



**EMCON**

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

Date December 31, 1997  
Project 20805-132.005

To:

Ms. Eva Chu  
Alameda County Health Care Services Agency  
Department of Environmental Health  
1131 Harborbay Parkway, Suite 250  
Alameda, California 94502-6577

*only MTRC to Alameda  
because to semi annual  
sampling - Done.*

We are enclosing:

Copies	Description
<u>1</u>	<u>Third quarter 1997 groundwater monitoring results report, 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  
File

Copy transmittal and Table 2:  
Scott T. Hooton, BP Oil Company

58 JAN -2 PM 4:02

ENVIRONMENTAL PROTECTION





Date: December 31, 1997

Re: ARCO Station #

6041 • 7249 Village Parkway • Dublin, CA  
Third 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 that reads "Paul Supple". The signature is written in a cursive, flowing style.

Paul Supple  
Environmental Engineer



**EMCON**

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

December 29, 1997  
Project 20805-132.005

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

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

Dear Mr. Supple:

This letter presents the results of the third 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

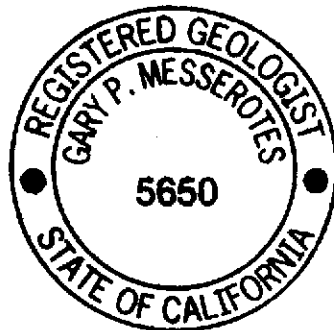
No monitoring event is thorough enough to describe all geologic and hydrogeologic conditions of interest at a given site. If conditions have not been identified during the monitoring event, results should not be construed as a guarantee of the absence of such conditions at the site, but rather as the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



December 29, 1997

## 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 (Third- 1997):

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

### WORK PROPOSED FOR NEXT QUARTER (Fourth- 1997):

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

### QUARTERLY MONITORING:

Current Phase of Project: Semi-Annual 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: 9.73 feet  
Groundwater Gradient (Average): 0.001 ft/ft toward south-southwest

### ATTACHED:

- Table 1 - Groundwater Monitoring Data, Third Quarter 1997
- Table 2 - Historical Groundwater Elevation and Analytical Data (Petroleum Hydrocarbons and Their Constituents)
- Table 3 - Historical Groundwater Analytical Data (Volatile Organic Compounds by USEPA Method 8240)
- Figure 1 - Site Location
- Figure 2 - Groundwater Data, Third Quarter 1997
- Appendix A - Analytical Results and Chain of Custody Documentation, Third Quarter 1997 Groundwater Monitoring Event

cc: Eva Chu, ACHCSA

Table 1  
Groundwater Monitoring Data  
Third Quarter 1997

ARCO Service Station 6041  
7249 Village Parkway, Dublin, California

Date: 12-05-97

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	08-20-97	336.56	10.75	325.81	ND	SSW	0.001	08-20-97	<5000^	<50^	<50^	<50^	<50^	7400	--
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-3	08-20-97	335.53	9.73	325.80	ND	SSW	0.001	08-20-97	<5000^	<50^	<50^	<50^	<50^	7700	--
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-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-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						
VW-2	08-20-97	NR	9.16	NR	ND	SSW	0.001	08-20-97	Not sampled: well not part of sampling program						

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 available, not analyzed

**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: 12-05-97

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	TPH/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	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	NU	SSW	0.001	08-20-97	<5000^	<50^	<50^	<50^	<50^	7400	--
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	--

**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: 12-05-97

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	
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-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							--

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: 12-05-97

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
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-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						
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						



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: 12-05-97

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  
 ESE: east-southeast  
 NW: northwest  
 SSE: south-southeast  
 SSW: south-southwest  
 N: north  
 E: east  
 FG: flat gradient; the groundwater gradient over the local area was nearly flat  
 ^: 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 2  
 Historical Groundwater Elevation and Analytical Data  
 Petroleum Hydrocarbons and Their Constituents  
 1995 - Present\*

ARCO Service Station 6041  
 7249 Village Parkway, Dublin, California

Date: 12-05 7

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

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: 11-24-97

Well Desig- nation	Water Level Field Date	TOC Elevation ft-MSL	Depth to Water feet	Ground- Water Elevation ft-MSL	Comments
<b>BP Station 1116</b>					
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-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-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	6.77	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	

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: 11-24-97

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-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-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		

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: 11-24-97

Well Designation	Water Level Field Date	TOC Elevation ft-MSL	Depth to Water feet	Ground- Water Elevation ft-MSL	Comments
AW-6	08-22-97	334.90	8.58	326.32	

**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-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-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		

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: 11-24-97

Well Desig- nation	Water Level Field Date	TOC Elevation ft-MSL	Depth to Water feet	Ground- Water Elevation ft-MSL	Comments
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-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-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-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		

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: 11-24-97

Well Desig- nation	Water Level Field Date	TOC Elevation ft-MSL	Depth to Water feet	Ground- Water Elevation ft-MSL	Comments
MW-6	03-21-97	335.42			Not surveyed: not scheduled for monitoring
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-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-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

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: 11-24-97

Well Desig- nation	Water Level Field Date	TOC Elevation ft-MSL	Depth to Water feet	Ground- Water Elevation ft-MSL	Comments
MW-9	03-21-97	334.57	Not surveyed: not scheduled for monitoring		
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-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-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			



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: 11-24-97

Well Desig- nation	Water Level Field Date	TOC Elevation ft-MSL	Depth to Water feet	Ground- Water Elevation ft-MSL	Comments
MW-13	03-21-97	335.64			Not surveyed: not scheduled for monitoring
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
<b>UNOCAL Station</b>					
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-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

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: 11-24-97

Well Desig- nation	Water Level Field Date	TOC Elevation ft-MSL	Depth to Water feet	Ground- Water Elevation ft-MSL	Comments
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-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-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-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	

Table 3  
Historical Groundwater Elevation Data

BP Station 1116, 7197 Village Parkway

Former Shell Station, 7194 Amador Valley Boulevard

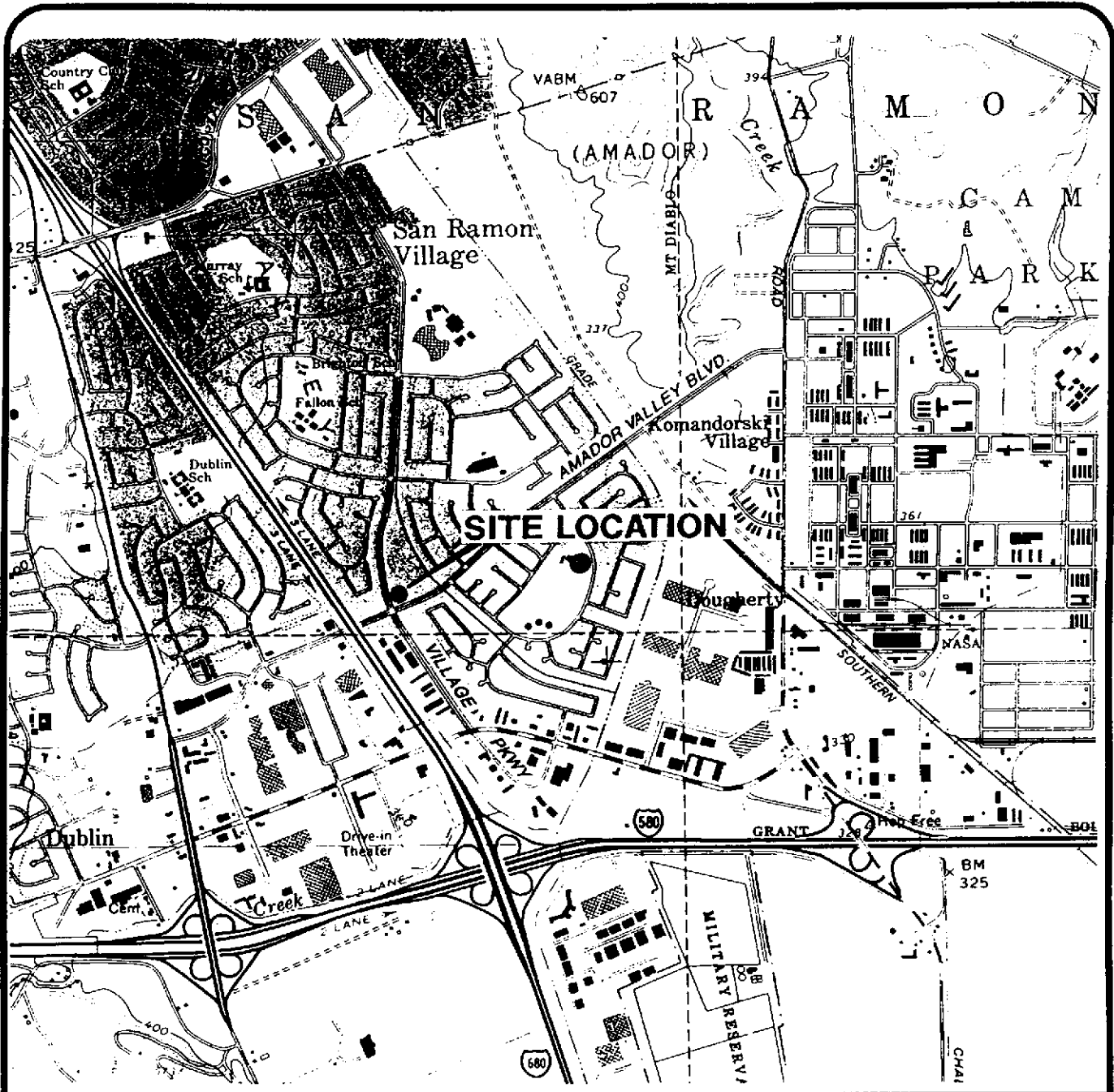
UNOCAL Station, 7375 Amador Valley Boulevard

Date: 11-24-97

Well Desig- nation	Water Level Field Date	TOC Elevation ft-MSL	Depth to Water feet	Ground- Water Elevation ft-MSL	Comments

TOC: top of casing

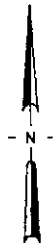
ft-MSL: elevation in feet, relative to mean sea level



EA-SANJOSE-CAD/DRAWINGS: I:\02002\SITELOC.dwg Xrefs: <NONE>  
 Scale: 1 = 1.00 Dim:Scale: 1 = 1.00 Date: 3/12/97 Time: 5:19 PM Operator: KAJ

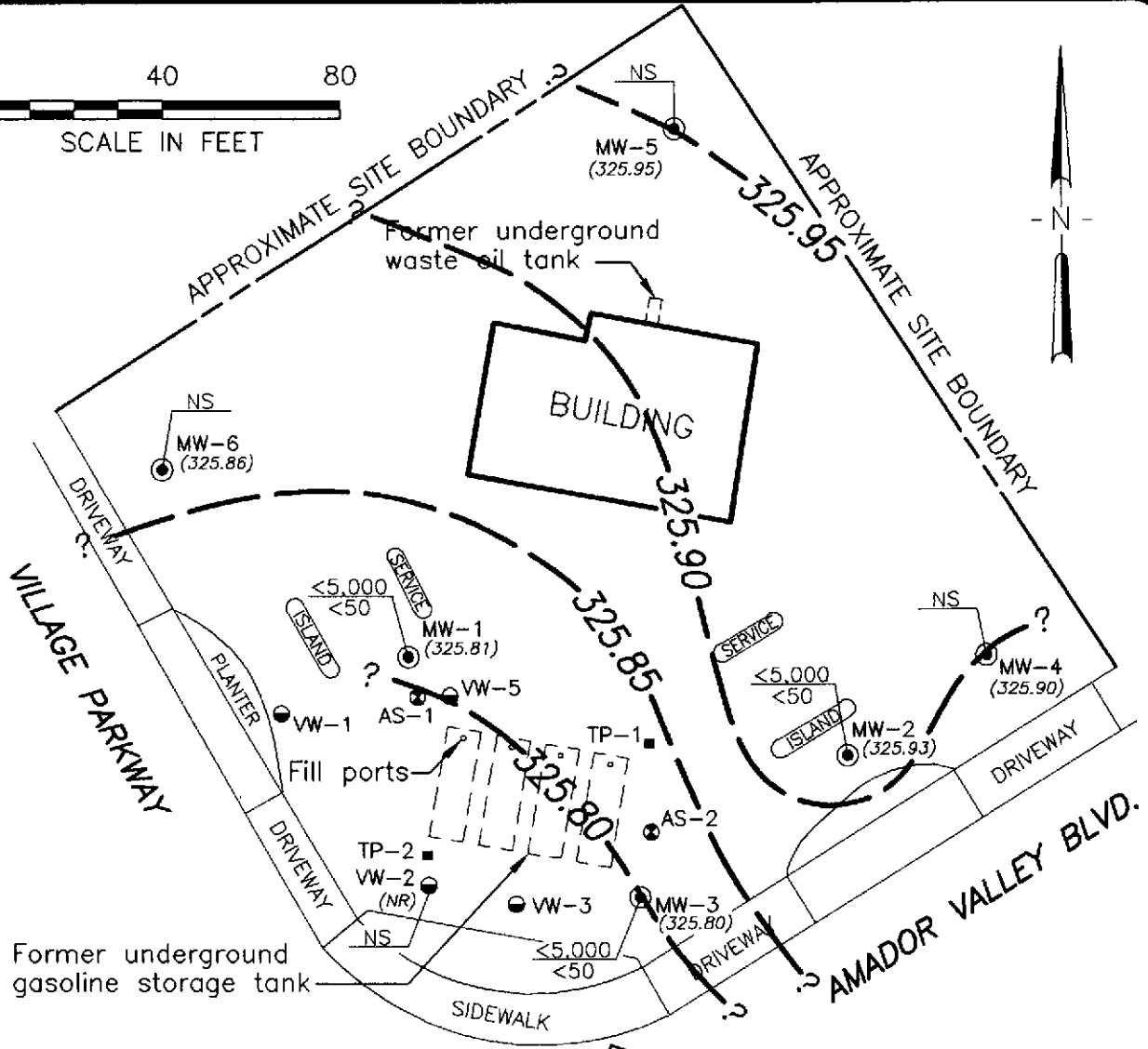
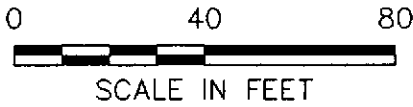


Base map from USGS 7.5' Quad. Map:  
 Dublin, California. Photorevised 1980.



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

- Approximate direction of groundwater flow showing showing gradient  
 (Calculated using wells MW-1, MW-4, and MW-5)
- (325.80) Groundwater elevation (Ft.-MSL) measured 3/21/97
- ? --- Groundwater elevation contour (Ft.-MSL)
- <math>< 5,000</math> TPHG concentration (ug/L); sampled 3/21/97
- <math>< 50</math> Benzene concentration (ug/L); sampled 3/21/97

EA-SANJOSE-CAD/DRAWINGS: G:\805-132\SJGWEL-A.dwg Xrefs: <NONE>  
 Date: 12/2/97 Time: 11:04 AM Operator: KAJ  
 Scale: 1 = 40.00 DimScale: 1 = 40.00



DATE	NOV. 1997
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 - 3RD QUARTER 1997**

**APPENDIX A**

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

**Columbia  
Analytical  
Services** inc.

September 4, 1997

Service Request No.: S9701596

Gary Messerotes  
EMCON  
1921 Ringwood Avenue  
San Jose, CA 95131

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

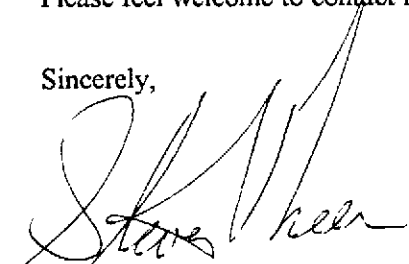
Dear Mr. Messerotes:

The following pages contain analytical results for sample(s) received by the laboratory on August 20, 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.

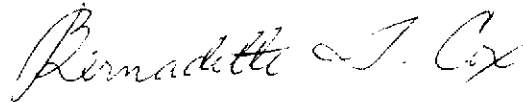
Analytical results were produced by procedures consistent with Columbia Analytical Services' (CAS) Quality Assurance Manual (with any deviations noted). Signature of this CAS Analytical Report below confirms that pages 2 through 10, following, have been thoroughly reviewed and approved for release in accord with CAS Standard Operating Procedure ADM-DatRev3.

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

Sincerely,



Steven L. Green  
Project Chemist



Greg Anderson  
Regional QA Coordinator

**COLUMBIA ANALYTICAL SERVICES, Inc.**

**Acronyms**

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



**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Report

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

**Service Request:** S9701596  
**Date Collected:** 8/20/97  
**Date Received:** 8/20/97

BTEX, MTBE and TPH as Gasoline

**Sample Name:** MW-3(14')  
**Lab Code:** S9701596-001  
**Test Notes:** C1

**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	8/26/97	<5000	
Benzene	EPA 5030	8020	0.5	100	NA	8/26/97	<50	
Toluene	EPA 5030	8020	0.5	100	NA	8/26/97	<50	
Ethylbenzene	EPA 5030	8020	0.5	100	NA	8/26/97	<50	
Xylenes, Total	EPA 5030	8020	0.5	100	NA	8/26/97	<50	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	100	NA	8/26/97	7700	

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:** S9701596  
**Date Collected:** 8/20/97  
**Date Received:** 8/20/97

BTEX, MTBE and TPH as Gasoline

**Sample Name:** MW-2(14')  
**Lab Code:** S9701596-002  
**Test Notes:** C1

**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	8/26/97	<5000	
Benzene	EPA 5030	8020	0.5	100	NA	8/26/97	<50	
Toluene	EPA 5030	8020	0.5	100	NA	8/26/97	<50	
Ethylbenzene	EPA 5030	8020	0.5	100	NA	8/26/97	<50	
Xylenes, Total	EPA 5030	8020	0.5	100	NA	8/26/97	<50	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	100	NA	8/26/97	3100	

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:** S9701596  
**Date Collected:** 8/20/97  
**Date Received:** 8/20/97

BTEX, MTBE and TPH as Gasoline

**Sample Name:** MW-1(17)  
**Lab Code:** S9701596-003  
**Test Notes:** C1

**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	8/26/97	<5000	
Benzene	EPA 5030	8020	0.5	100	NA	8/26/97	<50	
Toluene	EPA 5030	8020	0.5	100	NA	8/26/97	<50	
Ethylbenzene	EPA 5030	8020	0.5	100	NA	8/26/97	<50	
Xylenes, Total	EPA 5030	8020	0.5	100	NA	8/26/97	<50	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	100	NA	8/26/97	7400	

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:** S9701596  
**Date Collected:** NA  
**Date Received:** NA

BTEX, MTBE and TPH as Gasoline

**Sample Name:** Method Blank  
**Lab Code:** S970825-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	8/25/97	ND	
Benzene	EPA 5030	8020	0.5	1	NA	8/25/97	ND	
Toluene	EPA 5030	8020	0.5	1	NA	8/25/97	ND	
Ethylbenzene	EPA 5030	8020	0.5	1	NA	8/25/97	ND	
Xylenes, Total	EPA 5030	8020	0.5	1	NA	8/25/97	ND	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	1	NA	8/25/97	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:** S9701596  
**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-3(14')	S9701596-001		104	85
MW-2(14')	S9701596-002		103	83
MW-1(17')	S9701596-003		105	87
BATCH QC	S9701590-006MS		106	96
BATCH QC	S9701590-006DMS		111	102
Method Blank	S970825-WB1		102	94

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:** S9701596  
**Date Collected:** NA  
**Date Received:** NA  
**Date Extracted:** NA  
**Date Analyzed:** 8/25/97

Matrix Spike/Duplicate Matrix Spike Summary  
 TPH as Gasoline

**Sample Name:** BATCH QC Units: ug/L (ppb)  
**Lab Code:** S9701590-006MS, S9701590-006DMS Basis: NA  
**Test Notes:**

Analyte	Prep Method	Analysis Method	Spike Level			Sample Result	Percent Recovery				CAS Acceptance Limits	Relative Percent Difference	Result Notes
			MRL	MS	DMS		MS	DMS	MS	DMS			
Gasoline	EPA 5030	CA/LUFT	50	5000	5000	1800	6600	6800	96	100	75-135	3	

**COLUMBIA ANALYTICAL SERVICES, INC.**

QA/QC Report

**Client:** ARCO Products Company  
**Project:** 20805-132.003/TO#21133.00/6041 DUBLIN

**Service Request:** S9701596  
**Date Analyzed:** 8/25/97

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		Result Notes
					Acceptance Limits	Percent Recovery	
TPH as Gasoline	EPA 5030	CA/LUFT	250	270	90-110	108	
Benzene	EPA 5030	8020	25	23	85-115	92	
Toluene	EPA 5030	8020	25	25	85-115	100	
Ethylbenzene	EPA 5030	8020	25	24	85-115	96	
Xylenes, Total	EPA 5030	8020	75	72	85-115	96	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	25	23	85-115	92	

VDA P

**ARCO Products Company**

Division of AtlanticRichfieldCompany

Task Order No. **21133.00**

**Chain of Custody**

ARCO Facility no. <b>041</b>	City (Facility) <b>Dublin</b>	Project manager (Consultant) <b>Gary Messerotes</b>	Laboratory name <b>CAS</b>
ARCO engineer <b>Paul Supple</b>	Telephone no. (ARCO)	Telephone no. (Consultant) <b>(408) 453-7300</b>	Contract number
Consultant name <b>EMCON</b>	Address (Consultant) <b>1971 Ringwood Ave San Jose, CA 95131</b>		

Sample I.D.	Lab no.	Container no.	Matrix			Preservation		Sampling date	Sampling time	BTEX EPA 8020	BTEX/TPH EPA 1631/8015	TPH Modified 8015 Gas Diesel	Oil and Grease 413.1 413.2	TPH EPA 418.1/5M503E	EPA 601/8010	EPA 624/8240	EPA 625/8270	Semi Metals VOA	CAM Metals EPA 601/7000 T1LC STL	Lead Org./DHS Lead EPA 7420/7421	
			Soil	Water	Other	Ice	Acid														
MW-3(14) ①		2	X			X	HCL	8/20/97	1100		X										
MW-2(-)		2	X			X	HCL		<del>1100</del>		X	no samples taken									Dry well
MW-2(14) ②		2	X			X	HCL		H24		X										
MW-1(14) ③		2	X			X	HCL		1150		X										

Method of shipment  
**Sampler will deliver**

Special detection Limit/reporting  
**Lowest Possible**

Special QA/QC  
**As normal**

Remarks  
**2-40ml HCL VOA's**

Lab number  
**89701596**

Turnaround time

Priority Rush 1 Business Day

Rush 2 Business Days

Expedited 5 Business Days

Standard 10 Business Days

Condition of sample:	Temperature received:
Relinquished by sampler <i>[Signature]</i>	Received by <i>[Signature]</i>
Date <b>8/20/97</b> Time <b>12:25</b>	Date <b>8/20/97</b> Time <b>12:55</b>
Relinquished by	Received by laboratory
Date	Date

#70805-132.002