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

Date March 31, 1996
Project 20805-120.004

To:

Mr. Barney Chan
Alameda County Health Care Services Agency
Department of Environmental Health
1131 Harborbay Parkway, Suite 250
Alameda, California 94502-6577

#3756

We are enclosing:

Copies	Description
1	Fourth quarter 1995 groundwater monitoring report results and remediation system performance evaluations report, retail service station, 10600 and 10700 MacArthur Boulevard, Oakland, CA

For your:			Sent by:	
	X	Use		Regular Mail
		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.

John C. Young
Project Manager

cc: Kevin Graves, RWQCB - SFBR
Richard Gilcrease, Drake Builders
Michael Whelan, ARCO Products Company
Beth Dorris, ARCO Legal Department
Ivy Inouye, EMCON
File

ARCO Products Company

Date:

March 31, 1996

Re: ARCO Station #

10600 MacArthur Boulevard • Oakland, CA
Fourth Quarter 1995 Groundwater Monitoring Results
and Remediation System Performance Evaluation 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

March 22, 1996
Project 20805-120.004

Mr. Michael Whelan
ARCO Products Company
P.O. Box 612530
San Jose, California 95161

Re: Fourth quarter 1995 groundwater monitoring program results and remediation system performance evaluation report, SVE system at retail service station, 10600 MacArthur Boulevard, Oakland, California

Dear Mr. Whelan:

This letter presents the results of the fourth quarter 1995 groundwater monitoring program for the retail service station at 10600 MacArthur Boulevard, Oakland, California (Figure 1). Operation and performance data for the site's soil-vapor extraction (SVE) system are also presented. The quarterly monitoring program complies with Alameda County Health Care Services Agency (ACHCSA) requirements regarding underground tank investigations.

BACKGROUND

Site History and Previous Assessments

There are four underground storage tanks (USTs), designated T1 through T4, in the western portion of the site. These tanks are replacements for four former USTs (FT1 through FT4) that were removed from the southern portion of the site in February 1990. A former waste-oil tank adjacent to the northeastern wall of the station building was removed in 1988. Four soil samples collected beneath the waste-oil tank were analyzed for volatile organic compounds (VOCs), including tetrachloroethene (PCE), even though ARCO Products Company (ARCO) does not use PCE in its operations. Analytical results indicated no detectable concentrations of PCE in the soil samples collected. The locations of the former tanks, existing tanks, on- and off-site groundwater monitoring wells, and on-site vapor extraction wells are shown in Figure 2.

Adjacent to and immediately southeast of the station is a portion of the former Truck Manufacturing Plant (now a parking lot for Foothill Square Shopping Center). Aerial photographs suggest the possible presence of fuel tanks, fuel dispensers, and storage drums on several portions of the former Truck Manufacturing Plant. Since groundwater monitoring began in 1989, PCE has been detected in groundwater from both on- and off-site monitoring wells.

Since 1988, ARCO has conducted several site assessment investigations both on and off site to delineate the lateral and vertical extent of gasoline-impacted soils and groundwater at the site. A total of six on- and off-site groundwater monitoring wells (MW-1, MW-3 through MW-6, and MW-8) and one recovery well (RW-1) screened in the deeper water-bearing zone were installed to evaluate the groundwater flow direction of the deeper water-bearing zone, and to determine the lateral and vertical extent of petroleum-hydrocarbon-impacted soils and groundwater at the site. Wells MW-2 and MW-7 were installed on-and off-site to evaluate groundwater quality in the shallow water-bearing zone. Wells MW-1 through MW-8, WGR-3, and RW-1 are monitored quarterly.

On- and Off-Site Soil-Vapor Extraction Systems

ARCO installed twenty six 3/4-inch galvanized steel probes off site at the former Truck Manufacturing Plant, to remediate soils impacted by gasoline above the shallow water-bearing zone. The probes and well WGR-3 are connected via subsurface piping to a treatment system located in remediation compound on the ARCO site (Figure 2). This SVE well configuration was operated by EVAX Technologies (EVAX) from September 6, 1990, to March 21, 1991. The EVAX treatment system consisted of a propane-fired internal combustion (IC) engine. Pacific Environmental Group (PEG) replaced the IC engine with a 500 standard cubic foot per minute (scfm) gas-fired Anguil catalytic oxidizer (Cat-ox) and operated the off-site SVE system from June 12, 1991, to August 25, 1992.

A second phase of SVE construction was completed at the ARCO site in July 1992. A total of seven on-site SVE wells (VW-1 through VW-7) were installed and used, along with on-site well MW-2, to remediate hydrocarbon-impacted vadose-zone and capillary-fringe soils in the shallow water-bearing zone on site. Hydrocarbon vapor extracted from these wells is drawn by a 1.5-horsepower (hp) regenerative blower through subsurface remediation piping to the existing Cat-ox in the on-site remediation compound. The on-site SVE system was operated by PEG from August 25 to October 5, 1992. RESNA Industries, Inc. (RESNA, formerly Applied Geosystems), operated the SVE system from October 6, 1992, to May 1994. Operation of the SVE system is regulated under Bay Area Air Quality Management District (BAAQMD) Permit to Operate No. 5998. In December 1993, the SVE system was shut down because of low hydrocarbon concentrations in extracted vapor from the wells. The system was pulsed during first quarter 1994. After the site was transferred from RESNA to EMCON in October 1994, EMCON restarted the system in December 1994.

MONITORING PROGRAM FIELD PROCEDURES

EMCON performed the fourth quarter 1995 groundwater monitoring event on November 16, 1995. Field work this quarter included (1) measuring depths to groundwater

and subjectively analyzing groundwater for the presence of floating product in wells MW-1, MW-3 through MW-8, RW-1, and WGR-3, (2) purging and subsequently sampling groundwater monitoring wells MW-1, MW-3 through MW-8, RW-1, and WGR-3 for laboratory analysis, and (3) directing a state-certified laboratory to analyze the groundwater samples. Well MW-2 was not monitored because the well was inaccessible. Copies of all field data sheets from the fourth quarter 1995 groundwater monitoring event are included in Appendix A.

MONITORING PROGRAM RESULTS

Results of the fourth quarter 1995 groundwater monitoring event are summarized in Table 1 and illustrated in Figure 2. Concentrations of PCE in groundwater are illustrated in Figure 3. Historical groundwater elevation data are summarized in Table 2. Table 3 summarizes historical analytical data for analysis of petroleum hydrocarbons and their constituents. Table 4 summarizes historical analytical data for analysis of metals. Historical analytical data for VOC analyses are summarized in Table 5. Table 6 summarizes historical floating-product recovery data for wells MW-2 and MW-7. Copies of the fourth quarter 1995 analytical results and chain-of-custody documentation are included in Appendix B.

Groundwater elevation data collected on November 16, 1995, were used in calculating groundwater elevations for fourth quarter 1995. Consistent with previous quarters, EMCON used groundwater elevation data from wells MW-1, MW-3, and MW-8 to determine the local groundwater flow direction and gradient. The groundwater beneath the site flows southwest with an approximate hydraulic gradient of 0.003 foot per foot. Figure 2 illustrates groundwater elevations and TPHG and benzene analytical data for fourth quarter 1995.

Floating product was not identified this quarter. A total of 18.54 gallons of floating product has been recovered from wells MW-2 and MW-7 since 1991 (Table 6). No floating product has been recovered since 1992.

REMEDIAL PERFORMANCE EVALUATION - SVE SYSTEM

The SVE system was not operated during the 92-day reporting period from October 1, 1995 to January 1, 1996. The system is currently being pulsed.

System operation and performance data since restart of the system in December 1994 are detailed in Tables 7. Historical SVE system monitoring data log sheets are included in Appendix C. Please refer to *Fourth Quarter 1994 Groundwater Monitoring Results and Remediation System Performance Evaluation Report* (EMCON, March 1995) for operation and performance data for the on- and off-site SVE systems between September 1990 and May 1994.

Based on the information provided by EVAX, PEG, and RESNA, approximately 7,666 pounds (1,236 gallons) of petroleum hydrocarbons were removed by the on- and off-site SVE systems from September 1990 to December 22, 1994. A total of approximately 7,788 pounds (or 1,256 gallons) of hydrocarbons has been recovered from the site since system startup in September 1990. The calculations and assumptions for estimating hydrocarbon removal rates for the SVE system are shown in Table 7. Table 8 summarizes the operational status of the individual vapor extraction wells from December 1994 to the end of this reporting period.

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 fourth quarter of 1995 and the anticipated site activities for the first quarter of 1996.

Fourth Quarter 1995 Activities

- Prepared quarterly groundwater monitoring results and SVE system performance evaluation report for third quarter 1995.
- Performed quarterly groundwater monitoring for fourth quarter 1995.
- The low concentrations of benzene reported, as compared to the TPHG concentrations, indicate that the lighter-end constituents of gasoline have been removed through vapor extraction, volatilization, or natural degradation.

Work Anticipated for First Quarter 1996

- Prepare and submit quarterly groundwater monitoring results and SVE system performance evaluation report for fourth quarter 1995.
- Perform quarterly groundwater monitoring for first quarter 1996.

- Continue with on- and off-site SVE remediation. Pulse the SVE system on and off, to maximize hydrocarbon removal rates.

- Install oxygen releasing compounds (ORCs) into groundwater wells MW-2 and MW-7 to further stimulate natural biodegradation.

Please call if you have questions.

Sincerely,

EMCON

Valli Voruganti
Project Engineer

John C. Young, R.G. 6407
Project Manager

REGISTERED GEOLOGIST
JOHN CHARLES YOUNG
Exp 7/96
NO. 6407
STATE OF CALIFORNIA

Attachments:
Table 1 - Groundwater Monitoring Data, Fourth Quarter 1995
Table 2 - Historical Groundwater Elevation Data
Table 3 - Historical Groundwater Analytical Data, Petroleum Hydrocarbons and Their Constituents
Table 4 - Historical Groundwater Analytical Data, Metals
Table 5 - Historical Groundwater Analytical Data, Volatile Organic Compounds
Table 6 - Approximate Cumulative Floating Product Recovered
Table 7 - Soil-Vapor Extraction System Operation and Performance Data
Table 8 - Soil-Vapor Extraction Well Data
Figure 1 - Site Location
Figure 2 - TPHG and Benzene Concentrations in Groundwater, Fourth Quarter 1995
Figure 3 - Tetrachloroethene (PCE) Concentrations in Groundwater, Fourth Quarter 1995
Appendix A - Field Data Sheets, Fourth Quarter 1995 Groundwater Monitoring Event
Appendix B - Analytical Results and Chain-of-Custody Documentation, Groundwater Monitoring, Fourth Quarter 1995
Appendix C - SVE System Monitoring Data Log Sheets

cc: Barney Chan, ACHCSA
Kevin Graves, RWQCB-SFBR
Richard Gilcrease, Drake Builders
Beth Dorris, ARCO Legal Department
John Young, EMCON

Table 1
Groundwater Monitoring Data
Fourth Quarter 1995

10600 and 10700 MacArthur Boulevard
Oakland, California

Date: 03-11-96

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	TRPH EPA 418.1	TPHD LUFT Method
		ft-MSL	feet	ft-MSL	feet	MWN	foot/foot		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
MW-1	11-16-95	55 92	30.85	25.07	ND	SW	0.003	11-16-95	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--
MW-2	11-16-95	55.10	Not surveyed: well was inaccessible					11-16-95	Not surveyed: well was inaccessible								
MW-3	11-16-95	56 55	31 50	25.05	ND	SW	0.003	11-16-95	<500*	<0.5	<0.5	<0 5	<0.5	<3	--	--	--
MW-4	11-16-95	55.98	31.00	24 98	ND	SW	0.003	11-16-95	<900*	<0.5	<0 5	<0.5	<0.5	<6**	--	<0 5	--
MW-5	11-16-95	55 43	30.63	24.80	ND	SW	0.003	11-16-95	<500*	<0.5	<0.5	<0 5	0 7	<20**	--	--	--
MW-6	11-16-95	61 21	36.40	24.81	ND	SW	0.003	11-16-95	<500*	<0.5	<0.5	<0.5	<0 5	<3	--	--	--
MW-7	11-16-95	58 22	23 02	35.20	ND	SW	0 003	11-16-95	1400000	610	590	7800	3300	<4000***	--	--	--
MW-8	11-16-95	53.65	28.90	24 75	ND	SW	0.003	11-16-95	<50	<0.5	<0.5	<0.5	<0.5	6	9	--	--
RW-1	11-16-95	56 32	31 34	24.98	ND	SW	0.003	11-16-95	<50	<0.5	<0 5	<0.5	<0.5	<3	--	--	--
WGR-3	11-16-95	NR	22.50	NR	ND	SW	0.003	11-16-95	<50	<0 5	<0.5	<0 5	<0.5	3	--	--	--

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 Statest Environmental Protection Agency
MTBE: *methyl-tert-butyl ether*
TRPH: total recoverable petroleum hydrocarbons
TPHD: total petroleum hydrocarbons as diesel, California DHS LUFT Method
ND: none detected
SW: southwest
*: raised method reporting limit due to matrix interference, the sample contains a single non-fuel component eluting in the gasoline range and quantitated as gasoline (possibly PCE), and the chromatogram does not match the typical gasoline fingerprint
-- : not analyzed
**: raised method reporting limit due to matrix interference requiring sample dilution
NR: not reported; data not available or not measurable

Table 2
Historical Groundwater Elevation Data

10600 and 10700 MacArthur Boulevard
Oakland, California

Date: 03-08-96

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 foot/foot
MW-1	04-17-89	55 91	33.04	22.87	ND	NR	NR
MW-1	04-24-89	55.91	33 84	22.07	ND	NR	NR
MW-1	10-13-89	55.91	37.19	18 72	ND	NR	NR
MW-1	02-01-90	55.91	36.73	19.18	ND	NR	NR
MW-1	07-31-90	55.91	36 42	19 49	ND	NR	NR
MW-1	08-01-90	55.91	36.41	19.50	ND	NR	NR
MW-1	08-28-90	55.91	36.88	19.03	ND	NR	NR
MW-1	10-30-90	55.91	37.73	18.18	ND	NR	NR
MW-1	11-20-90	55 91	37.92	17.99	ND	NR	NR
MW-1	12-19-90	55 91	37.90	18.01	ND	NR	NR
MW-1	01-30-91	55.91	38.06	17 85	ND	NR	NR
MW-1	02-27-91	55.91	37.66	18.25	ND	NR	NR
MW-1	03-20-91	55.91	36.77	19.14	ND	NR	NR
MW-1	04-30-91	55.91	34.63	21.28	ND	NR	NR
MW-1	05-31-91	55 91	34.83	21.08	ND	NR	NR
MW-1	07-24-91	55.91	35 96	19.95	ND	NR	NR
MW-1	08-06-91	55.91	36.21	19.70	ND	NR	NR
MW-1	09-03-91	55.91	36.74	19 17	ND	NR	NR
MW-1	10-17-91	55.91	37.57	18 34	ND	NR	NR
MW-1	11-05-91	55.91	37.65	18.26	ND	NR	NR
MW-1	12-24-91	55.91	38.14	17.77	ND	NR	NR
MW-1	01-19-92	55.91	37.62	18.29	ND	NR	NR
MW-1	02-20-92	55.91	36.23	19.68	ND	NR	NR
MW-1	03-10-92	55.91	34.58	21.33	ND	NR	NR
MW-1	04-20-92	55 91	32.82	23.09	ND	NR	NR
MW-1	05-15-92	55.91	33 17	22.74	ND	NR	NR
MW-1	06-30-92	55.91	34.55	21.36	ND	NR	NR
MW-1	07-15-92	55.91	34.90	21.01	ND	NR	NR
MW-1	08-25-92	55.92	35.34	20.58	ND	NR	NR
MW-1	09-09-92	55.92	35.71	20.21	ND	NR	NR
MW-1	10-31-92	55.92	36.62	19.30	ND	NR	NR
MW-1	11-20-92	55.92	36.90	19.02	ND	NR	NR
MW-1	12-16-92	55.92	36.18	19.74	ND	NR	NR
MW-1	01-22-93	55.92	32.24	23.68	ND	NR	NR
MW-1	02-12-93	55.92	30.65	25.27	ND	NR	NR
MW-1	03-26-93	55.92	28.36	27.56	ND	NR	NR
MW-1	04-30-93	55.92	28.45	27.47	ND	NR	NR
MW-1	05-12-93	55.92	28.88	27.04	ND	NR	NR
MW-1	06-17-93	55.92	29.67	26.25	ND	NR	NR
MW-1	08-18-93	55.92	31 44	24 48	ND	NR	NR
MW-1	11-10-93	55 92	33.33	22.59	ND	NR	NR
MW-1	02-04-94	55.92	24.48	31.44	ND	NR	NR
MW-1	05-02-94	55.92	31.66	24.26	ND	NR	NR
MW-1	08-03-94	55.92	32.54	23.38	ND	SW	0.002
MW-1	12-06-94	55.92	31.89	24.03	ND	W	0.001
MW-1	03-10-95	55.92	26.26	29.66	ND	NNE	0.003
MW-1	06-05-95	55.92	25.71	30.21	ND	FG	FG
MW-1	08-29-95	55.92	28.44	27.48	ND	FG	FG
MW-1	11-16-95	55.92	30.85	25.07	ND	SW	0.003

Table 2
Historical Groundwater Elevation Data

10600 and 10700 MacArthur Boulevard
Oakland, California

Date. 03-08-96

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 foot/foot
MW-2	04-17-89	55.35	17.20	38 15	ND	NR	NR
MW-2	04-24-89	55 35	17 83	37.52	ND	NR	NR
MW-2	10-13-89	55 35	^20.15	^35.20	0.03	NR	NR
MW-2	02-01-90	55 35	NR	NR	NR	NR	NR
MW-2	07-31-90	55.35	18.90	36.45	ND	NR	NR
MW-2	08-01-90	55 35	^18.23	^37.03	1.04	NR	NR
MW-2	08-28-90	55.35	^21.25	^34.10	0.83	NR	NR
MW-2	10-30-90	55.35	^24.21	^31.14	1.04	NR	NR
MW-2	11-20-90	55 35	^25.08	^30 27	0 60	NR	NR
MW-2	12-19-90	55.35	^18.23	^37.12	ND	NR	NR
MW-2	01-30-91	55.35	^19.47	^35.88	0.03	NR	NR
MW-2	02-27-91	55 35	^18.84	^36.51	0.02	NR	NR
MW-2	03-20-91	55.35	^16.02	^39.33	0.01	NR	NR
MW-2	04-30-91	55.35	16.55	38.80	Sheen	NR	NR
MW-2	05-31-91	55.35	^18 41	^36 94	0 01	NR	NR
MW-2	07-24-91	55.35	19.81	35.54	Sheen	NR	NR
MW-2	08-06-91	55 35	^20.59	^34.76	0.14	NR	NR
MW-2	09-03-91	55.35	^23.23	^32.12	0.54	NR	NR
MW-2	10-17-91	55.35	^24.81	^30.54	0.20	NR	NR
MW-2	11-05-91	55.35	^18.88	^36 47	0.01	NR	NR
MW-2	12-24-91	55.35	^19.34	^36.01	0.09	NR	NR
MW-2	01-19-92	55.35	18.00	37.35	Sheen	NR	NR
MW-2	02-20-92	55.35	14.81	40.54	Skimmer	NR	NR
MW-2	03-10-92	55.35	14.95	40.40	Skimmer	NR	NR
MW-2	04-20-92	55.35	16.13	39.22	ND	NR	NR
MW-2	05-15-92	55.35	17.66	37.69	ND	NR	NR
MW-2	06-30-92	55.35	19.11	36.24	Sheen	NR	NR
MW-2	07-15-92	55.35	19 50	35.85	ND	NR	NR
MW-2	08-25-92	55 10	^21.35	^33.73	0 05	NR	NR
MW-2	09-09-92	55.10	^22.70	^32.40	0.05	NR	NR
MW-2	10-31-92	55.10	22.34	32 76	ND	NR	NR
MW-2	11-20-92	55 10	^19.85	^32.25	0 02^^	NR	NR
MW-2	12-16-92	55.10	NR	NR	NR	NR	NR
MW-2	01-22-93	55.10	13.10	42 00	ND	NR	NR
MW-2	02-12-93	55.10	14.71	40.39	0 05^^	NR	NR
MW-2	03-26-93	55.10 Not surveyed: well was inaccessible					
MW-2	04-30-93	55 10	15 48	39.62	ND	NR	NR
MW-2	05-12-93	55.10	^15.81	^39.29	0.01	NR	NR
MW-2	06-17-93	55.10	18.45	36 65	ND	NR	NR
MW-2	08-18-93	55.10	NR	NR	NR	NR	NR
MW-2	11-10-93	55.10	21.24	33.86	ND^^	NR	NR
MW-2	02-04-94	55.10	16.42	38 68	ND	NR	NR
MW-2	05-02-94	55.10	16.15	38.95	ND	NR	NR
MW-2	08-03-94	55.10 Not surveyed: well was inaccessible due to a parked vehicle					
MW-2	12-06-94	55.10	14.74	40.36	Sheen	W	0.001
MW-2	03-10-95	55.10	13 98	41.12	ND	NNE	0.003
MW-2	06-05-95	55 10	15.65	39.45	ND	FG	FG
MW-2	08-29-95	55.10	17.14	37.96	ND	FG	FG
MW-2	11-16-95	55 10 Not surveyed: well was inaccessible					

Table 2
Historical Groundwater Elevation Data

10600 and 10700 MacArthur Boulevard
Oakland, California

Date. 03-08-96

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 foot/foot
MW-3	04-24-89	56.55	34.47	22.08	ND	NR	NR
MW-3	10-13-89	56.55	37.60	18.95	ND	NR	NR
MW-3	02-01-90	56 55	37.20	19.35	ND	NR	NR
MW-3	07-31-90	56 55	36.90	19.65	ND	NR	NR
MW-3	08-01-90	56.55	36.87	19.68	ND	NR	NR
MW-3	08-28-90	56.55	37 33	19 22	ND	NR	NR
MW-3	10-30-90	56.55	38 15	18.40	ND	NR	NR
MW-3	11-20-90	56.55	38.33	18.22	ND	NR	NR
MW-3	12-19-90	56.55	38.30	18.25	ND	NR	NR
MW-3	01-30-91	56.55	DRY	DRY	ND	NR	NR
MW-3	02-27-91	56.55	38 11	18.44	ND	NR	NR
MW-3	03-20-91	56.55	37.26	19.29	ND	NR	NR
MW-3	04-30-91	56.55	35.02	21.53	ND	NR	NR
MW-3	05-31-91	56.55	35.26	21.29	ND	NR	NR
MW-3	07-24-91	56.55	36.40	20.15	ND	NR	NR
MW-3	08-06-91	56.55	36 66	19.89	ND	NR	NR
MW-3	09-03-91	56.55	37.20	19.35	ND	NR	NR
MW-3	10-17-91	56.55	38.04	18.51	ND	NR	NR
MW-3	11-05-91	56.55	38.08	18.47	ND	NR	NR
MW-3	12-24-91	56.55	DRY	DRY	ND	NR	NR
MW-3	01-19-92	56.55	38.07	18.48	ND	NR	NR
MW-3	02-20-92	56.55	36.71	19.84	ND	NR	NR
MW-3	03-10-92	56.55	34.96	21.59	ND	NR	NR
MW-3	04-20-92	56.55	33.20	23.35	ND	NR	NR
MW-3	05-15-92	56.55	33.70	22.85	ND	NR	NR
MW-3	06-30-92	56.55	34.97	21.58	ND	NR	NR
MW-3	07-15-92	56.55	35.35	21.20	ND	NR	NR
MW-3	08-25-92	56.55	35.94	20.61	ND	NR	NR
MW-3	09-09-92	56.55	36.19	20.36	ND	NR	NR
MW-3	10-31-92	56.55	36 13	20.42	ND	NR	NR
MW-3	11-20-92	56.55	37.40	19.15	ND	NR	NR
MW-3	12-16-92	56.55	36.68	19.87	ND	NR	NR
MW-3	01-22-93	56.55	32.58	23.97	ND	NR	NR
MW-3	02-12-93	56.55	30.86	25.69	ND	NR	NR
MW-3	03-26-93	56.55	28.60	27.95	ND	NR	NR
MW-3	04-30-93	56 55	28.79	27.76	ND	NR	NR
MW-3	05-12-93	56.55	29.17	27.38	ND	NR	NR
MW-3	06-17-93	56.55	30.11	26.44	ND	NR	NR
MW-3	08-18-93	56.55	31.91	24.64	ND	NR	NR
MW-3	11-10-93	56.55	33.80	22 75	ND	NR	NR
MW-3	02-04-94	56.55	33.58	22.97	ND	NR	NR
MW-3	05-02-94	56.55	32.16	24.39	ND	NR	NR
MW-3	08-03-94	56.55	33.09	23.46	ND	SW	0.002
MW-3	12-06-94	56.55	32.46	24.09	ND	W	0.001
MW-3	03-10-95	56.55	26.74	29.81	ND	NNE	0.003
MW-3	06-05-95	56.55	26.34	30.21	ND	FG	FG
MW-3	08-29-95	56.55	29.15	27.40	ND	FG	FG
MW-3	11-16-95	56.55	31.50	25 05	ND	SW	0.003

Table 2
Historical Groundwater Elevation Data

10600 and 10700 MacArthur Boulevard
Oakland, California

Date 03-08-96

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 foot/foot
MW-4	04-17-89	55.94	33 87	22.07	ND	NR	NR
MW-4	04-24-89	55.94	33.76	22.18	ND	NR	NR
MW-4	10-13-89	55 94	37.03	18.91	ND	NR	NR
MW-4	02-01-90	55.94	36.57	19.37	ND	NR	NR
MW-4	07-31-90	55.94	36 39	19.55	ND	NR	NR
MW-4	08-01-90	55.94	36.32	19.62	ND	NR	NR
MW-4	08-28-90	55.94	36.79	19.15	ND	NR	NR
MW-4	10-30-90	55.94	37.62	18.32	ND	NR	NR
MW-4	11-20-90	55.94	37.82	18.12	ND	NR	NR
MW-4	12-19-90	55.94	37.74	18.20	ND	NR	NR
MW-4	01-30-91	55.94	37.97	17.97	ND	NR	NR
MW-4	02-27-91	55.94	37 52	18.42	ND	NR	NR
MW-4	03-20-91	55.94	36.69	19.25	ND	NR	NR
MW-4	04-30-91	55.94	34.48	21.46	ND	NR	NR
MW-4	05-31-91	55.94	34.73	21.21	ND	NR	NR
MW-4	07-24-91	55.94	35.86	20.08	ND	NR	NR
MW-4	08-06-91	55.94	36.15	19.79	ND	NR	NR
MW-4	09-03-91	55.94	36.66	19.28	ND	NR	NR
MW-4	10-17-91	55.94	37.49	18.45	ND	NR	NR
MW-4	11-05-91	55.94	37.54	18.40	ND	NR	NR
MW-4	12-24-91	55.94	38.01	17.93	ND	NR	NR
MW-4	01-19-92	55.94	37.48	18.46	ND	NR	NR
MW-4	02-20-92	55.94	36.11	19.83	ND	NR	NR
MW-4	03-10-92	55.94	34 96	20.98	ND	NR	NR
MW-4	04-20-92	55.94	32.60	23.34	ND	NR	NR
MW-4	05-15-92	55.94	33.12	22.82	ND	NR	NR
MW-4	06-30-92	55.94	34.06	21.88	ND	NR	NR
MW-4	07-15-92	55.94	NR	NR	NR	NR	NR
MW-4	08-25-92	55.98	35.22	20.76	ND	NR	NR
MW-4	09-09-92	55.98	35.63	20.35	ND	NR	NR
MW-4	10-31-92	55.98	33.84	22.14	ND	NR	NR
MW-4	11-20-92	55.98	36.87	19.11	ND	NR	NR
MW-4	12-16-92	55.98	36.09	19.89	ND	NR	NR
MW-4	01-22-93	55.98	31.98	24.00	ND	NR	NR
MW-4	02-12-93	55.98	30.31	25.67	ND	NR	NR
MW-4	03-26-93	55.98	27.97	28.01	ND	NR	NR
MW-4	04-30-93	55.98	28.24	27.74	ND	NR	NR
MW-4	05-12-93	55.98	28.60	27.38	ND	NR	NR
MW-4	06-17-93	55.98	29.54	26.44	ND	NR	NR
MW-4	08-18-93	55.98	31.37	24.61	ND	NR	NR
MW-4	11-10-93	55.98	33.27	22.71	ND	NR	NR
MW-4	02-04-94	55.98	33.07	22.91	ND	NR	NR
MW-4	05-02-94	55.98	31.60	24.38	ND	NR	NR
MW-4	08-03-94	55.98	32.53	23.45	ND	SW	0.002
MW-4	12-06-94	55.98	31.91	24.07	ND	W	0.001
MW-4	03-10-95	55.98	26.22	29.76	ND	NNE	0.003
MW-4	06-05-95	55.98	25.79	30.19	ND	FG	FG
MW-4	08-29-95	55.98	28.56	27.42	ND	FG	FG
MW-4	11-16-95	55.98	31.00	24.98	ND	SW	0.003

Table 2
Historical Groundwater Elevation Data

10600 and 10700 MacArthur Boulevard
Oakland, California

Date 03-08-96

Well Designation	Water Level Field Date	Top of Casing Elevation	Depth to Water	Groundwater Elevation	Floating Product Thickness	Groundwater Flow Direction	Hydraulic Gradient
		ft-MSL	feet	ft-MSL	feet	MWN	foot/foot
MW-5	04-17-89	55.43	33.17	22.26	ND	NR	NR
MW-5	04-24-89	55.43	33.06	22.37	ND	NR	NR
MW-5	10-13-89	55.43	36.33	19.10	ND	NR	NR
MW-5	02-01-90	55.43	35.96	19.47	ND	NR	NR
MW-5	07-31-90	55.43	35.70	19.73	ND	NR	NR
MW-5	08-01-90	55.43	35.69	19.74	ND	NR	NR
MW-5	08-28-90	55.43	36.14	19.29	ND	NR	NR
MW-5	10-30-90	55.43	36.94	18.49	ND	NR	NR
MW-5	11-20-90	55.43	37.09	18.34	ND	NR	NR
MW-5	12-19-90	55.43	37.05	18.38	ND	NR	NR
MW-5	01-30-91	55.43	37.26	18.17	ND	NR	NR
MW-5	02-27-91	55.43	36.81	18.62	ND	NR	NR
MW-5	03-20-91	55.43	36.04	19.39	ND	NR	NR
MW-5	04-30-91	55.43	33.75	21.68	ND	NR	NR
MW-5	05-31-91	55.43	34.01	21.42	ND	NR	NR
MW-5	07-24-91	55.43	35.20	20.23	ND	NR	NR
MW-5	08-06-91	55.43	35.48	19.95	ND	NR	NR
MW-5	09-03-91	55.43	36.00	19.43	ND	NR	NR
MW-5	10-17-91	55.43	36 84	18.59	ND	NR	NR
MW-5	11-05-91	55.43	36 86	18.57	ND	NR	NR
MW-5	12-24-91	55.43	37.31	18.12	ND	NR	NR
MW-5	01-19-92	55.43	36.95	18 48	ND	NR	NR
MW-5	02-20-92	55.43	35.39	20.04	ND	NR	NR
MW-5	03-10-92	55.43	33.67	21.76	ND	NR	NR
MW-5	04-20-92	55.43	31.80	23.63	ND	NR	NR
MW-5	05-15-92	55.43	32.37	23.06	ND	NR	NR
MW-5	06-30-92	55.43	34.00	21.43	ND	NR	NR
MW-5	07-15-92	55.43	34.32	21.11	ND	NR	NR
MW-5	08-25-92	55.43	35.76	19.67	ND	NR	NR
MW-5	09-09-92	55.43	34.97	20.46	ND	NR	NR
MW-5	10-31-92	55.43	35.97	19.46	ND	NR	NR
MW-5	11-20-92	55.43	36.26	19.17	ND	NR	NR
MW-5	12-16-92	55.43	35.45	19.98	ND	NR	NR
MW-5	01-22-93	55.43	31.05	24.38	ND	NR	NR
MW-5	02-12-93	55.43	29.42	26.01	ND	NR	NR
MW-5	03-26-93	55.43	27.07	28.36	ND	NR	NR
MW-5	04-30-93	55.43	27.40	28.03	ND	NR	NR
MW-5	05-12-93	55.43	27.83	27.60	ND	NR	NR
MW-5	06-17-93	55.43	28.84	26.59	ND	NR	NR
MW-5	08-18-93	55.43	30.75	24.68	ND	NR	NR
MW-5	11-10-93	55.43	32.70	22.73	ND	NR	NR
MW-5	02-04-94	55.43	32.45	22.98	ND	NR	NR
MW-5	05-02-94	55.43	31.06	24.37	ND	NR	NR
MW-5	08-03-94	55.43	32.05	23.38	ND	SW	0.002
MW-5	12-06-94	55 43	31.44	23.99	ND	W	0.001
MW-5	03-10-95	55.43	25.62	29.81	ND	NNE	0.003
MW-5	06-05-95	55.43	25.30	30.13	ND	FG	FG
MW-5	08-29-95	55.43	28.21	27.22	ND	FG	FG
MW-5	11-16-95	55.43	30.63	24.80	ND	SW	0.003

Table 2
Historical Groundwater Elevation Data

10600 and 10700 MacArthur Boulevard
Oakland, California

Date: 03-08-96

Well Designation	Water Level Field Date	Top of Casing Elevation	Depth to Water	Groundwater Elevation	Floating Product Thickness	Groundwater Flow Direction	Hydraulic Gradient
		ft-MSL	feet	ft-MSL	feet	MWN	foot/foot
MW-6	06-30-92	61.21	35.50	25.71	ND	NR	NR
MW-6	07-15-92	61.21	39.89	21.32	ND	NR	NR
MW-6	08-25-92	61.21	34.90	26.31	ND	NR	NR
MW-6	09-09-92	61.21	Not surveyed; well was paved over				
MW-6	10-31-92	61.21	NR	NR	NR	NR	NR
MW-6	11-20-92	61.21	Not surveyed; well was paved over				
MW-6	12-16-92	61.21	NR	NR	NR	NR	NR
MW-6	01-22-93	61.21	36.52	24.69	ND	NR	NR
MW-6	02-12-93	61.21	35.65	25.56	ND	NR	NR
MW-6	03-28-93	61.21	33.33	27.88	ND	NR	NR
MW-6	04-30-93	61.21	33.56	27.65	ND	NR	NR
MW-6	05-12-93	61.21	33.95	27.26	ND	NR	NR
MW-6	06-17-93	61.21	34.90	26.31	ND	NR	NR
MW-6	08-18-93	61.21	36.72	24.49	ND	NR	NR
MW-6	11-10-93	61.21	38.64	22.57	ND	NR	NR
MW-6	02-04-94	61.21	38.48	22.73	ND	NR	NR
MW-6	05-02-94	61.21	37.02	24.19	ND	NR	NR
MW-6	08-03-94	61.21	37.97	23.24	ND	SW	0.002
MW-6	12-06-94	61.21	37.33	23.88	ND	W	0.001
MW-6	03-10-95	61.21	31.54	29.67	ND	NNE	0.003
MW-6	06-05-95	61.21	31.15	30.06	ND	FG	FG
MW-6	08-29-95	61.21	34.03	27.18	ND	FG	FG
MW-6	11-16-95	61.21	36.40	24.81	ND	SW	0.003

Table 2
Historical Groundwater Elevation Data

10600 and 10700 MacArthur Boulevard
Oakland, California

Date: 03-08-96

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 foot/foot
MW-7	06-30-92	58.22	23.70	34.52	ND	NR	NR
MW-7	07-15-92	58 22	23.10	35.12	ND	NR	NR
MW-7	08-25-92	58.22	34.23	23.99	ND	NR	NR
MW-7	09-09-92	58.22	^26.30	^31.92	1.31	NR	NR
MW-7	10-31-92	58.22	35.44	22.78	ND	NR	NR
MW-7	11-20-92	58.22	^23.47	^34.75	0.02	NR	NR
MW-7	12-16-92	58.22	^19.07	^39.15	0.04	NR	NR
MW-7	01-22-93	58.22	^16.56	^41.66	0.02	NR	NR
MW-7	02-12-93	58.22	^18.22	^40.00	0 04	NR	NR
MW-7	03-26-93	58.22	18.04	40.18	ND	NR	NR
MW-7	04-30-93	58.22	19.34	38.88	NR	NR	NR
MW-7	05-12-93	58.22	^19.80	^38.42	0.01	NR	NR
MW-7	06-17-93	58.22	^22.63	^35.59	0 01	NR	NR
MW-7	08-18-93	58.22	22.44	35.78	0.01	NR	NR
MW-7	11-10-93	58.22	24.51	33.71	ND^^	NR	NR
MW-7	02-04-94	58.22	20.78	37.44	ND	NR	NR
MW-7	05-02-94	58.22	20.51	37.71	ND	NR	NR
MW-7	08-03-94	58.22	22.66	35.56	ND	SW	0.002
MW-7	12-06-94	58.22	18.37	## 39.86	0.02	W	0.001
MW-7	03-10-95	58.22	17.69	40.53	ND^^	NNE	0.003
MW-7	06-05-95	58.22	19.68	38.54	ND	FG	FG
MW-7	08-29-95	58.22	21.70	36.52	ND	FG	FG
MW-7	11-16-95	58.22	23.02	35.20	ND	SW	0.003

Table 2
Historical Groundwater Elevation Data

10600 and 10700 MacArthur Boulevard
Oakland, California

Date. 03-08-96

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 foot/foot
MW-8	08-25-92	53.65	NR	NR	NR	NR	NR
MW-8	09-09-92	53.65	33.20	20 45	ND	NR	NR
MW-8	10-31-92	53.65	37.12	16.53	ND	NR	NR
MW-8	11-24-92	53.65	34.45	19.20	ND	NR	NR
MW-8	12-16-92	53 65	NR	NR	NR	NR	NR
MW-8	01-22-93	53.65	28 59	25 06	ND	NR	NR
MW-8	02-12-93	53.65	27 57	26.08	ND	NR	NR
MW-8	03-26-93	53.65	25.16	28.49	ND	NR	NR
MW-8	04-30-93	53.65	25.50	28.15	ND	NR	NR
MW-8	05-12-93	53.65	25.95	27.70	ND	NR	NR
MW-8	06-17-93	53.65	NR	NR	NR	NR	NR
MW-8	08-18-93	53.65	28 97	24.68	ND	NR	NR
MW-8	11-10-93	53.65	30.96	22.69	ND	NR	NR
MW-8	02-04-94	53 65	30.73	22 92	ND	NR	NR
MW-8	05-02-94	53.65	29.26	24.39	ND	NR	NR
MW-8	08-03-94	53.65	30.33	23.32	ND	SW	0.002
MW-8	12-06-94	53.65	29.66	23.99	ND	W	0.001
MW-8	03-10-95	53.65	23.60	30.05	ND	NNE	0.003
MW-8	06-05-95	53.65	23 48	30.17	ND	FG	FG
MW-8	08-29-95	53.65	26 44	27.21	ND	FG	FG
MW-8	11-16-95	53.65	28.90	24.75	ND	SW	0 003

Table 2
Historical Groundwater Elevation Data

10600 and 10700 MacArthur Boulevard
Oakland, California

Date: 03-08-96

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 foot/foot
RW-1	11-05-91	56.32	37.89	18.43	ND	NR	NR
RW-1	12-24-91	56.32	38.35	17.97	ND	NR	NR
RW-1	01-19-92	56 32	37.82	18.50	ND	NR	NR
RW-1	02-20-92	56 32	36.42	19.90	ND	NR	NR
RW-1	03-10-92	56.32	34.74	21.58	ND	NR	NR
RW-1	04-20-92	56.32	32.90	23.42	ND	NR	NR
RW-1	05-15-92	56.32	33.43	22.89	ND	NR	NR
RW-1	06-30-92	56.32	34 74	21.58	ND	NR	NR
RW-1	07-15-92	56.32	35.12	21.20	ND	NR	NR
RW-1	08-25-92	56.32	36.75	19.57	ND	NR	NR
RW-1	09-09-92	56.32	35.99	20.33	ND	NR	NR
RW-1	10-31-92	56.32	34.32	22.00	ND	NR	NR
RW-1	11-20-92	56.32	37.11	19.21	ND	NR	NR
RW-1	12-16-92	56.32	36.40	19.92	ND	NR	NR
RW-1	01-22-93	56.32	32.30	24.02	ND	NR	NR
RW-1	02-12-93	56.32	30.64	25.68	ND	NR	NR
RW-1	03-26-93	56.32	28.32	28.00	ND	NR	NR
RW-1	04-30-93	56.32	28.55	27.77	ND	NR	NR
RW-1	05-12-93	56.32	28.94	27.38	ND	NR	NR
RW-1	06-17-93	56.32	29.89	26.43	ND	NR	NR
RW-1	08-18-93	56.32	31 74	24 58	ND	NR	NR
RW-1	11-10-93	56.32	33.61	22 71	ND	NR	NR
RW-1	02-04-94	56.32	33.43	22.89	ND	NR	NR
RW-1	05-02-94	56.32	31.96	24.36	ND	NR	NR
RW-1	08-03-94	56.32	32.90	23.42	ND	SW	0.002
RW-1	12-06-94	56.32	32.24	24.08	ND	W	0.001
RW-1	03-10-95	56.32	26.48	29.84	Sheen	NNE	0 003
RW-1	06-05-95	56.32	26.20	30.12	ND	FG	FG
RW-1	08-29-95	56.32	28.98	27.34	ND	FG	FG
RW-1	11-16-95	56.32	31.34	24.98	ND	SW	0.003

Table 2
Historical Groundwater Elevation Data

10600 and 10700 MacArthur Boulevard
Oakland, California

Date: 03-08-96

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 foot/foot
WGR-3	05-02-94	NR	20.06	NR	ND	NR	NR
WGR-3	08-03-94	NR	22.30	NR	ND	NR	NR
WGR-3	12-06-94	NR	17.52	NR	ND	NR	NR
WGR-3	03-10-95	NR	15.20	NR	ND	NR	NR
WGR-3	06-05-95	NR	19.25	NR	ND	NR	NR
WGR-3	08-29-95	NR	21.41	NR	ND	NR	NR
WGR-3	11-16-95	NR	22.50	NR	ND	SW	0.003

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
SW: southwest
W: west
NNE: north-northeast
FG: flat gradient; the groundwater gradient over the local area was nearly flat
^: Depth to water (DTW) and groundwater elevation (GWE) were adjusted as follows: The thickness of the floating product (FPT) and the depth to water were recorded. The recorded thickness of floating product was then multiplied by 0.80 to obtain an approximate value for the displacement of water by the floating product. The approximate displacement value was then subtracted from the measured depth to water to obtain a calculated depth to water (potentiometric surface). GWE = TOC - [DTW - (FPT x 0.8)]
^^: floating product entered the well during purging
DRY: dry well; groundwater was not detected
##. corrected elevation (Z'), such that: $Z' = Z + (h * 0.73)$ where: Z = measured elevation, h = floating product thickness, 0.73 = density ratio of oil to water

Table 3
Historical Groundwater Analytical Data
Petroleum Hydrocarbons and Their Constituents

10600 and 10700 MacArthur Boulevard
Oakland, California

Date: 03-08-96

Well Designation	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	TRPH EPA 418 1	TPHD LUFT Method
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
MW-1	04-24-89	<50	<0 5	<0.5	<0.5	<0.5	--	--	--	--
MW-1	10-13-89	<20	<0 5	<0.5	<0.5	<0.5	--	--	--	--
MW-1	02-01-90	91#	<0.3	<0.3	<0.3	0.36	--	--	--	--
MW-1	07-31-90	<20	<0.5	<0 5	<0 5	<0 5	--	--	--	--
MW-1	10-30-90	<50	<0.5	<0.5	<0 5	<0 5	--	--	--	--
MW-1	01-30-91	<50	<0 5	<0.5	<0.5	<0.5	--	--	--	--
MW-1	04-30-91	<30	<0.3	<0.3	<0.3	<0.3	--	--	--	--
MW-1	08-06-91	<30	<0.3	<0.3	<0.3	<0.3	--	--	--	--
MW-1	11-05-91	<30	<0.3	<0.3	<0.3	<0 3	--	--	--	--
MW-1	03-10-92	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-1	06-30-92	<50	<0.5	<0 5	<0 5	<0.5	--	--	--	--
MW-1	09-09-92	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-1	11-20-92	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-1	02-12-93	<50	<0 5	<0.5	<0.5	<0.5	--	--	--	--
MW-1	05-12-93	<100*	<0 5	<0.5	<0.5	<0 5	--	--	--	--
MW-1	08-18-93	<51*	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-1	11-10-93	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-1	02-04-94	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-1	05-02-94	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-1	08-03-94	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-1	12-06-94	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-1	03-10-95	<57*	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-1	06-05-95	<84*	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-1	08-29-95	<60*	<0.5	<0.5	<0.5	<0.5	--	<1	--	--
MW-1	11-16-95	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--

Table 3
Historical Groundwater Analytical Data
Petroleum Hydrocarbons and Their Constituents

10600 and 10700 MacArthur Boulevard
Oakland, California

Date: 03-08-96

Well Designation	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	TRPH EPA 418.1 µg/L	TPHD LUFT Method µg/L
MW-2	04-24-89	165000	13000	21000	2100	12700	--	--	--	--
MW-2	10-13-89	Not sampled: well contained floating product								
MW-2	02-01-90	Not sampled: well contained floating product								
MW-2	07-31-90	240000	14000	24000	3000	17000	--	--	--	--
MW-2	10-30-90	Not sampled: well contained floating product								
MW-2	01-30-91	Not sampled: well contained floating product								
MW-2	04-30-91	Not sampled: well contained floating product								
MW-2	08-06-91	Not sampled: well contained floating product								
MW-2	11-05-91	Not sampled: well contained floating product								
MW-2	03-10-92	220000	8200	13000	4500	22000	--	--	--	--
MW-2	06-30-92	130000	10000	16000	4700	24000	--	--	--	--
MW-2	09-09-92	Not sampled: well contained floating product								
MW-2	11-20-92	Not sampled: well contained floating product								
MW-2	02-12-93	Not sampled: well contained floating product								
MW-2	05-12-93	Not sampled: well contained floating product								
MW-2	08-18-93	Not sampled:								
MW-2	11-10-93	Not sampled: floating product entered well during purging								
MW-2	02-04-94	2100	110	5.6	26	110	--	--	--	--
MW-2	05-02-94	3400	130	21	73	180	--	--	--	--
MW-2	08-03-94	Not sampled: well was inaccessible due to a parked vehicle								
MW-2	12-07-94	26000	570	43	220	1100	--	--	--	--
MW-2	03-11-95	2800	88	12	16	200	--	--	--	--
MW-2	06-05-95	1800	59	10	53	130	--	--	--	--
MW-2	08-29-95	4500	170	20	150	330	--	71	--	--
MW-2	11-16-95	Not surveyed: well was inaccessible								

Table 3
Historical Groundwater Analytical Data
Petroleum Hydrocarbons and Their Constituents

10600 and 10700 MacArthur Boulevard
Oakland, California

Date: 03-08-96

Well Designation	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	TRPH EPA 418.1	TPHD LUFT Method
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
MW-3	04-24-89	560#	0.54	0.75	<0.5	<0.5	--	--	--	--
MW-3	10-12-89	450#	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-3	02-01-90	360#	<0.3	<0.3	<0.3	0.85	--	--	--	--
MW-3	08-01-90	440#	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-3	10-30-90	340#	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-3	01-30-91	Not sampled, dry well								
MW-3	04-30-91	Not sampled: well was inaccessible due to construction								
MW-3	08-06-91	430#	<0.3	<0.3	<0.3	<0.3	--	--	--	--
MW-3	11-05-91	290#	<1.5	<1.5	<1.5	<1.5	--	--	--	--
MW-3	03-10-92	<360*	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-3	06-30-92	<530*	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-3	09-09-92	<290*	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-3	11-20-92	<270*	<0.5	<0.5	<2.4**	<1.8**	--	--	--	--
MW-3	02-12-93	<500*	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-3	05-12-93	<670*	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-3	08-18-93	<590*	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-3	11-10-93	<400*	<0.5	<0.5	<0.5	<0.9**	--	--	--	--
MW-3	02-04-94	<190*	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-3	05-02-94	<480*	<0.5	<0.5	<0.5	<0.9**	--	--	--	--
MW-3	08-03-94	<250*	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-3	12-06-94	<380*	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-3	03-11-95	<440*	<0.5	<0.5	<0.5	0.7	--	--	--	--
MW-3	06-05-95	<970*	<1**	<1**	1.1	1.8	--	--	--	--
MW-3	08-29-95	<700*	<0.5	<0.5	<0.5	<0.5	--	<20	--	--
MW-3	11-16-95	<500*	<0.5	<0.5	<0.5	<0.5	<3	--	--	--

Table 3
Historical Groundwater Analytical Data
Petroleum Hydrocarbons and Their Constituents

10600 and 10700 MacArthur Boulevard
Oakland, California

Date: 03-08-96

Well Designation	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	TRPH EPA 418.1	TPHD LUFT Method
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
MW-4	04-24-89	2500#	270	1.4	<0.5	85	--	--	--	--
MW-4	10-13-89	760#	0.86	<0.5	1.2	<0.5	--	--	--	--
MW-4	02-01-90	680#	<0.3	<0.3	<0.3	1.6	--	--	--	--
MW-4	07-31-90	470#	<0.5	<0.5	<0.5	<0.5	--	--	<500	240
MW-4	10-30-90	430#	<0.5	<0.5	<0.5	<0.5	--	--	<500	<100
MW-4	01-30-91	<50	<0.5	<0.5	1.2	<0.5	--	--	<500	<100
MW-4	04-30-91	600#	<0.3	0.3	<0.3	0.43	--	--	--	--
MW-4	08-06-91	520#	<0.3	<0.3	<0.3	<0.3	--	--	--	--
MW-4	11-05-91	900#	<3.0***	<3.0***	<3.0***	<3.0***	--	--	--	--
MW-4	03-10-92	<730*	<0.5	<0.5	<0.5	<0.5	--	--	<2500	--
MW-4	06-30-92	<670*	<0.5	<0.5	<2.3**	500	--	--	500	--
MW-4	09-09-92	<470*	<0.5	<0.5	<0.5	<0.5	--	--	3600	--
MW-4	11-20-92	<680*	<0.5	<0.5	<6.3**	<3.2**	--	--	800	--
MW-4	02-12-93	<860*	<0.5	<0.5	<0.5	<0.5	--	--	25000	--
MW-4	05-12-93	<670*	<0.5	<0.5	<1.4**	<1.3**	--	--	120000	--
MW-4	08-18-93	<700*	<0.5	<0.5	<0.5	<0.5	--	--	<500	--
MW-4	11-10-93	<460*	<0.5	<0.5	<0.5	<1.3**	--	--	<500	--
MW-4	02-04-94	<480*	<0.5	<0.5	<0.5	1.4	--	--	<500	--
MW-4	05-02-94	<490*	<0.5	<0.5	<0.5	<0.9**	--	--	5900	--
MW-4	08-03-94	<400*	<0.5	<0.5	<0.5	<0.5	--	--	<500	--
MW-4	12-06-94	<970*	<2.5**	<2.5**	<2.5**	<2.5**	--	--	1800	--
MW-4	03-11-95	<780*	<1.0**	<1.0**	<1.0**	1	--	--	<500	--
MW-4	06-05-95	<1200*	<1**	<1**	<1**	<1**	--	--	600	--
MW-4	08-29-95	<1100*	<1**	<1**	<1**	<1**	--	<20	--	--
MW-4	11-16-95	<900*	<0.5	<0.5	<0.5	<0.5	<6**	--	<0.5	--

Table 3
Historical Groundwater Analytical Data
Petroleum Hydrocarbons and Their Constituents

10600 and 10700 MacArthur Boulevard
Oakland, California

Date. 03-08-96

Well Designation	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	TRPH EPA 418 1	TPHD LUFT Method
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
MW-5	04-24-89	130#	0.67	<0.5	<0.5	<0 5	--	--	--	--
MW-5	10-13-89	75#	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-5	02-01-90	81#	0 94	0.88	<0.3	1.8	--	--	--	--
MW-5	07-31-90	110#	<0.5	<0.5	<0 5	<0 5	--	--	--	--
MW-5	10-30-90	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-5	01-30-91	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-5	04-30-91	120#	<0.3	<0.3	<0 3	<0.3	--	--	--	--
MW-5	08-06-91	<30	<0 3	<0.3	<0.3	<0.3	--	--	--	--
MW-5	11-05-91	77#	1	3.6	0.6	2.6	--	--	--	--
MW-5	03-10-92	<110*	<0.5	<0.5	<0.5	<0.6**	--	--	--	--
MW-5	06-30-92	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-5	09-09-92	<50	<0.5	<0 5	<0.5	<0.5	--	--	--	--
MW-5	11-24-92	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-5	02-12-93	<150*	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-5	05-12-93	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-5	08-18-93	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-5	11-10-93	<50	<0.5	<0.5	<0.5	<1.4**	--	--	--	--
MW-5	02-04-94	<50	<0.5	<0.5	<0.5	<0 5	--	--	--	--
MW-5	05-02-94	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-5	08-03-94	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-5	12-06-94	<550*	<0.5	0.6	1.1	2	--	--	--	--
MW-5	03-10-95	<110*	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-5	06-05-95	<130*	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-5	08-29-95	<120*	<0 5	<0.5	<0.5	<0.5	--	<5	--	--
MW-5	11-16-95	<500*	<0.5	<0.5	<0.5	0.7	<20**	--	--	--
MW-6	06-30-92	<850*	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-6	09-09-92	*Not sampled: well was paved over*								
MW-6	11-20-92	*Not sampled: well was paved over*								
MW-6	02-12-93	<1900*	<2.5***	<2.5***	<2.5***	<2.5***	--	--	--	--
MW-6	05-12-93	<1600*	<2.5***	<2.5***	<2.5***	<2.5***	--	--	--	-
MW-6	08-18-93	<1500*	<2.5***	<2.5***	<2.5***	<2.5***	--	--	--	--
MW-6	11-10-93	<1000*	<2.5***	<2.5***	<2.5***	<2 5***	--	--	--	--
MW-6	02-04-94	<830*	<2.5***	<2.5***	<2.5***	3.1	--	--	--	--
MW-6	05-02-94	<860*	<1***	<1***	<1***	1.3	--	--	--	--
MW-6	08-03-94	<660*	<1***	<1***	<1***	<1***	--	--	--	--
MW-6	12-07-94	<720*	<1**	<1**	<1**	<1**	--	--	--	--
MW-6	03-11-95	<390*	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-6	06-05-95	<750*	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-6	08-29-95	<600*	<0.5	<0.5	<0.5	<0.5	--	<20	--	--
MW-6	11-16-95	<500*	<0.5	<0.5	<0.5	<0.5	<3	--	--	--

Table 3
Historical Groundwater Analytical Data
Petroleum Hydrocarbons and Their Constituents

10600 and 10700 MacArthur Boulevard
Oakland, California

Date. 03-08-96

Well Designation	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	TRPH EPA 418 1	TPHD LUFT Method
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
MW-7	06-30-92	71000	5100	6600	2300	14000	--	--	--	--
MW-7	09-09-92	Not sampled: well contained floating product								
MW-7	11-20-92	Not sampled: well contained floating product								
MW-7	02-12-93	Not sampled: well contained floating product								
MW-7	05-12-93	Not sampled: well contained floating product								
MW-7	08-18-93	Not sampled: well contained floating product								
MW-7	11-10-93	Not sampled: floating product entered the well during purging								
MW-7	02-04-94	40000	900	980	1100	9700	--	--	--	--
MW-7	05-02-94	38000	640	600	930	7200	--	--	--	--
MW-7	08-03-94	47000	1000	1200	1500	10000	--	--	--	--
MW-7	12-07-94	260000	<200***	380	2200	11000	--	--	--	--
MW-7	03-11-95	Not sampled: floating product entered the well during purging								
MW-7	06-05-95	36000	90	51	450	2000	--	--	--	--
MW-7	08-29-95	86000	380	260	1100	5000	--	<10	--	--
MW-7	11-16-95	1400000	610	590	7800	3300	<4000***	--	--	--
MW-8	09-09-92	<50	3.4	<0.5	<0.5	0.7	--	--	--	--
MW-8	11-24-92	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-8	02-12-93	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-8	05-12-93	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-8	08-18-93	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-8	11-10-93	<50	<0.5	<0.5	<0.5	1.1	--	--	--	--
MW-8	02-04-94	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-8	05-02-94	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-8	08-03-94	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-8	12-07-94	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-8	03-10-95	<50	<0.5	<0 5	<0.5	<0.5	--	--	--	--
MW-8	06-05-95	<50	<0.5	<0.5	<0.5	<0 5	--	--	--	--
MW-8	08-29-95	<50	<0.5	<0.5	<0.5	<0.5	--	3	--	--
MW-8	11-16-95	<50	<0.5	<0.5	<0 5	<0.5	6	9	--	--

Table 3
Historical Groundwater Analytical Data
Petroleum Hydrocarbons and Their Constituents

10600 and 10700 MacArthur Boulevard
Oakland, California

Date: 03-08-96

Well Designation	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	TRPH EPA 418.1	TPHD LUFT Method
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
RW-1	11-05-91	750#	4.8	3 7	<3.0	<3.0	--	--	--	--
RW-1	03-10-92	<140*	<0.5	<0 5	<0.5	<0 6**	--	--	--	--
RW-1	06-30-92	<400*	<0.5	<0.5	<0.5	<0.5	--	--	--	--
RW-1	09-09-92	<520*	<0.5	<0.5	<0.5	<0.5	--	--	--	--
RW-1	11-24-92	<650*	<0.5	<0.5	<8.6**	<7.2**	--	--	--	--
RW-1	02-12-93	<260*	<0.5	<0.5	<0.5	<0.5	--	--	--	--
RW-1	05-12-93	<240*	<0.5	<0.5	<0.5	<0.5	--	--	--	--
RW-1	08-18-93	<230*	<0.5	<0.5	<0.5	<0 5	--	--	--	--
RW-1	11-10-93	<380*	<0.5	<0 5	<0.5	<0.8**	--	--	--	--
RW-1	02-04-94	<540*	<0.5	<0.5	<0 5	<1.5**	--	--	--	--
RW-1	05-02-94	<50	<0.5	<0 5	<0 5	<0.5	--	--	--	--
RW-1	08-03-94	<140*	<0.5	<0.5	<0.5	<0.5	--	--	--	--
RW-1	12-07-94	<79*	<0.5	<0.5	<0.5	<0.5	--	--	--	--
RW-1	03-10-95	<180*	<0.5	<0.5	<0.5	<0.5	--	--	--	--
RW-1	06-05-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
RW-1	08-29-95	<200*	<0.5	<0.5	<0.5	<0.5	--	<5	--	--
RW-1	11-16-95	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--
WGR-3	05-02-94	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
WGR-3	08-03-94	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
WGR-3	12-07-94	<50	<0.5	<0.5	<0.5	0.6	--	--	--	--
WGR-3	03-11-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
WGR-3	06-05-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
WGR-3	08-29-95	<50	<0.5	<0.5	<0.5	<0.5	--	10	--	--
WGR-3	11-16-95	<50	<0.5	<0.5	<0.5	<0.5	3	--	--	--

TPHG: total petroleum hydrocarbons as gasoline, California DHS LUFT Method
µg/L: micrograms per liter
EPA: United Statest Environmental Protection Agency
MTBE: Methyl-tert-butyl ether
TRPH: total recoverable petroleum hydrocarbons
TPHD: total petroleum hydrocarbons as diesel, California DHS LUFT Method
- - : not analyzed
#: based on new results, the chromatogram peaks previously interpreted to be TPHG and BTEX have been reinterpreted to be a single peak hydrocarbon (possibly PCE)
*: raised method reporting limit due to matrix interference; the sample contains a single non-fuel component eluting in the gasoline range and quantitated as gasoline (possibly PCE), and the chromatogram does not match the typical gasoline fingerprint
**: raised method reporting limit due to matrix interference requiring sample dilution
***: raised method reporting limit due to high analyte concentration requiring sample dilution

Table 4
Historical Groundwater Analytical Data
Metals

10600 and 10700 MacArthur Boulevard
Oakland, California

Date. 03-08-96

Well Designation	Water Sample FieldDate	Cadmium EPA 6010 µg/L	Chromium EPA 6010 µg/L	Lead EPA 7421 µg/L	Nickel EPA 6010 µg/L	Zinc EPA 6010 µg/L
MW-1	04-24-89	Sampling for additional parameters was not initiated				
MW-2	04-24-89	Sampling for additional parameters was not initiated				
MW-3	04-24-89	Sampling for additional parameters was not initiated				
MW-4	04-24-89	--	--	--	--	--
MW-4	10-13-89	--	--	--	--	--
MW-4	02-01-90	--	--	--	--	--
MW-4	07-31-90	--	--	--	--	--
MW-4	10-30-90	--	--	--	--	--
MW-4	01-30-91	--	--	--	--	--
MW-4	04-30-91	--	--	--	--	--
MW-4	08-06-91	<10	65	6.7	140	96
MW-4	11-05-91	Sampling for additional parameters was discontinued				
MW-5	04-24-89	Sampling for additional parameters was not initiated				
MW-6	06-30-92	Sampling for additional parameters was not initiated				
MW-7	06-30-92	Sampling for additional parameters was not initiated				
MW-8	09-09-92	Sampling for additional parameters was not initiated				
RW-1	11-05-91	Sampling for additional parameters was not initiated				
WGR-3	05-02-94	Sampling for additional parameters was not initiated				

EPA: United Statest Environmental Protection Agency
µg/L: micrograms per liter
-- . not analyzed

Table 5
Historical Groundwater Analytical Data
Volatile Organic Compounds

10600 and 10700 MacArthur Boulevard
Oakland, California

Date: 03-08-96

Well Designation	Water Sample Field Date	Halogenated Volatile Organic Compounds by EPA Method 601/8010 or 624/8240					BTEX by EPA Method 624/8240			
		Tetrachloro-ethene	Trichloro-ethene	1,2-Dichloro-ethene	cis-1,2-Dichloro-ethene	Freon 12	Benzene	Toluene	benzene	Xylenes
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
MW-1	09-03-91	4.5	ND	ND	ND	--	ND	ND	ND	ND
MW-1	11-06-91	<2.0	<2.0	<2.0	<2.0	--	ND	ND	ND	ND
MW-1	03-10-92	8.2	ND	ND	ND	--	ND	ND	ND	ND
MW-1	06-30-92	15	ND	ND	ND	--	ND	ND	ND	ND
MW-1	09-09-92	6	ND	ND	ND	--	ND	ND	ND	ND
MW-1	11-20-92	2	ND	ND	ND	--	ND	ND	ND	ND
MW-1	02-12-93	92	ND	ND	ND	--	ND	ND	ND	ND
MW-1	05-12-93	280	ND	ND	ND	--	ND	ND	ND	ND
MW-1	08-18-93	120	ND	ND	ND	--	ND	ND	ND	ND
MW-1	11-10-93	46	ND	ND	ND	--	ND	ND	ND	ND
MW-1	02-04-94	22	<1	<1	<1	--	<1	<1	<1	<5
MW-1	05-02-94	35	<1	<1	<1	--	<1	<1	<1	<5
MW-1	08-03-94	14	<1	--	<1	--	<1	<1	<1	<5
MW-1	12-06-94	17	<1	--	<1	--	<1	<1	<1	<5
MW-1	03-10-95	170	<1	--	<1	--	<1	<1	<1	<5
MW-1	06-05-95	210	<5	--	<5	--	<5	<5	<5	<25
MW-1	08-29-95	130	<1	--	<1	--	<1	<1	<1	<5
MW-1	11-16-95	45	<1	--	<1	<1	<1	<1	<1	<5

Table 5
Historical Groundwater Analytical Data
Volatile Organic Compounds

10600 and 10700 MacArthur Boulevard
Oakland, California

Date. 03-08-96

Well Designation	Water Sample Field Date	Halogenated Volatile Organic Compounds by EPA Method 601/8010 or 624/8240					BTEX by EPA Method 624/8240			
		Tetrachloro-ethene	Trichloro-ethene	1,2-Dichloro-ethene	cis-1,2-Dichloro-ethene	Freon 12	Benzene	Toluene	benzene	Xylenes
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
MW-2	09-03-91	Not sampled: well contained floating product								
MW-2	11-06-91	Not sampled: well contained floating product								
MW-2	03-10-92	0.9	ND	5 4	ND	- -	ND	ND	ND	ND
MW-2	06-30-92	<2000	<2000	<2000	<2000	- -	9300	18000	4200	27000
MW-2	09-09-92	Not sampled. well contained floating product								
MW-2	11-20-92	Not sampled: well contained floating product								
MW-2	02-12-93	Not sampled. well contained floating product								
MW-2	05-12-93	Not sampled: well contained floating product								
MW-2	08-18-93	Not sampled:								
MW-2	11-10-93	Not sampled· floating product entered the well during purging								
MW-2	02-04-94	<1	<1	<1	<1	- -	170	9	36	160
MW-2	05-02-94	<1	<1	<1	<1	- -	140	21	79	190
MW-2	08-03-94	Not sampled: well was inaccessible due to a parked car								
MW-2	12-06-94	<5	<5	- -	<5	- -	620	28	220	1200
MW-2	03-11-95	<1	<1	- -	<1	- -	110	12	15	240
MW-2	06-05-95	<1	<1	- -	<1	- -	83	14	72	190
MW-2	08-29-95	<5	<5	- -	<5	- -	220	26	210	450
MW-2	11-16-95	Not surveyed· well was inaccessible								

Table 5
Historical Groundwater Analytical Data
Volatile Organic Compounds

10600 and 10700 MacArthur Boulevard
Oakland, California

Date: 03-08-96

Well Designation	Water Sample Field Date	Halogenated Volatile Organic Compounds by EPA Method 601/8010 or 624/8240					BTEX by EPA Method 624/8240			
		Tetrachloro-ethene	Trichloro-ethene	1,2-Dichloro-ethene	cis-1,2-Dichloro-ethene	Freon 12	Benzene	Toluene	benzene	Xylenes
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
MW-3	09-03-91	1600	ND	ND	ND	--	ND	ND	ND	ND
MW-3	11-06-91	400	ND	ND	ND	--	ND	ND	ND	ND
MW-3	03-10-92	980	5.6	ND	1	3.4	ND	ND	ND	ND
MW-3	06-30-92	1500	ND	ND	ND	--	ND	ND	ND	ND
MW-3	09-09-92	800	ND	ND	ND	--	ND	ND	ND	ND
MW-3	11-20-92	690	ND	ND	ND	--	ND	ND	ND	ND
MW-3	02-12-93	1200	ND	ND	ND	--	ND	ND	ND	ND
MW-3	05-12-93	1600	ND	ND	ND	--	ND	ND	ND	ND
MW-3	08-18-93	1300	ND	ND	ND	--	ND	ND	ND	ND
MW-3	11-10-93	1300	ND	ND	ND	--	ND	ND	ND	ND
MW-3	02-04-94	91	<5	<5	<5	--	<5	<5	<5	<25
MW-3	05-02-94	1600	<20	<20	<20	--	<20	<20	<20	<100
MW-3	08-03-94	680	<20	--	<20	--	<20	<20	<20	<100
MW-3	12-06-94	1100	<25	--	<25	--	<25	<25	<25	<125
MW-3	03-11-95	1700	<10	--	<10	--	<10	<10	<10	<50
MW-3	06-05-95	2500	<20	--	<20	--	<20	<20	<20	<100
MW-3	08-29-95	1600	<20	--	<20	--	<20	<20	<20	<100
MW-3	11-16-95	1100	<20	--	<20	<20	<20	<20	<20	<100

Table 5
Historical Groundwater Analytical Data
Volatile Organic Compounds

10600 and 10700 MacArthur Boulevard
Oakland, California

Date: 03-08-96

Well Designation	Water Sample Field Date	Halogenated Volatile Organic Compounds by EPA Method 601/8010 or 624/8240					BTEX by EPA Method 624/8240			
		Tetrachloro-ethene	Trichloro-ethene	1,2-Dichloro-ethene	cis-1,2-Dichloro-ethene	Freon 12	Benzene	Toluene	benzene	Xylenes
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
MW-4	07-31-90	1600	7.5	0.7	ND	--	ND	ND	ND	ND
MW-4	10-30-90	3600	8 1	0.7	ND	--	ND	ND	ND	ND
MW-4	01-30-91	4900	12	ND	ND	--	ND	ND	ND	ND
MW-4	04-30-91	2200	ND	ND	ND	--	ND	ND	ND	ND
MW-4	08-06-91	1700	ND	ND	ND	--	ND	ND	ND	ND
MW-4	09-03-91	2000	ND	ND	ND	--	ND	ND	ND	ND
MW-4	11-06-91	1000	6.3	ND	ND	--	ND	ND	ND	ND
MW-4	03-10-92	2300	13	ND	4	--	ND	ND	ND	ND
MW-4	06-30-92	1800	ND	ND	ND	--	ND	ND	ND	ND
MW-4	09-09-92	1300	ND	ND	ND	--	ND	ND	ND	ND
MW-4	11-20-92	1700	ND	ND	ND	--	ND	ND	ND	ND
MW-4	02-12-93	1800	ND	ND	ND	--	ND	ND	ND	ND
MW-4	05-12-93	1500	ND	ND	ND	--	ND	ND	ND	ND
MW-4	08-18-93	1800	ND	ND	ND	--	ND	ND	ND	ND
MW-4	11-10-93	1800	ND	ND	ND	--	ND	ND	ND	ND
MW-4	02-04-94	1900	<20	<20	<20	--	<20	<20	<20	<100
MW-4	05-02-94	1700	<20	<20	<20	--	<20	<20	<20	<100
MW-4	08-03-94	1200	<20	--	<20	--	<20	<20	<20	<100
MW-4	12-06-94	2200	<20	--	<20	--	<20	<20	<20	<100
MW-4	03-11-95	2600	<20	--	<20	--	<20	<20	<20	<100
MW-4	06-05-95	3100	<20	--	<20	--	<20	<20	<20	<100
MW-4	08-29-95	2900	<20	--	<20	--	<20	<20	<20	<100
MW-4	11-16-95	2100	<20	--	<20	<20	<20	<20	<20	<100

Table 5
Historical Groundwater Analytical Data
Volatile Organic Compounds

10600 and 10700 MacArthur Boulevard
Oakland, California

Date: 03-08-96

Well Designation	Water Sample Field Date	Halogenated Volatile Organic Compounds by EPA Method 601/8010 or 624/8240					BTEX by EPA Method 624/8240			
		Tetrachloro-ethene	Trichloro-ethene	1,2-Dichloro-ethene	cis-1,2-Dichloro-ethene	Freon 12	Benzene	Toluene	benzene	Xylenes
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
MW-5	08-06-91	7.3	ND	ND	ND	--	ND	ND	ND	ND
MW-5	09-03-91	25	ND	ND	ND	--	ND	ND	ND	ND
MW-5	11-06-91	12	ND	ND	ND	--	ND	ND	ND	ND
MW-5	03-10-92	300	1 3	ND	ND	--	ND	ND	ND	ND
MW-5	06-30-92	30	ND	ND	ND	--	ND	ND	ND	ND
MW-5	09-09-92	120	ND	ND	ND	--	ND	ND	ND	ND
MW-5	11-24-92	93	ND	ND	ND	--	ND	ND	ND	ND
MW-5	02-12-93	210	ND	ND	ND	--	ND	ND	ND	ND
MW-5	05-12-93	50	ND	ND	ND	--	ND	ND	ND	ND
MW-5	08-18-93	80	ND	ND	ND	--	ND	ND	ND	ND
MW-5	11-10-93	42	ND	ND	ND	--	ND	ND	ND	ND
MW-5	02-04-94	39	<1	<1	<1	--	<1	<1	<1	<5
MW-5	05-02-94	35	<1	<1	<1	--	<1	<1	<1	<5
MW-5	08-03-94	25	<1	--	<1	--	<1	<1	<1	<5
MW-5	12-06-94	1800	<20	--	<20	--	<20	<20	<20	<100
MW-5	03-10-95	270	<5	--	<5	--	<5	<5	<5	<25
MW-5	06-05-95	310	<5	--	<5	--	<5	<5	<5	<25
MW-5	08-29-95	240	<5	--	<5	--	<5	<5	<5	<25
MW-5	11-16-95	940	<5	--	<5	<5	<5	<5	<5	<25

Table 5
Historical Groundwater Analytical Data
Volatile Organic Compounds

10600 and 10700 MacArthur Boulevard
Oakland, California

Date: 03-08-96

Well Designation	Water Sample Field Date	Halogenated Volatile Organic Compounds by EPA Method 601/8010 or 624/8240					BTEX by EPA Method 624/8240			
		Tetrachloro-ethene	Trichloro-ethene	1,2-Dichloro-ethene	cis-1,2-Dichloro-ethene	Freon 12	Benzene	Toluene	benzene	Xylenes
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
MW-6	06-30-92	2400	ND	ND	ND	--	ND	ND	ND	ND
MW-6	09-09-92	Not sampled: well was paved over								
MW-6	11-20-92	Not sampled: well was paved over								
MW-6	02-12-93	4200	ND	ND	ND	--	ND	ND	ND	ND
MW-6	05-12-93	3500	ND	ND	ND	--	ND	ND	ND	ND
MW-6	08-18-93	3000	ND	ND	ND	--	ND	ND	ND	ND
MW-6	11-10-93	3900	ND	ND	ND	--	ND	ND	ND	ND
MW-6	02-04-94	2900	<50	<50	<50	--	<50	<50	<50	<250
MW-6	05-02-94	2000	<50	<50	<50	--	<50	<50	<50	<250
MW-6	08-03-94	1400	<50	--	<50	--	<50	<50	<50	<250
MW-6	12-06-94	2000	<50	--	<50	--	<50	<50	<50	<250
MW-6	03-11-95	1300	<20	--	<20	--	<20	<20	<20	<100
MW-6	06-05-95	2000	<20	--	<20	--	<20	<20	<20	<100
MW-6	08-29-95	1300	<20	--	<20	--	<20	<20	<20	<100
MW-6	11-16-95	1300	<20	--	<20	<20	<20	<20	<20	<100

Table 5
Historical Groundwater Analytical Data
Volatile Organic Compounds

10600 and 10700 MacArthur Boulevard
Oakland, California

Date. 03-08-96

Well Designation	Water Sample Field Date	Halogenated Volatile Organic Compounds by EPA Method 601/8010 or 624/8240					BTEX by EPA Method 624/8240			
		Tetrachloro-ethene	Trichloro-ethene	1,2-Dichloro-ethene	cis-1,2-Dichloro-ethene	Freon 12	Benzene	Toluene	benzene	Xylenes
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
MW-7	06-30-92	<1000	<1000	<1000	<1000	--	5100	6800	2300	16000
MW-7	09-09-92	Not sampled: well contained floating product								
MW-7	11-20-92	Not sampled: well contained floating product								
MW-7	02-12-93	Not sampled: well contained floating product								
MW-7	05-12-93	Not sampled: well contained floating product								
MW-7	08-18-93	Not sampled: well contained floating product								
MW-7	11-10-93	Not sampled: floating product entered the well during purging								
MW-7	02-04-94	<50	<50	<50	<50	--	940	950	1100	9100
MW-7	05-02-94	<50	<50	<50	<50	--	440	400	660	5200
MW-7	08-03-94	<50	<50	--	<50	--	640	770	960	6200
MW-7	12-06-94	<50	<50	--	<50	--	230	180	750	4800
MW-7	03-11-95	Not sampled: floating product entered the well during purging								
MW-7	06-05-95	<10	<10	--	<10	--	86	27	420	1400
MW-7	08-29-95	<10	<10	--	<10	--	410	230	1100	5000
MW-7	11-16-95	<20	<20	--	<20	<20	360	220	1700	10000

Table 5
Historical Groundwater Analytical Data
Volatile Organic Compounds

10600 and 10700 MacArthur Boulevard
Oakland, California

Date: 03-08-96

Well Designation	Water Sample Field Date	Halogenated Volatile Organic Compounds by EPA Method 601/8010 or 624/8240					BTEX by EPA Method 624/8240			
		Tetrachloro-ethene	Trichloro-ethene	1,2-Dichloro-ethene	cis-1,2-Dichloro-ethene	Freon 12	Benzene	Toluene	benzene	Xylenes
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
MW-8	09-09-92	37	ND	ND	ND	--	4	ND	ND	ND
MW-8	11-24-92	2	ND	ND	ND	--	ND	ND	ND	ND
MW-8	02-12-93	<1	<1	<1	<1	--	ND	ND	ND	ND
MW-8	05-12-93	<1	<1	<1	<1	--	ND	ND	ND	ND
MW-8	08-18-93	<1	<1	<1	<1	--	ND	ND	ND	ND
MW-8	11-10-93	<1	<1	<1	<1	--	ND	ND	ND	ND
MW-8	02-04-94	<1	<1	<1	<1	--	<1	<1	<1	<5
MW-8	05-02-94	<1	<1	<1	<1	--	<1	<1	<1	<5
MW-8	08-03-94	<1	<1	--	<1	--	<1	<1	<1	<5
MW-8	12-06-94	2	<1	--	<1	--	<1	<1	<1	<5
MW-8	03-10-95	<1	<1	--	<1	--	<1	<1	<1	<5
MW-8	06-05-95	<1	<1	--	<1	--	<1	<1	<1	<5
MW-8	08-29-95	<1	<1	--	<1	--	<1	<1	<1	<5
MW-8	11-16-95	<1	<1	--	<1	<1	<1	<1	<1	<5

Table 5
Historical Groundwater Analytical Data
Volatile Organic Compounds

10600 and 10700 MacArthur Boulevard
Oakland, California

Date 03-08-96

Well Designation	Water Sample Field Date	Halogenated Volatile Organic Compounds by EPA Method 601/8010 or 624/8240					BTEX by EPA Method 624/8240			
		Tetrachloro-ethene	Trichloro-ethene	1,2-Dichloro-ethene	cis-1,2-Dichloro-ethene	Freon 12	Benzene	Toluene	benzene	Xylenes
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
RW-1	11-06-91	980	ND	ND	ND	--	ND	ND	ND	ND
RW-1	03-10-92	400	1.7	ND	ND	--	ND	ND	ND	ND
RW-1	06-30-92	1100	ND	ND	ND	--	ND	ND	ND	ND
RW-1	09-09-92	1500	ND	ND	ND	--	ND	ND	ND	ND
RW-1	11-24-92	1500	ND	ND	ND	--	ND	ND	ND	ND
RW-1	02-12-93	620	ND	ND	ND	--	ND	ND	ND	ND
RW-1	05-12-93	500	ND	ND	ND	--	ND	ND	ND	ND
RW-1	08-18-93	470	ND	ND	ND	--	ND	ND	ND	ND
RW-1	11-10-93	1500	ND	ND	ND	--	ND	ND	ND	ND
RW-1	02-04-94	2200	<20	<20	<20	--	<20	<20	<20	<100
RW-1	05-02-94	45	<1	<1	<1	--	<1	<1	<1	<5
RW-1	08-03-94	350	4	--	<1	--	<1	<1	<1	<5
RW-1	12-06-94	340	<5	--	<5	--	<5	<5	<5	<25
RW-1	03-10-95	260	<5	--	<5	--	<5	<5	<5	<25
RW-1	06-05-95	59	<1	--	<1	--	<1	<1	<1	<5
RW-1	08-29-95	570	<5	--	<5	--	<5	<5	<5	<25
RW-1	11-16-95	140	<1	--	<1	<1	<1	<1	<1	<5

Table 5
Historical Groundwater Analytical Data
Volatile Organic Compounds

10600 and 10700 MacArthur Boulevard
Oakland, California

Date: 03-08-96

Well Designation	Water Sample Field Date	Halogenated Volatile Organic Compounds by EPA Method 601/8010 or 624/8240					BTEX by EPA Method 624/8240			
		Tetrachloro-ethene	Trichloro-ethene	1,2-Dichloro-ethene	cis-1,2-Dichloro-ethene	Freon 12	Benzene	Toluene	benzene	Xylenes
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
WGR-3	05-02-94	<1	<1	<1	<1	- -	<1	<1	<1	<5
WGR-3	08-03-94	<1	<1	- -	<1	- -	<1	<1	<1	<5
WGR-3	12-06-94	4	<1	- -	<1	- -	<1	<1	<1	<5
WGR-3	03-11-95	<1	<1	- -	<1	- -	<1	<1	<1	<5
WGR-3	06-05-95	<1	<1	- -	<1	- -	<1	<1	<1	<5
WGR-3	08-29-95	<1	<1	- -	<1	- -	<1	<1	<1	<5
WGR-3	11-16-95	<1	<1	- -	<1	<1	<1	<1	<1	<5

µg/L: micrograms per liter
- - : not analyzed or not reported
ND- not detected at or above the method detection limit

Table 6
Approximate Cumulative Floating Product Recovered

10600 and 10700 MacArthur Boulevard
Oakland, California

Date: 03-08-96

Well Designation	Date	Floating Product Recovered gallons
MW-2 and MW-7	1991	18.15
MW-2 and MW-7	1992	0.39
MW-2 and MW-7	1993	0.00
MW-2 and MW-7	1994	0.00
MW-2 and MW-7	1995	0.00
	1991 to 1995 Total:	18.54

Table 7
Soil-Vapor Extraction System
Operation and Performance Data

Location: 10600 and 10700 MacArthur Boulevard, Oakland, California
Vapor Treatment Unit: Anguil Energy Systems Remedi-Cat, 500cfm Catalytic Oxidizer

Consultant: EMCON, 1921 Ringwood Avenue, San Jose, California
Start-Up Date: 09-06-90
Reporting Period From: 09-06-90 To: 01-01-96

Date Begin:		09-06-90	12-22-94	01-01-95	02-01-95	03-01-95
Date End:		12-22-94	01-01-95	02-01-95	03-01-95	04-01-95
Mode of Oxidation:		Catalytic (14)	Catalytic	Catalytic	Catalytic	Catalytic
Days of Operation:		0.0	4.9	26.4	28.0	31.0
Days of Downtime:		0.0	26.2	4.6	0.0	0.0
Average Vapor Concentrations (1)						
On-site WF Influent:	ppmv (2) as gasoline	NA (15)	32	<15	<15	1.2
	mg/m3 (3) as gasoline	NA	116	<60	<60	4.4
	ppmv as benzene	NA	<0.1	<0.1	<0.1	<0.05
	mg/m3 as benzene	NA	<0.3	<0.5	<0.5	<0.16
Off-site WF Influent:	ppmv as gasoline	NA	closed	closed	<15	1.4
	mg/m3 as gasoline	NA	closed	closed	<60	4.9
	ppmv as benzene	NA	closed	closed	<0.1	<0.05
	mg/m3 as benzene	NA	closed	closed	<0.5	<0.16
System Influent:	ppmv as gasoline	NA	32	<15	<15	<1.0
	mg/m3 as gasoline	NA	116	<60	<60	<3.6
	ppmv as benzene	NA	<0.1	<0.1	<0.1	<0.05
	mg/m3 as benzene	NA	<0.3	<0.5	<0.5	<0.16
System Effluent:	ppmv as gasoline	NA	<15	<15	<15	1.3
	mg/m3 as gasoline	NA	<54	<60	<60	4.6
	ppmv as benzene	NA	<0.1	<0.1	<0.1	<0.05
	mg/m3 as benzene	NA	<0.3	<0.5	<0.5	<0.16
Average On-site Well Field Flow Rate (4), scfm (5):		NA	81.6	53.7	62.0	71.3
Average Off-site Well Field Flow Rate (4), scfm:		NA	closed	closed	17.6	47.8
Average System Influent Flow Rate (4), scfm:		NA	81.6	53.7	79.6	119.1
Total Process Flow Rate, scfm:		NA	500.0	500.0	500.0	500.0
Average Destruction Efficiency (6), percent (7):		NA	53.4 (16)	NA	NA	NA
Average Emission Rates (8), pounds per day (9)						
Gasoline:		NA	0.40	0.29	0.43	0.05
Benzene:		NA	0.00	0.00	0.00	0.00
Operating Hours This Period:		NA	116.5	633.4	672.0	744.0
Operating Hours To Date:		NA	116.5	749.9	1421.9	2165.9
Pounds/ Hour Removal Rate, as gasoline (10):		NA	0.035	0.012	0.018	0.004
Pounds Removed This Period, as gasoline (11):		NA	4.13	7.64	12.01	3.08
Pounds Removed To Date, as gasoline (12):		7665.5	7669.6	7677.3	7689.3	7692.4
Gallons Removed This Period, as gasoline (13):		NA	0.67	1.23	1.94	0.50
Gallons Removed To Date, as gasoline:		1236.4	1237.1	1238.3	1240.3	1240.8

Table 7
Soil-Vapor Extraction System
Operation and Performance Data

Location: 10600 and 10700 MacArthur Boulevard
Oakland, California

Vapor Treatment Unit: *Anguil Energy Systems*
Remedi-Cat, 500cfm
Catalytic Oxidizer

Consultant: EMCON
1921 Ringwood Avenue
San Jose, California

Start-Up Date: 09-06-90
Reporting Period From: 09-06-90
To: 01-01-96

Date Begin:		04-01-95	05-01-95	08-01-95	09-01-95	10-01-95
Date End:		05-01-95	08-01-95	09-01-95	10-01-95	01-01-96
Mode of Oxidation:		Catalytic	Catalytic	Catalytic	Catalytic	Catalytic
Days of Operation:		30.0	18.7	17.9	0.0	0.0
Days of Downtime:		0.0	73.3	13.1	30.0	92.0
Average Vapor Concentrations (1)						
On-site WF Influent:	ppmv (2) as gasoline	<15	<15	95	NA	NA
	mg/m3 (3) as gasoline	<60	<60	350	NA	NA
	ppmv as benzene	<0.1	<0.1	1.1	NA	NA
	mg/m3 as benzene	<0.5	<0.5	3.6	NA	NA
Off-site WF Influent:	*ppmv as gasoline*	<15	<15	<15	NA	NA
	mg/m3 as gasoline	<60	<60	<60	NA	NA
	ppmv as benzene	<0.1	<0.1	<0.1	NA	NA
	mg/m3 as benzene	<0.5	<0.5	<0.5	NA	NA
System Influent:	ppmv as gasoline	<15	<15	93	NA	NA
	mg/m3 as gasoline	<60	<60	340	NA	NA
	ppmv as benzene	<0.1	<0.1	1	NA	NA
	mg/m3 as benzene	<0.5	<0.5	3.3	NA	NA
System Effluent:	ppmv as gasoline	<15	<15	<15	NA	NA
	mg/m3 as gasoline	<60	<60	<60	NA	NA
	ppmv as benzene	<0.1	<0.1	<0.1	NA	NA
	mg/m3 as benzene	<0.5	<0.5	<0.5	NA	NA
Average On-site Well Field Flow Rate (4), scfm (5):		74.5	79.6	83.5	0.0	0.0
Average Off-site Well Field Flow Rate (4), scfm:		37.1	33.6	34.2	0.0	0.0
Average System Influent Flow Rate (4), scfm:		111.6	113.3	117.7	0.0	0.0
Total Process Flow Rate (4), scfm:		500.0	500.0	500.0	0.0	0.0
Average Destruction Efficiency (6), percent (7):		NA	NA	82.4 (16)	NA	NA
Average Emission Rates (8), pounds per day (9)						
Gasoline:		0.60	0.61	0.63	NA	NA
Benzene:		0.01	0.01	0.01	NA	NA
Operating Hours This Period:		720.0	447.9	428.8	0.0	0.0
Operating Hours To Date:		2885.9	3333.8	3762.6	3762.6	3762.6
Pounds/ Hour Removal Rate, as gasoline (10):		0.025	0.025	0.154	0.000	0.000
Pounds Removed This Period, as gasoline (11):		18.04	11.40	66.11	0.00	0.00
Pounds Removed To Date, as gasoline:		7710.4	7721.8	7787.9	7787.9	7787.9
Gallons Removed This Period, as gasoline (12):		2.91	1.84	10.66	0.00	0.00
Gallons Removed To Date, as gasoline:		1243.7	1245.5	1256.2	1256.2	1256.2

Table 7
Soil-Vapor Extraction System
Operation and Performance Data

Location: 10600 and 10700 MacArthur Boulevard Oakland, California	Vapor Treatment Unit: Anguil Energy Systems Remedi-Cat, *500cfm* Catalytic Oxidizer
Consultant: EMCON 1921 Ringwood Avenue *San Jose, California*	Start-Up Date: *09-06-90* *Reporting Period* From: 09-06-90 To: 01-01-96

CURRENT REPORTING PERIOD:	10-01-95	to	01-01-96
DAYS / HOURS IN PERIOD:	92.0	2208.0	
DAYS / HOURS OF OPERATION:	0.0	0.0	
DAYS / HOURS OF DOWN TIME:	92.0	2208.0	
PERCENT OPERATIONAL:		0.0 %	
PERIOD POUNDS REMOVED:	0.0		
PERIOD GALLONS REMOVED:	0.0		
AVERAGE SYSTEM INFLUENT FLOW RATE (scfm):		0.0	

1. Average concentrations are based on discrete sample results reported during the month; refer to Appendix C for discrete sample results.
2. ppmv: parts per million by volume
3. mg/m3: milligrams per cubic meter
4. Average flow rates (time weighted average) are based on instantaneous flow rates recorded during the month; refer to Appendix C for instantaneous flow data.
5. scfm: flow in standard cubic feet per minute at one atmosphere and 70 degrees Fahrenheit
6. Average destruction efficiencies are calculated using monthly average concentrations; refer to Appendix C for instantaneous destruction efficiency data.
7. destruction efficiency, percent = ([system influent concentration (as gasoline in mg/m3) - system effluent concentration (as gasoline in mg/m3)] / system influent concentration (as gasoline in mg/m3)) x 100 percent
8. Average emission rates are calculated using monthly average concentrations and flow rates; refer to Appendix C for instantaneous emission rate data.
9. emission rates (pounds per day) = system effluent concentration (as gasoline or benzene in mg/m3) x system influent flow rate (scfm) x 0.02832 m3/ft3 x 1440 minutes/day x 1 pound/454,000 mg
10. pounds/ hour removal rate (as gasoline) = well field influent concentration (as gasoline in mg/m3) x well field influent flow rate (scfm) x 0.02832 m3/ft3 x 60 minutes/hour x 1 pound/454,000 mg
11. pounds removed this period (as gasoline) = pounds/ hour removal rate x hours of operation
12. Pounds removed data for the period from September 6, 1990 through December 22, 1994, were reported by EVAX, PEG, and RESNA. Please refer to *Fourth Quarter 1994 Groundwater Monitoring Results and Remediation System Performance Evaluation Report, EMCON March 1995,* for additioanl data for system operation before December 1994.
13. gallons removed this period (as gasoline) = pounds removed this period (as gasoline) x 0.1613 gallons/pound of gasoline
14. The exisung catalytic oxidation unit was used as the off-gas abatement device for the site, with the exception of the period from September 6, 1990 to March 21, 1991, when EVAX used an internal combustion engine as the abatement device.
15. NA: not analyzed, not available, or not applicable
16. Although the destruction efficiency appeared to be less than 90 percent, laboratory analytical results collected during this period indicate the effluent TVHG and benzene concentrations in off-gas discharged to the atmosphere were below laboratory detection limits, indicating compliance with BAAQMD discharge requirements.

Table 8
Soil-Vapor Extraction Well Data

10600 and 10700 MacArthur Boulevard
Oakland, California

Date: 03-11-96
Project Number: 0805-120.04

Date	Well Identification											
	VW-1			VW-2			VW-3			VW-4		
	Valve Position	TVHG ppmv	Vacuum Response in-H2O	Valve Position	TVHG ppmv	Vacuum Response in-H2O	Valve Position	TVHG ppmv	Vacuum Response in-H2O	Valve Position	TVHG ppmv	Vacuum Response in-H2O
12-22-94	open	<15 LAB	13.1	open	68 LAB	13.0	open	28 LAB	12.0	open	<15 LAB	13.1
01-17-95	closed	NA	NA	open	NA	NA	open	NA	NA	closed	NA	NA
02-16-95	open	NA	NA	open	NA	NA	open	NA	NA	open	NA	NA
03-27-95	open	NA	NA	open	NA	NA	open	NA	NA	open	NA	NA
05-24-95	System was shut doun											
08-01-95	System was restarted											
08-01-95	open	NA	NA	open	NA	NA	open	NA	NA	open	NA	NA
08-23-95	System was shut doun											

TVHG: concentration of total volatile hydrocarbons as gasoline
ppmv: parts per million by volume
in-H2O: inches of water
open: open to the system
passive: open to the atmosphere
closed: closed to the system and atmosphere
NA: not analyzed or not measured
FID: TVHG concentration was measured with a portable flame ionization detector
LAB: TVHG concentration was analyzed in the laboratory
PID: TVHG concentration was measured with a portable photoionization detector

Table 8
Soil-Vapor Extraction Well Data

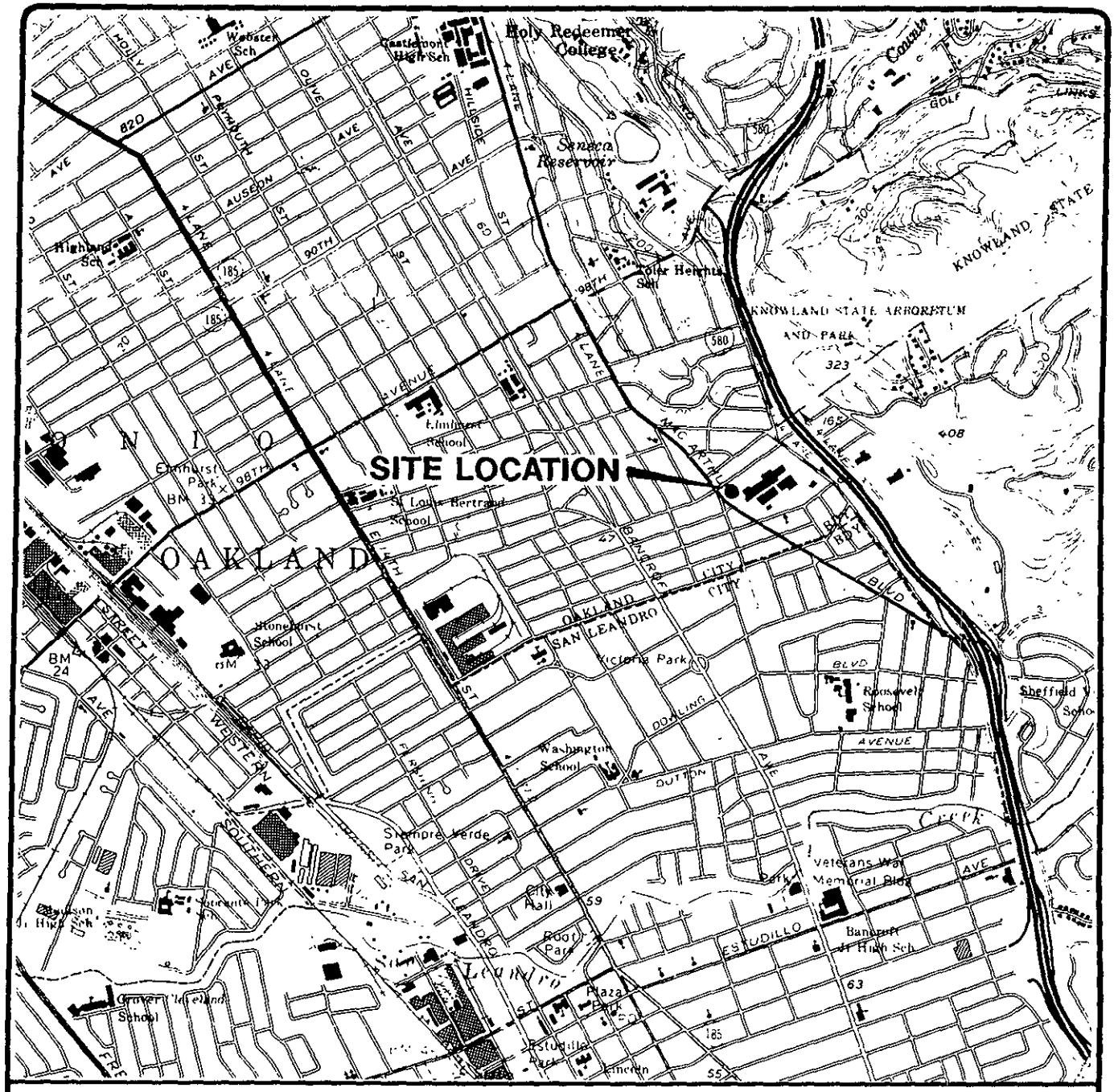
10600 and 10700 MacArthur Boulevard
Oakland, California

Date: 03-11-96
Project Number: 0805-120.04

Date	Well Identification											
	VW-5			VW-7			MW-2					
	Valve Position	TVHG ppmv	Vacuum Response in-H2O	Valve Position	TVHG ppmv	Vacuum Response in-H2O	Valve Position	TVHG ppmv	Vacuum Response in-H2O	Valve Position	TVHG ppmv	Vacuum Response in-H2O
12-22-94	open	<15 LAB	13.0	open	<15 LAB	13.1	open	<15 LAB	7.0			
01-17-95	closed	NA	NA	closed	NA	NA	open	NA	NA			
02-16-95	open	NA	NA	open	NA	NA	open	NA	NA			
03-27-95	open	NA	NA	open	NA	NA	open	NA	NA			
05-24-95	System was shut doun											
08-01-95	System was restarted											
08-01-95	open	NA	NA	open	NA	NA	open	NA	NA			
08-23-95	System was shut doun											

TVHG: concentration of total volatile hydrocarbons as gasoline
ppmv: parts per million by volume
in-H2O: inches of water
open: open to the system
passive: open to the atmosphere
closed: closed to the system and atmosphere
NA: not analyzed or not measured
PID: TVHG concentration was measured with a portable flame ionization detector
LAB: TVHG concentration was analyzed in the laboratory
PID: TVHG concentration was measured with a portable photoionization detector

182753



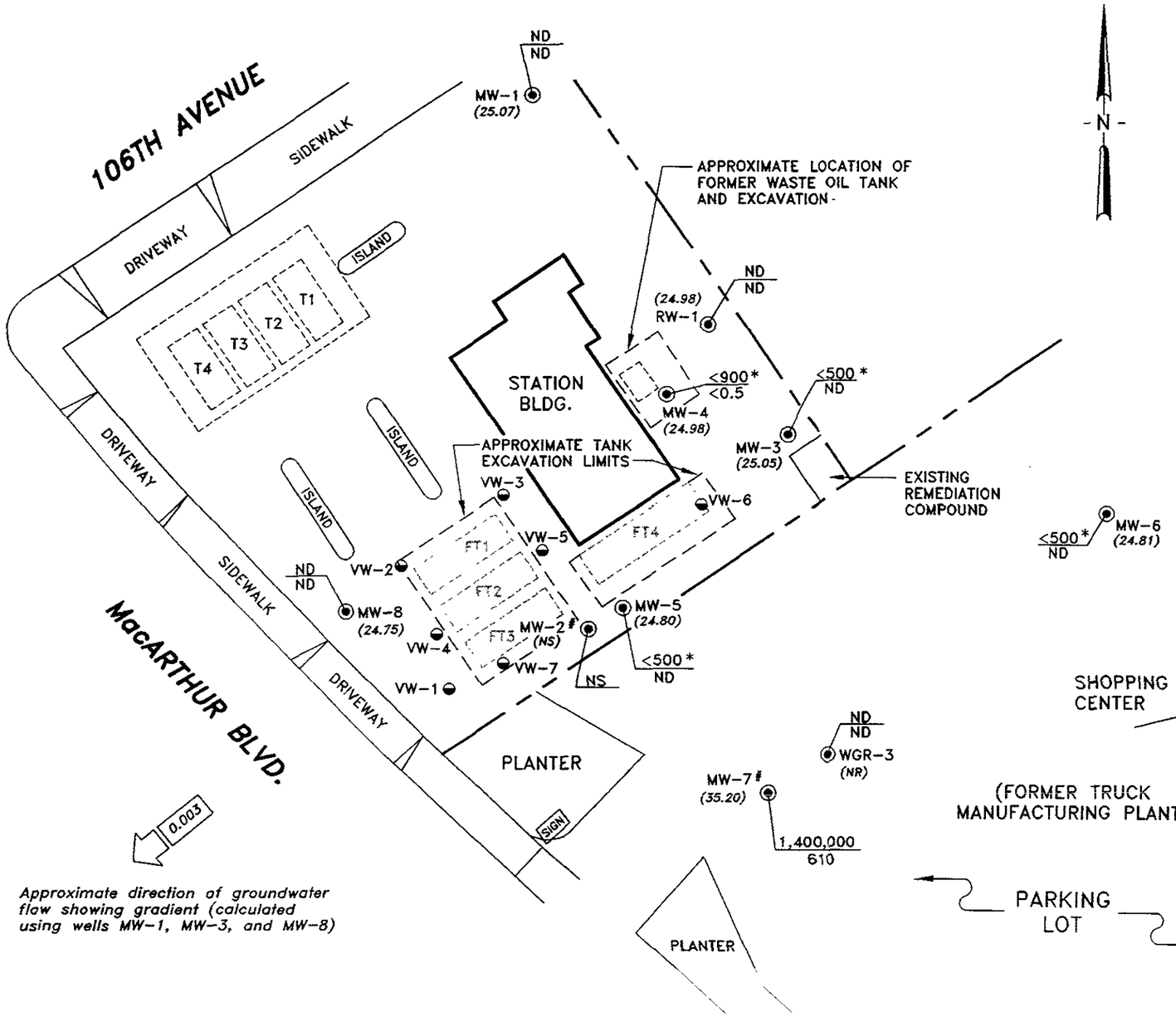
EMCON

10600 AND 10700 MACARTHUR BLVD.
QUARTERLY GROUNDWATER MONITORING
OAKLAND, CALIFORINA

SITE LOCATION

FIGURE
1

PROJECT NO.
805-120 04



Approximate direction of groundwater flow showing gradient (calculated using wells MW-1, MW-3, and MW-8)

EXPLANATION

- ◉ Groundwater monitoring well
- ◒ Vapor extraction well
- Existing underground storage tank
- Former underground storage tank
- (24.98) Groundwater elevation (Ft.-MSL); measured 11/16/95
- <500* / ND — TPHG concentration in groundwater (µg/L); sampled 11/16/95
- <500* / ND — Benzene concentration in groundwater (µg/L); sampled 11/16/95
- * Raised method reporting limit due to matrix interference; the sample contains a single non-fuel component eluting in the gasoline range and quantitated as gasoline (possibly PCE). The chromatogram does not match the typical gasoline fingerprint
- ** Raised method reporting limit due to matrix interference requiring sample dilution
- # Well screened in shallow water-bearing zone; not used in contouring
- ND Not detected at or above the method reporting limit for TPHG (50 µg/L) or benzene (0.5 µg/L)
- NS Not sampled; well was inaccessible
- NR Not recorded

Base map modified from RESNA 1995

EMCON

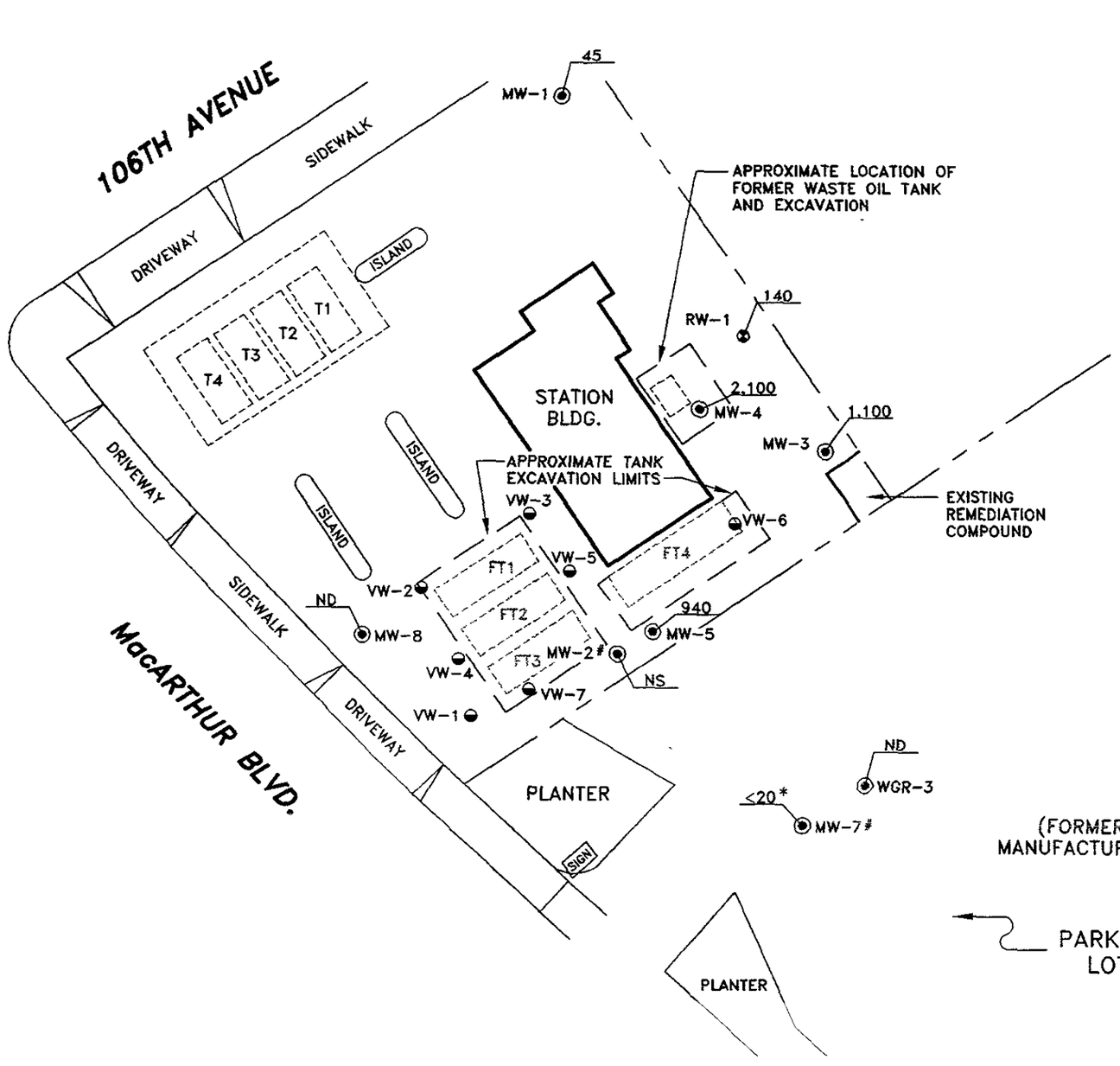
SCALE: 0 30 60 FEET

10600 AND 10700 MACARTHUR BLVD.
QUARTERLY GROUNDWATER MONITORING
OAKLAND, CALIFORNIA

TPHG AND BENZENE CONCENTRATIONS IN GROUNDWATER
FOURTH QUARTER 1995

FIGURE NO
2
PROJECT NO
805-120.04

(-.805-120\G00A REV 0 02/29/96 09:57:07 KAJ DJ



EXPLANATION

- Groundwater monitoring well
- Recovery well
- Vapor extraction well
- Existing underground storage tank
- Former underground storage tank
- 140 — PCE concentration in groundwater (µg/L); sampled 11/16/95
- ND — Not detected at or above the method reporting limit for PCE (1 µg/L)
- * — Raised method reporting limit due to matrix interference
- # — Well screened in shallow water-bearing zone.
- NS — Not sampled; well was inaccessible

Base map modified from RESNA, 1993

EMCON

SCALE: 0 30 60 FEET

10600 AND 10700 MACARTHUR BLVD.
QUARTERLY GROUNDWATER MONITORING
OAKLAND, CALIFORNIA

TETRACHLOROETHENE (PCE) CONCENTRATIONS IN GROUNDWATER
FOURTH QUARTER 1995

FIGURE NO.
3
PROJECT NO.
805-120.04

G:\805-120\PCE REV 0 03/08/96 09:57:07 KAJ DJ

APPENDIX A

FIELD DATA SHEETS, FOURTH QUARTER 1995 GROUNDWATER MONITORING EVENT

FIELD REPORT
DEPTH TO WATER / FLOATING PRODUCT SURVEY

PROJECT # : 1775-202.01 STATION ADDRESS : 10600 MacArthur Blvd. Oakland, CA DATE : 11-16-95

ARCO STATION # : 276 FIELD TECHNICIAN : M. Ross / M. Gallegos DAY : THURSDAY

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-8**	ok	Yes	Yes	NO	No	28.90	28.90	NA	NA	47.6	SLIP CAP
2	**WGR-3**	OK	Yes	Yes	Yes	Yes	22.50	22.50	NA	NA	26.7	
3	**MW-1**	ok	Yes	Yes	Yes	Yes	30.85	30.85	NA	NA	38.7	
4	**MW-5**	ok	Yes	Yes	Yes	Yes	30.63	30.63	NA	NA	46.6	
5	**RW-1**	OK	Yes	Yes	No	No	31.34	31.34	NA	NA	48.5	SLIP CAP
6	**MW-6**	ok	Yes	Yes	NO	NO	36.40	36.40	NA	NA	51.7	BROKEN WELL CAP
7	**MW-3**	OK	Yes	Yes	Yes	Yes	31.50	31.50	NA	NA	38.3	
8	**MW-4**	ok	Yes	Yes	Yes	Yes	31.00	31.00	NA	NA	47.8	
9	**MW-2**	OK	Yes	IW	IW	IW	IW	IW	IW	IW	IW	THREADS STRIPPED ON LID UNABLE TO OPEN.
10	**MW-7**	ok	Yes	Yes	Yes	Yes	23.02	23.02	NA	NA	36.6	

SURVEY POINTS ARE TOP OF WELL CASINGS

Rev. 3, 2/94

WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 1775-202.01 SAMPLE ID: MW-1 (38')

PURGED BY: M. Gallegos CLIENT NAME: ARCO #276

SAMPLED BY: V LOCATION: OAKLAND CA

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

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

CASING ELEVATION (feet/MSL): N/R VOLUME IN CASING (gal.): 1.28

DEPTH TO WATER (feet): 30.85 CALCULATED PURGE (gal.): 3.84

DEPTH OF WELL (feet): 38.7 ACTUAL PURGE VOL. (gal.): 4.0

DATE PURGED: 11-16-95 Start (2400 Hr) 1227 End (2400 Hr) 1235

DATE SAMPLED: V Start (2400 Hr) 1245 End (2400 Hr) —

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1229	1.5	6.49	1873	65.2	BRN	HEAVY
1232	3.0	6.52	1881	66.3	"	"
1235	4.0	6.59	1890	66.5	"	"

D. O. (ppm): N/R ODOR: none N/R (COBALT 0 - 500) N/R (NTU 0 - 200 or 0 - 1000)

Field QC samples collected at this well: N/R

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 Key

REMARKS: All samples taken

Meter Calibration: Date: 11-16-95 Time: ___ Meter Serial #: 9011 Temperature °F: ___

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

Location of previous calibration: RW-1

Signature: [signature] Reviewed By: [signature] Page 1 of 10

Rev. 3, 2/94

WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 1775-202.01 SAMPLE ID: MW-2

PURGED BY: M. Ross CLIENT NAME: Arco 276

SAMPLED BY: M Ross LOCATION: OAKLAND, CA

TYPE. Ground Water ✓ Surface Water ___ Treatment Effluent ___ Other ___

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

CASING ELEVATION (feet/MSL): NA VOLUME IN CASING (gal.): NA

DEPTH TO WATER (feet): NA CALCULATED PURGE (gal.): NA

DEPTH OF WELL (feet): NA ACTUAL PURGE VOL. (gal.): NA

DATE PURGED: NA Start (2400 Hr) NA End (2400 Hr) NA

DATE SAMPLED: NA Start (2400 Hr) NA End (2400 Hr) NA

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
	UNABLE TO OPEN LID. - DID NOT					
	PURGE OR SAMPLE					

D. O. (ppm): NA ODOR: NA

COLOR: NA (COBALT 0 - 500) TURBIDITY: NA (NTU 0 - 200 or 0 - 1000)

Field QC samples collected at this well: NA

Parameters field filtered at this well: NA

PURGING EQUIPMENT

___ 2" Bladder Pump ___ Bailer (Teflon®)

___ Centrifugal Pump ___ Bailer (PVC)

___ Submersible Pump ___ Bailer (Stainless Steel)

___ Well Wizard™ ___ Dedicated

Other: NA

SAMPLING EQUIPMENT

___ 2" Bladder Pump ___ Bailer (Teflon®)

___ DDL Sampler ___ Bailer (Stainless Steel)

___ Dipper ___ Submersible Pump

___ Well Wizard™ ___ Dedicated

Other: NA

WELL INTEGRITY: NA LOCK #: NONE

REMARKS: Unable to open up LID. - DID NOT Purge or Sample

Meter Calibration: Date: NA Time: NA Meter Serial #: NA Temperature °F: ___

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

Location of previous calibration: ___

Signature: [signature] Reviewed By: [signature] Page 2 of 10

Rev. 3, 2/94

WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 1775-202.01 SAMPLE ID: MW-2 (38')

PURGED BY: M. Gallegos CLIENT NAME: ARCO 276

SAMPLED BY: ↓ LOCATION: OAKLAND, CA

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

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

CASING ELEVATION (feet/MSL): NR VOLUME IN CASING (gal.): 1.11

DEPTH TO WATER (feet): 31.50 CALCULATED PURGE (gal.): 3.33

DEPTH OF WELL (feet): 38.3 ACTUAL PURGE VOL. (gal.): 3.5

DATE PURGED: 11-16-95 Start (2400 Hr) 1140 End (2400 Hr) 1150

DATE SAMPLED: ↓ Start (2400 Hr) 1200 End (2400 Hr) —

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1143	1.0	6.59	1191	65.0	BRN	Heavy
1146	2.0	6.63	1199	65.6	"	"
1150	3.5	6.64	1203	65.3	"	"

D. O. (ppm): NR ODOR: none

COLOR: NR (COBALT 0 - 500)

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

Field QC samples collected at this well: NR

Parameters field filtered at this well: NR

PURGING EQUIPMENT

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

SAMPLING EQUIPMENT

___ 2" Bladder Pump
✓ Bailer (Teflon®)
___ DDL Sampler
___ Bailer (Stainless Steel)
___ Dipper
___ Submersible Pump
___ Well Wizard™
___ Dedicated
Other: ___

WELL INTEGRITY: Good LOCK #: ARCO Key

REMARKS: All samples taken

Meter Calibration: Date: 11-16-95 Time: ___ Meter Serial #: 9011 Temperature °F: ___

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

Location of previous calibration: RW-1

Signature: Manuel A. Gallegos Reviewed By: ___ Page 3 of 10

Rev. 3, 2/94

WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 1775-202.01 SAMPLE ID: MW-4 (47')

PURGED BY: M. Gallegos CLIENT NAME: ARCO #276

SAMPLED BY: V LOCATION: OAKland, CA

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

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

CASING ELEVATION (feet/MSL):	N/R	VOLUME IN CASING (gal.):	2.74
DEPTH TO WATER (feet):	31.00	CALCULATED PURGE (gal.):	8.23
DEPTH OF WELL (feet):	47.8	ACTUAL PURGE VOL. (gal.):	8.5

DATE PURGED: 11-16-95 Start (2400 Hr) 1104 End (2400 Hr) 1114

DATE SAMPLED: V Start (2400 Hr) 1124 End (2400 Hr) —

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1107	2.5	6.95	1370	65.7	BRN	Heavy
1110	5.5	7.02	1401	66.1	"	"
1114	8.5	7.02	1398	66.2	"	"

D. O. (ppm): N/R ODOR: None.

COLOR (COBALT 0 - 500): N/R

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

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	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 Key

REMARKS: All Samples to Kas

Meter Calibration: Date: 11-16-95 Time: ___ Meter Serial #: 5011 Temperature °F: ___

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

Location of previous calibration: MW-1

Signature: [signature] Reviewed By: [signature] Page 4 of 10

Rev. 3, 2/94

WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 1775-202.01 SAMPLE ID: MW-1 (4C)

PURGED BY: M. GALLEGOS CLIENT NAME: ARCO #276

SAMPLED BY: " LOCATION: OAKLAND CA

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

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

CASING ELEVATION (feet/MSL): NR VOLUME IN CASING (gal.): 10.42

DEPTH TO WATER (feet): 30.63 CALCULATED PURGE (gal.): 31.30

DEPTH OF WELL (feet): 46.6 ACTUAL PURGE VOL. (gal.): 31.5

DATE PURGED: 11-16-95 Start (2400 Hr) 1303 End (2400 Hr) 1321

DATE SAMPLED: " Start (2400 Hr) 1335 End (2400 Hr) ___

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1307	10.5	6.33	750	66.2	BRN	HEAVY
1316	21.0	6.02	817	66.4	"	"
1321	31.5	6.09	812	66.1	"	"

D. O. (ppm): NR ODOR: none. NR (COBALT 0 - 500) NR (NTU 0 - 200 or 0 - 1000)

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	✓ 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: All Samples taken

Meter Calibration: Date: 11-16-95 Time: ___ Meter Serial #: Gall Temperature °F: ___

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

Location of previous calibration: Rm

Signature: [signature] Reviewed By: [signature] Page 5 of 10

Rev. 3. 2/94

WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 1775-202.01 SAMPLE ID: MW-6

PURGED BY: M. Ross CLIENT NAME: ARCO 276

SAMPLED BY: M. Ross LOCATION: OAKLAND, CA

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

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

CASING ELEVATION (feet/MSL):	NA	VOLUME IN CASING (gal.):	2.45
DEPTH TO WATER (feet):	36.40	CALCULATED PURGE (gal.):	7.49
DEPTH OF WELL (feet):	51.7	ACTUAL PURGE VOL. (gal.):	7.5

DATE PURGED: 11-16-95 Start (2400 Hr) 1057 End (2400 Hr) 1110

DATE SAMPLED: 11-16-95 Start (2400 Hr) 1125 End (2400 Hr) —

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1101	2.5	6.50	1963	66.7	Light BRN	MOD
1105	5.0	6.77	1996	66.1	"	"
1110	7.5	6.73	2140	66.2	"	"

D. O. (ppm): NA ODOR: NONE

Field QC samples collected at this well: NA

Parameters field filtered at this well: NA

NA (COBALT 0 - 500) NA (NTU 0 - 200 or 0 - 1000)

PURGING EQUIPMENT

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

SAMPLING EQUIPMENT

___ 2" Bladder Pump ✓ Bailer (Teflon®)
___ DDL Sampler ___ Bailer (Stainless Steel)
___ Dipper ___ Submersible Pump
___ Well Wizard™ ___ Dedicated
Other: ___

WELL INTEGRITY: Good LOCK #: ARCO

REMARKS: ___

Meter Calibration: Date: 11-16-95 Time: 1010 Meter Serial #: 9210 Temperature °F: ___

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

Location of previous calibration: WGR-3

Signature: Mona Ross Reviewed By: [illegible] Page 6 of 10

Rev. 3, 2/94

WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 1775-202.01 SAMPLE ID: MW-7

PURGED BY: M. ROSS CLIENT NAME: ARCO 276

SAMPLED BY: M. ROSS LOCATION: OAKLAND, CA

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

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

CASING ELEVATION (feet/MSL): NA VOLUME IN CASING (gal.): 2.21

DEPTH TO WATER (feet): 23.02 CALCULATED PURGE (gal.): 6.65

DEPTH OF WELL (feet): 36.6 ACTUAL PURGE VOL. (gal.): 7.0

DATE PURGED: 11-16-95 Start (2400 Hr) 1130 End (2400 Hr) 1145

DATE SAMPLED: 11-16-95 Start (2400 Hr) 1200 End (2400 Hr) —

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1134	2.5	6.53	815	69.4	LIGHT BRN	TRACE
1140	5.0	6.39	789	70.1	"	"
1146	7.0	6.31	754	69.6	"	"

D. O. (ppm): NA ODOR: STRONG

Field QC samples collected at this well: NA

Parameters field filtered at this well: NA

COLOR: NA (COBALT 0 - 500)

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

PURGING EQUIPMENT

___ 2" Bladder Pump ✓ Bailer (Teflon®)

___ Centrifugal Pump ___ Bailer (PVC)

___ Submersible Pump ___ Bailer (Stainless Steel)

___ Well Wizard™ ___ Dedicated

Other: ___

SAMPLING EQUIPMENT

___ 2" Bladder Pump ✓ Bailer (Teflon®)

___ DDL Sampler ___ Bailer (Stainless Steel)

___ Dipper ___ Submersible Pump

___ Well Wizard™ ___ Dedicated

Other: ___

WELL INTEGRITY: Good LOCK #: ARCO

REMARKS: Heavy STREEN Appeared in well - Product Like Substance Appeared after Further Purging.

Meter Calibration: Date: 11-16-95 Time: 1010 Meter Serial #: 9210 Temperature °F: ___

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

Location of previous calibration: WBR-3

Signature: Mike Ross Reviewed By: SA Page 7 of 10

Rev. 3, 2/94

WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 1775-202.01 SAMPLE ID: MW-8

PURGED BY: M. ROSS CLIENT NAME: ARCO 226

SAMPLED BY: M. ROSS LOCATION: OAKLAND, CA

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

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

CASING ELEVATION (feet/MSL): NA

DEPTH TO WATER (feet): 28.90

DEPTH OF WELL (feet): 47.6

VOLUME IN CASING (gal.): 12.21

CALCULATED PURGE (gal.): 36.65

ACTUAL PURGE VOL. (gal.): 35.0

DATE PURGED: 11-16-95 Start (2400 Hr) 1231 End (2400 Hr) 1245

DATE SAMPLED: 11-16-95 Start (2400 Hr) 1305 End (2400 Hr) ___

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (Visual)	TURBIDITY (Visual)
1235	12.5	6.24	680	72.1	Light Brn	TRACE
1242	25.0	6.22	669	71.2	"	"
1247	DRY	at 35.0 GALLONS				
1303	DTW	→ 31.47				
1310	Recharge	6.27	699	68.7	Light Brn	TRACE

D. O. (ppm): NA ODOR: SLIGHT

Field QC samples collected at this well: NA

Parameters field filtered at this well: NA

(COBALT 0 - 500): NA

(NTU 0 - 200 or 0 - 1000): NA

PURGING EQUIPMENT

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

SAMPLING EQUIPMENT

___ 2" Bladder Pump
___ DDL Sampler
___ Dipper
___ Well Wizard™
✓ Bailer (Teflon®)
___ Bailer (Stainless Steel)
___ Submersible Pump
___ Dedicated
Other: ___

WELL INTEGRITY: GOOD LOCK #: NONE

REMARKS: DRY at 35.0 GALLONS

Meter Calibration: Date: 11-16-95 Time: 1010 Meter Serial #: 9210 Temperature °F: ___

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

Location of previous calibration: WG-R-3

Signature: [signature] Reviewed By: [signature] Page 8 of 10

Rev. 3, 2/94

WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 1775-202-01 SAMPLE ID: RW-1 (418')

PURGED BY: M. Gallegos CLIENT NAME: ARCO # 276

SAMPLED BY: V LOCATION: OAKLAND, CA

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

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

CASING ELEVATION (feet/MSL): NR VOLUME IN CASING (gal.): 25.22

DEPTH TO WATER (feet): 31.34 CALCULATED PURGE (gal.): 75.67

DEPTH OF WELL (feet): 418.5 ACTUAL PURGE VOL. (gal.): 76.0

DATE PURGED: 11-16-95 Start (2400 Hr) 1025 End (2400 Hr) 1046

DATE SAMPLED: V Start (2400 Hr) 1055 End (2400 Hr) —

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1032	25.5	6.87	1336	66.2	clear	clear
1039	51.0	6.89	1334	66.1		
1046	76.0	6.91	1330	66.0		

D. O. (ppm): NR ODOR: slight NR (COBALT 0 - 500) NR (NTU 0 - 200 or 0 - 1000)

Field QC samples collected at this well: NR

Parameters field filtered at this well: NR

PURGING EQUIPMENT

- ___ 2" Bladder Pump
- ___ Centrifugal Pump
- X Submersible Pump
- ___ Well Wizard™
- ___ Bailer (Teflon®)
- ___ Bailer (PVC)
- ___ Bailer (Stainless Steel)
- ___ Dedicated

Other: ___

SAMPLING EQUIPMENT

- ___ 2" Bladder Pump
- ___ DDL Sampler
- ___ Dipper
- ___ Well Wizard™
- X Bailer (Teflon®)
- ___ Bailer (Stainless Steel)
- ___ Submersible Pump
- ___ Dedicated

Other: ___

WELL INTEGRITY: Good LOCK #: Slip CAP

REMARKS: All Samples taken

Meter Calibration: Date: 11/16/95 Time: 1023 Meter Serial #: 9011 Temperature °F: 66.2

(EC 1000 956 / 1000) (DI ___) (pH 7 715 / 700) (pH 10 993 / 1000) (pH 4 396 / —)

Location of previous calibration: ___

Signature: [signature] Reviewed By: [signature] Page 9 of 10

Rev. 3. 2/94

WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 1775-202.01 SAMPLE ID: LWGR-3

PURGED BY: M. ROSS CLIENT NAME: ARCO 276

SAMPLED BY: M. ROSS LOCATION: OAKLAND, CA

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

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

CASING ELEVATION (feet/MSL): NA VOLUME IN CASING (gal.): 2.74

DEPTH TO WATER (feet): 22.5 CALCULATED PURGE (gal.): 8.23

DEPTH OF WELL (feet): 26.7 ACTUAL PURGE VOL. (gal.): 6.0

DATE PURGED: 11-16-95 Start (2400 Hr) 1020 End (2400 Hr) 1030

DATE SAMPLED: 11-16-95 Start (2400 Hr) 1045 End (2400 Hr) ___

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1024	3.0	6.04	511	67.6	LIGHT BRN	TRACE
1030	6.0	6.11	515	67.7	"	MOD
1040	DTW →		25.29			
	DRY at	6.0	GALLONS			
1050	Recharge	6.23	519	67.6	LIGHT BRN	TRACE

D. O. (ppm): NA ODOR: NONE

Field QC samples collected at this well: NA

Parameters field filtered at this well: NA

COLOR (visual): NA (COBALT 0 - 500)

TURBIDITY (visual): NA (NTU 0 - 200 or 0 - 1000)

PURGING EQUIPMENT

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

SAMPLING EQUIPMENT

___ 2" Bladder Pump ✓ Bailer (Teflon®)
___ DDL Sampler ___ Bailer (Stainless Steel)
___ Dipper ___ Submersible Pump
___ Well Wizard™ ___ Dedicated
Other: ___

WELL INTEGRITY: GOOD LOCK #: ARCO

REMARKS: DRY at 6.0 GALLONS

Meter Calibration: Date: 11-16-95 Time: 1010 Meter Serial #: 9210 Temperature °F: 67.8

(EC 1000 996 / 1000) (DI ___) (pH 7 703 / 700) (pH 10 1003 / 1000) (pH 4 396 / ___)

Location of previous calibration: ___

Signature: [signature] Reviewed By: [signature] Page 10 of 10

APPENDIX B

ANALYTICAL RESULTS AND CHAIN-OF-CUSTODY DOCUMENTATION, GROUNDWATER MONITORING, FOURTH QUARTER 1995

Columbia Analytical Services inc.

December 7, 1995

Service Request No: S951452

John Young
EMCON
1921 Ringwood Avenue
San Jose, CA 95131

Re: **0805-120.04 / TO# 17075.00 / 276 Oakland**

Dear John:

The following pages contain analytical results for sample(s) received by the laboratory on November 16, 1995. 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 20, 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

Annelise J. Bazar
Regional QA Coordinator

SLG/ajb

COLUMBIA ANALYTICAL SERVICES, Inc.

Acronyms

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

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Arco Product Company	**Service Request:**	S9501452
Project:	0805-120.04/TO#17075.00/276 Oakland	**Date Collected:**	11/16/95
Sample Matrix:	Water	**Date Received:**	11/16/95
		Date Extracted:	NA

BTEX, MTBE and TPH as Gasoline
EPA Methods 5030/8020/California DHS LUFT Method
Units: ug/L (ppb)

Sample Name:	**MW-8 (47)**	**WGR-3 (26)**	**MW-1 (38)**
Lab Code:	S9501452-001	S9401452-002	S9501452-003
Date Analyzed:	11/30/95	11/30/95	11/30/95

Analyte	**MRL**			
TPH as Gasoline	50	ND	ND	ND
Benzene	0.5	ND	ND	ND
Toluene	0.5	ND	ND	ND
Ethylbenzene	0.5	ND	ND	ND
Total Xylenes	0.5	ND	ND	ND
Methyl-tert-butyl ether	3	6	3	ND

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Arco Product Company	**Service Request:**	S9501452
Project:	0805-120.04/TO#17075.00/276 Oakland	**Date Collected:**	11/16/95
Sample Matrix:	Water	**Date Received:**	11/16/95
		Date Extracted:	NA

BTEX, MTBE and TPH as Gasoline
EPA Methods 5030/8020/California DHS LUFT Method
Units: ug/L (ppb)

		Sample Name:	**MW-5 (46)**	**RW-1 (48)**	**MW-6 (51)**
		Lab Code:	*S9501452-004*	*S9501452-005*	*S9501452-006*
		Date Analyzed:	11/30/95	11/30/95	11/30/95
Analyte	**MRL**				
TPH as Gasoline	50		< 500 *	ND	< 500 *
Benzene	0.5		ND	ND	ND
Toluene	0.5		ND	ND	ND
Ethylbenzene	0.5		ND	ND	ND
Total Xylenes	0.5		0.7	ND	ND
Methyl-tert-butyl ether	3		< 20 **	ND	ND

* Raised MRL due to matrix interference. The sample contains non-fuel components eluting in the gasoline range, quantified as gasoline. The chromatogram does not match the typical gasoline fingerprint.

** Raised MRL due to matrix interference.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Arco Product Company	**Service Request:**	S9501452
Project:	0805-120.04/TO#17075.00/276 Oakland	**Date Collected:**	11/16/95
Sample Matrix:	Water	**Date Received:**	11/16/95
		Date Extracted:	NA

BTEX, MTBE and TPH as Gasoline
EPA Methods 5030/8020/California DHS LUFT Method
Units: ug/L (ppb)

		Sample Name:	**MW-3(38)**	**MW-4(47)**	**MW-7(36)**
		Lab Code:	S9501452-007	S9501452-008	S9501452-009
		Date Analyzed:	11/30/95	11/30/95	11/30/95
Analyte	**MRL**				
TPH as Gasoline	50		< 500 *	< 900 *	1,400,000
Benzene	0.5		ND	ND	610
Toluene	0.5		ND	ND	590
Ethylbenzene	0.5		ND	ND	7800
Total Xylenes	0.5		ND	ND	3300
Methyl-tert-butyl ether	3		ND	<6**	<4,000***

* Raised MRL due to matrix interference. The sample contains non-fuel components eluting in the gasoline range, quantified as gasoline. The chromatogram does not match the typical gasoline fingerprint.

** Raised MRL due to matrix interference.

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

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Arco Product Company	**Service Request:**	S9501452
Project:	0805-120.04/TO#17075.00/276 Oakland	**Date Collected:**	11/16/95
Sample Matrix:	Water	**Date Received:**	11/16/95
		Date Extracted:	NA

BTEX, MTBE and TPH as Gasoline
EPA Methods 5030/8020/California DHS LUFT Method
Units: ug/L (ppb)

Sample Name:	**Method Blank**
Lab Code:	951130-WMB
Date Analyzed:	11/30/95

Analyte	**MRL**	
TPH as Gasoline	50	ND
Benzene	0.5	ND
Toluene	0.5	ND
Ethylbenzene	0.5	ND
Total Xylenes	0.5	ND
Methyl-tert-butyl ether	3	ND

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Arco Product Services
Project: 0805-120.04/TO#17075.00/276 Oakland
Sample Matrix: Water

Service Request: S9501452
Date Collected: 11/16/95
Date Received: 11/16/95
Date Extracted: NA

Volatile Organic Compounds
EPA Method 8240
Units: ug/L (ppb)

	Sample Name:	MW-8 (47)	WGR-3 (26)	MW-1 (38)
	Lab Code:	S9501452-001	S9501452-002	S9501452-003
	Date Analyzed:	11/21/95	11/21/95	11/21/95
Analyte	**MRL**			
Chloromethane	10	ND	ND	ND
Vinyl Chloride	10	ND	ND	ND
Bromomethane	10	ND	ND	ND
Chloroethane	10	ND	ND	ND
Trichlorofluoromethane (CFC 11)	1	ND	ND	ND
Trichlorotrifluoroethane (CFC 113)	10	ND	ND	ND
1,1-Dichloroethene	1	ND	ND	ND
Acetone	20	ND	ND	ND
Carbon Disulfide	1	ND	ND	ND
Methylene Chloride	10	ND	ND	ND
trans-1,2-Dichloroethene	1	ND	ND	ND
cis-1,2-Dichloroethene	1	ND	ND	ND
2-Butanone (MEK)	10	ND	ND	ND
1,1-Dichloroethane	1	ND	ND	ND
Chloroform	1	ND	ND	ND
1,1,1-Trichloroethane (TCA)	1	ND	ND	ND
Carbon Tetrachloride	1	ND	ND	ND
Benzene	1	ND	ND	ND
1,2-Dichloroethane	1	ND	ND	ND
Vinyl Acetate	10	ND	ND	ND
Trichloroethene (TCE)	1	ND	ND	ND
1,2-Dichloropropane	1	ND	ND	ND
Bromodichloromethane	1	ND	ND	ND
2-Chloroethyl Vinyl Ether	10	ND	ND	ND
trans-1,3-Dichloropropene	1	ND	ND	ND
4-Methyl-2-pentanone (MIBK)	10	ND	ND	ND
2-Hexanone	10	ND	ND	ND
Toluene	1	ND	ND	ND
cis-1,3-Dichloropropene	1	ND	ND	ND
1,1,2-Trichloroethane	1	ND	ND	ND
Tetrachloroethene (PCE)	1	ND	ND	45
Dibromochloromethane	1	ND	ND	ND
Chlorobenzene	1	ND	ND	ND
Ethylbenzene	1	ND	ND	ND
Styrene	1	ND	ND	ND
Total Xylenes	5	ND	ND	ND
Bromoform	1	ND	ND	ND
1,1,2,2-Tetrachloroethane	1	ND	ND	ND
1,3-Dichlorobenzene	1	ND	ND	ND
1,4-Dichlorobenzene	1	ND	ND	ND
1,2-Dichlorobenzene	1	ND	ND	ND
Methyl-tert-butyl ether	1	9	NAN	NAN

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Arco Product Services	**Service Request:**	S9501452
Project:	0805-120.04/TO#17075.00/276 Oakland	**Date Collected:**	11/16/95
Sample Matrix:	Water	**Date Received:**	11/16/95
		Date Extracted:	NA

Volatile Organic Compounds
EPA Method 8240
Units: ug/L (ppb)

		Sample Name:	**MW-5 (46) ***	**RW-1 (48)**	**MW-6 (51) ***
		Lab Code:	S9501452-004	S9501452-005	S9501452-006
		Date Analyzed:	11/21/95	11/21/95	11/21/95
Analyte	**MRL**				
Chloromethane	10		<50	ND	<200
Vinyl Chloride	10		<50	ND	<200
Bromomethane	10		<50	ND	<200
Chloroethane	10		<50	ND	<200
Trichlorofluoromethane (CFC 11)	1		<5	ND	<20
Trichlorotrifluoroethane (CFC 113)	10		<50	ND	<200
1,1-Dichloroethene	1		<5	ND	<20
Acetone	20		<100	ND	<200
Carbon Disulfide	1		<5	ND	<20
Methylene Chloride	10		<50	ND	<200
trans-1,2-Dichloroethene	1		<5	ND	<20
cis-1,2-Dichloroethene	1		<5	ND	<20
2-Butanone (MEK)	10		<50	ND	<200
1,1-Dichloroethane	1		<5	ND	<20
Chloroform	1		<5	ND	<20
1,1,1-Trichloroethane (TCA)	1		<5	ND	<20
Carbon Tetrachloride	1		<5	ND	<20
Benzene	1		<5	ND	<20
1,2-Dichloroethane	1		<5	ND	<20
Vinyl Acetate	10		<50	ND	<200
Trichloroethene (TCE)	1		<5	ND	<20
1,2-Dichloropropane	1		<5	ND	<20
Bromodichloromethane	1		<5	ND	<20
2-Chloroethyl Vinyl Ether	10		<50	ND	<200
trans-1,3-Dichloropropene	1		<5	ND	<20
4-Methyl-2-pentanone (MIBK)	10		<50	ND	<200
2-Hexanone	10		<50	ND	<200
Toluene	1		<5	ND	<20
cis-1,3-Dichloropropene	1		<5	ND	<20
1,1,2-Trichloroethane	1		<5	ND	<20
Tetrachloroethene (PCE)	1		940	140	1300
Dibromochloromethane	1		<5	ND	<20
Chlorobenzene	1		<5	ND	<20
Ethylbenzene	1		<5	ND	<20
Styrene	1		<5	ND	<20
Total Xylenes	5		<25	ND	<100
Bromoform	1		<5	ND	<20
1,1,2,2-Tetrachloroethane	1		<5	ND	<20
1,3-Dichlorobenzene	1		<5	ND	<20
1,4-Dichlorobenzene	1		<5	ND	<20
1,2-Dichlorobenzene	1		<5	ND	<20

* Raised MRL due to matrix interference.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Arco Product Services
Project: 0805-120.04/TO#17075.00/276 Oakland
Sample Matrix: Water

Service Request: S9501452
Date Collected: 11/16/95
Date Received: 11/16/95
Date Extracted: NA

Volatile Organic Compounds
EPA Method 8240
Units: ug/L (ppb)

	Sample Name:	MW-3 (38) *	MW-4 (47) *	MW-7 (36) *
	Lab Code:	S9501452-007	S9501452-008	S9501452-009
	Date Analyzed:	11/21/95	11/21/95	11/21/95
Analyte	**MRL**			
Chloromethane	10	<200	<200	<200
Vinyl Chloride	10	<200	<200	<200
Bromomethane	10	<200	<200	<200
Chloroethane	10	<200	<200	<200
Trichlorofluoromethane (CFC 11)	1	<20	<20	<20
Trichlorotrifluoroethane (CFC 113)	10	<200	<200	<200
1,1-Dichloroethene	1	<20	<20	<20
Acetone	20	<400	<400	<400
Carbon Disulfide	1	<20	<200	<200
Methylene Chloride	10	<200	<200	<200
trans-1,2-Dichloroethene	1	<20	<200	<200
cis-1,2-Dichloroethene	1	<20	<200	<200
2-Butanone (MEK)	10	<200	<200	<200
1,1-Dichloroethane	1	<20	<20	<20
Chloroform	1	<20	<20	<20
1,1,1-Trichloroethane (TCA)	1	<20	<20	<20
Carbon Tetrachloride	1	<20	<20	<20
Benzene	1	<20	<20	360
1,2-Dichloroethane	1	<20	<20	<20
Vinyl Acetate	10	<200	<200	<200
Trichloroethene (TCE)	1	<20	<20	<20
1,2-Dichloropropane	1	<20	<20	<20
Bromodichloromethane	1	<20	<20	<20
2-Chloroethyl Vinyl Ether	10	<200	<200	<200
trans-1,3-Dichloropropene	1	<20	<20	<20
4-Methyl-2-pentanone (MIBK)	10	<200	<200	<200
2-Hexanone	10	<200	<200	<200
Toluene	1	<20	<20	220
cis-1,3-Dichloropropene	1	<20	<20	<20
1,1,2-Trichloroethane	1	<20	<20	<20
Tetrachloroethene (PCE)	1	1100	2100	<20
Dibromochloromethane	1	<20	<20	<20
Chlorobenzene	1	<20	<20	<20
Ethylbenzene	1	<20	<20	1700
Styrene	1	<20	<20	<20
Total Xylenes	5	<100	<200	10000
Bromoform	1	<20	<20	<20
1,1,2,2-Tetrachloroethane	1	<20	<20	<20
1,3-Dichlorobenzene	1	<20	<20	<20
1,4-Dichlorobenzene	1	<20	<20	<20
1,2-Dichlorobenzene	1	<20	<20	<20

* Raised MRL due to matrix interference.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Arco Product Services	**Service Request:**	S9501452
Project:	0805-120.04/TO#17075.00/276 Oakland	**Date Collected:**	11/16/95
Sample Matrix:	Water	**Date Received:**	11/16/95
		Date Extracted:	NA

Volatile Organic Compounds
EPA Method 8240
Units: ug/L (ppb)

		Sample Name:	**Method Blank**	**Method Blank**
		Lab Code:	951121-WMB	951128-WMB
		Date Analyzed:	11/21/95	11/28/95
Analyte	**MRL**			
Chloromethane	10		ND	ND
Vinyl Chloride	10		ND	ND
Bromomethane	10		ND	ND
Chloroethane	10		ND	ND
Trichlorofluoromethane (CFC 11)	1		ND	ND
Trichlorotrifluoroethane (CFC 113)	10		ND	ND
1,1-Dichloroethene	1		ND	ND
Acetone	20		ND	ND
Carbon Disulfide	1		ND	ND
Methylene Chloride	10		ND	ND
trans-1,2-Dichloroethene	1		ND	ND
cis-1,2-Dichloroethene	1		ND	ND
2-Butanone (MEK)	10		ND	ND
1,1-Dichloroethane	1		ND	ND
Chloroform	1		ND	ND
1,1,1-Trichloroethane (TCA)	1		ND	ND
Carbon Tetrachloride	1		ND	ND
Benzene	1		ND	ND
1,2-Dichloroethane	1		ND	ND
Vinyl Acetate	10		ND	ND
Trichloroethene (TCE)	1		ND	ND
1,2-Dichloropropane	1		ND	ND
Bromodichloromethane	1		ND	ND
2-Chloroethyl Vinyl Ether	10		ND	ND
trans-1,3-Dichloropropene	1		ND	ND
4-Methyl-2-pentanone (MIBK)	10		ND	ND
2-Hexanone	10		ND	ND
Toluene	1		ND	ND
cis-1,3-Dichloropropene	1		ND	ND
1,1,2-Trichloroethane	1		ND	ND
Tetrachloroethene (PCE)	1		ND	ND
Dibromochloromethane	1		ND	ND
Chlorobenzene	1		ND	ND
Ethylbenzene	1		ND	ND
Styrene	1		ND	ND
Total Xylenes	5		ND	ND
Bromoform	1		ND	ND
1,1,2,2-Tetrachloroethane	1		ND	ND
1,3-Dichlorobenzene	1		ND	ND
1,4-Dichlorobenzene	1		ND	ND
1,2-Dichlorobenzene	1		ND	ND

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON	**Service Request:**	L9504081
Project:	ARCO Products Company #276/#0805-120.04	**Date Collected:**	11/16/95
Sample Matrix:	Water	**Date Received:**	11/16/95
		Date Extracted:	11/17/95
		Date Analyzed:	11/17/95

Total Recoverable Petroleum Hydrocarbons (TRPH)
EPA Method 418.1
Units: mg/L (ppm)

Sample Name	Lab Code	MRL	Result
MW-4 (47)	L9504081-008	0.5	ND
Method Blank	L9504081-MB	0.5	ND

IAMRL/120594

APPENDIX A

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Arco Product Company	**Service Request:**	S9501452
Project:	0805-120.04/TO#17075.00/276 Oakland	**Date Collected:**	11/16/95
Sample Matrix:	Water	**Date Received:**	11/16/95
		Date Extracted:	NA
		Date Analyzed:	11/30/95

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

Sample Name	Lab Code	PID Detector Percent Recovery 4-Bromofluorobenzene	FID Detector Percent Recovery α,α,α–Trifluorotoluene
MW-8 (47)	S9501452-001	93	103
WGR-3 (26)	S9501452-002	94	100
MW-1 (38)	S9501452-003	94	100
MW-5 (46)	S9501452-004	92	102
RW-1 (48)	S9501452-005	95	102
MW-6 (51)	S9501452-006	95	103
MW-3 (38)	S9501452-007	94	100
MW-4 (47)	S9501452-008	88	101
MW-7 (36)	S9501452-009	82	130 *
Method Blank	951130-WMB	93	97
	CAS Acceptance Limits:	69-116	69-116

* High results due to sample matrix interference.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Arco Product Company
Project: 0805-120.04/TO#175075.00/276 Oakland

Service Request: S9501452
Date Analyzed: 11/30/95

Initial Calibration Verification (ICV) Summary
BTEX, MTBE 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	24.9	100	85-115
Toluene	25	24.7	99	85-115
Ethylbenzene	25	24.7	99	85-115
Xylenes, Total	75	75.2	100	85-115
Gasoline	250	246	98	90-110
Methyl-tert-butyl Ether	50	48	96	85-115

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Arco Product Company	**Service Request:**	S9501452
Project:	0805-120.04/TO#17075.00/276 Oakland	**Date Collected:**	11/16/95
Sample Matrix:	*Water*	**Date Received:**	11/16/95
		Date Extracted:	NA
		Date Analyzed:	11/30/95

Matrix Spike/Duplicate Matrix Spike Summary
BTE
EPA Methods 5030/8020
Units: ug/L (ppb)

Sample Name: Batch QC Sample
Lab Code: S9501463-002

	Spike Level		Sample	Spike Result		Percent Recovery		CAS Acceptance	Relative Percent
Analyte	MS	DMS	**Result**	MS	DMS	MS	DMS	Limits	**Difference**
Benzene	25	25	ND	26.1	25.8	104	103	75-135	1
Toluene	25	25	ND	26.1	25.8	104	103	73-136	1
Ethylbenzene	25	25	ND	26.1	25.7	104	103	69-142	2

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Arco Product Company
Project: 0805-120.04/TO #17075.00/276 Oakland
Sample Matrix: Water

Service Request: S9501452
Date Collected: 11/16/95
Date Received: 11/16/95
Date Extracted: NA
Date Analyzed: 11/21,28/1995

Surrogate Recovery Summary
Volatile Organic Compounds
EPA Method 8240

		Percent Recovery		
Sample Name	**Lab Code**	1,2-Dichloroethane-D_4	Toluene-D_8	4-Bromofluorobenzene
MW-8 (47)	S9501452-001	96	101	98
MW-8 (47) MS	S9501452-001MS	95	102	106
MW-8 (47) DS	S9501452-001MD	103	102	92
WGR-3 (26)	S9501452-002	96	99	89
MW-1 (38)	S9501452-003	101	101	87
MW-5 (46)	S9501452-004	101	100	95
RW-1 (48)	S9501452-005	103	101	99
MW-6 (57)	S9501452-006	100	101	95
MW-3 (38)	S9501452-007	102	100	96
MW-4 (47)	S9501452-008	99	99	97
MW-7 (36)	S9501452-009	106	99	102
Method Blank	951121-WMB	97	101	97
Method Blank	951128-WMB	102	102	96
CAS Acceptance Limits:		76-114	88-110	86-115

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: 0805-120.04/TO#17075.00/276 Oakland

Service Request: S9501452
Date Analyzed: 8/24/95

Initial Calibration Verification (ICV) Summary
Volatile Organic Compounds
EPA Method 624
Units: ppb

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits
Chloromethane	50	50.1	100	70-130
Vinyl Chloride	50	53.0	106	70-130
Bromomethane	50	53.2	106	70-130
Chloroethane	50	53.4	107	70-130
Acetone	50	59.7	119	70-130
1,1-Dichloroethene	50	56.5	113	70-130
Carbon Disulfide	50	52.8	106	70-130
Methylene Chloride	50	54.6	109	70-130
trans-1,2-Dichloroethene	50	56.0	112	70-130
cis-1,2-Dichloroethene	50	55.6	111	70-130
1,1-Dichloroethane	50	56.2	112	70-130
Vinyl Acetate	50	45.8	92	70-130
2-Butanone (MEK)	50	53.8	108	70-130
Chloroform	50	56.6	113	70-130
1,1,1-Trichloroethane (TCA)	50	56.8	114	70-130
Carbon Tetrachloride	50	54.3	109	70-130
Benzene	50	48.0	96	70-130
1,2-Dichloroethane	50	56.7	113	70-130
Trichloroethene (TCE)	50	47.6	95	70-130
1,2-Dichloropropane	50	47.3	95	70-130
Bromodichloromethane	50	46.8	94	70-130
2-Chloroethyl Vinyl Ether	50	62.6	125	70-130
2-Hexanone	50	60.8	122	70-130
trans-1,3-Dichloropropene	50	48.6	97	70-130
Toluene	50	47.9	96	70-130
cis-1,3-Dichloropropene	50	46.6	93	70-130
1,1,2-Trichloroethane	50	57.6	115	70-130
Tetrachloroethene (PCE)	50	53.6	107	70-130
Dibromochloromethane	50	51.5	103	70-130
Chlorobenzene	50	51.0	102	70-130
Ethylbenzene	50	48.4	97	70-130
o- Xylene	50	50.1	100	70-130
Styrene	50	48.3	97	70-130
Bromoform	50	49.1	98	70-130
1,1,2,2-Tetrachloroethane	50	49.6	99	70-130
Methyl-tert-butyl ether*	50	63.7	127	70-130

* ICV for Methyl-tert-butyl ether was analyzed on 11/28/95.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Arco Product Company	**Service Request:**	S9501452
Project:	0805-120.04/TO#17075.00/276 Oakland	**Date Collected:**	11/16/95
Sample Matrix:	Water	**Date Received:**	11/16/95
		Date Extracted:	NA
		Date Analyzed:	11/21/95

Matrix Spike/Duplicate Matrix Spike Summary
Volatile Organic Compounds
EPA Method 8240
Units: ug/L (ppb)

Sample Name: MW-8 (47)
Lab Code: S9501452-001

	Spike Level			Spike Result		Percent Recovery			
Analyte	MS	DMS	**Sample Result**	MS	DMS	MS	DMS	CAS Acceptance Limits	**Relative Percent Difference**
1,1-Dichloroethene	50	50	ND	53	52	106	104	61-145	2
Trichloroethene	50	50	ND	52	49	104	98	71-120	6
Chlorobenzene	50	50	ND	50	53	100	106	75-130	6
Toluene	50	50	ND	51	49	102	98	76-125	4
Benzene	50	50	ND	53	50	106	100	76-127	6

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON	**Service Request:**	L9504081
Project:	ARCO Products Company #276/#0805-120.04	**Date Collected:**	NA
LCS Matrix:	Water	**Date Received:**	NA
		Date Extracted:	NA
		Date Analyzed:	11/17/95

Laboratory Control Sample/Duplicate Laboratory Control Sample Summary*
Total Recoverable Petroleum Hydrocarbons (TRPH)
EPA Method 418.1
Units: mg/L (ppm)

	True Value		Result		Percent Recovery			
Analyte	LCS	DLCS	LCS	DLCS	LCS	DLCS	CAS Acceptance Limits	**Relative Percent Difference**
TRPH	2.05	2.05	2.03	1.96	99	96	75-125	4

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

DLCS/032395

ARCO Products Company
Division of AtlanticRichfieldCompany

Task Order No. 17075.00

Chain of Custody

ARCO Facility no. 276	City (Facility) Oakland	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

	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 8020/8015 MOD. GAS AND/OR MTBE	TPH Modified 8015 Gas ☐ Diesel ☐	Oil and Grease 413.1 ☐ 413.2 ☐	TPH EPA 418.1/SM503E	EPA 601/8010	EPA 8240/8260 *	EPA 625/8270	TCLP Metals ☐ Semi VOA ☐ VOA ☐	CAM Metals EPA 6010/7000 TTLC ☐ STLC ☐	Lead Org./DHS ☐ Lead EPA 7420/7421 ☐	EPA 8240 only for MTBE at highest well. No other compounds
1	MW-9(47)		6	~~X~~	X		X	HCL	11-16-95	13:05		X					X					
2	WGR-3(26)		6	~~X~~	X		X	HCL		10:45		X					X					
3	MW-1(38)		6	~~X~~	X		X	HCL		12:45		X					X					
4	MW-5(46)		6		X		X	HCL		13:35		X					X					
5	RW-1(48)		6		X		X	HCL		10:55		X					X					
6	MW-6(31)		6		X		X	HCL		11:25		X					X					
7	MW-3(38)		6		X		X	HCL		12:00		X					X					
8	MW-4(47)		6		X		X	HCL		11:24		X			X		X					
	~~MW-2( )~~		6		X		X	HCL		→ UNABLE TO SAMPLE - WELL LID UNABLE TO BE OPENED →		X					X					
9	MW-7(36)		6		X		X	HCL	↓	12:00		X					X					

* NOT INCLUDING MTBE

Special detection Limit/reporting: Lowest Possible

Special QA/QC: As Normal

Remarks: Analyze highest well for MTBE only by EPA 8240. 6-40ml HCL VOAs. MW-4 add 2-1 liter HCL Glass

~~Lab number: 120.04~~

Lab number: 5950145 2

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: Mike Whelan	Date: 11-16-95 Time: 1455	Received by: Joanie Brown CAS	11-16-95 1455
Relinquished by:	Date: Time:	Received by:	
Relinquished by: Joanie Brown	Date: 11-16-95 Time: 1900	Received by laboratory:	Date: Time:

CAS-5: 6 BTEX, ~~624~~ 8240 (MTBE) JB 11/20 CAS-2: 418.1

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

APC-3292 (2-91)

(12-4)

APPENDIX C

SVE SYSTEM MONITORING DATA LOG SHEETS

10600 and 10700 MacArthur Boulevard
SVE SYSTEM
MONITORING DATA

Reporting Period:
12/01/94 00.00
01/01/95 00.00

Hours in Period: 744.0
Days in Period: 31.00

Operation + Down Hours: 744.0
Operation + Down Days: 31.00

	Field Monitoring Data									Laboratory Monitoring Data																		
	Flow Rates			FID or PID Results						On-site Well Field Influent				Off-site Well Field Influent				System Influent				System Effluent						
Reading Date & Time	On-site Well Field Flow Rate	Off-site Well Field Flow Rate	System Influent Flow Rate	On-site Well Field	Off-site Well Field	System Influent	System Effluent	Destruction Efficiency	Laboratory Sample Time	Gasoline		Benzene		Gasoline		Benzene		Gasoline		Benzene		Gasoline		Benzene		Destruction Efficiency	Gasoline Emission Rate	Benzene Emission Rate	Period Hours	Meter Hours	Hours of Operation	Days of Operation	Down Hours	Down Days
	scfm	scfm	scfm	ppm	ppm	ppm	ppm	%		ppmv	mg/m3	ppmv	mg/m3	ppmv	mg/m3	ppmv	mg/m3	ppmv	mg/m3	ppmv	mg/m3	ppmv	mg/m3	ppmv	mg/m3	%	ppd	ppd						
12/01/94 00:00																														0.00				
12/22/94 11:07																													515 12	0 00	0.00	0.00	515 12	21 46
12/22/94 13 48	81.6	0.0	81.6	24 6		24.6	2.1	91.5	13 59	32	116	<0.1	<0.3					32	116	<0 1	<0 3	<15	<54	<0 1	<0.3	53.4	0.40	0 00	2.68	0 00	2 68	0.11	0.00	0.00
01/01/95 00.00	81.6	0.0	81.6																										226.20	0 00	113 82	4.74	112.38	4.68
Period Totals.																													744 00		116 50	4.85	627.50	26 15
Averages:	81.6	0.0	81.6	24.6		24.6	2.1			32	116	<0 1	<0.3					32	116	<0.1	<0 3	<15	<54	<0.1	<0 3	53.4	0.40	0.00						

10600 and 10700 MacArthur Boulevard
SVE SYSTEM
MONITORING DATA

Reporting Period:
01/01/95 00:00
02/01/95 00:00

Hours in Period: 744.0
Days In Period: 31.00

Operation + Down Hours: 744.0
Operation + Down Days: 31.00

Reading Date & Time	Field Monitoring Data: Flow Rates: On-site Well Field Flow Rate	Off-site Well Field Flow Rate	System Influent Flow Rate	FID or PID Results: On-site Well Field	Off-site Well Field	System Influent	System Effluent	Destruction Efficiency	Laboratory Sample Time	Laboratory Monitoring Data: On-site Well Field Influent: Gasoline		Benzene		Off-site Well Field Influent: Gasoline		Benzene		System Influent: Gasoline		Benzene		System Effluent: Gasoline		Benzene		Destruction Efficiency	Gasoline Emission Rate	Benzene Emission Rate	Period Hours	Meter Hours	Hours of Operation	Days of Operation	Down Hours	Down Days
	scfm	scfm	scfm	ppm	ppm	ppm	ppm	%		ppmv	mg/m3	ppmv	mg/m3	ppmv	mg/m3	ppmv	mg/m3	ppmv	mg/m3	ppmv	mg/m3	ppmv	mg/m3	ppmv	mg/m3	%	ppd	ppd						
01/01/95 00:00																														0.00				
01/05/95 14:39	81.6	0.0	81.6																										110.65	0.00	0.00	0.00	110.65	4.61
01/05/95 16:00	85.8	0.0	85.8	20.9		20.9	1.3	93.8																					1.35	0.00	1.35	0.06	0.00	0.00
01/17/95 14:49	80.8	0.0	80.8	3.1		3.1		NR	16:22	<15	<60	<0.1	<0.5					<15	<60	<0.1	<0.5	<15	<60	<0.1	<0.5	NR	0.44	0.00	286.82	0.00	286.82	11.95	0.00	0.00
01/17/95 17:03	80.8	0.0	80.8			0																							2.23	0.00	2.23	0.09	0.00	0.00
01/31/95 14:22	30.1	0.0	30.1	0.2		0.2	0	100.0																					333.32	0.00	333.32	13.89	0.00	0.00
02/01/95 00:00	53.5	0.0	53.5																										9.63	0.00	9.63	0.40	0.00	0.00
Period Totals:																													744.00		633.35	26.39	110.65	4.61
Averages:	53.7	0.0	53.7	8.1		6.1	0.7			<15	<60	<0.1	<0.5					<15	<60	<0.1	<0.5	<15	<60	<0.1	<0.5	NR	0.29	0.00						

10600 and 10700 MacArthur Boulevard
SVE SYSTEM
MONITORING DATA

Reporting Period:
02/01/95 00 00
03/01/95 00 00

Hours in Period 672.0
Days in Period. 28.00

Operation + Down Hours: 672 0
Operation + Down Days: 28.00

Reading Date & Time	Field Monitoring Data: Flow Rates: On-site Well Field Flow Rate	Off-site Well Field Flow Rate	System Influent Flow Rate	FID or PID Results: On-site Well Field	Off-site Well Field	System Influent	System Effluent	Destruction Efficiency	Laboratory Sample Time	Laboratory Monitoring Data: On-site Well Field Influent: Gasoline		Benzene		Off-site Well Field Influent: Gasoline		Benzene		System Influent: Gasoline		Benzene		System Effluent: Gasoline		Benzene		Destruction Efficiency	Gasoline Emission Rate	Benzene Emission Rate	Period Hours	Meter Hours	Hours of Operation	Days of Operation	Down Hours	Down Days
	scfm	scfm	scfm	ppm	ppm	ppm	ppm	%		ppmv	mg/m3	ppmv	mg/m3	ppmv	mg/m3	ppmv	mg/m3	ppmv	mg/m3	ppmv	mg/m3	ppmv	mg/m3	ppmv	mg/m3	%	ppd	ppd						
02/01/95 00:00																														0.00				
02/09/95 14:30	53.5	0.0	53.5	0.2		0.2	0	100.0																					206.50	0.00	206.50	8 60	0.00	0.00
02/09/95 15:36	0.0	52.3	52.3		0	0		NR	15.31	<15	<60	<0.1	<0.5					<15	<60	<0 1	<0.5	<15	<60	<0 1	<0 5	NR	0.28	0.00	1.10	0.00	1.10	0 05	0 00	0.00
02/09/95 16:36	53.5	0.0	53.5																										1.00	0 00	1.00	0 04	0 00	0.00
02/16/95 10:05	50.9	0.0	50.9																										161.48	0.00	161 48	6.73	0 00	0.00
02/16/95 13:02	74 1	60.2	134.3						13:12	<15	<60	<0.1	<0.5	<15	<60	<0 1	<0.5	<15	<60	<0.1	<0.5	<15	<60	<0.1	<0.5	NR	0 72	0.01	2.95	0.00	2.95	0 12	0.00	0.00
03/01/95 00:00	74 0	38 8	112 8																										298 97	0 00	298.97	12.46	0 00	0.00
Period Totals:																													672 00		672 00	28.00	0 00	0.00
Averages:	62.0	17.6	79.6	0.2	0.0	0.1	0.0			<15	<60	<0 1	<0.5	<15	<60	<0.1	<0.5	<15	<60	<0.1	<0 5	<15	<60	<0 1	<0 5	NR	0.43	0.00						

10600 and 10700 MacArthur Boulevard
SVE SYSTEM
MONITORING DATA

Reporting Period:
03/01/95 00:00
04/01/95 00:00

Hours in Period: 744.0
Days in Period: 31.00

Operation + Down Hours: 744.0
Operation + Down Days: 31.00

	Field Monitoring Data									Laboratory Monitoring Data																		
	Flow Rates			FID or PID Results						On-site Well Field Influent				Off-site Well Field Influent				System Influent				System Effluent						
Reading Date & Time	On-site Well Field Flow Rate	Off-site Well Field Flow Rate	System Influent Flow Rate	On-site Well Field	Off-site Well Field	System Influent	System Effluent	Destruction Efficiency	Laboratory Sample Time	Gasoline		Benzene		Gasoline		Benzene		Gasoline		Benzene		Gasoline		Benzene		Destruction Efficiency	Gasoline Emission Rate	Benzene Emission Rate	Period Hours	Meter Hours	Hours of Operation	Days of Operation	Down Hours	Down Days
	scfm	scfm	scfm	ppm	ppm	ppm	ppm	%		ppmv	mg/m3	ppmv	mg/m3	ppmv	mg/m3	ppmv	mg/m3	ppmv	mg/m3	ppmv	mg/m3	ppmv	mg/m3	ppmv	mg/m3	%	ppd	ppd						
03/01/95 00:00																														0.00				
03/03/95 11:22	74.0	38 8	112.8	1.9	1.9	2	2 2	NR																					59.37	0.00	59 37	2 47	0.00	0.00
03/14/95 08:58	72.9	48 0	120.9						09:41	1 2	4.4	<0.05	<0 16	1.4	4 9	<0.05	<0 16	<1.0	<3 6	<0 05	<0.16	1.3	4 6	<0.05	<0 16	NR	0 05	0.00	261.60	0.00	261 60	10 90	0.00	0.00
03/27/95 12:53	68.6	52.4	121.1	0 9	0	0.5	0	100.0																					315.92	0.00	315.92	13.16	0.00	0 00
04/01/95 00:00	73.8	38 9	112.7																										107 12	0.00	107 12	4.46	0.00	0 00
Period Totals:																													744 00		744.00	31.00	0.00	0 00
Averages:	71 3	47.8	119.1	1.4	1.0	1 3	1.1			1.2	4.4	<0 05	<0.16	1.4	4.9	<0.05	<0.16	<1 0	<3.6	<0.05	<0.16	1 3	4.6	<0.05	<0.16	NR	0.05	0 00						

10600 and 10700 MacArthur Boulevard
SVE SYSTEM
MONITORING DATA

Reporting Period:
04/01/95 00:00
05/01/95 00:00

Hours in Period 720.0
Days in Period 30.00

Operation + Down Hours: 720.0
Operation + Down Days: 30.00

Reading Date & Time	Field Monitoring Data: Flow Rates: On-site Well Field Flow Rate	Off-site Well Field Flow Rate	System Influent Flow Rate	FID or PID Results: On-site Well Field	Off-site Well Field	System Influent	System Effluent	Destruction Efficiency	Laboratory Sample Time	Laboratory Monitoring Data: On-site Well Field Influent: Gasoline		Benzene		Off-site Well Field Influent: Gasoline		Benzene		System Influent: Gasoline		Benzene		System Effluent: Gasoline		Benzene		Destruction Efficiency	Gasoline Emission Rate	Benzene Emission Rate	Period Hours	Meter Hours	Hours of Operation	Days of Operation	Down Hours	Down Days
	scfm	scfm	scfm	ppm	ppm	ppm	ppm	%		ppmv	mg/m3	ppmv	mg/m3	ppmv	mg/m3	ppmv	mg/m3	ppmv	mg/m3	ppmv	mg/m3	ppmv	mg/m3	ppmv	mg/m3	%	ppd	ppd						
04/01/95 00:00																														0 00				
04/14/95 07:58	73 8	38.9	112.7	1 2	0 1	1	0 1	90 0																				319 97	0.00	319 97	13.33	0 00	0.00
04/26/95 11:25	74 0	34.5	108.5						12:56	<15	<60	<0.1	<0.5	<15	<60	<0.1	<0.5	<15	<60	<0.1	<0 5	<15	<60	<0.1	<0.5	NR	0.58	0.00	291.45	0 00	291.45	12 14	0.00	0.00
05/01/95 00.00	78 3	38.8	117.1																										108.58	0.00	108.58	4.52	0.00	0.00
Period Totals.																													720 00		720 00	30.00	0.00	0 00
Averages:	74.5	37.1	111.6	1.2	0 1	1.0	0.1			<15	<60	<0 1	<0.5	<15	<60	<0.1	<0.5	<15	<60	<0.1	<0.5	<15	<60	<0.1	<0 5	NR	0.60	0.01						

10600 and 10700 MacArthur Boulevard
SVE SYSTEM
MONITORING DATA

Reporting Period.
05/01/95 00:00
08/01/95 00:00

Hours in Period: 2208
Days in Period: 92.00

Operation + Down Hours: 2208
Operation + Down Days: 92.00

Reading Date & Time	Field Monitoring Data: Flow Rates: On-site Well Field Flow Rate	Off-site Well Field Flow Rate	System Influent Flow Rate	FID or PID Results: On-site Well Field	Off-site Well Field	System Influent	System Effluent	Destruction Efficiency	Laboratory Sample Time	Laboratory Monitoring Data: On-site Well Field Influent: Gasoline		Benzene		Off-site Well Field Influent: Gasoline		Benzene		System Influent: Gasoline		Benzene		System Effluent: Gasoline		Benzene		Destruction Efficiency	Gasoline Emission Rate	Benzene Emission Rate	Period Hours	Meter Hours	Hours of Operation	Days of Operation	Down Hours	Down Days
	scfm	scfm	scfm	ppm	ppm	ppm	ppm	%		ppmv	mg/m3	ppmv	mg/m3	ppmv	mg/m3	ppmv	mg/m3	ppmv	mg/m3	ppmv	mg/m3	ppmv	mg/m3	ppmv	mg/m3	%	ppd	ppd						
05/01/95 00:00																														0 00				
05/08/95 12:37	78 3	38.8	117 1																									180.62	0.00	180 62	7.53	0.00	0.00
05/08/95 12:44	78.3	38 8	117.1						13:02	<15	<60	<0.1	<0.5	<15	<60	<0.1	<0.5	<15	<60	<0 1	<0.5	<15	<60	<0.1	<0.5	NR	0.63	0.01	0 12	0.00	0.12	0 00	0.00	0.00
05/24/95 16:09	80.5	30.1	110.7	1.4	0.1	0.8	0	100 0																				387.42	266 90	266.90	11.12	120.52	5.02
08/01/95 00:00	80 5	30.1	110.7																									1640	267 20	0.30	0.01	1640	68.31
Period Totals:																												2208		447.93	18 66	1760	73.34
Averages:	79.6	33.6	113 3	1 4	0.1	0.8	0.0			<15	<60	<0 1	<0.5	<15	<60	<0 1	<0.5	<15	<60	<0.1	<0.5	<15	<60	<0.1	<0 5	NR	0.61	0.01						

10600 and 10700 MacArthur Boulevard
SVE SYSTEM
MONITORING DATA

Reporting Period
08/01/95 00.00
09/01/95 00 00

Hours in Period 744.0
Days in Period 31.00

Operation + Down Hours: 744 0
Operation + Down Days: 31.00

Reading Date & Time	Field Monitoring Data: Flow Rates: On-site Well Field Flow Rate	Off-site Well Field Flow Rate	System Influent Flow Rate	FID or PID Results: On-site Well Field	Off-site Well Field	System Influent	System Effluent	Destruction Efficiency	Laboratory Sample Time	Laboratory Monitoring Data: On-site Well Field Influent: Gasoline		Benzene		Off-site Well Field Influent: Gasoline		Benzene		System Influent: Gasoline		Benzene		System Effluent: Gasoline		Benzene		Destruction Efficiency	Gasoline Emission Rate	Benzene Emission Rate	Period Hours	Meter Hours	Hours of Operation	Days of Operation	Down Hours	Down Days
	scfm	scfm	scfm	ppm	ppm	ppm	ppm	%		ppmv	mg/m3	ppmv	mg/m3	ppmv	mg/m3	ppmv	mg/m3	ppmv	mg/m3	ppmv	mg/m3	ppmv	mg/m3	ppmv	mg/m3	%	cpd	ppd						
08/01/95 00:00																														267.20				
08/01/95 13:20	83.5	34 2	117 7						13 15	96	350	1.1	3 6	<15	<60	<0 1	<0.5	93	340	1	3 3	<15	<60	<0 1	<0 5	82.4	0 63	0 01	13.33	267.60	0 40	0.02	13	0 54
08/22/95 16:30	83.5	34.2	117 7																										507.17	695.80	428 20	17.84	78 97	3 29
08/22/95 17:05	83.5	34 2	117.7																										0.58	696 00	0 20	0.01	0 38	0.02
09/01/95 00:00	0.0	0 0	0.0																										222.92	696 00	0 00	0.00	223	9.29
Period Totals.																													744 00		428.80	17.87	315.20	13.13
Averages:	83 5	34.2	117.7							96	350	1.1	3 6	<15	<60	<0 1	<0.5	93	340	1.0	3.3	<15	<60	<0.1	<0 5	82.4	0 63	0 01						

10600 and 10700 MacArthur Boulevard
SVE SYSTEM
MONITORING DATA

Reporting Period:
09/01/95 00:00
10/01/95 00:00

Hours in Period: 720.0
Days in Period: 30.00

Operation + Down Hours: 720.0
Operation + Down Days: 30.00

Reading Date & Time	Field Monitoring Data: Flow Rates: On-site Well Field Flow Rate	Off-site Well Field Flow Rate	System Influent Flow Rate	FID or PID Results: On-site Well Field	Off-site Well Field	System Influent	System Effluent	Destruction Efficiency	Laboratory Sample Time	Laboratory Monitoring Data: On-site Well Field Influent: Gasoline		Benzene		Off-site Well Field Influent: Gasoline		Benzene		System Influent: Gasoline		Benzene		System Effluent: Gasoline		Benzene		Destruction Efficiency	Gasoline Emission Rate	Benzene Emission Rate	Period Hours	Meter Hours	Hours of Operation	Days of Operation	Down Hours	Down Days
	scfm	scfm	scfm	ppm	ppm	ppm	ppm	%		ppmv	mg/m3	ppmv	mg/m3	ppmv	mg/m3	ppmv	mg/m3	ppmv	mg/m3	ppmv	mg/m3	ppmv	mg/m3	ppmv	mg/m3	%	ppd	ppd						
09/01/95 00:00																														696 00				
09/01/95 00:00	0.0	0.0	0.0																										0 00	696 00	0.00	0.00	0.00	0.00
10/01/95 00:00	0.0	0.0	0.0																										720 00	696.00	0 00	0.00	720.00	30 00
Period Totals:																													720.00		0.00	0.00	720.00	30.00
Averages:	0.0	0.0	0.0																															

10600 and 10700 MacArthur Boulevard
SVE SYSTEM
MONITORING DATA

Reporting Period:
10/01/95 00:00
01/01/96 00:00

Hours in Period: 2208
Days in Period: 92.00

Operation + Down Hours: 2208
Operation + Down Days: 92.00

Reading Date & Time	Field Monitoring Data: Flow Rates: On-site Well Field Flow Rate	Off-site Well Field Flow Rate	System Influent Flow Rate	FID or PID Results: On-site Well Field	Off-site Well Field	System Influent	System Effluent	Destruction Efficiency	Laboratory Sample Time	Laboratory Monitoring Data: On-site Well Field Influent: Gasoline	Benzene	Off-site Well Field Influent: Gasoline	Benzene	System Influent: Gasoline	Benzene	System Effluent: Gasoline	Benzene	Destruction Efficiency	Gasoline Emission Rate	Benzene Emission Rate	Period Hours	Meter Hours	Hours of Operation	Days of Operation	Down Hours	Down Days
	scfm	scfm	scfm	ppm	ppm	ppm	ppm	%		ppmv mg/m3	ppmv mg/m3	ppmv mg/m3	ppmv mg/m3	ppmv mg/m3	ppmv mg/m3	ppmv mg/m3	ppmv mg/m3	%	ppd	ppd						
10/01/95 00:00																						696 00				
11/01/95 00 00	0 0	0.0	0.0																		744 00	696.00	0.00	0 00	744 00	31.00
12/01/95 00:00	0.0	0.0	0.0																		720.00	696.00	0 00	0.00	720.00	30.00
01/01/96 00.00	0.0	0.0	0 0																		744 00	696 00	0 00	0.00	744 00	31.00
Period Totals:																					2208		0.00	0.00	2208	92 00
Averages:	0.0	0.0	0.0																							