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

Date September 26, 1996
Project 20805-127.003

To:

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

STID #744 Reviewed 10/1/96 DK

96 OCT -1 AM 9:20
ENVIRONMENTAL PROTECTION

We are enclosing:

Copies	Description
1	Second quarter 1996 groundwater monitoring results for 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.

John C. Young
Project Manager

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

ARCO Products Company

Date:
September 26, 1996

Re: ARCO Station #

2111 • 1156 Davis Street • San Leandro, CA
Second Quarter 1996 Groundwater Monitoring Results

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

Submitted by:

Paul Supple
Environmental Engineer

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

September 25, 1996
Project 20805-127.003

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

Re: Second quarter 1996 groundwater monitoring program results, ARCO service station 2111, San Leandro, California

Dear Mr. Supple:

This letter presents the results of the second quarter 1996 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

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

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

I:/I:\ARCO\2111\081496.DOC-96 ljt:1

September 25, 1996

ARCO QUARTERLY REPORT

Station No.: 2111	Address: 1156 Davis Street, San Leandro, California
EMCON Project No.	20805-127.003
ARCO Environmental Engineer/Phone No.:	Paul Supple /(510) 299-8891
EMCON Project Manager/Phone No.:	John C. Young /(408) 453-7300
Primary Agency/Regulatory ID No.:	ACHCSA /Dale Klettke Case No. STID 744

WORK PERFORMED THIS QUARTER (Second- 1996):

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

WORK PROPOSED FOR NEXT QUARTER (Third- 1996):

1. Perform quarterly groundwater monitoring and sampling for third quarter 1996.
2. Submit quarterly report for second quarter 1996.
3. Submit report of findings for soil and groundwater investigation to ARCO.
4. Initiate a risk based corrective action (RBCA) Tier 2 evaluation, in response to a letter from ACHCSA requesting a Tier 2 evaluation be performed and reported by September 11, 1996.

QUARTERLY MONITORING:

Current Phase of Project:	Quarterly Groundwater Monitoring and Soil and Groundwater Assessment
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
Approximate Depth to Groundwater:	13.71 feet
Groundwater Gradient (Average):	0.003 ft/ft toward west (consistent with past events)

ATTACHED:

- Table 1 - Groundwater Monitoring Data, Second Quarter 1996
- 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 1996
- Appendix A - Field Data Sheets, Second Quarter 1996 Groundwater Monitoring Event
- Appendix B - Analytical Results and Chain of Custody Documentation, Second Quarter 1996 Groundwater Monitoring Event

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

Table 1
Groundwater Monitoring Data
Second Quarter 1996

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

Date: 08-02-96

Well Designation	Water Level Field Date	Top of Casing Elevation	Depth to Water	Groundwater Elevation	Floating Product Thickness	Groundwater Flow Direction	Hydraulic Gradient	Water Sample Field Date	TPHG LUFT Method	Benzene EPA 8020	Toluene EPA 8020	Ethylbenzene EPA 8020	Total Xylenes EPA 8020	MTBE EPA 8020	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	05-24-96	39.60	15.94	23.66	ND	W	0.003	05-24-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--
MW-2	05-24-96	37.99	14.03	23.96	ND	W	0.003	05-24-96	2300	300	<5*	73	310	<25*	--	--
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-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-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-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-7	05-24-96	38.68	14.58	24.10	ND	W	0.003	05-24-96	22000	570	40	42	1900	<200*	--	--

ft-MSL: elevation in feet, relative to mean sea level
MWN: ground-water flow direction and gradient apply to the entire monitoring well network
ft/ft: foot per foot
TPHG: total petroleum hydrocarbons as gasoline, California DHS LUFT Method
µg/L: micrograms per liter
EPA: United Statest Environmental Protection Agency
MTBE: methyl-tert-butyl ether
TRPH: total recoverable petroleum hydrocarbons
TPHD: total petroleum hydrocarbons as diesel, California DHS LUFT Method
ND: none detected
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
20805-127.003

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

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

Date: 08-02-96

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

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

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

Date: 08-02-96

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

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
^: 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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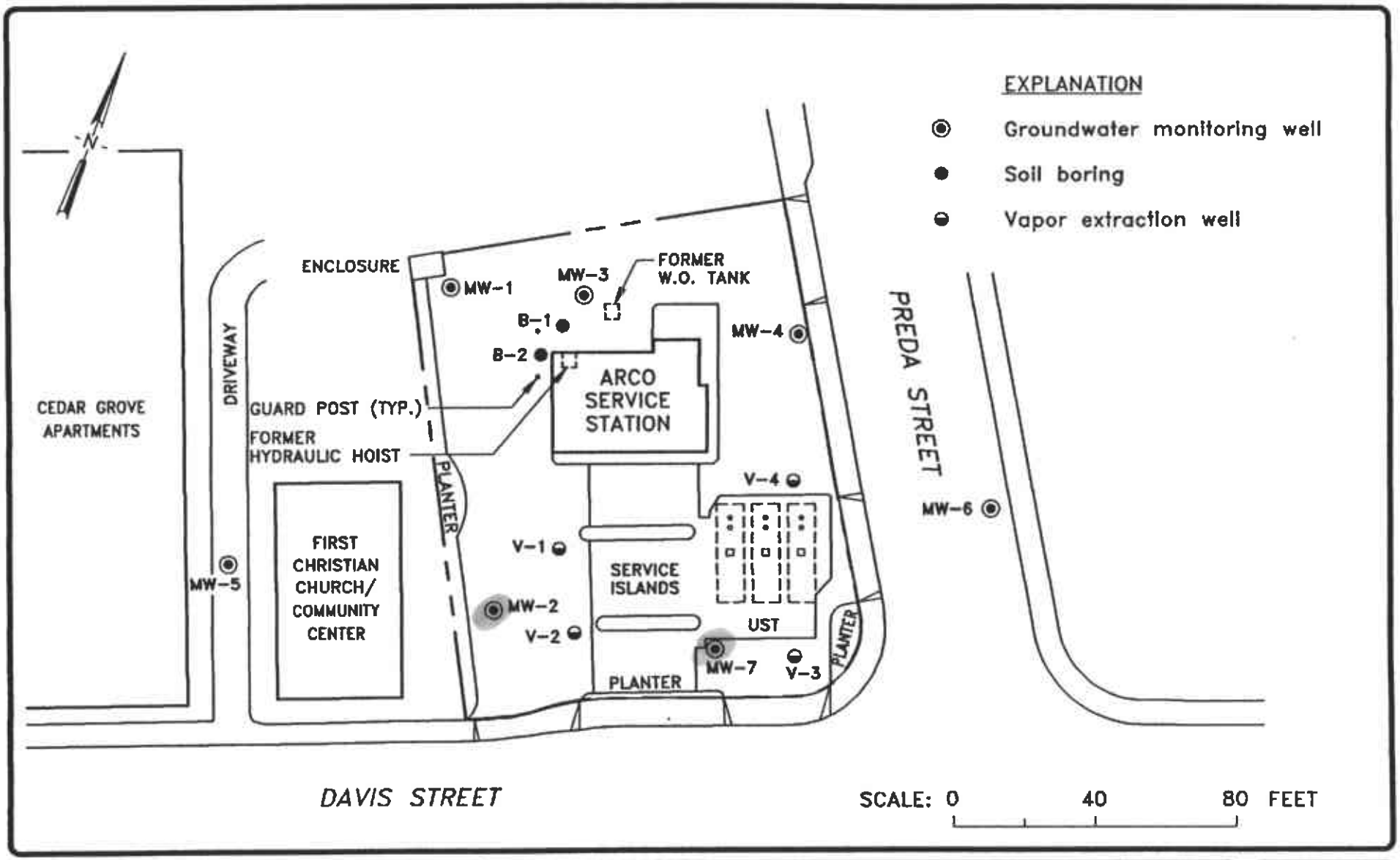
ARCO PRODUCTS COMPANY
SERVICE STATION 2111, 1156 DAVIS STREET
QUARTERLY GROUNDWATER MONITORING
SAN LEANDRO, CALIFORNIA

SITE LOCATION

FIGURE
1
PROJECT NO.
805-127.03



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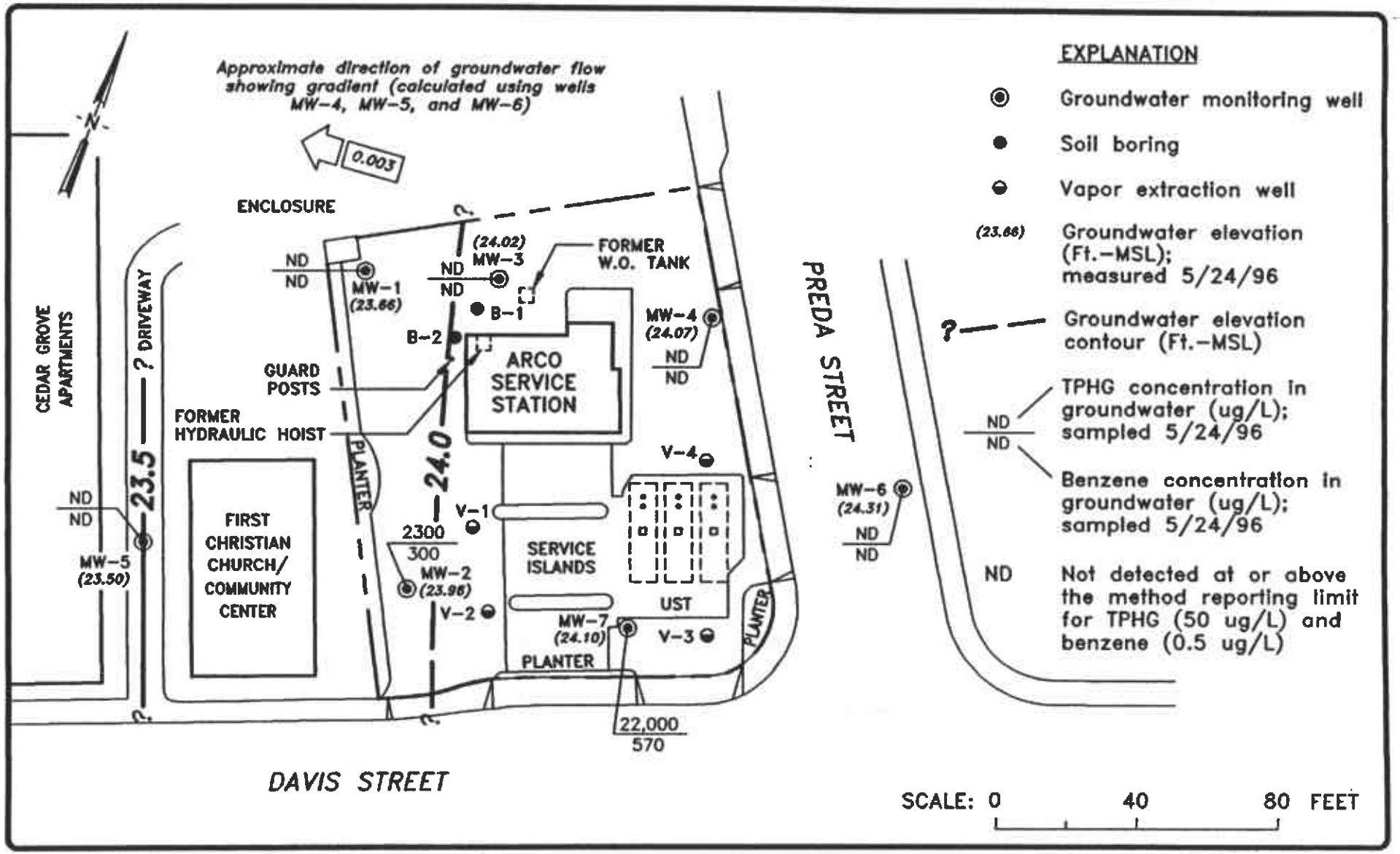
ARCO PRODUCTS COMPANY
SERVICE STATION 2111, 1156 DAVIS STREET
QUARTERLY GROUNDWATER MONITORING
SAN LEANDRO, CALIFORNIA

SITE PLAN

FIGURE
2
PROJECT NO.
805-127.03



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

GROUNDWATER DATA
SECOND QUARTER 1996

FIGURE
3
PROJECT NO.
805-127.003

APPENDIX A

FIELD DATA SHEETS, SECOND QUARTER 1996 GROUNDWATER MONITORING EVENT

FIELD REPORT
DEPTH TO WATER / FLOATING PRODUCT SURVEY

PROJECT # : 21775-226.002 STATION ADDRESS : 1156 Davis Street, San Leandro DATE : 5/24/96

ARCO STATION # : 2111 FIELD TECHNICIAN : D. Gambelin DAY : Fri

DTW Order	WELL ID	Well Box Seal	Well Lid Secure	Gasket Present	Lock Number	Type Of Well Cap	FIRST DEPTH TO WATER (feet)	SECOND DEPTH TO WATER (feet)	DEPTH TO FLOATING PRODUCT (feet)	FLOATING PRODUCT THICKNESS (feet)	WELL TOTAL DEPTH (feet)	COMMENTS
1	MW-1	Y	Y	Y	3490	LWC	15.94	15.94	ND	ND	26.2	
2	MW-4	Y	Y	Y	3490	LWC	14.03	14.03	ND	ND	21.7	
3	MW-3	Y	Y	Y	3490	LWC	15.30	15.30	ND	ND	26.7	
4	MW-5	Y	Y	Y	~~3616~~ Dolphin	LWC	13.71	13.71	ND	ND	24.0	Please replace lock w/ 3490
5	MW-6	Y	Y	Y	~~3490~~ Dolphin	LWC	12.80	12.80	ND	ND	25.0	Please replace lock w/ 3490
6	MW-2	X	Y	Y	3490	LWC	14.03	14.03	ND	ND	26.6	
7	MW-7	Y	Y	Y	Dolphin	LWC	14.58	14.58	ND	ND	27.1	Please replace lock w/ 3490

SURVEY POINTS ARE TOP OF WELL CASINGS

Rev. 3, 2/94

WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 20775.226.002 SAMPLE ID: MW-1(26)

PURGED BY: D. Gamboa CLIENT NAME: ARCO 2111

SAMPLED BY: D. Gamboa LOCATION: San Leandro

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

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

CASING ELEVATION (feet/MSL):	NR	VOLUME IN CASING (gal.):	6.70
DEPTH TO WATER (feet):	15.94	CALCULATED PURGE (gal.):	20.11
DEPTH OF WELL (feet):	26.2	ACTUAL PURGE VOL. (gal.):	20.5

DATE PURGED: 5/24/96 Start (2400 Hr) 1200 End (2400 Hr) 1206

DATE SAMPLED: 5/24/96 Start (2400 Hr) 1210 End (2400 Hr) ___

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1202	1.0	6.83	574	70.1	Brn	Light
1204	14.0	6.77	576	71.0	"	"
1206	20.5	6.76	572	71.4	"	"

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

COLOR (COBALT 0 - 500): NR

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

Field QC samples collected at this well: NR

Parameters field filtered at this well: NR

PURGING EQUIPMENT		SAMPLING EQUIPMENT	
___ 2" Bladder Pump	___ Bailer (Teflon®)	___ 2" Bladder Pump	X Bailer (Teflon®)
X Centrifugal Pump	___ Bailer (PVC)	___ DDL Sampler	___ Bailer (Stainless Steel)
___ Submersible Pump	___ Bailer (Stainless Steel)	___ Dipper	___ Submersible Pump
___ Well Wizard™	___ Dedicated	___ Well Wizard™	___ Dedicated
Other: ___		Other: ___	

WELL INTEGRITY: Good LOCK #: 3490

REMARKS: ___

Meter Calibration: Date: 5/24/96 Time: 1030 Meter Serial #: ___ Temperature °F: ___

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

Location of previous calibration: MW-6

Signature: [signature] Reviewed By: [signature] Page 1 of 7

Rev. 3, 2/94

WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 20775-226.002 SAMPLE ID: MW-2(26)

PURGED BY: D. Gambelin CLIENT NAME: ARCO 2111

SAMPLED BY: D. Gambelin LOCATION: San Leandro

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

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

CASING ELEVATION (feet/MSL):	NR	VOLUME IN CASING (gal.):	8.21
DEPTH TO WATER (feet):	14.03	CALCULATED PURGE (gal.):	24.64
DEPTH OF WELL (feet):	26.6	ACTUAL PURGE VOL. (gal.):	25.0

DATE PURGED: 5/24/96 Start (2400 Hr) 1307 End (2400 Hr) 1313

DATE SAMPLED: 5/24/96 Start (2400 Hr) 1315 End (2400 Hr) ___

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1309	8.5	6.86	524	72.2	Brn	Mod.
1311	17.0	6.82	512	71.4	↓	↓
1313	25.0	6.82	505	70.7	↓	↓

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

Field QC samples collected at this well: NR

Parameters field filtered at this well: NR

PURGING EQUIPMENT		SAMPLING EQUIPMENT	
___ 2" Bladder Pump	___ Bailer (Teflon®)	___ 2" Bladder Pump	X Bailer (Teflon®)
X Centrifugal Pump	___ Bailer (PVC)	___ DDL Sampler	___ Bailer (Stainless Steel)
___ Submersible Pump	___ Bailer (Stainless Steel)	___ Dipper	___ Submersible Pump
___ Well Wizard™	___ Dedicated	___ Well Wizard™	___ Dedicated
Other: ___		Other: ___	

WELL INTEGRITY: Good LOCK #: 3490

REMARKS: ___

Meter Calibration: Date: 5/24/96 Time: 1030 Meter Serial #: ___ Temperature °F: ___

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

Location of previous calibration: MW-6

Signature: [signature] Reviewed By: [signature] Page 2 of 7

Rev. 3, 2/94

WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 21775-226.002 SAMPLE ID: MW-3(26)

PURGED BY: D. Gambelin CLIENT NAME: ARCO 2111

SAMPLED BY: D. Gambelin LOCATION: San Leandro

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

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

CASING ELEVATION (feet/MSL): NR VOLUME IN CASING (gal.): 7.45

DEPTH TO WATER (feet): 15.30 CALCULATED PURGE (gal.): 22.34

DEPTH OF WELL (feet): 26.7 ACTUAL PURGE VOL. (gal.): 22.5

DATE PURGED: 5/24/96 Start (2400 Hr) 1132 End (2400 Hr) 1138

DATE SAMPLED: 5/24/96 Start (2400 Hr) 1140 End (2400 Hr) ___

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1134	7.5	6.81	570	69.9	Brn	Light
1136	15.0	6.78	565	70.5	↓	↓
1138	22.5	6.80	563	69.9	↓	↓

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

Field QC samples collected at this well: NR

Parameters field filtered at this well: NR

PURGING EQUIPMENT		SAMPLING EQUIPMENT	
___ 2" Bladder Pump	___ Bailer (Teflon®)	___ 2" Bladder Pump	X Bailer (Teflon®)
X Centrifugal Pump	___ Bailer (PVC)	___ DDL Sampler	___ Bailer (Stainless Steel)
___ Submersible Pump	___ Bailer (Stainless Steel)	___ Dipper	___ Submersible Pump
___ Well Wizard™	___ Dedicated	___ Well Wizard™	___ Dedicated
Other: ___		Other: ___	

WELL INTEGRITY: Good LOCK #: 3490

REMARKS: ___

Meter Calibration: Date: 5/24/96 Time: 1030 Meter Serial #: 4972 Temperature °F: ___

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

Location of previous calibration: MW-6

Signature: [signature] Reviewed By: [signature] Page 3 of 7

Rev. 3, 2/94

WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 21775.226.002 SAMPLE ID: MW-4(21)

PURGED BY: D. Gumbelin CLIENT NAME: ARCO 2111

SAMPLED BY: D Gumbelin LOCATION: San Leandro

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

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

CASING ELEVATION (feet/MSL):	NR	VOLUME IN CASING (gal.):	5.01
DEPTH TO WATER (feet):	14.03	CALCULATED PURGE (gal.):	15.03
DEPTH OF WELL (feet):	21.7	ACTUAL PURGE VOL. (gal.):	15.5

DATE PURGED: 5/24/96 Start (2400 Hr) 1110 End (2400 Hr) 1119

DATE SAMPLED: 5/24/96 Start (2400 Hr) 1122 End (2400 Hr) ___

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1115	5.5	6.85	6080	75.0	Brn	Heavy
1117	10.5	6.85	5650	77.4		
1119	15.5	6.79	5620	77.2	↓	↓

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

COLOR (COBALT 0 - 500): NR

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

Field QC samples collected at this well: NR

Parameters field filtered at this well: NR

PURGING EQUIPMENT		SAMPLING EQUIPMENT	
___ 2" Bladder Pump	___ Bailer (Teflon®)	___ 2" Bladder Pump	X Bailer (Teflon®)
X Centrifugal Pump	___ Bailer (PVC)	___ DDL Sampler	___ Bailer (Stainless Steel)
___ Submersible Pump	___ Bailer (Stainless Steel)	___ Dipper	___ Submersible Pump
___ Well Wizard™	___ Dedicated	___ Well Wizard™	___ Dedicated
Other: ___		Other: ___	

WELL INTEGRITY: Good LOCK #: 3490

REMARKS: ___

Meter Calibration: Date: 5/24/96 Time: 1030 Meter Serial #: ___ Temperature °F: ___

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

Location of previous calibration: MW-6

Signature: D. Gumbelin Reviewed By: SH Page 4 of 7

Rev. 3, 2/94

WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 20805-027.003 SAMPLE ID: MW-5 (23)

PURGED BY: D. Gamberlin CLIENT NAME: ARCO 2111

SAMPLED BY: D. Gamberlin LOCATION: San Leandro

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

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

CASING ELEVATION (feet/MSL): NR VOLUME IN CASING (gal.): 1.68

DEPTH TO WATER (feet): 13.71 CALCULATED PURGE (gal.): 5.04

DEPTH OF WELL (feet): 24.0 ACTUAL PURGE VOL. (gal.): 5.5

DATE PURGED: 5/24/96 Start (2400 Hr) 1242 End (2400 Hr) 1248

DATE SAMPLED: 5/24/96 Start (2400 Hr) 1255 End (2400 Hr) —

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1243	2.0	7.23	560	75.5	Brn	Hvy
1245	3.5	7.15	552	70.0	"	"
1248	5.5	7.11	551	70.4	"	"

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

COLOR: NR (COBALT 0 - 500)

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

Field QC samples collected at this well: NR

Parameters field filtered at this well: NR

PURGING EQUIPMENT

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

SAMPLING EQUIPMENT

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

WELL INTEGRITY: Good LOCK #: ~~3490~~ 3616

REMARKS: ___

Meter Calibration: Date: 5/24/96 Time: 1030 Meter Serial #: ___ Temperature °F: ___

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

Location of previous calibration: MW-6

Signature: ___ Reviewed By: ___ Page 5 of 7

Rev. 3, 2/94

WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 2175-226.002 SAMPLE ID: MW-6(24)

PURGED BY: D Gambelin CLIENT NAME: ARCO 2111

SAMPLED BY: D. Gambelin LOCATION: San Leandro

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

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

CASING ELEVATION (feet/MSL): NR VOLUME IN CASING (gal.): 1.99

DEPTH TO WATER (feet): 12.80 CALCULATED PURGE (gal.): 5.98

DEPTH OF WELL (feet): 25.0 ACTUAL PURGE VOL. (gal.): 6.0

DATE PURGED: 5/24/96 Start (2400 Hr) 1048 End (2400 Hr) 1057

DATE SAMPLED: 5/24/96 Start (2400 Hr) 1100 End (2400 Hr) ___

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1052	2.0	6.82	1606	75.5	Brn	Heavy
1054	4.0	6.78	769	75.3	"	"
1057	6.0	6.83	752	75.2	"	"

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

COLOR: NR (COBALT 0 - 500)

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

Field QC samples collected at this well: NR

Parameters field filtered at this well: NR

PURGING EQUIPMENT		SAMPLING EQUIPMENT	
___ 2" Bladder Pump	___ Bailer (Teflon®)	___ 2" Bladder Pump	X Bailer (Teflon®)
___ Centrifugal Pump	X Bailer (PVC)	___ DDL Sampler	___ Bailer (Stainless Steel)
___ Submersible Pump	___ Bailer (Stainless Steel)	___ Dipper	___ Submersible Pump
___ Well Wizard™	___ Dedicated	___ Well Wizard™	___ Dedicated
Other: ___		Other: ___	

WELL INTEGRITY: Good LOCK #: 3490

REMARKS: ___

Meter Calibration: Date: 5/24/96 Time: 1030 Meter Serial #: 4972 Temperature °F: 78.1

(EC 1000 1251/1000) (DI 15) (pH 7 7.27/7.00) (pH 10 9.78/10.00) (pH 4 3.87/ ✓)

Location of previous calibration: ___

Signature: [signature] Reviewed By: SA Page 6 of 7

Rev. 3, 2/94

WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 21775.226002 SAMPLE ID: MW-7(26)

PURGED BY: D. Gamble/n CLIENT NAME: ARCO 2111

SAMPLED BY: D. Gamble/n LOCATION: San Leandro

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

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

CASING ELEVATION (feet/MSL): NR VOLUME IN CASING (gal.): 8.21

DEPTH TO WATER (feet): 14.03 CALCULATED PURGE (gal.): 24.64

DEPTH OF WELL (feet): 26.6 ACTUAL PURGE VOL. (gal.): 11.0

DATE PURGED: 5/24/96 Start (2400 Hr) 1329 End (2400 Hr) 1333

DATE SAMPLED: 5/24/96 Start (2400 Hr) 1340 End (2400 Hr) ___

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1331	8.5	6.96	766	70.9	Brn	Light
1333	well Dry at 11.0g					
1340	Recharge	6.90	843	70.7	Brn	Light

D. O. (ppm): NR ODOR: Light

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

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

Field QC samples collected at this well: NR

Parameters field filtered at this well: NR

PURGING EQUIPMENT		SAMPLING EQUIPMENT	
___ 2" Bladder Pump	___ Bailer (Teflon®)	___ 2" Bladder Pump	X Bailer (Teflon®)
X Centrifugal Pump	___ Bailer (PVC)	___ DDL Sampler	___ Bailer (Stainless Steel)
___ Submersible Pump	___ Bailer (Stainless Steel)	___ Dipper	___ Submersible Pump
___ Well Wizard™	___ Dedicated	___ Well Wizard™	___ Dedicated
Other: ___		Other: ___	

WELL INTEGRITY: Good LOCK #: 3490

REMARKS: well Dry at 11.0g

Meter Calibration: Date: 5/24/96 Time: 1030 Meter Serial #: ___ Temperature °F: ___

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

Location of previous calibration: MW-6

Signature: [signature] Reviewed By: [signature] Page 7 of 7

APPENDIX B

ANALYTICAL RESULTS AND CHAIN OF CUSTODY DOCUMENTATION, SECOND QUARTER 1996 GROUNDWATER MONITORING EVENT

Columbia Analytical Services inc.

July 30, 1996

Service Request No: S9600835

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

Re: 2111 San Leandro / Project No. 20805-127.003/TO#19350.00

Dear Mr. Young:

The following pages contain analytical results for sample(s) received by the laboratory on May 24, 1996. Results of sample analyses are followed by Appendix A which contains sample custody documentation and quality assurance deliverables requested for this project. The work requested has been assigned the Service Request No. Listed above -- to help expedite our service please refer to this number when contacting the laboratory.

Analytical results were produced by procedures consistent with Columbia Analytical Services' (CAS) Quality Assurance Manual (with any deviations noted). Signature of this CAS Analytical Report below confirms that pages 2 through 15, following, have been thoroughly reviewed and approved for release in accord with CAS Standard Operating Procedure ADM-DatRev3.

If you have questions or further needs, please call me at (408) 428-1283.

Sincerely,

Steven L. Green
Project Chemist

Greg Anderson
Regional QA Coordinator

CVR/smh

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:**	L9602623
Project:	2111 San Leandro/#20805-127.003/TO#19350.00	**Date Collected:**	5/24/96
Sample Matrix:	Water	**Date Received:**	5/24/96
		Date Extracted:	5/30/96
		Date Analyzed:	5/30/96

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

Sample Name	Lab Code	MRL	Result
MW-3 (26)	L9602623-001	0.5	ND
Method Blank	L9602623-MB	0.5	ND

1AMRL/120594

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	ARCO Products Company	**Service Request:**	L9602623
Project:	2111 San Leandro/#20805-127.003/TO#19350.00	**Date Collected:**	5/24/96
Sample Matrix:	Water	**Date Received:**	5/24/96
		Date Extracted:	5/29/96

Total Petroleum Hydrocarbons as Diesel
EPA Methods 3510/Modified 8015/California DHS LUFT Method
Units: ug/L (ppb)

Sample Name	Lab Code	Date Analyzed	MRL	Result
MW-3 (26)	L9602623-001	5/31/96	50	ND
Method Blank	L9602623-MB	5/30/96	50	ND

1AMRLB/120594

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	ARCO Products Company	**Service Request:**	S9600835
Project:	2111 SAN LEANDRO/20805-127.003/TO#19350.00	**Date Collected:**	5/24/96
Sample Matrix:	Water	**Date Received:**	5/24/96
		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(26)**	**MW-4(21)**	**MW-3(26)**
	Lab Code:	S9600835-001	S9600835-002	S9600835-003
	Date Analyzed:	6/3/96	6/3/96	6/3/96
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	ND	ND	ND

3S22/060194

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	ARCO Products Company	**Service Request:**	S9600835
Project:	2111 SAN LEANDRO/20805-127.003/TO#19350.00	**Date Collected:**	5/24/96
Sample Matrix:	Water	**Date Received:**	5/24/96
		Date Extracted:	NA

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

		Sample Name:	**MW-6(24)**	**MW-2(26)**	**MW-7**
		Lab Code:	S9600835-005	S9600835-006	S9600835-007
		Date Analyzed:	6/4/96	6/4/96	6/4/96
Analyte	**MRL**				
TPH as Gasoline	50		ND	2300	22,000
Benzene	0.5		ND	300	570
Toluene	0.5		ND	<5*	40
Ethylbenzene	0.5		ND	73	42
Total Xylenes	0.5		ND	310	1900
Methyl *tert*-Butyl Ether	3		6	<25*	<200*

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

3S22/060194

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	ARCO Products Company	**Service Request:**	S9600835
Project:	2111 SAN LEANDRO/20805-127.003/TO#19350.00	**Date Collected:**	5/24/96
Sample Matrix:	Water	**Date Received:**	5/24/96
		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**	**Method Blank**
		Lab Code:	S960603-WB1	S960604-WB1
		Date Analyzed:	6/3/96	6/4/96
Analyte	**MRL**			
TPH as Gasoline	50		ND	ND
Benzene	0.5		ND	ND
Toluene	0.5		ND	ND
Ethylbenzene	0.5		ND	ND
Total Xylenes	0.5		ND	ND
Methyl *tert*-Butyl Ether	3		ND	ND

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

3S22/060194

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	ARCO Products Company	**Service Request:**	L9602623
Project:	2111 San Leandro/#20805-127.003/TO#19350.00	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	NA
		Date Analyzed:	NA

Surrogate Recovery Summary
Total Petroleum Hydrocarbons as Diesel
EPA Methods 3510/Modified 8015/California DHS LUFT Method

Sample Name	**Lab Code**	**Percent Recovery** *p*-Terphenyl
MW-3 (26)	L9602623-001	92
Method Blank	L9602623-MB	70
Laboratory Control Sample	L9602623-LCS	70
Duplicate Laboratory Control Sample	L9602623-DLCS	70

CAS Acceptance Limits: 50-140

SUR1/120594

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: 2111 San Leandro/#20805-127.003/TO#19350.00
LCS Matrix: Water

Service Request: L9602623
Date Collected: NA
Date Received: NA
Date Extracted: 5/30/96
Date Analyzed: 5/30/96

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

	True Value		Result		Percent Recovery			
Analyte	LCS	DLCS	LCS	DLCS	LCS	DLCS	CAS Acceptance Limits	**Relative Percent Difference**
TRPH	2.11	2.11	2.03	2.03	96	96	75-125	<1

DLCS/032395

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	ARCO Products Company	**Service Request:**	L9602623
Project:	2111 San Leandro/#20805-127.003/TO#19350.00	**Date Collected:**	NA
LCS Matrix:	Water	**Date Received:**	NA
		Date Extracted:	5/29/96
		Date Analyzed:	5/31/96

Laboratory Control Sample/Duplicate Laboratory Control Sample Summary*
Total Petroleum Hydrocarbons as Diesel
EPA Methods 3510/Modified 8015/California DHS LUFT Method
Units: ug/L (ppb)

	True Value		Result		Percent Recovery		CAS Acceptance	Relative Percent
Analyte	LCS	DLCS	LCS	DLCS	LCS	DLCS	Limits	**Difference**
Diesel	2000	2000	1620	1690	81	84	70-140	4

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

DLCS/032395

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	ARCO Products Company	**Service Request:**	L9602623
Project:	2111 San Leandro/#20805-127.003/TO#19350.00	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	5/30/96
		Date Analyzed:	5/30/96

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

Sample Name: BATCH QC
Lab Code: L9602625-012

	Spike Level		Sample	Spike Result		Percent Recovery		CAS Acceptance	Relative Percent
Analyte	MS	DMS	**Result**	MS	DMS	MS	DMS	Limits	**Difference**
TRPH	1.99	1.99	0.550	2.22	2.05	84	75	45-155	8

DMS1S/120594

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	ARCO Products Company	**Service Request:**	S9600835
Project:	2111 SAN LEANDRO/20805-127.003/TO#19350.00	**Date Collected:**	5/24/96
Sample Matrix:	Water	**Date Received:**	5/24/96
		Date Extracted:	NA
		Date Analyzed:	6/3-4/96

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(26)	S9600835-001	105	104
MW-4(21)	S9600835-002	105	101
MW-3(26)	S9600835-003	106	103
MW-6(24)	S9600835-005	108	96
MW-2(26)	S9600835-006	103	105
MW-7(26)	S9600835-007	99	106*
MW-1 (26) (MS)	S9600835-001MS	100	105
MW-1 (26) (DMS)	S9600835-001DMS	100	110
Method Blank	S960603-WB1	105	105
Method Blank	S960604-WB2	107	100
	CAS Acceptance Limits:	69-116	69-116

* The surrogate used for this sample was 4-Bromofluorobenzene.

SUR2/060194

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	ARCO Products Company	**Service Request:**	S9600835
Project:	2111 SAN LEANDRO/20805-127.003/TO#19350.00	**Date Collected:**	5/24/96
Sample Matrix:	Water	**Date Received:**	5/24/96
		Date Extracted:	NA
		Date Analyzed:	6/3/96

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

Sample Name: Batch QC
Lab Code: S9600835-001

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

DMS1S/060194

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

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

Service Request: S9600835
Date Analyzed: 6/3/96

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	26.7	107	85-115
Toluene	25	26.8	107	85-115
Ethylbenzene	25	27.0	108	85-115
Xylenes, Total	75	83.3	111	85-115
Gasoline	250	261	104	90-110
Methyl *tert*-Butyl Ether	50	44	88	85-115

ARCO Products Company
Division of AtlanticRichfieldCompany

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 Mike Whelan	Telephone no. (ARCO)	Telephone no. (Consultant) (408) 453-7300	Fax no. (Consultant) (408) 453-0452
Consultant name EMCON	Address (Consultant) 1921 Ringwood Ave. San Jose, CA 95131		Contract number

Sample I.D.	Lab no.	Container no.	Matrix: Soil	Matrix: Water	Matrix: Other	Preservation: Ice	Preservation: Acid	Sampling date	Sampling time	BTEX 602/EPA 8020	BTEX/TPH incl. Mod. EPA M602/8020/8015	TPH Modified 8015 Gas ☐ Diesel ☒	Oil and Grease 413.1 ☐ 413.2 ☐	TPH EPA 418.1/SM503E	EPA 601/8010	EPA 624/8240	EPA 625/8270	TCLP Metals ☐ Semi VOA ☐ VOA ☐	CAM Metals EPA 6010/7000 TTLC ☐ STLC ☐	Lead Org./DHS ☐ Lead EPA 7420/7421 ☐		
MW-1(26)	1	2		X		X	HCL	5/24/96	1210		X											
MW-4(21)	2	2		X		X	HCL		1122		X											
MW-3(26)	3	6		X		X	HCL		1140		X	X		X								
MW-5(23)	4	2		X		X	HCL		1255		X											
MW-6(24)	5	2		X		X	HCL		1100		X											
MW-2(26)	6	2		X		X	HCL		1315		X											
MW-7(26)	7	2		X		X	HCL	↓	1340		X											

Method of shipment: Sampler will deliver

Special detection Limit/reporting: Lowest Possible

Special QA/QC: As Normal

Remarks: 2-40ml HCL VOAs (All Wells) MW-3 add: 2-1liter HCL Gl 2-1liter NP Gl #70805-127.003

Lab number: 9600835

Turnaround time

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

Condition of sample:

Temperature received:

	Date	Time	
Relinquished by sampler	5/24/96	1430	Received by
Relinquished by	Date	Time	Received by
Relinquished by	Date	Time	Received by laboratory: Kurt Kolby CAS — Date 5-24-96 — Time 1430

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

APC-3292 (2-91)

Columbia Analytical Services inc.

July 30, 1996 Service Request No: S9600835

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

Re: 2111 San Leandro / Project No. 20805-127.003/TO#19350.00

Dear Mr. Young:

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If you have questions or further needs, please call me at (408) 428-1283.

Sincerely,

Steven L. Green
Project Chemist

Greg Anderson
Regional QA Coordinator

CVR/smh

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:**	S9600835
Project:	2111 SAN LEANDRO/20805-127.003/TO#19350.00	**Date Collected:**	5/24/96
Sample Matrix:	Water	**Date Received:**	5/24/96
		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(23)**	**Method Blank**
		Lab Code:	S9600835-004	S960604-WB
		Date Analyzed:	6/4/96	6/4/96
Analyte	**MRL**			
TPH as Gasoline	50		ND	ND
Benzene	0.5		ND	ND
Toluene	0.5		ND	ND
Ethylbenzene	0.5		ND	ND
Total Xylenes	0.5		ND	ND
Methyl *tert*-Butyl Ether	3		7	ND

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	ARCO Products Company	**Service Request:**	S9600835
Project:	2111 SAN LEANDRO/20805-127.003/TO#19350.00	**Date Collected:**	5/24/96
Sample Matrix:	Water	**Date Received:**	5/24/96
		Date Extracted:	NA
		Date Analyzed:	6/4/96

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(23)	S9600835-004	106	102
Method Blank	S960604-WB	107	100
CAS Acceptance Limits:		69-116	69-116

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	ARCO Products Company	**Service Request:**	S9600835
Project:	2111 SAN LEANDRO/20805-127.003/TO#19350.00	**Date Collected:**	5/24/96
Sample Matrix:	Water	**Date Received:**	5/24/96
		Date Extracted:	NA
		Date Analyzed:	6/4/96

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

Sample Name: Batch QC
Lab Code: S9600835-001

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

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	ARCO Products Company	**Service Request:**	S9600835
Project:	2111 SAN LEANDRO/20805-127.003/TO#19350.00	**Date Analyzed:**	6/4/96

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	26.7	107	85-115
Toluene	25	26.8	107	85-115
Ethylbenzene	25	27.0	108	85-115
Xylenes, Total	75	83.3	111	85-115
Gasoline	250	261	104	90-110
Methyl *tert*-Butyl Ether	50	44	88	85-115

ARCO Products Company
Division of AtlanticRichfieldCompany

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 Mike Whelan	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 incl. MTBE) EPA M602/8020/8015	TPH Modified 8015 Gas ☐ Diesel ☒	Oil and Grease 413.1 ☐ 413.2 ☐	TPH EPA 418.1/SM503E	EPA 601/8010	EPA 624/8240	EPA 625/8270	TCLP Metals ☐ Semi VOA ☐ VOA ☐	CAM Metals EPA 6010/7000 TTLC ☐ STLC ☐	Lead Org./DHS ☐ Lead EPA 7420/7421 ☐		
MW-1(26)	1	2		X		X	HCL	5/24/96	1210		X											
MW-4(21)	2	2		X		X	HCL		1122		X											
MW-3(26)	3	6		X		X	HCL		1140		X	X		X								
MW-5(23)	4	2		X		X	HCL		1255		X											
MW-6(24)	5	2		X		X	HCL		1100		X											
MW-2(26)	6	2		X		X	HCL		1315		X											
MW-7(26)	7	2		X		X	HCL	↓	1340		X											

Special detection Limit/reporting: Lowest Possible

Special QA/QC: As Normal

Remarks:
2-40ml HCL VOAs (All Wells)
MW-3 add:
2-1 liter HCL Gl
2-1 liter NP Gl
#70805-127.CCB

Lab number: 9600835

Method of shipment: Sampler will deliver

Turnaround time

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

Condition of sample:

Temperature received:

Relinquished by sampler	Date 5/24/96	Time 1430	Received by
Relinquished by	Date	Time	Received by
Relinquished by	Date	Time	Received by laboratory: CAS

Date: 5-24-96 Time: 1430

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

APC-3292 (2-91)