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

ENVIRONMENTAL PROTECTION
96 JUN 26 PM 2:47

Date June 18, 1996
Project 20805-131.008

To:

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

We are enclosing:

Copies	Description
1	First quarter 1996 groundwater monitoring results
	for ARCO service station 6002, Oakland, California

For your:	X	Use	Sent by:		Regular Mail
		Approval			Standard Air
		Review			Courier
		Information		X	Other: Certified Mail

Comments:

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

John C. Young
Project Manager

cc: Kevin Graves, RWQCB - SFBR
Michael Whelan, ARCO Products Company
File

-ARCO Products Company

Date:

June 18, 1996

Re: ARCO Station #

6002 • 6235 Seminary Avenue • Oakland, CA
First Quarter 1996 Groundwater Monitoring Results

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

Submitted by:

Michael R. Whelan

Michael R. Whelan
Environmental Engineer

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

May 14, 1996
Project 20805-131.008

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

Re: First quarter 1996 groundwater monitoring program results, ARCO service station 6002, Oakland, California

Dear Mr. Whelan:

This letter presents the results of the first quarter 1996 groundwater monitoring program at ARCO Products Company (ARCO) service station 6002, 6235 Seminary Avenue, Oakland, California (Figure 1). The quarterly monitoring program complies with Alameda County Health Care Services Agency (ACHCSA) requirements regarding underground tank investigations.

LIMITATIONS

No monitoring event is thorough enough to describe all geologic and hydrogeologic conditions of interest at a given site. If conditions have not been identified during the monitoring event, 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.

Please call if you have questions.

Sincerely,

EMCON

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

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

SJ/I:\ARCO\6002\IMI01265.DOC-96 ljt:1

May 14, 1996

ARCO QUARTERLY REPORT

Station No.: 6002	Address: 6235 Seminary Avenue, Oakland, California
EMCON Project No.	20805-131.008
ARCO Environmental Engineer/Phone No.:	Michael Whelan /(408) 453-1640
EMCON Project Manager/Phone No.:	John C. Young /(408) 453-7300
Primary Agency/Regulatory ID No.:	ACHCSA /Juliet Shin

WORK PERFORMED THIS QUARTER (First- 1996):

1. Prepared and submitted quarterly groundwater monitoring report for fourth quarter 1995.
2. Performed quarterly groundwater monitoring and sampling for first quarter 1996.
3. Pursued off-site access to install groundwater monitoring wells.
4. Decommissioned monitoring wells MW-1 and MW-2.
5. Removed four underground storage tanks and performed source removal.

WORK PROPOSED FOR NEXT QUARTER (Second- 1996):

1. Perform quarterly groundwater monitoring and sampling for second quarter 1996.
2. Prepare and submit quarterly groundwater monitoring report for first quarter 1996.
3. Install off-site monitoring wells.
4. Prepare and submit RBCA tier 1 and tier 2 evaluation report for on-site.
5. Prepare and submit *Underground Storage Tank Removal Report, ARCO Service Station 6002. San Jose, California* (EMCON, April 25, 1996).

QUARTERLY MONITORING:

Current Phase of Project:	Quarterly Groundwater Monitoring
Frequency of Sampling:	Quarterly (groundwater)
Frequency of Monitoring:	Quarterly (groundwater)
Is Floating Product (FP) Present On-site:	☐ Yes ☒ No
Bulk Soil Removed to Date :	approximately 370 cubic yards of TPH impacted soil
Bulk Soil Removed This Quarter :	approximately 370 cubic yards of TPH impacted soil
Water Wells or Surface Waters, within 2000 ft., impacted by site:	None
Current Remediation Techniques:	None
Approximate Depth to Groundwater:	8.50 feet
Groundwater Gradient (Average):	0.08 ft/ft toward west-southwest (consistent with past events)

ATTACHED:

- Table 1 - Groundwater Monitoring Data, First Quarter 1996
- Table 2 - Historical Groundwater Elevation Data
- Table 3 - Historical Groundwater Analytical Data, Petroleum Hydrocarbons and Their Constituents
- Figure 1 - Site Location
- Figure 2 - Groundwater Data, First Quarter 1996
- Appendix A - Field Data Sheets, First Quarter 1996 Groundwater Monitoring Event
- Appendix B - Analytical Results and Chain of Custody Documentation, First Quarter 1996 Groundwater Monitoring Event

cc: Juliet Shin, ACHCSA
Kevin Graves, RWQCB - SFBR

Table 1
Groundwater Monitoring Data
First Quarter 1996

ARCO Service Station 6002
6235 Seminary Avenue, Oakland, California

Date: 05-16-96

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
		ft-MSL	feet	ft-MSL	feet	MWN	ft/ft		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
MW-1	02-23-96	247.06	Well was decommisioned on 2-12-96					03-01-96	Well was decommisioned on 2-12-96						
MW-2	02-23-96	249.30	Well was decommisioned on 2-12-96					03-01-96	Well was decommisioned on 2-12-96						
MW-3	02-23-96	248.35	6.64	241.71	ND	WSW	0.08	03-01-96	<50	<0.5	<0.5	0.6	1.9	<3	- -
MW-4	02-23-96	242.91	8.51	234.40	ND	WSW	0.08	03-01-96	59	1.2	7.4	1.6	9.3	3	- -
MW-5	02-23-96	244.82	11.93	232.89	ND	WSW	0.08	03-01-96	27000	1300	<50	1600	1500	730	- -
MW-6	02-23-96	NR	9.82	NR	ND	WSW	0.08	03-01-96	<50	<0.5	0.8	<0.5	0.6	<3	- -
VW-1	02-23-96	NR	5.29	NR	ND	WSW	0.08	03-01-96	21000	490	57	520	1500	240	- -
VW-2	02-23-96	NR	6.92	NR	ND	WSW	0.08	03-01-96	Not sampled: not part of sampling program						

TOC: top of casing
ft-MSL: elevation in feet, relative to mean sea level
MWN: groundwater flow direction and gradient apply to the entire monitoring well network
TPHG: total petroleum hydrocarbons as gasoline
µg/L: micrograms per liter
WSW: west-southwest
- - : not analyzed
ND: none detected
NR: not reported; data not available or not measurable

esj/h:\6002\6002mdb.xls\Table 1:imi
20805-131.008

Table 2
Historical Groundwater Elevation Data
1994 - Present*

ARCO Service Station 6002
6235 Seminary Avenue, Oakland, California

Date: 05-14-96

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-5	07-08-94	244.82	12.94	231.88	ND	W	0.08
MW-5	09-24-94	244.82	13.60	231.22	ND	WSW	0.08
MW-5	11-21-94	244.82	12.45	232.37	ND	SW	0.07
MW-5	03-15-95	244.82	11.99	232.83	ND	WSW	0.08
MW-5	05-30-95	244.82	12.97	231.85	ND	WSW	0.08
MW-5	09-01-95	244.82	14.03	230.79	ND	WSW	0.09
MW-5	11-13-95	244.82	13.65	231.17	ND	WSW	0.08
MW-5	02-23-96	244.82	11.93	232.89	ND	WSW	0.08
MW-6	06-29-95	NR	6.63	NR	ND	NR	NR
MW-6	09-01-95	NR	Not surveyed:				
MW-6	11-13-95	NR	7.70	NR	ND	WSW	0.08
MW-6	02-23-96	NR	9.82	NR	ND	WSW	0.08
AS-1	06-29-95	NR	9.20	NR	ND	NR	NR
VW-1	02-23-96	NR	5.29	NR	ND	WSW	0.08
VW-2	02-23-96	NR	6.92	NR	ND	WSW	0.08

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
W: west
WSW: west-southwest
SW: southwest
*: For previous historical groundwater elevation data please refer to *Fourth Quarter 1995 Groundwater Monitoring Program Results, ARCO Service Station 6002, Oakland, California*, (EMCON, February 23, 1996).
** [corrected elevation (Z')] = Z + (h * 0.73) where: Z: measured elevation, h: floating product thickness, 0.73: density ratio of oil to water

Table 3
Historical Groundwater Analytical Data
Petroleum Hydrocarbons and Their Constituents
1994 - Present*

ARCO Service Station 6002
6235 Seminary Avenue, Oakland, California

Date: 05-14-96

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
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
MW-1	01-21-94	18000	1300	1600	250	1900	--	--
MW-1	07-08-94	21000	5200	<50	1000	1500	--	--
MW-1	09-24-94	13000	2900	37	830	640	--	--
MW-1	11-21-94	12000	2800	160	640	1300	--	--
MW-1	03-15-95	13000	1200	44	770	1100	--	--
MW-1	05-30-95	19000	1600	30	890	1400	--	--
MW-1	09-01-95	14000	1300	28	480	780	24000	--
MW-1	11-13-95	11000	570	17	260	410	--	25000
MW-1	03-01-96	Well was decommisioned on 2-12-96						
MW-2	07-08-94	<50	<0.5	<0.5	<0.5	<0.5	--	--
MW-2	09-24-94	<50	<0.5	<0.5	<0.5	<0.5	--	--
MW-2	11-21-94	<50	<0.5	<0.5	<0.5	<0.5	--	--
MW-2	03-15-95	<50	<0.5	<0.5	<0.5	<0.5	--	--
MW-2	05-30-95	<50	<0.5	<0.5	<0.5	<0.5	--	--
MW-2	09-01-95	<50	<0.5	<0.5	<0.5	<0.5	<3	--
MW-2	11-13-95	<50	<0.5	<0.5	<0.5	<0.5	--	--
MW-2	03-01-96	Well was decommisioned on 2-12-96						
MW-3	07-08-94	<50	<0.5	<0.5	<0.5	<0.5	--	--
MW-3	09-24-94	<50	<0.5	<0.5	<0.5	<0.5	--	--
MW-3	11-21-94	<50	<0.5	<0.5	<0.5	<0.5	--	--
MW-3	03-15-95	<50	<0.5	<0.5	<0.5	<0.5	--	--
MW-3	05-30-95	<50	<0.5	<0.5	<0.5	<0.5	--	--
MW-3	09-01-95	<50	<0.5	<0.5	<0.5	<0.5	<3	--
MW-3	11-13-95	120	45	0.7	<0.5	6.2	--	--
MW-3	03-01-96	<50	<0.5	<0.5	0.6	1.9	<3	--
MW-4	07-08-94	<50	<0.5	<0.5	<0.5	<0.5	--	--
MW-4	09-24-94	140	<0.5	<0.5	<0.9	<0.5	--	--
MW-4	11-21-94	<50	<0.5	<0.5	<0.5	<0.5	--	--
MW-4	03-15-95	<50	<0.5	<0.5	<0.5	<0.5	--	--
MW-4	05-30-95	<50	<0.5	<0.5	<0.5	<0.5	--	--
MW-4	09-01-95	78	<0.5	0.7	<0.5	<0.5	<3	--
MW-4	11-13-95	<50	<0.5	<0.5	<0.5	<0.5	--	--
MW-4	03-01-96	59	1.2	7.4	1.6	9.3	3	--

Table 2
Historical Groundwater Elevation Data
1994 - Present*

ARCO Service Station 6002
6235 Seminary Avenue, Oakland, California

Date: 05-14-96

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	01-21-94	247.06	7.82	239.24	ND	NR	NR
MW-1	07-08-94	247.06	8.32	238.74	ND	W	0.08
MW-1	09-24-94	247.06	8.84	238.22	ND	WSW	0.08
MW-1	11-21-94	247.06	7.27	239.79	ND	SW	0.07
MW-1	03-15-95	247.06	7.37	239.69	ND	WSW	0.08
MW-1	05-30-95	247.06	8.48	238.58	ND	WSW	0.08
MW-1	09-01-95	247.06	9.47	237.59	ND	WSW	0.09
MW-1	11-13-95	247.06	8.78	** 238.29	0.01	WSW	0.08
MW-1	02-23-96	247.06	Well was decommisioned on 2-12-96				
MW-2	07-08-94	249.30	9.51	239.79	ND	W	0.08
MW-2	09-24-94	249.30	10.02	239.28	ND	WSW	0.08
MW-2	11-21-94	249.30	7.83	241.47	ND	SW	0.07
MW-2	03-15-95	249.30	8.25	241.05	ND	WSW	0.08
MW-2	05-30-95	249.30	9.93	239.37	ND	WSW	0.08
MW-2	09-01-95	249.30	10.69	238.61	ND	WSW	0.09
MW-2	11-13-95	249.30	10.32	238.98	ND	WSW	0.08
MW-2	02-23-96	249.30	Well was decommisioned on 2-12-96				
MW-3	07-08-94	248.35	7.75	240.60	ND	W	0.08
MW-3	09-24-94	248.35	8.14	240.21	ND	WSW	0.08
MW-3	11-21-94	248.35	6.80	241.55	ND	SW	0.07
MW-3	03-15-95	248.35	6.76	241.59	ND	WSW	0.08
MW-3	05-30-95	248.35	7.81	240.54	ND	WSW	0.08
MW-3	09-01-95	248.35	8.65	239.70	ND	WSW	0.09
MW-3	11-13-95	248.35	8.25	240.10	ND	WSW	0.08
MW-3	02-23-96	248.35	6.64	241.71	ND	WSW	0.08
MW-4	07-08-94	242.91	10.97	231.94	ND	W	0.08
MW-4	09-24-94	242.91	11.81	231.10	ND	WSW	0.08
MW-4	11-21-94	242.91	9.14	233.77	ND	SW	0.07
MW-4	03-15-95	242.91	9.37	233.54	ND	WSW	0.08
MW-4	05-30-95	242.91	11.47	231.44	ND	WSW	0.08
MW-4	09-01-95	242.91	12.28	230.63	ND	WSW	0.09
MW-4	11-13-95	242.91	11.75	231.16	ND	WSW	0.08
MW-4	02-23-96	242.91	8.51	234.40	ND	WSW	0.08

Table 3
Historical Groundwater Analytical Data
Petroleum Hydrocarbons and Their Constituents
1994 - Present*

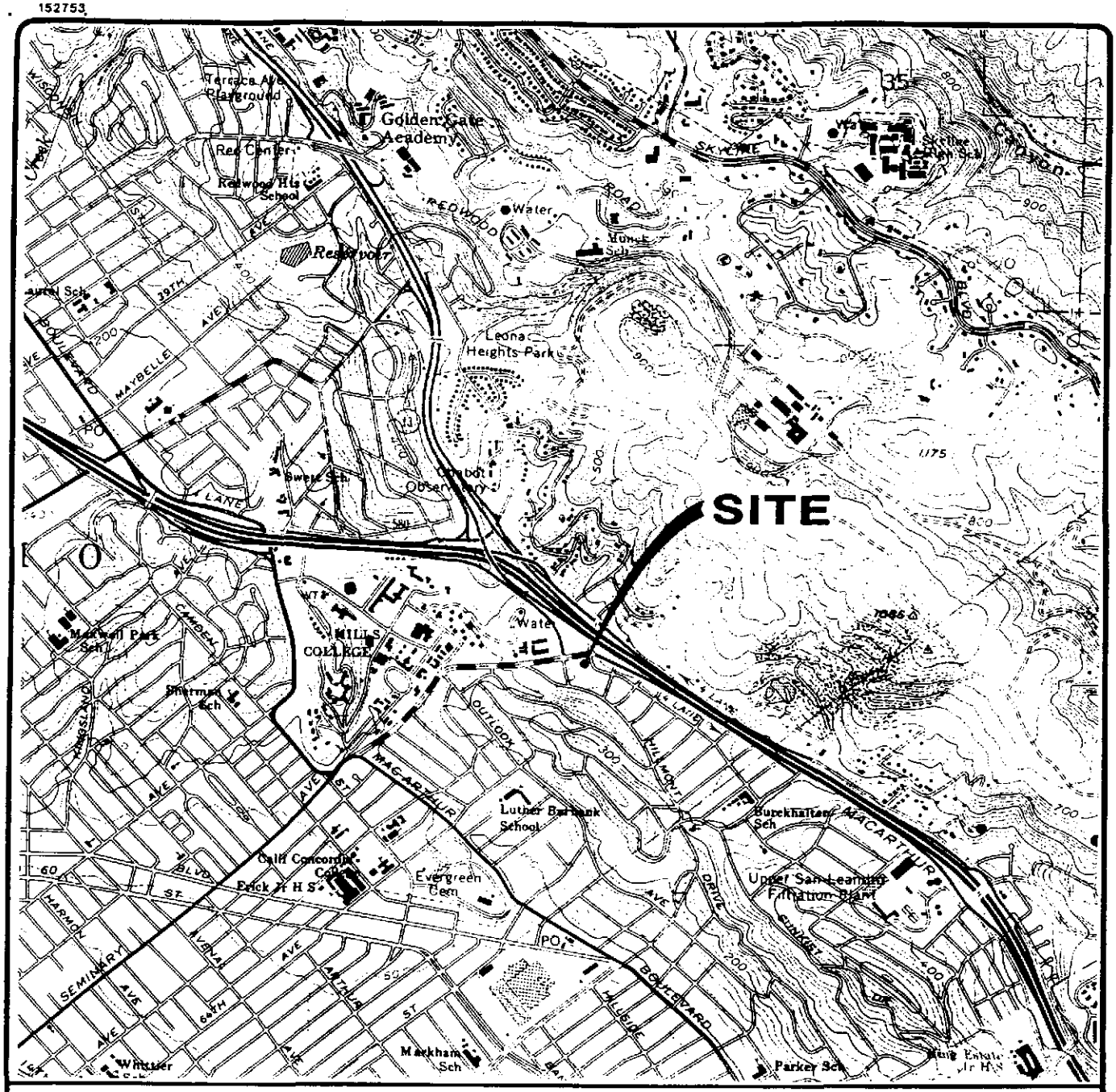
ARCO Service Station 6002
6235 Seminary Avenue, Oakland, California

Date: 05-14-96

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
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
MW-5	07-08-94	41000	3300	<50	2200	2900	--	--
MW-5	09-24-94	28000	4000	<50	2400	2100	--	--
MW-5	11-21-94	38000	3100	<50	3100	4100	--	--
MW-5	03-15-95	21000	870	22	1600	1900	--	--
MW-5	05-30-95	17000	2100	250	1000	520	--	--
MW-5	09-01-95	19000	1500	25	1600	880	8300	--
MW-5	11-13-95	21000	1300	22	1400	630	--	--
MW-5	03-01-96	27000	1300	<50	1600	1500	730	--
MW-6	06-30-95	<50	<0.5	<0.5	<0.5	<0.5	--	--
MW-6	09-01-95	Not sampled:						
MW-6	11-13-95	<50	<0.5	<0.5	<0.5	<0.5	<3	--
MW-6	03-01-96	<50	<0.5	0.8	<0.5	0.6	<3	--
AS-1	06-30-95	<50	1.6	<0.5	0.9	0.9	--	--
VW-1	03-01-96	21000	490	57	520	1500	240	--
VW-2	03-01-96	Not sampled: not part of sampling program						

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
-- : not analyzed
*: For previous historical analytical data please refer to *Fourth Quarter 1995 Groundwater Monitoring Program Results, ARCO Service Station 6002, Oakland, California,* (EMCON, February 23, 1996).

152753



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

N

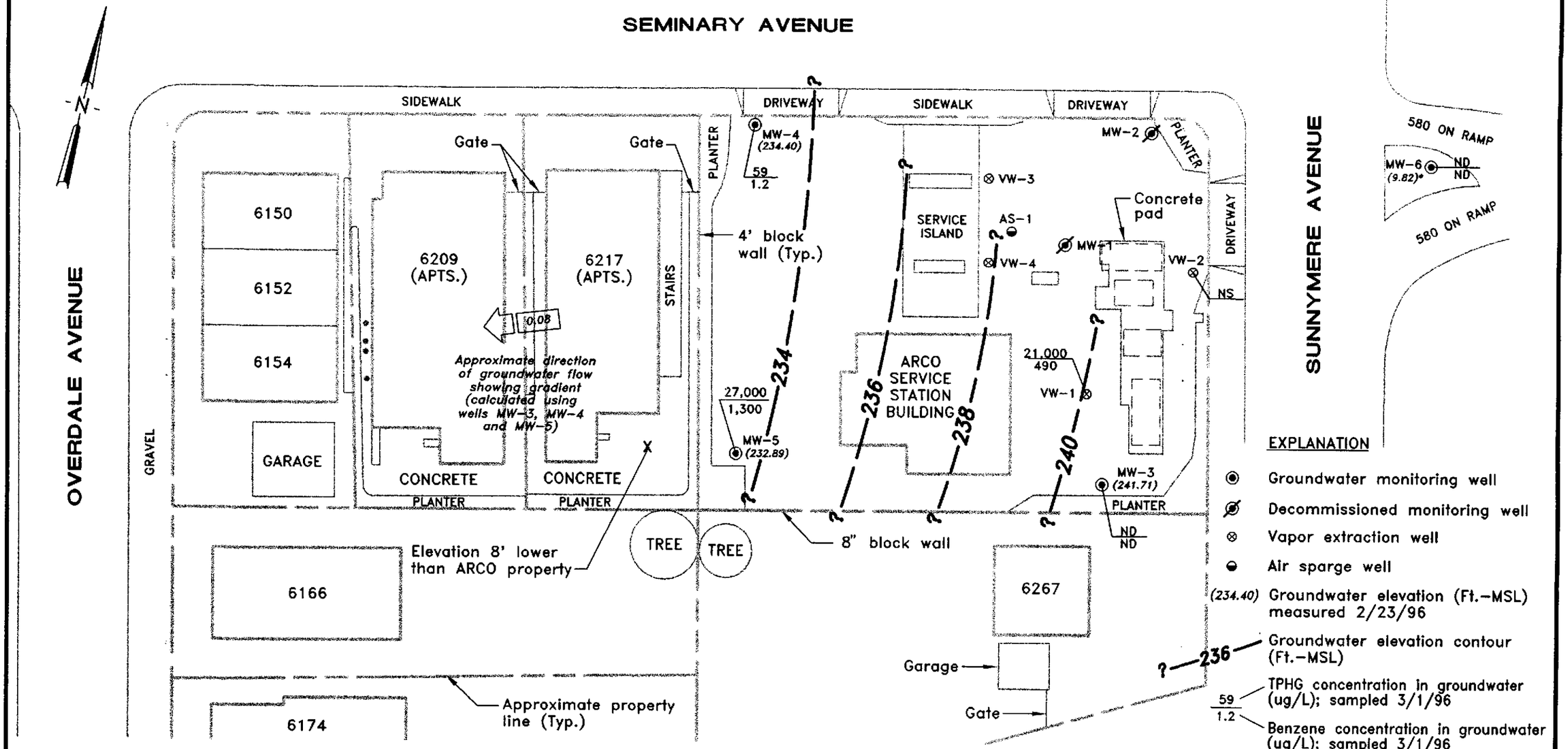
Scale : 0 2000 4000 Feet

EMCON

ARCO PRODUCTS COMPANY
SERVICE STATION 6002, 6235 SEMINARY AVE.
QUARTERLY GROUNDWATER MONITORING
OAKLAND, CALIFORNIA

SITE LOCATION

FIGURE
1
PROJECT NO.
805-131.08



EXPLANATION

- ◉ Groundwater monitoring well
- ⊘ Decommissioned monitoring well
- ⊗ Vapor extraction well
- ◒ Air sparge well
- (234.40) Groundwater elevation (Ft.–MSL) measured 2/23/96
- 236 Groundwater elevation contour (Ft.–MSL)
- 59 / 1.2 TPHG concentration in groundwater (ug/L); sampled 3/1/96 / Benzene concentration in groundwater (ug/L); sampled 3/1/96
- NS Not sampled; not scheduled for chemical analysis
- ND Not detected at or above method reporting limit for TPHG (50 ug/L) or benzene (0.5 ug/L)
- * Depth to water (well not surveyed)

Base map modified from GSI, 1994.

EMCON

SCALE: 0 30 60 FEET

ARCO PRODUCTS COMPANY
SERVICE STATION 6002, 6235 SEMINARY AVE.
QUARTERLY GROUNDWATER MONITORING
OAKLAND, CALIFORNIA

GROUNDWATER DATA
FIRST QUARTER 1996

FIGURE NO.
2
PROJECT NO.
805–131.003

G:\805-131\GWCHEM REV 0 05/16/96 13:44:54 KAJ DJ

FIELD REPORT
DEPTH TO WATER / FLOATING PRODUCT SURVEY

PROJECT # : 21775-241.002 STATION ADDRESS : 6235 Seminary Avenue, Oakland DATE : 2/23/96

ARCO STATION # : 6002 FIELD TECHNICIAN : D. Gamblin DAY : Fri

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-6	X	X	X	~~3254~~ ARCO	X	9.82	9.82	NA	NA	32.0	
2	MW-2	well		Removed								
3	MW-3	X	X	X	ARCO	X	6.64	6.64	NA	NA	24.6	
4	MW-4	X	X	X	ARCO	X	8.51	8.51	NA	NA	24.2	
5	MW-1			well	Taken	Out						
6	MW-5	X	X	X	ARCO	X	11.93	11.93	NA	NA	24.5	
	VW-1	X	X	X	3259	X	5.29	5.29	NA	NA	13.5	
	VW-2	X	X	X	3259	X	6.92	6.92	NA	NA	13.8	

SURVEY POINTS ARE TOP OF WELL CASINGS

Rev. 3, 2/94

WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 21775-241-002 SAMPLE ID: MW-3

PURGED BY: J WILLIAMS CLIENT NAME: ARCO 6002

SAMPLED BY: L 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): N/A VOLUME IN CASING (gal.): 11.69

DEPTH TO WATER (feet): 7.20 CALCULATED PURGE (gal.): 35.08

DEPTH OF WELL (feet): 25.6 ACTUAL PURGE VOL. (gal.): 36

DATE PURGED: 03-01-96 Start (2400 Hr) 1308 End (2400 Hr) 1324

DATE SAMPLED: L Start (2400 Hr) — End (2400 Hr) 1330

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1313	12	6.72	426	67.4 ✓	BROWN	HEAVY
1316	24	6.31	430	65.7 ✓	BROWN	MOD
1324	36	6.39	425	65.3 ✓	CLEAR	TRACE

D. O. (ppm): N/A ODOR: ~~Slight~~ Slight

COLOR (COBALT 0 - 500): N/R

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

Field QC samples collected at this well: N/A

Parameters field filtered at this well: N/A

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: OK LOCK #: ARCO

REMARKS: ___

Meter Calibration: Date: 3-1-96 Time: ___ Meter Serial #: 9208 Temperature °F: ___

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

Location of previous calibration: ___

Signature: [signature] Reviewed By: [signature] Page 1 of 5

Rev. 3, 2/94

WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 21175-241.002 SAMPLE ID: MW-4 24)

PURGED BY: M. Ross / J. Williams CLIENT NAME: ARCO 6002

SAMPLED BY: M. Ross / J. Williams 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.): 10.18

DEPTH TO WATER (feet): 8.61 CALCULATED PURGE (gal.): 30.55

DEPTH OF WELL (feet): 24.2 ACTUAL PURGE VOL. (gal.): 21.0

DATE PURGED: 3-1-96 Start (2400 Hr) 1350 End (2400 Hr) 1355

DATE SAMPLED: 3-1-96 Start (2400 Hr) 1405 End (2400 Hr) ___

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1353	10.5	6.25	387	68.5	Light Brn	Mod
1355	21.0	6.27	396	69.6	Light Brn	Heavy
___	Dry at 21.0		gallons			
1400	DTW	→	13.73 →	significantly different	from above DTW	
1405	Recharge	6.27	386	68.7	Light Brn	Trace
D. O. (ppm): NA	ODOR: NONE				NA (COBALT 0 - 500)	NA (NTU 0 - 200 or 0 - 1000)

too low for recharge

Field QC samples collected at this well: NA

Parameters field filtered at this well: 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 #: ARCO

REMARKS: DRY at 21.0 gallons

Meter Calibration: Date: 3-1-96 Time: 1200 Meter Serial #: 9208 Temperature °F: ___

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

Location of previous calibration: MW-6

Signature: Mike Ross Reviewed By: SC Page 2 of 5

Rev. 3, 2/94

WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 21775-241.002 SAMPLE ID: MW-5 (24)

PURGED BY: M. Ross / J. Williams CLIENT NAME: ARCO 6002

SAMPLED BY: M. Ross / J. Williams 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.): 8.14

DEPTH TO WATER (feet): 12.13 CALCULATED PURGE (gal.): 24.44

DEPTH OF WELL (feet): 24.6 ACTUAL PURGE VOL. (gal.): 24.5

DATE PURGED: 3-1-96 Start (2400 Hr) 1411 End (2400 Hr) 1419

DATE SAMPLED: 3-1-96 Start (2400 Hr) 1425 End (2400 Hr) —

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1413	8.5	6.35	567	70.4	Light Brn	TRACE
1416	16.5	6.38	6.14	69.7	Light Brn	TRACE
1419	24.5	6.42	6.02	69.0 ✓	Light Brn	TRACE

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

Field QC samples collected at this well: NO

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
✓ 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 #: ARCO

REMARKS: ___

Meter Calibration: Date: 3-1-96 Time: 1200 Meter Serial #: 9208 Temperature °F: ___

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

Location of previous calibration: MW-6

Signature: Mike Ross Reviewed By: SG Page 3 of 5

Rev. 3. 2/94

WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 21775-241-002 SAMPLE ID: MW-6 (33)

PURGED BY: J WILLIAMS CLIENT NAME: ARCO 6002

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.): 4.29

DEPTH TO WATER (feet): 6.82 CALCULATED PURGE (gal.): 12.87

DEPTH OF WELL (feet): 33.1 ACTUAL PURGE VOL. (gal.): 10

DATE PURGED: 03-01-96 Start (2400 Hr) 1203 End (2400 Hr) 1208

DATE SAMPLED: ✓ Start (2400 Hr) — End (2400 Hr) 1215

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1207	4.5	7.66	480	71.3	BROWN	HEAVY
1208	9	7.38	506	70.5	BROWN	HEAVY
___	DRIED	10 GALLONS TIME 1208			___	___
1217	Recharge	7.42	506	67.6	BROWN	HEAVY
___	___	___	___	___	___	___

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

___ 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: OK LOCK #: ARCO

REMARKS: ___

Meter Calibration: Date: 3-1-96 Time: 1200 Meter Serial #: 9208 Temperature °F: 72.1

(EC 1000 924 / 1000) (DI ___) (pH 7 700 / 200) (pH 10 9.87 / 10.00) (pH 4 4.00 ___)

Location of previous calibration: ___

Signature: [signature] Reviewed By: SIT Page 4 of 5

Rev. 3, 2/94

WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 21225-241.002 SAMPLE ID: VW-1(13)

PURGED BY: M. Ross / J. Williams CLIENT NAME: ARCO 6002

SAMPLED BY: M. Ross / J. Williams 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): 5.31

DEPTH OF WELL (feet): 13.8

VOLUME IN CASING (gal.): 5.54

CALCULATED PURGE (gal.): 16.64

ACTUAL PURGE VOL. (gal.): 17.0

DATE PURGED: 3-1-96 Start (2400 Hr) 1434 End (2400 Hr) 1440

DATE SAMPLED: 3-1-96 Start (2400 Hr) 1445 End (2400 Hr) —

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1436	6.0	6.57	499	69.1	GREY	HEAVY
1438	11.5	6.36	490	62.6	GREY	MOD
1440	17.0	6.37	476	67.1 ✓	GREY	MOD

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

Field QC samples collected at this well: NA

Parameters field filtered at this well: NO

NA (COBALT 0 - 500)

NA (NTU 0 - 200 or 0 - 1000)

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 #: ARC

REMARKS: ___

Meter Calibration: Date: 3-1-96 Time: 1200 Meter Serial #: E208 Temperature °F: ___

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

Location of previous calibration: MW-6

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

Columbia Analytical Services INC.

March 11, 1996

Service Request No: S9600349

Mr. John Young
EMCON
1921 Ringwood Avenue
San Jose, CA 95131

Re: **6002 Oakland / 20805-131.007 / TO#19350.00**

Dear Mr. Young:

The following pages contain analytical results for sample(s) received by the laboratory on March 1, 1996. 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 8, following, have been thoroughly reviewed and approved for release in accord with CAS Standard Operating Procedure ADM-DatRev3.

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

Sincerely,

Steven L. Green
Project Chemist

Greg Anderson
Regional QA Coordinator

SLG/jk

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	**Service Request:**	S9600349
Project:	6002 Oakland / 20805-131.007/TO#19350.00	**Date Collected:**	3/1/96
Sample Matrix:	Water	**Date Received:**	3/1/96
		Date Extracted:	N/A

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

Sample Name:	**MW-6 (33)**	**MW-3 (25)**	**MW-4 (24)**
Lab Code:	S9600349-001	S9600349-002	S9600349-003
Date Analyzed:	3/5/96	3/5/96	3/5/96

Analyte	**MRL**			
TPH as Gasoline	50	ND	ND	59
Benzene	0.5	ND	ND	1.2
Toluene	0.5	0.8	ND	7.4
Ethylbenzene	0.5	ND	0.6	1.6
Total Xylenes	0.5	0.6	1.9	9.3
Methyl-tert-butyl ether	3	ND	ND	3

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	ARCO	**Service Request:**	S9600349
Project:	6002 Oakland / 20805-131.007/TO#19350.00	**Date Collected:**	3/1/96
Sample Matrix:	Water	**Date Received:**	3/1/96
		Date Extracted:	N/A

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

Sample Name:		**MW-5 (24)**	**Method Blank**
Lab Code:		S9600349-004	S9600349MB
Date Analyzed:		3/5/96	3/5/96
Analyte	**MRL**		
TPH as Gasoline	50	27000	ND
Benzene	0.5	1300	ND
Toluene	0.5	<50 *	ND
Ethylbenzene	0.5	1600	ND
Total Xylenes	0.5	1500	ND
Methyl-tert-butyl ether	3	730	ND

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

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO
Project: 6002 Oakland / 20805-131.007/TO#19350.00
Sample Matrix: Water

Service Request: S9600349
Date Collected: 3/1/96
Date Received: 3/1/96
Date Extracted: NA
Date Analyzed: 3/5/96

Surrogate Recovery Summary
BTEX 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-6 (33)	S9600349-001	88	100
MW-3 (25)	S9600349-002	96	90
MW-4 (24)	S9600349-003	94	101
MW-5 (24)	S9600349-004	92	101
MW-6 (33)MS	S9600349MS	90	110
MW-6 (33)MSD	S9600349MSD	100	112
Method Blank	S9600349MB	93	101
CAS Acceptance Limits:		69-116	69-116

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	ARCO	**Service Request:**	S9600349
Project:	6002 Oakland / 20805-131.007/TO#19350.00	**Date Collected:**	3/1/96
Sample Matrix:	Water	**Date Received:**	3/1/96
		Date Extracted:	NA
		Date Analyzed:	3/5/96

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

Sample Name: MW-6 (33)
Lab Code: S9600349-001

	Spike Level		Sample	Spike Result		Percent Recovery		CAS Acceptance	Relative Percent
Analyte	MS	DMS	**Result**	MS	DMS	MS	DMS	Limits	**Difference**
Gasoline	250	250	ND	250	250	100	100	67-121	<1

DMS1S/060194

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO
Project: 6002 Oakland / 20805-131.007/TO#19350.00

Service Request: S9600349
Date Analyzed: 3/5/96

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

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits
Benzene	25	24.1	96	85-115
Toluene	25	24.0	96	85-115
Ethylbenzene	25	23.8	95	85-115
Xylenes, Total	75	72.6	97	85-115
Gasoline	250	256	102	90-110
MTBE	50	46.0	92	85-115

ARCO Products Company
Division of AtlanticRichfieldCompany

Task Order No. 19350.00

Chain of Custody

ARCO Facility no. 6002	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

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 (acids, MTBE) EPA M602/8020/8015	TPH Modified 8015 Gas ☐ Diesel ☐	Oil and Grease 413.1 ☐ 413.2 ☐	TPH EPA 418.1/SM503E	EPA 601/8010	EPA 624/8240	EPA 625/8270	TCLP Metals ☐ Semi VOA ☐ VOA ☐	CAM Metals EPA 6010/7000 TTLC ☐ STLC ☐	Lead Org./DHS ☐ Lead EPA 7420/7421 ☐		
MW-6	(33)	2		X		X	HCL	3-1-96	1215		X											
MW-3	(25)	2		X		X	HCL		1330		X											
MW-4	(24)	2		X		X	HCL		1405		X											
MW-5	(24)	2		X		X	HCL		1425		X											

Method of shipment: Sampler will deliver

Special detection Limit/reporting: Lowest Possible

Special QA/QC: As Normal

Remarks: 2-40ml HCL VOAs

#20805-131.007

Lab number: 9600349

Turnaround time

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

Condition of sample:

Temperature received:

	Date	Time			
Relinquished by sampler	3/1/96	1646	Received by		
Relinquished by			Received by		
Relinquished by			Received by laboratory	Date 3-1-96	Time 1646

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

APC-3292 (2-91)

Columbia
Analytical
Services inc.

March 11, 1996

Service Request No: S9600350

Mr. John Young
EMCON
1921 Ringwood Avenue
San Jose, CA 95131

Re: **6002 Oakland / 20805-131.007 / TO#19350.00**

Dear Mr. Young:

The following pages contain analytical results for sample(s) received by the laboratory on March 1, 1996. 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 7, following, have been thoroughly reviewed and approved for release in accord with CAS Standard Operating Procedure ADM-DatRev3.

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

Sincerely,

Steven L. Green
Project Chemist

Greg Anderson
Regional QA Coordinator

SLG/jk

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	**Service Request:**	S9600350
Project:	6002 Oakland / 20805-131.007/TO#19350.00	**Date Collected:**	3/1/96
Sample Matrix:	Water	**Date Received:**	3/1/96
		Date Extracted:	N/A

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

	Sample Name:	**VW-1 (13)**	**Method Blank**
	Lab Code:	S9600349-004	S9600349MB
	Date Analyzed:	3/6/96	3/6/96
Analyte	**MRL**		
TPH as Gasoline	50	21000	ND
Benzene	0.5	490	ND
Toluene	0.5	57	ND
Ethylbenzene	0.5	520	ND
Total Xylenes	0.5	1500	ND
Methyl-tert-butyl ether	3	240	ND

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO
Project: 6002 Oakland / 20805-131.007 / TO#19350.00
Sample Matrix: Water

Service Request: S9600350
Date Collected: 3/1/96
Date Received: 3/1/96
Date Extracted: NA
Date Analyzed: 3/5-6/96

Surrogate Recovery Summary
BTEX 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
VW-1(13)	S9600350-001	100	105
Batch MS	S9600350-MS	90	110
Batch DMS	S9600350-DMS	100	112
Method Blank	S9600350-MB	91	98
CAS Acceptance Limits:		69-116	69-116

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	ARCO	**Service Request:**	S9600350
Project:	6002 Oakland / 20805-131.007/TO#19350.00	**Date Collected:**	3/1/96
Sample Matrix:	Water	**Date Received:**	3/1/96
		Date Extracted:	NA
		Date Analyzed:	3/5/96

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

Sample Name: Batch QC
Lab Code: S9600349-001

	Spike Level		Sample	Spike Result		Percent Recovery		CAS Acceptance	Relative Percent
Analyte	MS	DMS	**Result**	MS	DMS	MS	DMS	Limits	**Difference**
Gasoline	250	250	ND	250	250	100	100	67-121	<1

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO
Project: 6002 Oakland / 20805-131.007/TO#19350.00

Service Request: S9600350
Date Analyzed: 3/5/96

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

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits
Benzene	25	24.1	96	85-115
Toluene	25	24.0	96	85-115
Ethylbenzene	25	23.8	95	85-115
Xylenes, Total	75	72.6	97	85-115
Gasoline	250	256	102	90-110
MTBE	50	46.0	92	85-115

ARCO Products Company
Division of AtlanticRichfieldCompany

Task Order No. 19350.00

Chain of Custody

ARCO Facility no. 6002	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

Sample I.D.	Lab no.	Container no.	Matrix: Soil	Matrix: Water	Matrix: Other	Preservation: Ice	Preservation: Acid	Sampling date	Sampling time	BTEX 602/EPA 8020	BTEX/TPH EPA M602/8020/8015	TPH Modified 8015 Gas ☐ Diesel ☐	Oil and Grease 413.1 ☐ 413.2 ☐	TPH EPA 418.1/SM503E	EPA 601/8010	EPA 624/8240	EPA 625/8270	TCLP Metals ☐ Semi VOA ☐ VOA ☐	CAM Metals EPA 6010/7000 TTLC ☐ STLC ☐	Lead Org./DHS ☐ Lead EPA 7420/7421 ☐		
VW-1 (13)	2	2		X		X	HCL	3-1-96	1446		X											

Method of shipment: Sampler Will deliver

Special detection Limit/reporting: Lowest Possible

Special QA/QC: As Normal

Remarks: 2-40ml HCL VOAs

20805-131-007

Lab number: 59600350

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: Joe Ingle	Date 3-1-96 Time 1646	Received by	
Relinquished by	Date Time	Received by	
Relinquished by	Date Time	Received by laboratory: Jonne Brown	Date 3-1-96 Time 1646

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

APPC-3292 (2-91)