EMCON
1921 Ringwood Avenue • San Jose, California 95131-1721 • (408) 453-7300 • Fax (408) 437-9626

Date September 29, 1995
Project 0805-132.02

To:

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

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We are enclosing:

Copies	Description
1	Second quarter 1995 groundwater monitoring report for ARCO service station 6041, Deblin, California

For your:		Sent by:	
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	Approval		Standard Air
	Review		Courier
	Information	X	Other: Cert. Mail

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

David Larsen
Project Coordinator

cc: Copy entire document:
Kevin Graves, RWQCB - SFBR
Michael Whelan, ARCO Products Company
David Larsen, EMCON
File

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

ARCO Products Company
Environmental Engineering
2155 South Bascom Avenue, Suite 202
Campbell, California 95008

Date: September 29, 1995

Re: ARCO Station # 6041 • 7249 Village Parkway • Dublin, CA
Second Quarter 1995 Groundwater Monitoring Report

" 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:

Michael R. Whelan

Michael R. Whelan
Environmental Engineer

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

September 8, 1995
Project 0805-132.02

Mr. Michael Whelan
ARCO Products Company
2155 South Bascom Avenue, Suite 202
Campbell, California 95008

Re: Second quarter 1995 groundwater monitoring program results, ARCO service station 6041, Dublin, California

Dear Mr. Whelan:

This letter presents the results of the second quarter 1995 groundwater monitoring program at ARCO Products Company (ARCO) service station 6041, 7249 Village Parkway, Dublin, California (Figure 1). The quarterly monitoring program complies with Alameda County Health Care Services Agency (ACHCSA) requirements regarding underground tank investigations.

BACKGROUND

Six on-site groundwater monitoring wells (MW-1 through MW-6), five on-site vapor extraction wells (VW-1 through VW-5), and two on-site air-sparge wells (AS-1 and AS-2) were installed as part of a comprehensive site assessment conducted at this site from September 1991 through February 1994 (Figure 2). Please refer to *Report of Findings, Air Sparge Pilot Test* (RESNA, June 10, 1994), and *First Quarter 1995 Groundwater Monitoring Results, ARCO Service Station 6041, Dublin, California* (EMCON, June 1995) for more details.

MONITORING PROGRAM FIELD PROCEDURES

A program of quarterly groundwater monitoring was initiated during the third quarter of 1991 to provide information concerning water quality, flow direction, and gradient, and to meet ACHCSA and Regional Water Quality Control Board (RWQCB) requirements regarding underground fuel tank investigations. Water levels are measured quarterly in wells MW-1 through MW-6. Wells MW-5 and MW-6 are sampled annually, during the first quarter of the year. Well MW-4 is sampled semiannually, during the first and third quarters. Wells MW-1, MW-2, and MW-3 are sampled quarterly.

EMCON performed the second quarter 1995 groundwater monitoring event on May 24, 1995. Field work included (1) measuring depths to groundwater and subjectively analyzing groundwater for the presence of floating product in wells MW-1 through

MW-6; (2) purging and subsequently sampling groundwater monitoring wells MW-1, MW-2, and MW-3 for laboratory analysis; and (3) directing a state-certified laboratory to analyze the groundwater samples. Copies of all field data sheets from the second quarter 1995 groundwater monitoring event are included in Appendix A.

ANALYTICAL PROCEDURES

Groundwater samples collected during second quarter 1995 monitoring were analyzed for total petroleum hydrocarbons as gasoline (TPHG), and benzene, toluene, ethylbenzene, and total xylenes (BTEX). Groundwater samples were prepared for analysis by U.S. Environmental Protection Agency (USEPA) method 5030 (purge and trap). Groundwater was analyzed for TPHG by the methods accepted by the Department of Toxic Substances Control, California Environmental Protection Agency (Cal-EPA), and referenced in the *Leaking Underground Fuel Tank* (LUFT) *Field Manual* (State Water Resources Control Board, October 1989). Samples were analyzed for BTEX by USEPA method 8020, as described in *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods* (EPA SW-846, November 1986, third edition). These methods are recommended in *Tri-Regional Board Staff Recommendations for Preliminary Evaluation and Investigation of Underground Tank Sites* (August 10, 1990) for analysis of samples from petroleum-hydrocarbon-impacted sites.

MONITORING PROGRAM RESULTS

Results of the second quarter 1995 groundwater monitoring event are summarized in Table 1 and illustrated in Figure 2. Historical groundwater elevation data, including top-of-casing elevations, depth-to-water measurements, calculated groundwater elevations, floating-product thickness measurements, and groundwater flow direction and gradient data, are summarized in Table 2. Table 3 summarizes historical laboratory data for TPHG and BTEX. Table 4 summarizes historical groundwater elevation data for the British Petroleum (BP) station at 7197 Village Parkway, the former Shell station at 7194 Amador Valley Boulevard, and the UNOCAL station at 7375 Amador Valley Boulevard. Figure 3 illustrates vicinity groundwater elevation data for all four service stations (ARCO, BP, Shell, and UNOCAL) during the second quarter of 1995. Copies of the second quarter 1995 analytical results and chain-of-custody documentation are included in Appendix B.

On-site groundwater contours and analytical data for the second quarter of 1995 are presented in Figure 2. Groundwater elevation data collected on May 24, 1995, were used to calculate the on-site groundwater flow direction and gradient. Data from on-site wells MW-2, MW-5, and MW-6 indicate that groundwater beneath the site flows to the east-southeast, with a gradient of 0.002 foot per foot. This relatively shallow local gradient and flow direction may be overridden by regional flow patterns. The approximate

groundwater flow direction and gradient for the site vicinity were calculated using groundwater elevation data collected from the UNOCAL, ARCO, and BP stations during the May 24, 1995, cooperative sampling event. Based on data collected from wells MW-3 (UNOCAL), AW-4 (BP), and MW-5 (ARCO), groundwater in the site vicinity flows northeast, with an approximate hydraulic gradient of 0.007 foot per foot (Figure 3).

Groundwater samples collected from wells MW-1, MW-2, and MW-3 contained 640, 370, and 110 micrograms per liter (µg/L) of TPHG, respectively, and 12, 110, and 8 µg/L of benzene, respectively.

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, such a finding should not therefore be construed as a guarantee of the absence of such conditions at the site, but rather as the result of the scope, limitations, and cost of work performed during the monitoring event.

SITE STATUS UPDATE

This update reports site activities performed during the second quarter of 1995 and the anticipated site activities for the third quarter of 1995.

Second Quarter 1995 Activities

- Prepared and submitted quarterly groundwater monitoring report for first quarter 1995.
- Performed quarterly groundwater monitoring for second quarter 1995.

Work Anticipated for Third Quarter 1995

- Prepare and submit quarterly groundwater monitoring report for second quarter 1995.
- Perform quarterly groundwater monitoring for third quarter 1995.

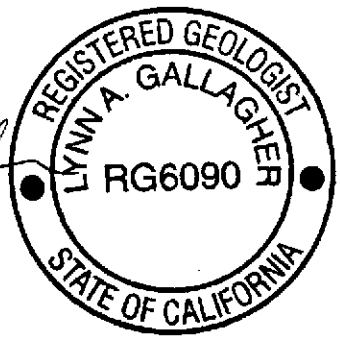
Please call if you have questions.

Sincerely,

EMCON

David Larsen
Project Coordinator

Lynn A. Gallagher, R.G. 6090
Project Geologist



Attachments:

Table 1 -	Groundwater Monitoring Data, Second Quarter 1995
Table 2 -	Historical Groundwater Elevation Data
Table 3 -	Historical Groundwater Analytical Data (TPHG and BTEX)
Table 4 -	Historical Groundwater Elevation Data (BP, Shell, and UNOCAL Stations)
Figure 1 -	Site Location
Figure 2 -	Groundwater Data, Second Quarter 1995
Figure 3 -	Vicinity Groundwater contours (ARCO, BP, Shell, and UNOCAL Stations), Second Quarter 1995
Appendix A -	Field Data Sheets, Second Quarter 1995 Groundwater Monitoring Event
Appendix B -	Analytical Results and Chain-of-Custody Documentation, Second Quarter 1995

Table 1
Groundwater Monitoring Data
Second Quarter 1995

ARCO Service Station 6041
7249 Village Parkway, Dublin, California

Date: 09-06-95
Project Number: 0805-132.02

Well Designation	Water Level Field Date	TOC Elevation	Depth to Water	Ground-Water Elevation	Floating Product Thickness	Ground-Water Flow Direction	Hydraulic Gradient	Water Sample Field Date	TPHG	Benzene	Toluene	Ethyl-benzene	Total Xylenes
		ft-MSL	feet	ft-MSL	feet	MWN	foot/foot		µg/L	µg/L	µg/L	µg/L	µg/L
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-2	05-24-95	334.80	6.88	327.92	ND	ESE	0.002	05-24-95	370	110	<1	17	1.9
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-4	05-24-95	334.22	6.68	327.54	ND	ESE	0.002	05-24-95	Not sampled: not scheduled for chemical analysis				
MW-5	05-24-95	335.87	8.10	327.77	ND	ESE	0.002	05-24-95	Not sampled: not scheduled for chemical analysis				
MW-6	05-24-95	335.84	8.35	327.49	ND	ESE	0.002	05-24-95	Not sampled: not scheduled for chemical analysis				

TOC: top of casing
ft-MSL: elevation in feet, relative to mean sea level
MWN: ground-water flow direction and gradient apply to the entire monitoring well network
TPHG: total petroleum hydrocarbons as gasoline
µg/L: micrograms per liter
ND: none detected
ESE: east-southeast

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Table 2
Historical Groundwater Elevation Data

ARCO Service Station 6041
7249 Village Parkway, Dublin, California

Date: 09-06-95
Project Number: 0805-132.02

Well Designation	Water Level Field Date	TOC Elevation ft-MSL	Depth to Water feet	Ground-Water Elevation ft-MSL	Floating Product Thickness feet	Ground-Water Flow Direction MWN	Hydraulic Gradient foot/foot
MW-1	09-20-91	336.56	11.20	325.36	ND	NR	NR
MW-1	10-22-91	336.56	11.48	325.08	ND	NR	NR
MW-1	11-27-91	336.56	11.27	325.29	ND	NR	NR
MW-1	12-16-91	336.56	11.55	325.01	ND	NR	NR
MW-1	01-18-92	336.56	11.37	325.19	ND	NR	NR
MW-1	02-21-92	336.56	9.13	327.43	ND	NR	NR
MW-1	03-16-92	336.56	9.70	326.86	ND	NR	NR
MW-1	04-24-92	336.56	10.20	326.36	ND	NR	NR
MW-1	05-15-92	336.56	10.46	326.10	ND	NR	NR
MW-1	06-09-92	336.56	10.73	325.83	ND	NR	NR
MW-1	07-28-92	336.56	11.04	325.52	ND	NR	NR
MW-1	08-24-92	336.56	11.32	325.24	ND	NR	NR
MW-1	09-09-92	336.56	11.54	325.02	ND	NR	NR
MW-1	10-26-92	336.56	11.80	324.76	ND	NR	NR
MW-1	11-10-92	336.56	11.74	324.82	ND	NR	NR
MW-1	12-14-92	336.56	10.77	325.79	ND	NR	NR
MW-1	01-15-93	336.56	8.88	327.68	ND	NR	NR
MW-1	02-10-93	336.56	9.66	326.90	ND	NR	NR
MW-1	03-29-93	336.56	8.31	328.25	ND	NR	NR
MW-1	04-27-93	336.56	9.03	327.53	ND	NR	NR
MW-1	05-10-93	336.56	9.50	327.06	ND	NR	NR
MW-1	06-18-93	336.56	10.16	326.40	ND	NR	NR
MW-1	07-28-93	336.56	10.68	325.88	ND	NR	NR
MW-1	08-30-93	336.56	10.59	325.97	ND	NR	NR
MW-1	09-28-93	336.56	10.82	325.74	ND	NR	NR
MW-1	10-31-93	336.56	10.94	325.62	ND	NR	NR
MW-1	11-11-93	336.56	10.70	325.86	ND	NR	NR
MW-1	12-15-93	336.56	10.56	326.00	ND	NR	NR
MW-1	02-11-94	336.56	10.35	326.21	ND	NR	NR
MW-1	03-13-94	336.56	9.99	326.57	ND	NR	NR
MW-1	05-17-94	336.56	9.82	326.74	ND	NR	NR
MW-1	08-25-94	336.56	10.11	326.45	ND	NR	NR
MW-1	09-22-94	336.56	11.20	325.36	ND	NR	NR
MW-1	11-18-94	336.56	10.25	326.31	ND	NR	NR
MW-1	02-15-95	336.56	8.53	328.03	ND	NR	NR
MW-1	05-24-95	336.56	9.00	327.56	ND	ESE	0.002

Table 2
Historical Groundwater Elevation Data

ARCO Service Station 6041
7249 Village Parkway, Dublin, California

Date: 09-06-95
Project Number: 0805-132.02

Well Designation	Water Level Field Date	TOC Elevation	Depth to Water	Ground-Water Elevation	Floating Product Thickness	Ground-Water Flow Direction	Hydraulic Gradient
		ft-MSL	feet	ft-MSL	feet	MWN	foot/foot
MW-2	09-20-91	334.80	9.22	325.58	ND	NR	NR
MW-2	10-22-91	334.80	9.66	325.14	ND	NR	NR
MW-2	11-27-91	334.80	9.48	325.32	ND	NR	NR
MW-2	12-16-91	334.80	9.76	325.04	ND	NR	NR
MW-2	01-18-92	334.80	9.47	325.33	ND	NR	NR
MW-2	02-21-92	334.80	7.62	327.18	ND	NR	NR
MW-2	03-16-92	334.80	7.84	326.96	ND	NR	NR
MW-2	04-24-92	334.80	8.34	326.46	ND	NR	NR
MW-2	05-15-92	334.80	8.62	326.18	ND	NR	NR
MW-2	06-09-92	334.80	8.88	325.92	ND	NR	NR
MW-2	07-28-92	334.80	9.38	325.42	ND	NR	NR
MW-2	08-24-92	334.80	9.81	324.99	ND	NR	NR
MW-2	09-09-92	334.80	9.92	324.88	ND	NR	NR
MW-2	10-26-92	334.80	10.13	324.67	ND	NR	NR
MW-2	11-10-92	334.80	10.12	324.68	ND	NR	NR
MW-2	12-14-92	334.80	8.99	325.81	ND	NR	NR
MW-2	01-15-93	334.80	7.20	327.60	ND	NR	NR
MW-2	02-10-93	334.80	7.30	327.50	ND	NR	NR
MW-2	03-29-93	334.80	6.60	328.20	ND	NR	NR
MW-2	04-27-93	334.80	7.10	327.70	ND	NR	NR
MW-2	05-10-93	334.80	7.40	327.40	ND	NR	NR
MW-2	06-18-93	334.80	8.02	326.78	ND	NR	NR
MW-2	07-28-93	334.80	8.47	326.33	ND	NR	NR
MW-2	08-30-93	334.80	8.80	326.00	ND	NR	NR
MW-2	09-28-93	334.80	9.19	325.61	ND	NR	NR
MW-2	10-31-93	334.80	9.12	325.68	ND	NR	NR
MW-2	11-11-93	334.80	9.02	325.78	ND	NR	NR
MW-2	12-15-93	334.80	8.82	325.98	ND	NR	NR
MW-2	02-11-94	334.80	8.59	326.21	ND	NR	NR
MW-2	03-13-94	334.80	8.09	326.71	ND	NR	NR
MW-2	05-17-94	334.80	7.99	326.81	ND	NR	NR
MW-2	08-25-94	334.80	9.23	325.57	ND	NR	NR
MW-2	09-22-94	334.80	9.47	325.33	ND	NR	NR
MW-2	11-18-94	334.80	8.70	326.10	ND	NR	NR
MW-2	02-15-95	334.80	6.75	328.05	ND	NR	NR
MW-2	05-24-95	334.80	6.88	327.92	ND	ESE	0.002

Table 2
Historical Groundwater Elevation Data

ARCO Service Station 6041
7249 Village Parkway, Dublin, California

Date: 09-06-95
Project Number: 0805-132.02

Well Designation	Water Level Field Date	TOC Elevation ft-MSL	Depth to Water feet	Ground-Water Elevation ft-MSL	Floating Product Thickness feet	Ground-Water Flow Direction MWN	Hydraulic Gradient foot/foot
MW-3	09-20-91	335.53	10.16	325.37	ND	NR	NR
MW-3	10-22-91	335.53	10.48	325.05	ND	NR	NR
MW-3	11-27-91	335.53	10.17	325.36	ND	NR	NR
MW-3	12-16-91	335.53	10.25	325.28	ND	NR	NR
MW-3	01-18-92	335.53	10.71	324.82	ND	NR	NR
MW-3	02-21-92	335.53	8.68	326.85	ND	NR	NR
MW-3	03-16-92	335.53	8.91	326.62	ND	NR	NR
MW-3	04-24-92	335.53	9.14	326.39	ND	NR	NR
MW-3	05-15-92	335.53	9.54	325.99	ND	NR	NR
MW-3	06-09-92	335.53	9.72	325.81	ND	NR	NR
MW-3	07-28-92	335.53	10.15	325.38	ND	NR	NR
MW-3	08-24-92	335.53	10.42	325.11	ND	NR	NR
MW-3	09-09-92	335.53	10.53	325.00	ND	NR	NR
MW-3	10-26-92	335.53	10.92	324.61	ND	NR	NR
MW-3	11-10-92	335.53	10.72	324.81	ND	NR	NR
MW-3	12-14-92	335.53	9.78	325.75	ND	NR	NR
MW-3	01-15-93	335.53	7.66	327.87	ND	NR	NR
MW-3	02-10-93	335.53	7.87	327.66	ND	NR	NR
MW-3	03-29-93	335.53	7.35	328.18	ND	NR	NR
MW-3	04-27-93	335.53	7.70	327.83	ND	NR	NR
MW-3	05-10-93	335.53	8.46	327.07	ND	NR	NR
MW-3	06-18-93	335.53	9.13	326.40	ND	NR	NR
MW-3	07-28-93	335.53	9.49	326.04	ND	NR	NR
MW-3	08-30-93	335.53	9.62	325.91	ND	NR	NR
MW-3	09-28-93	335.53	9.80	325.73	ND	NR	NR
MW-3	10-31-93	335.53	9.84	325.69	ND	NR	NR
MW-3	11-11-93	335.53	9.81	325.72	ND	NR	NR
MW-3	12-15-93	335.53	10.23	325.30	ND	NR	NR
MW-3	02-11-94	335.53	9.60	325.93	ND	NR	NR
MW-3	03-13-94	335.53	9.03	326.50	ND	NR	NR
MW-3	05-17-94	335.53	9.11	326.42	ND	NR	NR
MW-3	08-25-94	335.53	11.09	324.44	ND	NR	NR
MW-3	09-22-94	335.53	10.21	325.32	ND	NR	NR
MW-3	11-18-94	335.53	9.79	325.74	ND	NR	NR
MW-3	02-15-95	335.53	8.55	326.98	ND	NR	NR
MW-3	05-24-95	335.53	8.17	327.36	ND	ESE	0.002

Table 2
Historical Groundwater Elevation Data

ARCO Service Station 6041
7249 Village Parkway, Dublin, California

Date: 09-06-95
Project Number: 0805-132.02

Well Designation	Water Level Field Date	TOC Elevation ft-MSL	Depth to Water feet	Ground-Water Elevation ft-MSL	Floating Product Thickness feet	Ground-Water Flow Direction MWN	Hydraulic Gradient foot/foot
MW-4	11-10-92	334.22	9.58	324.64	ND	NR	NR
MW-4	12-14-92	334.22	8.72	325.50	ND	NR	NR
MW-4	01-15-93	334.22	7.27	326.95	ND	NR	NR
MW-4	02-10-93	334.22	6.80	327.42	ND	NR	NR
MW-4	03-29-93	334.22	6.29	327.93	ND	NR	NR
MW-4	04-27-93	334.22	6.33	327.89	ND	NR	NR
MW-4	05-10-93	334.22	6.68	327.54	ND	NR	NR
MW-4	06-18-93	334.22	7.05	327.17	ND	NR	NR
MW-4	07-28-93	334.22	7.77	326.45	ND	NR	NR
MW-4	08-30-93	334.22	8.09	326.13	ND	NR	NR
MW-4	09-28-93	334.22	8.40	325.82	ND	NR	NR
MW-4	10-31-93	334.22	8.56	325.66	ND	NR	NR
MW-4	11-11-93	334.22	8.48	325.74	ND	NR	NR
MW-4	12-15-93	334.22	8.38	325.84	ND	NR	NR
MW-4	02-11-94	334.22	8.15	326.07	ND	NR	NR
MW-4	03-13-94	334.22	7.57	326.65	ND	NR	NR
MW-4	05-17-94	334.22	7.49	326.73	ND	NR	NR
MW-4	08-25-94	334.22	8.79	325.43	ND	NR	NR
MW-4	09-22-94	334.22	8.99	325.23	ND	NR	NR
MW-4	11-18-94	334.22	8.31	325.91	ND	NR	NR
MW-4	02-15-95	334.22	7.85	326.37	ND	NR	NR
MW-4	05-24-95	334.22	6.68	327.54	ND	ESE	0.002

Table 2
Historical Groundwater Elevation Data

ARCO Service Station 6041
7249 Village Parkway, Dublin, California

Date: 09-06-95
Project Number: 0805-132.02

Well Designation	Water Level Field Date	TOC Elevation ft-MSL	Depth to Water feet	Ground-Water Elevation ft-MSL	Floating Product Thickness feet	Ground-Water Flow Direction MWN	Hydraulic Gradient foot/foot
MW-5	11-10-92	335.87	11.02	324.85	ND	NR	NR
MW-5	12-14-92	335.87	10.17	325.70	ND	NR	NR
MW-5	01-15-93	335.87	8.14	327.73	ND	NR	NR
MW-5	02-10-93	335.87	8.00	327.87	ND	NR	NR
MW-5	03-29-93	335.87	7.52	328.35	ND	NR	NR
MW-5	04-27-93	335.87	8.26	327.61	ND	NR	NR
MW-5	05-10-93	335.87	8.64	327.23	ND	NR	NR
MW-5	06-18-93	335.87	9.26	326.61	ND	NR	NR
MW-5	07-28-93	335.87	9.65	326.22	ND	NR	NR
MW-5	08-30-93	335.87	9.81	326.06	ND	NR	NR
MW-5	09-28-93	335.87	9.99	325.88	ND	NR	NR
MW-5	10-31-93	335.87	10.02	325.85	ND	NR	NR
MW-5	11-11-93	335.87	10.09	325.78	ND	NR	NR
MW-5	12-15-93	335.87	10.08	325.79	ND	NR	NR
MW-5	02-11-94	335.87	9.63	326.24	ND	NR	NR
MW-5	03-13-94	335.87	9.26	326.61	ND	NR	NR
MW-5	05-17-94	335.87	8.99	326.88	ND	NR	NR
MW-5	08-25-94	335.87	10.23	325.64	ND	NR	NR
MW-5	09-22-94	335.87	10.39	325.48	ND	NR	NR
MW-5	11-18-94	335.87	9.65	326.22	ND	NR	NR
MW-5	02-15-95	335.87	7.80	328.07	ND	NR	NR
MW-5	05-24-95	335.87	8.10	327.77	ND	ESE	0.002

Table 2
Historical Groundwater Elevation Data

ARCO Service Station 6041
7249 Village Parkway, Dublin, California

Date: 09-06-95
Project Number: 0805-132.02

Well Designation	Water Level Field Date	TOC Elevation ft-MSL	Depth to Water feet	Ground-Water Elevation ft-MSL	Floating Product Thickness feet	Ground-Water Flow Direction MWN	Hydraulic Gradient foot/foot
MW-6	11-10-92	335.84	11.03	324.81	ND	NR	NR
MW-6	12-14-92	335.84	10.03	325.81	ND	NR	NR
MW-6	01-15-93	335.84	7.64	328.20	ND	NR	NR
MW-6	02-10-93	335.84	8.22	327.62	ND	NR	NR
MW-6	03-29-93	335.84	7.59	328.25	ND	NR	NR
MW-6	04-27-93	335.84	8.20	327.64	ND	NR	NR
MW-6	05-10-93	335.84	8.85	326.99	ND	NR	NR
MW-6	06-18-93	335.84	9.26	326.58	ND	NR	NR
MW-6	07-28-93	335.84	9.83	326.01	ND	NR	NR
MW-6	08-30-93	335.84	10.15	325.69	ND	NR	NR
MW-6	09-28-93	335.84	9.95	325.89	ND	NR	NR
MW-6	10-31-93	335.84	10.16	325.68	ND	NR	NR
MW-6	11-11-93	335.84	10.02	325.82	ND	NR	NR
MW-6	12-15-93	335.84	10.28	325.56	ND	NR	NR
MW-6	02-11-94	335.84	9.66	326.18	ND	NR	NR
MW-6	03-13-94	335.84	9.28	326.56	ND	NR	NR
MW-6	05-17-94	335.84	9.10	326.74	ND	NR	NR
MW-6	08-25-94	335.84	10.39	325.45	ND	NR	NR
MW-6	09-22-94	335.84	10.50	325.34	ND	NR	NR
MW-6	11-18-94	335.84	9.54	326.30	ND	NR	NR
MW-6	02-15-95	335.84	7.81	328.03	ND	NR	NR
MW-6	05-24-95	335.84	8.35	327.49	ND	ESE	0.002

TOC: top of casing
ft-MSL: elevation in feet, relative to mean sea level
MWN: ground-water flow direction and gradient apply to the entire monitoring well network
ND: none detected
NR: not reported; data not available or not measurable
ESE: east-southeast

Table 3
Historical Groundwater Analytical Data

ARCO Service Station 6041
7249 Village Parkway, Dublin, California

Date: 09-06-95
Project Number: 0805-132.02

Well Designation	Water Sample Field Date	TPHG µg/L	Benzene µg/L	Toluene µg/L	Ethyl-benzene µg/L	Total Xylenes µg/L
MW-1	09-20-91	410	28	36	4.3	89
MW-1	12-16-91	840	50	50	3.9	12
MW-1	03-16-92	780	22	12	45	22
MW-1	06-09-92	700	8.8	15	16	18
MW-1	09-09-92	400	5.4	8.4	4.6	6.7
MW-1	11-10-92	2800	93	56	190	390
MW-1	02-10-93	9700	180	100	450	740
MW-1	05-10-93	6400	120	12	410	300
MW-1	08-30-93	2000	2.5	<2.5	110	61
MW-1	11-11-93	2100	<2.5	<2.5	66	20
MW-1	02-11-94	2000	<2.5	<2.5	25	5.7
MW-1	05-17-94	1400	79	1.4	11	2.4
MW-1	08-25-94	880	2.4	<1	4.6	<1
MW-1	11-18-94	2500	1.5	<0.5	1.4	<1
MW-1	02-15-95	820	15	<1	5.2	1.4
MW-1	05-24-95	640	12	<1	7.3	<1
MW-2	09-20-91	130	6.6	0.96	1.4	1.5
MW-2	12-16-91	83	0.96	<0.3	<0.3	<0.3
MW-2	03-16-92	430	130	<2.5	37	5
MW-2	06-09-92	120	3.7	<0.5	5.7	<0.5
MW-2	09-09-92	<50	<0.5	<0.5	<0.5	<0.5
MW-2	11-10-92	<50	<0.5	<0.5	<0.5	<0.5
MW-2	02-10-93	740	110	<5	35	<5
MW-2	05-10-93	2000	650	14	86	28
MW-2	08-30-93	170	1.4	7.9	1.6	15
MW-2	11-11-93	78	<0.5	2.8	0.7	5.9
MW-2	02-11-94	<50	2.4	0.7	<0.5	<0.5
MW-2	05-17-94	150	19	<0.5	2.5	1.2
MW-2	08-25-94	<50	<0.5	<0.5	<0.5	<0.5
MW-2	11-18-94	237	1.9	0.6	<0.5	<1
MW-2	02-15-95	730	110	1.7	25	66
MW-2	05-24-95	370	110	<1	17	1.9

Table 3
Historical Groundwater Analytical Data

ARCO Service Station 6041
7249 Village Parkway, Dublin, California

Date: 09-06-95
Project Number: 0805-132.02

Well Designation	Water Sample Field Date	TPHG µg/L	Benzene µg/L	Toluene µg/L	Ethyl-benzene µg/L	Total Xylenes µg/L
MW-3	09-20-91	990	50	100	11	200
MW-3	12-16-91	1000	180	5.1	23	4.3
MW-3	03-16-92	430	86	<1.0	22	3.4
MW-3	06-09-92	1800	290	2.4	49	17
MW-3	09-09-92	2600	550	<5	120	12
MW-3	11-10-92	1100	280	<5	100	<5
MW-3	02-10-93	980	190	<5	52	<5
MW-3	05-10-93	1100	280	<2.5	70	<2.5
MW-3	08-30-93	470	120	<1	22	<1
MW-3	11-11-93	830	96	<2.5	25	<2.5
MW-3	02-11-94	220	42	<1.0	84	<1.0
MW-3	05-17-94	200	44	<0.5	9.3	<0.5
MW-3	08-25-94	100	4.3	<0.5	1.1	<0.5
MW-3	11-18-94	1850	3.5	<0.5	0.9	<1
MW-3	02-15-95	100	14	<0.5	6.3	<0.5
MW-3	05-24-95	110	8	<0.5	2.7	<0.5
MW-4	11-10-92	<50	<0.5	<0.5	<0.5	<0.5
MW-4	02-10-93	<50	<0.5	<0.5	<0.5	<0.5
MW-4	05-10-93	<50	<0.5	<0.5	<0.5	<0.5
MW-4	08-30-93	<50	<0.5	<0.5	<0.5	<0.5
MW-4	11-11-93	<50	<0.5	<0.5	<0.5	<0.5
MW-4	02-11-94	<50	<0.5	<0.5	<0.5	<0.5
MW-4	05-17-94	<50	<0.5	<0.5	<0.5	<0.5
MW-4	08-25-94	<50	<0.5	<0.5	<0.5	<0.5
MW-4	11-18-94	<50	<0.5	<0.5	<0.5	<1
MW-4	02-15-95	<50	<0.5	<0.5	<0.5	<0.5
MW-4	05-24-95	Not sampled: not scheduled for chemical analysis				

Table 3
Historical Groundwater Analytical Data

ARCO Service Station 6041
7249 Village Parkway, Dublin, California

Date: 09-06-95
Project Number: 0805-132.02

Well Designation	Water Sample Field Date	TPHG µg/L	Benzene µg/L	Toluene µg/L	Ethyl-benzene µg/L	Total Xylenes µg/L
MW-5	11-10-92	<50	<0.5	<0.5	<0.5	<0.5
MW-5	02-10-93	<50	<0.5	<0.5	<0.5	<0.5
MW-5	05-10-93	<50	<0.5	<0.5	<0.5	<0.5
MW-5	08-30-93	<50	<0.5	<0.5	<0.5	<0.5
MW-5	11-11-93	<50	<0.5	<0.5	<0.5	<0.5
MW-5	02-11-94	<50	<0.5	<0.5	<0.5	<0.5
MW-5	05-17-94	<50	<0.5	<0.5	<0.5	<0.5
MW-5	08-25-94	<50	<0.5	<0.5	<0.5	<0.5
MW-5	11-18-94	<50	<0.5	<0.5	<0.5	<1
MW-5	02-15-95	<50	<0.5	<0.5	<0.5	<0.5
MW-5	05-24-95	Not sampled: not scheduled for chemical analysis				
MW-6	11-10-92	<50	<0.5	<0.5	<0.5	<0.5
MW-6	02-10-93	<50	<0.5	<0.5	<0.5	<0.5
MW-6	05-10-93	<50	<0.5	<0.5	<0.5	<0.5
MW-6	08-30-93	<50	<0.5	<0.5	<0.5	<0.5
MW-6	11-11-93	<50	<0.5	<0.5	<0.5	<0.5
MW-6	02-11-94	<50	<0.5	<0.5	<0.5	<0.5
MW-6	05-17-94	<50	<0.5	<0.5	<0.5	<0.5
MW-6	08-25-94	<50	<0.5	<0.5	<0.5	<0.5
MW-6	11-18-94	<50	<0.5	<0.5	<0.5	<1
MW-6	02-15-95	<50	<0.5	<0.5	<0.5	<0.5
MW-6	05-24-95	Not sampled: not scheduled for chemical analysis				

TPHG: total petroleum hydrocarbons as gasoline
µg/L: micrograms per liter

Table 4
Historical Groundwater Elevation Data

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

Date: 09-06-95
Project Number: 0805-132.02

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	11-10-92	335.17	10.67	324.50	
MW-1	02-10-93	335.17	5.25	329.92	
MW-1	05-21-93	335.17	5.73	329.44	
MW-1	08-12-93	335.17	8.99	326.18	
MW-1	11-11-93	335.17	9.65	325.52	
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-2	11-10-92	334.58	10.27	324.31	
MW-2	02-10-93	334.58	6.46	328.12	
MW-2	05-21-93	334.58	6.96	327.62	
MW-2	08-12-93	334.58	8.58	326.00	
MW-2	11-11-93	334.58	9.28	325.30	
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-3	11-10-92	335.13	10.78	324.35	
MW-3	02-10-93	335.13	7.16	327.97	
MW-3	05-21-93	335.13	7.69	327.44	
MW-3	08-12-93	335.13	9.11	326.02	
MW-3	11-11-93	335.13	9.78	325.35	
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	

Table 4
Historical Groundwater Elevation Data

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

Date: 09-06-95
Project Number: 0805-132.02

Well Designation	Water Level Field Date	TOC Elevation ft-MSL	Depth to Water feet	Ground-Water Elevation ft-MSL	Comments
AW-4	11-10-92	333.41	9.10	324.31	
AW-4	02-10-93	333.41	Not surveyed: well was inaccessible		
AW-4	05-21-93	333.41	Not surveyed: well was inaccessible		
AW-4	08-12-93	333.41	Not surveyed: well was inaccessible		
AW-4	11-11-93	333.41	8.00	325.41	
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-5	11-10-92	334.81	10.27	324.54	
AW-5	02-10-93	334.81	7.29	327.52	
AW-5	05-21-93	334.81	7.77	327.04	
AW-5	08-12-93	334.81	8.87	325.94	
AW-5	11-11-93	334.81	9.13	325.68	
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-6	11-10-92	334.90	10.10	324.80	
AW-6	02-10-93	334.90	7.13	327.77	
AW-6	05-21-93	334.90	7.64	327.26	
AW-6	08-12-93	334.90	8.64	326.26	
AW-6	11-11-93	334.90	8.67	326.23	
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	

Table 4
Historical Groundwater Elevation Data

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

Date: 09-06-95
Project Number: 0805-132.02

Well Designation	Water Level Field Date	TOC Elevation ft-MSL	Depth to Water feet	Ground-Water Elevation ft-MSL	Comments
Former Shell Station					
MW-1	11-10-92	334.83	10.04	324.79	
MW-1	02-10-93	334.83	7.24	327.59	
MW-1	05-10-93	334.83	7.78	327.05	
MW-1	08-12-93	334.83	8.54	326.29	
MW-1	11-11-93	334.83	8.56	326.27	
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-2	11-10-92	336.96	12.05	324.91	
MW-2	02-10-93	336.96	9.28	327.68	
MW-2	05-10-93	336.96	9.65	327.31	
MW-2	08-12-93	336.96	10.70	326.26	
MW-2	11-11-93	336.96	11.36	325.60	
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-3	11-10-92	336.93	11.84	325.09	
MW-3	02-10-93	336.93	8.82	328.11	
MW-3	05-10-93	336.93	10.88	326.05	
MW-3	08-12-93	336.93	10.36	326.57	
MW-3	11-11-93	336.93	10.64	326.29	
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	

Table 4
Historical Groundwater Elevation Data

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

Date: 09-06-95
Project Number: 0805-132.02

Well Designation	Water Level Field Date	TOC Elevation ft-MSL	Depth to Water feet	Ground-Water Elevation ft-MSL	Comments
MW-4	11-10-92	337.14	12.12	325.02	
MW-4	02-10-93	337.14	9.40	327.74	
MW-4	05-10-93	337.14	9.54	327.60	
MW-4	08-12-93	337.14	10.68	326.46	
MW-4	11-11-93	337.14	11.97	325.17	
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-5	11-10-92	334.96	9.65	325.31	
MW-5	02-10-93	334.96	7.97	326.99	
MW-5	05-10-93	334.96	Not surveyed:		
MW-5	08-12-93	334.96	8.75	326.21	
MW-5	11-11-93	334.96	9.32	325.64	
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-6	11-10-92	335.42	10.56	324.86	
MW-6	02-10-93	335.42	7.65	327.77	
MW-6	05-10-93	335.42	8.10	327.32	
MW-6	08-12-93	335.42	9.18	326.24	
MW-6	11-11-93	335.42	9.38	326.04	
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	

Table 4
Historical Groundwater Elevation Data

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

Date: 09-06-95
Project Number: 0805-132.02

Well Designation	Water Level Field Date	TOC Elevation ft-MSL	Depth to Water feet	Ground-Water Elevation ft-MSL	Comments
MW-7	11-10-92	333.23	8.82	324.41	
MW-7	02-10-93	333.23	6.06	327.17	
MW-7	05-10-93	333.23	6.68	326.55	
MW-7	08-12-93	333.23	6.83	326.40	
MW-7	11-11-93	333.23	6.90	326.33	
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-8	11-10-92	335.80	10.41	325.39	
MW-8	02-10-93	335.80	7.35	328.45	
MW-8	05-10-93	335.80	8.00	327.80	
MW-8	08-12-93	335.80	9.00	326.80	
MW-8	11-11-93	335.80	9.47	326.33	
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-9	11-10-92	334.57	9.61	324.96	
MW-9	02-10-93	334.57	7.20	327.37	
MW-9	05-10-93	334.57	7.56	327.01	
MW-9	08-12-93	334.57	8.25	326.32	
MW-9	11-11-93	334.57	10.30	324.27	
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	

Table 4
Historical Groundwater Elevation Data

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

Date: 09-06-95
Project Number: 0805-132.02

Well Designation	Water Level Field Date	TOC Elevation ft-MSL	Depth to Water feet	Ground-Water Elevation ft-MSL	Comments
MW-11	11-10-92	334.20	9.47	324.73	
MW-11	02-10-93	334.20	6.79	327.41	
MW-11	05-10-93	334.20	7.18	327.02	
MW-11	08-12-93	334.20	8.10	326.10	
MW-11	11-11-93	334.20	8.56	325.64	
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-12	11-10-92	332.53	8.32	324.21	
MW-12	02-10-93	332.53	6.75	325.78	
MW-12	05-10-93	332.53	Not surveyed:		
MW-12	08-12-93	332.53	6.23	326.30	
MW-12	11-11-93	332.53	7.43	325.10	
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-13	11-10-92	335.64	10.69	324.95	
MW-13	02-10-93	335.64	7.49	328.15	
MW-13	05-10-93	335.64	8.06	327.58	
MW-13	08-12-93	335.64	8.73	326.91	
MW-13	11-11-93	335.64	9.15	326.49	
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	
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	

Table 4
Historical Groundwater Elevation Data

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

Date: 09-06-95
Project Number: 0805-132.02

Well Designation	Water Level Field Date	TOC Elevation ft-MSL	Depth to Water feet	Ground-Water Elevation ft-MSL	Comments
UNOCAL Station					
MW-1	11-10-92	336.72	11.97	324.75	
MW-1	02-10-93	336.72	8.63	328.09	
MW-1	05-10-93	336.72	9.57	327.15	
MW-1	08-12-93	336.08	9.91	326.17	
MW-1	11-11-93	336.07	10.17	325.90	
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-2	11-10-92	337.36	12.15	325.21	
MW-2	02-10-93	337.36	8.81	328.55	
MW-2	05-10-93	337.36	9.75	327.61	
MW-2	08-12-93	336.78	10.11	326.67	
MW-2	11-11-93	336.78	10.51	326.27	
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-3	11-10-92	337.53	12.33	325.20	
MW-3	02-10-93	337.53	8.95	328.58	
MW-3	05-10-93	337.53	9.91	327.62	
MW-3	08-12-93	336.98	10.34	326.64	
MW-3	11-11-93	336.98	10.64	326.34	
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	

Table 4
Historical Groundwater Elevation Data

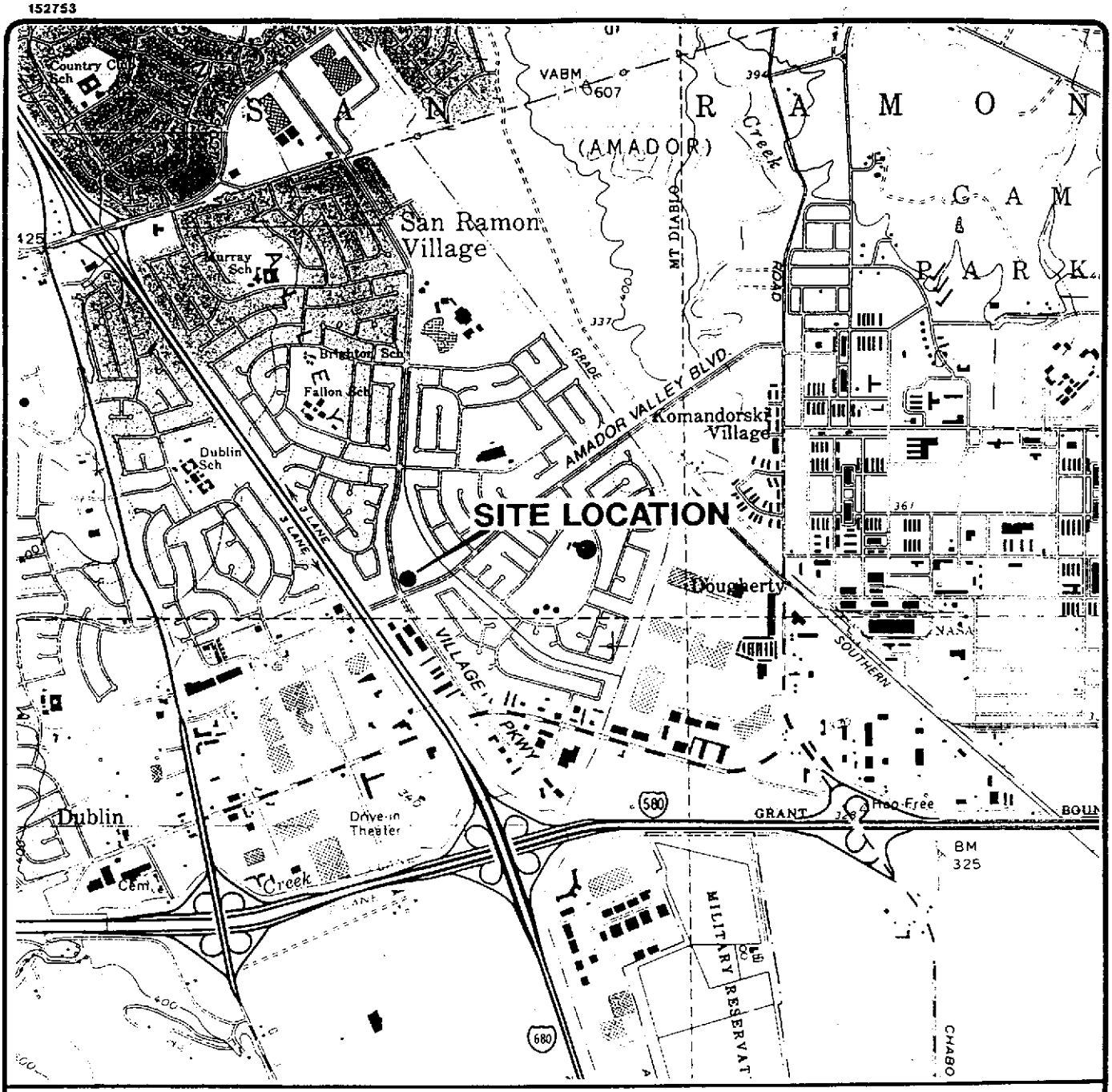
BP Station 1116, 7197 Village Parkway
Former Shell Station, 7194 Amador Valley Boulevard
UNOCAL Station, 7375 Amador Valley Boulevard

Date: 09-06-95
Project Number: 0805-132.02

Well Designation	Water Level Field Date	TOC Elevation ft-MSL	Depth to Water feet	Ground-Water Elevation ft-MSL	Comments
MW-4	11-10-92	337.00	12.32	324.68	
MW-4	02-10-93	337.00	8.94	328.06	
MW-4	05-10-93	337.00	9.90	327.10	
MW-4	08-12-93	336.42	10.32	326.10	
MW-4	11-11-93	336.43	10.48	325.95	
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-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	

TOC: top of casing
ft-MSL: elevation in feet, relative to mean sea level

152753



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

Scale : 0 2000 4000 Feet

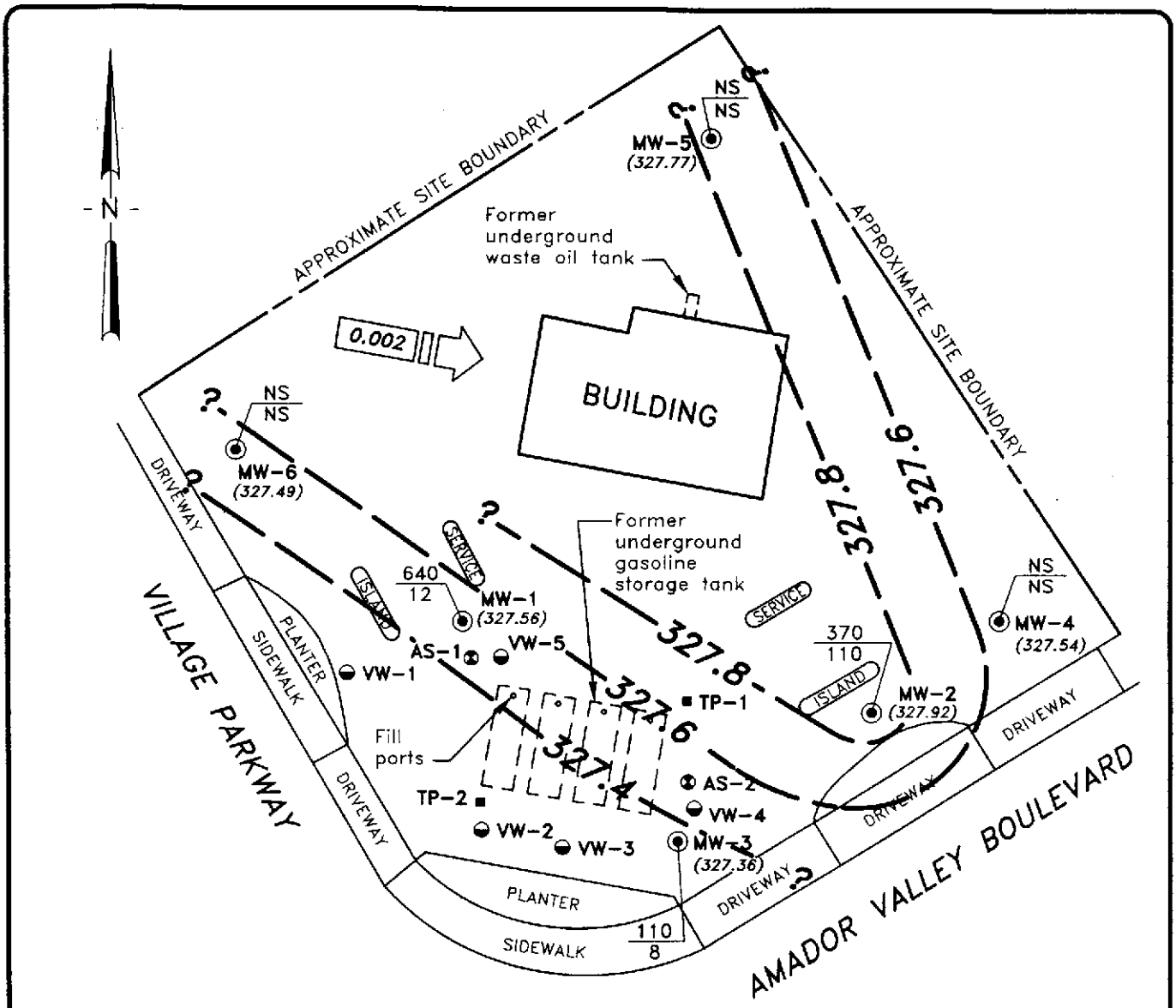
- N -

EMCON

ARCO PRODUCTS COMPANY
SERVICE STATION 6041, 7249 VILLAGE PARKWAY
QUARTERLY GROUNDWATER MONITORING
DUBLIN, CALIFORNIA

SITE LOCATION

FIGURE
1
PROJECT NO.
805-132.02



EXPLANATION

- ◉ Groundwater monitoring well
- ▪ Tank pit observation well
- ◒ Vapor extraction well
- ⊠ Air sparge well
- NS Not sampled; not scheduled for chemical analysis
- (327.49) Groundwater elevation (Ft.–MSL) measured 5/24/95
- ? — Groundwater elevation contour (Ft.–MSL)
- 110 / 8 — TPHG concentration (ug/L); sampled 5/24/95; Benzene concentration (µg/L); sampled 5/24/95

SCALE: 0 40 80 FEET
(Approximate)

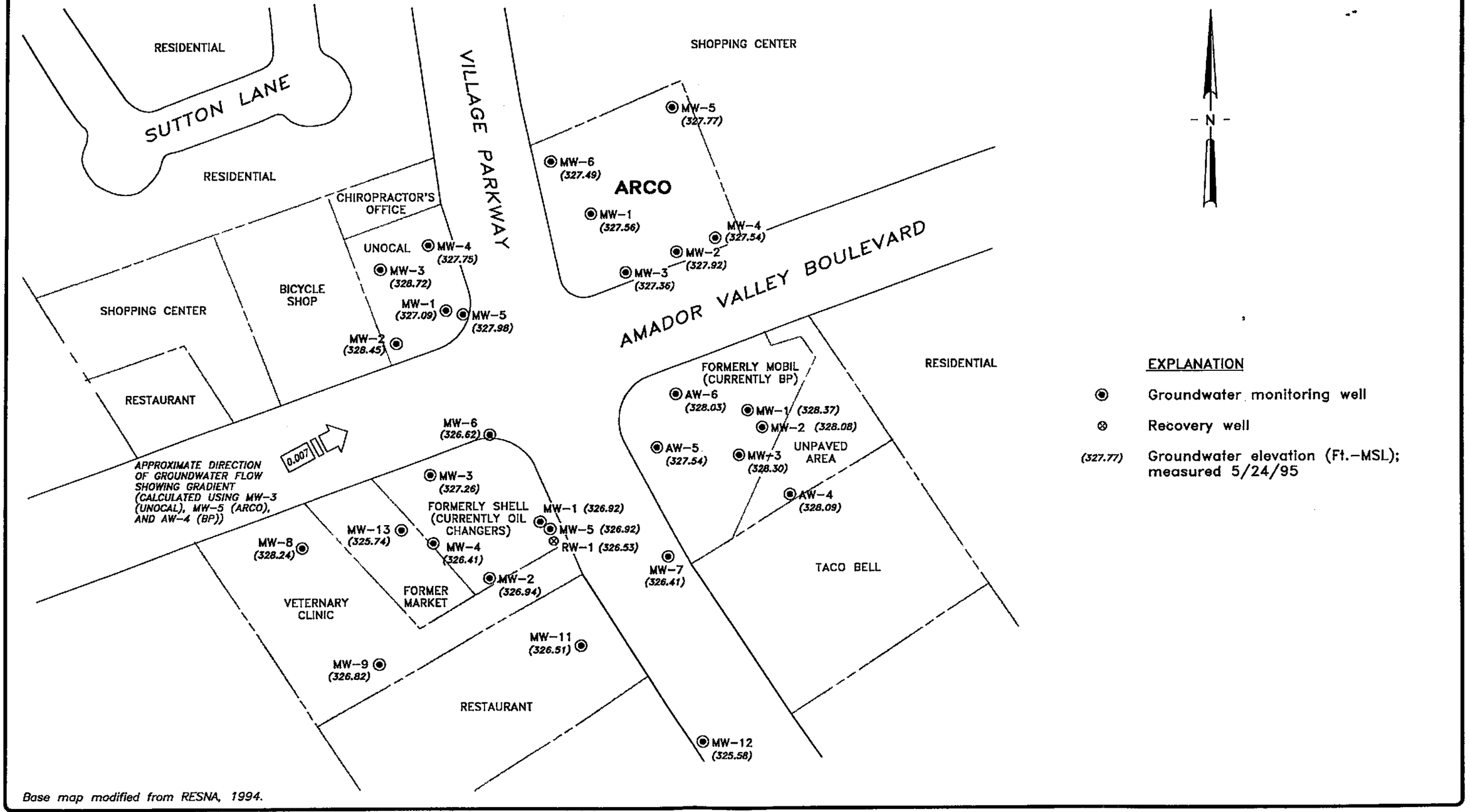
EMCON

ARCO PRODUCTS COMPANY
SERVICE STATION 6041, 7249 VILLAGE PARKWAY
QUARTERLY GROUNDWATER MONITORING
DUBLIN, CALIFORNIA

GROUNDWATER DATA
SECOND QUARTER 1995

FIGURE
2
PROJECT NO.
805-132.02

G:\805-132\G01 REV 0 09/07/95 09:41:22 DD DJ



Base map modified from RESNA, 1994.

EMCON

SCALE: 0 40 80 FEET

ARCO PRODUCTS COMPANY
SERVICE STATION 6041, 7249 VILLAGE PARKWAY
QUARTERLY GROUNDWATER MONITORING
DUBLIN, CALIFORNIA

GROUNDWATER DATA
SECOND QUARTER 1995

FIGURE
3
PROJECT NO.
805-132.02

APPENDIX A

FIELD DATA SHEETS, SECOND QUARTER 1995 GROUNDWATER MONITORING EVENT

FIELD REPORT
DEPTH TO WATER / FLOATING PRODUCT SURVEY

PROJECT # : 1775-244.01 STATION ADDRESS : 7249 Village Parkway, Dublin DATE : 5/24/95

ARCO STATION # : 6041 FIELD TECHNICIAN : R. Davis / M. Gallegos DAY : Wednesday

DTW Order	WELL ID	Well Box Seal	Well Lid Secure	Gasket	Lock	Locking Well Cap	FIRST DEPTH TO WATER (feet)	SECOND DEPTH TO WATER (feet)	DEPTH TO FLOATING PRODUCT (feet)	FLOATING PRODUCT THICKNESS (feet)	WELL TOTAL DEPTH (feet)	COMMENTS
1	MW-4	Have	15/16	ok	ok	ok	6.68	6.68	NR	NR	14.5	
2	MW-5		15/16	Ok	ok	OK	8.10	8.10			17.5	
3	MW-6		15/16	OK	ok	broken	8.35	8.35			15.8	water in box (below TOC)
4	MW-2		15/16	ok	ok	ok	6.88	6.88			14.0	water in box (below TOC)
5	MW-3		15/16	ok	ok	ok	8.17	8.17			14.7	
6	MW-1		15/16	ok	ok	ok	9.00	9.00			17.5	

SURVEY POINTS ARE TOP OF WELL CASINGS

ALISTO ENGINEERING GROUP
GROUNDWATER MONITORING

Client: BP Oil
Alisto Project No: 10-017-04-001
Service Station No: 11116

Date: 5-24-95
Field Personnel: D. Cusale
Site Address: 7197 Village Pkwy Dublin

FIELD ACTIVITY:

X Groundwater Monitoring
__ Groundwater Sampling
__ Well Development

QUALITY CONTROL SAMPLES:

__ QC-1 Sample Duplicate (Well ID)
__ QC-2 Trip Blank
__ QC-3 Rinsate Blank

Lab ID	Well ID	Well Diam	Order Measured/ Sampled	Total Depth	Depth to Water	Depth to Product	Product Thick-ness	Comments
S-1	AW-4	4	✓	34.15	5.32			
S-2	AW-5	4	✓	32.90	7.27			
S-3	AW-6	4	✓	16.50	6.87			
	MW1				6.80			NS
	MW2				6.50			NS
	MW3				6.83			NS

Notes:

Barrels: ___Soil ___Water ___Dbl Contained ___Empty ___Soil Pile (Cu Yds)

FORM: FS2/121592

WELL GAUGING DATA

Project # 95052402 Date 5-24-95 Client SHELL

Site 7194 AMADOR VALLEY BLVD., DUBLIN

Well I.D.	Well Size (in.)	Sheen/ Odor	Depth to Immiscible Liquid (feet)	Thickness of Immiscible Liquid (ft.)	~~Volume of Immiscibles Removed (ml)~~ TOC Elev.	Depth to Water (feet)	Depth to Well Bottom (feet)	Survey Point: TOB or TOC
MW1	4				334.83	7.91	25.22	TOC
MW2	4				336.96	10.02	24.51	
MW3	4				336.93	9.67	24.24	
MW4	4				337.14	10.73	24.78	
MW5	4				334.96	8.04	44.70	
MW6	4				335.42	8.80	22.91	
MW7	4				333.23	6.82	16.46	
MW8	4				335.80	7.56	16.11	
MW9	4				334.57	7.75	17.91	
MW11	4				334.20	7.69	16.37	
MW12	4				332.53	6.95	17.15	
MW13	4				335.64	9.90	17.06	
RW1	6				336.19	9.66	31.05	

DUBLIN – 7375 Amador Valley Road.

TABLE 1

SUMMARY OF MONITORING DATA
UNOCAL MONITORING WELLS

Well #	Ground Water Elevation (feet)	Depth to Water (feet)•	Total Well Depth (feet)♦	Product Thickness (feet)	Sheen	Water Purged (gallons)
(Monitored and Sampled June 13, 1995)						
MW1	327.25	8.82	19.45	0	No	8
MW2*	327.81	8.97	19.24	0	--	0
MW3*	327.80	9.18	18.90	0	--	0
MW4*	327.22	9.21	19.40	0	--	0
MW5	327.31	8.65	19.68	0	No	8
(Monitored on May 24, 1995)						
MW1	327.09	8.98	19.49	0	--	0
MW2	328.45	8.33	19.25	0	--	0
MW3	328.72	8.26	18.93	0	--	0
MW4	327.75	8.68	19.40	0	--	0
MW5	327.98	7.98	20.00	0	--	0
(Monitored and Sampled February 15, 1995)						
MW1	328.27	7.80	19.52	0	No	8
MW2	329.20	7.58	19.30	0	No	8
MW3	329.36	7.62	18.98	0	No	8
MW4	328.31	8.12	19.44	0	No	8.5
MW5	328.20	7.76	20.02	0	No	8
(Monitored and Sampled November 18, 1994)						
MW1	326.38	9.69	19.49	0	No	7
MW2*	326.83	9.95	19.26	0	--	0
MW3*	326.83	10.15	18.91	0	--	0
MW4*	326.33	10.10	19.44	0	--	0
MW5	325.87	10.09	19.99	0	No	7

Post-it® Fax Note 7671

Date 6/23/95	# of pages ▶ 1
To Rob Davis	From S. KARKARIAN
Co./Dept. EMCON Assoc.	Co.
Phone #	Phone #
Fax # [illegible]	Fax # (510) 689-1918

Rev. 3, 2/94

WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 1775-244.01 SAMPLE ID: MW-1

PURGED BY: M. Gallegos CLIENT NAME: ARCO # 6041

SAMPLED BY: // LOCATION: Dublin, CA

TYPE: Ground Water / Surface Water ___ Treatment Effluent ___ Other ___

CASING DIAMETER (inches): 2 ___ 3 ___ 4 / 4.5 ___ 6 ___ Other ___

CASING ELEVATION (feet/MSL):	N/R	VOLUME IN CASING (gal.):	5.55
DEPTH TO WATER (feet):	9.00	CALCULATED PURGE (gal.):	16.66
DEPTH OF WELL (feet):	17.5	ACTUAL PURGE VOL. (gal.):	11.5

DATE PURGED: 5-24-95 Start (2400 Hr) 15:17 End (2400 Hr) 15:22

DATE SAMPLED: // Start (2400 Hr) 15:35 End (2400 Hr) ___

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
15:19	5.5	6.60	302	69.9	lt. gray	clear
15:22	11.0	6.62	343	72.0	gray	mod.
	well dried	at 11.0	gallons			
15:27	recharge:	6.65	340	71.3	gray	mod.

D. O. (ppm): N/R ODOR: slight

COLOR (visual): N/R (COBALT 0 - 500)

TURBIDITY (visual): N/R (NTU 0 - 200 or 0 - 1000)

Field QC samples collected at this well: N/R

Parameters field filtered at this well: N/R

PURGING EQUIPMENT		SAMPLING EQUIPMENT	
___ 2" Bladder Pump	___ Bailer (Teflon®)	___ 2" Bladder Pump	/ Bailer (Teflon®)
___ Centrifugal Pump	/ Bailer (PVC)	___ DDL Sampler	___ Bailer (Stainless Steel)
___ Submersible Pump	___ Bailer (Stainless Steel)	___ Dipper	___ Submersible Pump
___ Well Wizard™	___ Dedicated	___ Well Wizard™	___ Dedicated
Other: ___		Other: ___	

WELL INTEGRITY: good LOCK #: Arco Key

REMARKS: light sheen observed on purge water
well dried at 11.0 gallons

Meter Calibration: Date: 5-24-95 Time: ___ Meter Serial #: 9011 Temperature °F: ___

(EC 1000 ___ / ___) (DI ___) (pH 7 ___ / ___) (pH 10 ___ / ___) (pH 4 ___ / ___)

Location of previous calibration: MW-2

Signature: M. Gallegos Reviewed By: ___ Page 1 of 3

Rev. 3, 2/94

WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 1775-244.01 SAMPLE ID: MW-2

PURGED BY: M Gallegos CLIENT NAME: ARCO (0741)

SAMPLED BY: ✓ LOCATION: Niles, CA

TYPE: Ground Water X Surface Water ___ Treatment Effluent ___ Other ___

CASING DIAMETER (inches): 2 ___ 3 ___ 4 X 4.5 ___ 6 ___ Other ___

CASING ELEVATION (feet/MSL):	NR	VOLUME IN CASING (gal.):	4.65
DEPTH TO WATER (feet):	6.88	CALCULATED PURGE (gal.):	13.95
DEPTH OF WELL (feet):	14.0	ACTUAL PURGE VOL. (gal.):	14.0

DATE PURGED: 5-24-95 Start (2400 Hr) 14:38 End (2400 Hr) 14.45

DATE SAMPLED: ✓ Start (2400 Hr) 14:50 End (2400 Hr) ___

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
14:40	4.5	6.44	2250	67.0	gray	mod.
14:43	9.0	6.61	3020	66.7	gray	mod.
14:45	14.0	6.69	3070	66.7	gray	mod.

D. O. (ppm): NR ODOR: slight

COLOR (COBALT 0 - 500): NR

TURBIDITY (NTU 0 - 200 or 0 - 1000): NR

Field QC samples collected at this well: NR

Parameters field filtered at this well: NR

PURGING EQUIPMENT		SAMPLING EQUIPMENT	
___ 2" Bladder Pump	___ Bailer (Teflon®)	___ 2" Bladder Pump	X Bailer (Teflon®)
___ Centrifugal Pump	X Bailer (PVC)	___ DDL Sampler	___ Bailer (Stainless Steel)
___ Submersible Pump	___ Bailer (Stainless Steel)	___ Dipper	___ Submersible Pump
___ Well Wizard™	___ Dedicated	___ Well Wizard™	___ Dedicated
Other: ___		Other: ___	

WELL INTEGRITY: good LOCK #: ARCO ICE VS

REMARKS: all samples collected

Meter Calibration: Date: 5-24-95 Time: 1430 Meter Serial #: 7011 Temperature °F: 72.7

(EC 1000 977 / 1000) (DI ___) (pH 7 703 / 700) (pH 10 1000 / 1000) (pH 4 358 / ___)

Location of previous calibration: ___

Signature: [signature] Reviewed By: SV Page 2 of 3

Rev. 3, 2/94

WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 1775-244.01 SAMPLE ID: MW-3

PURGED BY: M Gallegos CLIENT NAME: ARCO # 6041

SAMPLED BY: " LOCATION: Dublin, CA

TYPE: Ground Water X Surface Water ___ Treatment Effluent ___ Other ___

CASING DIAMETER (inches): 2 ___ 3 ___ 4 X 4.5 ___ 6 ___ Other ___

CASING ELEVATION (feet/MSL):	NR	VOLUME IN CASING (gal.):	4.26
DEPTH TO WATER (feet):	8.17	CALCULATED PURGE (gal.):	12.79
DEPTH OF WELL (feet):	14.7	ACTUAL PURGE VOL. (gal.):	5.5

DATE PURGED: 5-24-95 Start (2400 Hr) 14:58 End (2400 Hr) 15:03

DATE SAMPLED: " Start (2400 Hr) 15:05 End (2400 Hr) ___

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (Visual)	TURBIDITY (Visual)
15:02	4.5	6.70	234	68.3	gray	mod.
15:03	~~8.5~~ well dried		at 5.5	gallons	gray	mod.
15:11	recharge:	6.70	238	68.7	gray	mod.

D. O. (ppm): NR ODOR: slight

Color (Cobalt 0 - 500): NR

Turbidity (NTU 0 - 200 or 0 - 1000): NR

Field QC samples collected at this well: NR

Parameters field filtered at this well: NR

PURGING EQUIPMENT		SAMPLING EQUIPMENT	
___ 2" Bladder Pump	___ Bailer (Teflon®)	___ 2" Bladder Pump	X Bailer (Teflon®)
___ Centrifugal Pump	X Bailer (PVC)	___ DDL Sampler	___ Bailer (Stainless Steel)
___ Submersible Pump	___ Bailer (Stainless Steel)	___ Dipper	___ Submersible Pump
___ Well Wizard™	___ Dedicated	___ Well Wizard™	___ Dedicated
Other: ___		Other: ___	

WELL INTEGRITY: good LOCK #: ARCO

REMARKS: well dried at 5.5 gallons

Meter Calibration: Date: 5/24/95 Time: ___ Meter Serial #: 9011 Temperature °F: ___

(EC 1000 ___ / ___) (DI ___) (pH 7 ___ / ___) (pH 10 ___ / ___) (pH 4 ___ / ___)

Location of previous calibration: MW-2

Signature: [signature] Reviewed By: [signature] Page 4 of 3

APPENDIX B

ANALYTICAL RESULTS AND CHAIN-OF-CUSTODY DOCUMENTATION, SECOND QUARTER 1995

Columbia Analytical Services INC.

June 8, 1995 Service Request No. S950665

John Young
EMCON
1921 Ringwood Avenue
San Jose, CA 95131

Re: **ARCO Facility No. 6041 / EMCON Project No. 0805-132.02**

Dear Mr. Young:

Attached are the results of the water sample(s) submitted to our lab on May 25, 1995. For your reference, these analyses have been assigned our service request number S950665.

All analyses were performed consistent with our laboratory's quality assurance program. All results are intended to be considered in their entirety, and CAS is not responsible for use of less than the complete report. Results apply only to the samples analyzed.

Please call if you have any questions.

Respectfully submitted:

COLUMBIA ANALYTICAL SERVICES, INC.

Steven L. Green
Project Chemist

Annelise J. Bazar
Regional QA Coordinator

SLG/ajb

01

COLUMBIA ANALYTICAL SERVICES, Inc.

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
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
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is 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
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 MRL
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON	**Service Request:**	S950665
Project:	ARCO Facility No. 6041/EMCON Project No. 0805-132.02	**Date Collected:**	5/24/95
Sample Matrix:	Water	**Date Received:**	5/25/95
		Date Extracted:	NA
		Date Analyzed:	6/2/95

BTEX and TPH as Gasoline
EPA Methods 5030/8020/California DHS LUFT Method

Analyte:	**TPH as Gasoline**	**Benzene**	**Toluene**	**Ethyl-benzene**	**Xylenes, Total**
Units:	ug/L (ppb)	ug/L (ppb)	ug/L (ppb)	ug/L (ppb)	ug/L (ppb)
Method Reporting Limit:	50	0.5	0.5	0.5	0.5
Sample Name	**Lab Code**				
MW-2 (14)	S950665-001	370	110	<1*	17	1.9
MW-3 (14)	S950665-002	110	8.0	ND	2.7	ND
MW-1 (17)	S950665-003	640	12	<1*	7.3	<1*
Method Blank	S950602-WB1	ND	ND	ND	ND	ND

* Raised MRL due to high analyte concentration requiring sample dilution.

Approved By: _____ Date: 6/8/95

5ABTXGAS/061694

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON	**Service Request:**	S950665
Project:	ARCO Facility No. 6041/EMCON Project No. 0805-132.02	**Date Collected:**	5/24/95
Sample Matrix:	Water	**Date Received:**	5/25/95
		Date Extracted:	NA
		Date Analyzed:	6/2/95

Matrix Spike/Duplicate Matrix Spike Summary
TPH as Gasoline
EPA Methods 5030/California DHS LUFT Method
Units: ug/L (ppb)

Sample Name: Batch QC
Lab Code: S950666-002

	Spike Level		Sample	Spike Result		Percent Recovery		CAS Acceptance	Relative Percent
Analyte	MS	DMS	**Result**	MS	DMS	MS	DMS	Limits	**Difference**
Gasoline	250	250	ND	234	233	94	93	67-121	<1

Approved By: _____ Date: 6/8/95

DMS1S/060194

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON	**Service Request:**	S950665
Project:	ARCO Facility No. 6041/EMCON Project No. 0805-132.02	**Date Collected:**	5/24/95
Sample Matrix:	Water	**Date Received:**	5/25/95
		Date Extracted:	NA
		Date Analyzed:	6/2/95

Surrogate Recovery Summary
BTEX and TPH as Gasoline
EPA Methods 5030/8020/California DHS LUFT Method

Sample Name	**Lab Code**	**Percent Recovery** α,α,α-Trifluorotoluene
MW-2 (14)	S950665-001	92
MW-3 (14)	S950665-002	94
MW-1 (17)	S950665-003	105*
(MS)	S950666-002MS	103
(DMS)	S950666-002DMS	103
Method Blank	S950602-WB1	92

CAS Acceptance Limits: 69-116

* The surrogate used for this sample was 4-bromofluorobenzene.

Approved By: _____ Date: 6/8/95

SUR1/062994

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON **Service Request:** S950665
Project: ARCO Facility No. 6041/EMCON Project No. 0805-132.02 **Date Analyzed:** 6/2/95

Initial Calibration Verification (ICV) Summary
BTEX and TPH as Gasoline
EPA Methods 5030/8020/California DHS LUFT Method
Units: ppb

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits
Benzene	25	25.8	103	85-115
Toluene	25	24.9	100	85-115
Ethylbenzene	25	25.0	100	85-115
Xylenes, Total	75	72.2	96	85-115
Gasoline	250	238	95	90-110

Approved By: _____ Date: 6/8/95

ICV25AL/060194

ARCO Products Company
Division of AtlanticRichfieldCompany

Task Order No. # 17075.09

Chain of Custody

ARCO Facility no. 6041	City (Facility) Dublin	Project manager (Consultant) John Young	Laboratory name CAS
ARCO engineer Mike Whelan	Telephone no. (ARCO)	Telephone no. (Consultant) (408)453-7300	Fax no. (Consultant) (408)453-0452
Consultant name EMCON	Address (Consultant) 1921 Ringwood Ave San Jose, CA 95131		Contract number

Method of shipment: Sampler will deliver

Special detection Limit/reporting: lowest possible

Special QA/QC: As Normal

Remarks: 2 40ml HCL VOAs

#605-132.02

Lab number: 595-0665

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

	Sample I.D.	Lab no.	Container no.	Matrix: Soil	Matrix: Water	Matrix: Other	Preservation: Ice	Preservation: Acid	Sampling date	Sampling time	BTEX 602/EPA 8020	BTEX/TPH EPA M602/8020/8015	TPH Modified 8015 Gas ☐ Diesel ☐	Oil and Grease 413.1 ☐ 413.2 ☐	TPH EPA 418.1/SM503E	EPA 601/8010	EPA 624/8240	EPA 625/8270	TCLP Metals ☐ Semi VOA ☐ VOA ☐	CAM Metals EPA 6010/7000 TTLC ☐ STLC ☐	Lead Org./DHS ☐ Lead EPA 7420/7421 ☐
1	MW-2(14')				X		X	HCL	5-24-95	1450		X									
2	MW-3(14')				X		X	HCL	"	1505		X									
3	MW-1(17')				X		X	HCL	"	1527		X									

Condition of sample: ok

Temperature received:

Relinquished by sampler	Date 5-25-95	Time 08:45	Received by
Relinquished by	Date	Time	Received by
Relinquished by	Date	Time	Received by laboratory — Date 5/25/95 — Time 8:45

Distribution: White copy — Laboratory; Canary copy — ARCO Environmental Engineering; Pink copy — Consultant
ARCO-3292 (2-91)

Due 6/9