STID 744

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

98 APR 10 PM 2:49

Date March 31, 1998
Project 20805-127.005

To:

Mr. Kevin Tinsley
Alameda County Health Care Services Agency
Department of Environmental Health
1131 Harbor Bay Parkway
Alameda, California 94502

STIP 744

We are enclosing:

Copies	Description
1	Fourth quarter 1997 groundwater monitoring results report, ARCO service station 2111, San Leandro, California
1	First Christian Church letter

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

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.

Gary P. Messerotes
Project Manager

cc: Mike Bakaldin, San Leandro Hazardous Materials Program
Paul Supple, ARCO Products Company
File

ARCO Products Company

Date: March 31, 1998

Re: ARCO Station #

2111 • 1156 Davis Street • San Leandro, CA
Fourth Quarter 1997 Groundwater Monitoring Results

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

Submitted by:

Paul Supple
Environmental Engineer

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

March 12, 1998
Project 20805-127.005

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

Re: Fourth quarter 1997 groundwater monitoring results, ARCO service station 2111, San Leandro, California

Dear Mr. Supple:

This letter presents the results of the fourth quarter 1997 groundwater monitoring program at ARCO Products Company (ARCO) service station 2111, 1156 Davis Street, San Leandro, 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, results should not be construed as a guarantee of the absence of such conditions at the site, but rather as the product of the scope and limitations of work performed during the monitoring event.

Please call if you have questions.

Sincerely,

EMCON

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

REGISTERED GEOLOGIST
GARY P. MESSEROTES
5650
STATE OF CALIFORNIA

March 12, 1998

ARCO QUARTERLY REPORT

Station No.:	2111	Address:	1156 Davis Street, San Leandro, California
EMCON Project No.			20805-127.005
ARCO Environmental Engineer/Phone No.:			Paul Supple /(510) 299-8891
EMCON Project Manager/Phone No.:			Gary P. Messerotes /(408) 453-7300
Primary Agency/Regulatory ID No.:			ACHCSA /Kevin Tinsley Case No. STID 744

WORK PERFORMED THIS QUARTER (Fourth- 1997):

1. Prepared and submitted quarterly monitoring report for third quarter 1997.
2. Performed quarterly groundwater monitoring and sampling for fourth quarter 1998.

WORK PROPOSED FOR NEXT QUARTER (First- 1998):

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

QUARTERLY MONITORING:

Current Phase of Project:	Quarterly Groundwater Monitoring
Frequency of Sampling:	Quarterly (groundwater)
Frequency of Monitoring:	Quarterly (groundwater)
Is Floating Product (FP) Present On-site:	☐ Yes ☒ No
Bulk Soil Removed to Date :	Unknown
Bulk Soil Removed This Quarter :	None
Water Wells or Surface Waters, within 2000 ft., impacted by site:	None
Current Remediation Techniques:	None
Average Depth to Groundwater:	17.53 feet
Groundwater Gradient (Average):	0.002 ft/ft toward west (consistent with past events)

ATTACHED:

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

cc: Kevin Tinsley, ACHCSA
Mike Bakaldin, San Leandro Hazardous Materials Program

Table 1
Groundwater Monitoring Data
Fourth Quarter 1997

ARCO Service Station 2111
1156 Davis Street, San Leandro, California

Date: 03-12-98

Well Designation	Water Level Field Date	Top of Casing Elevation	Depth to Water	Groundwater Elevation	Floating Product Thickness	Groundwater Flow Direction	Hydraulic Gradient	Water Sample Field Date	TPHG LUFT Method	Benzene EPA 8020	Toluene EPA 8020	Ethylbenzene EPA 8020	Total Xylenes EPA 8020	MTBE EPA 8020	TRPH EPA 418.1	TPHD LUFT Method
		ft-MSL	feet	ft-MSL	feet	MWN	ft/ft		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
MW-1	11-10-97	39.60	19.19	20.41	ND	W	0.002	11-10-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--
MW-2	11-10-97	37.99	17.52	20.47	ND	W	0.002	11-10-97	1300	82	<5^	14	49	550	--	--
MW-3	11-10-97	39.32	18.83	20.49	ND	W	0.002	11-10-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--
MW-4	11-10-97	38.10	17.53	20.57	ND	W	0.002	11-10-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--
MW-5	11-10-97	37.21	16.88	20.33	ND	W	0.002	11-10-97	<1000^	<10^	<10^	<10^	<10^	770	--	--
MW-6	11-10-97	37.11	16.53	20.58	ND	W	0.002	11-10-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--
MW-7	11-10-97	38.68	18.05	20.63	ND	W	0.002	11-10-97	5600	590	10	370	43	540	--	--

ft-MSL: elevation in feet, relative to mean sea level
MWN: ground-water flow direction and gradient apply to the entire monitoring well network
ft/ft: foot per foot
TPHG: total petroleum hydrocarbons as gasoline, California DHS LUFT Method
µg/L: micrograms per liter
EPA: United States Environmental Protection Agency
MTBE: Methyl tert-butyl ether
TRPH: total recoverable petroleum hydrocarbons
TPHD: total petroleum hydrocarbons as diesel, California DHS LUFT Method
ND: none detected
W: West
-- : not available or not analyzed
^: method reporting limit was raised due to: (1) high analyte concentration requiring sample dilution, or (2) matrix interference

Table 2
Historical Groundwater Elevation and Analytical Data
Petroleum Hydrocarbons and Their Constituents

ARCO Service Station 2111
1156 Davis Street, San Leandro, California

Date: 03-12-98

Well Designation	Water Level Field Date	Top of Casing Elevation	Depth to Water	Groundwater Elevation	Floating Product Thickness	Groundwater Flow Direction	Hydraulic Gradient	Water Sample Field Date	TPHG LUFT Method	Benzene EPA 8020	Toluene EPA 8020	Ethylbenzene EPA 8020	Total Xylenes EPA 8020	MTBE EPA 8020	TRPH EPA 418.1	TPHD LUFT Method
		ft-MSL	feet	ft-MSL	feet	MWN	ft/ft		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
MW-1	08-01-95	39.60	17.45	22.15	ND	NR	NR	08-01-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--
MW-1	12-14-95	39.60	17.09	22.51	ND	W	0.002	12-14-95	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--
MW-1	03-21-96	39.60	14.72	24.88	ND	WSW	0.005	03-21-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--
MW-1	05-24-96	39.60	15.94	23.66	ND	W	0.003	05-24-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--
MW-1	08-09-96	39.60	17.89	21.71	ND	WNW	0.01	08-09-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--
MW-1	11-06-96	39.60	18.66	20.94	ND	WNW	0.007	11-06-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--
MW-1	03-24-97	39.60	16.13	23.47	ND	W	0.005	03-24-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--
MW-1	05-27-97	39.60	17.23	22.37	ND	NNW	0.006	05-28-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--
MW-1	08-07-97	39.60	18.68	20.92	ND	W	0.009	08-07-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--
MW-1	11-10-97	39.60	19.19	20.41	ND	W	0.002	11-10-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--
MW-2	08-01-95	37.99	15.67	22.32	ND	NR	NR	08-01-95	23000	1300	310	500	3500	--	--	--
MW-2	12-14-95	37.99	15.36	22.63	ND	W	0.002	12-14-95	7300	900	25	180	1000	<200^	--	--
MW-2	03-21-96	37.99	12.84	25.15	ND	WSW	0.005	03-21-96	9600	850	30	280	1400	250	--	--
MW-2	05-24-96	37.99	14.03	23.96	ND	W	0.003	05-24-96	2300	300	<5^	73	310	<25^	--	--
MW-2	08-09-96	37.99	16.10	21.89	ND	WNW	0.01	08-09-96	2800	290	6	75	320	50	--	--
MW-2	11-06-96	37.99	16.98	21.01	ND	WNW	0.007	11-06-96	750	76	<1^	15	51	110	--	--
MW-2	03-24-97	37.99	14.22	23.77	ND	W	0.005	03-24-97	790	18	<1^	2	6	280	--	--
MW-2	05-27-97	37.99	15.42	22.57	ND	NNW	0.006	05-28-97	750	14	<1^	<1^	10	150	--	--
MW-2	08-07-97	37.99	16.92	21.07	ND	W	0.009	08-07-97	360	41	<2.5^	<2.5^	15	260	--	--
MW-2	11-10-97	37.99	17.52	20.47	ND	W	0.002	11-10-97	1300	82	<5^	14	49	550	--	--

Table 2
Historical Groundwater Elevation and Analytical Data
Petroleum Hydrocarbons and Their Constituents

ARCO Service Station 2111
1156 Davis Street, San Leandro, California

Date 03-12-98

Well Designation	Water Level Field Date	Top of Casing Elevation	Depth to Water	Groundwater Elevation	Floating Product Thickness	Groundwater Flow Direction	Hydraulic Gradient	Water Sample Field Date	TPHG LUFT Method	Benzene EPA 8020	Toluene EPA 8020	Ethylbenzene EPA 8020	Total Xylenes EPA 8020	MTBE EPA 8020	TRPH EPA 418.1	TPHD LUFT Method
		ft-MSL	feet	ft-MSL	feet	MWN	ft/ft		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
MW-3	08-01-95	39.32	17.00	22.32	ND	NR	NR	08-01-95	<50	<0.5	<0.5	<0.5	<0.5	--	600	76*
MW-3	12-14-95	39.32	16.70	22.62	ND	W	0.002	12-14-95	<50	<0.5	<0.5	<0.5	<0.5	<3	<500	<50
MW-3	03-21-96	39.32	14.17	25.15	ND	WSW	0.005	03-21-96	<50	<0.5	<0.5	<0.5	<0.5	<3	<500	<50
MW-3	05-24-96	39.32	15.30	24.02	ND	W	0.003	05-24-96	<50	<0.5	<0.5	<0.5	<0.5	<3	<500	<50
MW-3	08-09-96	39.32	17.58	21.74	ND	WNW	0.01	08-09-96	<50	<0.5	<0.5	<0.5	<0.5	<3	<500	--
MW-3	11-06-96	39.32	18.33	20.99	ND	WNW	0.007	11-06-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--
MW-3	03-24-97	39.32	15.44	23.88	ND	W	0.005	03-24-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--
MW-3	05-27-97	39.32	16.75	22.57	ND	NNW	0.006	05-28-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--
MW-3	08-07-97	39.32	18.35	20.97	ND	W	0.009	08-07-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--
MW-3	11-10-97	39.32	18.83	20.49	ND	W	0.002	11-10-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--
MW-4	08-01-95	38.10	15.65	22.45	ND	NR	NR	08-01-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--
MW-4	12-14-95	38.10	15.35	22.75	ND	W	0.002	12-14-95	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--
MW-4	03-21-96	38.10	12.74	25.36	ND	WSW	0.005	03-21-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--
MW-4	05-24-96	38.10	14.03	24.07	ND	W	0.003	05-24-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--
MW-4	08-09-96	38.10	16.10	22.00	ND	WNW	0.01	08-09-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--
MW-4	11-06-96	38.10	17.00	21.10	ND	WNW	0.007	11-06-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--
MW-4	03-24-97	38.10	14.21	23.89	ND	W	0.005	03-24-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--
MW-4	05-27-97	38.10	15.38	22.72	ND	NNW	0.006	05-28-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--
MW-4	08-07-97	38.10	16.95	21.15	ND	W	0.009	08-07-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--
MW-4	11-10-97	38.10	17.53	20.57	ND	W	0.002	11-10-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--

Table 2
Historical Groundwater Elevation and Analytical Data
Petroleum Hydrocarbons and Their Constituents

ARCO Service Station 2111
1156 Davis Street, San Leandro, California

Date: 03-12-98

Well Designation	Water Level Field Date	Top of Casing Elevation	Depth to Water	Groundwater Elevation	Floating Product Thickness	Groundwater Flow Direction	Hydraulic Gradient	Water Sample Field Date	TPHG LUFT Method	Benzene EPA 8020	Toluene EPA 8020	Ethylbenzene EPA 8020	Total Xylenes EPA 8020	MTBE EPA 8020	TRPH EPA 418.1	TPHD LUFT Method
		ft-MSL	feet	ft-MSL	feet	MWN	ft/ft		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
MW-5	03-21-96	37.21	12.60	24.61	ND	WSW	0.005	03-22-96	<50	<0.5	<0.5	<0.5	<0.5	82	--	--
MW-5	05-24-96	37.21	13.71	23.50	ND	W	0.003	05-24-96	<50	<0.5	<0.5	<0.5	<0.5	7	--	--
MW-5	08-09-96	37.21	15.60	21.61	ND	WNW	0.01	08-09-96	<50	<0.5	<0.5	<0.5	<0.5	8	--	--
MW-5	11-06-96	37.21	16.36	20.85	ND	WNW	0.007	11-06-96	<50	<0.5	<0.5	<0.5	<0.5	100	--	--
MW-5	03-24-97	37.21	13.87	23.34	ND	W	0.005	03-24-97	<50	<0.5	<0.5	<0.5	<0.5	460	--	--
MW-5	05-27-97	37.21	14.71	22.50	ND	NNW	0.006	05-28-97	<100^	<1^	<1^	<1^	<1^	120	--	--
MW-5	08-07-97	37.21	16.90	20.31	ND	W	0.009	08-07-97	<250^	<2.5^	<2.5^	<2.5^	<2.5^	250	--	--
MW-5	11-10-97	37.21	16.88	20.33	ND	W	0.002	11-10-97	<1000^	<10^	<10^	<10^	<10^	770	--	--
MW-6	03-21-96	37.11	11.55	25.56	ND	WSW	0.005	03-22-96	<50	<0.5	1.9	<0.5	<0.5	<3	--	--
MW-6	05-24-96	37.11	12.80	24.31	ND	W	0.003	05-24-96	<50	<0.5	<0.5	<0.5	<0.5	6	--	--
MW-6	08-09-96	37.11	Not surveyed: Car parked on well			NR	NR	08-09-96	Not sampled: Car parked on well							
MW-6	11-06-96	37.11	Not surveyed: Car parked on well			NR	NR	11-06-96	Not surveyed: Car parked on well							
MW-6	03-24-97	37.11	13.06	24.05	ND	W	0.005	03-24-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--
MW-6	05-27-97	37.11	14.30	22.81	ND	NNW	0.006	05-28-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--
MW-6	08-07-97	37.11	16.40	20.71	ND	W	0.009	08-07-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--
MW-6	11-10-97	37.11	16.53	20.58	ND	W	0.002	11-10-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--
MW-7	03-21-96	38.68	13.32	25.36	ND	WSW	0.005	03-22-96	32000	870	450	970	4900	280	--	--
MW-7	05-24-96	38.68	14.58	24.10	ND	W	0.003	05-24-96	22000	570	40	42	1900	<200*	--	--
MW-7	08-09-96	38.68	15.33	23.35	ND	WNW	0.01	08-09-96	14000	390	<10^	180	470	<200*	--	--
MW-7	11-06-96	38.68	16.95	21.73	ND	WNW	0.007	11-06-96	9500	440	<10^	210	150	<100*	--	--
MW-7	03-24-97	38.68	14.65	24.03	ND	W	0.005	03-24-97	6400	420	<10^	260	13	480	--	--
MW-7	05-27-97	38.68	15.58	23.10	ND	NNW	0.006	05-28-97	5000	420	<5^	230	10	460	--	--
MW-7	08-07-97	38.68	17.10	21.58	ND	W	0.009	08-07-97	3900	350	<5^	200	10	330	--	--
MW-7	11-10-97	38.68	18.05	20.63	ND	W	0.002	11-10-97	3600	590	10	370	43	540	--	--

Table 2
Historical Groundwater Elevation and Analytical Data
Petroleum Hydrocarbons and Their Constituents

ARCO Service Station 2111
1156 Davis Street, San Leandro, California

Date: 03-12-98

Well Designation	Water Level Field Date	Top of Casing Elevation	Depth to Water	Groundwater Elevation	Floating Product Thickness	Groundwater Flow Direction	Hydraulic Gradient	Water Sample Field Date	TPHG LUFT Method	Benzene EPA 8020	Toluene EPA 8020	Ethylbenzene EPA 8020	Total Xylenes EPA 8020	MTBE EPA 8020	TRPH EPA 418.1	TPHD LUFT Method
		ft-MSL	feet	ft-MSL	feet	MWN	ft/ft		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L

ft-MSL: elevation in feet, relative to mean sea level
MWN: ground-water flow direction and gradient apply to the entire monitoring well network
ft/ft: foot per foot
TPHG: total petroleum hydrocarbons as gasoline, California DHS LUFT Method
µg/L: micrograms per liter
EPA: United States Environmental Protection Agency
MTBE: Methyl tert-butyl ether
TRPH: total recoverable petroleum hydrocarbons
TPHD: total petroleum hydrocarbons as diesel, California DHS LUFT Method
NR: not reported; data not available or not measurable
ND: none detected
W: west
*: chromatogram fingerprint is not characteristic of diesel
^: method reporting limit was raised due to: (1) high analyte concentration requiring sample dilution, or (2) matrix interference
- -: not available

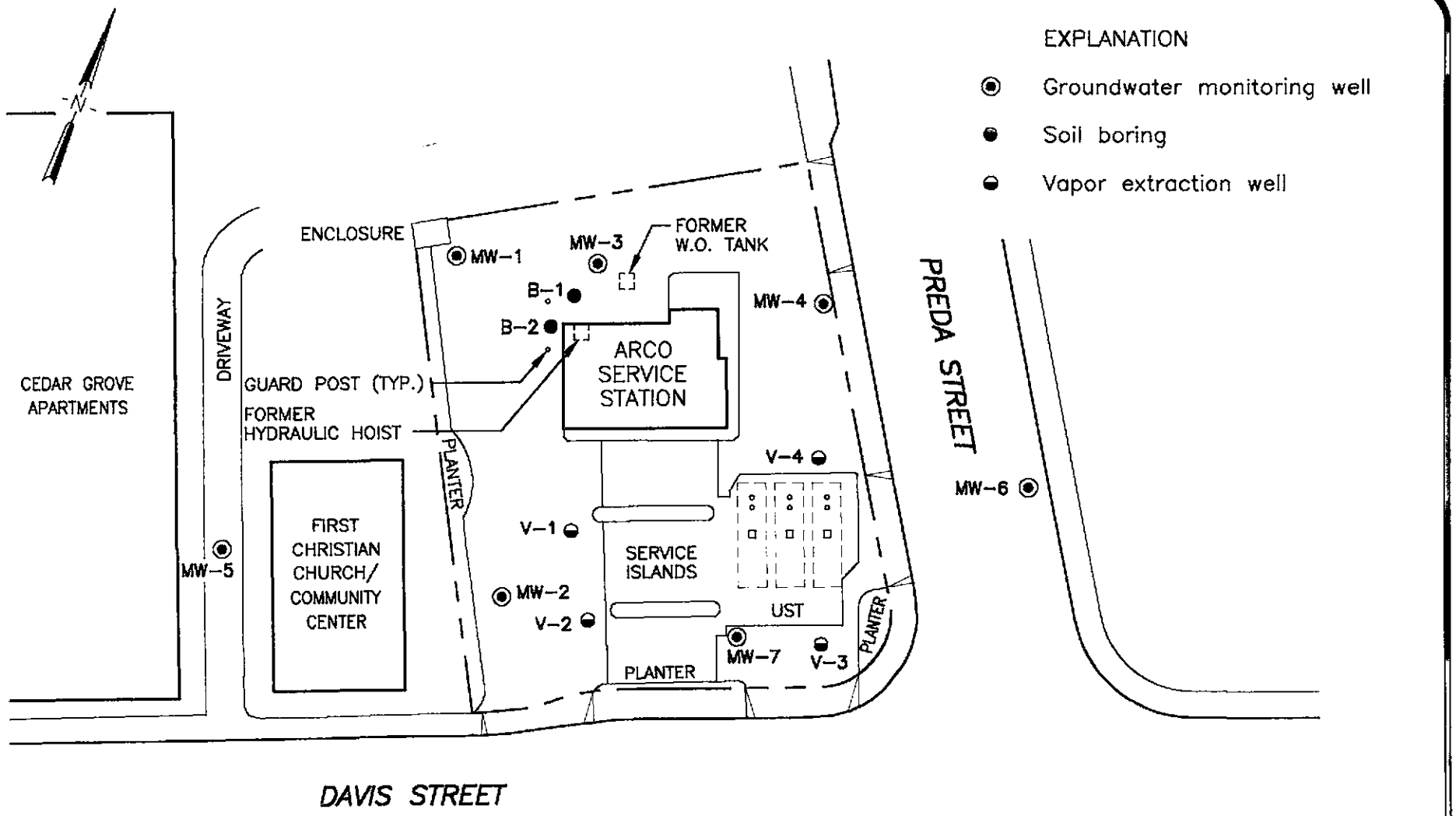
EMCON

DATE NOV. 1997
DWN KAJ
APP
REV
PROJECT NO.
805-127.005

FIGURE 1
ARCO PRODUCTS COMPANY
SERVICE STATION 2111, 1156 DAVIS STREET
SAN LEANDRO, CALIFORNIA
QUARTERLY GROUNDWATER MONITORING
SITE LOCATION

EA-SANJOSE-CAD/DRAWINGS: I:\0Z002\SITELOC.dwg Xrefs: <NONE>
Scale: 1 = 1.00 DimScale: 1 = 1.00 Date: 3/12/97 Time: 5:19 PM Operator: KAJ

EA-SANJOSE-CAD/DRAWINGS: G:\805-127\SJSITE.dwg Xrefs: <NONE>
Scale: 1 = 40.00 DimScale: 1 = 40.00 Date: 12/1/97 Time: 6:12 PM Operator: KAJ



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0 40 80
SCALE IN FEET

DATE NOV. 1997
DWN KAJ
APP
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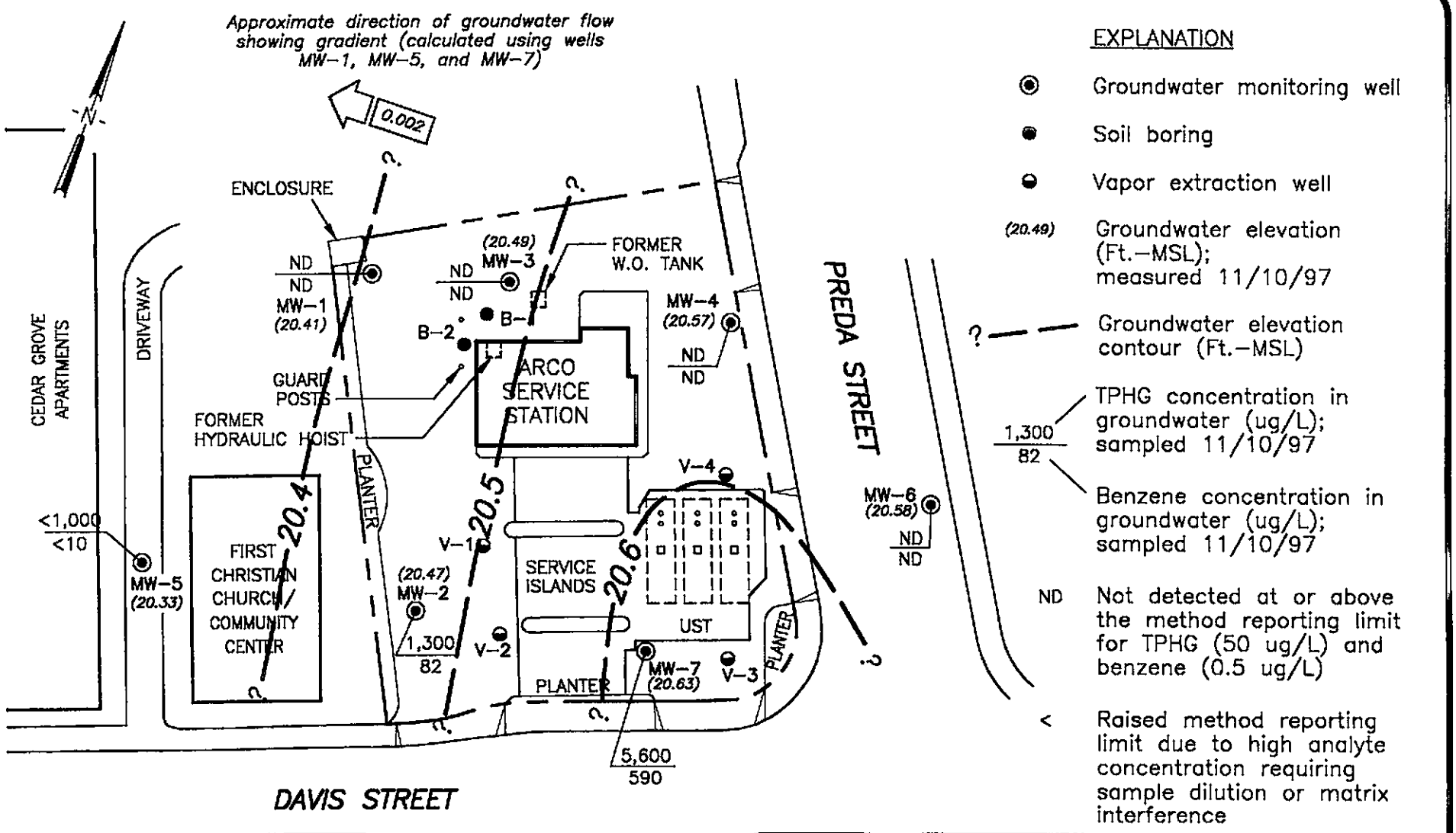
PROJECT NO.
805-127.005

FIGURE 2
ARCO PRODUCTS COMPANY
SERVICE STATION 2111, 1156 DAVIS ST.
SAN LEANDRO, CALIFORNIA
QUARTERLY GROUNDWATER MONITORING
SITE PLAN

EA-SANJOSE-CAD/DRAWINGS: R:\805-127\SJGWELEV.dwg Xrefs: <NONE>
Scale: 1 = 40.00 DimScale: 1 = 40.00 Date: 3/12/98 Time: 10:31 AM Operator: KAJ



emcon

0 40 80
SCALE IN FEET

DATE MAR. 1998
DWN KAJ
APP
REV
PROJECT NO.
805-127.005

FIGURE 3
ARCO PRODUCTS COMPANY
SERVICE STATION 2111, 1156 DAVIS ST.
SAN LEANDRO, CALIFORNIA
QUARTERLY GROUNDWATER MONITORING
GROUNDWATER DATA - 4TH QUARTER 1997

APPENDIX A

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

Columbia Analytical Services INC.

November 21, 1997 Service Request No.: S9702313

Gary Messerotes
EMCON
1921 Ringwood Avenue
San Jose, CA 95131

RE: 20805-127.005/TO#21133.00/2111 SAN LEANDRO

Dear Mr. Messerotes:

The following pages contain analytical results for sample(s) received by the laboratory on November 10, 1997. Results of sample analyses are followed by Appendix A which contains sample custody documentation and quality assurance deliverables requested for this project. The work requested has been assigned the Service Request No. listed above. To help expedite our service, please refer to this number when contacting the laboratory.

Analytical results were produced by procedures consistent with Columbia Analytical Services' (CAS) Quality Assurance Manual (with any deviations noted). Signature of this CAS Analytical Report below confirms that pages 2 through 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

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 Products Company	**Service Request:**	S9702313
Project:	20805-127.005/TO#21133.00/2111 SAN LEANDRO	**Date Collected:**	11/10/97
Sample Matrix:	Water	**Date Received:**	11/10/97

BTEX, MTBE and TPH as Gasoline

Sample Name:	MW-5(17)	Units:	ug/L (ppb)
Lab Code:	S9702313-001	Basis:	NA
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	20	NA	11/14/97	<1000	C1
Benzene	EPA 5030	8020	0.5	20	NA	11/14/97	<10	C1
Toluene	EPA 5030	8020	0.5	20	NA	11/14/97	<10	C1
Ethylbenzene	EPA 5030	8020	0.5	20	NA	11/14/97	<10	C1
Xylenes, Total	EPA 5030	8020	0.5	20	NA	11/14/97	<10	C1
Methyl *tert*-Butyl Ether	EPA 5030	8020	3	20	NA	11/14/97	770	

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

1S22/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	ARCO Products Company	**Service Request:**	S9702313
Project:	20805-127.005/TO#21133.00/2111 SAN LEANDRO	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

BTEX, MTBE and TPH as Gasoline

Sample Name:	Method Blank	Units:	ug/L (ppb)
Lab Code:	S971113-WB1	Basis:	NA
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	1	NA	11/13/97	ND	
Benzene	EPA 5030	8020	0.5	1	NA	11/13/97	ND	
Toluene	EPA 5030	8020	0.5	1	NA	11/13/97	ND	
Ethylbenzene	EPA 5030	8020	0.5	1	NA	11/13/97	ND	
Xylenes, Total	EPA 5030	8020	0.5	1	NA	11/13/97	ND	
Methyl *tert*-Butyl Ether	EPA 5030	8020	3	1	NA	11/13/97	ND	

1522/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: 20805-127.005/TO#21133.00/2111 SAN LEANDRO
Sample Matrix: Water

Service Request: S9702313
Date Collected: NA
Date Received: NA
Date Extracted: NA
Date Analyzed: NA

Surrogate Recovery Summary
BTEX, MTBE and TPH as Gasoline

Prep Method: EPA 5030
Analysis Method: 8020 CA/LUFT

Units: PERCENT
Basis: NA

Sample Name	Lab Code	Test Notes	Percent Recovery	
			4-Bromofluorobenzene	a,a,a-Trifluorotoluene
MW-5(17)	S9702313-001		101	93
BATCH QC	S9702252-001MS		99	97
BATCH QC	S9702252-001DMS		99	98
Method Blank	S971113-WB1		100	99
CAS Acceptance Limits:			69-116	69-116

SUR2/020397p

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: 20805-127.005/TO#21133.00/2111 SAN LEANDRO
Sample Matrix: Water

Service Request: S9702313
Date Collected: NA
Date Received: NA
Date Extracted: NA
Date Analyzed: 11/14/97

Matrix Spike/Duplicate Matrix Spike Summary
BTE

Sample Name: BATCH QC
Lab Code: S9702252-001MS, S9702252-001DMS
Test Notes:

Units: ug/L (ppb)
Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Spike Level MS	Spike Level DMS	Sample Result	Spike Result MS	Spike Result DMS	Percent Recovery MS	Percent Recovery DMS	CAS Acceptance Limits	Relative Percent Difference
Benzene	EPA 5030	8020	0.5	25	25	ND	23	24	92	96	75-135	4
Toluene	EPA 5030	8020	0.5	25	25	ND	23	22	92	88	73-136	4
Ethylbenzene	EPA 5030	8020	0.5	25	25	ND	23	22	92	88	69-142	4

DMS/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: 20805-127.005/TO#21133.00/2111 SAN LEANDRO

Service Request: S9702313
Date Analyzed: 11/13/97

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

Sample Name: ICV
Lab Code: ICV1
Test Notes:

Units: ug/L (ppb)
Basis: NA

ICV Source:

Analyte	Prep Method	Analysis Method	True Value	Result	CAS Percent Recovery Acceptance Limits	Percent Recovery	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	250	260	90-110	104	
Benzene	EPA 5030	8020	25	26	85-115	104	
Toluene	EPA 5030	8020	25	26	85-115	104	
Ethylbenzene	EPA 5030	8020	25	26	85-115	104	
Xylenes, Total	EPA 5030	8020	75	79	85-115	105	
Methyl *tert*-Butyl Ether	EPA 5030	8020	25	26	85-115	104	

ICV032196

TPH/BTEX

ARCO Products Company

Division of Atlantic/Richfield Company

Task Order No. 71133.00

Chain of Custody

ARCO Facility no. 211	City (Facility) San Leandro	Project manager (Consultant) Gary Messerotes	Laboratory Name CAS
ARCO engineer Paul Supple	Telephone no. (ARCO)	Telephone no. (Consultant) (408) 453-7300	Fax no. (Consultant) (408) 453-0457
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 including BTBE EPA M602/8020/8015	TPH Modified 8015 Gas ☐ Diesel ☐	Oil and Grease 413.1 ☐ 413.2 ☐	TPH EPA 418.1/SM 503E	EPA 601/8010	EPA 624/8240	EPA 625/8270	TCLP Semi Metals ☐ VOA ☐ VOA ☐	CAM Metals EPA 6010/7000 TTLC ☐ STLC ☐	Lead Org/DHS ☐ Lead EPA 7420/7421 ☐			
MW-5		2		X		X	HCL	11-10-97	14:15		X												

Method of shipment: Sampler will deliver

Special Detection Limit/reporting: Lowest Possible

Special QA/QC: As Normal

Remarks: 2-40ml HCL VOAs

#20805-127.005

Lab Number: 59702313

Turnaround Time:

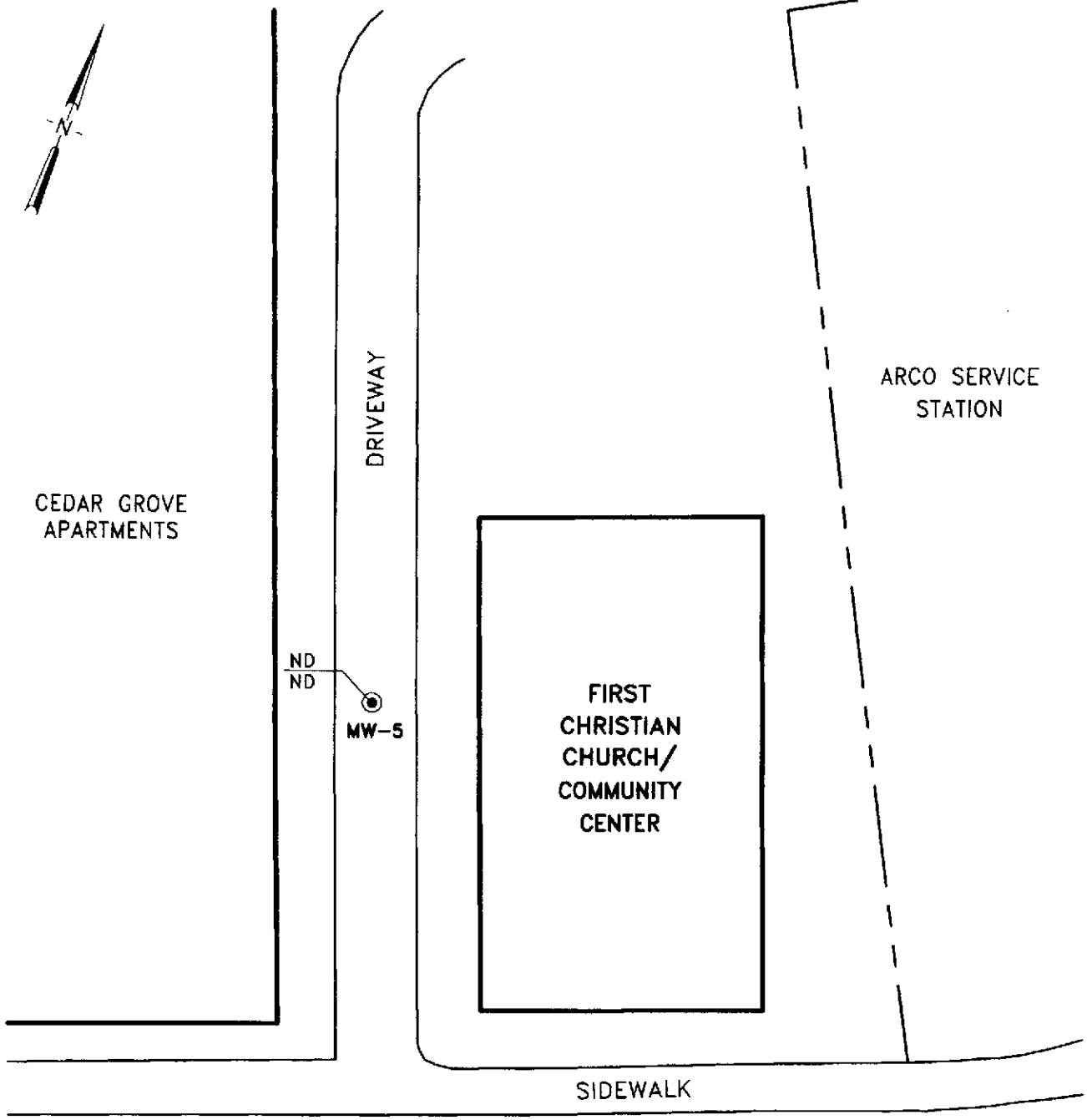
- Priority Rush 1 Business Day ☐
- Rush 2 Business Days ☐
- Expedited 5 Business Days ☐
- Standard 10 Business Days ☒

DVE 11/21/97

Condition of sample:		Temperature received:	
Relinquished by sampler	Date 11/10/97 Time 1455	Received by	
Relinquished by	Date Time	Received by	
Relinquished by	Date Time	Received by laboratory Kay Somlin	Date 11/10/97 Time 1455

Distribution: White Copy – Laboratory: Canary Copy – ARCO Environmental Engineering: Pink Copy – Consultant

R20/543



EMCON

DATE NOV. 1997
DWN KAJ
APP
REV
PROJECT NO. 805-127.005

FIGURE 1
FIRST CHRISTIAN CHURCH
1190 DAVIS STREET
SAN LEANDRO, CALIFORNIA
QUARTERLY GROUNDWATER MONITORING
GENERALIZED SITE PLAN

EA-SANJOSE-CAD/DRAWINGS: G:\805-127\SJFIG1.dwg Xrefs: <NONE>
Scale: 1 = 20.00 DimScale: 1 = 20.00 Date: 12/2/97 Time: 9:01 AM Operator: KAJ

Columbia Analytical Services INC.

November 21, 1997 Service Request No.: S9702312

Gary Messerotes
EMCON
1921 Ringwood Avenue
San Jose, CA 95131

RE: 20805-127.005/TO#21133.00/2111 SAN LEANDRO

Dear Mr. Messerotes:

The following pages contain analytical results for sample(s) received by the laboratory on November 10, 1997. Results of sample analyses are followed by Appendix A which contains sample custody documentation and quality assurance deliverables requested for this project. The work requested has been assigned the Service Request No. listed above. To help expedite our service, please refer to this number when contacting the laboratory.

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Steven L. Green
Project Chemist

Greg Anderson
Regional QA Coordinator

COLUMBIA ANALYTICAL SERVICES, Inc.
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LUFT	Leaking Underground Fuel Tank
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TSS	Total Suspended Solids
TTLC	Total Threshold Limit Concentration
VOA	Volatile Organic Analyte(s)

ACRONLST.DOC 7/14/95

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	ARCO Products Company	**Service Request:**	S9702312
Project:	20805-127.005/TO#21133.00/2111 SAN LEANDRO	**Date Collected:**	11/10/97
Sample Matrix:	Water	**Date Received:**	11/10/97

BTEX, MTBE and TPH as Gasoline

Sample Name:	MW-1(20)	Units:	ug/L (ppb)
Lab Code:	S9702312-001	Basis:	NA
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	1	NA	11/15/97	ND	
Benzene	EPA 5030	8020	0.5	1	NA	11/15/97	ND	
Toluene	EPA 5030	8020	0.5	1	NA	11/15/97	ND	
Ethylbenzene	EPA 5030	8020	0.5	1	NA	11/15/97	ND	
Xylenes, Total	EPA 5030	8020	0.5	1	NA	11/15/97	ND	
Methyl *tert*-Butyl Ether	EPA 5030	8020	3	1	NA	11/15/97	ND	

1S22/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	ARCO Products Company	**Service Request:**	S9702312
Project:	20805-127.005/TO#21133.00/2111 SAN LEANDRO	**Date Collected:**	11/10/97
Sample Matrix:	Water	**Date Received:**	11/10/97

BTEX, MTBE and TPH as Gasoline

Sample Name:	MW-4(18)	Units:	ug/L (ppb)
Lab Code:	S9702312-002	Basis:	NA
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	1	NA	11/15/97	ND	
Benzene	EPA 5030	8020	0.5	1	NA	11/15/97	ND	
Toluene	EPA 5030	8020	0.5	1	NA	11/15/97	ND	
Ethylbenzene	EPA 5030	8020	0.5	1	NA	11/15/97	ND	
Xylenes, Total	EPA 5030	8020	0.5	1	NA	11/15/97	ND	
Methyl *tert*-Butyl Ether	EPA 5030	8020	3	1	NA	11/15/97	ND	

1S22/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	ARCO Products Company	**Service Request:**	S9702312
Project:	20805-127.005/TO#21133.00/2111 SAN LEANDRO	**Date Collected:**	11/10/97
Sample Matrix:	Water	**Date Received:**	11/10/97

BTEX, MTBE and TPH as Gasoline

Sample Name:	MW-3(19)	Units:	ug/L (ppb)
Lab Code:	S9702312-003	Basis:	NA
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	1	NA	11/16/97	ND	
Benzene	EPA 5030	8020	0.5	1	NA	11/16/97	ND	
Toluene	EPA 5030	8020	0.5	1	NA	11/16/97	ND	
Ethylbenzene	EPA 5030	8020	0.5	1	NA	11/16/97	ND	
Xylenes, Total	EPA 5030	8020	0.5	1	NA	11/16/97	ND	
Methyl *tert*-Butyl Ether	EPA 5030	8020	3	1	NA	11/16/97	ND	

1S22/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	ARCO Products Company	**Service Request:**	S9702312
Project:	20805-127.005/TO#21133.00/2111 SAN LEANDRO	**Date Collected:**	11/10/97
Sample Matrix:	Water	**Date Received:**	11/10/97

BTEX, MTBE and TPH as Gasoline

Sample Name:	MW-6(17)	Units:	ug/L (ppb)
Lab Code:	S9702312-004	Basis:	NA
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	1	NA	11/16/97	ND	
Benzene	EPA 5030	8020	0.5	1	NA	11/16/97	ND	
Toluene	EPA 5030	8020	0.5	1	NA	11/16/97	ND	
Ethylbenzene	EPA 5030	8020	0.5	1	NA	11/16/97	ND	
Xylenes, Total	EPA 5030	8020	0.5	1	NA	11/16/97	ND	
Methyl *tert*-Butyl Ether	EPA 5030	8020	3	1	NA	11/16/97	ND	

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	ARCO Products Company	**Service Request:**	S9702312
Project:	20805-127.005/TO#21133.00/2111 SAN LEANDRO	**Date Collected:**	11/10/97
Sample Matrix:	Water	**Date Received:**	11/10/97

BTEX, MTBE and TPH as Gasoline

Sample Name:	MW-2(18)	Units:	ug/L (ppb)
Lab Code:	S9702312-005	Basis:	NA
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	10	NA	11/19/97	1300	
Benzene	EPA 5030	8020	0.5	10	NA	11/19/97	82	
Toluene	EPA 5030	8020	0.5	10	NA	11/19/97	<5	C1
Ethylbenzene	EPA 5030	8020	0.5	10	NA	11/19/97	14	
Xylenes, Total	EPA 5030	8020	0.5	10	NA	11/19/97	49	
Methyl *tert*-Butyl Ether	EPA 5030	8020	3	10	NA	11/19/97	550	

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

1S22/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	ARCO Products Company	**Service Request:**	S9702312
Project:	20805-127.005/TO#21133.00/2111 SAN LEANDRO	**Date Collected:**	11/10/97
Sample Matrix:	Water	**Date Received:**	11/10/97

BTEX, MTBE and TPH as Gasoline

Sample Name:	MW-7(19)	Units:	ug/L (ppb)
Lab Code:	S9702312-006	Basis:	NA
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	10	NA	11/16/97	5600	
Benzene	EPA 5030	8020	0.5	10	NA	11/16/97	590	
Toluene	EPA 5030	8020	0.5	10	NA	11/16/97	10	
Ethylbenzene	EPA 5030	8020	0.5	10	NA	11/16/97	370	
Xylenes, Total	EPA 5030	8020	0.5	10	NA	11/16/97	43	
Methyl *tert*-Butyl Ether	EPA 5030	8020	3	10	NA	11/16/97	540	

1S22/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	ARCO Products Company	**Service Request:**	S9702312
Project:	20805-127.005/TO#21133.00/2111 SAN LEANDRO	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

BTEX, MTBE and TPH as Gasoline

Sample Name:	Method Blank	Units:	ug/L (ppb)
Lab Code:	S971114-WB1	Basis:	NA
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	1	NA	11/14/97	ND	
Benzene	EPA 5030	8020	0.5	1	NA	11/14/97	ND	
Toluene	EPA 5030	8020	0.5	1	NA	11/14/97	ND	
Ethylbenzene	EPA 5030	8020	0.5	1	NA	11/14/97	ND	
Xylenes, Total	EPA 5030	8020	0.5	1	NA	11/14/97	ND	
Methyl *tert*-Butyl Ether	EPA 5030	8020	3	1	NA	11/14/97	ND	

1S22/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	ARCO Products Company	**Service Request:**	S9702312
Project:	20805-127.005/TO#21133.00/2111 SAN LEANDRO	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

BTEX, MTBE and TPH as Gasoline

Sample Name:	Method Blank	Units:	ug/L (ppb)
Lab Code:	S971117-WB1	Basis:	NA
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	1	NA	11/17/97	ND	
Benzene	EPA 5030	8020	0.5	1	NA	11/17/97	ND	
Toluene	EPA 5030	8020	0.5	1	NA	11/17/97	ND	
Ethylbenzene	EPA 5030	8020	0.5	1	NA	11/17/97	ND	
Xylenes, Total	EPA 5030	8020	0.5	1	NA	11/17/97	ND	
Methyl *tert*-Butyl Ether	EPA 5030	8020	3	1	NA	11/17/97	ND	

1S22/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: 20805-127.005/TO#21133.00/2111 SAN LEANDRO
Sample Matrix: Water

Service Request: S9702312
Date Collected: NA
Date Received: NA
Date Extracted: NA
Date Analyzed: NA

Surrogate Recovery Summary
BTEX, MTBE and TPH as Gasoline

Prep Method: EPA 5030
Analysis Method: 8020 CA/LUFT

Units: PERCENT
Basis: NA

Sample Name	Lab Code	Test Notes	Percent Recovery 4-Bromofluorobenzene	Percent Recovery a,a,a-Trifluorotoluene
MW-1(20)	S9702312-001		100	91
MW-4(18)	S9702312-002		98	94
MW-3(19)	S9702312-003		99	98
MW-6(17)	S9702312-004		99	93
MW-2(18)	S9702312-005		101	93
MW-7(19)	S9702312-006		95	96
BATCH QC	S9702317-001MS		98	97
BATCH QC	S9702317-001DMS		100	94
Method Blank	S971114-WB1		101	98
Method Blank	S971117-WB1		98	90
CAS Acceptance Limits:			69-116	69-116

SUR2/020397p

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: 20805-127.005/TO#21133.00/2111 SAN LEANDRO
Sample Matrix: Water

Service Request: S9702312
Date Collected: NA
Date Received: NA
Date Extracted: NA
Date Analyzed: 11/15/97

Matrix Spike/Duplicate Matrix Spike Summary
BTE

Sample Name: BATCH QC
Lab Code: S9702317-001MS, S9702317-001DMS
Test Notes:

Units: ug/L (ppb)
Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Spike Level MS	Spike Level DMS	Sample Result	Spike Result MS	Spike Result DMS	Percent Recovery MS	Percent Recovery DMS	CAS Acceptance Limits	Relative Percent Difference
Benzene	EPA 5030	8020	0.5	25	25	ND	24	25	96	100	75-135	4
Toluene	EPA 5030	8020	0.5	25	25	ND	25	25	100	100	73-136	<1
Ethylbenzene	EPA 5030	8020	0.5	25	25	ND	23	22	92	88	69-142	4

DMS/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: 20805-127.005/TO#21133.00/2111 SAN LEANDRO

Service Request: S9702312
Date Analyzed: 11/14/97

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

Sample Name: ICV
Lab Code: ICV1
Test Notes:

Units: ug/L (ppb)
Basis: NA

ICV Source:

Analyte	Prep Method	Analysis Method	True Value	Result	CAS Percent Recovery Acceptance Limits	Percent Recovery	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	250	250	90-110	100	
Benzene	EPA 5030	8020	25	23	85-115	92	
Toluene	EPA 5030	8020	25	23	85-115	92	
Ethylbenzene	EPA 5030	8020	25	23	85-115	92	
Xylenes, Total	EPA 5030	8020	75	68	85-115	91	
Methyl *tert*-Butyl Ether	EPA 5030	8020	25	24	85-115	96	

ICV/032196

TPHVOA F

ARCO Products Company
Division of Atlantic/Richfield Company

Task Order No. 21133.00

Chain of Custody

ARCO Facility no. 2111	City (Facility) San Leandro	Project manager (Consultant) Gary Messerotes	Laboratory Name CAS
ARCO engineer Paul Supple	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 incl. MTBE EPA M602/8020/8015	TPH Modified 8015 Gas ☐ Diesel ☐	Oil and Grease 413.1 ☐ 413.2 ☐	TPH EPA 418.1/SM 503E	EPA 601/8010	EPA 624/8240	EPA 625/8270	TCLP Semi Metals ☐ VOA ☐ VOA ☐	CAM Metals EPA 6010/7000 TTLC ☐ STLC ☐	Lead Org/DHS ☐ Lead EPA 7420/7421 ☐
MW-1(20)	1	2		X		X	HCL	11-10-97	14:05		X									
MW-4(18)	2	2		X		X	HCL		13:15		X									
MW-3(19)	3	2		X		X	HCL		13:45		X									
MW-6(17)	4	2		X		X	HCL		12:55		X									
~~MW-5( )~~		2		~~X~~		~~X~~	~~HCL~~				~~X~~									
MW-2(18)	5	2		X		X	HCL		13:30		X									
MW-7(19)	6	2		X		X	HCL	↓	14:30		X									

Special Detection Limit/reporting: Lowest Possible

Special QA/QC: As Normal

Remarks: 2-40ml HCL VOAs

#20805-127.005

Lab Number: 9702312

Turnaround Time:

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

DVE 11/21/97

Condition of sample:		Temperature received:	
Relinquished by sampler	Date 11/10/97 Time 1455	Received by	
Relinquished by	Date Time	Received by	
Relinquished by	Date Time	Received by laboratory CAS	Date 11/11/97 Time 1455

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

March 13, 1998
Project 20805-127.005

Reverend Sura D. Phoenix
First Christian Church
1190 Davis Street
San Leandro, California 94577

Re: Fourth quarter 1997 laboratory analytical results, groundwater samples, First Christian Church, 1190 Davis Street, San Leandro, California

Dear Reverend Phoenix:

Enclosed please find copies of the laboratory analytical results for the groundwater sample collected from well MW-5 during the fourth quarter of 1997. This well is located at the First Christian Church, 1190 Davis Street, San Leandro, California. The groundwater samples were collected on November 10, 1997 during quarterly sampling of the ARCO Products Company service station 2111, 1156 Davis Street, San Leandro. The laboratory analytical results indicate that the groundwater sample concentrations were not detected above the raised method reporting limit (MRL) for total petroleum hydrocarbons as gasoline, and the gasoline constituents benzene, toluene, ethylbenzene, and total xylenes. However, methyl tert-butyl ether (MTBE) was detected at a concentration of 770 micrograms per liter (µg/L).

Please call if you have questions.

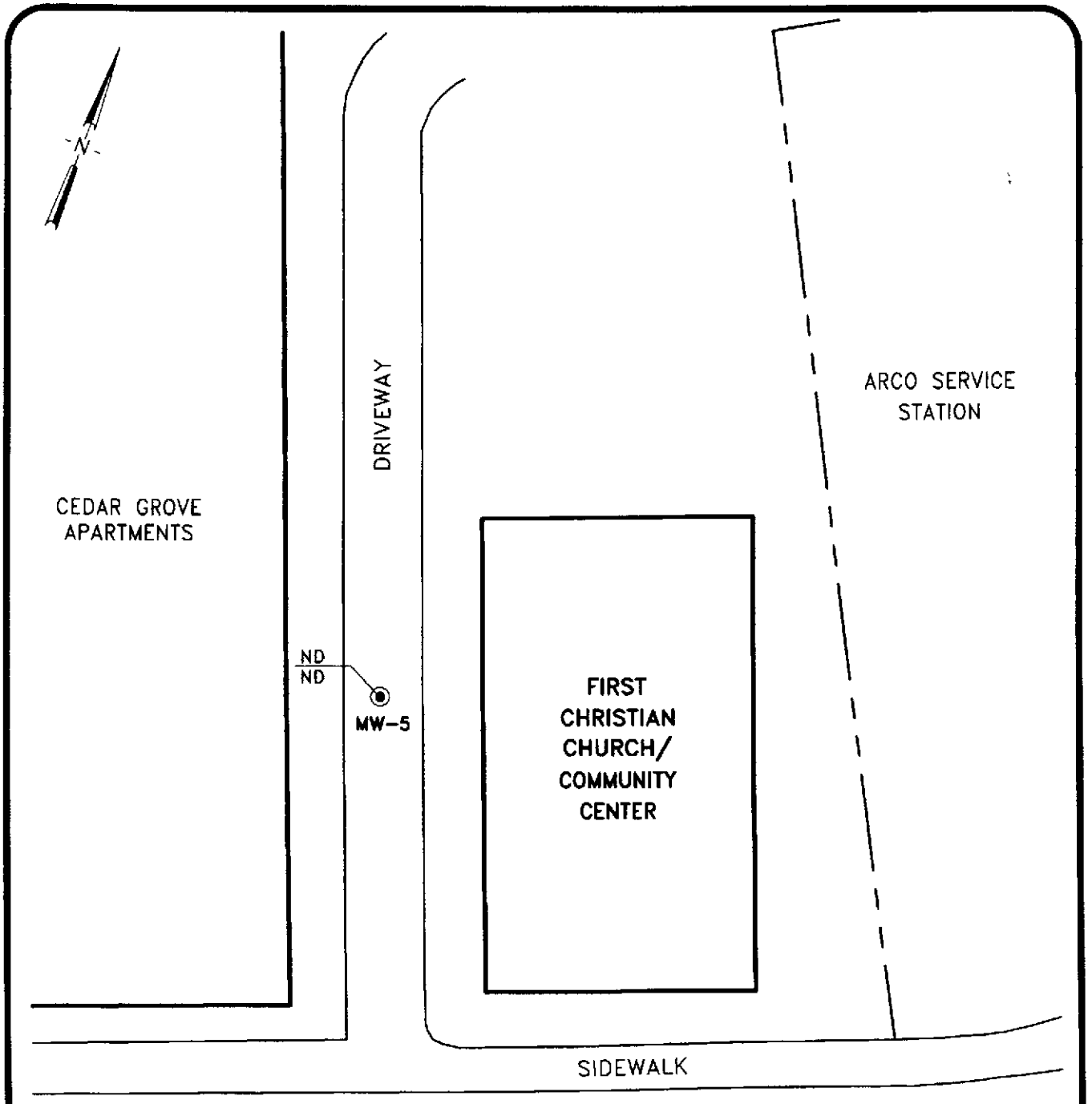
Sincerely,

EMCON

Gary P. Messerotes
Project Manager

Attachments: Figure 1 - Generalized Site Plan
Attachment A -Copy of Analytical Results and Chain-of-Custody Documentation, Well MW-5, Fourth Quarter 1997

cc: Kevin Tinsley, ACHCSA
Paul Supple, ARCO Products Company
File



EXPLANATION

- ◉ Groundwater monitoring well
- ND / ND — TPHG concentration in groundwater (ppb) / Benzene concentration in groundwater (ppb)
- ND — Not detected

EMCON

DATE NOV. 1997
DWN KAJ
APP
REV
PROJECT NO. 805-127.005

FIGURE 1
FIRST CHRISTIAN CHURCH
1190 DAVIS STREET
SAN LEANDRO, CALIFORNIA
QUARTERLY GROUNDWATER MONITORING GENERALIZED SITE PLAN

EA-SANJOSE-CAD/DRAWINGS: G:\805-127\SJFIG1.dwg Xrefs: <NONE>
Scale: 1 = 20.00 DimScale: 1 = 20.00 Date: 12/2/97 Time: 9:01 AM Operator: KAJ

ATTACHMENT A

COPY OF ANALYTICAL RESULTS AND CHAIN-OF-CUSTODY DOCUMENTATION, WELL MW-5, FOURTH QUARTER 1997

Columbia Analytical Services, Inc.

November 21, 1997 Service Request No.: S9702313

Gary Messerotes
EMCON
1921 Ringwood Avenue
San Jose, CA 95131

RE: 20805-127.005/TO#21133.00/2111 SAN LEANDRO

Dear Mr. Messerotes:

The following pages contain analytical results for sample(s) received by the laboratory on November 10, 1997. Results of sample analyses are followed by Appendix A which contains sample custody documentation and quality assurance deliverables requested for this project. The work requested has been assigned the Service Request No. listed above. To help expedite our service, please refer to this number when contacting the laboratory.

Analytical results were produced by procedures consistent with Columbia Analytical Services' (CAS) Quality Assurance Manual (with any deviations noted). Signature of this CAS Analytical Report below confirms that pages 2 through 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

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 Products Company	**Service Request:**	S9702313
Project:	20805-127.005/TO#21133.00/2111 SAN LEANDRO	**Date Collected:**	11/10/97
Sample Matrix:	Water	**Date Received:**	11/10/97

BTEX, MTBE and TPH as Gasoline

Sample Name:	MW-5(17)	Units:	ug/L (ppb)
Lab Code:	S9702313-001	Basis:	NA
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	20	NA	11/14/97	<1000	C1
Benzene	EPA 5030	8020	0.5	20	NA	11/14/97	<10	C1
Toluene	EPA 5030	8020	0.5	20	NA	11/14/97	<10	C1
Ethylbenzene	EPA 5030	8020	0.5	20	NA	11/14/97	<10	C1
Xylenes, Total	EPA 5030	8020	0.5	20	NA	11/14/97	<10	C1
Methyl *tert*-Butyl Ether	EPA 5030	8020	3	20	NA	11/14/97	770	

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

1S22/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	ARCO Products Company	**Service Request:**	S9702313
Project:	20805-127.005/TO#21133.00/2111 SAN LEANDRO	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

BTEX, MTBE and TPH as Gasoline

Sample Name:	Method Blank	Units:	ug/L (ppb)
Lab Code:	S971113-WB1	Basis:	NA
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	1	NA	11/13/97	ND	
Benzene	EPA 5030	8020	0.5	1	NA	11/13/97	ND	
Toluene	EPA 5030	8020	0.5	1	NA	11/13/97	ND	
Ethylbenzene	EPA 5030	8020	0.5	1	NA	11/13/97	ND	
Xylenes, Total	EPA 5030	8020	0.5	1	NA	11/13/97	ND	
Methyl *tert*-Butyl Ether	EPA 5030	8020	3	1	NA	11/13/97	ND	

1S22/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	ARCO Products Company	**Service Request:**	S9702313
Project:	20805-127.005/TO#21133.00/2111 SAN LEANDRO	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	NA
		Date Analyzed:	NA

Surrogate Recovery Summary
BTEX, MTBE and TPH as Gasoline

Prep Method:	EPA 5030	Units:	PERCENT
Analysis Method:	8020 CA/LUFT	Basis:	NA

Sample Name	Lab Code	Test Notes	Percent Recovery	
			4-Bromofluorobenzene	a,a,a-Trifluorotoluene
MW-5(17)	S9702313-001		101	93
BATCH QC	S9702252-001MS		99	97
BATCH QC	S9702252-001DMS		99	98
Method Blank	S971113-WB1		100	99
CAS Acceptance Limits:			69-116	69-116

SUR2/020397p

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	ARCO Products Company	**Service Request:**	S9702313
Project:	20805-127.005/TO#21133.00/2111 SAN LEANDRO	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	NA
		Date Analyzed:	11/14/97

Matrix Spike/Duplicate Matrix Spike Summary
BTE

Sample Name:	BATCH QC	Units:	ug/L (ppb)
Lab Code:	S9702252-001MS, S9702252-001DMS	Basis:	NA
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	Spike Level MS	Spike Level DMS	Sample Result	Spike Result MS	Spike Result DMS	Percent Recovery MS	Percent Recovery DMS	CAS Acceptance Limits	Relative Percent Difference
Benzene	EPA 5030	8020	0.5	25	25	ND	23	24	92	96	75-135	4
Toluene	EPA 5030	8020	0.5	25	25	ND	23	22	92	88	73-136	4
Ethylbenzene	EPA 5030	8020	0.5	25	25	ND	23	22	92	88	69-142	4

DMS/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: 20805-127.005/TO#21133.00/2111 SAN LEANDRO

Service Request: S9702313
Date Analyzed: 11/13/97

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

Sample Name: ICV
Lab Code: ICV1
Test Notes:

Units: ug/L (ppb)
Basis: NA

ICV Source:

Analyte	Prep Method	Analysis Method	True Value	Result	CAS Percent Recovery Acceptance Limits	Percent Recovery	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	250	260	90-110	104	
Benzene	EPA 5030	8020	25	26	85-115	104	
Toluene	EPA 5030	8020	25	26	85-115	104	
Ethylbenzene	EPA 5030	8020	25	26	85-115	104	
Xylenes, Total	EPA 5030	8020	75	79	85-115	105	
Methyl *tert*-Butyl Ether	EPA 5030	8020	25	26	85-115	104	

ICV/032196

ARCO Products Company
Division of Atlantic/Richfield Company

Task Order No. 21133.00

Chain of Custody

ARCO Facility no. 2111	City (Facility) San Leandro	Project manager (Consultant) Gary Messerates	Laboratory Name CAS
ARCO engineer Paul Supple	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 MTBE	TPH Modified 8015 Gas ☐ Diesel ☐	Oil and Grease 413.1 ☐ 413.2 ☐	TPH EPA 418.1/SM 503E	EPA 601/8010	EPA 624/8240	EPA 625/8270	TCLP Semi Metals ☐ VOA ☐ VOA ☐	CAM Metals EPA 6010/7000 TTLC ☐ STLC ☐	Lead Org/DHS ☐ Lead EPA 7420/7421 ☐			
MW-5		2		X		X	HCL	11-10-97	14:15		X												

Method of shipment: Sampler will deliver

Special Detection Limit/reporting: Lowest Possible

Special QA/QC: As Normal

Remarks: 2-40ml HCL VOAs

#20805-127.00

Lab Number: 9702313

Turnaround Time:

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

DUE 11/21/97

Condition of sample:		Temperature received:	
Relinquished by sampler	Date 11/10/97 Time 1455	Received by	
Relinquished by	Date Time	Received by	
Relinquished by	Date Time	Received by laboratory Jay Sevilla	Date 11/10/97 Time 1455

Distribution: White Copy – Laboratory Canary Copy – ARCO Environmental Engineering: Pink Copy – Consultant

R20/543