



EMCON

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

97 SEP 30 AM 9:18

STIP 744
BO

Date September 30, 1997
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

We are enclosing:

Copies	Description
<u>1</u>	<u>Second quarter 1997 groundwater monitoring results</u> <u>for ARCO service station 2111, San Leandro, California</u>
<u>1</u>	<u>First Christian Church letter</u>

For your:	<input checked="" type="checkbox"/>	Use	Sent by:	<input checked="" type="checkbox"/>	Regular Mail
	<input type="checkbox"/>	Approval		<input type="checkbox"/>	Standard Air
	<input type="checkbox"/>	Review		<input type="checkbox"/>	Courier
	<input type="checkbox"/>	Information		<input type="checkbox"/>	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 Messerotes
Project Manager

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





Date: September 30, 1997

Re: ARCO Station #

2111 • 1156 Davis Street • San Leandro, CA
Second 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:

A handwritten signature in cursive script that reads "Paul Supple".

Paul Supple
Environmental Engineer



EMCON

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

August 29, 1997
Project 20805-127.005

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

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

Dear Mr. Supple:

This letter presents the results of the second 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



EMCON



August 29, 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.: Gary P. Messerotes /(408) 453-7300
Primary Agency/Regulatory ID No.: ACHCSA /Kevin Tinsley Case No. STID 744

WORK PERFORMED THIS QUARTER (Second- 1997):

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

WORK PROPOSED FOR NEXT QUARTER (Third- 1997):

1. Submit quarterly report for second quarter 1997.
2. Perform quarterly groundwater monitoring and sampling for third 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: 15.58 feet
Groundwater Gradient (Average): 0.006 ft/ft toward north-northwest (consistent with past events)

ATTACHED:

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

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

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Table 1
Groundwater Monitoring Data
Second Quarter 1997

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

Date: 08-27-97

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	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-2	05-27-97	37.99	15.42	22.57	ND	NNW	0.006	05-28-97	750	14	<1 [^]	<1 [^]	10	150	--	--
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-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-5	05-27-97	37.21	14.71	22.50	ND	NNW	0.006	05-28-97	<100 [^]	<1 [^]	<1 [^]	<1 [^]	<1 [^]	120	--	--
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-7	05-27-97	38.68	15.58	23.10	ND	NNW	0.006	05-28-97	5000	420	<5 [^]	230	10	460	--	--

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

NNW: north-northwest

W: west

--: not available, 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: 08-27-97

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 ft/ft	Water Sample Field Date	TPHG LUFT Method µg/L	Benzene EPA 8020 µg/L	Toluene EPA 8020 µg/L	Ethylbenzene EPA 8020 µg/L	Total Xylenes EPA 8020 µg/L	MTBE EPA 8020 µg/L	TRPH EPA 418.1 µg/L	TPHD LUFT Method 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-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-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	--	--

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

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

Date: 08-27-97

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	Δ	--	--
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	Δ	--	--
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	Δ	--	--
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	Δ	--	--
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	Δ	--	--
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	Δ	--	--
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	Δ	--	--
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 ^Δ	<1 ^Δ	<1 ^Δ	<1 ^Δ	120	--	--
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	Δ	--	--
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			<0.5	<0.5	--	--	
MW-6	11-06-96	37.11	Not surveyed: Car parked on well			NR	NR	11-06-96	Not surveyed: Car parked on well			<0.5	<0.5	--	--	
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	Δ	--	--
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	Δ	--	--

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

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

Date: 08-27-97

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 ft/ft	Water Sample Field Date	TPHG LUFT Method µg/L	Benzene EPA 8020 µg/L	Toluene EPA 8020 µg/L	Ethylbenzene EPA 8020 µg/L	Total Xylenes EPA 8020 µg/L	MTBE EPA 8020 µg/L	TRPH EPA 418.1 µg/L	TPHD LUFT Method 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	--	--
MW-7	05-27-97	38.68	15.58	23.10	ND	NNW	0.006	05-28-97	5000	420	6^	230	10	460	--	--

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

NNW: north-northwest

W: west

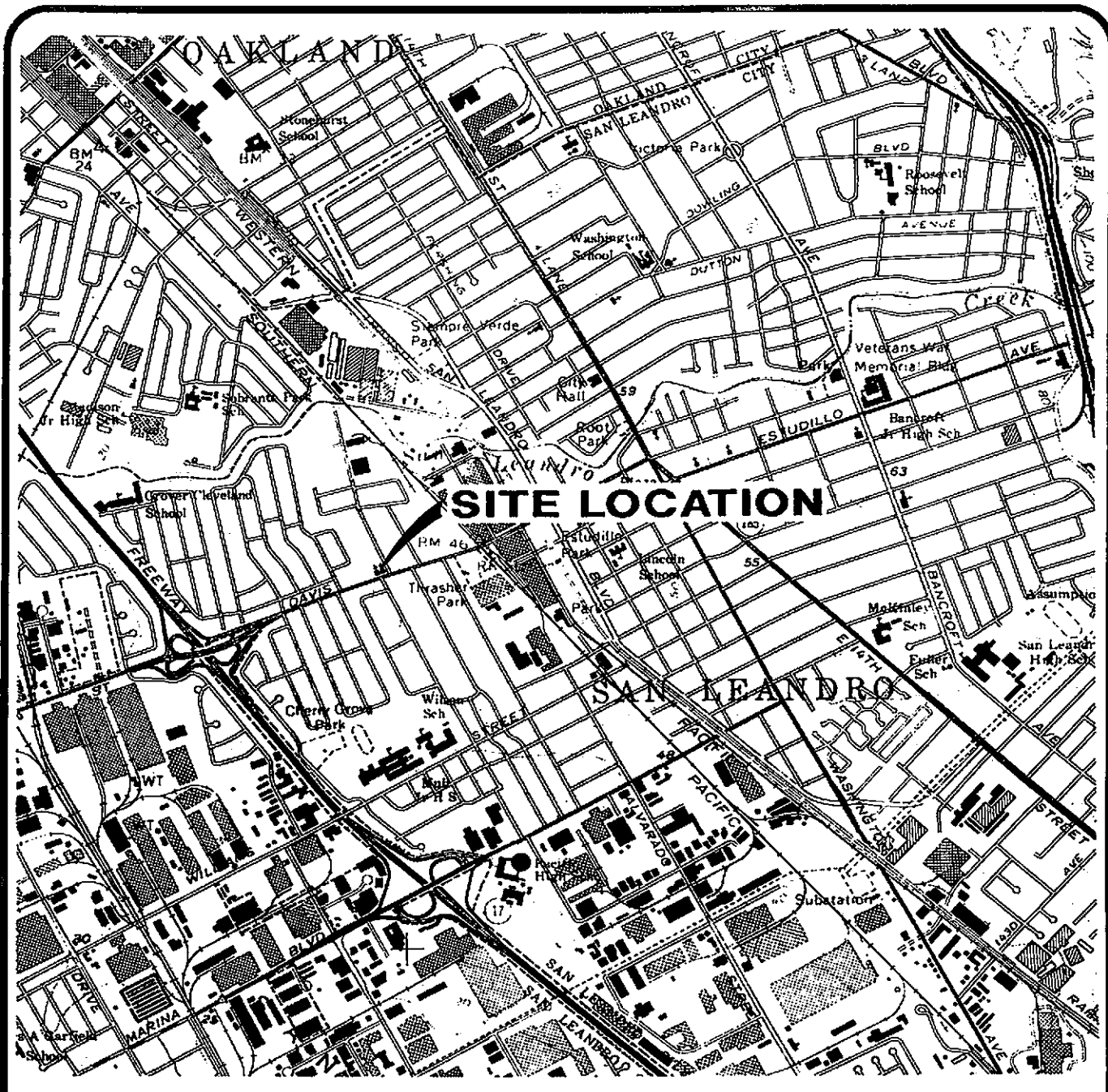
WSW: west-southwest

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

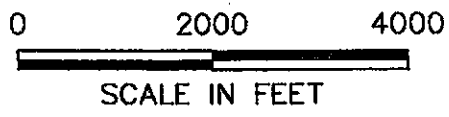
--: not available



EA-SANJOSE-CAD/DRAWINGS: I:\02002\SITELOC.dwg Xrefs: <NONE>
 Scale: 1 = 1.00 DimScale: 1 = 1.00 Date: 3/12/97 Time: 5:19 PM Operator: KAJ

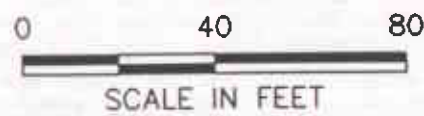
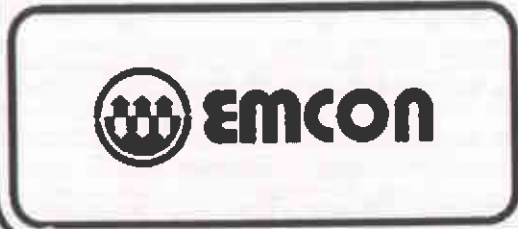
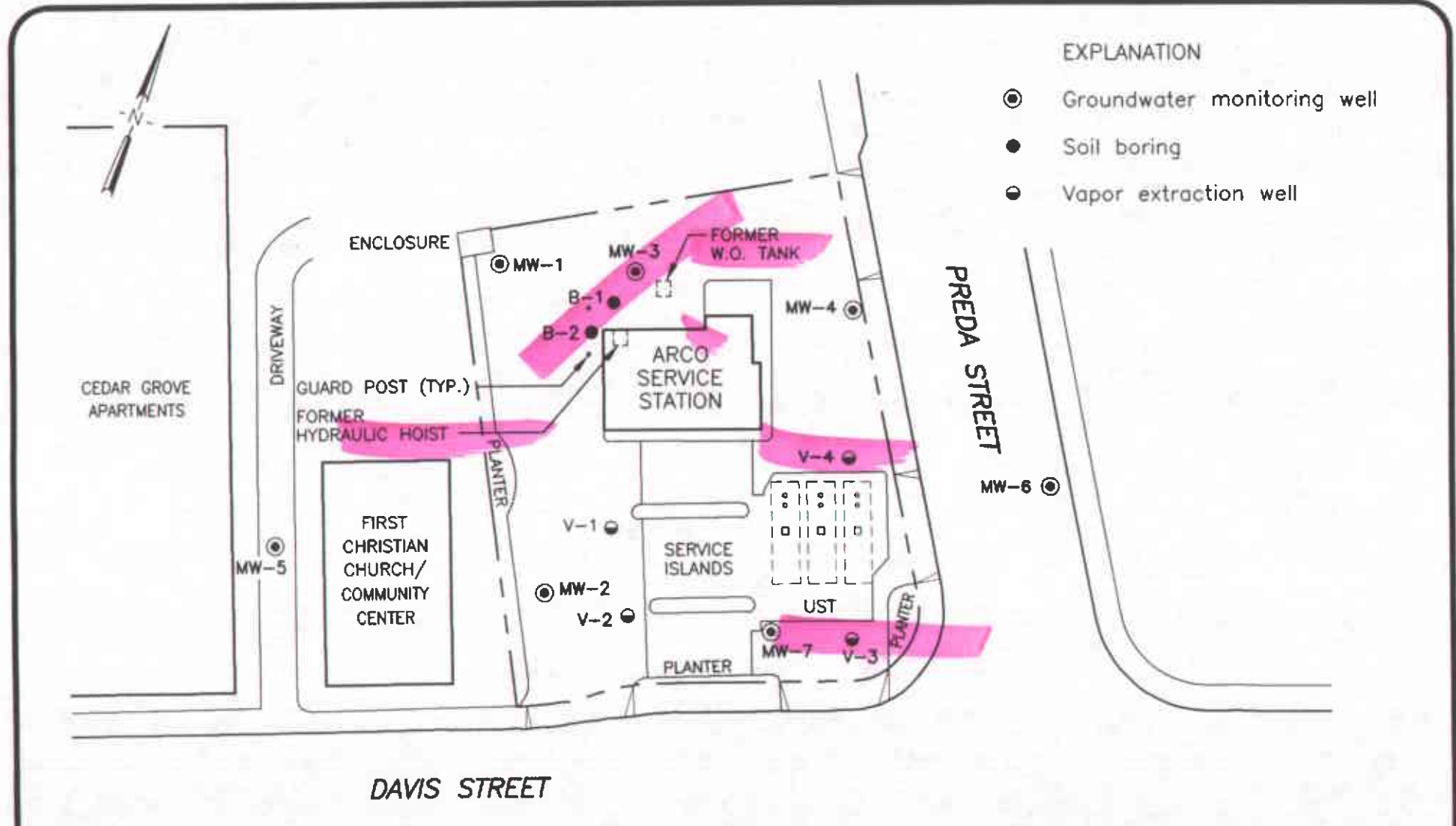


Base map from USGS 7.5' Quad. Map:
 San Leandro, California. Photorevised 1980.



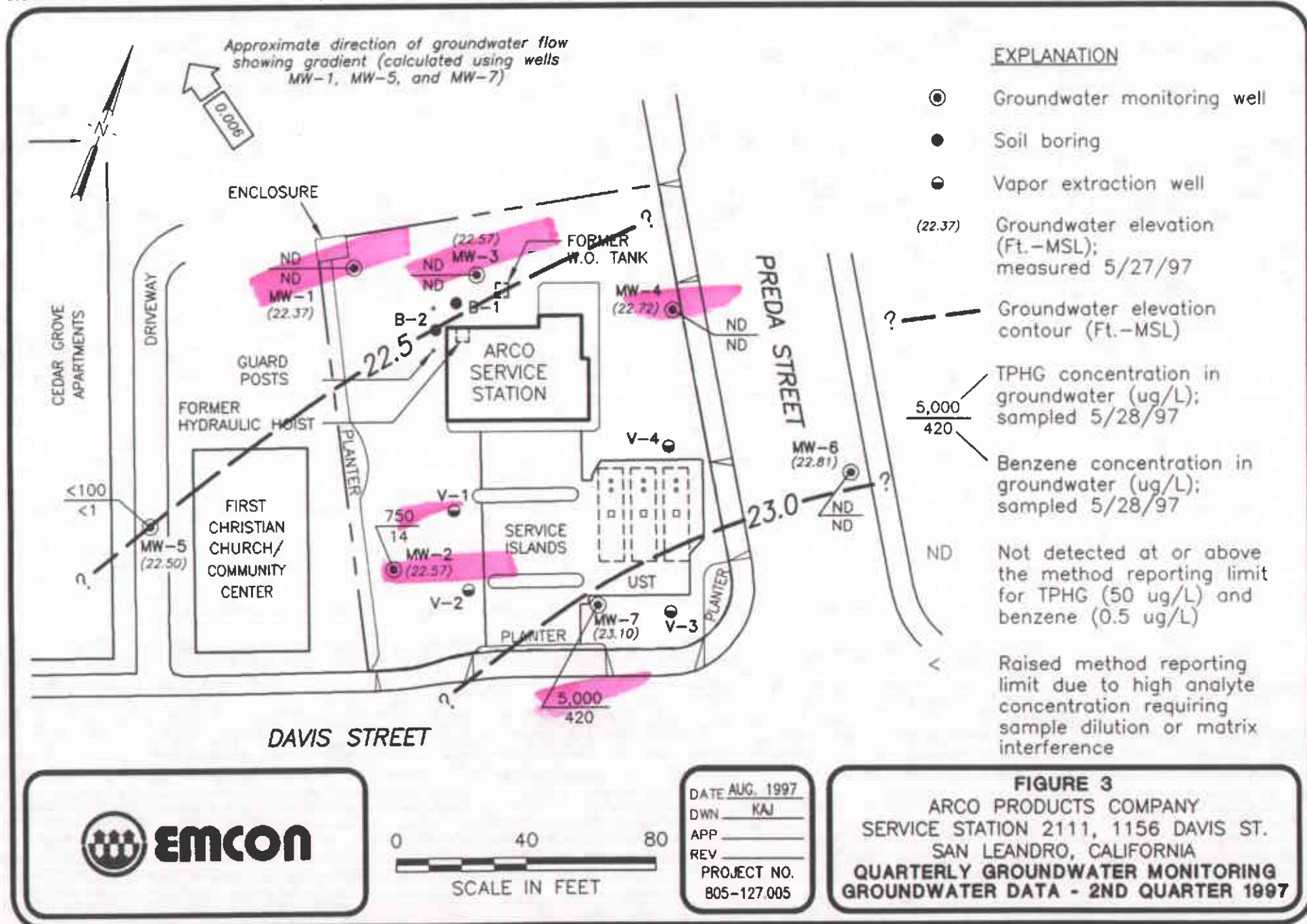
DATE APR. 1997
 DWN KAJ
 APP _____
 REV _____
 PROJECT NO.
 805-127.005

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



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**



APPENDIX A

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



June 16, 1997

Service Request No.: S9700983

Ms. Ivy Inouye
EMCON
1921 Ringwood Avenue
San Jose, CA 95131

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

Dear Ms. Inouye:

The following pages contain analytical results for sample(s) received by the laboratory on May 28, 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 14, 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,

A handwritten signature in black ink, appearing to read "Steven L. Green", written in a cursive style.

Steven L. Green
Project Chemist

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
Project: 20805-127.005/TO#21133.00/2111 SAN LEANDRO
Sample Matrix: Water

Service Request: S9700983
Date Collected: 5/28/97
Date Received: 5/28/97

BTEX, MTBE and TPH as Gasoline

Sample Name: MW-1 (18)
Lab Code: S9700983-001
Test Notes:

Units: ug/L (ppb)
Basis: NA

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	6/4/97	ND	
Benzene	EPA 5030	8020	0.5	1	NA	6/4/97	ND	
Toluene	EPA 5030	8020	0.5	1	NA	6/4/97	ND	
Ethylbenzene	EPA 5030	8020	0.5	1	NA	6/4/97	ND	
Xylenes, Total	EPA 5030	8020	0.5	1	NA	6/4/97	ND	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	1	NA	6/4/97	ND	

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

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

Service Request: S9700983
Date Collected: 5/28/97
Date Received: 5/28/97

BTEX, MTBE and TPH as Gasoline

Sample Name: MW-4 (16)
Lab Code: S9700983-002
Test Notes:

Units: ug/L (ppb)
Basis: NA

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	6/4/97	ND	
Benzene	EPA 5030	8020	0.5	1	NA	6/4/97	ND	
Toluene	EPA 5030	8020	0.5	1	NA	6/4/97	ND	
Ethylbenzene	EPA 5030	8020	0.5	1	NA	6/4/97	ND	
Xylenes, Total	EPA 5030	8020	0.5	1	NA	6/4/97	ND	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	1	NA	6/4/97	ND	

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

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

Service Request: S9700983
Date Collected: 5/28/97
Date Received: 5/28/97

BTEX, MTBE and TPH as Gasoline

Sample Name: MW-3 (17)
Lab Code: S9700983-003
Test Notes:

Units: ug/L (ppb)
Basis: NA

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	6/5/97	ND	
Benzene	EPA 5030	8020	0.5	1	NA	6/5/97	ND	
Toluene	EPA 5030	8020	0.5	1	NA	6/5/97	ND	
Ethylbenzene	EPA 5030	8020	0.5	1	NA	6/5/97	ND	
Xylenes, Total	EPA 5030	8020	0.5	1	NA	6/5/97	ND	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	1	NA	6/5/97	ND	

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

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

Service Request: S9700983
Date Collected: 5/28/97
Date Received: 5/28/97

BTEX, MTBE and TPH as Gasoline

Sample Name: MW-6 (15)
Lab Code: S9700983-005
Test Notes:

Units: ug/L (ppb)
Basis: NA

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	6/5/97	ND	
Benzene	EPA 5030	8020	0.5	1	NA	6/5/97	ND	
Toluene	EPA 5030	8020	0.5	1	NA	6/5/97	ND	
Ethylbenzene	EPA 5030	8020	0.5	1	NA	6/5/97	ND	
Xylenes, Total	EPA 5030	8020	0.5	1	NA	6/5/97	ND	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	1	NA	6/5/97	ND	

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

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

Service Request: S9700983
Date Collected: 5/28/97
Date Received: 5/28/97

BTEX, MTBE and TPH as Gasoline

Sample Name: MW-2 (16)
Lab Code: S9700983-006
Test Notes:

Units: ug/L (ppb)
Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	2	NA	6/5/97	750	
Benzene	EPA 5030	8020	0.5	2	NA	6/5/97	14	
Toluene	EPA 5030	8020	0.5	2	NA	6/5/97	<1	C1
Ethylbenzene	EPA 5030	8020	0.5	2	NA	6/5/97	<1	C1
Xylenes, Total	EPA 5030	8020	0.5	2	NA	6/5/97	10	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	2	NA	6/5/97	150	

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

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

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

Service Request: S9700983
Date Collected: 5/28/97
Date Received: 5/28/97

BTEX, MTBE and TPH as Gasoline

Sample Name: MW-7 (16)
Lab Code: S9700983-007
Test Notes:

Units: ug/L (ppb)
Basis: NA

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	6/5/97	5000	
Benzene	EPA 5030	8020	0.5	10	NA	6/5/97	420	
Toluene	EPA 5030	8020	0.5	10	NA	6/5/97	<5	C1
Ethylbenzene	EPA 5030	8020	0.5	10	NA	6/5/97	230	
Xylenes, Total	EPA 5030	8020	0.5	10	NA	6/5/97	10	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	10	NA	6/5/97	460	

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

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

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

Service Request: S9700983
Date Collected: NA
Date Received: NA

BTEX, MTBE and TPH as Gasoline

Sample Name: Method Blank
Lab Code: S970604-WB1
Test Notes:

Units: ug/L (ppb)
Basis: NA

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	6/4/97	ND	
Benzene	EPA 5030	8020	0.5	1	NA	6/4/97	ND	
Toluene	EPA 5030	8020	0.5	1	NA	6/4/97	ND	
Ethylbenzene	EPA 5030	8020	0.5	1	NA	6/4/97	ND	
Xylenes, Total	EPA 5030	8020	0.5	1	NA	6/4/97	ND	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	1	NA	6/4/97	ND	

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

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

Service Request: S9700983
Date Collected: NA
Date Received: NA

BTEX, MTBE and TPH as Gasoline

Sample Name: Method Blank
Lab Code: S970605-WB1
Test Notes:

Units: ug/L (ppb)
Basis: NA

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	6/5/97	ND	
Benzene	EPA 5030	8020	0.5	1	NA	6/5/97	ND	
Toluene	EPA 5030	8020	0.5	1	NA	6/5/97	ND	
Ethylbenzene	EPA 5030	8020	0.5	1	NA	6/5/97	ND	
Xylenes, Total	EPA 5030	8020	0.5	1	NA	6/5/97	ND	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	1	NA	6/5/97	ND	

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: S9700983
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 CALUFT

Units: PERCENT
Basis: NA

Sample Name	Lab Code	Test Notes	Percent Recovery	
			4-Bromofluorobenzene	a,a,a-Trifluorotoluene
MW-1 (18)	S9700983-001		103	96
MW-4 (16)	S9700983-002		101	96
MW-3 (17)	S9700983-003		102	96
MW-6 (15)	S9700983-005		103	97
MW-2 (16)	S9700983-006		98	114
MW-7 (16)	S9700983-007		96	116
BATCH QC	S9700984-003MS		97	110
BATCH QC	S9700984-003DMS		96	107
Method Blank	S970604-WB1		101	96
Method Blank	S970605-WB1		100	97

CAS Acceptance Limits: 69-116 69-116

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: S9700983
Date Collected: NA
Date Received: NA
Date Extracted: NA
Date Analyzed: 6/4/97

Matrix Spike/Duplicate Matrix Spike Summary
 TPH as Gasoline

Sample Name: BATCH QC Units: ug/L (ppb)
Lab Code: S9700984-003MS, S9700984-003DMS Basis: NA
Test Notes:

Percent Recovery

Analyte	Prep Method	Analysis Method	Spike Level								CAS		Relative Percent Difference	Result Notes
			MRL	MS	DMS	Sample Result	MS	DMS	MS	DMS	Acceptance Limits			
Gasoline	EPA 5030	CA/LUFT	50	250	250	91	310	320	88	92	75-135		3	

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

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

Service Request: S9700983
Date Analyzed: 6/4/97

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

Sample Name: ICV Units: ug/L (ppb)
Lab Code: ICV1 Basis: NA
Test Notes:

ICV Source:

Analyte	Prep Method	Analysis Method	True Value	Result	CAS		Result Notes
					Percent Recovery Acceptance Limits	Percent Recovery	
TPH as Gasoline	EPA 5030	CA/LUFT	250	240	90-110	96	
Benzene	EPA 5030	8020	25	26	85-115	104	
Toluene	EPA 5030	8020	25	26	85-115	104	
Ethylbenzene	EPA 5030	8020	25	27	85-115	108	
Xylenes, Total	EPA 5030	8020	75	80	85-115	107	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	25	27	85-115	108	

ICV/032196

ARCO Facility no. 2111	City (Facility) San Leandro	Project manager (Consultant) Paul Supple	Laboratory name CAS
ARCO engineer Paul Supple	Telephone no. (ARCO)	Telephone no. (Consultant) (408) 453-7300	Contract number
Consultant name Emcon	Address (Consultant) 1921 Ringwood Ave. San Jose, CA 95131		
		Fax no. (Consultant) 408-453-0452	

Sample I.D.	Lab no.	Container no.	Matrix			Preservation		Sampling date	Sampling time	BTEX EPA 802/EPA 8020	BTEX/TPH EPA 1631/EPA 1631/1631/1631/1631/1631/1631	TPH Modified 8015 Gas <input type="checkbox"/> Diesel <input type="checkbox"/>	Oil and Grease 413.1 <input type="checkbox"/> 413.2 <input type="checkbox"/>	TPH EPA 418.1/SM603E	EPA 801/8010	EPA 824/8240	EPA 825/8270	TCPL Metals <input type="checkbox"/> VOA <input type="checkbox"/> YOA <input type="checkbox"/>	Semi Metals <input type="checkbox"/> VOA <input type="checkbox"/> YOA <input type="checkbox"/>	CAMP Metals EPA 8010/7000 TTLC <input type="checkbox"/> STLC <input type="checkbox"/>	Lead Org./DHS Lead EPA 7420/7421 <input type="checkbox"/>	
			Soil	Water	Other	Ice	Acid															
mw-1(18')	1	2		X		X	HCL	5/25/97	1025		X											
mw-4(10')	2	2		X		X	HCL		0940		X											
mw-3(17')	3	2		X		X	HCL		1040		X											
mw-5(15')	4	2		X		X	HCL		0955		X											
mw-6(15')	5	2		X		X	HCL		0925		X											
mw-2(16')	6	2		X		X	HCL		1010		X											
mw-7(16')	7	2		X		X	HCL	✓	0915		X											

Method of shipment
Sampler will deliver

Special detection Limit/reporting
Lowest possible.

Special QA/QC
AS Normal

Remarks
**2-40 mL HCL
VOAS
MTBE BY 8020

#20805-127005**

Lab number
S9700983

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

Condition of sample: INTACT				Temperature received: COOL			
Relinquished by sampler <i>[Signature]</i>	Date 5/25/97	Time	Received by /	Date	Time	Received by	
Relinquished by /	Date	Time	Received by	Date	Time	Received by	
Relinquished by /	Date	Time	Received by laboratory COOL	Date 5/25/97	Time 1125A	Received by	