

5/96 report

ARCO
712 Lewelling
San Leandro



EMCON





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

May 23, 1996
Project 20805-121.003

Mr. John Sullivan
17760 Sweetbriar Place
Castro Valley, California 94546

Re: First quarter 1996 laboratory analytical results, groundwater samples, Chateau Manor Apartments, 724 Lewelling Boulevard, San Leandro, California

Dear Mr. Sullivan:

Enclosed please find copies of the laboratory analytical results for groundwater samples collected from wells MW-9 and MW-10 during the first quarter of 1996. These wells are located at Chateau Manor Apartments, 724 Lewelling Boulevard, San Leandro, California. The groundwater samples were collected on March 14, 1996, during quarterly sampling of the ARCO Products Company service station 601, 712 Lewelling Boulevard, San Leandro. The laboratory analytical results indicate that the groundwater sample concentrations were not detectable for total petroleum hydrocarbons as gasoline, and the gasoline constituents benzene, toluene, ethylbenzene, and total xylenes.

Please call if you have questions.

Sincerely,

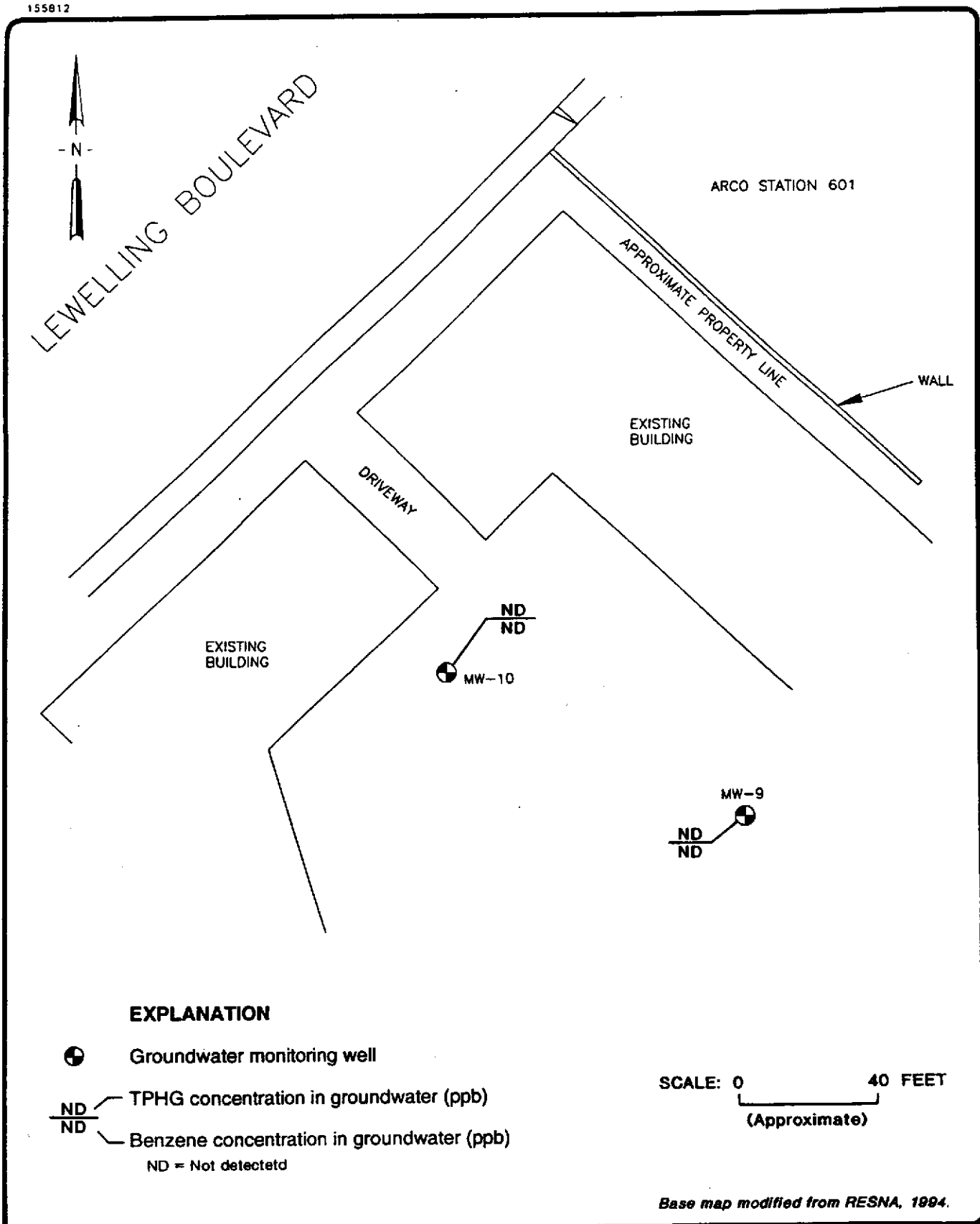
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John C. Young
Project Manager

Attachments: Figure 1 - Generalized Site Plan
Attachment A -Copy of Analytical Results and Chain-of-Custody
Documentation, Wells MW-9 and MW-10,
First Quarter 1996

cc: ~~Scott Seery~~, ACHCSA
Kevin Graves, RWQCB - SFBR
Mike Whelan, ARCO Products Company
File





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CHATEAU MANOR APARTMENTS
724 LEWELLING BLVD.
QUARTERLY GROUNDWATER MONITORING
SAN LEANDRO, CALIFORNIA

GENERALIZED SITE PLAN

FIGURE

1

PROJECT NO.
805-121.03

ATTACHMENT A

**COPY OF ANALYTICAL RESULTS AND CHAIN-OF-CUSTODY
DOCUMENTATION, WELLS MW-9 AND MW-10,
FIRST QUARTER 1996**



March 21, 1996

Service Request No: S9600419

John Young
EMCON
1921 Ringwood Avenue
San Jose, CA 95131

Re: 601 San Leandro / 20805-121.002 / TO#19350.00

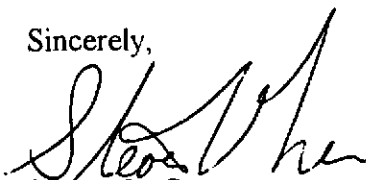
Dear Mr. Young:

The following pages contain analytical results for sample(s) received by the laboratory on March 14, 1996. Results of sample analyses are followed by Appendix A which contains sample custody documentation and quality assurance deliverables requested for this project. The work requested has been assigned the Service Request No. Listed above -- to help expedite our service please refer to this number when contacting the laboratory.

Analytical results were produced by procedures consistent with Columbia Analytical Services' (CAS) Quality Assurance Manual (with any deviations noted). Signature of this CAS Analytical Report below confirms that pages 2 through 7, following, have been thoroughly reviewed and approved for release in accord with CAS Standard Operating Procedure ADM-DatRev3.

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

Sincerely,


Steven L. Green
Project Chemist


Greg Anderson
Regional QA Coordinator

SLG/jk

COLUMBIA ANALYTICAL SERVICES, Inc.

Acronyms

A2LA	American Association for Laboratory Accreditation
ASTM	American Society for Testing and Materials
BOD	Biochemical Oxygen Demand
BTEX	Benzene, Toluene, Ethylbenzene, Xylenes
CAM	California Assessment Metals
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
COD	Chemical Oxygen Demand
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DLCS	Duplicate Laboratory Control Sample
DMS	Duplicate Matrix Spike
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
IC	Ion Chromatography
ICB	Initial Calibration Blank sample
ICP	Inductively Coupled Plasma atomic emission spectrometry
ICV	Initial Calibration Verification sample
J	Estimated concentration. The value is less than the MRL, but greater than or equal to the MDL. If the value is equal to the MRL, the result is actually <MRL before rounding.
LCS	Laboratory Control Sample
LUFT	Leaking Underground Fuel Tank
M	Modified
MBAS	Methylene Blue Active Substances
MCL	Maximum Contaminant Level. The highest permissible concentration of a substance allowed in drinking water as established by the U. S. EPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
MS	Matrix Spike
MTBE	Methyl tert-Butyl Ether
NA	Not Applicable
NAN	Not Analyzed
NC	Not Calculated
NCASI	National Council of the paper industry for Air and Stream Improvement
ND	Not Detected at or above the method reporting/detection limit (MRL/MDL)
NIOSH	National Institute for Occupational Safety and Health
NTU	Nephelometric Turbidity Units
ppb	Parts Per Billion
ppm	Parts Per Million
PQL	Practical Quantitation Limit
QA/QC	Quality Assurance/Quality Control
RCRA	Resource Conservation and Recovery Act
RPD	Relative Percent Difference
SIM	Selected Ion Monitoring
SM	Standard Methods for the Examination of Water and Wastewater, 18th Ed., 1992
STLC	Solubility Threshold Limit Concentration
SW	Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, 3rd Ed., 1986 and as amended by Updates I, II, IIA, and IIB.
TCLP	Toxicity Characteristic Leaching Procedure
TDS	Total Dissolved Solids
TPH	Total Petroleum Hydrocarbons
tr	Trace level. The concentration of an analyte that is less than the PQL but greater than or equal to the MDL. If the value is equal to the PQL, the result is actually <PQL before rounding.
TRPH	Total Recoverable Petroleum Hydrocarbons
TSS	Total Suspended Solids
TTLC	Total Threshold Limit Concentration
VOA	Volatile Organic Analyte(s)

ACRONLST.DOC 7/14/95

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: 601 San Leandro / 20805-121.002 / TO#19350.00
Sample Matrix: Water

Service Request: S9600419
Date Collected: 3/14/96
Date Received: 3/14/96
Date Extracted: NA

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

Sample Name:	MW-9(16)	MW-10(18)	Method Blank
Lab Code:	S9600419-001	S9600419-002	S9600319-WB
Date Analyzed:	3/19/96	3/19/96	3/19/96

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

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: 601 San Leandro / 20805-121.002 / TO#19350.00
Sample Matrix: Water

Service Request: S9600419
Date Collected: 3/14/96
Date Received: 3/14/96
Date Extracted: NA
Date Analyzed: 3/19/96

Surrogate Recovery Summary
BTEX, MTBE and TPH as Gasoline
EPA Methods 5030/8020/California DHS LUFT Method

Sample Name	Lab Code	PID Detector	FID Detector
		Percent Recovery 4-Bromofluorobenzene	Percent Recovery α,α,α -Trifluorotoluene
MW-9(16)	S9600419-001	94	99
MW-10(18)	S9600419-002	94	105
Method Blank	S9600319-WB	95	99

CAS Acceptance Limits: 69-116 69-116

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	ARCO Products Company	Service Request:	S9600419
Project:	601 San Leandro / 20805-121.002 / TO#19350.00	Date Collected:	3/14/96
Sample Matrix:	Water	Date Received:	3/14/96
		Date Extracted:	NA
		Date Analyzed:	3/19/96

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

Sample Name: MW-9(16)
Lab Code: S9600419-001

Analyte	Spike Level		Sample Result	Spike Result		Percent Recovery			Relative Percent Difference
						CAS		Acceptance Limits	
	MS	DMS		MS	DMS	MS	DMS		
Gasoline	250	250	ND	220	230	88	92	67-121	4

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: 601 San Leandro / 20805-121.002 / TO#19350.00

Service Request: S9600419
Date Analyzed: 3/19/96

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	24.7	99	85-115
Toluene	25	24.7	99	85-115
Ethylbenzene	25	23.9	96	85-115
Xylenes, Total	75	74.4	99	85-115
Gasoline	250	269	108	90-110
Methyl-tert-butyl Ether	50	46	92	85-115

Division of Atlantic Richfield Company

Chain of Custody

Laboratory name

CAS

Contract number

Method of shipment	
--------------------	--

Sampler
will
deliver

Special detection
Limit/reporting

Lowest Possible

Special QA/QC

As Normal

Remarks

Separate CAR

#20905-121,008

Lab number
59600419

Turnaround timePriority Rush
1 Business Day ☐

☐	Rush 2 Business Days	☐
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Expedited 3/21 ☒
5 Business Days

Standard
10 Business Days ☐

Condition of sample: INTACT

Temperature received: coal

Relinquished by sampler

Date 3-14-96 Time 1450

Received by

Relinquished by

Date	Time
------	------

Received by

Relinquished by

Date	Time
------	------

Received by laboratory 7/1

Date 3/14/90

Time 14:50

R8/52



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

May 21, 1996
Project 20805-121.003

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

Re: First quarter 1996 groundwater monitoring program results, ARCO service station 601, San Leandro, California

Dear Mr. Whelan:

This letter presents the results of the first quarter 1996 groundwater monitoring program at ARCO Products Company (ARCO) service station 601, 712 Lewelling Boulevard, San Leandro, California (Figure 1). The quarterly monitoring program complies with Alameda County Health Care Services Agency (ACHCSA) requirements regarding underground tank investigations.

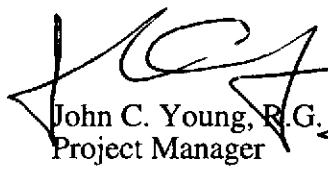
LIMITATIONS

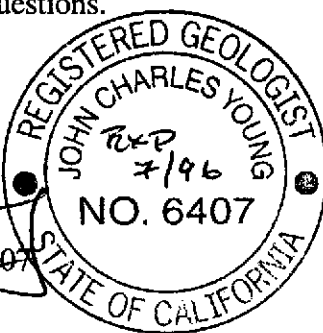
No monitoring event is thorough enough to describe all geologic and hydrogeologic conditions of interest at a given site. If conditions have not been identified during the monitoring event, such a finding should not therefore be construed as a guarantee of the absence of such conditions at the site, 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


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



May 21, 1996

ARCO QUARTERLY REPORT

Station No.: 601 Address: 712 Lewelling Boulevard, San Leandro, California
EMCON Project No. 20805-121.003
ARCO Environmental Engineer/Phone No.: Michael Whelan /(408) 453-1640
EMCON Project Manager/Phone No.: John C. Young /(408) 453-7300
Primary Agency/Regulatory ID No.: ACHCSA /Scott Seery

WORK PERFORMED THIS QUARTER (First- 1996):

1. Prepared and submitted quarterly groundwater monitoring report for fourth quarter 1995.
2. Performed quarterly groundwater monitoring for first quarter 1996.
3. **Installed oxygen releasing compounds (ORCs) into groundwater well MW-3 to further stimulate natural biodegradation.**

WORK PROPOSED FOR NEXT QUARTER (Second- 1996):

1. Perform quarterly groundwater monitoring and sampling for second quarter 1996.
2. Prepare and submit quarterly groundwater monitoring report for first quarter 1996.
3. **Install oxygen releasing compounds (ORCs) into groundwater well MW-8.**
4. Discontinue diesel analysis in wells MW-1 and MW-8. Based on four years of historical TPHD results, it appears that samples from these wells contain lower boiling point hydrocarbons, possibly gasoline.
5. Discontinue quarterly metals analyses in wells MW-1 and MW-8 pending second quarter analytical results. If these results remain below the MCLs for Cadmium, Chromium, Lead, Nickel and Zinc, then samples will be analyzed for metals annually.

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 0.01 feet/sheen, Wells MW-1 and MW-3
Cumulative FP Recovered to Date : 3.45 gallons, Well MW-1
FP Recovered This Quarter : None
Bulk Soil Removed to Date : 1,565 cubic yards of TPH impacted soil
Bulk Soil Removed This Quarter : None
Water Wells or Surface Waters
within 2000 ft., impacted by site: None
Current Remediation Techniques: Enhanced bioremediation
Approximate Depth to Groundwater: 5.78 feet
Groundwater Gradient (Average): 0.007 ft/ft toward northwest

ATTACHED:

- Table 1 - Groundwater Monitoring Data, First Quarter 1996
- Table 2 - Historical Groundwater Elevation Data
- Table 3 - Historical Groundwater Analytical Data, Petroleum Hydrocarbons and Their Constituents
- Table 4 - Historical Groundwater Analytical Data, Metals

- Table 5 - Historical Groundwater Analytical Data, Volatile and Semivolatile Organic Compounds
- Table 6 - Approximate Cumulative Floating Product Recovered, Monitoring Well MW-1
- Figure 1 - Site Location
- Figure 2 - Groundwater Data, First Quarter 1996
- Appendix A - Field Data Sheets, First Quarter 1996 Groundwater Monitoring Event
- Appendix B - Analytical Results and Chain of Custody Documentation, First Quarter 1996 Groundwater Monitoring Event

cc:

~~King~~ **Stacy, ACHCSA**
 Kevin Graves, RWQCB-SFBR
 Mike Bakaldin, SLFD

Table 1
Groundwater Monitoring Data
First Quarter 1996

ARCO Service Station 601
712 Lewelling Boulevard, San Leandro, California

Date: 05-08-96

Well Designation	Water Level Field Date	Top of Casing Elevation	Depth to Water	Groundwater Elevation	Floating Product Thickness	Groundwater Flow Direction	Hydraulic Gradient	Water Sample Field Date	TPHG LUFT Method	Benzene EPA 8020	Toluene EPA 8020	Ethylbenzene EPA 8020	Total Xylenes EPA 8020	MTBE EPA 8020	MTBE EPA 8240	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	µg/L
MW-1	02-22-96	22.26	6.01	** 16.26	0.01	NW	0.007	03-14-96	100000	6200	320	2500	12000	<1000*	--	--	--
MW-2	02-22-96	21.33	5.78	15.55	ND	NW	0.007	03-14-96	11000	290	67	190	330	<50*	--	--	--
MW-3	02-22-96	20.11	5.14	** 14.98	0.01	NW	0.007	03-14-96	150000	4400	7600	4100	22000	<3000*	--	--	--
MW-4	02-22-96	20.75	7.29	13.46	ND	NW	0.007	03-14-96	940	150	82	19	130	<20*	--	--	--
MW-5	02-22-96	20.90	5.12	15.78	ND	NW	0.007	03-14-96	52000	9100	3300	940	5000	<500*	--	--	--
MW-6	02-22-96	22.08	6.21	15.87	ND	NW	0.007	03-14-96	17000	3100	69	810	1500	<300*	--	--	--
MW-7	02-22-96	22.89	7.44	15.45	ND	NW	0.007	03-14-96	110	1.4	<0.5	3.8	3	<3	--	--	--
MW-8	02-22-96	20.97	5.35	15.62	ND	NW	0.007	03-14-96	5800	<5*	<5*	28	<5*	110	--	1900	6800*
MW-9	02-22-96	20.89	7.36	13.53	ND	NW	0.007	03-14-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--
MW-10	02-22-96	21.12	5.41	15.71	ND	NW	0.007	03-14-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--
MW-11	02-22-96	22.38	6.63	15.75	ND	NW	0.007	03-14-96	150	<0.5	<0.5	<0.8*	0.8	<3	--	--	--
MW-12	02-22-96	22.77	6.81	15.96	ND	NW	0.007	03-14-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--
MW-13	02-22-96	22.45	6.71	15.74	ND	NW	0.007	03-14-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--
MW-14	02-22-96	22.99	6.52	16.47	ND	NW	0.007	03-14-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--
MW-15	02-22-96	19.19	4.84	14.35	ND	NW	0.007	03-14-96	<50	<0.5	<0.5	<0.5	<0.5	12	--	--	--

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

NW: northwest

--: not analyzed

ND: none detected

*: method reporting limit was raised due to high analyte concentration requiring sample dilution

**: [corrected elevation (Z')] = Z + (h * 0.73) where: Z = measured elevation, h = floating product thickness, 0.73 = density ratio of oil to water

^: chromatogram fingerprint is not characteristic of diesel

Table 2
Historical Groundwater Elevation Data
1994 - Present*

ARCO Service Station 601
712 Lewelling Boulevard, San Leandro, California

Date: 05-08-96

Well Designation	Water Level Field Date	Top of Casing Elevation ft-MSL	Depth to Water feet	Groundwater Elevation ft-MSL	Floating Product Thickness feet	Groundwater Flow Direction MWN	Hydraulic Gradient foot/foot
MW-1	02-14-94	22.26	7.72	14.54	Sheen	NR	NR
MW-1	05-05-94	22.26	8.47	13.79	Sheen	NR	NR
MW-1	08-04-94	22.26	8.72	13.54	Sheen	SW	0.004
MW-1	11-20-94	22.26	7.81	14.45	Sheen	SW	0.002
MW-1	03-17-95	22.26	6.57	15.69	ND	WSW	0.006
MW-1	06-01-95	22.26	7.87	14.39	ND	SW	0.003
MW-1	08-31-95	22.26	8.12	** 14.15	0.01	SSW	0.005
MW-1	11-27-95	22.26	8.42	13.84	Sheen	SSW	0.004
MW-1	02-22-96	22.26	6.01	** 16.26	0.01	NW	0.007
MW-2	02-14-94	21.33	6.88	14.45	ND	NR	NR
MW-2	05-05-94	21.33	7.51	13.82	ND	NR	NR
MW-2	08-04-94	21.33	8.00	13.33	ND	SW	0.004
MW-2	11-20-94	21.33	6.86	14.47	ND	SW	0.002
MW-2	03-17-95	21.33	6.12	15.21	ND	WSW	0.006
MW-2	06-01-95	21.33	6.56	14.77	ND	SW	0.003
MW-2	08-31-95	21.33	7.18	14.15	ND	SSW	0.005
MW-2	11-27-95	21.33	7.39	13.94	ND	SSW	0.004
MW-2	02-22-96	21.33	5.78	15.55	ND	NW	0.007
MW-3	02-14-94	20.11	5.81	14.30	ND	NR	NR
MW-3	05-05-94	20.11	6.81	13.30	ND	NR	NR
MW-3	08-04-94	20.11	7.31	12.80	ND	SW	0.004
MW-3	11-20-94	20.11	5.88	14.23	ND	SW	0.002
MW-3	03-17-95	20.11	5.46	14.65	ND	WSW	0.006
MW-3	06-01-95	20.11	6.34	13.77	ND	SW	0.003
MW-3	08-31-95	20.11	6.60	** 13.52	0.02	SSW	0.005
MW-3	11-27-95	20.11	6.76	** 13.36	0.01	SSW	0.004
MW-3	02-22-96	20.11	5.14	** 14.98	0.01	NW	0.007
MW-4	02-14-94	20.75	DRY	DRY	ND	DRY	DRY
MW-4	05-05-94	20.75	7.73	13.02	ND	NR	NR
MW-4	08-04-94	20.75	7.83	12.92	ND	SW	0.004
MW-4	11-20-94	20.75	7.73	13.02	ND	SW	0.002
MW-4	03-17-95	20.75	6.65	14.10	ND	WSW	0.006
MW-4	06-01-95	20.75	7.25	13.50	ND	SW	0.003
MW-4	08-31-95	20.75	7.75	13.00	ND	SSW	0.005
MW-4	11-27-95	20.75	7.87	12.88	ND	SSW	0.004
MW-4	02-22-96	20.75	7.29	13.46	ND	NW	0.007

Table 2
Historical Groundwater Elevation Data
1994 - Present*

ARCO Service Station 601
712 Lewelling Boulevard, San Leandro, California

Date: 05-08-96

Well Designation	Water Level Field Date	Top of Casing Elevation	Depth to Water	Groundwater Elevation	Floating Product Thickness	Groundwater Flow Direction	Hydraulic Gradient
		ft-MSL	feet	ft-MSL	feet	MWN	
MW-5	02-14-94	20.90	6.49	14.41	ND	NR	NR
MW-5	05-05-94	20.90	7.18	13.72	ND	NR	NR
MW-5	08-04-94	20.90	7.83	13.07	ND	SW	0.004
MW-5	11-20-94	20.90	6.34	14.56	ND	SW	0.002
MW-5	03-17-95	20.90	5.51	15.39	ND	WSW	0.006
MW-5	06-01-95	20.90	6.55	14.35	ND	SW	0.003
MW-5	08-31-95	20.90	6.80	14.10	ND	SSW	0.005
MW-5	11-27-95	20.90	7.13	13.77	ND	SSW	0.004
MW-5	02-22-96	20.90	5.12	15.78	ND	NW	0.007
MW-6	02-14-94	22.08	7.78	14.30	ND	NR	NR
MW-6	05-05-94	22.08	8.24	13.84	ND	NR	NR
MW-6	08-04-94	22.08	DRY	DRY	ND	DRY	DRY
MW-6	11-20-94	22.08	7.41	14.67	ND	SW	0.002
MW-6	03-17-95	22.08	6.66	15.42	ND	WSW	0.006
MW-6	06-01-95	22.08	7.60	14.48	ND	SW	0.003
MW-6	08-31-95	22.08	7.92	14.16	ND	SSW	0.005
MW-6	11-27-95	22.08	8.21	13.87	ND	SSW	0.004
MW-6	02-22-96	22.08	6.21	15.87	ND	NW	0.007
MW-7	02-14-94	22.89	8.80	14.09	ND	NR	NR
MW-7	05-05-94	22.89	9.11	13.78	ND	NR	NR
MW-7	08-04-94	22.89	DRY	DRY	ND	DRY	DRY
MW-7	11-20-94	22.89	8.72	14.17	ND	SW	0.002
MW-7	03-17-95	22.89	7.68	15.21	ND	WSW	0.006
MW-7	06-01-95	22.89	8.40	14.49	ND	SW	0.003
MW-7	08-31-95	22.89	9.09	13.80	ND	SSW	0.005
MW-7	11-27-95	22.89	9.15	13.74	ND	SSW	0.004
MW-7	02-22-96	22.89	7.44	15.45	ND	NW	0.007
MW-8	02-14-94	20.97	7.00	13.97	ND	NR	NR
MW-8	05-05-94	20.97	7.46	13.51	ND	NR	NR
MW-8	08-04-94	20.97	8.17	12.80	ND	SW	0.004
MW-8	11-20-94	20.97	6.78	14.19	ND	SW	0.002
MW-8	03-17-95	20.97	6.14	14.83	ND	WSW	0.006
MW-8	06-01-95	20.97	6.50	14.47	ND	SW	0.003
MW-8	08-31-95	20.97	7.35	13.62	ND	SSW	0.005
MW-8	11-27-95	20.97	7.60	13.37	ND	SSW	0.004
MW-8	02-22-96	20.97	5.35	15.62	ND	NW	0.007

Table 2
Historical Groundwater Elevation Data
1994 - Present*

ARCO Service Station 601

712 Lewelling Boulevard, San Leandro, California

Date: 05-08-96

Well Designation	Water Level Field Date	Top of Casing Elevation	Depth to Water	Groundwater Elevation	Floating Product Thickness	Groundwater Flow Direction	Hydraulic Gradient
		ft-MSL	feet	ft-MSL	feet	MWN	foot/foot
MW-9	02-14-94	20.89	7.47	13.42	ND	NR	NR
MW-9	05-05-94	20.89	8.04	12.85	ND	NR	NR
MW-9	08-04-94	20.89	8.78	12.11	ND	SW	0.004
MW-9	11-20-94	20.89	6.83	14.06	ND	SW	0.002
MW-9	03-17-95	20.89	6.94	13.95	ND	WSW	0.006
MW-9	06-01-95	20.89	8.15	12.74	ND	SW	0.003
MW-9	08-31-95	20.89	8.10	12.79	ND	SSW	0.005
MW-9	11-27-95	20.89	8.38	12.51	ND	SSW	0.004
MW-9	02-22-96	20.89	7.36	13.53	ND	NW	0.007
MW-10	02-14-94	21.12	7.13	13.99	ND	NR	NR
MW-10	05-05-94	21.12	8.08	13.04	ND	NR	NR
MW-10	08-04-94	21.12	8.84	12.28	ND	SW	0.004
MW-10	11-20-94	21.12	7.05	14.07	ND	SW	0.002
MW-10	03-17-95	21.12	6.26	14.86	ND	WSW	0.006
MW-10	06-01-95	21.12	7.63	13.49	ND	SW	0.003
MW-10	08-31-95	21.12	8.17	12.95	ND	SSW	0.005
MW-10	11-27-95	21.12	8.38	12.74	ND	SSW	0.004
MW-10	02-22-96	21.12	5.41	15.71	ND	NW	0.007
MW-11	02-14-94	22.38	7.94	14.44	ND	NR	NR
MW-11	05-05-94	22.38	8.55	13.83	ND	NR	NR
MW-11	08-04-94	22.38	9.13	13.25	ND	SW	0.004
MW-11	11-20-94	22.38	7.73	14.65	ND	SW	0.002
MW-11	03-17-95	22.38	6.94	15.44	ND	WSW	0.006
MW-11	06-01-95	22.38	7.90	14.48	ND	SW	0.003
MW-11	08-31-95	22.38	8.18	14.20	ND	SSW	0.005
MW-11	11-27-95	22.38	8.48	13.90	ND	SSW	0.004
MW-11	02-22-96	22.38	6.63	15.75	ND	NW	0.007
MW-12	02-14-94	22.77	8.24	14.53	ND	NR	NR
MW-12	05-05-94	22.77	8.97	13.80	ND	NR	NR
MW-12	08-04-94	22.77	9.57	13.20	ND	SW	0.004
MW-12	11-20-94	22.77	8.06	14.71	ND	SW	0.002
MW-12	03-17-95	22.77	7.09	15.68	ND	WSW	0.006
MW-12	06-01-95	22.77	8.40	14.37	ND	SW	0.003
MW-12	08-31-95	22.77	8.55	14.22	ND	SSW	0.005
MW-12	11-27-95	22.77	8.95	13.82	ND	SSW	0.004
MW-12	02-22-96	22.77	6.81	15.96	ND	NW	0.007

Table 2
Historical Groundwater Elevation Data
1994 - Present*

ARCO Service Station 601
712 Lewelling Boulevard, San Leandro, California

Date: 05-08-96

Well Designation	Water Level Field Date	Top of Casing Elevation ft-MSL	Depth to Water feet	Groundwater Elevation ft-MSL	Floating Product Thickness feet	Groundwater Flow Direction MWN	Hydraulic Gradient foot/foot
MW-13	02-14-94	22.45	7.78	14.67	ND	NR	NR
MW-13	05-05-94	22.45	8.38	14.07	ND	NR	NR
MW-13	08-04-94	22.45	8.78	13.67	ND	SW	0.004
MW-13	11-20-94	22.45	7.68	14.77	ND	SW	0.002
MW-13	03-17-95	22.45	6.91	15.54	ND	WSW	0.006
MW-13	06-01-95	22.45	7.72	14.73	ND	SW	0.003
MW-13	08-31-95	22.45	7.58	14.87	ND	SSW	0.005
MW-13	11-27-95	22.45	7.98	14.47	ND	SSW	0.004
MW-13	02-22-96	22.45	6.71	15.74	ND	NW	0.007
MW-14	02-14-94	22.99	8.80	14.19	ND	NR	NR
MW-14	05-05-94	22.99	9.49	13.50	ND	NR	NR
MW-14	08-04-94	22.99	10.11	12.88	ND	SW	0.004
MW-14	11-20-94	22.99	8.66	14.33	ND	SW	0.002
MW-14	03-17-95	22.99	8.17	14.82	ND	WSW	0.006
MW-14	06-01-95	22.99	8.57	14.42	ND	SW	0.003
MW-14	08-31-95	22.99	9.05	13.94	ND	SSW	0.005
MW-14	11-27-95	22.99	9.19	13.80	ND	SSW	0.004
MW-14	02-22-96	22.99	6.52	16.47	ND	NW	0.007
MW-15	02-14-94	19.19	5.44	13.75	ND	NR	NR
MW-15	05-05-94	19.19	6.18	13.01	ND	NR	NR
MW-15	08-04-94	19.19	6.84	12.35	ND	SW	0.004
MW-15	11-20-94	19.19	5.31	13.88	ND	SW	0.002
MW-15	03-17-95	19.19	5.21	13.98	ND	WSW	0.006
MW-15	06-01-95	19.19	5.84	13.35	ND	SW	0.003
MW-15	08-31-95	19.19	6.18	13.01	ND	SSW	0.005
MW-15	11-27-95	19.19	6.42	12.77	ND	SSW	0.004
MW-15	02-22-96	19.19	4.84	14.35	ND	NW	0.007

ft-MSL: elevation in feet, relative to mean sea level

MWN: ground-water flow direction and gradient apply to the entire monitoring well network

NR: not reported; data not available or not measurable

ND: none detected

SW: southwest

WSW: west-southwest

SSW: south-southwest

NW: northwest

DRY: dry well; groundwater was not detected

*: For previous historical groundwater elevation data please refer to *Fourth Quarter 1995 Groundwater Monitoring Program Results, ARCO Service Station 601, San Leandro, California*, (EMCON, March 14, 1996).

**: [corrected elevation (Z')] = Z + (h * 0.73) where: Z = measured elevation, h = floating product thickness, 0.73 = density ratio of oil to water

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

ARCO Service Station 601
712 Lewelling Boulevard, San Leandro, California

Date: 05-08-96

Well Designation	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	MTBE EPA 8240 µg/L	TRPH EPA 418.1 µg/L	TPHD LUFT Method µg/L
MW-1	02-14-94	Not sampled: well contained floating product								
MW-1	05-05-94	Not sampled: well contained floating product								
MW-1	08-04-94	Not sampled: well contained floating product								
MW-1	11-20-94	Not sampled: well contained floating product								
MW-1	03-17-95	120000	5300	370	1500	13000	--	--	48000	6200^
MW-1	06-01-95	250000	7100	950	3500	21000	--	--	38000	190000^
MW-1	08-31-95	Not sampled: well contained floating product								
MW-1	11-27-95	310000	4600	770	5700	21000	--	--	--	--
MW-1	03-14-96	100000	6200	320	2500	12000	<1000*	--	--	--
MW-2	02-14-94	8700	670	370	50	1400	--	--	--	--
MW-2	05-05-94	5600	390	140	120	480	--	--	--	--
MW-2	08-04-94	2300	180	<2.5*	<2.5*	230	--	--	--	--
MW-2	11-20-94	4900	170	150	120	390	--	--	--	--
MW-2	03-17-95	10000	460	77	260	550	--	--	--	--
MW-2	06-01-95	13000	400	78	210	410	--	--	--	--
MW-2	08-31-95	5000	280	18	120	140	<50*	--	--	--
MW-2	11-27-95	3200	230	12	77	90	--	--	--	--
MW-2	03-14-96	11000	290	67	190	330	<50*	--	--	--
MW-3	02-14-94	85000	4200	12000	2500	16000	--	--	--	--
MW-3	05-05-94	560000	4600	14000	5300	40000	--	--	--	--
MW-3	08-04-94	64000	4200	7600	1700	12000	--	--	--	--
MW-3	11-20-94	80000	4700	9700	2400	15000	--	--	--	--
MW-3	03-17-95	370000	4800	12000	5800	34000	--	--	--	--
MW-3	06-01-95	270000	6000	11000	5200	28000	--	--	--	--
MW-3	08-31-95	Not sampled: well contained floating product								
MW-3	11-27-95	150000	5100	8800	3900	21000	--	--	--	--
MW-3	03-14-96	150000	4400	7600	4100	22000	<3000*	--	--	--
MW-4	02-14-94	Not sampled: dry well								
MW-4	05-05-94	1900	510	78	31	150	--	--	--	--
MW-4	08-04-94	1300	360	17	<5*	190	--	--	--	--
MW-4	11-20-94	<50	2.9	0.5	<0.5	1.4	--	--	--	--
MW-4	03-17-95	16000	1800	970	310	2500	--	--	--	--
MW-4	06-01-95	16000	2800	870	380	2700	--	--	--	--
MW-4	08-31-95	9000	2000	270	270	1400	<100*	--	--	--
MW-4	11-27-95	3800	890	130	130	550	--	--	--	--
MW-4	03-14-96	940	150	82	19	130	<20*	--	--	--

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

ARCO Service Station 601
712 Lewelling Boulevard, San Leandro, California

Date: 05-08-96

Well Designation	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	MTBE EPA 8240 µg/L	TRPH EPA 418.1 µg/L	TPHD LUFT Method µg/L
MW-5	02-14-94	46000	7300	5300	940	5200	--	--	--	--
MW-5	05-05-94	54000	9700	4700	1000	6400	--	--	--	--
MW-5	08-04-94	57000	14000	3200	1200	7200	--	--	--	--
MW-5	11-20-94	33000	5700	1800	720	4700	--	--	--	--
MW-5	03-17-95	48000	6400	2000	740	5100	--	--	--	--
MW-5	06-01-95	76000	11000	5400	1400	7700	--	--	--	--
MW-5	08-31-95	53000	12000	1600	1000	6000	<500*	--	--	--
MW-5	11-27-95	43000	7900	3300	950	4900	--	--	--	--
MW-5	03-14-96	52000	9100	3300	940	5000	<500*	--	--	--
MW-6	02-14-94	47000	14000	390	1000	5100	--	--	--	--
MW-6	05-05-94	45000	14000	<200*	1300	4500	--	--	--	--
MW-6	08-04-94	Not sampled: dry well								
MW-6	11-20-94	30000	11000	<100*	1200	2300	--	--	--	--
MW-6	03-17-95	45000	9300	<100*	1900	3600	--	--	--	--
MW-6	06-01-95	23000	5600	<50*	1300	1900	--	--	--	--
MW-6	08-31-95	26000	8000	<100*	1900	900	<500*	--	--	--
MW-6	11-27-95	6700	1800	<20*	480	230	--	--	--	--
MW-6	03-14-96	17000	3100	69	810	1500	<300*	--	--	--
MW-7	02-14-94	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-7	05-05-94	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-7	08-04-94	Not sampled: dry well								
MW-7	11-20-94	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-7	03-17-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-7	06-01-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-7	08-31-95	<50	<0.5	<0.5	0.6	<0.5	<3	--	--	--
MW-7	11-27-95	<50	<0.5	<0.5	0.9	<0.5	--	--	--	--
MW-7	03-14-96	110	1.4	<0.5	3.8	3	<3	--	--	--
MW-8	02-14-94	3600	3	<1*	72	<1*	--	--	2000	3900^
MW-8	05-05-94	2100	<2.5*	<2.5*	8.3	<2.5*	--	--	700	440^
MW-8	08-04-94	1200	1.5	<1*	6.7	<1*	--	--	700	<50
MW-8	11-20-94	2300	1.2	1.1	20	2.2	--	--	<500	2100^
MW-8	03-17-95	5400	<5*	<5*	35	<5*	--	--	--	--
MW-8	06-01-95	2600	<2.5*	<2.5*	15	<2.5*	--	--	--	--
MW-8	08-31-95	1400	<3*	<3*	5	<3*	520	--	900	--
MW-8	11-27-95	620	<0.5	<0.5	<0.5	0.5	--	560	900	510^
MW-8	03-14-96	5800	<5*	<5*	28	<5*	110	--	1900	6800^

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

ARCO Service Station 601
712 Lewelling Boulevard, San Leandro, California

Date: 05-08-96

Well Designation	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	MTBE EPA 8240 µg/L	TRPH EPA 418.1 µg/L	TPHD LUFT Method µg/L
MW-9	02-14-94	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-9	05-05-94	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-9	08-04-94	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-9	11-20-94	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-9	03-17-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-9	06-01-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-9	08-31-95	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--
MW-9	11-27-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-9	03-14-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--
MW-10	02-14-94	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-10	05-05-94	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-10	08-04-94	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-10	11-20-94	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-10	03-17-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-10	06-01-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-10	08-31-95	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--
MW-10	11-27-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-10	03-14-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--
MW-11	02-14-94	650	<1*	<1*	2	4	--	--	--	--
MW-11	05-05-94	210	<0.5	<0.5	2.5	0.6	--	--	--	--
MW-11	08-04-94	390	<0.5	<0.7*	1.9	2.2	--	--	--	--
MW-11	11-20-94	1300	1.3	0.5	1.5	21	--	--	--	--
MW-11	03-17-95	100	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-11	06-01-95	210	<0.5	<0.5	0.9	0.7	--	--	--	--
MW-11	08-31-95	680	<0.5	<0.5	4	1.8	<3	--	--	--
MW-11	11-27-95	340	<0.5	<0.5	2.2	1.6	--	--	--	--
MW-11	03-14-96	150	<0.5	<0.5	<0.8*	0.8	<3	--	--	--
MW-12	02-14-94	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-12	05-05-94	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-12	08-04-94	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-12	11-20-94	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-12	03-17-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-12	06-01-95	Not sampled: not scheduled for chemical analysis								
MW-12	08-31-95	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--
MW-12	11-27-95	Not sampled: not scheduled for chemical analysis								
MW-12	03-14-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--

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

ARCO Service Station 601
712 Lewelling Boulevard, San Leandro, California

Date: 05-08-96

Well Designation	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	MTBE EPA 8240 µg/L	TRPH EPA 418.1 µg/L	TPHD LUFT Method µg/L
MW-13	02-14-94	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-13	05-05-94	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-13	08-04-94	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-13	11-20-94	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-13	03-17-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-13	06-01-95	Not sampled: not scheduled for chemical analysis								
MW-13	08-31-95	Not sampled: not scheduled for chemical analysis								
MW-13	11-27-95	Not sampled: not scheduled for chemical analysis								
MW-13	03-14-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--
MW-14	02-14-94	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-14	05-05-94	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-14	08-04-94	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-14	11-20-94	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-14	03-17-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-14	06-01-95	Not sampled: not scheduled for chemical analysis								
MW-14	08-31-95	Not sampled: not scheduled for chemical analysis								
MW-14	11-27-95	Not sampled: not scheduled for chemical analysis								
MW-14	03-14-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--
MW-15	02-14-94	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-15	05-05-94	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-15	08-04-94	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-15	11-20-94	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-15	03-17-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-15	06-01-95	Not sampled: not scheduled for chemical analysis								
MW-15	08-31-95	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--
MW-15	11-27-95	Not sampled: not scheduled for chemical analysis								
MW-15	03-14-96	<50	<0.5	<0.5	<0.5	<0.5	12	--	--	--

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

--: not analyzed

^: 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

** For previous historical analytical data please refer to *Fourth Quarter 1995 Groundwater Monitoring Program Results, ARCO Service Station 601, San Leandro, California*, (EMCON, March 14, 1996).

Table 4
Historical Groundwater Analytical Data
Metals*
1994 - Present**

ARCO Service Station 601
712 Lewelling Boulevard, San Leandro, California

Date: 05-13-96

Well Designation	Water Sample Field Date	Cadmium EPA 6010 µg/L	Chromium EPA 6010 µg/L	Lead EPA 7421 µg/L	Nickel EPA 6010 µg/L	Zinc EPA 6010 µg/L
MW-1	02-14-94	Not sampled: well contained floating product				
MW-1	05-05-94	Not sampled: well contained floating product				
MW-1	08-04-94	Not sampled: well contained floating product				
MW-1	11-20-94	Not sampled: well contained floating product				
MW-1	03-17-95	<5	20	20	<40	60
MW-1	06-01-95	<5	20	22	70	100
MW-1	08-31-95	Not sampled: well contained floating product				
MW-1	11-27-95	Not analyzed: well MW-8 was sampled for additional parameters in lieu of well MW-1				
MW-1	03-14-96	Not analyzed: well MW-8 was sampled for additional parameters in lieu of well MW-1				
MW-2	03-23-92	Not analyzed: sampling for additional parameters was discontinued				
MW-3	03-23-92	Not analyzed: sampling for additional parameters was discontinued				
MW-4	06-10-91	Not analyzed: sampling for additional parameters was not initiated				
MW-5	06-08-92	Not analyzed: sampling for additional parameters was discontinued				
MW-6	06-10-91	Not analyzed: sampling for additional parameters was not initiated				
MW-7	06-10-91	Not analyzed: sampling for additional parameters was not initiated				
MW-8	02-14-94	<5	<10	4	<40	20
MW-8	05-05-94	<3	<5	4	<20	60
MW-8	08-04-94	<3	6	3	<20	27
MW-8	11-20-94	<3	<5	<2	<20	14
MW-8	03-17-95	Not analyzed: well MW-1 was sampled for additional parameters in lieu of well MW-8				
MW-8	06-01-95	Not analyzed: well MW-1 was sampled for additional parameters in lieu of well MW-8				
MW-8	08-31-95	<5	40	16	50	90
MW-8	11-27-95	<5	130	77	170	280
MW-8	03-14-96	<5	30	7	40	60
MW-9	06-11-93	Not analyzed: sampling for additional parameters was not initiated				
MW-10	06-11-93	Not analyzed: sampling for additional parameters was not initiated				
MW-11	11-16-92	Not analyzed: sampling for additional parameters was not initiated				
MW-12	11-16-92	Not analyzed: sampling for additional parameters was not initiated				
MW-13	11-16-92	Not analyzed: sampling for additional parameters was not initiated				
MW-14	09-15-92	Not analyzed: sampling for additional parameters was not initiated				
MW-15	05-13-93	Not analyzed: sampling for additional parameters was not initiated				

EPA: United States Environmental Protection Agency

µg/L: micrograms per liter

- - : not analyzed

*: Historically samples were analyzed for total metals. On March 14, 1996, the samples were filtered and analyzed for dissolved metals.

**: For previous historical analytical data please refer to *Fourth Quarter 1995 Groundwater Monitoring Program Results, ARCO Service Station 601, San Leandro, California*, (EMCON, March 14, 1996).

Table 5
Historical Groundwater Analytical Data
Volatile and Semivolatile Organic Compounds
1994 - Present*

ARCO Service Station 601

712 Lewelling Boulevard, San Leandro, California

Date: 05-14-96

Well Designation	Water Sample Field Date	Volatile Organic Compounds by EPA Method 601/8010 or 624/8240							Semivolatile Organic Compounds by EPA Method 3520/8270				
		Methylene Chloride µg/L	1,2-Dichloro-ethane µg/L	1,1-Dichloro-ethane µg/L	Benzene µg/L	Toluene µg/L	Ethylbenzene µg/L	Total Xylenes µg/L	Naphthalene µg/L	2-Methyl-naphthalene µg/L	Bis (2-ethylhexyl) Phthalate µg/L	Phenol µg/L	2,4-Di-methyl-phenol µg/L
MW-1	02-14-94	Not sampled: well contained floating product											
MW-1	05-05-94	Not sampled: well contained floating product											
MW-1	08-04-94	Not sampled: well contained floating product											
MW-1	11-20-94	Not sampled: well contained floating product											
MW-1	03-17-95	--	--	--	--	--	--	--	1300	730	<50	ND	150
MW-1	06-01-95	--	--	--	--	--	--	--	2200	1700	<100	240	<100
MW-1	08-31-95	Not sampled: well contained floating product											
MW-1	11-27-95	Not sampled: well contained floating product											
MW-1	03-14-96	Not sampled: well contained floating product											
MW-2	03-23-92	Not analyzed: sampling for additional parameters was discontinued											
MW-8	02-14-94	--	--	--	--	--	--	--	350	65	ND	ND	ND
MW-8	05-05-94	<0.5	<0.5	0.7	--	--	--	--	23	<10	<10	ND	ND
MW-8	08-04-94	--	--	--	--	--	--	--	11	<10	10	ND	ND
MW-8	12-13-94	--	--	--	--	--	--	--	14	<10	14	ND	ND
MW-8	03-17-95	Not analyzed: well MW-1 was sampled for additional parameters in lieu of well MW-8											
MW-8	06-01-95	Not analyzed: well MW-1 was sampled for additional parameters in lieu of well MW-8											
MW-8	08-31-95	--	--	--	--	--	--	--	62	8	<5	<5	<5
MW-8	11-27-95	--	--	--	--	--	--	--	15	<5	<5	<5	<5
MW-8	03-14-96	--	--	--	--	--	--	--	400	55	<50	<50	<50

EPA: United States Environmental Protection Agency

µg/L: micrograms per liter

-- : not analyzed

ND: not detected at or above the method detection limit

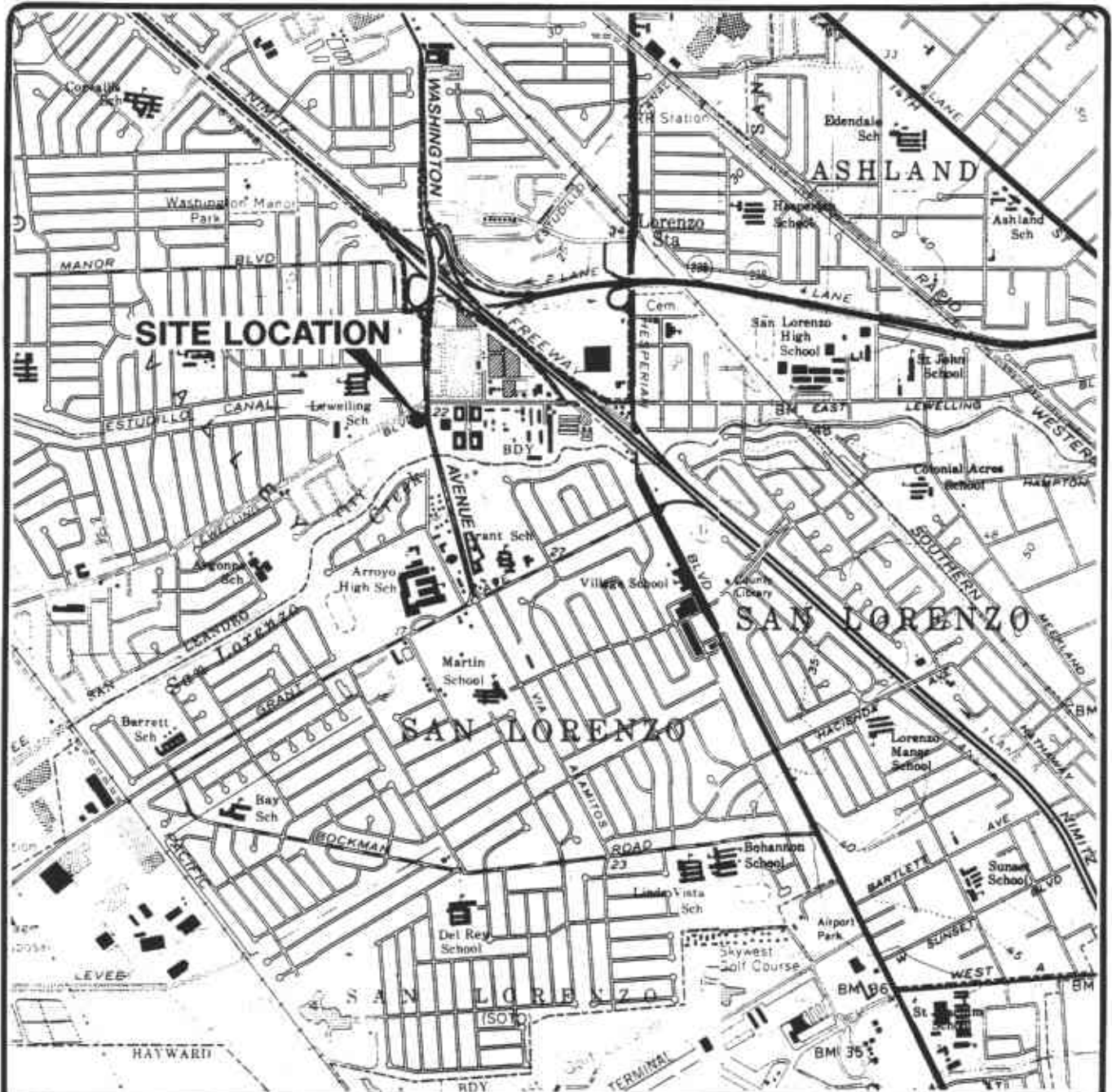
*: For previous historical analytical data please refer to *Fourth Quarter 1995 Groundwater Monitoring Program Results, ARCO Service Station 601, San Leandro, California*, (EMCON, March 14, 1996).

Table 6
Approximate Cumulative Floating Product Recovered

ARCO Service Station 601
712 Lewelling Boulevard, San Leandro, California

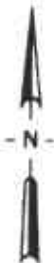
Date: 05-13-96

Well Design- nation	Date	Floating Product Recovered gallons
MW-1	1991	3.43
MW-1	1992	0.02
MW-1	1993	0.00
MW-1	1994	0.00
MW-1	1995	0.00
MW-1	1996	0.00
1991 to 1996 Total:		3.45



Base map from USGS 7.5' Quad. Maps:
Hayward and San Leandro, California.
Photorevised 1980.

Scale : 0 2000 4000 Feet



emcon

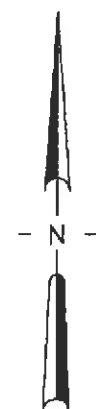
ARCO PRODUCTS COMPANY
SERVICE STATION 801, 712 LEWELLING BLVD.
QUARTERLY GROUNDWATER MONITORING
SAN LEANDRO, CALIFORNIA

SITE LOCATION

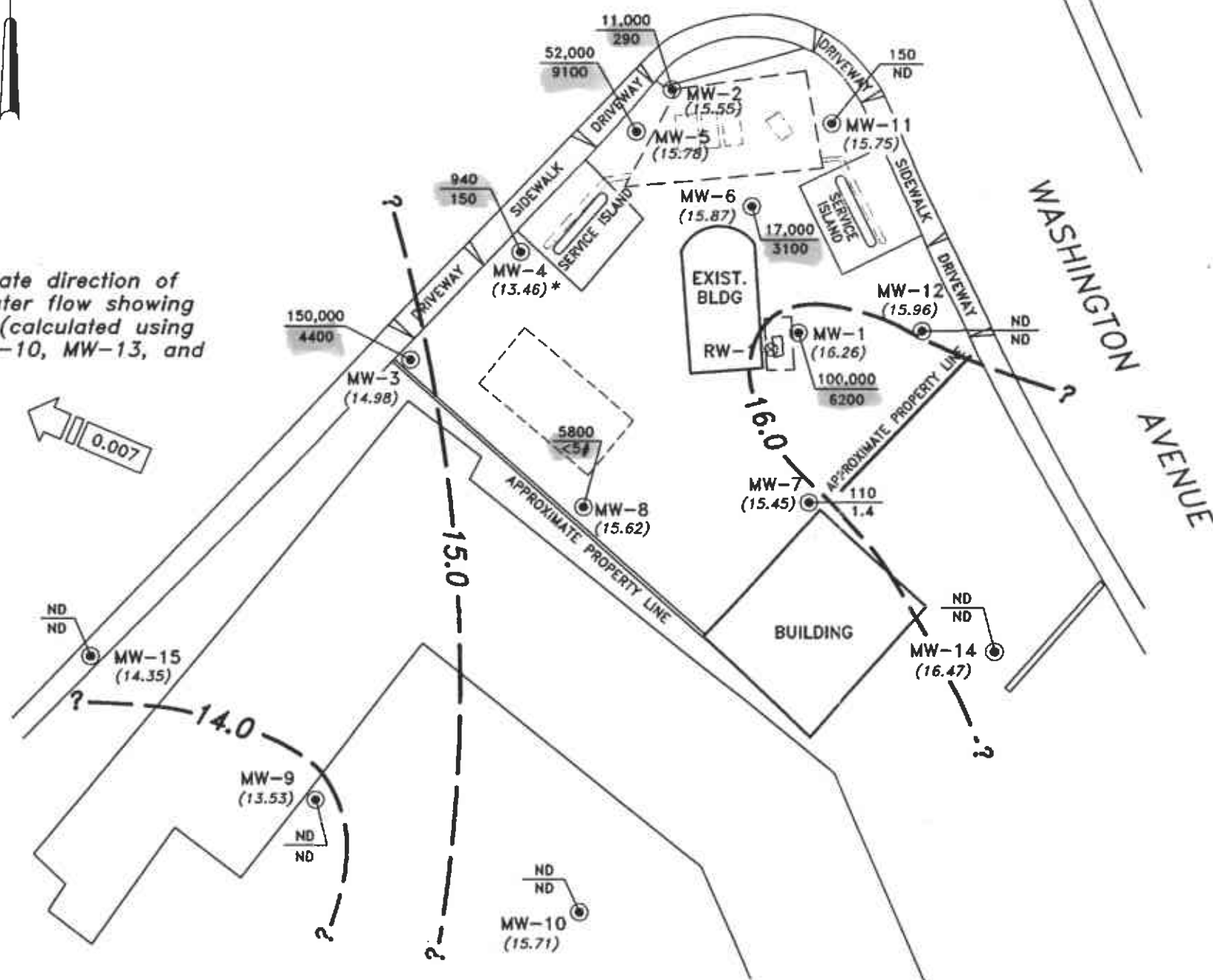
FIGURE

1

PROJECT NO.
805-121.03



Approximate direction of groundwater flow showing gradient (calculated using wells MW-10, MW-13, and MW-15)



EXPLANATION

- Groundwater monitoring well
- Vapor extraction well
- Former underground gasoline storage tank
- Existing underground gasoline storage tank
- Approximate limit of gasoline tank excavation
- Former product line
- (15.55) Groundwater elevation (Ft.-MSL) measured 2/22/96
- ?- Groundwater elevation contour (Ft.-MSL)
- 11,000 / 290 TPHG, concentration in groundwater (ug/L); sampled 3/14/96
- 11,000 / 290 Benzene concentration in groundwater (ug/L); sampled 3/14/96
- * The groundwater elevation for well MW-4 was not used in contouring
- ND Not detected at or above the method reporting limit for TPHG (50 ug/L) or benzene (0.5 ug/L)
- # Method reporting limit was raised due to high analyte concentration requiring sample location



SCALE: 0 50 100 FEET
(Approximate)

ARCO PRODUCTS COMPANY
SERVICE STATION 601, 712 LEWELLING BLVD.
QUARTERLY GROUNDWATER MONITORING
SAN LEANDRO, CALIFORNIA

GROUNDWATER DATA
FIRST QUARTER 1996

FIGURE NO.

2

PROJECT NO.
805-121.003

APPENDIX A

**FIELD DATA SHEETS, FIRST QUARTER 1996
GROUNDWATER MONITORING EVENT**

FIELD REPORT
DEPTH TO WATER / FLOATING PRODUCT SURVEY

PROJECT # : 21775-208.002 STATION ADDRESS : 712 Lewelling Blvd., San Leandro

DATE : 2-22-96

ARCO STATION # : 601

FIELD TECHNICIAN : M. ROSS / D. Gumbelin

DAY : THURSDAY

DTW Order	WELL ID	Well Box Seal	Well Lid Secure	Gasket	Lock	Locking Well Cap	FIRST DEPTH TO WATER (feet)	SECOND DEPTH TO WATER (feet)	DEPTH TO FLOATING PRODUCT (feet)	FLOATING PRODUCT THICKNESS (feet)	WELL TOTAL DEPTH (feet)	COMMENTS
1	MW-7	OK	Yes	Yes	Yes	Yes	7.44	7.44	NA	NA	9.6	
2	MW-9	OK	Yes	Yes	Yes	Yes	7.36	7.36	NA	NA	16.2	
3	MW-10	OK	Yes	Yes	Yes	Yes	5.41	5.41	NA	NA	18.6	UNDER PRESSURE Water IN BOX T.O.C.
4	MW-12	OK	Yes	Yes	Yes	Yes	6.81	6.81	NA	NA	11.7	Water IN BOX T.O.C.
5	MW-13	OK	Yes	Yes	Yes	Yes	6.71	6.71	NA	NA	13.0	
6	MW-14	OK	Yes	Yes	Yes	Yes	6.52	6.52	NA	NA	13.0	UNDER PRESSURE
7	MW-15	OK	Yes	Yes	Yes	Yes	4.84	4.84	NA	NA	10.1	Water IN BOX T.O.C.
8	MW-11	OK	Yes	Yes	Yes	Yes	6.63	6.63	NA	NA	11.9	
9	MW-8	OK	Yes	Yes	Yes	Yes	5.35	5.35	NA	NA	10.2	Water IN BOX T.O.C.
10	MW-2	OK	Yes	Yes	Yes	Yes	5.78	5.78	NA	NA	12.3	Water IN BOX T.O.C.
11	MW-4	OK	Yes	Yes	Yes	Yes	7.29	7.29	NA	NA	8.5	
12	MW-6	OK	Yes	Yes	Yes	Yes	6.21	6.21	NA	NA	8.6	Water IN BOX
13	MW-5	OK	Yes	Yes	Yes	Yes	5.12	5.12	NA	NA	10.1	
14	MW-1	OK	Yes	Yes	Yes	Yes	6.01	6.01	6.0 NA	.01 NA	12.0	Water IN BOX
15	MW-3	OK	Yes	Yes	Yes	Yes	5.14	5.14	5.13 NA	.01 NA	11.9	

SURVEY POINTS ARE TOP OF WELL CASINGS



WATER SAMPLE FIELD DATA SHEET

Rev. 3.2/94

PROJECT NO: 21775-308-002SAMPLE ID: MW-1(11)PURGED BY: M. Biss / M. G. L...CLIENT NAME: ARCO 601SAMPLED BY: M. Biss / M. G. L...LOCATION: SAN Geronimo, CATYPE: Ground Water ☒ Surface Water ☐ Treatment Effluent ☐ Other ☐CASING DIAMETER (inches): 2 ☐ 3 ☐ 4 ☒ 4.5 ☐ 6 ☐ Other ☐

CASING ELEVATION (feet/MSL):	<u>NA</u>	VOLUME IN CASING (gal.):	<u>3.24</u>
DEPTH TO WATER (feet):	<u>6.13</u>	CALCULATED PURGE (gal.):	<u>9.74</u>
DEPTH OF WELL (feet):	<u>11.1</u>	ACTUAL PURGE VOL. (gal.):	<u>10.0</u>

DATE PURGED: <u>3-14-96</u>	Start (2400 Hr) <u>1339</u>	End (2400 Hr) <u>1347</u>
DATE SAMPLED: <u>3-14-96</u>	Start (2400 Hr) <u>1345</u>	End (2400 Hr) <u>—</u>

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (μmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
<u>1340</u>	<u>3.5</u>	<u>6.91</u>	<u>1241</u>	<u>70.3</u>	<u>Light Brn</u>	<u>MOD</u>
<u>1341</u>	<u>7.0</u>	<u>6.86</u>	<u>1309</u>	<u>69.7</u>	<u>Light Brn</u>	<u>MOD</u>
<u>1347</u>	<u>10.0</u>	<u>6.82</u>	<u>1412</u>	<u>69.9</u>	<u>Light Brn</u>	<u>MOD</u>

D. O. (ppm): NA ODOR: ST. CLOAC COLOR: NA TURBIDITY: NA

(COBALT 0 - 500) (NTU 0 - 200 or 0 - 1000)

Field QC samples collected at this well:

Parameters field filtered at this well:

NANA

PURGING EQUIPMENT

☐ 2" Bladder Pump	☐ Bailer (Teflon®)
☐ Centrifugal Pump	☒ Bailer (PVC)
☐ Submersible Pump	☐ Bailer (Stainless Steel)
☐ Well Wizard™	☐ Dedicated

Other: ☐

SAMPLING EQUIPMENT

☐ 2" Bladder Pump	☒ Bailer (Teflon®)
☐ DDL Sampler	☐ Bailer (Stainless Steel)
☐ Dipper	☐ Submersible Pump
☐ Well Wizard™	☐ Dedicated

Other: ☐WELL INTEGRITY: GOOD LOCK #: ARCOREMARKS: Heavy STEADYMeter Calibration: Date: 3-14-96 Time: 1630 Meter Serial #: 9204 Temperature °F: (EC 1000 /) (DI /) (pH 7 /) (pH 10 /) (pH 4 /)Location of previous calibration: MW-9Signature: M. Biss Reviewed By: SJT Page 1 of 15

**WATER SAMPLE FIELD DATA SHEET**PROJECT NO: 21775-202002SAMPLE ID: MW-2(12)PURGED BY: M. Ross / M. L. Weger CLIENT NAME: ARCO 601SAMPLED BY: M. Ross / M. L. Weger LOCATION: San Leandro, CATYPE: Ground Water ☒ Surface Water ☐ Treatment Effluent ☐ Other ☐CASING DIAMETER (inches): 2 ☐ 3 ☐ 4 ☒ 4.5 ☐ 6 ☐ Other ☐

CASING ELEVATION (feet/MSL):	<u>NA</u>	VOLUME IN CASING (gal.):	<u>4.21</u>
DEPTH TO WATER (feet):	<u>9.85</u>	CALCULATED PURGE (gal.):	<u>12.64</u>
DEPTH OF WELL (feet):	<u>12.3</u>	ACTUAL PURGE VOL. (gal.):	<u>13.0</u>

DATE PURGED: 3-14-96 Start (2400 Hr) 1248 End (2400 Hr) 1251DATE SAMPLED: 3-14-96 Start (2400 Hr) 1255 End (2400 Hr) —

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
<u>1249</u>	<u>4.5</u>	<u>6.82</u>	<u>1742</u>	<u>69.2</u>	<u>clr</u>	<u>clr</u>
<u>1250</u>	<u>9.0</u>	<u>6.83</u>	<u>1731</u>	<u>68.7</u>	<u>clr</u>	<u>clr</u>
<u>1251</u>	<u>13.0</u>	<u>6.92</u>	<u>1722</u>	<u>68.0</u>	<u>6.66</u>	<u>1.00</u>

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

(COBALT 0 - 500) (NTU 0 - 200 or 0 - 1000)

Field QC samples collected at this well: NA Parameters field filtered at this well: NA**PURGING EQUIPMENT**

☐ 2" Bladder Pump	☐ Bailer (Teflon®)
☐ Centrifugal Pump	☒ Bailer (PVC)
☐ Submersible Pump	☐ Bailer (Stainless Steel)
☐ Well Wizard™	☐ Dedicated

Other: **SAMPLING EQUIPMENT**

☐ 2" Bladder Pump	☒ Bailer (Teflon®)
☐ DDL Sampler	☐ Bailer (Stainless Steel)
☐ Dipper	☐ Submersible Pump
☐ Well Wizard™	☐ Dedicated

Other: WELL INTEGRITY: GOOD LOCK #: ARCOREMARKS: Water in box T.O.C.Meter Calibration: Date: 3-14-96 Time: 1030 Meter Serial #: 9204 Temperature °F: (EC 1000 /) (DI) (pH 7 /) (pH 10 /) (pH 4 /)Location of previous calibration: MW-9Signature: M. L. WegerReviewed By: SHPage 2 of 15



WATER SAMPLE FIELD DATA SHEET

Rev. 3, 2/94

PROJECT NO: 2175-206-202SAMPLE ID: MW-3(12)PURGED BY: M. Ross / M. GallowayCLIENT NAME: ARIS 601SAMPLED BY: M. Ross / M. GallowayLOCATION: San Leandro, CATYPE: Ground Water ☒ Surface Water ☐ Treatment Effluent ☐ Other ☐CASING DIAMETER (inches): 2 ☐ 3 ☐ 4 ☒ 4.5 ☐ 6 ☐ Other ☐CASING ELEVATION (feet/MSL): NAVOLUME IN CASING (gal.): 4.58DEPTH TO WATER (feet): 4.98CALCULATED PURGE (gal.): 13.75DEPTH OF WELL (feet): 12.0ACTUAL PURGE VOL. (gal.): 14.0DATE PURGED: 3-14-96Start (2400 Hr) 1358End (2400 Hr) 1359DATE SAMPLED: 3-14-96Start (2400 Hr) 1403End (2400 Hr)

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
<u>1356</u>	<u>5.0</u>	<u>7.16</u>	<u>1129</u>	<u>67.8</u>	<u>Light Brown</u>	<u>Trace</u>
<u>1357</u>	<u>9.5</u>	<u>6.93</u>	<u>1098</u>	<u>66.4</u>	<u>Light Brown</u>	<u>Trace</u>
<u>1359</u>	<u>14.0</u>	<u>6.98</u>	<u>1131</u>	<u>65.8</u>	<u>Light Brown</u>	<u>Trace</u>

D. O. (ppm): NAODOR: NoneNANAField QC samples collected at this well:
NAParameters field filtered at this well:
NA(COBALT 0 - 500) (NTU 0 - 200
or 0 - 1000)

PURGING EQUIPMENT

☐ 2" Bladder Pump ☒ Bailer (Teflon®)
☐ Centrifugal Pump ☒ Bailer (PVC)
☐ Submersible Pump ☐ Bailer (Stainless Steel)
☐ Well Wizard™ ☐ Dedicated

Other:

SAMPLING EQUIPMENT

☐ 2" Bladder Pump ☒ Bailer (Teflon®)
☐ DDL Sampler ☐ Bailer (Stainless Steel)
☐ Dipper ☐ Submersible Pump
☐ Well Wizard™ ☐ Dedicated

Other: WELL INTEGRITY: GoodLOCK #: ARISREMARKS: Heavy streamMeter Calibration: Date: 3-14-96 Time: 1030 Meter Serial #: 9204 Temperature °F: (EC 1000 /) (DI) (pH 7 /) (pH 10 /) (pH 4 /)Location of previous calibration: MW-9Signature: White RossReviewed By: SGTPage 3 of 15



EMCON
ASSOCIATES

WATER SAMPLE FIELD DATA SHEET

Rev. 3, 2/94

PROJECT NO: 21775-208.002

SAMPLE ID: MW-4(8)

PURGED BY: M. Ross / M. Galleys

CLIENT NAME: ARCO 601

SAMPLED BY: M. Ross / M. Galleys

LOCATION: San Leandro, CA

TYPE: Ground Water ☒ Surface Water ☐ Treatment Effluent ☐ Other ☐

CASING DIAMETER (inches): 2 ☐ 3 ☐ 4 ☒ 4.5 ☐ 6 ☐ Other ☐

CASING ELEVATION (feet/MSL): NA VOLUME IN CASING (gal.): .54
DEPTH TO WATER (feet): 7.67 CALCULATED PURGE (gal.): 1.62
DEPTH OF WELL (feet): 8.50 ACTUAL PURGE VOL. (gal.): 1.0

DATE PURGED: 3-14-96 Start (2400 Hr) 1301 End (2400 Hr) 1322
DATE SAMPLED: 3-14-96 Start (2400 Hr) 1305 End (2400 Hr) —

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
<u>1322</u>	<u>1.0</u>	<u>7.05</u>	<u>1419</u>	<u>69.8</u>	<u>ch</u>	<u>ch</u>
	<u>DRY at 1.0</u>		<u>gallons</u>			

<u>1325</u>	<u>Recharge</u>	<u>7.04</u>	<u>1380</u>	<u>68.7</u>	<u>ch</u>	<u>ch</u>
-------------	-----------------	-------------	-------------	-------------	-----------	-----------

D. O. (ppm): NA ODOR: NONE COLOR: NA TURBIDITY: NA

Field QC samples collected at this well: NA Parameters field filtered at this well: NA

PURGING EQUIPMENT

☐ 2" Bladder Pump ☒ Bailer (Teflon®)
☐ Centrifugal Pump ☐ Bailer (PVC)
☐ Submersible Pump ☐ Bailer (Stainless Steel)
☐ Well Wizard™ ☐ Dedicated

Other: —

SAMPLING EQUIPMENT

☐ 2" Bladder Pump ☒ Bailer (Teflon®)
☐ DDL Sampler ☐ Bailer (Stainless Steel)
☐ Dipper ☐ Submersible Pump
☐ Well Wizard™ ☐ Dedicated

Other: —

WELL INTEGRITY: 6000 LOCK #: ARCO

REMARKS: DRY at 1.0 gallons

Meter Calibration: Date: 3-14-96 Time: 1030 Meter Serial #: 9204 Temperature °F: —
(EC 1000 — / —) (DI —) (pH 7 — / —) (pH 10 — / —) (pH 4 — / —)

Location of previous calibration: MW-7

Signature: M. Ross Reviewed By: SG Page 4 of 15



WATER SAMPLE FIELD DATA SHEET

PROJECT NO: 21775-222.202SAMPLE ID: MLW-5(10)PURGED BY: M. Ross / M. GellingsCLIENT NAME: ARCO 601SAMPLED BY: M. Ross / M. GellingsLOCATION: San Leandro, CATYPE: Ground Water ☒ Surface Water ☐ Treatment Effluent ☐ Other ☐CASING DIAMETER (inches): 2 ☐ 3 ☐ 4 ☒ 4.5 ☐ 6 ☐ Other ☐

CASING ELEVATION (feet/MSL):	<u>NA</u>	VOLUME IN CASING (gal.):	<u>3.18</u>
DEPTH TO WATER (feet):	<u>5.22</u>	CALCULATED PURGE (gal.):	<u>9.56</u>
DEPTH OF WELL (feet):	<u>10.1</u>	ACTUAL PURGE VOL. (gal.):	<u>4.5</u>

DATE PURGED: <u>3-14-96</u>	Start (2400 Hr) <u>1328</u>	End (2400 Hr) <u>1530</u>
DATE SAMPLED: <u>3-14-96</u>	Start (2400 Hr) <u>1332</u>	End (2400 Hr) <u>—</u>

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
<u>1328</u>	<u>3.5</u>	<u>6.89</u>	<u>1894</u>	<u>69.8</u>	<u>clr</u>	<u>clr</u>
<u>1330</u>	<u>7.0</u>	<u>DRY</u>	<u>4.5</u>	<u>9 GALLONS</u>		
<u>1332</u>	<u>Recharge</u>	<u>6.94</u>	<u>1962</u>	<u>71.6</u>	<u>clr</u>	<u>clr</u>
D. O. (ppm):	<u>NA</u>	ODOR:	<u>STRONG</u>		<u>NA</u>	<u>NA</u>
Field QC samples collected at this well:			Parameters field filtered at this well:			
<u>NA</u>			<u>NA</u>			

(COBALT 0 - 500) (NTU 0 - 200 or 0 - 1000)

PURGING EQUIPMENT

☐ 2" Bladder Pump	☐ Bailer (Teflon®)
☐ Centrifugal Pump	☒ Bailer (PVC)
☐ Submersible Pump	☐ Bailer (Stainless Steel)
☐ Well Wizard™	☐ Dedicated

Other: _____

SAMPLING EQUIPMENT

☐ 2" Bladder Pump	☒ Bailer (Teflon®)
☐ DDL Sampler	☐ Bailer (Stainless Steel)
☐ Dipper	☐ Submersible Pump
☐ Well Wizard™	☐ Dedicated

Other: _____

WELL INTEGRITY: GOOD LOCK #: ARCOREMARKS: DRY at 4.5 GALLONSMeter Calibration: Date: 3-14-96 Time: 1030 Meter Serial #: 9201 Temperature °F: _____

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

Location of previous calibration: ARCO - 9Signature: [Signature] Reviewed By: [Signature] Page 5 of 15



WATER SAMPLE FIELD DATA SHEET

PROJECT NO: 21775-208.003SAMPLE ID: MW-6 (48)PURGED BY: M. Ross / M. GailorCLIENT NAME: ARCO 601SAMPLED BY: M. Ross / M. GailorLOCATION: Sant Leandro, CATYPE: Ground Water ☒ Surface Water ☐ Treatment Effluent ☐ Other ☐CASING DIAMETER (inches): 2 ☐ 3 ☐ 4 ☒ 4.5 ☐ 6 ☐ Other ☐

CASING ELEVATION (feet/MSL):	<u>NA</u>	VOLUME IN CASING (gal.):	<u>1.54</u>
DEPTH TO WATER (feet):	<u>6.24</u>	CALCULATED PURGE (gal.):	<u>4.62</u>
DEPTH OF WELL (feet):	<u>8.6</u>	ACTUAL PURGE VOL. (gal.):	<u>2.0</u>

DATE PURGED:	<u>3-14-96</u>	Start (2400 Hr)	<u>1318</u>	End (2400 Hr)	<u>1319</u>
DATE SAMPLED:	<u>3-14-96</u>	Start (2400 Hr)	<u>1325</u>	End (2400 Hr)	<u>—</u>

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
<u>1319</u>	<u>2.0</u>	<u>7.09</u>	<u>1490</u>	<u>69.6</u>	<u>Light Brown</u>	<u>MOD</u>
<u>—</u>	<u>DRY at 2.0</u>	<u>gallons</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>
<u>1325</u>	<u>Recharge</u>	<u>6.95</u>	<u>1538</u>	<u>71.8</u>	<u>clr</u>	<u>clr</u>
D. O. (ppm):	<u>NA</u>	ODOR:	<u>moderate</u>		<u>NA</u>	<u>NA</u>
Field QC samples collected at this well:			Parameters field filtered at this well:			
<u>NA</u>			<u>NA</u>			

(COBALT 0 - 500) (NTU 0 - 200 or 0 - 1000)

PURGING EQUIPMENT

☐ 2' Bladder Pump	☐ Bailer (Teflon®)
☐ Centrifugal Pump	☒ Bailer (PVC)
☐ Submersible Pump	☐ Bailer (Stainless Steel)
☐ Well Wizard™	☐ Dedicated

Other: —

SAMPLING EQUIPMENT

☐ 2' Bladder Pump	☒ Bailer (Teflon®)
☐ DDL Sampler	☐ Bailer (Stainless Steel)
☐ Dipper	☐ Submersible Pump
☐ Well Wizard™	☐ Dedicated

Other: —WELL INTEGRITY: Good LOCK #: ARCOREMARKS: DRY at 2.0 gallonsMeter Calibration: Date: 3-14-96 Time: 1030 Meter Serial #: 9204 Temperature °F: —(EC 1000 — / —) (DI —) (pH 7 — / —) (pH 10 — / —) (pH 4 — / —)Location of previous calibration: MW-9Signature: Mike Ross Reviewed By: GA Page 6 of 15



DATA SHEET

SAMPLE ID: MW-7(9)

CLIENT NAME: ARL 601

LOCATION: Saint Andrews (CA)

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

VOLUME IN CASING (gal.): 1.39

CALCULATED PURGE (gal.): 4.17

ACTUAL PURGE VOL. (gal.): 2.0

End (2400 Hr) 1137

End (2400 Hr) _____

(COBALT 0 - 500) (NTU 0 - 200
or 0 - 1000)

Parameters field filtered at this well:

SAMPLING EQUIPMENT

☐ 2" Bladder Pump	☒ Bailer (Teflon®)
☐ DDL Sampler	☐ Bailer (Stainless Steel)
☐ Dipper	☐ Submersible Pump
☐ Well Wizard™	☐ Dedicated

Other: _____

WELL INTEGRITY: Good LOCK #: ARLO

REMARKS: Driv out 2.0 gallons

Meter Calibration: Date: 2-14-96 Time: 1030 Meter Serial #: 9204 Temperature °F: _____

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

Location of previous calibration: MD-9

Signature: Shane Lee Reviewed By: SLT Page 7 of 15



WATER SAMPLE FIELD DATA SHEET

PROJECT NO: 21775-208.002SAMPLE ID: MW-8 (10)PURGED BY: M. Ross / M. GallagherCLIENT NAME: ARCO 601SAMPLED BY: M. Ross / M. GallagherLOCATION: San Leandro, CATYPE: Ground Water ☒ Surface Water ☐ Treatment Effluent ☐ Other ☐CASING DIAMETER (inches): 2 ☐ 3 ☐ 4 ☒ 4.5 ☐ 6 ☐ Other ☐

CASING ELEVATION (feet/MSL):	<u>NA</u>	VOLUME IN CASING (gal.):	<u>3.27</u>
DEPTH TO WATER (feet):	<u>5.18</u>	CALCULATED PURGE (gal.):	<u>9.83</u>
DEPTH OF WELL (feet):	<u>10.2</u>	ACTUAL PURGE VOL. (gal.):	<u>10.0</u>

DATE PURGED: 3-14-96Start (2400 Hr) 1228End (2400 Hr) 1231DATE SAMPLED: 3-14-96Start (2400 Hr) 1235End (2400 Hr) —

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (μ mhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
<u>1229</u>	<u>3.5</u>	<u>6.93</u>	<u>1289</u>	<u>67.0</u>	<u>Light Brn</u>	<u>TRACE</u>
<u>1230</u>	<u>7.0</u>	<u>6.87</u>	<u>1110</u>	<u>66.1</u>	<u>Light Brn</u>	<u>TRACE</u>
<u>1231</u>	<u>10.0</u>	<u>6.88</u>	<u>1113</u>	<u>66.2</u>	<u>Brn</u>	<u>Hoary</u>

D. O. (ppm): NAODOR: STRONGNA
(COBALT 0 - 500)NA
(NTU 0 - 200
or 0 - 1000)

Field QC samples collected at this well:

NA

Parameters field filtered at this well:

NA

PURGING EQUIPMENT

☐ 2" Bladder Pump	☐ Bailer (Teflon®)
☐ Centrifugal Pump	☒ Bailer (PVC)
☐ Submersible Pump	☐ Bailer (Stainless Steel)
☐ Well Wizard™	☐ Dedicated

Other:

SAMPLING EQUIPMENT

☐ 2" Bladder Pump	☒ Bailer (Teflon®)
☐ DDL Sampler	☐ Bailer (Stainless Steel)
☐ Dipper	☐ Submersible Pump
☐ Well Wizard™	☐ Dedicated

Other: WELL INTEGRITY: GoodLOCK #: ARCOREMARKS: Water in box T.O.C.Meter Calibration: Date 3-14-96 Time: 1630 Meter Serial #: 9204 Temperature °F: (EC 1000 /) (DI) (pH 7 /) (pH 10 /) (pH 4 /)Location of previous calibration: MW-9Signature: Mike RossReviewed By: STPage 8 of 15



EMCON
ASSOCIATES

WATER SAMPLE FIELD DATA SHEET

Rev. 3, 2/94

PROJECT NO: 21775-208.02

SAMPLE ID: MW-9(16)

PURGED BY: M. ROSS / M. GILLES

CLIENT NAME: ARCO 601

SAMPLED BY: M. ROSS / M. GILLES

LOCATION: San Leandro

TYPE: Ground Water ☒ Surface Water ☐ Treatment Effluent ☐ Other ☐

CASING DIAMETER (inches): 2 ☒ 3 ☐ 4 ☐ 4.5 ☐ 6 ☐ Other ☐

CASING ELEVATION (feet/MSL): <u>NA</u>	VOLUME IN CASING (gal.): <u>1.34</u>
DEPTH TO WATER (feet): <u>7.86</u>	CALCULATED PURGE (gal.): <u>4.03</u>
DEPTH OF WELL (feet): <u>116.1</u>	ACTUAL PURGE VOL. (gal.): <u>4.5</u>

DATE PURGED: <u>3-14-96</u>	Start (2400 Hr) <u>1041</u>	End (2400 Hr) <u>1044</u>
DATE SAMPLED: <u>3-14-92</u>	Start (2400 Hr) <u>1048</u>	End (2400 Hr) <u>—</u>

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
<u>1042</u>	<u>1.5</u>	<u>6.98</u>	<u>1008</u>	<u>69.0</u>	<u>Light Brown</u>	<u>Trace</u>
<u>1043</u>	<u>3.0</u>	<u>7.07</u>	<u>1052</u>	<u>69.1</u>	<u>Light Brown</u>	<u>Trace</u>
<u>1044</u>	<u>4.5</u>	<u>7.05</u>	<u>1072</u>	<u>69.4</u>	<u>—</u>	<u>—</u>
<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>
<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>

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

Field QC samples collected at this well: NA Parameters field filtered at this well: NA

PURGING EQUIPMENT

☐ 2" Bladder Pump ☒ Bailer (Teflon®)
☐ Centrifugal Pump ☐ Bailer (PVC)
☐ Submersible Pump ☐ Bailer (Stainless Steel)
☐ Well Wizard™ ☐ Dedicated

Other: —

SAMPLING EQUIPMENT

☐ 2" Bladder Pump ☒ Bailer (Teflon®)
☐ DDL Sampler ☐ Bailer (Stainless Steel)
☐ Dipper ☐ Submersible Pump
☐ Well Wizard™ ☐ Dedicated

Other: —

WELL INTEGRITY: Good LOCK #: ARCO

REMARKS: Water in the Box T.O.C

Meter Calibration: Date: 3-14-96 Time: 1030 Meter Serial #: 9204 Temperature °F: 70.9
 (EC 1000 953 / 1000) (DI —) (pH 7.693 / 1700) (pH 10 992 / 1000) (pH 4 4001 / —)
 Location of previous calibration: —

Signature: M. Ross Reviewed By: GR Page 9 of 15



EMCON
ASSOCIATES

Rev. 3, 2/94

WATER SAMPLE FIELD DATA SHEET

PROJECT NO: 21775-208.002

SAMPLE ID: MW-10(18)

PURGED BY: M. ROSS / M. Gallegos

CLIENT NAME: ARCO 601

SAMPLED BY: M. ROSS / M. Gallegos

LOCATION: San Geronimo, CA

TYPE: Ground Water ☒ Surface Water ☐ Treatment Effluent ☐ Other ☐

CASING DIAMETER (inches): 2 ☒ 3 ☐ 4 ☐ 4.5 ☐ 6 ☐ Other ☐

CASING ELEVATION (feet/MSL): NA

VOLUME IN CASING (gal.): 2.09

DEPTH TO WATER (feet): 5.68

CALCULATED PURGE (gal.): 6.28

DEPTH OF WELL (feet): 18.5

ACTUAL PURGE VOL. (gal.): 6.5

DATE PURGED: 3-14-96

Start (2400 Hr) 1054

End (2400 Hr) 1058

DATE SAMPLED: 3-14-96

Start (2400 Hr) 1103

End (2400 Hr) —

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
<u>1056</u>	<u>2.5</u>	<u>7.14</u>	<u>1210</u>	<u>67.8</u>	<u>BREN</u>	<u>160 µm</u>
<u>1057</u>	<u>4.5</u>	<u>7.15</u>	<u>1166</u>	<u>67.2</u>	<u>BREN</u>	<u>160 µm</u>
<u>1058</u>	<u>6.5</u>	<u>7.17</u>	<u>1175</u>	<u>67.1</u>	<u>BREN</u>	<u>160 µm</u>

D. O. (ppm): NA

ODOR: NONE

NA
(COBALT 0 - 500)

NA
(NTU 0 - 200
or 0 - 1000)

Field QC samples collected at this well:
NA

Parameters field filtered at this well:
NA

PURGING EQUIPMENT

- ☐ 2" Bladder Pump
☐ Centrifugal Pump
☐ Submersible Pump
☐ Well Wizard™
☐ Bailer (Teflon®)
☒ Bailer (PVC)
☐ Bailer (Stainless Steel)
☐ Dedicated

Other:

SAMPLING EQUIPMENT

- ☐ 2" Bladder Pump
☐ DDL Sampler
☐ Dipper
☐ Well Wizard™
☒ Bailer (Teflon®)
☐ Bailer (Stainless Steel)
☐ Submersible Pump
☐ Dedicated

Other:

WELL INTEGRITY: Good LOCK #: ARCO

REMARKS: Water in BAK T.O.C

Meter Calibration: Date: 3-14-96 Time: 1030 Meter Serial #: 9204 Temperature °F:

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

Location of previous calibration: MW-9

Signature: M. Ross Reviewed By: Page 10 of 15



WATER SAMPLE FIELD DATA SHEET

Rev. 3, 2/94

PROJECT NO: 21775-208.002SAMPLE ID: MW-11 (11)PURGED BY: M. Ross / M. GelleraCLIENT NAME: ARCO (60)SAMPLED BY: M. Ross / M. GelleraLOCATION: San Leandro, CATYPE: Ground Water ☒ Surface Water ☐ Treatment Effluent ☐ Other ☐CASING DIAMETER (inches): 2 ☐ 3 ☐ 4 ☒ 4.5 ☐ 6 ☐ Other ☐

CASING ELEVATION (feet/MSL):	<u>NA</u>	VOLUME IN CASING (gal.):	<u>3.46</u>
DEPTH TO WATER (feet):	<u>6.60</u>	CALCULATED PURGE (gal.):	<u>10.38</u>
DEPTH OF WELL (feet):	<u>11.9</u>	ACTUAL PURGE VOL. (gal.):	<u>10.5</u>

DATE PURGED: <u>3-14-96</u>	Start (2400 Hr) <u>1215</u>	End (2400 Hr) <u>1218</u>
DATE SAMPLED: <u>3-14-96</u>	Start (2400 Hr) <u>1220</u>	End (2400 Hr) <u>—</u>

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
<u>1216</u>	<u>3.5</u>	<u>7.05</u>	<u># 1729</u>	<u>69.3</u>	<u>BEN</u>	<u>Heavy</u>
<u>1217</u>	<u>7.0</u>	<u>6.98</u>	<u>1693</u>	<u>68.5</u>	<u>BEN</u>	<u>Heavy</u>
<u>1218</u>	<u>10.5</u>	<u>7.06</u>	<u>1621</u>	<u>67.9</u>	<u>BEN</u>	<u>Heavy</u>

D. O. (ppm): <u>NA</u>	ODOR: <u>NONE</u>	<u>NA</u>	<u>NA</u>
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Field QC samples collected at this well:	Parameters field filtered at this well:	(COBALT 0 - 500)	(NTU 0 - 200 or 0 - 1000)
<u>NA</u>	<u>NA</u>		

PURGING EQUIPMENT

☐ 2" Bladder Pump	☐ Bailer (Teflon®)
☐ Centrifugal Pump	☒ Bailer (PVC)
☐ Submersible Pump	☐ Bailer (Stainless Steel)
☐ Well Wizard™	☐ Dedicated

Other: ☐

SAMPLING EQUIPMENT

☐ 2" Bladder Pump	☒ Bailer (Teflon®)
☐ DDL Sampler	☐ Bailer (Stainless Steel)
☐ Dipper	☐ Submersible Pump
☐ Well Wizard™	☐ Dedicated

Other: ☐WELL INTEGRITY: Good LOCK #: ARCOREMARKS: Meter Calibration: Date: 7-14-96 Time: 1030 Meter Serial #: 9204 Temperature °F: (EC 1000 /) (DI) (pH 7 /) (pH 10 /) (pH 4 /)Location of previous calibration: MW-9Signature: White Ross Reviewed By: SG Page 11 of 15



WATER SAMPLE FIELD DATA SHEET

Rev. 3, 2/94

PROJECT NO: 21775-207 002SAMPLE ID: MW-12 (11)PURGED BY: M. Ross / M. GellingsCLIENT NAME: ARCO 601SAMPLED BY: M. Ross / M. GellingsLOCATION: San Leandro, CATYPE: Ground Water ☒ Surface Water ☐ Treatment Effluent ☐ Other ☐CASING DIAMETER (inches): 2 ☐ 3 ☐ 4 ☒ 4.5 ☐ 6 ☐ Other ☐

CASING ELEVATION (feet/MSL):	<u>NA</u>	VOLUME IN CASING (gal.):	<u>3.16</u>
DEPTH TO WATER (feet):	<u>6.76</u>	CALCULATED PURGE (gal.):	<u>9.48</u>
DEPTH OF WELL (feet):	<u>11.6</u>	ACTUAL PURGE VOL. (gal.):	<u>9.5</u>

DATE PURGED: 3-14-96Start (2400 Hr) 1125End (2400 Hr) 1128DATE SAMPLED: 3-14-96Start (2400 Hr) 1132End (2400 Hr) —

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (μ mhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
<u>1126</u>	<u>3.5</u>	<u>7.14</u>	<u>1845</u>	<u>67.8</u>	<u>Light Brown</u>	<u>Trace</u>
<u>1127</u>	<u>6.5</u>	<u>7.04</u>	<u>1671</u>	<u>68.1</u>	<u>Light Brown</u>	<u>Trace</u>
<u>1128</u>	<u>9.5</u>	<u>7.01</u>	<u>1652</u>	<u>68.2</u>	<u>Brown</u>	<u>Mod</u>

D. O. (ppm): NAODOR: NoneNANA

Field QC samples collected at this well:

Parameters field filtered at this well:

(COBALT 0 - 500)

(NTU 0 - 200
or 0 - 1000)

PURGING EQUIPMENT

☐ 2" Bladder Pump	☐ Bailer (Teflon®)
☐ Centrifugal Pump	☒ Bailer (PVC)
☐ Submersible Pump	☐ Bailer (Stainless Steel)
☐ Well Wizard™	☐ Dedicated

Other:

SAMPLING EQUIPMENT

☐ 2" Bladder Pump	☒ Bailer (Teflon®)
☐ DDL Sampler	☐ Bailer (Stainless Steel)
☐ Dipper	☐ Submersible Pump
☐ Well Wizard™	☐ Dedicated

Other: WELL INTEGRITY: GoodLOCK #: ARCO

REMARKS:

Water in Box T.O.C.Meter Calibration: Date: 3-14-96 Time: 1030 Meter Serial #: 9204 Temperature °F: (EC 1000 /) (DI) (pH 7 /) (pH 10 /) (pH 4 /)Location of previous calibration: MW 9Signature: Mike RossReviewed By: Page 12 of 15



WATER SAMPLE FIELD DATA SHEET

PROJECT NO: 21775-208.002SAMPLE ID: MW-19 (13)PURGED BY: M. Ross / M. GallagherCLIENT NAME: ARCO 601SAMPLED BY: M. Ross / M. GallagherLOCATION: San Leandro, CATYPE: Ground Water ☒ Surface Water ☐ Treatment Effluent ☐ Other ☐CASING DIAMETER (inches): 2 ☒ 3 ☐ 4 ☐ 4.5 ☐ 6 ☐ Other ☐

CASING ELEVATION (feet/MSL):	<u>NA</u>	VOLUME IN CASING (gal.):	<u>1.01</u>
DEPTH TO WATER (feet):	<u>6.76</u>	CALCULATED PURGE (gal.):	<u>3.05</u>
DEPTH OF WELL (feet):	<u>13.0</u>	ACTUAL PURGE VOL. (gal.):	<u>3.5</u>

DATE PURGED: <u>3-14-96</u>	Start (2400 Hr) <u>1202</u>	End (2400 Hr) <u>1205</u>
DATE SAMPLED: <u>3-14-96</u>	Start (2400 Hr) <u>1209</u>	End (2400 Hr) <u>—</u>

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
<u>1203</u>	<u>1.5</u>	<u>6.98</u>	<u>1803</u>	<u>69.0</u>	<u>Light Brn</u>	<u>mod</u>
<u>1204</u>	<u>2.5</u>	<u>7.15</u>	<u>1661</u>	<u>69.6</u>	<u>Light Brn</u>	<u>mod</u>
<u>1205</u>	<u>3.5</u>	<u>7.06</u>	<u>1780</u>	<u>69.9</u>	<u>Brn</u>	<u>heavy</u>
D. O. (ppm): <u>NA</u>	ODOR: <u>NDNF</u>	COLOR: <u>NA</u>	TURBIDITY: <u>NA</u>			
Field QC samples collected at this well: <u>NA</u>			Parameters field filtered at this well: <u>NA</u>			

PURGING EQUIPMENT		SAMPLING EQUIPMENT	
☐ 2" Bladder Pump	☒ Bailer (Teflon®)	☐ 2" Bladder Pump	☒ Bailer (Teflon®)
☐ Centrifugal Pump	☐ Bailer (PVC)	☐ DDL Sampler	☐ Bailer (Stainless Steel)
☐ Submersible Pump	☐ Bailer (Stainless Steel)	☐ Dipper	☐ Submersible Pump
☐ Well Wizard™	☐ Dedicated	☐ Well Wizard™	☐ Dedicated
Other: <u> </u>	Other: <u> </u>	Other: <u> </u>	Other: <u> </u>

WELL INTEGRITY: Good LOCK #: ARCOREMARKS:

Meter Calibration: Date: 3-14-96 Time: 1030 Meter Serial #: 9204 Temperature °F:
 (EC 1000 /) (DI) (pH 7 /) (pH 10 /) (pH 4 /)
 Location of previous calibration: MW-4

Signature: Mike Ross Reviewed By: GA Page 13 of 15



WATER SAMPLE FIELD DATA SHEET

Rev. 3, 2/94

PROJECT NO: 21775-208,002SAMPLE ID: MW-14 (13)PURGED BY: M. Ross / M. BullockCLIENT NAME: ARCO 601SAMPLED BY: M. Ross / M. BullockLOCATION: Sand Creek Dr. CroTYPE: Ground Water ☒ Surface Water ☐ Treatment Effluent ☐ Other ☐CASING DIAMETER (inches): 2 ☒ 3 ☐ 4 ☐ 4.5 ☐ 6 ☐ Other ☐

CASING ELEVATION (feet/MSL):	<u>NA</u>	VOLUME IN CASING (gal.):	<u>0.99</u>
DEPTH TO WATER (feet):	<u>6.88</u>	CALCULATED PURGE (gal.):	<u>2.99</u>
DEPTH OF WELL (feet):	<u>13.0</u>	ACTUAL PURGE VOL. (gal.):	<u>3.0</u>

DATE PURGED: 3-14-96Start (2400 Hr) 1144End (2400 Hr) 1148DATE SAMPLED: 3-14-96Start (2400 Hr) 1153End (2400 Hr) —

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
<u>1145</u>	<u>1.0</u>	<u>6.88</u>	<u>1880</u>	<u>66.7</u>	<u>BRN</u>	<u>Heavy</u>
<u>1147</u>	<u>2.0</u>	<u>6.89</u>	<u>1877</u>	<u>67.0</u>	<u>BRN</u>	<u>Heavy</u>
<u>1148</u>	<u>3.0</u>	<u>6.91</u>	<u>1920</u>	<u>67.2</u>	<u>BRN</u>	<u>Heavy</u>

D. O. (ppm): NAODOR: NONENA
(COBALT 0 - 500)NA
(NTU 0 - 200
or 0 - 1000)

Field QC samples collected at this well:

Parameters field filtered at this well:

PURGING EQUIPMENT

☐ 2" Bladder Pump	☒ Bailer (Teflon®)
☐ Centrifugal Pump	☐ Bailer (PVC)
☐ Submersible Pump	☐ Bailer (Stainless Steel)
☐ Well Wizard™	☐ Dedicated

Other:

SAMPLING EQUIPMENT

☐ 2" Bladder Pump	☒ Bailer (Teflon®)
☐ DDL Sampler	☐ Bailer (Stainless Steel)
☐ Dipper	☐ Submersible Pump
☐ Well Wizard™	☐ Dedicated

Other: WELL INTEGRITY: GoodLOCK #: ARCOREMARKS:

Meter Calibration: Date: 3-14-96 Time: 1070 Meter Serial #: 9204 Temperature °F:
(EC 1000 /) (DI) (pH 7 /) (pH 10 /) (pH 4 /)

Location of previous calibration: MW-9Signature: M. RossReviewed By: SAPage 14 of 15



EMCON
ASSOCIATES

WATER SAMPLE FIELD DATA SHEET

Rev. 3, 2/94

PROJECT NO: 21775-202.002

SAMPLE ID: MW-15(10)

PURGED BY: M. ROSS / m. ballejo

CLIENT NAME: ARCS 621

SAMPLED BY: M. ROSS / m. ballejo

LOCATION: Santa Barbara, CA

TYPE: Ground Water ☒ Surface Water ☐ Treatment Effluent ☐ Other ☐

CASING DIAMETER (inches): 2 ☒ 3 ☐ 4 ☐ 4.5 ☐ 6 ☐ Other ☐

CASING ELEVATION (feet/MSL): NA

VOLUME IN CASING (gal.): 0.86

DEPTH TO WATER (feet): 4.70

CALCULATED PURGE (gal.): 2.59

DEPTH OF WELL (feet): 10.0

ACTUAL PURGE VOL. (gal.): 3.0

DATE PURGED: 3-14-96

Start (2400 Hr) 1107

End (2400 Hr) 1110

DATE SAMPLED: 3-14-96

Start (2400 Hr) 1112

End (2400 Hr) —

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
<u>1108</u>	<u>1.0</u>	<u>7.35</u>	<u>1013</u>	<u>67.2</u>	<u>Light Mn</u>	<u>Trace</u>
<u>1109</u>	<u>2.0</u>	<u>7.34</u>	<u>1073</u>	<u>66.5</u>	<u>Mn</u>	<u>mod</u>
<u>1110</u>	<u>3.0</u>	<u>7.35</u>	<u>1080</u>	<u>65.9</u>	<u>Mn</u>	<u>Heavy</u>

D. O. (ppm): NA

ODOR: NONE

NA
(COBALT 0 - 500)

NA
(NTU 0 - 200
or 0 - 1000)

Field QC samples collected at this well:

Parameters field filtered at this well:

PURGING EQUIPMENT

- ☐ 2" Bladder Pump ☒ Bailer (Teflon®)
☐ Centrifugal Pump ☐ Bailer (PVC)
☐ Submersible Pump ☐ Bailer (Stainless Steel)
☐ Well Wizard™ ☐ Dedicated

Other:

SAMPLING EQUIPMENT

- ☐ 2" Bladder Pump ☒ Bailer (Teflon®)
☐ DDL Sampler ☐ Bailer (Stainless Steel)
☐ Dipper ☐ Submersible Pump
☐ Well Wizard™ ☐ Dedicated

Other:

WELL INTEGRITY: Good

LOCK #: ARCS

REMARKS:

Meter Calibration: Date: 3-14-96 Time: 1030 Meter Serial #: 9204 Temperature °F:

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

Location of previous calibration: MW-9

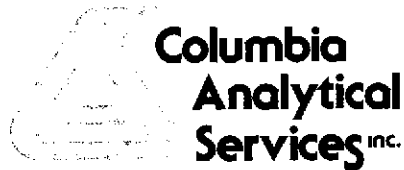
Signature: Mike Ross

Reviewed By: SA

Page 15 of 15

APPENDIX B

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



March 22, 1996

Service Request No: S9600420

John Young
EMCON
1921 Ringwood Avenue
San Jose, CA 95131

Re: 601 San Leandro/Project No. 20805-121.002/TO#19350.00

Dear Mr. Young:

The following pages contain analytical results for sample(s) received by the laboratory on March 14, 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 27, 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 "Steve Green", written over the word "Sincerely,".

Steven L. Green
Project Chemist

A handwritten signature in black ink, appearing to read "Greg Anderson", written in a cursive style.

Greg Anderson
Regional QA Coordinator

SLG/sh

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: EMCON
Project: ARCO Products Company #601/#20805-121.002
Sample Matrix: Water

Service Request: L9601780
Date Collected: 3/14/96
Date Received: 3/14/96
Date Extracted: 3/19/96
Date Analyzed: 3/19/96

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

Sample Name	Lab Code	MRL	Result
MW-8 (10)	L9601780-001	0.5	1.9
Method Blank	L9601780-MB	0.5	ND

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: ARCO Products Company #601/#20805-121.002
Sample Matrix: Water

Service Request: L9601780
Date Collected: 3/14/96
Date Received: 3/14/96
Date Extracted: 3/18/96

Base Neutral/Acid Semivolatile Organic Compounds
 EPA Methods 3510/8270
 Units: ug/L (ppb)

Sample Name:	MW-8 (10)	Method Blank
Lab Code:	L9601780-001*	L9601780-MB
Date Analyzed:	3/19/96	3/21/96

Base Neutral Analyte	MRL		
N-Nitrosodimethylamine	5	<50	ND
Aniline	5	<50	ND
Bis(2-chloroethyl) Ether	5	<50	ND
1,2-Dichlorobenzene	5	<50	ND
1,3-Dichlorobenzene	5	<50	ND
1,4-Dichlorobenzene	5	<50	ND
Bis(2-chloroisopropyl) Ether	5	<50	ND
N-Nitrosodi-n-propylamine	5	<50	ND
Hexachloroethane	5	<50	ND
Nitrobenzene	5	<50	ND
Isophorone	5	<50	ND
Bis(2-chloroethoxy)methane	5	<50	ND
1,2,4-Trichlorobenzene	5	<50	ND
Naphthalene	5	400	ND
4-Chloroaniline	5	<50	ND
Hexachlorobutadiene	5	<50	ND
2-Methylnaphthalene	5	55	ND
Hexachlorocyclopentadiene	10	<100	ND
2-Chloronaphthalene	5	<50	ND
2-Nitroaniline	20	<200	ND
Dimethyl Phthalate	5	<50	ND
Acenaphthylene	5	<50	ND
3-Nitroaniline	20	<200	ND
Acenaphthene	5	<50	ND
Dibenzofuran	5	<50	ND
2,4-Dinitrotoluene	5	<50	ND

* MRL is elevated because of matrix interferences and because the sample required diluting.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: ARCO Products Company #601/#20805-121.002
Sample Matrix: Water

Service Request: L9601780
Date Collected: 3/14/96
Date Received: 3/14/96
Date Extracted: 3/18/96

Base Neutral/Acid Semivolatile Organic Compounds
 EPA Methods 3510/8270
 Units: ug/L (ppb)

Sample Name:	MW-8 (10)	Method Blank
Lab Code:	L9601780-001*	L9601780-MB
Date Analyzed:	3/19/96	3/21/96

Base Neutral Analyte	MRL		
2,6-Dinitrotoluene	5	<50	ND
Diethyl Phthalate	5	<50	ND
4-Chlorophenyl Phenyl Ether	5	<50	ND
Fluorene	5	<50	ND
4-Nitroaniline	20	<200	ND
N-Nitrosodiphenylamine	5	<50	ND
4-Bromophenyl Phenyl Ether	5	<50	ND
Hexachlorobenzene	5	<50	ND
Phenanthrene	5	<50	ND
Anthracene	5	<50	ND
Di-n-butyl Phthalate	5	<50	ND
Fluoranthene	5	<50	ND
Pyrene	5	<50	ND
Butylbenzyl Phthalate	5	<50	ND
3,3'-Dichlorobenzidine	20	<200	ND
Benzo(a)anthracene	5	<50	ND
Bis(2-ethylhexyl) Phthalate	5	<50	ND
Chrysene	5	<50	ND
Di-n-octyl Phthalate	5	<50	ND
Benzo(b)fluoranthene	5	<50	ND
Benzo(k)fluoranthene	5	<50	ND
Benzo(a)pyrene	5	<50	ND
Indeno(1,2,3-c,d)pyrene	5	<50	ND
Dibenz(a,h)anthracene	5	<50	ND
Benzo(g,h,i)perylene	5	<50	ND
Pyridine	10	<100	ND

* MRL is elevated because of matrix interferences and because the sample required diluting.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: ARCO Products Company #601/#20805-121.002
Sample Matrix: Water

Service Request: L9601780
Date Collected: 3/14/96
Date Received: 3/14/96
Date Extracted: 3/18/96

Base Neutral/Acid Semivolatile Organic Compounds
 EPA Methods 3510/8270
 Units: ug/L (ppb)

Sample Name:	MW-8 (10)	Method Blank
Lab Code:	L9601780-001*	L9601780-MB
Date Analyzed:	3/19/96	3/21/96

Acid Analyte	MRL		
Phenol	5	<50	ND
2-Chlorophenol	5	<50	ND
Benzyl Alcohol	10	<100	ND
2-Methylphenol	5	<50	ND
3- and 4-Methylphenol ^a	5	<50	ND
2-Nitrophenol	5	<50	ND
2,4-Dimethylphenol	5	<50	ND
Benzoic Acid	50	<500	ND
2,4-Dichlorophenol	5	<50	ND
4-Chloro-3-methylphenol	5	<50	ND
2,4,6-Trichlorophenol	5	<50	ND
2,4,5-Trichlorophenol	5	<50	ND
2,4-Dinitrophenol	50	<500	ND
4-Nitrophenol	50	<500	ND
2-Methyl-4,6-dinitrophenol	20	<200	ND
Pentachlorophenol	30	<300	ND

^a Quantified as 4-Methylphenol.

* MRL is elevated because of matrix interferences and because the sample required diluting.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: ARCO Products Company #601/#20805-121.002
Sample Matrix: Water

Service Request: S9600420
Date Collected: 3/14/96
Date Received: 3/14/96
Date Extracted: NA

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

Sample Name:	MW-7(9)	MW-12(11)	MW-13(13)
Lab Code:	S9600420-001	S9600420-002	S9600420-003
Date Analyzed:	3/19/96	3/19/96	3/19/96

Analyte	MRL			
TPH as Gasoline	50	110	ND	ND
Benzene	0.5	1.4	ND	ND
Toluene	0.5	ND	ND	ND
Ethylbenzene	0.5	3.8	ND	ND
Total Xylenes	0.5	3	ND	ND
Methyl-tert-butyl ether	3	ND	ND	ND

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: ARCO Products Company #601/#20805-121.002
Sample Matrix: Water

Service Request: S9600420
Date Collected: 3/14/96
Date Received: 3/14/96
Date Extracted: NA

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

Sample Name:	MW-14(13)	MW-15(10)	MW-11(11)
Lab Code:	S9600420-004	S9600420-005	S9600420-006
Date Analyzed:	3/19/96	3/19/96	3/20/96

Analyte	MRL			
TPH as Gasoline	50	ND	ND	150
Benzene	0.5	ND	ND	ND
Toluene	0.5	ND	ND	ND
Ethylbenzene	0.5	ND	ND	<0.8*
Total Xylenes	0.5	ND	ND	0.8
Methyl-tert-butyl ether	3	ND	12	ND

* Raised MRL due to matrix interference.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: ARCO Products Company #601/#20805-121.002
Sample Matrix: Water

Service Request: S9600420
Date Collected: 3/14/96
Date Received: 3/14/96
Date Extracted: NA

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

Sample Name:	MW-8(10)	MW-2(12)	MW-4(8)
Lab Code:	S9600420-007	S9600420-008	S9600420-009
Date Analyzed:	3/20/96	3/20/96	3/20/96

Analyte	MRL			
TPH as Gasoline	50	5800	11000	940
Benzene	0.5	<5*	290	150
Toluene	0.5	<5*	67	82
Ethylbenzene	0.5	28	190	19
Total Xylenes	0.5	<5*	330	130
Methyl-tert-butyl ether	3	110	<50*	<20*

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

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: ARCO Products Company #601/#20805-121.002
Sample Matrix: Water

Service Request: S9600420
Date Collected: 3/14/96
Date Received: 3/14/96
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(8)	MW-5(10)	MW-1(11)
Lab Code:	S9600420-010	S9600420-011	S9600420-012
Date Analyzed:	3/20/96	3/20/96	3/20/96

Analyte	MRL			
TPH as Gasoline	50	17000	52000	100000
Benzene	0.5	3100	9100	6200
Toluene	0.5	69	3300	320
Ethylbenzene	0.5	810	940	2500
Total Xylenes	0.5	1500	5000	12000
Methyl-tert-butyl ether	3	<300*	<500*	<1000*

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

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: ARCO Products Company #601/#20805-121.002
Sample Matrix: Water

Service Request: S9600420
Date Collected: 3/14/96
Date Received: 3/14/96
Date Extracted: NA

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

Sample Name:	MW-3(12)	Method Blank	Method Blank
Lab Code:	S9600420-013	S960319-WB	S960320-WB
Date Analyzed:	3/20/96	3/19/96	3/20/96

Analyte	MRL			
TPH as Gasoline	50	150000	ND	ND
Benzene	0.5	4400	ND	ND
Toluene	0.5	7600	ND	ND
Ethylbenzene	0.5	4100	ND	ND
Total Xylenes	0.5	22000	ND	ND
Methyl-tert-butyl ether	3	<3000*	ND	ND

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

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: ARCO Products Company #601/#20805-121.002
Sample Matrix: Water

Service Request: S9600420
Date Collected: 3/14/96
Date Received: 3/14/96
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
Lab Code: S960321-WB
Date Analyzed: 3/21/96

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

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

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: ARCO Products Company #601/#20805-121.002
Sample Matrix: Water

Service Request: L9601780
Date Collected: 3/14/96
Date Received: 3/14/96
Date Extracted: 3/21/96

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

Sample Name	Lab Code	Date Analyzed	MRL	Result
MW-8 (10)	L9601780-001	3/21/96	50	*6800
Method Blank	L9601780-MB	3/21/96	50	ND

* The chromatogram fingerprint is indicative of a fuel-hydrocarbon mixture eluting within the gasoline and paint thinner ranges.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: ARCO Products Company #601/#20805-121.002
Sample Matrix: Water

Service Request: L9601780
Date Collected: 3/14/96
Date Received: 3/14/96
Date Digested: 3/18-21/96

Dissolved Metals
Units: mg/L (ppm)

Sample Name: MW-8 (10) Method Blank
Lab Code: L9601780-001 L9601780-MB
Date Analyzed: 3/21/96 3/21/96

Analyte	EPA Method	MRL		
Cadmium	3010/6010	0.005	ND	ND
Chromium	3010/6010	0.01	0.03	ND
Lead	3020/7421	0.002	0.007	ND
Nickel	3010/6010	0.04	0.04	ND
Zinc	3010/6010	0.01	0.06	ND

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
Project: ARCO Products Company #601/#20805-121.002
Sample Matrix: Water

Service Request: L9601780
Date Collected: NA
Date Received: NA
Date Extracted: NA
Date Analyzed: NA

Surrogate Recovery Summary
 Base Neutral/Acid Semivolatile Organic Compounds
 EPA Methods 3510/8270

Sample Name	Lab Code	2FP	P e r c e n t		R e c o v e r y		
			PHL	TBP	NBZ	FBP	TPH
MW-8 (10)	L9601780-001	49	26	68	81	112	98
Method Blank	L9601780-MB	58	36	62	101	95	86
Matrix Spike	L9601765-1MS	56	32	70	99	96	78
Duplicate Matrix Spike	L9601765-1DMS	53	32	69	97	96	73
Laboratory Control Sample	L9601780-LCS	56	33	71	99	99	77

CAS Acceptance Limits: 21-100 10-94 10-123 35-114 43-116 33-141

2FP 2-Fluorophenol
 PHL Phenol-D6
 TBP 2,4,6-Tribromophenol
 NBZ Nitrobenzene-D5
 FBP 2-Fluorobiphenyl
 TPH Terphenyl-D14

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
 Project: ARCO Products Company #601/#20805-121.002
 Sample Matrix: Water

Service Request: L9601780
 Date Collected: NA
 Date Received: NA
 Date Extracted: 3/18/96
 Date Analyzed: 3/19/96

Matrix Spike/Duplicate Matrix Spike Summary
 Base Neutral/Acid Semivolatile Organic Compounds
 EPA Methods 3510/8270
 Units: µg/L (ppb)

Sample Name: BATCH QC
 Lab Code: L9601765-001

Analyte	Spike Level		Sample Result	Spike Result		Percent Recovery		CAS Acceptance Limits	Relative Percent Difference
	MS	DMS		MS	DMS	MS	DMS		
Phenol	50.0	50.0	ND	20.0	19.7	40	39	12-89	2
2-Chlorophenol	50.0	50.0	ND	40.5	39.5	81	79	27-123	2
1,4-Dichlorobenzene	50.0	50.0	ND	37.4	36.6	75	73	36-97	2
N-Nitrosodi-n-propylamine	50.0	50.0	ND	42.6	43.5	85	87	41-116	2
1,2,4-Trichlorobenzene	50.0	50.0	ND	38.9	39.6	78	79	39-98	2
4-Chloro-3-methylphenol	50.0	50.0	ND	41.9	42.6	84	85	23-97	2
Acenaphthene	50.0	50.0	ND	51.8	50.6	104	101	46-118	2
4-Nitrophenol	50.0	50.0	ND	18.0	15.9	36	32	10-80	12
2,4-Dinitrotoluene	50.0	50.0	ND	43.1	42.1	86	84	24-96	2
Pentachlorophenol	50.0	50.0	ND	39.4	39.1	79	78	9-103	1
Pyrene	50.0	50.0	ND	48.6	44.6	97	89	26-127	9

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
Project: ARCO Products Company #601/#20805-121.002
LCS Matrix: Water

Service Request: L9601780
Date Collected: NA
Date Received: NA
Date Extracted: 3/18/96
Date Analyzed: 3/20/96

Laboratory Control Sample Summary
 Base Neutral/Acid Semivolatile Organic Compounds
 EPA Methods 3510/8270
 Units: µg/L (ppb)

Analyte	True Value	Result	Percent Recovery	CAS
				Percent Recovery Acceptance Limits
Phenol	50.0	20.6	41	5-112
2-Chlorophenol	50.0	40.9	82	23-134
1,4-Dichlorobenzene	50.0	36.6	73	20-124
N-Nitrosodi-n-propylamine	50.0	44.5	89	D-230
1,2,4-Trichlorobenzene	50.0	39.5	79	44-142
4-Chloro-3-methylphenol	50.0	44.1	88	22-147
Acenaphthene	50.0	51.9	104	47-145
4-Nitrophenol	50.0	17.1	34	D-132
2,4-Dinitrotoluene	50.0	44.0	88	39-139
Pentachlorophenol	50.0	34.9	70	14-176
Pyrene	50.0	46.6	93	52-115

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
Project: ARCO Products Company #601/#20805-121.002
Sample Matrix: Water

Service Request: S9600420
Date Collected: NA
Date Received: NA
Date Extracted: NA
Date Analyzed: 3/20/96

Surrogate Recovery Summary
 BTEX and TPH as Gasoline
 EPA Methods 5030/8020/California DHS LUFT Method

Sample Name	Lab Code	PID Detector Percent Recovery 4-Bromofluorobenzene	FID Detector Percent Recovery α,α,α -Trifluorotoluene
MW-7(9)	S9600420-001	96	102
MW-12(11)	S9600420-002	96	87
MW-13(13)	S9600420-003	97	84
MW-14(13)	S9600420-004	95	98
MW-15(10)	S9600420-005	84	98
MW-11(11)	S9600420-006	91	103
MW-8(10)	S9600420-007	94	107
MW-2(12)	S9600420-008	81	112*
MW-4(8)	S9600420-009	92	99
MW-6(8)	S9600420-010	91	101
MW-5(10)	S9600420-011	88	103
MW-1(11)	S9600420-012	92	103
MW-3(12)	S9600420-013	93	102
Method Blank	S960319-WB	95	99
Method Blank	S960320-WB	93	99
Method Blank	S960321-WB	92	98
Batch QC	S9600419-001MS	92	99
Batch QC	S9600419-001DMS	90	109

CAS Acceptance Limits: 69-116 69-116

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

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
Project: ARCO Products Company #601/#20805-121.002
Sample Matrix: Water

Service Request: S9600386
Date Collected: NA
Date Received: NA
Date Extracted: NA
Date Analyzed: 3/15/96

Matrix Spike/Duplicate Matrix Spike Summary

TPH as Gasoline
 EPA Methods 5030/8015
 Units: ug/L (ppb)

Sample Name: Batch QC
Lab Code: S960419-001MS

Analyte	Spike Level		Sample Result	Spike Result		Percent Recovery			Relative Percent Difference
	MS	DMS		MS	DMS	CAS Acceptance Limits			
						MS	DMS		
Gasoline	250	250	ND	220	230	88	92	75-135	4

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
Project: ARCO Products Company #601/#20805-121.002

Service Request: S9600386
Date Analyzed: 3/15/96

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	24.7	99	85-115
Toluene	25	24.7	99	85-115
Ethylbenzene	25	23.9	96	85-115
Xylenes, Total	75	74.4	99	85-115
Gasoline	250	269	108	90-110
Methyl-tert-butyl Ether	50	46	92	85-115

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
Project: ARCO Products Company #601/#20805-121.002
Sample Matrix: Water

Service Request: L9601780
Date Collected: NA
Date Received: NA
Date Extracted: NA
Date Analyzed: NA

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

Sample Name	Lab Code	Percent Recovery <i>p</i> -Terphenyl
MW-8 (10)	L9601780-001	93
Method Blank	L9601780-MB	100
Laboratory Control Sample	L9601780-LCS	101
Duplicate LCS	L9601780-DLCS	96

CAS Acceptance Limits: 50-140

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
Project: ARCO Products Company #601/#20805-121.002
LCS Matrix: Water

Service Request: L9601780
Date Collected: NA
Date Received: NA
Date Extracted: 3/21/96
Date Analyzed: 3/21/96

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

Analyte	True Value		Result		Percent Recovery		CAS Acceptance Limits	Relative Percent Difference
	LCS	DLCS	LCS	DLCS	LCS	DLCS		
Diesel	2000	2000	1940	1990	97	100	70-140	3

* 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.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
Project: ARCO Products Company #601/#20805-121.002
LCS Matrix: Water

Service Request: L9601780
Date Collected: NA
Date Received: NA
Date Extracted: 3/19/96
Date Analyzed: 3/19/96

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

Analyte	True Value		Result		Percent Recovery		CAS Acceptance Limits	Relative Percent Difference
	LCS	DLCS	LCS	DLCS	LCS	DLCS		
TRPH	2.11	2.11	1.93	2.00	91	95	75-125	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.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
Project: ARCO Products Company #601/#20805-121.002
LCS Matrix: Water

Service Request: L9601780
Date Collected: NA
Date Received: NA
Date Analyzed: NA
Date Digested: 3/21/96

Laboratory Control Sample Summary
Dissolved Metals
Units: mg/L (ppm)

Analyte	EPA Method	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits
Cadmium	3010/6010	0.100	0.090	90	75-125
Chromium	3010/6010	0.500	0.453	91	75-125
Lead	3020/7421	0.0400	0.0353	88	75-125
Nickel	3010/6010	0.500	0.444	89	75-125
Zinc	3010/6010	0.500	0.475	95	75-125

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
Project: ARCO Products Company #601/#20805-121.002
Sample Matrix: Water

Service Request: L9601780
Date Collected: NA
Date Received: NA
Date Extracted: NA
Date Analyzed: 3/21/96

Matrix Spike/Duplicate Matrix Spike Summary
Dissolved Metals
Units: mg/L (ppm)

Sample Name: BATCH QC
Lab Code: L9601765-005

Analyte	MRL	Spike Level	Sample Result	Spike Result		Percent Recovery		CAS Acceptance Limits	Relative Percent Difference
				MS	DMS	MS	DMS		
Lead	0.002	0.0400	ND	0.0355	0.0358	89	90	75-125	<1

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
Project: ARCO Products Company #601/#20805-121.002
Sample Matrix: Water

Service Request: L9601780
Date Collected: NA
Date Received: NA
Date Extracted: NA
Date Analyzed: 3/21/96

Matrix Spike/Duplicate Matrix Spike Summary
 Dissolved Metals
 Units: mg/L (ppm)

Sample Name: BATCH QC
Lab Code: L9601628-001

Analyte	MRL	Spike Level	Sample Result	Spike Result		Percent Recovery		CAS Acceptance Limits	Relative Percent Difference
				MS	DMS	MS	DMS		
Cadmium	0.005	0.100	ND	0.092	0.090	92	90	75-125	2
Chromium	0.01	0.500	ND	0.460	0.458	92	92	75-125	<1
Nickel	0.04	0.500	ND	0.450	0.446	90	89	75-125	<1
Zinc	0.01	0.500	0.016	0.482	0.493	93	95	75-125	2

ARCO Facility no. 601	City (Facility) San Leandro	Project manager (Consultant) John Young	Laboratory name CAS
ARCO engineer Mike Whelan	Telephone no. (ARCO)	Telephone no. (Consultant) (408) 453-7306	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 602/EPA 8020	TEXTHPH EPA 821-8015	TPH Modified 8015 Gas ☐ Diesel ☐	Oil and Grease 413.1 ☐ 413.2 ☐	TPH EPA 418.1/SM503E	EPA 601/8010	EPA 624/8240	EPA 626/8270	TCPL Metals ☐ VOA ☐ VOC ☐	CAN Metals EPA 601/7000 ITLC ☐ STLC ☐	Lead Org./DHS ☐ Lead EPA ☐ 7420/4231	Dissolved Metals (Cd, Cr, Zn, Ni, Pb)	TPH/D6, 3510	Method of shipment	
			Soil	Water	Other	Ice	Acid																Special detection Limit/reporting	
MW-7(9)		2		X		X	HCL	3-14-96	1140		X													Sampler will deliver
MW-9(-)		2		X		X	HCL				X													Lowest Possible
MW-10(-)		2		X		X	HCL				X													
MW-12(11)		2		X		X	HCL	3-14-96	1132		X													Special QA/QC
MW-13(13)		2		X		X	HCL		1209		X													As Normal
MW-14(13)		2		X		X	HCL		1153		X													
MW-15(10)		2		X		X	HCL		1112		X													
MW-11(11)		2		X		X	HCL		1220		X													Remarks
MW-8(10)		10		X		X	HCL		1235		X			X			X			X	X	X		
MW-2(12)		2		X		X	HCL		1255		X													
MW-4(8)		2		X		X	HCL		1305		X													
MW-6(13)		2		X		X	HCL		1338		X													
MW-5(10)		2		X		X	HCL		1332		X													#20805-121.00
MW-1(11)		2		X		X	HCL		1345		X													Lab number
MW-3(12)		2		X		X	HCL		1403		X													59600420
																								Turnaround time
																								Priority Rush 1 Business Day

Condition of sample:		Temperature received:		Priority Rush 1 Business Day ☐	
Relinquished by sampler	Date 3-14-96 Time 1450	Received by		Rush 2 Business Days ☐	
Relinquished by	Date Time	Received by		Expedited 5 Business Days 3/ ☒	
Relinquished by	Date Time	Received by laboratory	Date 3/14/96	Time 14:50	Standard 10 Business Days ☐

**Columbia
Analytical
Services^{inc.}**

March 21, 1996

Service Request No: S9600419

John Young
EMCON
1921 Ringwood Avenue
San Jose, CA 95131

Re: **601 San Leandro / 20805-121.002 / TO#19350.00**

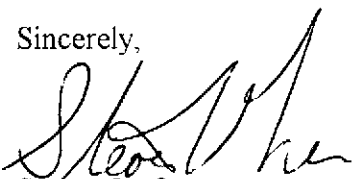
Dear Mr. Young:

The following pages contain analytical results for sample(s) received by the laboratory on March 14, 1996. Results of sample analyses are followed by Appendix A which contains sample custody documentation and quality assurance deliverables requested for this project. The work requested has been assigned the Service Request No. Listed above -- to help expedite our service please refer to this number when contacting the laboratory.

Analytical results were produced by procedures consistent with Columbia Analytical Services' (CAS) Quality Assurance Manual (with any deviations noted). Signature of this CAS Analytical Report below confirms that pages 2 through 7, following, have been thoroughly reviewed and approved for release in accord with CAS Standard Operating Procedure ADM-DatRev3.

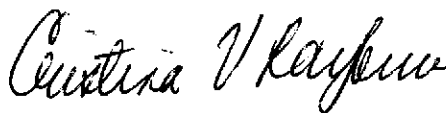
Please feel welcome to contact me should you have questions or further needs.

Sincerely,



Steven L. Green
Project Chemist

SLG/jk



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
TTLIC	Total Threshold Limit Concentration
VOA	Volatile Organic Analyte(s)

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: 601 San Leandro / 20805-121.002 / TO#19350.00
Sample Matrix: Water

Service Request: S9600419
Date Collected: 3/14/96
Date Received: 3/14/96
Date Extracted: NA

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

Sample Name:	MW-9(16)	MW-10(18)	Method Blank
Lab Code:	S9600419-001	S9600419-002	S9600319-WB
Date Analyzed:	3/19/96	3/19/96	3/19/96

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

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: 601 San Leandro / 20805-121.002 / TO#19350.00
Sample Matrix: Water

Service Request: S9600419
Date Collected: 3/14/96
Date Received: 3/14/96
Date Extracted: NA
Date Analyzed: 3/19/96

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-9(16)	S9600419-001	94	99
MW-10(18)	S9600419-002	94	105
Method Blank	S9600319-WB	95	99

CAS Acceptance Limits: 69-116 69-116

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: 601 San Leandro / 20805-121.002 / TO#19350.00
Sample Matrix: Water

Service Request: S9600419
Date Collected: 3/14/96
Date Received: 3/14/96
Date Extracted: NA
Date Analyzed: 3/19/96

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

Sample Name: MW-9(16)
Lab Code: S9600419-001

Analyte	Spike Level		Sample Result	Spike Result		Percent Recovery		CAS Acceptance Limits	Relative Percent Difference
						MS	DMS		
Gasoline	250	250	ND	220	230	88	92	67-121	4

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: 601 San Leandro / 20805-121.002 / TO#19350.00

Service Request: S9600419
Date Analyzed: 3/19/96

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	24.7	99	85-115
Toluene	25	24.7	99	85-115
Ethylbenzene	25	23.9	96	85-115
Xylenes, Total	75	74.4	99	85-115
Gasoline	250	269	108	90-110
Methyl-tert-butyl Ether	50	46	92	85-115

Division of Atlantic Richfield Company

Task Order No. 9350.00

Chain of Custody

28/52