0.5	4	NA	12/1/97	3	
Toluene	EPA 5030	8020	0.5	4	NA	12/1/97	<2	C1
Ethylbenzene	EPA 5030	8020	0.5	4	NA	12/1/97	<2	C1
Xylenes, Total	EPA 5030	8020	0.5	4	NA	12/1/97	<2	C1
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	4	NA	12/1/97	180	

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

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: 20805-132.003/TO#21133.00/6041 DUBLIN
Sample Matrix: Water

Service Request: S9702431
Date Collected: 11/21/97
Date Received: 11/21/97

BTEX, MTBE and TPH as Gasoline

Sample Name: MW-2(14')
Lab Code: S9702431-002
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	12/1/97	<2000	C1
Benzene	EPA 5030	8020	0.5	40	NA	12/1/97	<20	C1
Toluene	EPA 5030	8020	0.5	40	NA	12/1/97	<20	C1
Ethylbenzene	EPA 5030	8020	0.5	40	NA	12/1/97	<20	C1
Xylenes, Total	EPA 5030	8020	0.5	40	NA	12/1/97	<20	C1
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	40	NA	12/1/97	2600	

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

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: 20805-132.003/TO#21133.00/6041 DUBLIN
Sample Matrix: Water

Service Request: S9702431
Date Collected: 11/21/97
Date Received: 11/21/97

BTEX, MTBE and TPH as Gasoline

Sample Name: MW-1 (17)
Lab Code: S9702431-003
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	100	NA	11/30/97	<5000	C1
Benzene	EPA 5030	8020	0.5	100	NA	11/30/97	<50	C1
Toluene	EPA 5030	8020	0.5	100	NA	11/30/97	<50	C1
Ethylbenzene	EPA 5030	8020	0.5	100	NA	11/30/97	<50	C1
Xylenes, Total	EPA 5030	8020	0.5	100	NA	11/30/97	<50	C1
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	100	NA	11/30/97	8500	

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

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: 20805-132.003/TO#21133.00/6041 DUBLIN
Sample Matrix: Water

Service Request: S9702431
Date Collected: 11/21/97
Date Received: 11/21/97

BTEX, MTBE and TPH as Gasoline

Sample Name: MW-3(14)
Lab Code: S9702431-004
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	100	NA	11/30/97	<5000	C1
Benzene	EPA 5030	8020	0.5	100	NA	11/30/97	<50	C1
Toluene	EPA 5030	8020	0.5	100	NA	11/30/97	<50	C1
Ethylbenzene	EPA 5030	8020	0.5	100	NA	11/30/97	<50	C1
Xylenes, Total	EPA 5030	8020	0.5	100	NA	11/30/97	<50	C1
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	100	NA	11/30/97	9700	

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

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: 20805-132.003/TO#21133.00/6041 DUBLIN
Sample Matrix: Water

Service Request: S9702431
Date Collected: NA
Date Received: NA

BTEX, MTBE and TPH as Gasoline

Sample Name: Method Blank
Lab Code: S971129-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	11/29/97	ND	
Benzene	EPA 5030	8020	0.5	1	NA	11/29/97	ND	
Toluene	EPA 5030	8020	0.5	1	NA	11/29/97	ND	
Ethylbenzene	EPA 5030	8020	0.5	1	NA	11/29/97	ND	
Xylenes, Total	EPA 5030	8020	0.5	1	NA	11/29/97	ND	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	1	NA	11/29/97	ND	

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: 20805-132.003/TO#21133.00/6041 DUBLIN
Sample Matrix: Water

Service Request: S9702431
Date Collected: NA
Date Received: NA

BTEX, MTBE and TPH as Gasoline

Sample Name: Method Blank
Lab Code: S971201-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	12/1/97	ND	
Benzene	EPA 5030	8020	0.5	1	NA	12/1/97	ND	
Toluene	EPA 5030	8020	0.5	1	NA	12/1/97	ND	
Ethylbenzene	EPA 5030	8020	0.5	1	NA	12/1/97	ND	
Xylenes, Total	EPA 5030	8020	0.5	1	NA	12/1/97	ND	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	1	NA	12/1/97	ND	

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: 20805-132.003/TO#21133.00/6041 DUBLIN
Sample Matrix: Water

Service Request: S9702431
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
VW-2(9')	S9702431-001		102	83
MW-2(14')	S9702431-002		98	99
MW-1(7')	S9702431-003		99	98
MW-3(14')	S9702431-004		98	97
BATCH QC	S9702459-002MS		99	99
BATCH QC	S9702459-002DMS		98	101
Method Blank	S971129-WB1		96	101
Method Blank	S971201-WB1		98	102

CAS Acceptance Limits: 69-116 69-116

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: 20805-132.003/TO#21133.00/6041 DUBLIN
Sample Matrix: Water

Service Request: S9702431
Date Collected: NA
Date Received: NA
Date Extracted: NA
Date Analyzed: 11/29/97

Matrix Spike/Duplicate Matrix Spike Summary
BTE

Sample Name: BATCH QC
Lab Code: S9702459-002MS, S9702459-002DMS
Test Notes:

Units: ug/L (ppb)
Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Spike Level		Sample Result	Spike Result		Percent Recovery			
				MS	DMS		MS	DMS	MS	DMS	CAS	Relative
											Acceptance Limits	Percent Difference
Benzene	EPA 5030	8020	0.5	25	25	ND	25	24	100	96	75-135	4
Toluene	EPA 5030	8020	0.5	25	25	ND	25	24	100	96	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: 20805-132.003/TO#21133.00/6041 DUBLIN

Service Request: S9702431
Date Analyzed: 11/29/97

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

Sample Name: ICV
Lab Code: ICV1
Test Notes:

Units: ug/L (ppb)
Basis: NA

ICV Source:

Analyte	Prep Method	Analysis Method	True Value	Result	CAS Percent Recovery	Percent Recovery	Result Notes
					Acceptance Limits		
TPH as Gasoline	EPA 5030	CA/LUFT	250	250	90-110	100	
Benzene	EPA 5030	8020	25	26	85-115	104	
Toluene	EPA 5030	8020	25	26	85-115	104	
Ethylbenzene	EPA 5030	8020	25	25	85-115	100	
Xylenes, Total	EPA 5030	8020	75	78	85-115	104	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	25	26	85-115	104	

Products Company

Task Order No. 21133.00

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