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TRANSMITTAL

TO: Mr. Scott Seery
Alameda County Health
Care Services Agency
80 Swan Way, Room 200
Oakland, CA 94621

DATE: **September 16, 1993**
PROJECT NUMBER: 69034.12
SUBJECT: ARCO Station No. 601

FROM: Erin Krueger

WE ARE SENDING YOU:

COPIES	DATED	DESCRIPTION
1	9/14/93	Second Quarter 1993 Groundwater Monitoring Report for ARCO Station No. 601, 712 Lewelling Boulevard, San Leandro, California.

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Erin D. Krueger, Staff Geologist

cc: Mr. Michael Whelan, ARCO
Mr. John Jang, CRWQCB
Mr. Guy Telham. SLFD

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LETTER REPORT
QUARTERLY GROUNDWATER MONITORING
Second Quarter 1993
at
ARCO Station 601
712 Lewelling Boulevard
San Leandro, California

69034.12

9-14-93

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September 14, 1993
0623MWHE
69034.12

Mr. Michael Whelan
ARCO Products Company
Post Office Box 5811
San Mateo, California 94402

Subject: Second Quarter 1993 Groundwater Monitoring Report for ARCO Station 601, 712 Lewelling Boulevard, San Leandro, California.

Mr. Whelan:

As requested by ARCO Products Company (ARCO), RESNA Industries Inc. (RESNA) has prepared this letter report which summarizes the results of second quarter 1993 groundwater monitoring performed by ARCO's contractor, EMCON Associates (EMCON) of San Jose, California, at the above-referenced site. The objectives of this quarterly groundwater monitoring event were to evaluate changes in the groundwater flow direction and gradient, and changes in concentrations of petroleum hydrocarbons in the local groundwater associated with four former gasoline underground storage tanks (USTs) and a former waste-oil UST at the site. Field work and laboratory analyses of groundwater samples during this quarter were performed under the direction of EMCON and included measuring depths to groundwater, subjectively analyzing groundwater for the presence of petroleum product, collecting groundwater samples from the wells for laboratory analyses, and directing a State-certified laboratory to analyze the groundwater samples. Evaluation and warrant of EMCON's field data and field protocols are beyond RESNA's scope of work. RESNA's scope of work was limited to interpretation of field and laboratory analyses data, including evaluating trends in reported hydrocarbon concentrations in the local groundwater, the groundwater gradient, and direction of groundwater flow beneath the site.

The operating ARCO Station 601 is located on the southwestern corner of Lewelling Boulevard and Washington Avenue in San Leandro, California, as shown on the Site

Vicinity Map, Plate 1. Results of previous environmental investigations at the site are presented in the reports listed in the references section. Locations of the groundwater monitoring wells and pertinent site features are shown on the Generalized Site Plan, Plate 2.

Groundwater Sampling and Gradient Evaluation

Depth to water levels (DTW) were measured by EMCON field personnel on April 28, May 13, and June 17, 1993. Quarterly sampling was performed by EMCON field personnel on May 13, 1993. The results of EMCON's field work at the site, including DTW measurements and subjective analysis for the presence of product in the groundwater in wells MW-1 through MW-8, and MW-11 through MW-15 are presented on EMCON's Field Reports and Water Sample Field Data Sheets. These data are included in Appendix A.

The DTW measurements, depth of wells, wellhead elevations, groundwater elevations, and subjective observations for the presence of product in groundwater monitoring wells MW-1 through MW-8 and MW-11 through MW-15, for previous quarterly groundwater monitoring at the site are summarized in Table 1, Cumulative Groundwater Monitoring Data. According to EMCON's Field Reports, 0.01 feet of floating product was observed in monitoring wells MW-1 and MW-3 during all three monitoring events, and product entered well MW-5 during purging on May 13, 1993. No evidence of floating product was observed in wells MW-2, MW-4, MW-6 through MW-9, or MW-11 through MW-15 during the quarter. Based on EMCON's DTW levels, the groundwater elevations for April, May, and June 1993 are shown on the Groundwater Elevation Maps, Plates 3 through 5. Groundwater gradients and flow directions interpreted from the April data indicated a gradient of 0.008 ft/ft to the northwest, May data indicated a gradient of 0.004 ft/ft to the west-southwest, and June data indicated a gradient of 0.004 ft/ft to the southwest with a local groundwater depression around monitoring well MW-4. The variability of groundwater gradient and flow direction may be explained by the relatively low slope and shallow depth of the groundwater surface making it more susceptible to change by infiltration, seasonal variation, or local subsurface activities.

Groundwater monitoring wells MW-2, MW-4, MW-6 through MW-8, and MW-11 through MW-15 were purged and sampled by EMCON field personnel on May 13, 1992. Because subjective analysis indicated petroleum product was present in MW-1 and MW-3, and product entered MW-5 during purging, groundwater samples were not collected from these wells for laboratory analyses. EMCON's Water Sample Field Data sheets, Field Reports, and Summary of Groundwater Monitoring Data, are included in Appendix A. The purge water was removed from the site by a licensed hazardous waste hauler.

Laboratory Methods and Analyses

Under the direction of EMCON, groundwater samples collected from wells MW-2, MW-4, MW-6 through MW-8, and MW-11 through MW-15 were analyzed by Columbia Analytical Services, Inc. located in San Jose, California (Hazardous Waste Testing Laboratory Certification No. 1426). The water samples were analyzed for total petroleum hydrocarbons as gasoline (TPHg) and benzene, toluene, ethylbenzene, and total xylenes (BTEX) using Environmental Protection Agency (EPA) Methods 5030/8020/California DHS LUFT Method. In addition, water samples from MW-8, the well located closest to and roughly downgradient of the former waste-oil UST, were also analyzed for total metals using EPA Method 6010, lead using EPA Method 7421, Halogenated Volatile Organic Compounds (VOCs) using EPA Methods 5030/601, Base Neutral Acid Semivolatile Organic Compounds (BNAs) using EPA Methods 3510/8270, total petroleum hydrocarbons as diesel (TPHd) using EPA Method 3510/California DHS LUFT Method, and Total Recoverable Petroleum Hydrocarbons (TOG) using EPA Methods 418.1. These analyses of the MW-8 samples were performed at the request of Mr. Scott Seery of the Alameda County Health Care Services Agency. (If during future monitoring events, monitoring well MW-1 does not contain floating product, samples will be collected from MW-1 and analyzed for waste-oil constituents instead of samples from MW-8.) Results of these and previous water analyses are summarized in Table 2, Cumulative Results of Laboratory Analyses of Groundwater. Concentrations of TPHg and benzene in the groundwater are shown on Plate 6, TPHg/Benzene Concentrations in Groundwater. The Chain of Custody Records and Laboratory Analysis Reports are included in Appendix A.

The following general trends were noted in reported hydrocarbon concentrations in groundwater from the monitoring wells since the last quarterly monitoring at the site. Monitoring wells MW-1 and MW-3 continue to contain floating product or product sheen, and MW-5 contained product following purging. Concentrations of TPHg and BTEX in monitoring wells MW-2, MW-6, MW-7, MW-8, and MW-11 generally decreased since last quarter; and concentrations generally increased in well MW-4. Monitoring wells MW-12, MW-13, and MW-14 continue to have nondetectable TPHg and BTEX. The analytical results for MW-8 indicated a decreased concentration of total oil and grease (TOG), concentrations of metals continued to be below the State Maximum Contaminant Levels (MCLs), VOCs remained nondetectable, BNAs remained low, and the hydrocarbons classified as diesel continued to have a nontypical diesel fingerprint, which may be indicative of weathered gasoline.

Product Removal

Floating product is checked monthly in wells MW-1 and MW-3 and removed if present. A Horner EZY Product Skimmer was previously installed in well MW-3 on December 24, 1991, as a means of interim remediation. Quantities of floating product and water removed are presented on Table 3, Approximate Cumulative Product Recovered. The total product recovered at the site is 3.45 gallons.

RESNA also recommends that copies of this report be forwarded to:

Mr. Scott Seery
Alameda County Health Care Services Agency
Department of Environmental Health
80 Swan Way, Room 200
Oakland, California 94621

Mr. John Jang
California Regional Water Quality Control Board
San Francisco Bay Region
2101 Webster Street, Suite 500
Oakland, California 94612

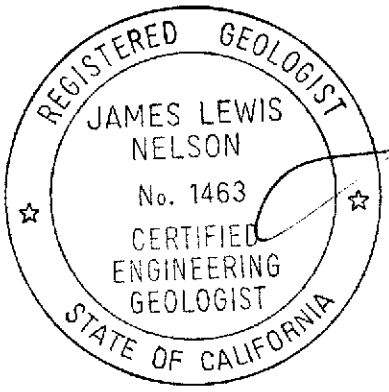
Mr. Guy Telham
San Leandro Fire Department
835 East 14th Street
San Leandro, California 94577

If you have any questions or comments, please call us at (408) 264-7723.

Sincerely,
RESNA Industries Inc.

Erin D. Krueger

Erin Krueger
Staff Geologist



James L. Nelson
Certified Engineering
Geologist No. 1463

Enclosures:

References

Plate 1, Site Vicinity Map
Plate 2, Generalized Site Plan
Plate 3, Groundwater Gradient Map, April 28, 1993
Plate 4, Groundwater Gradient Map, May 13, 1993
Plate 5, Groundwater Gradient Map, June 17, 1993
Plate 6, TPHg/Benzene Concentrations in Groundwater, May 13, 1993

Table 1, Cumulative Groundwater Monitoring Data
Table 2, Cumulative Results of Laboratory Analyses of Groundwater Samples
Table 3, Approximate Cumulative Product Recovered

Appendix A: EMCON's Water Sample Field Data Sheets, Field Reports, Summary of Groundwater Monitoring Data, and Chain of Custody Records

REFERENCES

Alameda County Health Care Services. December 26, 1991, Letter Regarding CAL-EPA Regional Hydrogeology and Contamination Study, Central San Leandro.

Applied GeoSystems, November 9, 1989, Limited Environmental Site Assessment at ARCO Service Station No. 601, San Leandro, California. AGS Report 69034-1.

Applied GeoSystems, November 30, 1990, Letter Report Quarterly Ground-Water Monitoring Fourth Quarter 1990. AGS Report 69034-3.

Applied GeoSystems, December 14, 1990, Subsurface Environmental Assessment at ARCO Station 601, San Leandro, California. AGS Report 69034-2.

Applied GeoSystems, March 24, 1991, Letter Report Quarterly Ground-Water Monitoring First Quarter 1991. (Letter Report 0130ccar, AGS 69034-3).

Applied GeoSystems, July 3, 1991, Letter Report Quarterly Ground-Water Monitoring, Second Quarter 1991. AGS 69034.03.

California Department of Health Services, Office of Drinking Water, October 18, 1990, Summary of Maximum contaminant Level (MCL) and Action Levels (AL).

GeoStrategies, Inc., June 29, 1990, Tank Replacement Report, ARCO Service Station #601, San Leandro, California. GSI Report 7918-2.

GeoStrategies, Inc, November 14, 1989, Proposed Scope of Work, ARCO Service Station #601, San Leandro, California. GSI Report 7918-1.

RESNA Industries, October 17,1991, Subsurface Environmental Assessment and Vapor Extraction Test at ARCO Station 601, 712 Lewelling Boulevard, San Leandro, California. RESNA 69034.04.

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RESNA Industries, March 21, 1991, Work Plan for Subsurface Investigation and Remediation at ARCO Station 601, 712 Lewelling Boulevard, San Leandro, California. RESNA 69034-4W.

RESNA Industries, March 21, 1991, Addendum One to Work Plan at ARCO Station 601, 712 Lewelling Boulevard, San Leandro, California. RESNA 69034-4W.

RESNA Industries, May 15, 1991, Addendum Two to Work Plan for Interim Product Recovery at ARCO Station 601, 712 Lewelling Boulevard, San Leandro, California. RESNA 69034-04.

RESNA Industries, March 6, 1992, Addendum Three to Work Plan Additional Subsurface Investigation at ARCO Station 601, 712 Lewelling Boulevard, San Leandro, California. RESNA 69034.08

RESNA Industries, March 6, 1992, Addendum Four to Work Plan for Interim Groundwater Remediation at ARCO Station 601, 712 Lewelling Boulevard, San Leandro, California. RESNA 69034.07

RESNA Industries, April 9, 1992, Letter Report Quarterly Groundwater Monitoring, Fourth Quarter 1991, at ARCO Station 601, 712 Lewelling Boulevard, San Leandro, California. RESNA 69034.06.

RESNA Industries, May 5, 1992, Letter Report Quarterly Groundwater Monitoring, First Quarter 1992, at ARCO Station 601, 712 Lewelling Boulevard, San Leandro, California. RESNA 69034.06.

RESNA Industries, September 24, 1992, Letter Report Quarterly Groundwater Monitoring, Second Quarter 1992, at ARCO Station 601, 712 Lewelling Boulevard, San Leandro, California. RESNA 69034.06.

RESNA Industries, September 14, 1992, Addendum Five to Work Plan, at ARCO Station 601, 712 Lewelling Boulevard, San Leandro, California. RESNA 69034.10.

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(Continued)

RESNA Industries, October 21, 1992, Work Plan for Offsite Subsurface Investigation at ARCO Station 601, 712 Lewelling Boulevard, San Leandro, California. RESNA 69034.11.

RESNA Industries, December 7, 1992, Letter Report Quarterly Groundwater Monitoring, Third Quarter 1992, at ARCO Station 601, 712 Lewelling Boulevard, San Leandro, California. RESNA 69034.06

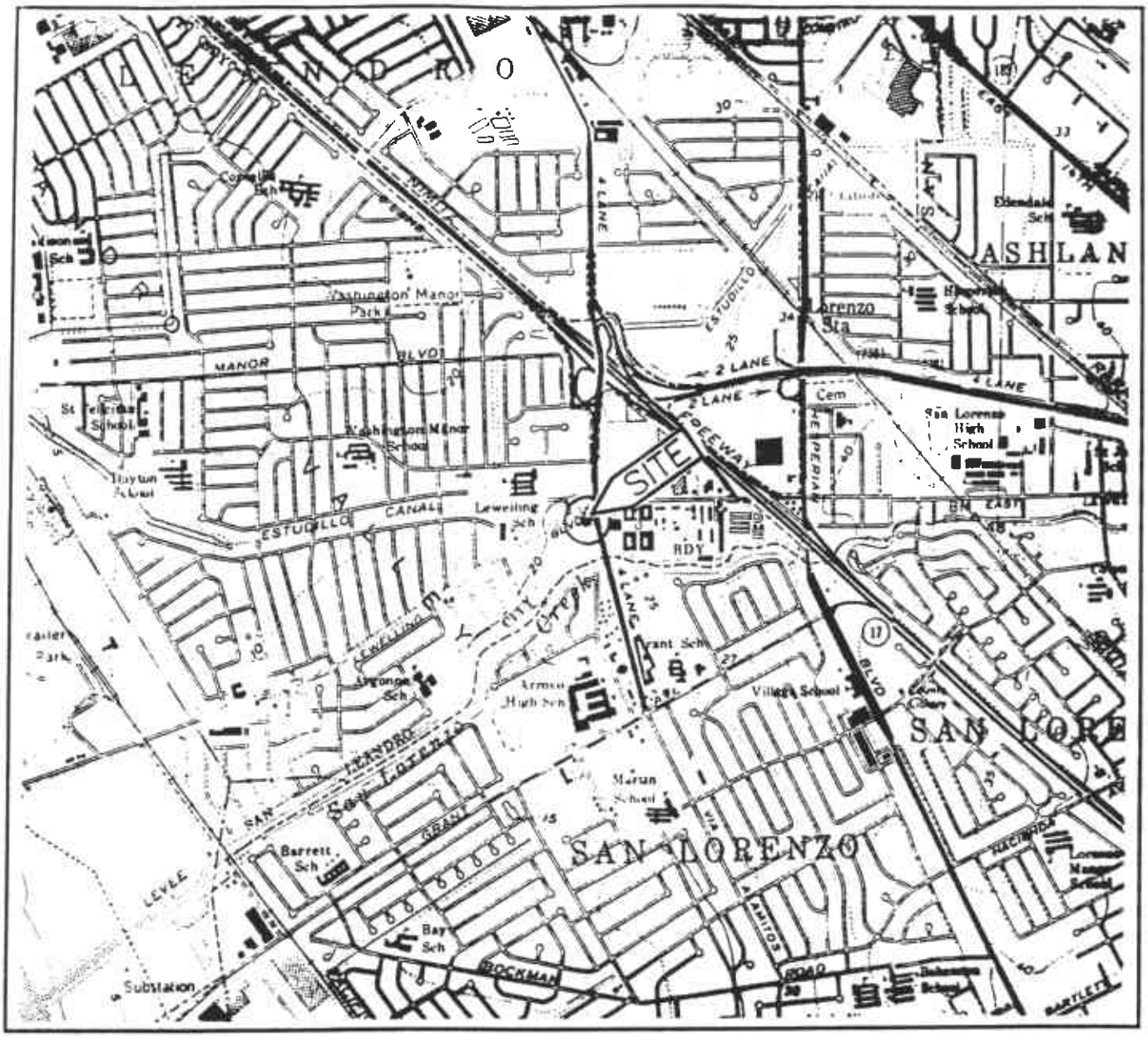
RESNA Industries, February 3, 1992, Limited Offsite Subsurface Investigation at ARCO Station 601, 712 Lewelling Boulevard, San Leandro, California. RESNA 69034.11

RESNA Industries, March 1, 1993, Letter Report Quarterly Groundwater Monitoring, Fourth Quarter 1992, at ARCO Station 601, 712 Lewelling Boulevard, San Leandro, California. RESNA 69034.12

RESNA Industries, March 3, 1993, Additional Subsurface Investigation at ARCO Station 601, 712 Lewelling Boulevard, San Leandro, California. RESNA 69034.10

RESNA Industries, March 30, 1993, Addendum Seven to Work Plan to Evaluate Aquifer Test Data and Feasibility of Remediation Alternatives at ARCO Station 601, 712 Lewelling Boulevard, San Leandro, California. RESNA 69034.14

RESNA Industries, June 10, 1993, Letter Report Quarterly Groundwater Monitoring, First Quarter 1993, at ARCO Station 601, 712 Lewelling Boulevard, San Leandro, California. RESNA 69034.12



Base: U.S. Geological Survey
7.5-Minute Quadrangles
Hayward/San Leandro, California.
Photorevised 1984

LEGEND

⊙ = Site Location

N

Approximate Scale

2000 1000 0 2000 4000

feet

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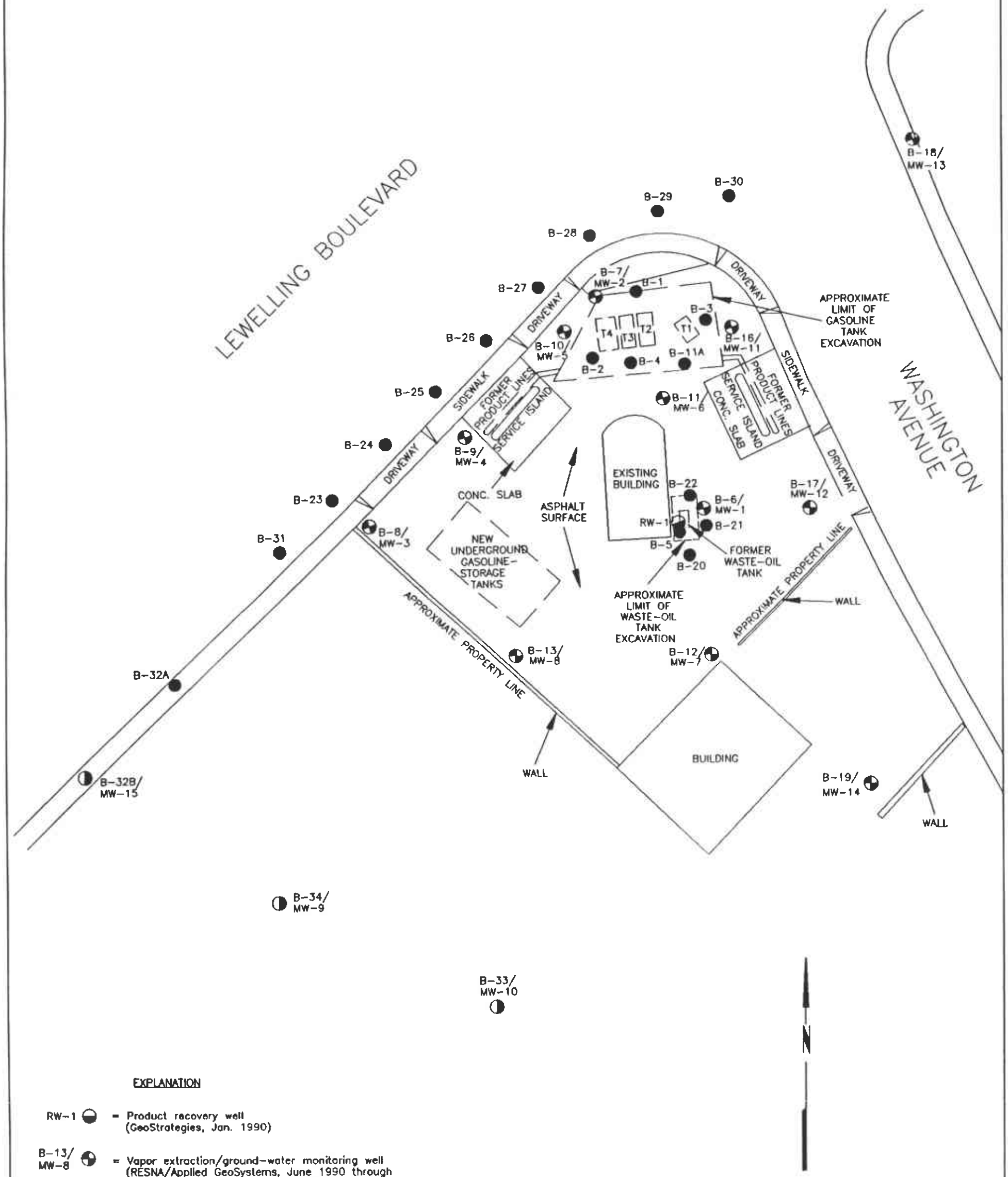
SITE VICINITY MAP
ARCO Station 601
712 Lewelling Boulevard
San Leandro, California

PLATE
1



EXPLANATION

- RW-1 = Product recovery well (GeoStrategies, Jan. 1990)
- B-13/ MW-8 = Vapor extraction/ground-water monitoring well (RESNA/Applied GeoSystems, June 1990 through November 1992, and March 1993)
- B-32B/ MW-15 = Groundwater monitoring well (RESNA, June 1993)
- B-31 = Soil boring (RESNA/Applied GeoSystems, August 1989 through October 1992, and March 1993)
- T4 = Former gasoline underground storage tanks

Source: Surveyed by Ron Archer, Civil Engineer Inc. modified by John Koch Land Surveyor.

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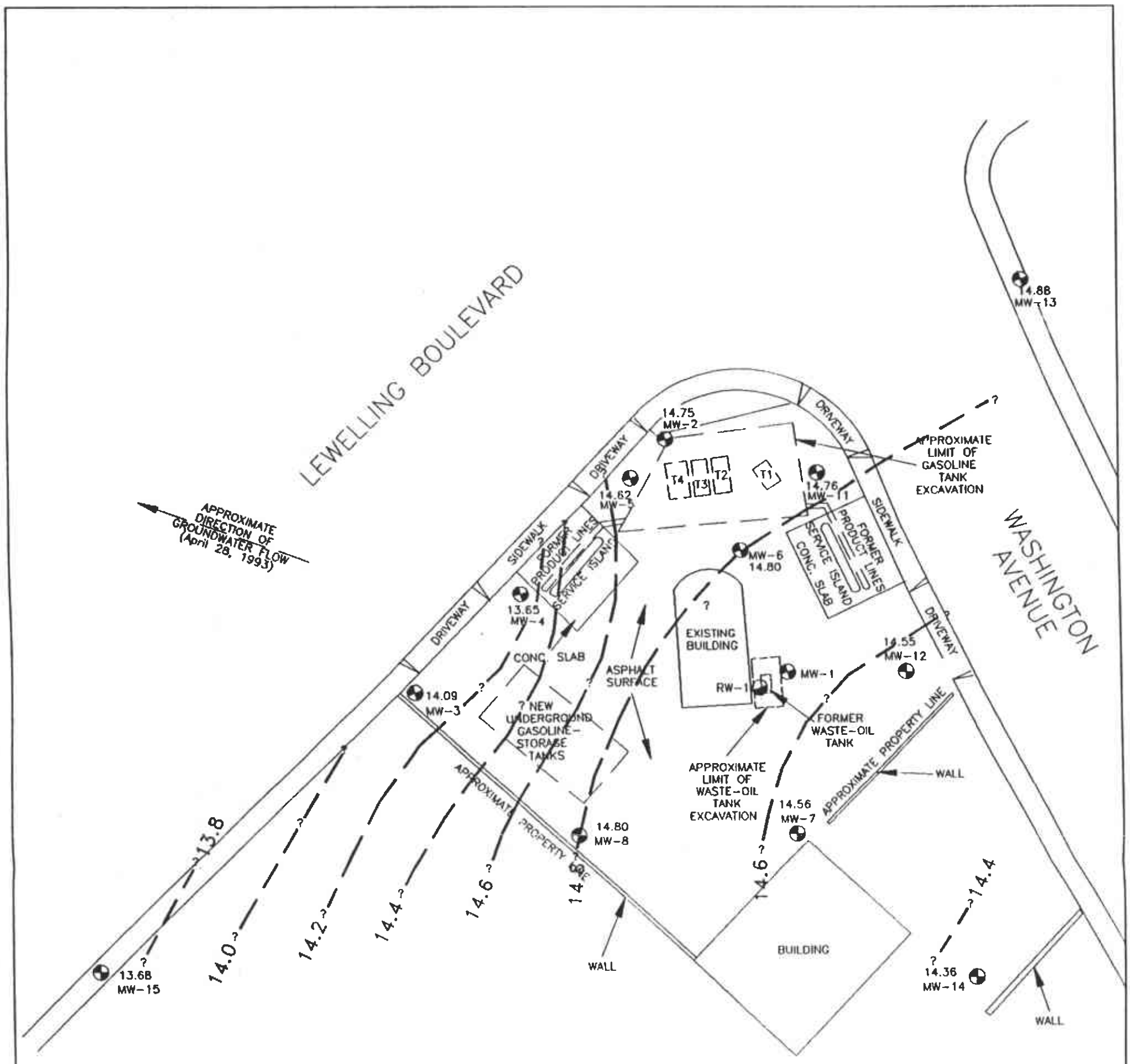
GENERALIZED SITE PLAN
ARCO Station 601
712 Lewelling Boulevard
San Leandro, California

PLATE
2



EXPLANATION

14.8 = Line of equal elevation of groundwater in feet above mean sea level (MSL)

15.49 = Elevation of groundwater in feet above MSL, April 28, 1993

RW-1 = Product recovery well (GeoStrategies, Jan. 1990)

MW-15 = Vapor extraction/groundwater monitoring well (RESNA/Applied GeoSystems, June 1990 through November 1992, and March 1993)

T4 = Former gasoline underground storage tanks

Approximate Scale

40 20 0 40 80

feet

Source: Surveyed by Ron Archer, Civil Engineer Inc. modified by John Koch Land Surveyor.

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GROUNDWATER GRADIENT MAP
ARCO Station 601
712 Lewelling Boulevard
San Leandro, California

PLATE 3

LEWELLING BOULEVARD

WASHINGTON AVENUE

14.50 MW-13

?14.4

14.34 MW-2

DRIVEWAY

DRIVEWAY

APPROXIMATE LIMIT OF GASOLINE TANK EXCAVATION

14.22 MW-5

T4 T3 T2 T1

14.34 MW-11

SIDEWALK

FORMER PRODUCT LINES

SERVICE ISLAND

CONC. SLAB

14.35 MW-6

SIDEWALK

FORMER PRODUCT LINES

SERVICE ISLAND

CONC. SLAB

?

DRIVEWAY

APPROXIMATE DIRECTION OF GROUNDWATER FLOW (May 13, 1993)

DRIVEWAY

13.73 MW-4

CONC. SLAB

ASPHALT SURFACE

EXISTING BUILDING

RW-1

14.18* MW-1

14.14 MW-12

13.74* MW-3

NEW UNDERGROUND GASOLINE STORAGE TANKS

APPROXIMATE LIMIT OF WASTE-OIL TANK EXCAVATION

FORMER WASTE-OIL TANK

APPROXIMATE PROPERTY LINE

WALL

APPROXIMATE PROPERTY LINE

14.04 MW-8

14.33 MW-7

?14.0

?14.2

?14.2

?13.8

?13.6

?13.4

WALL

BUILDING

13.28 MW-15

13.94 MW-14

WALL

EXPLANATION

14.4 = Line of equal elevation of groundwater in feet above mean sea level (MSL)

14.50 = Elevation of groundwater in feet above MSL, May 13, 1993

RW-1 = Product recovery well (GeoStrategies, Jan. 1990)

MW-15 = Vapor extraction/groundwater monitoring well (RESNA/Applied GeoSystems, June 1990 through November 1992, and March 1993)

T4 = Former gasoline underground storage tanks

* = Elevation corrected for presence of floating product

N

Approximate Scale

40 20 0 40 80

feet

Source: Surveyed by Ron Archer, Civil Engineer Inc. modified by John Koch Land Surveyor.

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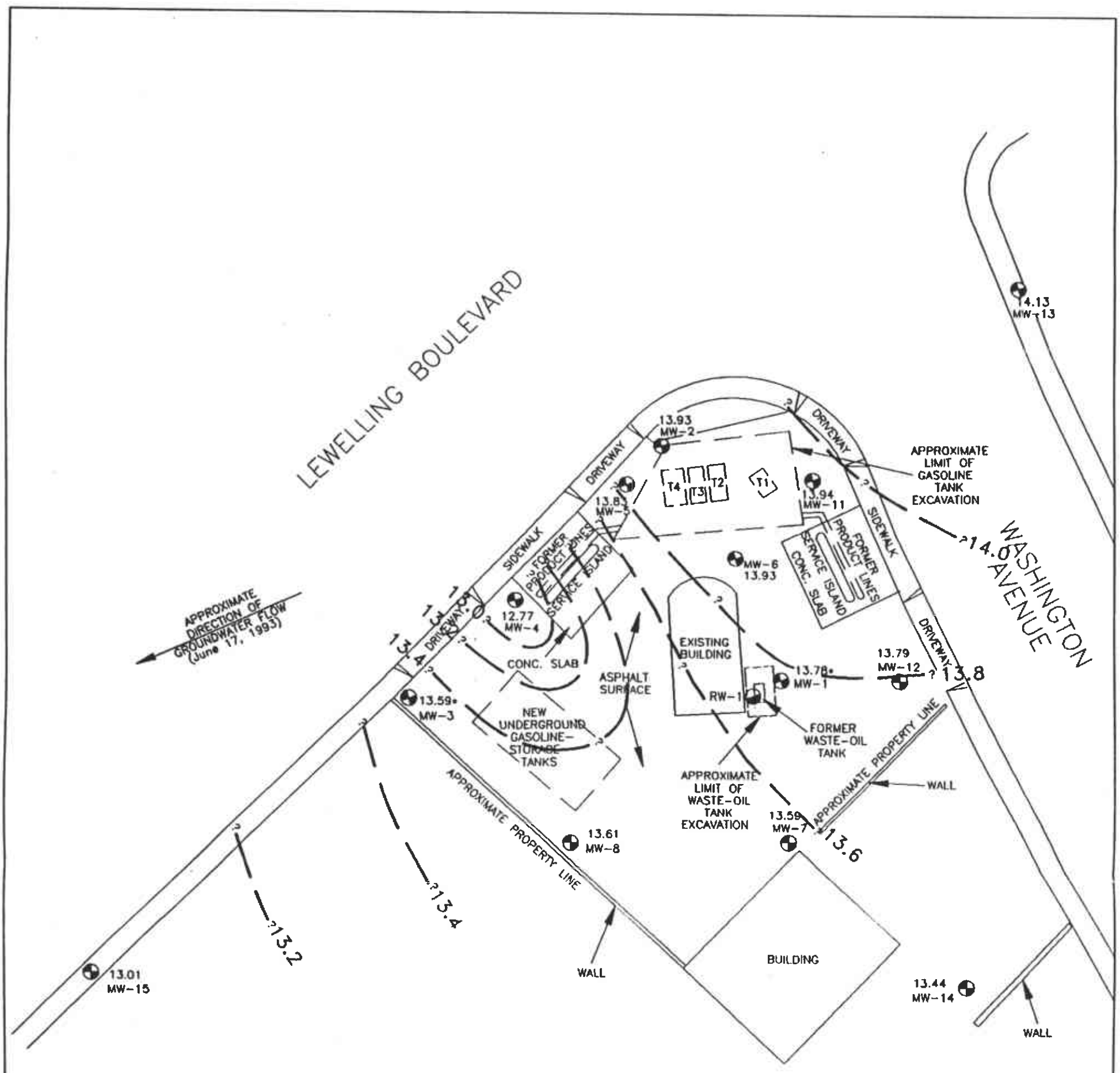
GROUNDWATER GRADIENT MAP
ARCO Station 601
712 Lewelling Boulevard
San Leandro, California

PLATE 4



EXPLANATION

14.0 = Line of equal elevation of groundwater in feet above mean sea level (MSL)

14.13 = Elevation of groundwater in feet above MSL, June 17, 1993

RW-1 = Product recovery well (GeoStrategies, Jan. 1990)

MW-15 = Vapor extraction/groundwater monitoring well (RESNA/Applied GeoSystems, June 1990 through November 1992, and March 1993)

T4 = Former gasoline underground storage tanks

* = Elevation corrected for floating product

N

Approximate Scale

40 20 0 40 80

feet

Source: Surveyed by Ron Archer, Civil Engineer Inc. modified by John Koch Land Surveyor.

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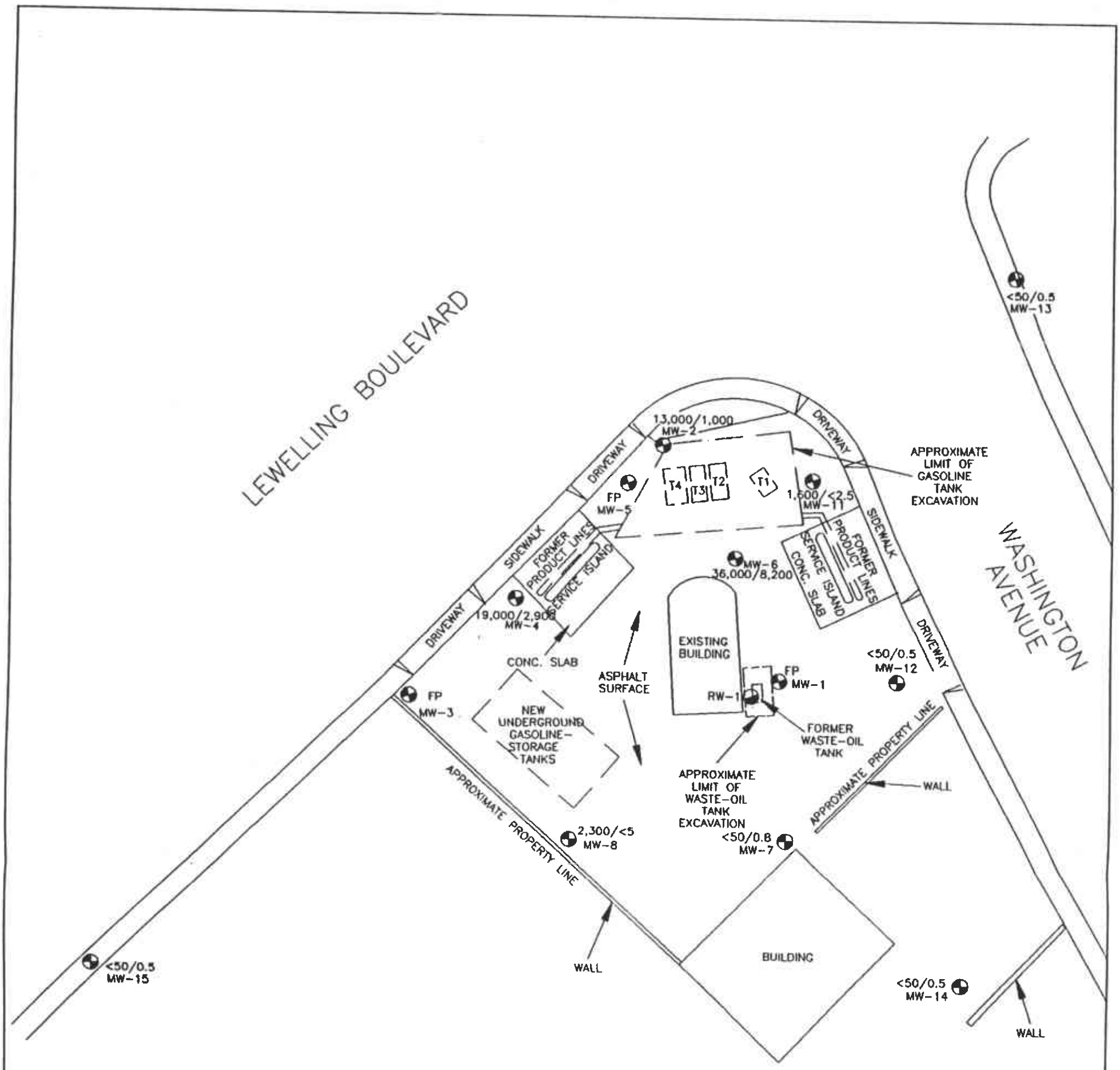
PROJECT 69034.12 90341202

GROUNDWATER GRADIENT MAP
ARCO Station 601
712 Lewelling Boulevard
San Leandro, California

PLATE
5



EXPLANATION

36,000/8,200 = Concentration of TPHg/benzene in groundwater in parts per billion, May 13, 1993

FP = Floating product

RW-1 = Product recovery well (GeoStrategies, Jan. 1990)

MW-15 = Vapor extraction/groundwater monitoring well (RESNA/Applied GeoSystems, June 1990 through November 1992, and March 1993)

T4 = Former gasoline underground storage tanks

N

Approximate Scale

40 20 0 40 80

feet

Source: Surveyed by Ron Archer, Civil Engineer Inc. modified by John Koch Land Surveyor.

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TPHg/BENZENE CONCENTRATIONS IN GROUNDWATER ARCO Station 601 712 Lewelling Boulevard San Leandro, California

PLATE 6

TABLE 1
CUMULATIVE GROUNDWATER MONITORING DATA
ARCO Station 601
San Leandro, California
(Page 1 of 8)

Date Well Measured	Depth of Well	Well Elevation	Depth-to-Water	Water Elevation	Floating Product
MW-1					
07/17/90	11.20	22.98	9.03	13.95	Emulsion
08/07/90			9.19	13.79	None
10/15/90			9.85*	13.13	0.25
11/20/90			9.79*	13.19	0.46
12/21/90			9.18	13.80	Sheen
01/09/91			9.47*	13.51*	0.02
02/27/91			9.31*	13.67*	0.03
03/20/91			7.81**	15.17**	Sheen
04/16/91			6.12	16.86	Sheen
05/16/91			8.60*	13.66*	0.01
06/10/91		22.26	9.00	13.26	Sheen
07/18/91			9.33*	12.93*	0.01
08/22/91			9.49*	12.77*	0.04
09/18/91			9.63*	12.63*	0.04
10/10/91			9.73*	12.53*	0.04
11/21/91			8.40*	13.86*	0.01
12/24/91			9.68*	13.30*	0.13
01/19/92	11.10		8.84	13.42	None
02/20/92			7.22	15.04	None
03/23/92			7.40	14.86	Sheen
04/21/92			8.30	13.96	None
05/15/92			8.77*	13.49*	0.01
06/08/92			9.08*	13.18*	0.02
07/15/92			9.40	12.86	None
08/25/92			8.21	14.05	None
09/15/92			8.18*	14.08*	0.02
10/28/92			8.62	13.64	None
11/16/92		22.26	9.09*	13.17*	0.02
12/16/92			8.10*	14.16*	0.02
01/15/93	11.10		6.53	15.73	None
02/16/93			7.03*	15.23*	0.01
03/30/93			6.86	15.40	None
04/28/93			6.77*	15.49*	0.01
05/13/93			8.08*	14.18*	0.01
06/17/93			8.48*	13.78*	0.01
MW-2					
07/17/90	12.33	22.06	7.86	14.20	None
08/07/90			8.03	14.03	None
10/15/90			8.61	13.45	None
11/20/90			8.76	13.30	None
12/21/90			8.28	13.78	None

See notes on page 8 of 8.

TABLE 1
CUMULATIVE GROUNDWATER MONITORING DATA
ARCO Station 601
San Leandro, California
(Page 2 of 8)

Date Well Measured	Depth of Well	Well Elevation	Depth-to-Water	Water Elevation	Floating Product
MW-2					
01/09/91			8.43	13.63	None
02/27/91			8.28	13.78	None
03/20/91			7.26**	14.80**	None
04/16/91			6.97	15.09	None
05/16/91			7.52	15.27	None
06/10/91		21.33	7.91	14.88	None
07/18/91			8.30	14.49	None
08/22/91			8.50	14.29	None
09/18/91			8.63	14.16	None
10/10/91			8.82	13.97	None
11/21/91			8.46	14.33	None
12/24/91			8.72	14.07	None
01/19/92	12.20		7.96	14.83	None
02/20/92			6.55	16.24	None
03/23/92			6.86	15.93	None
04/21/92			7.15	14.18	None
05/15/92			7.61	13.72	None
06/08/92			7.95	13.38	None
07/15/92			8.45	12.88	None
08/25/92			8.53	12.80	None
09/15/92			8.71	12.62	None
10/28/92			8.89	12.44	None
11/16/92		21.33	7.93	13.40	None
12/16/92			7.44	13.89	None
01/15/93	12.30		6.13	15.20	None
02/16/93			6.02	15.31	None
03/30/93			5.98	15.35	None
04/28/93			6.58	14.75	None
05/13/93			6.99	14.34	None
06/17/93			7.40	13.93	None
MW-3					
07/17/90	11.99	20.84	7.03	13.81	Sheen
08/07/90			7.21	13.63	None
10/15/90			8.19*	12.65*	0.75
11/20/90			7.98*	12.85*	1.08
12/21/90			7.22*	13.62*	0.01
01/09/91			7.46*	13.38*	0.30
02/27/91			7.37*	13.47*	0.02
03/20/91			5.79**	15.05**	Sheen
04/16/91			7.95	12.89	Sheen

See notes on page 8 of 8.

TABLE 1
CUMULATIVE GROUNDWATER MONITORING DATA
ARCO Station 601
San Leandro, California
(Page 3 of 8)

Date Well Measured	Depth of Well	Well Elevation	Depth-to-Water	Water Elevation	Floating Product
MW-3					
05/16/91			7.50	12.61	None
06/10/91		20.11	7.14	12.97	Sheen
07/18/91			7.55	12.56	None
08/22/91			7.64	12.47	Sheen
09/18/91			7.89*	12.22*	0.12
10/10/91			7.82*	12.29*	0.26
11/21/91			7.59*	12.52*	0.04
12/24/91			8.74*	11.37*	0.01
01/19/92	11.94		6.98	13.13	0.01
02/20/92			5.05	15.06	0.01
03/23/92			5.75	14.36	Sheen
04/21/92			6.55	13.56	None
05/15/92			7.11*	13.00*	0.03
06/08/92			7.52*	12.59*	0.02
07/15/92			7.92	12.19	None
08/25/92			8.00	12.11	None
09/15/92			8.01*	12.10*	0.02
10/28/92			8.66	11.45	None
11/16/92		20.11	7.11	13.00	Sheen
12/16/92			6.62	13.49	None
01/15/93	11.9		4.44	15.67	None
02/16/93			5.93*	14.18*	0.01
03/30/93	12.0		5.48	14.63	None
04/28/93			6.02*	14.09*	0.01
05/13/93			6.37*	13.74*	0.01
06/17/93			6.52*	13.59*	0.01
MW-4					
06/10/91	8.30	20.75	Dry		None
07/18/91			7.86	12.89	None
08/22/91			7.85	12.90	None
09/18/91			7.84	12.91	None
10/10/91			Dry		None
11/21/91			Dry		None
12/24/91			Dry		None
01/19/92	12.02		8.20	Residual Water	None
02/20/92	8.50		8.13	Residual Water	None
03/23/92			7.94	Residual Water	None
04/21/92			8.20	Residual Water	None
05/15/92			8.16	Residual Water	None
06/08/92			8.12	Residual Water	None

See notes on page 8 of 8.

TABLE 1
CUMULATIVE GROUNDWATER MONITORING DATA
ARCO Station 601
San Leandro, California
(Page 4 of 8)

Date Well Measured	Depth of Well	Well Elevation	Depth-to-Water	Water Elevation	Floating Product
MW-4					
07/15/92	8.90		8.81	Residual Water	None
08/25/92			8.39	Residual Water	None
09/15/92			Dry		None
10/28/92	8.4		8.23	Residual Water	None
11/16/92	8.5	20.75	8.29	Residual Water	None
12/16/92	8.5		8.18	Residual Water	None
01/15/93			7.48	13.27	None
02/16/93			7.10	13.65	None
03/30/93			7.51	13.24	None
04/28/93			7.10	13.65	None
05/13/93			7.02	13.73	None
06/17/93			7.98	12.77	None
MW-5					
06/10/91	9.88	20.90	7.58	13.32	None
07/18/91			7.97	12.93	None
08/22/91			8.18	12.72	None
09/18/91			8.31	12.59	None
10/10/91			8.51	12.39	Sheen
11/21/91			8.13	12.77	None
12/24/91			8.32	12.58	None
01/19/92	10.10		7.50	13.40	None
02/20/92			5.97	14.93	None
03/23/92			6.06	14.84	None
04/21/92			6.90	14.00	None
05/15/92			7.32	13.58	None
06/08/92			7.66	13.24	None
07/15/92			8.34	12.56	None
08/25/92			8.18	12.72	None
09/15/92			8.40	12.50	0.02+
10/28/92			8.83	12.07	None
11/16/92		20.90	7.70	13.20	None
12/16/92			6.92	13.98	None
01/15/93	10.1		5.52	15.38	None
02/16/93			5.64	15.26	None
03/30/93			5.56	15.34	None
04/28/93			6.28	14.62	None
05/13/93			6.68	14.22	None
06/17/93			7.07	13.83	None

See notes on page 8 of 8.

TABLE 1
CUMULATIVE GROUNDWATER MONITORING DATA
ARCO Station 601
San Leandro, California
(Page 5 of 8)

Date Well Measured	Depth of Well	Well Elevation	Depth-to-Water	Water Elevation	Floating Product
MW-6					
06/10/91	8.40	22.08	Dry		None
07/18/91			Dry		None
08/22/91			Dry		None
09/18/91			Dry		None
10/10/91			Dry		None
11/21/91			Dry		None
12/24/91			Dry		None
01/19/92	8.60		8.58	Residual water	None
02/20/92			7.28	14.80	None
03/23/92			7.45	14.63	None
04/21/92			7.74	14.34	None
05/15/92			8.50	Residual Water	None
06/08/92			Dry		None
07/15/92			8.81	Residual Water	None
08/25/92			8.42	Residual Water	None
09/15/92			Dry		None
10/28/92	8.75		8.75	Residual Water	None
11/16/92	8.6	22.08	8.57	Residual Water	None
12/16/92	8.6		8.10	Residual Water	None
01/15/93			7.22	14.86	None
02/16/93			6.79	15.29	None
03/30/93			6.68	15.40	None
04/28/93			7.28	14.80	None
05/13/93			7.73	14.35	None
06/17/93			8.15	13.93	None
MW-7					
06/10/91	9.36	22.89	Dry		None
07/18/91			Dry		None
08/22/91			Dry		None
09/18/91			Dry		None
10/10/91			Dry		None
11/21/91			Dry		None
12/24/91			Dry		None
01/19/92	9.55		Dry		None
02/20/92			8.74	14.15	None
03/23/92			8.20	14.69	None
04/21/92			8.86	14.03	None
05/15/92			9.29	Residual Water	None
06/08/92			9.52	Residual Water	None
07/15/92			9.78	Residual Water	None

See notes on page 8 of 8.

TABLE 1
CUMULATIVE GROUNDWATER MONITORING DATA
ARCO Station 601
San Leandro, California
(Page 6 of 8)

Date Well Measured	Depth of Well	Well Elevation	Depth-to-Water	Water Elevation	Floating Product
MW-7					
08/25/92			9.33	Residual Water	None
09/15/92			Dry		None
10/28/92	11.7**		10.38**	12.51	None
11/16/92	9.6	22.89	9.53	Residual Water	None
12/16/92	9.6		9.21	Residual Water	None
01/15/93			8.37	14.52	None
02/16/93			7.84	15.05	None
03/30/93			8.03	14.86	None
04/28/93			8.33	14.56	None
05/13/93			8.56	14.33	None
06/17/93			9.30	13.59	None
MW-8					
06/10/91	10.00	20.97	7.80	13.17	None
07/18/91			8.36	12.61	None
08/22/91			8.53	12.44	None
09/18/91			8.68	12.29	None
10/10/91			8.87	12.10	None
11/21/91			8.43	12.54	None
12/24/91			8.68	12.29	None
01/19/92	10.15		7.73	13.24	None
02/20/92			5.57	15.40	None
03/23/92			5.81	15.16	None
04/21/92			7.05	13.92	None
05/15/92			7.79	13.18	None
06/08/92			8.01	12.96	None
07/15/92			8.46	12.51	None
08/25/92			8.64	12.33	None
09/15/92			8.80	12.17	None
10/28/92			8.80	12.17	None
11/16/92		20.97	8.19	12.78	None
12/16/92			6.66	14.31	None
01/15/93			5.18	15.79	None
02/16/93			5.84	15.13	None
03/30/93	10.2		4.98	15.99	None
04/28/93			6.17	14.80	None
05/13/93			6.93	14.04	None
06/17/93			7.36	13.61	None
MW-11					
11/16/92	11.9	22.38	9.02	13.36	None
12/16/92			8.48	13.90	None
01/15/93			7.14	15.24	None

See notes on page 8 of 8.

TABLE 1
CUMULATIVE GROUNDWATER MONITORING DATA
ARCO Station 601
San Leandro, California
(Page 7 of 8)

Date Well Measured	Depth of Well	Well Elevation	Depth-to-Water	Water Elevation	Floating Product
MW-11					
02/16/93			7.11	15.27	None
03/30/93			7.01	15.37	None
04/28/93			7.62	14.76	None
05/13/93			8.04	14.34	None
06/17/93			8.44	13.94	None
MW-12					
11/16/92	11.6	22.77	9.65	13.12	None
12/16/92			8.71	14.06	None
01/15/93			7.19	15.58	None
02/16/93			7.88	14.89	None
03/30/93			7.43	15.34	None
04/28/93			8.22	14.55	None
05/13/93			8.63	14.14	None
06/17/93			8.98	13.79	None
MW-13					
11/16/92	13.0	22.45	9.02	13.43	None
12/16/92			8.23	14.22	None
01/15/93			6.89	15.56	None
02/16/93			7.14	15.31	None
03/30/93			7.01	15.44	None
04/28/93			7.57	14.88	None
05/13/93			7.95	14.50	None
06/17/93			8.32	14.13	None
MW-14					
09/15/92	13.0	22.99	10.66	12.33	None
10/28/92			10.91	12.08	None
11/16/92			10.33	12.66	None
12/16/92			9.20	13.79	None
01/15/93			7.06	15.93	None
02/16/93			8.18	14.81	None
03/30/93			7.97	14.93	None
04/28/93			8.63	14.36	None
05/13/93			9.05	13.94	None
06/17/93			9.55	13.44	None

See notes on page 8 of 8.

TABLE 1
CUMULATIVE GROUNDWATER MONITORING DATA
ARCO Station 601
San Leandro, California
(Page 8 of 8)

Date Well Measured	Depth of Well	Well Elevation	Depth-to-Water	Water Elevation	Floating Product
MW-15					
04/28/93	10.1	19.19	5.51	13.68	None
05/13/93			5.91	13.28	None
06/17/93			6.18	13.01	None

Measurements in feet.
Datum mean sea level.
Depth-to-Water measured in feet below top of casing.
*The recorded thickness of the floating product was multiplied by 0.80 to obtain an approximate value for the displacement of water by the floating product. This approximate displacement value was then subtracted from the measured depth to water to obtain a calculated depth to water.
** = Anomalous data.
+ Floating Product entered well during purging, therefore DTW was not affected.
Residual Water = less than 4 inches of water trapped within the cap at the base of the well.

TABLE 2
CUMULATIVE RESULTS OF LABORATORY ANALYSES
OF GROUNDWATER SAMPLES
ARCO Station 601
San Leandro, California
(Page 1 of 4)

Sample	TPHg	TPHd	B	T	E	X	TOG	BNAs	VOCs	Cd	Cr	Pb	Ni	Zn
MW-1														
07/18/90	Not sampled–sheen													
10/15/90	Not sampled--floating product													
01/09/91	Not sampled--floating product													
04/16/91	Not sampled--sheen													
06/10/91	Not sampled–sheen													
10/10/91	Not sampled--floating product													
03/23/92	Not sampled--sheen													
06/08/92	Not sampled--floating product													
09/15/92	Not sampled--floating product													
11/16/92	Not sampled–floating product													
02/16/93	Not sampled–floating product													
05/13/93	Not sampled–floating product													
MW-2														
07/18/90	35,000	850[a]	3,800 (3,200)	2,900 (2,400)	690 (270)	3,600 (2,900)	<5,000	340[a] 170[b]	39[c]	<20	50	50	NA	120
10/15/90	6,400	NA	650	290	110	560	NA	NA	18[c]	NA	NA	NA	NA	NA
01/09/91	13,000	NA	1500 (1700)	970 (1200)	390 (370)	1500 (2400)	NA	NA	6.5[d]	NA	NA	NA	NA	NA
04/16/91	54,000	NA	5,200	9,000	1,500	7,700	NA	NA	NA	NA	NA	NA	NA	NA
06/10/91	26,000	NA	3,000	2,500	880	4,200	NA	NA	NA	NA	NA	NA	NA	NA
10/10/91	10,000	NA	1,600	910	280	1,400	<5,000	NA	1.7[d]	<10	<10	11	72	91
03/23/92	33,000	NA	4,100	5,000	1,100	5,300	NA	NA	NA	NA	NA	NA	NA	NA
06/08/92	18,000	NA	1,200	980	330	1,800	NA	NA	NA	NA	NA	NA	NA	NA
09/15/92	13,000	NA	430	500	340	1,800	NA	NA	NA	NA	NA	NA	NA	NA
11/16/92	13,000	NA	900	940	300	1,400	NA	NA	NA	NA	NA	NA	NA	NA
02/16/93	20,000	NA	1,800	1,200	530	2,700	NA	NA	NA	NA	NA	NA	NA	NA
05/13/93	13,000	NA	1,000	470	370	1,900	NA	NA	NA	NA	NA	NA	NA	NA
MW-3														
07/18/90	NA	NA	NA	NA	NA	NA	<5,000	NA	NA	NA	NA	NA	NA	NA
10/15/90	Not sampled--floating product													
01/09/91	Not sampled–floating product													
04/16/91	Not sampled–sheen													
06/10/91	Not sampled–sheen													
10/10/91	Not sampled–floating product													
03/23/92	Not sampled--sheen													
06/08/92	Not sampled--floating product													
09/15/92	Not sampled–floating product													
11/16/92	Not sampled–sheen													
02/16/93	Not sampled–floating product													
05/13/93	Not sampled–floating product													

See notes on page 4 of 4.

TABLE 2
CUMULATIVE RESULTS OF LABORATORY ANALYSES
OF GROUNDWATER SAMPLES
ARCO Station 601
San Leandro, California
(Page 2 of 4)

Sample	TPHg	TPHd	B	T	E	X	TOG	BNAs	VOCs	Cd	Cr	Pb	Ni	Zn
MW-4														
06/10/91						Not sampled--dry								
10/10/91	15,000	NA	5,300	1,500	470	1,300	NA	NA	NA	NA	NA	NA	NA	NA
03/23/92	24,000	NA	5,600	4,000	580	3,100	NA	NA	NA	NA	NA	NA	NA	NA
06/08/92	5,700	NA	2,000	170	92	270	NA	NA	NA	NA	NA	NA	NA	NA
09/15/92						Not sampled--dry								
11/16/92						Not sampled--dry								
02/16/93	12,000	NA	920	1,100	130	750	NA	NA	NA	NA	NA	NA	NA	NA
05/13/93	19,000	NA	2,900	2,800	360	1,900	NA	NA	NA	NA	NA	NA	NA	NA
MW-5														
06/10/91	100,000	NA	25,000	20,000	2,600	12,000	NA	NA	NA	NA	NA	NA	NA	NA
10/10/91						Not sampled--sheen								
03/23/92	150,000	NA	24,000	31,000	4,400	23,000	NA	NA	NA	NA	NA	28	NA	NA
06/08/92	120,000	NA	17,000	13,000	2,400	11,000	NA	NA	NA	NA	NA	NA	NA	NA
09/15/92						Not sampled--floating product								
11/16/92	110,000	NA	16,000	16,000	3,200	18,000	NA	NA	NA	NA	NA	NA	NA	NA
02/16/93	150,000	NA	12,000	15,000	3,000	17,000	NA	NA	NA	NA	NA	NA	NA	NA
05/13/93						Not sampled--floating product								
MW-6														
06/10/91						Not sampled--dry								
10/10/91						Not sampled--dry								
03/23/92	75,000	NA	19,000	10,000	1,600	8,600	NA	NA	NA	NA	NA	NA	NA	NA
06/08/93						Not sampled--dry								
09/15/92						Not sampled--dry								
11/16/92						Not sampled--dry								
02/16/93	65,000	NA	14,000	3,500	1,300	6,100	NA	NA	NA	NA	NA	NA	NA	NA
05/13/93	36,000	NA	8,200	870	1,000	5,200	NA	NA	NA	NA	NA	NA	NA	NA
MW-7														
06/10/91						Not sampled--dry								
10/10/91						Not sampled--dry								
03/23/92	270	NA	10	0.5	3.0	13	NA	NA	NA	NA	NA	NA	NA	NA
06/08/92						Not sampled--residual water								
09/15/92						Not sampled--dry								
11/16/92						Not sampled--dry								
02/16/93	120	NA	3.6	<0.5	<0.5	1.2	NA	NA	NA	NA	NA	NA	NA	NA
05/13/93	<50	NA	0.8	<0.5	<0.5	<0.5	NA	NA	NA	NA	NA	NA	NA	NA
MW-8														
06/10/91	5,800	NA	73	7.2	150	21	<5,000	NA	NA	NA	NA	NA	NA	NA
10/10/91	2,800	NA	31	6.1	4.5	3.9	NA	NA	NA	NA	NA	NA	NA	NA

See notes on page 4 of 4.

TABLE 2
CUMULATIVE RESULTS OF LABORATORY ANALYSES
OF GROUNDWATER SAMPLES
ARCO Station 601
San Leandro, California
(Page 3 of 4)

Sample	TPHg	TPHd	B	T	E	X	TOG	BNAs	VOCs	Cd	Cr	Pb	Ni	Zn
MW-8														
03/23/92	8,000	NA	18 (23**)	<5.0‴ (<5.0‴)	320 (450**)	42 (23**)	NA	NA	ND	NA	NA	NA	NA	NA
06/08/92	4,000	NA	<10**	<10**	110	<10**	NA	NA	NA	NA	NA	NA	NA	NA
09/15/92	4,200	460***	6.4	<5*	120	<5*	NA	6*	ND	ND	59	18	78	128
11/16/92	2,600	1,100***	4.0	<2.5**	21	5.2	1,200	32[a]	ND	7	42	20	69	123
02/16/93	8,700	5,300***	<5**	<5**	200	<5**	150,000	730[a] 130[b]	ND	<3	7	4	24	54
05/13/93	2,300	2,300***	<5**	<5**	42	<5**	2,000	97[a] 20[b]	ND	<3	17	10	31	49
MW-11														
11/16/92	7,000	NA	21	<10**	18	230	NA	NA	NA	NA	NA	NA	NA	NA
02/16/93	2,200	NA	<10**	<10**	11	<10**	NA	NA	NA	NA	NA	NA	NA	NA
05/13/93	1,600	NA	<2.5**	<2.5**	41	6.8	NA	NA	NA	NA	NA	NA	NA	NA
MW-12														
11/16/92	<50	NA	<0.5	<0.5	<0.5	<0.5	NA	NA	NA	NA	NA	NA	NA	NA
02/16/93	<50	NA	<0.5	<0.5	<0.5	<0.5	NA	NA	NA	NA	NA	NA	NA	NA
05/13/93	<50	NA	<0.5	<0.5	<0.5	<0.5	NA	NA	NA	NA	NA	NA	NA	NA
MW-13														
11/16/92	<50	NA	<0.5	<0.5	<0.5	<0.5	NA	NA	NA	NA	NA	NA	NA	NA
02/16/93	<50	NA	<0.5	<0.5	<0.5	<0.5	NA	NA	NA	NA	NA	NA	NA	NA
05/13/93	<50	NA	<0.5	<0.5	<0.5	<0.5	NA	NA	NA	NA	NA	NA	NA	NA
MW-14														
09/15/92	<50	NA	<0.5	<0.5	<0.5	<0.5	NA	NA	NA	NA	NA	NA	NA	NA
11/16/92	<50	NA	<0.5	<0.5	<0.5	<0.5	NA	NA	NA	NA	NA	NA	NA	NA
02/16/93	<50	NA	<0.5	<0.5	<0.5	<0.5	NA	NA	NA	NA	NA	NA	NA	NA
05/13/93	<50	NA	<0.5	<0.5	<0.5	<0.5	NA	NA	NA	NA	NA	NA	NA	NA
MW-15														
05/13/93	<50	NA	<0.5	<0.5	<0.5	<0.5	NA	NA	NA	NA	NA	NA	NA	NA
DWAL:	—	—	—	100	—	—	—	—	—	—	—	—	—	—
MCLs:	—	—	1	NA	680	1,750	—	—	—	10	50	50	—	5,000

See notes on page 4 of 4.

TABLE 2
CUMULATIVE RESULTS OF LABORATORY ANALYSES
OF GROUNDWATER SAMPLES
ARCO Station 601
San Leandro, California
(Page 4 of 4)

Results in micrograms per liter (ug/L) = parts per billion (ppb).

NA:	Not analyzed.
<:	Results reported as less than the detection limit.
*:	Applied analytical laboratories reports that the chromatograph resembled gasoline not diesel.
**:	Laboratory reported raised maximum reporting limit due to high analyte concentration requiring sample dilution.
***:	Sample contains a lower boiling point hydrocarbon mixture quantitated as diesel. The chromatogram does not match the typical diesel fingerprint.
( ):	BTEX results analyzed as VOCs.
TPHg:	Total petroleum hydrocarbons as gasoline using EPA method 8015.
TPHd:	Total petroleum hydrocarbons as diesel using EPA method 3550/3510.
	B: Benzene, T: Toluene, E: Ethylbenzene, X: Total Xylene isomers.
BTEX:	Measured using EPA method 8020/602.
TOG:	Total oil and grease measured using Standard Method 503A/E or EPA Method 418.1.
BNAs:	Base neutral and acid extractables including polynuclear aromatics concentrations are below laboratory reporting limits for respective compounds except as indicated. ([a] = naphthalene, [b] = 2-methylnaphthalene, [c] = Bis (2-ethylhexyl) Phthalate)
VOCs:	volatile organics except for BTEX concentrations are below laboratory reporting limits for respective compounds except as indicated. ([e] = methylene chloride, [d] = 1,2-Dichloroethane)
Cd:	Cadmium (using EPA Method 6010)
Cr:	Chromium (using EPA Method 6010)
Pb:	Lead (using EPA Method 7421)
Ni:	Nickel (using EPA Method 6010)
Zn:	Zinc (using EPA Method 6010)
ND:	Below detection limits. Detection limits for VOCs varied according to analyte.
DWAL:	California Department of Health Services recommended drinking water action levels (October 1990).
MCLs:	Maximum Contaminant Level in ppb (October 1990).

TABLE 3
APPROXIMATE CUMULATIVE PRODUCT RECOVERED
ARCO Station 601
San Leandro, California

Year	Floating Product Recovered (gallons)
1991	TOTAL: 3.43
1992	
MW-1	
01/29/92	None present
02/28/92	None present
03/25/92	None present
06/08/92	0.02
09/15/92	None removed*
MW-3	
01/29/92	None present
02/28/92	None present
03/25/92	None present
06/08/92	None present
09/15/92	None removed*
	TOTAL: 0.02
1993	
MW-1	
02/26/93	None present
MW-3	
02/26/93	None present
	TOTAL: 0
1991 + 1992 + 1993	TOTAL: 3.45

* = No product removed as the storage drum for product had been removed from the site.

RESNA
Working to Restore Nature

APPENDIX A

EMCON'S WATER SAMPLE FIELD DATA SHEETS, FIELD REPORTS, SUMMARY OF GROUNDWATER MONITORING DATA, AND CHAIN OF CUSTODY RECORDS

69034.12

EMCON Associates
1938 Junction Avenue • San Jose, California 95131-2102 • (408) 453-0719 • Fax (408) 453-0452

Date May 4, 1993
Project 0G70-007.01

To:
Mr. Joel Coffman
RESNA/ Applied Geosystems
3315 Almaden Expressway, Suite 34
San Jose, California 95118

We are enclosing:

Copies	Description
1	Depth To Water/Floating Product Survey Results
	April 1993 monthly water level survey, ARCO
	station 601, 712 Lewelling Blvd., San Leandro, CA

For your: X Information Sent by: X Mail

Comments:
Monthly water level data for the above mentioned site are attached. Please call if you have any questions: (408) 453-2266.

Reviewed by:

REGISTERED PROFESSIONAL ENGINEER ROBERT CURTIS PORTER No: 4094 Exp. 6/30/94 INDUSTRIAL STATE OF CALIFORNIA

Jim Butera JB

Robert Porter, Senior Project Engineer.

FIELD REPORT
DEPTH TO WATER / FLOATING PRODUCT SURVEY

PROJECT # : 0G70-007.01 STATION ADDRESS : 712 Lewelling Blvd. San Leandro DATE : 4/28/93

ARCO STATION # : 601 FIELD TECHNICIAN : B. Statland DAY : Wednesday

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-15	Good	Yes	ok	Dolphin	Yes	5.51	5.51	ND	ND	10.1	—
2	MW-14	ok	Yes	ok	3289	Yes	8.63	8.65	ND	ND	13.0	—
3	MW-13	ok	Yes	ok	3289	Yes	7.57	7.57	ND	ND	13.0	—
4	MW-12	ok	Yes	ok	0964	Yes	8.22	8.23	ND	ND	11.6	H2O in C.Box above L.W.C. New 0464 lock installed
5	MW-7	ok	Yes	ok	0909	Yes	8.33	8.33	ND	ND	9.6	—
6	MW-4	ok	Yes	ok	0909	Yes	7.10	7.10	ND	ND	8.5	H2O in Box. slight odor.
7	MW-11	ok	Yes	ok	lock is jammed	Yes	7.62	7.62	ND	ND	11.8	Next Event Bring Bolt Cutters to replace lock.
8	MW-6	ok	Yes	ok	3259	Yes	7.28	7.28	ND	ND	8.6	H2O in C.Box. slight odor.
9	MW-8	ok	Yes	ok	3259	Yes	6.17	6.18	ND	ND	10.2	H2O in C.Box.
10	MW-2	ok	Yes	ok	3259	Yes (New)	6.58	6.58	ND	ND	12.3	New 4" L.W.C. ~~installed~~ Road box profile lid. H2O in Box flush w/ top of Casing.
11	MW-5	ok	Yes	ok	3259	Yes	6.28	6.28	ND	ND	10.1	—
12	MW-1	ok	~~Yes~~ NO	none	0464 (Dec)	Yes	6.78	6.78	(0.01' with Bailer)		11.1	H2O in C.Box. New 0464 lock installed. V. Strong odor. New
13	MW-3	ok	~~Yes~~ NO	ok	3259	Yes	6.03	6.03	(0.01' with Bailer)		11.9	Skimmer. V. Strong odor. H2O in Box. New screw

SURVEY POINTS ARE TOP OF WELL CASINGS

One New Diversified screw put on to hold down lid. Other Hole is plugged w/ hex screw.

EMCON Associates
1938 Junction Avenue • San Jose, California 95131-2102 • (408) 453-0719 • Fax (408) 453-0452

Date June 3,1993
Project 0G70-007.01

To:
Mr. John Young
RESNA
3315 Almaden Expressway, Suite 34
San Jose, California 95050

We are enclosing:

Copies	Description
1	Depth To Water / Floating Product Survey Results
1	Summary of Groundwater Monitoring Data
1	Certified Analytical Reports with Chain-of-Custody
13	Water Sample Field Data Sheets

For your: X Information Sent by: X Mail

Comments:

Enclosed are the data from the second quarter 1993 monitoring event at ARCO service station 601, 712 Lewelling Boulevard, San Leandro, CA. Groundwater monitoring is conducted consistent with applicable regulatory guidelines. Please call if you have any questions: (408) 453-2266.

Jim Butera JB

Reviewed by:

6/30/93

Robert Porter, Senior Project Engineer.

FIELD REPORT
DEPTH TO WATER / FLOATING PRODUCT SURVEY

PROJECT # : 0G70-007.01 STATION ADDRESS : 712 Lewelling Blvd. San Leandro DATE : 5-13-93

ARCO STATION # : 601 FIELD TECHNICIAN : REICHELDERFER/WILLIAMS 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-15	OK	YES	OK	DEPHIN	OK	5.91	5.91	ND	NA	10.1	—
2	MW-14	OK	YES	OK	3259	OK	9.05	9.05	ND	NA	13.0	—
3	MW-13	OK	YES	OK	3259	OK	7.95	7.95	ND	NA	13.0	—
4	MW-12	OK	YES	OK	OA64	OK	8.63	8.63	ND	NA	11.6	—
5	MW-7	OK	YES	OK	3259	OK	8.56	8.56	ND	NA	9.6	—
6	MW-4	OK	YES	OK	3259	OK	7.02	7.02	ND	NA	8.5	WATER IN BOX, BELOW LWL
7	MW-11	OK	YES	OK	3259	OK	8.04	8.04	ND	NA	11.9	—
8	MW-6	OK	YES	OK	3259	OK	7.73	7.73	ND	NA	8.6	WATER IN BOX, BELOW LWL
9	MW-8	OK	YES	OK	3259	OK	6.93	6.93	ND	NA	10.2	WATER IN BOX, BELOW LWL
10	MW-2	OK	YES*	OK	3259	~~BAD~~ OK	6.99	6.99	ND	NA	12.3	WATER IN BOX, BELOW LWL * ONE BOLT HOLE CRACKED OFF
11	MW-5	OK	YES	OK	3259	OK	6.68	6.68	*ND	NA	10.1	DISCREPANCY STRONG ODOR
12	MW-1	OK	YES	OK	OA64	OK	8.09	8.09	8.08	0.01	11.1	STRONG ODOR
13	MW-3	OK	YES*	OK	3259	OK	6.38	6.38	6.37	0.01	11.9	NO DETECTABLE PRODUCT IN SUBMERSIBLE ONE HEX BOLT HOLE CRACKED

SURVEY POINTS ARE TOP OF WELL CASINGS

* Product entered well while sampling.

Summary of Groundwater Monitoring Data
Second Quarter 1993
ARCO Service Station 601
712 Lewelling Boulevard, San Leandro, California
micrograms per liter (µg/l) or parts per billion (ppb)

Well ID and Sample Depth	Sampling Date	Depth To Water (feet)	Floating Product Thickness (feet)	TPH[1] as Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Total Xylenes (ppb)	TRPH[2] (ppb)	TPH Diesel (ppb)
MW-1	05/13/93	8.09	0.01	FP.[3]	FP.	FP.	FP.	FP.	FP.	FP.
MW-2(12)	05/13/93	6.99	ND.[4]	13,000.	1,000.	470.	370.	1,900.	NR.[5]	NR.
MW-3	05/13/93	6.38	0.01	FP.	FP.	FP.	FP.	FP.	FP.	FP.
MW-4(8.5)	05/13/93	7.02	ND.	19,000.	2,900.	2,800.	360.	1,900.	NR.	NR.
MW-5	05/13/93	6.68	0.01	FP.	FP.	FP.	FP.	FP.	FP.	FP.
MW-6(8.5)	05/13/93	7.73	ND.	36,000.	8,200.	870.	1,000.	5,200.	NR.	NR.
MW-7(9)	05/13/93	8.56	ND.	<50.	0.8	<0.5	<0.5	<0.5	NR.	NR.
MW-8(10)	05/13/93	6.93	ND.	2,300.	<5.	<5.	42.	<5.	2,000.*	2,300.
MW-11(10)	05/13/93	8.04	ND.	1,600.	<2.5	<2.5	41.	6.8	NR.	NR.
MW-12(11)	05/13/93	8.63	ND.	<50.	<0.5	<0.5	<0.5	<0.5	NR.	NR.
MW-13(13)	05/13/93	7.95	ND.	<50.	<0.5	<0.5	<0.5	<0.5	NR.	NR.
MW-14(13)	05/13/93	9.05	ND.	<50.	<0.5	<0.5	<0.5	<0.5	NR.	NR.
MW-15(10)	05/13/93	5.91	ND.	<50.	<0.5	<0.5	<0.5	<0.5	NR.	NR.
FB-1[6]	05/13/93	NA.[7]	NA.	<50	<0.5	<0.5	<0.5	<0.5	NR.	NR.

1. TPH = Total petroleum hydrocarbons
2. TRPH = Total recoverable petroleum hydrocarbons
3. FP. = Not sampled; well was not sampled due to detection of floating product
4. ND. = Not detected
5. NR. = Not required, well not sampled for listed parameter
6. FB. = Field blank
7. NA. = Not applicable

* = Reported in CAR as parts per million, converted to ppb in summary.

Summary of Analytical Results
Total Metals by EPA[1] Method 6010 and 7421
Second Quarter 1993
ARCO Service Station 601
712 Lewelling Blvd. San Leandro, California
micrograms per liter (µg/l) or parts per billion (ppb)

Well ID and Sample Depth	Sampling Date	Cadmium (ppb)	Chromium (ppb)	Lead (ppb)	Nickle (ppb)	Zinc (ppb)
MW-8(10)	05/13/93	<3.	17.	10.	31.	49.

1. EPA = United States Environmental Protection Agency

Summary of Analytical Results
Base Neutral / Acid Semivolatile Organic Compounds by EPA[1] Methods 3510/8270
Second Quarter 1993
ARCO Service Station 601
712 Lewelling Boulevard, San Leandro, California
micrograms per liter (µg/l) or parts per billion (ppb)

Well ID and Sample Depth	Sampling Date	Naphthalene (ppb)	2-Methylnaphthalene (ppb)
MW-8(10)	05/13/93	97.	20.

1. EPA = United States Environmental Protection Agency.

Columbia Analytical Services INC.

May 27, 1993

Service Request No. SJ93-0665

Jim Butera
EMCON Associates
1921 Ringwood Avenue
San Jose, CA 95131

Re: **EMCON Project No. 0G70-007.01**
ARCO Facility No. 601

Dear Mr. Butera:

Attached are the results of the water samples submitted to our lab on May 13, 1993. For your reference, these analyses have been assigned our service request number SJ93-0665.

All analyses were performed consistent with our laboratory's quality assurance program. All results are intended to be considered in their entirety, and CAS is not responsible for use of less than the complete report. Results apply only to the samples analyzed.

Please call if you have any questions.

Respectfully submitted:

COLUMBIA ANALYTICAL SERVICES, INC.

Keoni A. Murphy
Laboratory Manager

Annelise J. Bazar
Regional QA Coordinator

KAM/ajb

1921 Ringwood Avenue • San Jose, California 95131 • Telephone 408/437-2400 • Fax 408/437-0056

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON Associates	**Date Received:**	05/13/93
Project:	ARCO Project No. 0G70-007.01	**Service Request No.:**	SJ93-0665
	ARCO Facility No. 601	**Sample Matrix:**	Water

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

Sample Name	Date Sampled	MRL	Result
MW-8 (10)	05/13/93	0.5	2.0
Method Blank		0.5	ND

MRL Method Reporting Limit
ND None Detected at or above the method reporting limit

Approved by: Kevin Murphy Date: May 27, 1993

1921 Ringwood Avenue • San Jose, California 95131 • Telephone 408/437-2400 • Fax 408/437-56

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON Associates	**Date Received:**	05/13/93
Project:	EMCON Project No. 0G70-007.01	**Date Extracted:**	05/21/93
	ARCO Facility No. 601	**Date Analyzed:**	05/22/93 *
Sample Matrix:	Water	**Service Request No.:**	SJ93-0665

Total Petroleum Hydrocarbons as Diesel
EPA Method 3510/California DHS LUFT Method
µg/L (ppb)

Sample Name	MRL	TPH as Diesel
MW-8 (10)	50	2,300. **
Method Blank	50	ND

MRL Method Reporting Limit
TPH Total Petroleum Hydrocarbons
ND None Detected at or above the method reporting limit
* This sample was part of the analytical batch started on May 22, 1993. However, it was analyzed after midnight so the actual date analyzed is May 23, 1993.
** The sample contains components eluting in the diesel range that were quantitated as diesel. The chromatogram does not match the typical diesel fingerprint.

Approved by: Kevin Murphy Date: May 27, 1993

1921 Ringwood Avenue • San Jose, California 95131 • Telephone 408/437-2400 • Fax 408/437-2456

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON Associates	**Date Received:**	05/13/93
Project:	EMCON Project No. 0G70-007.01	**Service Request No.:**	SJ93-0665
	ARCO Facility No. 601	**Sample Matrix:**	Water

BTEX and TPH as Gasoline
EPA Methods 5030/8020/California DHS LUFT Method
µg/L (ppb)

Sample Name:		MW-2 (12)	MW-4 (8.5)	MW-6 (8.5)
Date Analyzed:		05/21/93	05/21/93	05/21/93
Analyte	**MRL**			
Benzene	0.5	1,000.	2,900.	8,200.
Toluene	0.5	470.	2,800.	870.
Ethylbenzene	0.5	370.	360.	1,000.
Total Xylenes	0.5	1,900.	1,900.	5,200.
TPH as Gasoline	50	13,000.	19,000.	36,000.

TPH Total Petroleum Hydrocarbons
MRL Method Reporting Limit

Approved by: Kevin Murphy Date: May 27, 1993

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON Associates	**Date Received:**	05/13/93
Project:	EMCON Project No. 0G70-007.01	**Service Request No.:**	SJ93-0665
	ARCO Facility No. 601	**Sample Matrix:**	Water

BTEX and TPH as Gasoline
EPA Methods 5030/8020/California DHS LUFT Method
µg/L (ppb)

Sample Name:		MW-7 (9)	MW-8 (10)	MW-11 (10)
Date Analyzed:		05/21/93	05/21/93	05/21/93
Analyte	**MRL**			
Benzene	0.5	0.8	<5. *	<2.5 *
Toluene	0.5	ND	<5. *	<2.5 *
Ethylbenzene	0.5	ND	42.	41.
Total Xylenes	0.5	ND	<5. *	6.8
TPH as Gasoline	50	ND	2,300.	1,600.

TPH Total Petroleum Hydrocarbons
MRL Method Reporting Limit
ND None Detected at or above the method reporting limit
* Raised MRL due to high analyte concentration requiring sample dilution.

Approved by: _____ Date: May 27, 1993

1921 Ringwood Avenue • San Jose, California 95131 • Telephone 408/437-2400 • Fax 408/437-56

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON Associates	**Date Received:**	05/13/93
Project:	EMCON Project No. 0G70-007.01	**Service Request No.:**	SJ93-0665
	ARCO Facility No. 601	**Sample Matrix:**	Water

BTEX and TPH as Gasoline
EPA Methods 5030/8020/California DHS LUFT Method
µg/L (ppb)

Sample Name:		MW-12 (11)	MW-13 (13)	MW-14 (13)
Date Analyzed:		05/21/93	05/21/93	05/21/93
Analyte	**MRL**			
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
TPH as Gasoline	50	ND	ND	ND

TPH Total Petroleum Hydrocarbons
MRL Method Reporting Limit
ND None Detected at or above the method reporting limit

Approved by: Kevin Murphy Date: May 27, 1993

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON Associates	**Date Received:**	05/13/93
Project:	EMCON Project No. 0G70-007.01	**Service Request No.:**	SJ93-0665
	ARCO Facility No. 601	**Sample Matrix:**	Water

BTEX and TPH as Gasoline
EPA Methods 5030/8020/California DHS LUFT Method
µg/L (ppb)

Sample Name:		MW-15 (10)	FB-1	Method Blank
Date Analyzed:		05/21/93	05/21/93	05/21/93
Analyte	**MRL**			
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
TPH as Gasoline	50	ND	ND	ND

TPH Total Petroleum Hydrocarbons
MRL Method Reporting Limit
ND None Detected at or above the method reporting limit

Approved by: Kevin Murphy Date: May 27, 1993

1921 Ringwood Avenue • San Jose, California 95131 • Telephone 408/437-2400 • Fax 408/437 056

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON Associates	**Date Received:**	05/13/93
Project:	EMCON Project No. 0G70-007.01	**Service Request No.:**	SJ93-0665
	ARCO Facility No. 601	**Sample Matrix:**	Water

Halogenated Volatile Organic Compounds
EPA Methods 5030/601
µg/L (ppb)

Sample Name:	MW-8 (10)	Method Blank
Date Analyzed:	05/18/93	05/18/93

Analyte	MRL		
Dichlorodifluoromethane (Freon 12)	1	ND	ND
Chloromethane	1	ND	ND
Vinyl Chloride	0.5	ND	ND
Bromomethane	0.5	ND	ND
Chloroethane	0.5	ND	ND
Trichlorofluoromethane (Freon 11)	0.5	ND	ND
1,1-Dichloroethene	0.5	ND	ND
Trichlorotrifluoroethane (Freon 113)	0.5	ND	ND
Methylene Chloride	1	ND	ND
trans-1,2-Dichloroethene	0.5	ND	ND
cis-1,2-Dichloroethene	0.5	ND	ND
1,1-Dichloroethane	0.5	ND	ND
Chloroform	0.5	ND	ND
1,1,1-Trichloroethane (TCA)	0.5	ND	ND
Carbon Tetrachloride	0.5	ND	ND
1,2-Dichloroethane	0.5	ND	ND
Trichloroethene (TCE)	0.5	ND	ND
1,2-Dichloropropane	0.5	ND	ND
Bromodichloromethane	0.5	ND	ND
2-Chloroethyl Vinyl Ether	5	ND	ND
trans-1,3-Dichloropropene	0.5	ND	ND
cis-1,3-Dichloropropene	0.5	ND	ND
1,1,2-Trichloroethane	0.5	ND	ND
Tetrachloroethene (PCE)	0.5	ND	ND
Dibromochloromethane	0.5	ND	ND
Chlorobenzene	0.5	ND	ND
Bromoform	0.5	ND	ND
1,1,2,2-Tetrachloroethane	0.5	ND	ND
1,3-Dichlorobenzene	1	ND	ND
1,4-Dichlorobenzene	1	ND	ND
1,2-Dichlorobenzene	1	ND	ND

MRL Method Reporting Limit
ND None Detected at or above the method reporting limit

Approved by: Kevin Murphy Date: May 27, 1993

1921 Ringwood Avenue • San Jose, California 95131 • Telephone 408/437-2400 • Fax 408/437-0356

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON Associates	**Date Received:**	05/13/93
Project:	EMCON Project No. 0G70-007.01	**Service Request No.:**	SJ93-0665
	ARCO Facility No. 601	**Sample Matrix:**	Water

Continuing Calibration Summary
Inorganics
EPA Method 418.1
mg/L

True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
40.	41.1	103.	90-110

Approved by: _____ Date: May 27, 1993

1921 Ringwood Avenue • San Jose, California 95131 • Telephone 408/437-2400 • Fax 408/437-0356

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON Associates	**Date Received:**	05/13/93
Project:	EMCON Project No.0G70-007.01	**Service Request No.:**	SJ93-0665
	ARCO Facility No. 601	**Sample Matrix:**	Water

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

Spike Level	Sample Result	Spike Result MS	Spike Result DMS	Percent Recovery MS	Percent Recovery DMS	CAS Acceptance Criteria
4.	120.	152.	142.	NA	NA	56-151

NA Not Applicable because of the sample matrix. Accuracy of spike value is reduced since the sample concentration was greater than 30 times the amount spiked.

Approved by: Kevin Murphy Date: May 27, 1993

1921 Ringwood Avenue • San Jose, California 95131 • Telephone 408/437-2400 • Fax 408/437 356

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON Associates
Project: EMCON Project No. 0G70-007.01
ARCO Facility No. 601

Date Received: 05/13/93
Service Request No.: SJ93-0665
Sample Matrix: Water

Initial Calibration Verification
Total Petroleum Hydrocarbons as Diesel
EPA Methods 3510/DHS LUFT Method
mg/L (ppm)

Date Analyzed: 05/22/93

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
TPH as Diesel	500.	511.	102.	90-110

TPH Total Petroleum Hydrocarbons

Approved by: Kelly A Murphy Date: May 27, 1993

1921 Ringwood Avenue • San Jose, California 95131 • Telephone 408/437-2400 • Fax 408/437 056

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON Associates
Project: EMCON Project No. 0G70-007.01
ARCO Facility No. 601

Date Received: 05/13/93
Service Request No.: SJ93-0665
Sample Matrix: Water

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

Sample Name	Date Analyzed	Percent Recovery *p*-Terphenyl
MW-8 (10)	05/21/93	93.
MS	05/21/93	100.
DMS	05/21/93	90.
Method Blank	05/21/93	87.
	CAS Acceptance Criteria	46-133

Approved by: Keenan Murphy Date: May 27, 1993

1921 Ringwood Avenue • San Jose, California 95131 • Telephone 408/437-2400 • Fax 408/437 356

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON Associates
Project: EMCON Project No. 0G70-007.01
ARCO Facility No. 601

Date Received: 05/13/93
Service Request No.: SJ93-0665
Sample Matrix: Water

Matrix Spike/Duplicate Matrix Spike Summary
Total Petroleum Hydrocarbons as Diesel
EPA Method 3510/DHS LUFT Method
µg/L (ppb)

Date Analyzed: 05/22/93

Analyte	Spike Level	Sample Result	Spike Result MS	Spike Result DMS	Percent Recovery MS	Percent Recovery DMS	Acceptance Criteria
Diesel	4,000.	ND	4,580.	4,210.	114.	105.	61-121

ND None Detected at or above the method reporting limit

Approved by: _____ Date: May 23/1993

1921 Ringwood Avenue • San Jose, California 95131 • Telephone 408/437-2400 • Fax 408/437 056

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON Associates
Project: EMCON Project No. 0G70-007.01
ARCO Facility No. 601

Date Received: 05/13/93
Service Request No.: SJ93-0665

Initial Calibration Verification
BTEX and TPH as Gasoline
EPA Methods 5030/8020/DHS LUFT Method
µg/L (ppb)

Date Analyzed: 05/21/93

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
Benzene	25.	23.1	92.	85-115
Toluene	25.	24.4	97.	85-115
Ethylbenzene	25.	23.4	94.	85-115
Total Xylenes	75.	70.9	94.	85-115
TPH as Gasoline	250.	241.	96.	90-110

TPH Total Petroleum Hydrocarbons

Approved by: Kenneth Murphy Date: May 27, 1993

1921 Ringwood Avenue • San Jose, California 95131 • Telephone 408/437-2400 • Fax 408/437 356

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON Associates	**Date Received:**	05/13/93
Project:	EMCON Project No. 0G70-007.01	**Service Request No.:**	SJ93-0665
	ARCO Facility No. 601	**Sample Matrix:**	Water

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

Sample Name	Date Analyzed	Percent Recovery α,α,α-Trifluorotoluene
MW-2 (12)	05/21/93	96.
MW-4 (8.5)	05/21/93	95.
MW-6 (8.5)	05/21/93	100.
MW-7 (9)	05/21/93	89.
MW-8 (10)	05/21/93	95.
MW-11 (10)	05/21/93	93.
MW-12 (11)	05/21/93	94.
MW-13 (13)	05/21/93	87.
MW-14 (13)	05/21/93	85.
MW-15 (10)	05/21/93	85.
FB-1	05/21/93	85.
MW-12 (11) MS	05/21/93	100.
MW-12 (11) DMS	05/21/93	96.
Method Blank	05/21/93	91.
	CAS Acceptance Criteria	70-130

TPH Total Petroleum Hydrocarbons

Approved by: Kevin Murphy Date: May 27, 1993

1921 Ringwood Avenue • San Jose, California 95131 • Telephone 408/437-2400 • Fax 408/437-356

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON Associates	**Date Received:**	05/13/93
Project:	EMCON Project No. 0G70-007.01	**Service Request No.:**	SJ93-0665
	ARCO Facility No. 601	**Sample Matrix:**	Water

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

Sample Name: MW-12 (11)
Date Analyzed: 05/21/93

			Spike Result		Percent Recovery		CAS Acceptance
Analyte	Spike Level	Sample Result	MS	DMS	MS	DMS	Criteria
TPH as Gasoline	250.	ND	239.	238.	96.	95.	76-130

TPH Total Petroleum Hydrocarbons
ND None Detected at or above the method reporting limit

Approved by: Kenneth Murphy Date: May 27, 1993

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COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON Associates
Project: EMCON Project No. 0G70-007.01
ARCO Facility No. 601

Date Received: 05/13/93
Service Request No.: SJ93-0665

Initial Calibration Verification
Halogenated Volatile Organic Compounds
EPA Methods 5030/601
Nanograms

Date Analyzed: 05/18/93

Analyte	True Value	Result	Percent Recovery	EPA Percent Recovery Acceptance Criteria
Chloromethane	50	41.	82.	D-193
Vinyl Chloride	50	55.	110.	28-163
Bromomethane	50	42.	84.	D-144
Chloroethane	50	58.	116.	46-137
Trichlorofluoromethane (Freon 11)	50	43.	86.	21-156
1,1-Dichloroethene	50	37.	74.	28-167
Methylene Chloride	50	56.	112.	25-162
trans-1,2-Dichloroethene	50	44.	88.	38-155
1,1-Dichloroethane	50	45.	90.	47-132
Chloroform	50	38.	76.	49-133
1,1,1-Trichloroethane (TCA)	50	43.	86.	41-138
Carbon Tetrachloride	50	45.	90.	43-143
1,2-Dichloroethane	50	45.	90.	51-147
Trichloroethene (TCE)	50	42.	84.	35-146
1,2-Dichloropropane	50	45.	90.	44-156
Bromodichloromethane	50	45.	90.	42-172
trans-1,3-Dichloropropene	50	55.	110.	22-178
cis-1,3-Dichloropropene	50	48.	96.	22-178
1,1,2-Trichloroethane	50	44.	88.	39-136
Tetrachloroethene (PCE)	50	45.	90.	26-162
Dibromochloromethane	50	46.	92.	24-191
Chlorobenzene	50	53.	106.	38-150
Bromoform	50	33.	66.	13-159
1,1,2,2-Tetrachloroethane	50	37.	74.	8-184
1,3-Dichlorobenzene	50	44.	88.	7-187
1,4-Dichlorobenzene	50	49.	98.	42-143
1,2-Dichlorobenzene	50	48.	96.	D-208

D Detected

Approved by: _____ Date: May 27, 1993

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COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON Associates	**Date Received:**	05/13/93
Project:	EMCON Project No. 0G70-007.01	**Service Request No.:**	SJ93-0665
	ARCO Facility No. 601	**Sample Matrix:**	Water

Surrogate Recovery Summary
Halogenated Volatile Organic Compounds
EPA Methods 5030/601

Sample Name	Date Analyzed	**Percent Recovery** 4-Bromofluorobenzene
MW-8 (10)	05/18/93	101.
MW-8 (10) MS	05/18/93	125.
MW-8 (10) MS	05/18/93	128.
Method Blank	05/18/93	78.
	CAS Acceptance Criteria	70-130

Approved by: Kenneth Murphy Date: May 27, 1993

1921 Ringwood Avenue • San Jose, California 95131 • Telephone 408/437-2400 • Fax 408/437-7356

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

EMCON Associates
EMCON Project No. 0G70-007.01
ARCO Facility No. 601

Date Received: 05/13/93
Service Request No.: SJ93-0665
Sample Matrix: Water

Matrix Spike/Duplicate Matrix Spike Summary
Halogenated Volatile Organic Compounds
EPA Methods 5030/601
µg/L (ppb)

ne: MW-8 (10)
d: 05/18/93

Percent Recovery

	Spike Level	Sample Result	Spike Result MS	Spike Result DMS	MS	DMS	EPA Acceptance Criteria
oethene	5.0	ND	4.24	4.57	85.	91.	28-167
ene	5.0	ND	4.30	4.40	86.	88.	35-146
hene	5.0	ND	4.57	4.72	91.	94.	26-162

e Detected at or above the method reporting limit

Date: May 27, 1993

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1 of 2

ARCO Products Company
Division of AtlanticRichfieldCompany

Task Order No. EMC-93-5

Chain of Custody

ARCO Facility no. 601	City (Facility) San Leandro	Project manager (Consultant) JIM BUTERA	Laboratory name CAS
ARCO engineer Kyle Christie	Telephone no. (ARCO) 571-2434	Telephone no. (Consultant) 453-0719	Fax no. (Consultant) 453-0452
Consultant name EMCON ASSOCIATES	Address (Consultant) 1935 JUNCTION Avenue San Jose		Contract number 07017

Method of shipment: SAMPLER WILL DELIVER

Special detection Limit/reporting: LOWEST POSSIBLE

Special QA/QC: AS NORMAL

Remarks: 2-40 ml HCl VOA's

Sample I.D	Lab no.	Container no.	Matrix: Soil	Matrix: Water	Matrix: Other	Preservation: Ice	Preservation: Acid	Sampling date	Sampling time	BTEX 602/EPA 8020	BTEX/TPH GAS EPA M602/8020/8015	TPH Modified 8015 Gas ☐ Diesel ☐	Oil and Grease 413.1 ☐ 413.2 ☐	TPH EPA 418.1/SM503E	EPA 601/8010	EPA 624/8240	EPA 625/8270	TCLP Metals ☐ VOA ☐ Sem. ☐ VOA ☐	CAM Metals EPA 6010/7000 TTLC ☐ STLC ☐	Lead Org./DHS ☐ Lead EPA 7420/7421 ☐
MW-1		2				NO SAMPLES TAKEN, PRODUCT IN WELL														
MW-2 (17)	1-2	2				X	HCl	5-13-93	1437		X									
MW-3		2									NO SAMPLES TAKEN, PRODUCT IN WELL									
MW-4 (8.5)	3-4	2							1256		X									
MW-5		2									NO SAMPLES TAKEN, PRODUCT CAME INTO WELL WHILE PURGING									
MW-6 (8.5)	5-6	2							1358		X									
MW-7 (9)	7-8	2							1227		X									
MW-8 (10)	9-10	2							1420		X									
MW-9		2									NO SAMPLES TAKEN, WELLS ARE NOT ON THE REQUEST									
MW-10		2																		
MW-11 (10)	11-12	2				X	X	5-13-93	1324		X									
MW-12 (11)	13-14	2							1404											
MW-13 (13)	15-16	2							1329											
MW-14 (13)	17-18	2							1250											
MW-15 (13)	19-20	2							1319											
TB-1	21-22	2							1254											

Condition of sample: OK

Temperature received: Cool

Relinquished by sampler	Date 5-13-93	Time 1615	Received by
Relinquished by	Date	Time	Received by
Relinquished by	Date	Time	Received by laboratory — Date 5-13-93 — Time 16.20

Lab number: SJ-93-0665

Turnaround time

Priority Rush 1 Business Day	
Rush 2 Business Days	
Expedited 5 Business Days	
Standard 10 Business Days	X

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

ARCO Products Company
Division of AtlanticRichfieldCompany

Task Order No. EMC-93-5

Chain of Custody

ARCO Facility no. 601	City (Facility) San Leandro	Project manager (Consultant) Jim Butera	Laboratory name: CAS
ARCO engineer Kyle Christie	Telephone no. (ARCO) 571-2434	Telephone no. (Consultant) 453-0719 / Fax no (Consultant) 453-0452	Contract number: 07077
Consultant name EMCON Associates		Address (Consultant) 1938 Junction Avenue San Jose	

Sample I.D.	Lab no.	Container no.	Matrix: Soil	Matrix: Water	Matrix: Other	Preservation: Ice	Preservation: Acid	Sampling date	Sampling time	BTEX 602/EPA 8020	BTEX/TPH EPA M602/8020/8015	TPH Modified 8015 Gas ☐ Diesel ☐	Oil and Grease 413.1 ☐ 413.2 ☐ (418.1)	TPH EPA 418.1/SM503E	EPA 601/8010	EPA 624/8240	EPA 625/8270	TCLP Metals ☐ VOA ☐ Semi VOA ☐	CAM Metals EPA 6010/7000 TTLC ☐ STLC ☐	Lead Org./DHS ☐ Lead EPA 7420/7421 ☐	Total Metals	Cd, Cr, Pb, Zn, Ni
MW-8(10)	23-26	4		X		X	HCl	5-13-93	1420			418.1	X		X					[illegible]		
MW-8(10)	27	1		X		X	HNO_3	↓	1420											X	X	
MW-8(10)	21-28	4		X		X	NP	↓	1420			X					X					

Method of shipment: Sampler will deliver

Special detection Limit/reporting: Lowest Possible

Special QA/QC: As Normal

Remarks:
2-40 ml HCl VOA's
2-Liter HCl Glass
4-Liter NP Glass
1-500 ml HNO_3 plastic

Lab number: SJ93-0665

Turnaround time:
- Priority Rush 1 Business Day [ ]
- Rush 2 Business Days [ ]
- Expedited 5 Business Days [ ]
- Standard 10 Business Days [X]

Condition of sample: Ok			Temperature received: Cool		
Relinquished by sampler: [signature]	Date 5-13-93	Time 1615	Received by: [signature]	Date 5-13-93	Time 16:20
Relinquished by	Date	Time	Received by		
Relinquished by	Date	Time	Received by laboratory	Date	Time

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

ISR 2981 - 8(10), metals

Columbia Analytical Services, Inc.

June 1, 1993

Service Request No.: K932732C

Vivian Hsiong
EMCON Associates
1921 Ringwood Avenue
San Jose, CA 95131-1721

Re: **ARCO 601-San Leandro/Task Order #EMC-93-5/SJ930665**

Dear Vivian:

Enclosed are the results of the sample submitted to our laboratory on May 14, 1993. Preliminary results were transmitted via facsimile on May 27, 1993. For your reference, these analyses have been assigned our service request number K932732C.

All analyses were performed consistent with our laboratory's quality assurance program. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the samples analyzed.

Please call if you have any questions. My extension is 239.

Respectfully submitted,

Columbia Analytical Services, Inc.

Joe Wiegel
Project Chemist

JW/sam

1317 South 13th Avenue • P.O. Box 479 • Kelso, Washington 98626 • Telephone 206/577-7222 • Fax 206/636-10

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON Associates
Project: ARCO 601/San Leandro /TO# EMC-93-5
Matrix: Water

Date Received: 5/17/93
Work Order No.: K932732C

Total Metals
µg/L (ppb)

		Sample Name:	MW-8	Method Blank
		Lab Code:	K273201	K2732MB
Analyte	EPA Method	MRL		
Cadmium	6010	3	ND	ND
Chromium	6010	5	17	ND
Lead	7421	2	10	ND
Nickel	6010	20	31	ND
Zinc	6010	10	49	ND

Approved: _____

Date: 6/2/93

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON Associates	**Date Received:**	05/14/93
Project:	ARCO 601-San Leandro/TO# EMC-93-5	**Date Extracted:**	05/17/93
Sample Matrix:	Water	**Date Analyzed:**	05/24/93
		Work Order No.:	K932732C

Base Neutral/Acid Semivolatile Organic Compounds
EPA Methods 3510/8270
µg/L (ppb)

Sample Name: MW-8
Lab Code: K2732-1

Base Neutral Analyte	MRL	Result	Base Neutral Analyte	MRL	Result
N-Nitrosodimethylamine	25	ND	2,6-Dinitrotoluene	10	ND
Aniline	25	ND	Diethyl Phthalate	10	ND
Bis(2-chloroethyl) Ether	10	ND	4-Chlorophenyl Phenyl Ether	10	ND
1,2-Dichlorobenzene	10	ND	Fluorene	10	ND
1,3-Dichlorobenzene	10	ND	4-Nitroaniline	25	ND
1,4-Dichlorobenzene	10	ND	N-Nitrosodiphenylamine	10	ND
Bis(2-chloroisopropyl) Ether	10	ND	4-Bromophenyl Phenyl Ether	10	ND
N-Nitrosodi-n-propylamine	10	ND	Hexachlorobenzene	10	ND
Hexachloroethane	10	ND	Phenanthrene	10	ND
Nitrobenzene	10	ND	Anthracene	10	ND
Isophorone	10	ND	Di-n-butyl Phthalate	10	ND
Bis(2-chloroethoxy)methane	10	ND	Fluoranthene	10	ND
1,2,4-Trichlorobenzene	10	ND	Pyrene	10	ND
Naphthalene	10	97	Butylbenzyl Phthalate	10	ND
4-Chloroaniline	10	ND	3,3'-Dichlorobenzidine	25	ND
Hexachlorobutadiene	10	ND	Benz(a)anthracene	10	ND
2-Methylnaphthalene	10	20	Bis(2-ethylhexyl) Phthalate	10	ND
Hexachlorocyclopentadiene	10	ND	Chrysene	10	ND
2-Chloronaphthalene	10	ND	Di-n-octyl Phthalate	10	ND
2-Nitroaniline	25	ND	Benzo(b)fluoranthene	10	ND
Dimethyl Phthalate	10	ND	Benzo(k)fluoranthene	10	ND
Acenaphthylene	10	ND	Benzo(a)pyrene	10	ND
3-Nitroaniline	25	ND	Indeno(1,2,3-c,d)pyrene	10	ND
Acenaphthene	10	ND	Dibenz(a,h)anthracene	10	ND
Dibenzofuran	10	ND	Benzo(g,h,i)perylene	10	ND
2,4-Dinitrotoluene	10	ND			

Acid Analyte	MRL	Result	Acid Analyte	MRL	Result
Phenol	10	ND	2,4-Dichlorophenol	10	ND
2-Chlorophenol	10	ND	4-Chloro-3-methylphenol	10	ND
Benzyl Alcohol	10	ND	2,4,6-Trichlorophenol	10	ND
2-Methylphenol	10	ND	2,4,5-Trichlorophenol	10	ND
3- and 4-Methylphenol♦	10	ND	2,4-Dinitrophenol	25	ND
2-Nitrophenol	10	ND	4-Nitrophenol	25	ND
2,4-Dimethylphenol	10	ND	2-Methyl-4,6-dinitrophenol	25	ND
Benzoic Acid	25	ND	Pentachlorophenol	25	ND

MRL Method Reporting Limit
ND None Detected at or above the method reporting limit
♦ Quantified as 4-methylphenol.

Approved by _____ Date 6/2/93

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON Associates	**Date Extracted:**	05/17/93
Project:	ARCO 601-San Leandro/TO# EMC-93-5	**Date Analyzed:**	05/24/93
Sample Matrix:	Water	**Work Order No.:**	K932732C

Base Neutral/Acid Semivolatile Organic Compounds
EPA Methods 3510/8270
µg/L (ppb)

Sample Name: Method Blank
Lab Code: K2732-MB

Base Neutral Analyte	MRL	Result	Base Neutral Analyte	MRL	Result
N-Nitrosodimethylamine	25	ND	2,6-Dinitrotoluene	10	ND
Aniline	25	ND	Diethyl Phthalate	10	ND
Bis(2-chloroethyl) Ether	10	ND	4-Chlorophenyl Phenyl Ether	10	ND
1,2-Dichlorobenzene	10	ND	Fluorene	10	ND
1,3-Dichlorobenzene	10	ND	4-Nitroaniline	25	ND
1,4-Dichlorobenzene	10	ND	N-Nitrosodiphenylamine	10	ND
Bis(2-chloroisopropyl) Ether	10	ND	4-Bromophenyl Phenyl Ether	10	ND
N-Nitrosodi-n-propylamine	10	ND	Hexachlorobenzene	10	ND
Hexachloroethane	10	ND	Phenanthrene	10	ND
Nitrobenzene	10	ND	Anthracene	10	ND
Isophorone	10	ND	Di-n-butyl Phthalate	10	ND
Bis(2-chloroethoxy)methane	10	ND	Fluoranthene	10	ND
1,2,4-Trichlorobenzene	10	ND	Pyrene	10	ND
Naphthalene	10	ND	Butylbenzyl Phthalate	10	ND
4-Chloroaniline	10	ND	3,3'-Dichlorobenzidine	25	ND
Hexachlorobutadiene	10	ND	Benz(a)anthracene	10	ND
2-Methylnaphthalene	10	ND	Bis(2-ethylhexyl) Phthalate	10	ND
Hexachlorocyclopentadiene	10	ND	Chrysene	10	ND
2-Chloronaphthalene	10	ND	Di-n-octyl Phthalate	10	ND
2-Nitroaniline	25	ND	Benzo(b)fluoranthene	10	ND
Dimethyl Phthalate	10	ND	Benzo(k)fluoranthene	10	ND
Acenaphthylene	10	ND	Benzo(a)pyrene	10	ND
3-Nitroaniline	25	ND	Indeno(1,2,3-c,d)pyrene	10	ND
Acenaphthene	10	ND	Dibenz(a,h)anthracene	10	ND
Dibenzofuran	10	ND	Benzo(g,h,i)perylene	10	ND
2,4-Dinitrotoluene	10	ND			

Acid Analyte	MRL	Result	Acid Analyte	MRL	Result
Phenol	10	ND	2,4-Dichlorophenol	10	ND
2-Chlorophenol	10	ND	4-Chloro-3-methylphenol	10	ND
Benzyl Alcohol	10	ND	2,4,6-Trichlorophenol	10	ND
2-Methylphenol	10	ND	2,4,5-Trichlorophenol	10	ND
3- and 4-Methylphenol♦	10	ND	2,4-Dinitrophenol	25	ND
2-Nitrophenol	10	ND	4-Nitrophenol	25	ND
2,4-Dimethylphenol	10	ND	2-Methyl-4,6-dinitrophenol	25	ND
Benzoic Acid	25	ND	Pentachlorophenol	25	ND

MRL Method Reporting Limit
ND None Detected at or above the method reporting limit
♦ Quantified as 4-methylphenol.

Approved by _____ Date 6/2/93

00004

APPENDIX A

LABORATORY QC RESULTS

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON Associates	**Date Received:**	5/17/93
Project:	ARCO 601/San Leandro /TO# EMC-93-5	**Work Order No.:**	K932732C
Matrix:	Water		

Matrix Spike/Duplicate Matrix Spike Summary
Total Metals
µg/L (ppb)

Sample Name: MW-8
Lab Code: K273201

Analyte	MRL	Spike Level	Sample Result	Spiked Sample Result	Duplicate Spiked Sample Result	Percent Recovery: Spiked Sample	Percent Recovery: Duplicate Spiked Sample	CAS Acceptance Criteria	Relative Percent Difference
Cadmium	3	50	ND	49	50	98	100	75-125	2
Chromium	5	200	17	216	218	100	100	75-125	<1
Lead	2	20	10	25	26	75	80	75-125	4
Nickel	20	500	31	542	533	102	100	75-125	2
Zinc	10	500	49	524	522	95	95	75-125	<1

MRL Method Reporting Limit
ND None Detected at or above the method reporting limit

METDMS.W1/03-13-92

Approved: _____ Date: 6/2/93

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON Associates	**Date Received:**	05/14/93
Project:	ARCO 601-San Leandro/TO# EMC-93-5	**Date Extracted:**	05/17/93
Sample Matrix:	Water	**Date Analyzed:**	05/24,26,27/93
		Work Order No.:	K932732C

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

Sample Name	Lab Code	Percent Recovery					
		2FP	PHL	TBP	NBZ	FBP	TPH
MW-8	K2732-1	[a]17	18	18	50	53	65
Method Blank	K2732-MB	47	42	70	72	60	79
Laboratory Control Sample	K2732-LCS	48	38	70	71	62	70
Batch QC	K2759-1MS	60	52	65	83	56	70
Batch QC	K2759-1DMS	61	52	65	83	53	74
EPA Acceptance Criteria		21-100	10-94	10-123	35-114	43-116	33-141

2FP 2-Fluorophenol
PHL Phenol-D_6
TBP 2,4,6-Tribromophenol
NBZ Nitrobenzene-D_5
FBP 2-Fluorobiphenyl
TPH Terphenyl-D_{14}

a Outside of acceptance limits because of matrix effects. The sample produced an emulsion during the preparation steps.

Approved by _____ Date 6/2/93

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON Associates	**Date Extracted:**	05/17/93
Project:	ARCO 601-San Leandro/TO# EMC-93-5	**Date Analyzed:**	05/27/93
Sample Matrix:	Water	**Work Order No.:**	K932732C

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

Sample Name: Batch QC
Lab Code: K2759-1

Analyte	Spike Level MS	Spike Level DMS	Sample Result	Spike Result MS	Spike Result DMS	Percent Recovery MS	Percent Recovery DMS	EPA Acceptance Criteria	Relative Percent Difference
Phenol	400	400	ND	200	190	50	48	12-89	4
2-Chlorophenol	400	400	ND	290	280	72	70	27-123	3
1,4-Dichlorobenzene	200	200	ND	150	120	75	60	36-97	22
N-Nitrosodi-n-propylamine	200	200	ND	140	110	70	55	41-116	24
1,2,4-Trichlorobenzene	200	200	ND	130	110	65	55	39-98	17
4-Chloro-3-methylphenol	400	400	ND	290	280	72	70	23-97	3
Acenaphthene	200	200	ND	160	140	80	70	46-118	13
4-Nitrophenol	400	400	ND	220	210	55	52	10-80	6
2,4-Dinitrotoluene	200	200	ND	180	160	90	80	24-96	12
Pentachlorophenol	400	400	ND	100	150	25	38	9-103	41
Pyrene	200	200	ND	170	160	85	80	26-127	6

ND None Detected at or above the method reporting limit

Approved by _____ Date 6/2/93

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON Associates	**Date Extracted:**	05/17/93
Project:	ARCO 601-San Leandro/TO# EMC-93-5	**Date Analyzed:**	05/24/93
LCS Matrix:	Water	**Work Order No.:**	K932732C

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

Analyte	True Value	Result	Percent Recovery	EPA Percent Recovery Acceptance Criteria
Phenol	100	36	36	5-112
2-Chlorophenol	100	75	75	23-134
1,4-Dichlorobenzene	100	63	63	20-124
N-Nitrosodi-n-propylamine	100	66	66	D-230
1,2,4-Trichlorobenzene	100	55	55	44-142
4-Chloro-3-methylphenol	100	70	70	22-147
Acenaphthene	100	69	69	47-145
4-Nitrophenol	100	24	24	D-132
2,4-Dinitrotoluene	100	63	63	39-139
Pentachlorophenol	100	22	22	14-176
Pyrene	100	72	72	52-115

D Detected; result must be greater than zero.

Approved by _____ Date 6/2/93

APPENDIX B

CHAIN OF CUSTODY INFORMATION

ARCO Products Company
Division of AtlanticRichfieldCompany

Task Order No. EMC-93-5

Chain of Custody

ARCO Facility no.	601	City (Facility)	SAN Leandro	Project manager (Consultant)	JIM BUTERA
ARCO engineer	Kyle Christie	Telephone no. (ARCO)	571-2434	Telephone no. (Consultant)	453-0719
Fax no. (Consultant)	453-0452				
Consultant name	EMCON ASSOCIATES	Address (Consultant)	1938 JUNCTION Avenue San Jose		

Laboratory name: CAS

Contract number:

Sample I.D.	Lab no.	Container no.	Matrix: Soil	Matrix: Water	Matrix: Other	Preservation: Ice	Preservation: Acid	Sampling date	Sampling time	BTEX 602/EPA 8020	BTEX/TPH EPA M602/8020/8015	TPH Modified 8015 Gas ☐ Diesel ☑	Oil and Grease 413.1 ☐ 413.2 ☐ (418.1)	TPH EPA 418.1/SM503E	EPA 601/8010	EPA 624/8240	EPA 625/8270	TCLP Metals ☐ VOA ☐ Semi VOA ☐	CAM Metals EPA 6010/7000 TTLC ☐ STLC ☐	Lead Org./DHS ☐ Lead EPA 7420/7421 ☑	TOTAL ICP METALS 6010	Cd, Cr, Pb, Zn, Ni
MW8(10)		4		X		X	HCl	5-13-93	1420			8010	X		X					[illegible]		
MW8(10)		1		X		X	HNO3	↓	1420											X	X	
MW8(10)		4		X		X	NP	↓	1420			X					X					

Method of shipment: Sampler will deliver

Special detection Limit/reporting: Lowest Possible

Special QA/QC: As Normal

Remarks:
2-40 ml HCl VOA's
2-Liter HCl/Glass
4-Liter NP Glass
1-500 ml HNO3 plastic

Lab number: SJ93-0665

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

Condition of sample: Ok			Temperature received: Cool		
Relinquished by sampler: [signature]	Date: 5-13-93	Time: 1615	Received by: [signature]	Date: 5-13-93	Time: 16:20
Relinquished by	Date	Time	Received by		
Relinquished by	Date	Time	Received by laboratory: Ruth Amsun	Date: 5-14-93	Time: 0930

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

ISR 2981 - 8270, metals

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: 0670-007-01 SAMPLE ID: MW-1

PURGED BY: J. Williams CLIENT NAME: ARCO 601

SAMPLED BY: J. Williams LOCATION: 712 Lewelling Blvd 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): NR VOLUME IN CASING (gal.): 1.97

DEPTH TO WATER (feet): 8.08 CALCULATED PURGE (gal.): 5.91

DEPTH OF WELL (feet): 11.1 ACTUAL PURGE VOL. (gal.): NA

DATE PURGED: 05-13-93 Start (2400 Hr) NA End (2400 Hr) NA

DATE SAMPLED: 05-13-93 Start (2400 Hr) NA End (2400 Hr) NA

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
			NO READINGS			

D. O. (ppm): NR ODOR: ___ COLOR (COBALT 0 - 100): NR TURBIDITY (NTU 0 - 200): NR

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): ___

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: ___ LOCK #: 0464

REMARKS: [redacted] Product .01

Meter Calibration: Date: 5-13-93 Time: 1204 Meter Serial #: 8912 Temperature °F: ___

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

Location of previous calibration: ___

Signature: [signature] Reviewed By: JB Page 1 of 13

Rev. 2, 5/91

WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 0670-007.01 | SAMPLE ID: MW-2(12)

PURGED BY: K REICHELDERFER | CLIENT NAME: ARCO 601

SAMPLED BY: ↓ | LOCATION: 712 LEWELLING BL SAN LEANDRO, CA

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

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

CASING ELEVATION (feet/MSL): NR | VOLUME IN CASING (gal.): 3.44

DEPTH TO WATER (feet): 7.03 | CALCULATED PURGE (gal.): 10.33

DEPTH OF WELL (feet): 12.3 | ACTUAL PURGE VOL. (gal.): 10.50

DATE PURGED: 5-13-93 | Start (2400 Hr) 1421 | End (2400 Hr) 1432

DATE SAMPLED: 5-13-93 | Start (2400 Hr) 1437 | End (2400 Hr) 1439

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1425	3.50	6.83	1606	68.9	GREY	MODERATE
1429	7.00	6.84	1642	68.1	↓	LIGHT
1432	10.50	6.82	1645	67.5	↓	↓

D. O. (ppm): NR | ODOR: STRONG | COLOR: NR (COBALT 0 - 100) | TURBIDITY: NR (NTU 0 - 200)

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): NR

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

WELL INTEGRITY: OK* | LOCK #: 3259

REMARKS: * • WATER IN BOX, BELOW LWC
• ONE ~~THREADED~~ BOLT HOLE (IN BOX) IS CRACKED OFF (ONLY 1 BOLT
• REPLACED LWC
• VERY WINDY WHILE SAMPLING

Meter Calibration: Date: 5-13-93 | Time: 1155 | Meter Serial #: 9203 | Temperature °F: ___

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

Location of previous calibration: MW-15

Signature: Kevin Reichelderfer | Reviewed By: ___ | Page 2 of 13

Rev. 2, 5/91

WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 0670-007.01 SAMPLE ID: MW-3

PURGED BY: Williams CLIENT NAME: ARCO 601

SAMPLED BY: NA LOCATION: SAN LEANDRO

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

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

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

DEPTH TO WATER (feet): / CALCULATED PURGE (gal.): /

DEPTH OF WELL (feet): ___ ACTUAL PURGE VOL. (gal.): /

DATE PURGED: 5-13-93 Start (2400 Hr) NA/ End (2400 Hr) NA/

DATE SAMPLED: NA Start (2400 Hr) ___ End (2400 Hr) /

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
Well contained floating product and was not sampled						

D. O. (ppm): NA ODOR: NA COLOR (COBALT 0 - 100): NA TURBIDITY (NTU 0 - 200): NA

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): NA

PURGING EQUIPMENT

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

SAMPLING EQUIPMENT

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

WELL INTEGRITY: OK LOCK #: 3259

REMARKS: ___

Meter Calibration: Date: ___ Time: ___ Meter Serial #: ___ Temperature °F: ___

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

Location of previous calibration: ___

Signature: [signature] for J-N Reviewed By: JB

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91
1.96

EMCON ASSOCIATES

PROJECT NO: 0670-007-01 SAMPLE ID: MW-4
PURGED BY: J WILLIAMS CLIENT NAME: ARCO 601
SAMPLED BY: J WILLIAMS LOCATION: 712 LEWELLING BLVD 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): NR VOLUME IN CASING (gal.): .96
DEPTH TO WATER (feet): 7.02 CALCULATED PURGE (gal.): 2.90
DEPTH OF WELL (feet): 8.5 ACTUAL PURGE VOL. (gal.): 1

DATE PURGED: 05-13-93 Start (2400 Hr) 1240 End (2400 Hr) 1250
DATE SAMPLED: 05-13-93 Start (2400 Hr) 1255 End (2400 Hr) 1256

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1249	1	7.22	1453	65.3	GREY	HEAVY
	(DRIED AT ONE GALLON)					
1259	Recharge	7.12	1522	63.7	GREY	HEAVY

D. O. (ppm): NR ODOR: STRONG NR (COBALT 0 - 100) NR (NTU 0 - 200)

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): NA

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: ___		Other: ___	

WELL INTEGRITY: OK LOCK #: ___

REMARKS: ___

Meter Calibration: Date: 5/13/93 Time: 1204 Meter Serial #: ___ Temperature °F: ___
(EC 1000 ___ / ___) (DI ___) (pH 7 ___ / ___) (pH 10 ___ / ___) (pH 4 ___ / ___)
Location of previous calibration: MW-7

Signature: Joseph B. Williams Reviewed By: JB Page 4 of 13

Rev. 2 5/91

WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 0670-007.01 SAMPLE ID: MW-5(10)

PURGED BY: K REICHELDERFER CLIENT NAME: ARCO 601

SAMPLED BY: ↓ LOCATION: 712 LEWELLING BL SAN LEANDRO, C

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

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

CASING ELEVATION (feet/MSL):	NR	VOLUME IN CASING (gal.):	2.21
DEPTH TO WATER (feet):	6.71	CALCULATED PURGE (gal.):	6.64
DEPTH OF WELL (feet):	10.1	ACTUAL PURGE VOL. (gal.):	NA

DATE PURGED: 5-13-93 Start (2400 Hr) 1459 End (2400 Hr) NA

DATE SAMPLED: 5-13-93 Start (2400 Hr) NA End (2400 Hr) NA

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
	2.50					

~~NO SAMPLES TAKEN - PRODUCT CAME INTO WELL WHILE PURGING~~

D. O. (ppm): NR ODOR: STRONG COLOR: NR (COBALT 0 - 100) TURBIDITY: NR (NTU 0 - 200)

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): NR

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

WELL INTEGRITY: OK LOCK #: 3259

REMARKS: • STRONG ODOR
• SHEEN OF PRODUCT CAME IN DURING PURGING - NO SAMPLES TAKEN

Meter Calibration: Date: 5-13-93 Time: 1155 Meter Serial #: 9203 Temperature °F: ___

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

Location of previous calibration: MW-15

Signature: Kevin Reichelderfer Reviewed By: JP Page 5 of 13

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: 0670-007-01 SAMPLE ID: MW-6

PURGED BY: J Williams CLIENT NAME: ARCO 601

SAMPLED BY: J Williams LOCATION: 712 Lewelling Blvd 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): NR VOLUME IN CASING (gal.): .56

DEPTH TO WATER (feet): 7.73 CALCULATED PURGE (gal.): 1.70

DEPTH OF WELL (feet): 8.6 ACTUAL PURGE VOL. (gal.): 56

DATE PURGED: 05-13-93 Start (2400 Hr) 1340 End (2400 Hr) 1345

DATE SAMPLED: 05-13 93 Start (2400 Hr) 1254 End (2400 Hr) 1358

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1345	.56	6.90	1345	69.3	GREY	HEAVY
	DRIED AFTER ONE CASING					
	Recharge	6.90	1347	67.9	GREY	HEAVY

D. O. (ppm): NR ODOR: STRONG NR (COBALT 0 - 100) NR (NTU 0 - 200)

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): NR

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: OK LOCK #: ___

REMARKS: ___

Meter Calibration: Date: 5-13-93 Time: 1200 Meter Serial #: 8912 Temperature °F: ___

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

Location of previous calibration: MW-7

Signature: [signature] Reviewed By: [signature] Page 6 of 18

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91 1.96

EMCON ASSOCIATES

PROJECT NO: 0670-007-01 SAMPLE ID: MW-7

PURGED BY: J Williams CLIENT NAME: ARCO 601

SAMPLED BY: J Williams LOCATION: 712 Lewelling Blvd 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): NR VOLUME IN CASING (gal.): .67

DEPTH TO WATER (feet): 8.56 CALCULATED PURGE (gal.): 2.0

DEPTH OF WELL (feet): 9.6 ACTUAL PURGE VOL. (gal.): .67

DATE PURGED: 05-13-93 Start (2400 Hr) 1216 End (2400 Hr) 1227

DATE SAMPLED: 05-13-93 Start (2400 Hr) 1227 End (2400 Hr) 1234

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1219	.67	7.00	1798	69.6	BROWN	HEAVY
	(DRIED ONE READING)					

D. O. (ppm): NR ODOR: None NR (COBALT 0 - 100) NR (NTU 0 - 200)

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): NONE

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: ___		Other: ___	

WELL INTEGRITY: OK LOCK #: ___

REMARKS: WELL DRIED AFTER ONE READING Time 1222

NO Recharge Reading in this well

Meter Calibration: Date: 5-13-93 Time: 1204 Meter Serial #: 8912 Temperature °F: 67.5

(EC 1000 1123 / 1000) (DI ___) (pH 7 7.01 / 7.00) (pH 10 10.14 / 10.00) (pH 4 3.96 / ___)

Location of previous calibration: ___

Signature: Joseph B. Williams Reviewed By: JB Page 67 of 13

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: 0670-007-01 SAMPLE ID: MW-3

PURGED BY: J Williams CLIENT NAME: ARCO 601

SAMPLED BY: J Williams LOCATION: 712 Lewelling Blvd 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): NR VOLUME IN CASING (gal.): 2.13

DEPTH TO WATER (feet): 6.93 CALCULATED PURGE (gal.): 6.40

DEPTH OF WELL (feet): 10.2 ACTUAL PURGE VOL. (gal.): 4

DATE PURGED: 05-13-93 Start (2400 Hr) 1408 End (2400 Hr) 1414

DATE SAMPLED: 05-13-93 Start (2400 Hr) 1414 End (2400 Hr) 1420

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1412	2.5	7.02	1414	65.9	GREY	HEAVY
	DRIED After 4 GALLON Time = 1414					
1422	Recharge	7.07	1425	65.4	GREY	HEAVY

D. O. (ppm): NR ODOR: STRONG NR (COBALT 0 - 100) NR (NTU 0 - 200)

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): 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: OK LOCK #: ___

REMARKS: ___

Meter Calibration: Date: 5-13-93 Time: 1204 Meter Serial #: 8912 Temperature °F: ___

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

Location of previous calibration: MW-5

Signature: Joseph B. Williams Reviewed By: JB Page 8 of 12

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: 0670-007-01 SAMPLE ID: MW-11

PURGED BY: J. Williams CLIENT NAME: ARCO 601

SAMPLED BY: J. Williams LOCATION: 712 Lewelling Blvd 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): NR VOLUME IN CASING (gal.): 2.52

DEPTH TO WATER (feet): 8.04 CALCULATED PURGE (gal.): 7.56

DEPTH OF WELL (feet): 11.9 ACTUAL PURGE VOL. (gal.): 8

DATE PURGED: 05-13-93 Start (2400 Hr) 1310 End (2400 Hr) 1320

DATE SAMPLED: 05-13-93 Start (2400 Hr) 1323 End (2400 Hr) 1324

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1313	3	6.94	1636	64.6	GREY	HEAVY
1317	6	6.95	1548	65.3	"	"
1326	8	6.95	1546	65.5	"	"

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

COLOR (COBALT 0 - 100): NR TURBIDITY (NTU 0 - 200): NR

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): NR

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: OK LOCK #: ___

REMARKS: ___

Meter Calibration: Date: 5-13-93 Time: 1200 Meter Serial #: 8912 Temperature °F: ___

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

Location of previous calibration: ___

Signature: Joseph B. Williams Reviewed By: JB

Rev. 2, 5/91

WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 0670-007.01 | SAMPLE ID: MW-12(11)

PURGED BY: K REICHELDERFER | CLIENT NAME: ARCO 601

SAMPLED BY: ↓ | LOCATION: 712 LEWELLING BLV SAN LEANDRO, CA

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

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

CASING ELEVATION (feet/MSL):	NR	VOLUME IN CASING (gal.):	1.93
DEPTH TO WATER (feet):	8.65	CALCULATED PURGE (gal.):	5.78
DEPTH OF WELL (feet):	11.6	ACTUAL PURGE VOL. (gal.):	6.00

DATE PURGED: 5-13-93 | Start (2400 Hr) 1348 | End (2400 Hr) 1359

DATE SAMPLED: 5-13-93 | Start (2400 Hr) 1404 | End (2400 Hr) 1406

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1352	2.00	7.01	1680	70.0	CLOUDY	LIGHT
1356	4.00	7.02	1695	69.2	↓	↓
1359	6.00	7.03	1640	68.4	↓	↓

D. O. (ppm): NR | ODOR: NONE | COLOR: NR (COBALT 0 - 100) | TURBIDITY: NR (NTU 0 - 200)

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): NR

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

WELL INTEGRITY: OK | LOCK #: 0464

REMARKS: ___

Meter Calibration: Date: 5-13-93 Time: 1155 Meter Serial #: 9203 Temperature °F: ___

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

Location of previous calibration: MW-15

Signature: Kevin Reichelderfer | Reviewed By: ___ | Page 10 of 13

Rev. 2 5/91

WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 0970-007.01 SAMPLE ID: MW-13 (13)

PURGED BY: K REICHELDERFER CLIENT NAME: ARCO 601

SAMPLED BY: ↓ LOCATION: 712 LEWELLING BL SAN LEANDRO, CA

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

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

CASING ELEVATION (feet/MSL):	NR	VOLUME IN CASING (gal.):	0.83
DEPTH TO WATER (feet):	7.94	CALCULATED PURGE (gal.):	2.48
DEPTH OF WELL (feet):	13.0	ACTUAL PURGE VOL. (gal.):	2.50

DATE PURGED: 5-13-93 Start (2400 Hr) 1316 End (2400 Hr) 1323

DATE SAMPLED: 5-13-93 Start (2400 Hr) 1329 End (2400 Hr) 1331

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1318	1.00	7.25	1707	68.4	BROWN	MODERATE
1321	2.00	7.21	1679	66.7	↓	↓
1323	2.50	7.15	1674	66.1	↓	↓

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

COLOR (COBALT 0 - 100): NR

TURBIDITY (NTU 0 - 200): NR

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): NR

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

WELL INTEGRITY: OK LOCK #: 3259

REMARKS: ___

Meter Calibration: Date: 5-13-93 Time: 1155 Meter Serial #: 9203 Temperature °F: ___

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

Location of previous calibration: MW-15

Signature: Kevin Reichelderfer Reviewed By: JB Page 11 of 12

Rev. 2, 5/91

WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 0670-007.01 SAMPLE ID: MW-1+(13)

PURGED BY: K REICHELDERFER CLIENT NAME: ARCO 601

SAMPLED BY: ↓ LOCATION: 712 LEWELLING BLV. SAN LEANDRO, CA

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

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

CASING ELEVATION (feet/MSL):	NR	VOLUME IN CASING (gal.):	0.61
DEPTH TO WATER (feet):	9.29	CALCULATED PURGE (gal.):	1.82
DEPTH OF WELL (feet):	13.00	ACTUAL PURGE VOL. (gal.):	2.00

DATE PURGED: 5-13-93 Start (2400 Hr) 1235 End (2400 Hr) 1245

DATE SAMPLED: 5-13-93 Start (2400 Hr) 1250 End (2400 Hr) 1252

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1238	1.00	6.97	1444	68.3	BROWN	HEAVY
1241	1.50	6.97	1442	67.4	↓	↓
1245	2.00	7.06	1429	67.1		

D. O. (ppm): NR ODOR: NONE COLOR: NR (COBALT 0 - 100) TURBIDITY: NR (NTU 0 - 200)

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): FB-1 @ 1257

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

WELL INTEGRITY: OK LOCK #: 3259

REMARKS: ___

Meter Calibration: Date: 5-13-93 Time: 1155 Meter Serial #: 9203 Temperature °F: ___

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

Location of previous calibration: MW-15

Signature: Kevin Reichelderfer Reviewed By: JJ Page 12 of 13

WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 0670-007.01 | SAMPLE ID: MW-15 (10)

PURGED BY: K REICHELDERFER | CLIENT NAME: ARCO 601

SAMPLED BY: ↓ | LOCATION: 712 LEWELLING BLVD SAN LEANDRO, CA

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

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

CASING ELEVATION (feet/MSL):	NR	VOLUME IN CASING (gal.):	0.68
DEPTH TO WATER (feet):	5.91	CALCULATED PURGE (gal.):	2.05
DEPTH OF WELL (feet):	10.1	ACTUAL PURGE VOL. (gal.):	2.50

DATE PURGED: 5-13-93 Start (2400 Hr) 1204 End (2400 Hr) 1211

DATE SAMPLED: 5-13-93 Start (2400 Hr) 1219 End (2400 Hr) 1221

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1206	1.00	7.31	902	68.1	BROWN	HEAVY
1208	2.00	7.42	903	66.3	↓	MODERATE
1211	2.50	7.45	897	65.7	↓	↓

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

COLOR (COBALT 0 - 100): NR

TURBIDITY (NTU 0 - 200): NR

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): NR

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

WELL INTEGRITY: OK LOCK #: DOLPHIN

REMARKS: ___

Meter Calibration: Date: 5-13-93 Time: 1155 Meter Serial #: 9203 Temperature °F: 71.2

(EC 1000 1053 / 1000) (DI 7.64) (pH 7 7.02 / 7.00) (pH 10 10.03 / 10.00) (pH 4 3.96 / —)

Location of previous calibration: ___

Signature: Kevin Reichelderfer Reviewed By: JB Page 12 of 13

6936.12

EMCON Associates

1938 Junction Avenue • San Jose, California 95131-2102 • **(408) 453-0719** • Fax (408) 453-0452

Date June 21, 1993

Project 0G70-007.01

To:

Mr. John Young
RESNA
3315 Almaden Expressway, Suite 34
San Jose, California 95118

We are enclosing:

Copies	Description
1	Depth To Water/Floating Product Survey Results
	June 1993 monthly water level survey, ARCO
	station 601, 712 Lewelling Blvd., San Leandro, CA

For your: X Information Sent by: X Mail

Comments:

Monthly water level data for the above mentioned site are attached. Please call if you have any questions: (408) 453-2266.

Reviewed by:

Jim Butera JB

REGISTERED PROFESSIONAL ENGINEER ROBERT CURTIS PORTER No: 4004 Exp. 6/30/94 INDUSTRIAL STATE OF CALIFORNIA

Robert Porter

Robert Porter, Senior Project Engineer.

FIELD REPORT
DEPTH TO WATER / FLOATING PRODUCT SURVEY

PROJECT # : 0G70-007.01 STATION ADDRESS : 712 Lewelling Blvd. San Leandro DATE : 6-17-93

ARCO STATION # : 601 FIELD TECHNICIAN : I.G. / S.H. 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-15	OK	YES	OK	~~Dolphin~~	OK	6.18	6.18	ND	NR	10.1	# 3259
2	MW-14	OK	YES	OK	3259	OK	9.55	9.55	ND	NR	13.0	ONE BOLT IS COCKEYED
3	MW-13	OK	YES	OK	3259	OK	8.32	8.32	ND	NR	13.0	BOLT HOLES NEEDED TO BE CLEANED
4	MW-12	OK	YES	OK	~~0464~~	OK	8.98	8.98	NO	NR	11.6	#3259
5	MW-7	OK	YES	OK	3259	OK	9.30	9.30	ND	NR	9.6	—
6	MW-11	OK	YES	OK	3259	OK	8.44	8.44	ND	NR	11.8	—
7	MW-8	OK	YES	OK	3259	OK	7.36	7.36	ND	NR	10.2	WATER IN BOX
8	MW-2	SMALL CRACKS	YES	OK	3259	OK	7.40	7.40	ND	NR	12.3	WATER IN BOX SLIGHT ODOR
9	MW-4	OK	YES	OK	3259	OK	7.99	7.98	NO	NR	8.5	WATER IN BOX
10	MW-6	OK	YES	OK	3259	OK	8.15	8.15	ND	NR	8.6	WATER IN BOX MODERATE ODOR
11	MW-5	OK	YES	OK	3259	OK	7.07	7.07	ND	NR	10.1	—
12	MW-1	OK	YES	OK	~~0464~~	OK	8.49	8.49	8.48	.01	11.1	#3259 BROKEN MISSING ONE BOLT (~~REPLACED~~) STRONG ODOR
13	MW-3	OK	YES	OK	3259	OK	6.53	6.53	6.52	.01	11.9	SKIMMER REPLACED MISSING BOLT

SURVEY POINTS ARE TOP OF WELL CASINGS