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

97 JUL -1 PM 4:40

Date June 27, 1997
Project 20805-127.005

To:

#744
80

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

We are enclosing:

Copies	Description
1	First quarter 1997 groundwater monitoring results for ARCO service station 2111, San Leandro, California 1156 Davis St., San Leandro 94577
1	First Christian Church letter

For your:	X	Use	Sent by:	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.

Valli Voruganti
Project Manager

cc: Kevin Graves, RWQCB - SFBR
Mike Bakaldin, San Leandro Hazardous Materials Program
Paul Supple, ARCO Products Company
File

June 27, 1997

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.: Valli Voruganti /(408) 453-7300
Primary Agency/Regulatory ID No.: ACHCSA /Kevin Tinsley Case No. STID 744

WORK PERFORMED THIS QUARTER (First- 1997):

1. Conducted quarterly groundwater monitoring and sampling for first quarter 1997.
2. Prepared and submitted quarterly monitoring report for fourth quarter 1996.

WORK PROPOSED FOR NEXT QUARTER (Second- 1997):

1. Perform quarterly groundwater monitoring and sampling for second quarter 1997.
2. Submit quarterly report for first quarter 1997.

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:	14.22 feet
Groundwater Gradient (Average):	0.005 ft/ft toward west (consistent with past events)

ATTACHED:

- Table 1 - Groundwater Monitoring Data, First 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, First Quarter 1997
- Appendix A - Analytical Results and Chain of Custody Documentation, First Quarter 1997 Groundwater Monitoring Event

cc: Kevin Tinsley, ACHCSA
Kevin Graves, RWQCB-SFBR
Mike Bakaldin, San Leandro Hazardous Materials Program

ARCO Products Company

Date:
June 25, 1997

Re: ARCO Station #

2111 • 1156 Davis Street • San Leandro, CA
First 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

June 27, 1997
Project 20805-127.005

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

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

Dear Mr. Supple:

This letter presents the results of the first 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, 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

Lynn Gallagher, R.G. 6090
Project Manager

REGISTERED GEOLOGIST
LYNN A. GALLAGHER
RG6090
STATE OF CALIFORNIA

Table 1
Groundwater Monitoring Data
First Quarter 1997

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

Date: 06-06-97

Well Designation	Water Level Field Date	Top of Casing Elevation	Depth to Water	Groundwater Elevation	Floating Product Thickness	Groundwater Flow Direction	Hydraulic Gradient	Water Sample Field Date	TPHG LUFT Method	Benzene EPA 8020	Toluene EPA 8020	Ethylbenzene EPA 8020	Total Xylenes EPA 8020	MTBE EPA 8020	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	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-2	03-24-97	37.99	14.22	23.77	ND	W	0.005	03-24-97	790	18	<1^	2	6	280	--	--
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-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-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-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-7	03-24-97	38.68	14.65	24.03	ND	W	0.005	03-24-97	6400	420	<10^	260	13	480	--	--

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, not analyzed
^: method reporting limit was raised due to: (1) high analyte concentration requiring sample dilution, or (2) matrix interference

esj/h:\2111\2111mdb.xls\Table 1:imi
20805-127.005

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

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

Date: 06-06-97

Well Designation	Water Level Field Date	Top of Casing Elevation	Depth to Water	Groundwater Elevation	Floating Product Thickness	Groundwater Flow Direction	Hydraulic Gradient	Water Sample Field Date	TPHG LUFT Method	Benzene EPA 8020	Toluene EPA 8020	Ethylbenzene EPA 8020	Total Xylenes EPA 8020	MTBE EPA 8020	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-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-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	--	--

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

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

Date: 06-06-97

Well Designation	Water Level Field Date	Top of Casing Elevation	Depth to Water	Groundwater Elevation	Floating Product Thickness	Groundwater Flow Direction	Hydraulic Gradient	Water Sample Field Date	TPHG LUFT Method	Benzene EPA 8020	Toluene EPA 8020	Ethylbenzene EPA 8020	Total Xylenes EPA 8020	MTBE EPA 8020	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-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-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-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	--	--

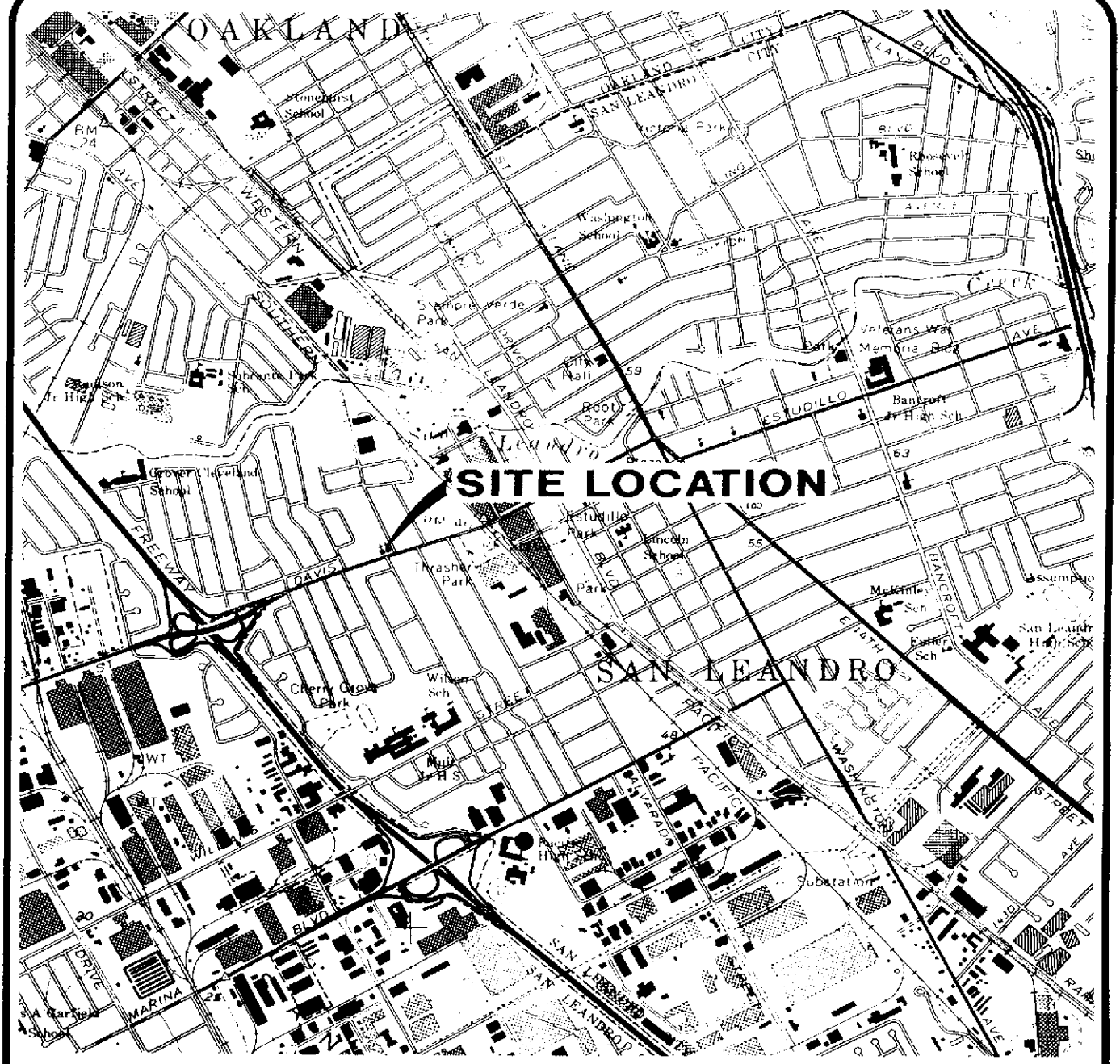
Table 2
Historical Groundwater Elevation and Analytical Data
Petroleum Hydrocarbons and Their Constituents

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

Date: 06-06-97

Well Designation	Water Level Field Date	Top of Casing Elevation	Depth to Water	Groundwater Elevation	Floating Product Thickness	Groundwater Flow Direction	Hydraulic Gradient	Water Sample Field Date	TPHG LUFT Method	Benzene EPA 8020	Toluene EPA 8020	Ethylbenzene EPA 8020	Total Xylenes EPA 8020	MTBE EPA 8020	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-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	--	--

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
WSW: west-southwest
WNW: west-northwest
*: 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



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DATE APR. 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:\02002\SITELOC.dwg Xrefs: <NONE>
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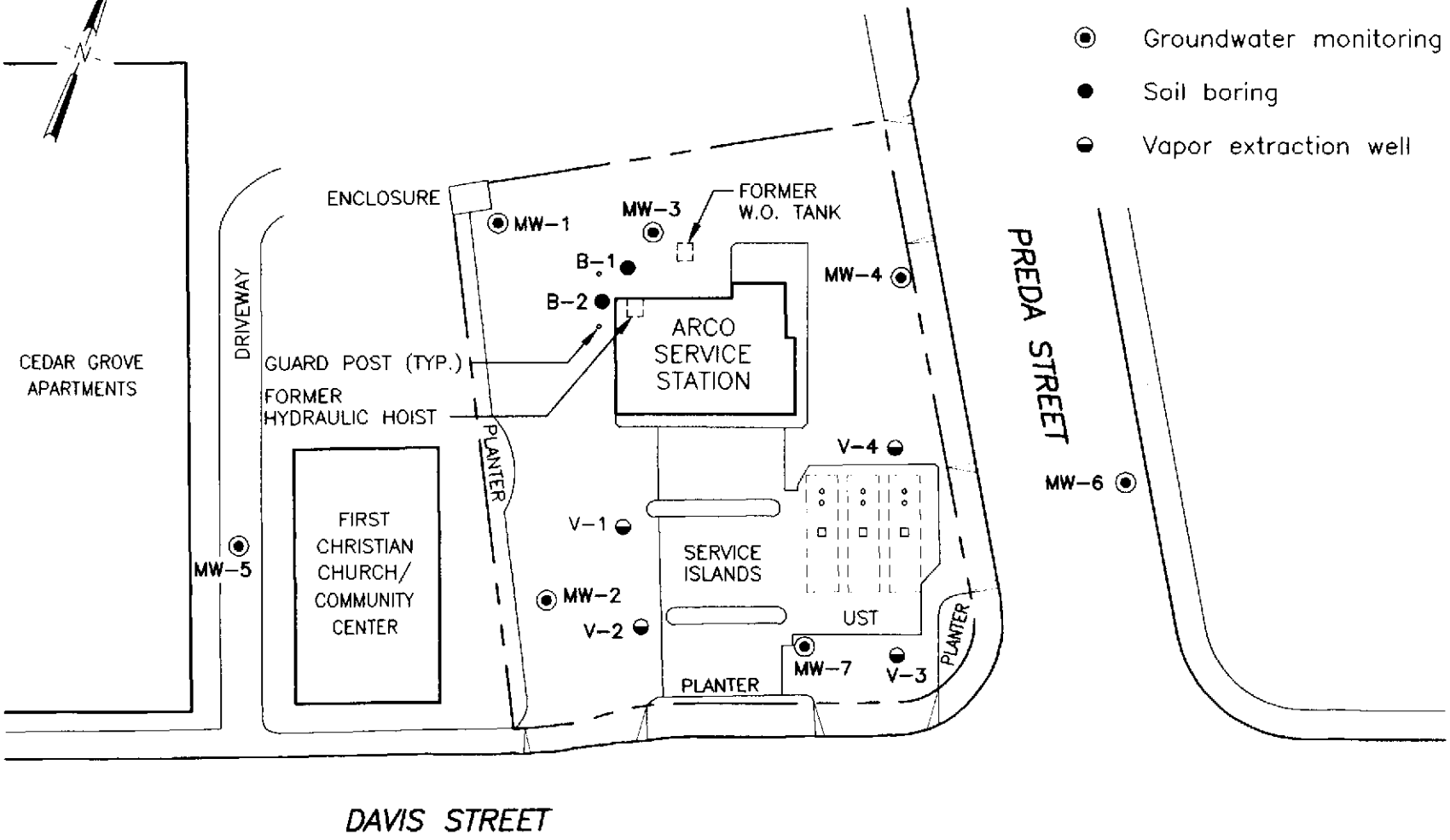

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0 40 80
SCALE IN FEET

DATE MAY 1997
DWN KMM
APP
REV
PROJECT NO.
20805-127.005

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

EA-SANJOSE-CAD/DRAWINGS: G:\805-127\SJGWELEV.dwg Xrefs: <NONE>
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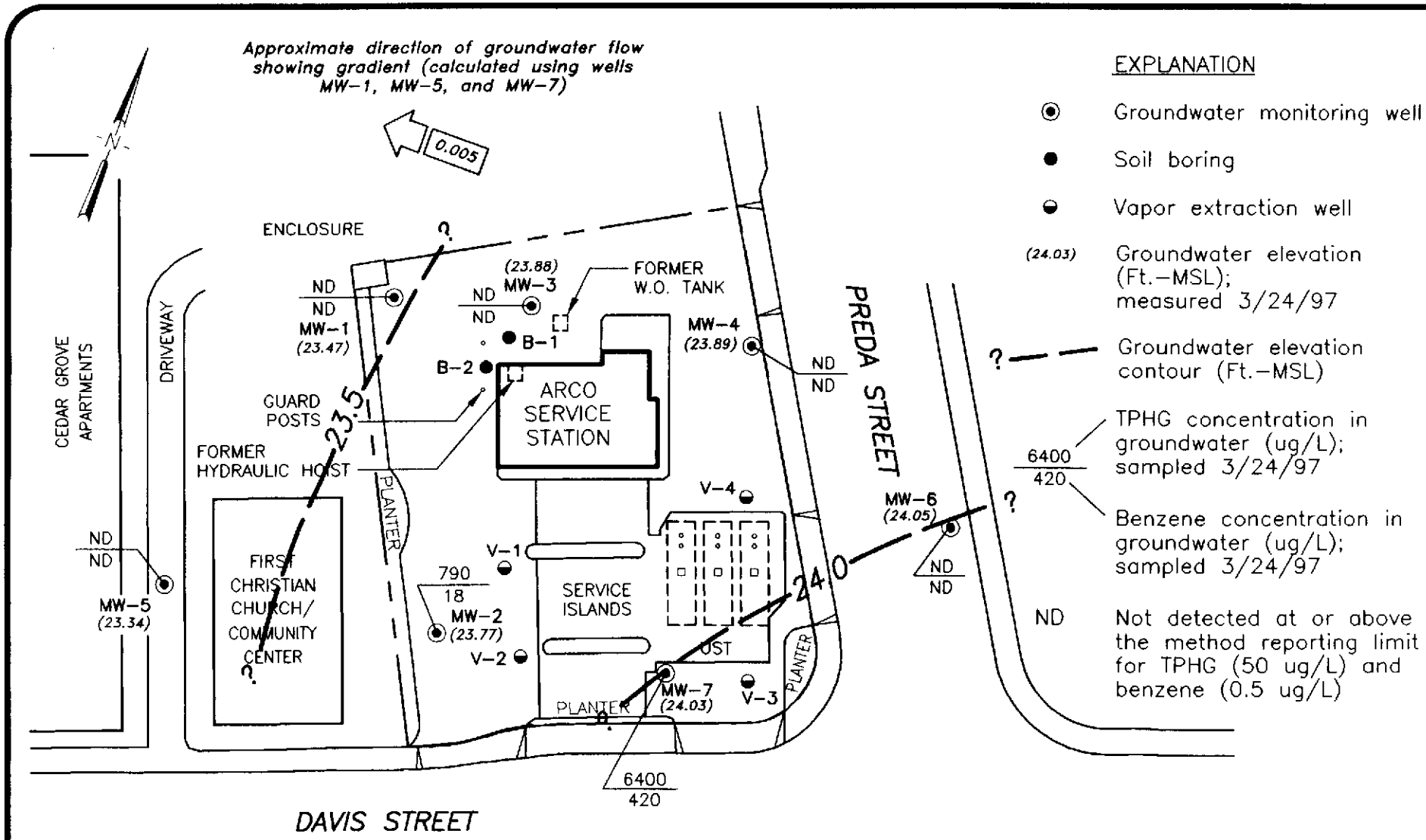

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0 40 80
SCALE IN FEET

DATE MAY 1997
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20805-127.005

FIGURE 3
ARCO PRODUCTS COMPANY
SERVICE STATION 2111, 1156 DAVIS ST.
SAN LEANDRO, CALIFORNIA
QUARTERLY GROUNDWATER MONITORING
GROUNDWATER DATA - 1ST QUARTER 1997

APPENDIX A

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

Columbia Analytical Services inc.

April 7, 1997 Service Request No.: S9700526

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

RE: 2111 SAN LEANDRO/20805-127.003/TO#19350.00

Dear Mr. Young:

The following pages contain analytical results for sample(s) received by the laboratory on March 24, 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 Analytica Report below confirms that pages 2 through 9, 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

Bernadette T. Cox for
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:**	S9700526
Project:	2111 SAN LEANDRO/20805-127.003/TO#19350.00	**Date Collected:**	3/24/97
Sample Matrix:	Water	**Date Received:**	3/24/97
		Date Extracted:	NA

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

Sample Name:	**MW-1 (17)**	**MW-2 (15)**	**MW-3 (16)**
Lab Code:	S9700526-001	S9700526-002	S9700526-003
Date Analyzed:	4/2/97	4/2/97	4/2/97

Analyte	**MRL**			
TPH as Gasoline	50	ND	790	ND
Benzene	0.5	ND	18	ND
Toluene	0.5	ND	<1 C1	ND
Ethylbenzene	0.5	ND	2	ND
Total Xylenes	0.5	ND	6	ND
Methyl *tert*-Butyl Ether	3	ND	280	ND

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

3S22/060194

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: 2111 SAN LEANDRO/20805-127.003/TO#19350.00
Sample Matrix: Water

Service Request: S9700526
Date Collected: 3/24/97
Date Received: 3/24/97
Date Extracted: NA

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

Sample Name:	**MW-4 (15)**	**MW-6 (14)**	**MW-7 (15)**
Lab Code:	S9700526-004	S9700526-005	S9700526-006
Date Analyzed:	4/2/97	4/3/97	4/3/97

Analyte	**MRL**			
TPH as Gasoline	50	ND	ND	6400
Benzene	0.5	ND	ND	420
Toluene	0.5	ND	ND	<10 C1
Ethylbenzene	0.5	ND	ND	260
Total Xylenes	0.5	ND	ND	13
Methyl *tert*-Butyl Ether	3	ND	ND	480

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

3S22/060194

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	ARCO Products Company	**Service Request:**	S9700526
Project:	2111 SAN LEANDRO/20805-127.003/TO#19350.00	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		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:	S9700402-WB1
Date Analyzed:	4/2/97

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

3522/060194

QA/QC Report

Client: ARCO Products Company
Project: 2111 SAN LEANDRO/20805-127.003/TO#19350.00
Sample Matrix: Water

Service Request: S9700526
Date Collected: 3/24/97
Date Received: 3/24/97
Date Extracted: NA
Date Analyzed: NA

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-1 (17)	S9700526-001	100	95
MW-2 (15)	S9700526-002	97	98
MW-3 (16)	S9700526-003	98	94
MW-4 (15)	S9700526-004	97	96
MW-6 (14)	S9700526-005	98	95
MW-7 (15)	S9700526-006	91	101
Method Blank	S9700402-WB1	97	92
MW-1 (17)MS	S9700526-001MS	103	95
MW-1 (17)DMS	S9700526-001DMS	102	96
	CAS Acceptance Limits:	69-116	69-116

SUR2/060194

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	ARCO Products Company	**Service Request:**	S9700526
Project:	2111 SAN LEANDRO/20805-127.003/TO#19350.00	**Date Collected:**	3/24/97
Sample Matrix:	Water	**Date Received:**	3/24/97
		Date Extracted:	NA
		Date Analyzed:	4/2/97

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

Sample Name: MW-1 (17)
Lab Code: S9700526-001MS, DMS

	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	26	104	104	75-135	<1
Toluene	25	25	ND	26	26	104	104	73-136	<1
Ethylbenzene	25	25	ND	26	26	104	104	69-142	<1

DMS1S/060194

Client: ARCO Products Company
Project: 2111 SAN LEANDRO/20805-127.003/TO#19350.00

Service Request: S9700526
Date Analyzed: 4/2/97

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	26	104	85-115
Toluene	25	27	108	85-115
Ethylbenzene	25	28	112	85-115
Xylenes, Total	75	81	108	85-115
Gasoline	250	230	92	90-110
Methyl *tert*-Butyl Ether	25	24	96	85-115

ARCO Products Company Division of AtlanticRichfieldCompany S9700526 **Task Order No.** 19350.00

Chain of Custody

ARCO Facility no.	2111
City (Facility)	San Leandro
Project manager (Consultant)	John Young
Laboratory name	CAS
ARCO engineer	Paul Supple
Telephone no. (ARCO)	—
Telephone no. (Consultant)	(408) 453-7300
Fax no. (Consultant)	—
Contract number	—
Consultant name	EMCON / OWT
Address (Consultant)	1921 Ringwood Ave

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 (Incl. MTBE)	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 ☐ VOA ☐ Semi VOA ☐	CAM Metals EPA 6010/7000 TTLC ☐ STLC ☐	Lead Org./DHS ☐ Lead EPA 7420/7421 ☐		
MW-1(17)	1	2		X		X	X	3-24-97	1045		X											
MW-2(15)	2	2		X		X	X	↓	1200		↓											
MW-3(16)	3	2		X		X	X	↓	1100		↓											
MW-4(15)	4	2		X		X	X	↓	1015		↓											
MW-6(14)	5	2		X		X	X	↓	1225		↓											
MW-7(15)	6	2		X		X	X	↓	1250		↓											

Method of shipment: Will Be Delivered

Special detection Limit/reporting: Lowest Possible

Special QA/QC: As Normal

Remarks: 2 - 40ml (HCl) voas.

20805-127.003

Lab number: S9700526

Turnaround time

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

Condition of sample: ok

Temperature received: Cool

Relinquished by	Date	Time	Received by	Date	Time
Relinquished by sampler: [signature]	3-24-97	1445	Received by		
Relinquished by			Received by		
Relinquished by			Received by laboratory: Joanne Brown	3/24/97	1445

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

APPC-3292 (2-91)

Columbia Analytical Services, Inc.

April 7, 1997

Service Request No.: S9700525

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

RE: 2111 SAN LEANDRO/20805-127.003/TO#19350.00

Dear Mr. Young:

The following pages contain analytical results for sample(s) received by the laboratory on March 24, 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 Analytica 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

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)

ACRONLST.DOC 7/14/95

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	ARCO Products Company	**Service Request:**	S9700525
Project:	2111 SAN LEANDRO/20805-127.003/TO#19350.00	**Date Collected:**	3/24/97
Sample Matrix:	Water	**Date Received:**	3/24/97
		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 (14)**	**Method Blank**	**Method Blank**
		Lab Code:	S9700525-001	S9700402-WB1	S9700401-WB1
		Date Analyzed:	4/2/97	4/2/97	4/1/97
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		460	ND	ND

3S22/060194

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	ARCO Products Company	**Service Request:**	S9700525
Project:	2111 SAN LEANDRO/20805-127.003/TO#19350.00	**Date Collected:**	3/24/97
Sample Matrix:	Water	**Date Received:**	3/24/97
		Date Extracted:	NA
		Date Analyzed:	NA

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-5 (14)	S9700525-001	98	94
Method Blank	S9700402-WB1	97	92
Method Blank	S9700401-WB1	96	91
Batch QC	S9700526-001MS	103	95
Batch QC	S9700526-001DMS	102	96
	CAS Acceptance Limits:	69-116	69-116

SUR2/060194

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	ARCO Products Company	**Service Request:**	S9700525
Project:	2111 SAN LEANDRO/20805-127.003/TO#19350.00	**Date Collected:**	3/24/97
Sample Matrix:	Water	**Date Received:**	3/24/97
		Date Extracted:	NA
		Date Analyzed:	4/2/97

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

Sample Name: Batch QC
Lab Code: S9700526-001MS, DMS

	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	26	104	104	75-135	<1
Toluene	25	25	ND	26	26	104	104	73-136	<1
Ethylbenzene	25	25	ND	26	26	104	104	69-142	<1

DMS1S/060194

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	ARCO Products Company	**Service Request:**	S9700525
Project:	2111 SAN LEANDRO/20805-127.003/TO#19350.00	**Date Analyzed:**	4/2/97

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	26	104	85-115
Toluene	25	27	108	85-115
Ethylbenzene	25	28	112	85-115
Xylenes, Total	75	81	108	85-115
Gasoline	250	230	92	90-110
Methyl *tert*-Butyl Ether	25	24	96	85-115

ICV25AL/060194

ARCO Products Company Division of AtlanticRichfieldCompany

Lab # S9700525 **Task Order No.** 19350.00

Chain of Custody

ARCO Facility no. 2111	City (Facility) San Leandro	Project manager (Consultant) John Young	Laboratory name CAS
ARCO engineer Paul Supple	Telephone no. (ARCO) —	Telephone no. (Consultant) (408) 453-7300	Fax no. (Consultant) —
Consultant name EMCON/DNT	Address (Consultant) 1921 Ringwood Ave		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 Ind. Air	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-5 (B4)	1	2		X		X	X	3-24-97	1140		X									

Method of shipment: Will be Delivered

Special detection Limit/reporting: Lowest Possible

Special QA/QC: AS Normal

Remarks: 2 - 40mL (VOAs) HCL

20805-127.003

Lab number: 525 9B 3/24 S9700525

Turnaround time: 2

Priority Rush 1 Business Day ☐

Rush 2 Business Days ☐

Expedited 5 Business Days ☐

Standard 10 Business Days ☒

Condition of sample: ok

Temperature received: Cool

	Date	Time			
Relinquished by sampler	3-24-97	1445	Received by		
Relinquished by			Received by		
Relinquished by			Received by laboratory	Date 3/24/97	Time 1445

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

APPC-3292 (2-91)

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