RESNA

Working To Restore Nature

3315 Almaden Expressway, Suite 34
San Jose, CA 95118
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TRANSMITTAL

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

DATE: December 7, 1992
PROJECT NUMBER: 69034.06
SUBJECT: Final - Quarterly Groundwater Monitoring, Third Quarter 1992, ARCO Station 601, 712 Lewelling Blvd., San Leandro, California.

FROM: Erin McLucas
TITLE: Staff Geologist

WE ARE SENDING YOU:

COPIES	DATED	NO.	DESCRIPTION
1	12/7/92	69034.06	Final - Quarterly Groundwater Monitoring at the above subject site.

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REMARKS: cc: Mr. Michael Whelan, ARCO Products Company
Mr. John Jang, RWQCB, San Francisco Bay Region
Mr. Guy Telham, San Leandro Fire Department
Mr. Joel Coffman, RENSA Industries Inc.

Copies: 1 to RESNA project file no. 69034.06

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December 11, 1992
1211SSRY.601
61026.02

Mr. Scott Seery
Alameda County Health Care Services Agency
Department of Environmental Health
80 Swan Way, Room 200
Oakland, California 94624

Subject: Site Status Update for ARCO Station 601, 712 Lewelling Blvd., San Leandro, California.

Dear Mr. Seery:

This letter provides an update on investigation and remedial activities conducted for the above-referenced site. This update covers site activities performed during November 1992, and site activities anticipated for the month of December 1992.

November 1992 Activities

- Performed groundwater monitoring and monthly product removal from wells MW-1, MW-3, and MW-5.
- Continued with design and preparation of plans and specifications for a groundwater remediation system at the site.
- Drilled and installed one offsite groundwater monitoring well across Washington Avenue from the site.
- Initiated preparation of draft Additional Subsurface Investigation Report including onsite and offsite borings and wells.
- Initiated preparation of draft Limited Offsite Subsurface Investigation Report including the soil borings along Lewelling Boulevard.

Site Status Update
ARCO Station 601, San Leandro, California

December 11, 1992
61026.02

Work Anticipated for December 1992

- Continue monthly groundwater monitoring.
- Monthly removal of floating product will continue.
- Submit Final Third Quarter 1992 Quarterly Monitoring Report to ARCO and regulators.
- Continue with design and preparation of plans and specifications for a groundwater remediation system at the site.
- Continue with attempts to gain offsite access from private owner (Mr. John J. Sullivan) to install offsite monitoring wells, as directed in the letter from RWQCB dated December 7, 1992. RWQCB has requested that agreement between ARCO and Mr. Sullivan be reached by December 23, 1992 concerning installation of offsite monitoring wells.

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

Sincerely,
RESNA Industries Inc.

Joel Coffman
Project Geologist

cc: Mr. Michael Whelan, ARCO Products Company
Mark Thomson, Alameda County District Attorney's Office
John Jang, Regional Water Quality Control Board

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LETTER REPORT
QUARTERLY GROUNDWATER MONITORING
Third Quarter 1992
at
ARCO Station 601
712 Lewelling Boulevard
San Leandro, California

69034.06

12/2/92

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Working To Restore Nature

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San Jose, CA 95118
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December 7, 1992
1203MWHE
69034.06

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

Subject: Third Quarter 1992 Groundwater Monitoring Report for ARCO Station 601, 712 Lewelling Boulevard, San Leandro, California.

Mr. Whelan:

As requested by ARCO Products Company (ARCO), this letter report summarizes the results of third quarter 1992 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 are 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. The field work and laboratory analyses of groundwater samples during this quarter was 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. Field procedures and acquisition of field data were performed under the direction of EMCON; evaluation and warrant of their field data and field protocols is beyond RESNA Industries Inc.'s (RESNA's) scope of work. RESNA's scope of work was limited to interpretation of field and laboratory analyses data, which included 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.

The results of previous environmental investigations at the site are presented in the reports listed in the references section. The 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 measurements (DTW) were taken by EMCON field personnel on July 15, August 25, and September 15, ~~1992~~. Quarterly sampling was performed by EMCON field personnel on September 15, 1992. Additional samples were taken from well MW-8 on September 18, 1992, after the well had recovered from the previous sampling event. The results of EMCON's field work on the site, including DTW measurements and subjective analysis for the presence of product in the groundwater in MW-1 through MW-8, 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 well, wellhead elevations, groundwater elevations, and subjective observations for the presence of product in groundwater monitoring wells MW-1 through MW-8 for this quarter and previous quarterly groundwater monitoring at the site are summarized in Table 1, Cumulative Groundwater Monitoring Data. According to EMCON's Field Reports, no evidence of floating product was observed in monitoring wells MW-1 through MW-8 during the July 15 and August 25, 1992, monitorings, and roughly 0.02 feet of floating product was measured in wells MW-1, MW-3, and MW-5 (product entered well MW-5 during purging) during the September 15, 1992, monitoring. Evidence of product sheen in MW-2, MW-4, and MW-6 through MW-8 on September 15, 1992, was not noted (see Appendix A). Based on EMCON's DTW levels, the groundwater gradients and flow directions for July, August, and September 1992 groundwater monitorings are shown on the Groundwater Gradient Maps, Plates 3 through 5. Generally, the groundwater gradient and flow direction were less than 0.01 (nearly flat) toward the west. These interpretations are generally consistent with previous quarters.

During July and August, wells MW-4, MW-6 and MW-7 contained less than 4 inches of water and during September these wells were dry. Therefore, the water in these wells for July and August monitorings appears to be residual and not representative of the first encountered water-bearing zone The DTW levels in wells MW-4, MW-6, and MW-7 were not used to interpret the groundwater gradient. Because groundwater monitoring wells MW-11 through MW-13 had not been installed during this quarter, and MW-14 was installed but not yet surveyed, the DTW water levels from these wells were not used to interpret the groundwater gradient.

Groundwater monitoring wells MW-2, MW-8, and MW-14, were purged and sampled by EMCON field personnel on September 15 and MW-8 was further purged and sampled on September 18, 1992, as the well had dried prior to obtaining enough samples for the additional analyses required. Because subjective analysis indicated petroleum product was present in MW-1, MW-3, and MW-5, and wells MW-4, MW-6, and MW-7 were dry, groundwater samples were not taken 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; the Monitoring Well Purge Water Disposal Form is also included in Appendix A.

Laboratory Methods and Analyses

Under the direction of EMCON, groundwater samples collected from wells MW-2, MW-8, and MW-14 were analyzed by Columbia Analytical Services, Inc. located in San Jose, California (Hazardous Waste Testing Laboratory Certification No. 1426). The water samples from MW-2, MW-8, and MW-14 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/DHS LUFT Method. In addition, water samples from MW-8, the well not containing floating product and located closest to and in a downgradient direction of the former waste-oil UST, were also analyzed for total metals by EPA Method 6010, lead by EPA Method 7421, Halogenated Volatile Organic Compounds by EPA Methods 5030/601, Semi-volatile Organic Compounds by EPA Methods 3510/8270, TPH as Diesel by EPA Method 3510/California DHS LUFT Method, and Total Recoverable Petroleum Hydrocarbons. These analyses of the MW-8 samples were performed at the request of Mr. Scott Seery of the Alameda County Health Care Services Agency. One additional analysis of MW-8 samples for these waste oil constituents will be performed during the 4th quarter 1992 monitoring event. During future monitoring events when monitoring well MW-1 does not contain floating product, samples will be collected from MW-1 and analyzed for waste oil constituents. 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 four monitoring wells since quarterly monitoring began at the site on July 1990. Monitoring wells MW-1 and MW-3 continue to contain floating product, and MW-5 was observed to contain measurable floating product for the first time.

Concentrations of TPHg and BTEX in monitoring wells MW-2 and MW-8 increased in the first quarter 1992 and decreased during the second and third quarters 1992. **No waste oil constituents were found in the groundwater samples collected from monitoring well MW-8.** Groundwater monitoring wells MW-4, MW-6, and MW-7 continue to contain only residual water or to be dry, and therefore no trends have been established for these wells.

Product Removal

Floating product is checked monthly in wells MW-1 and MW-3 and removed if present. A Horner EZY Product Skimmer was 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

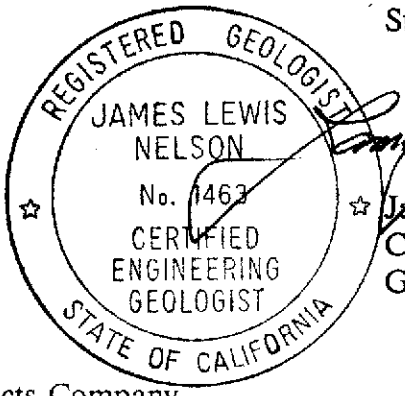
Mr. John Jang
California Regional Water Quality Control Board
San Francisco Bay Region
2101 Webster Street, Suite 500
Oakland, California 94612

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 or (800) 926-0815.

Sincerely,
RESNA Industries Inc.

Erin McLucas
Staff Geologist



James L. Nelson
Certified Engineering
Geologist No. 1463

cc: H.C. Winsor, ARCO Products Company

Enclosures: References
Plate 1, Site Vicinity Map
Plate 2, Generalized Site Plan
Plate 3, Groundwater Gradient Map, July 15, 1992
Plate 4, Groundwater Gradient Map, August 25, 1992
Plate 5, Groundwater Gradient Map, September 15, 1992
Plate 6, TPHg/Benzene Concentrations in Groundwater, September 15, 1992

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

Appendix A: EMCON's Field Reports (3), Summary of Groundwater Monitoring Data, Certified Analytical Reports with Chain-of-Custody Record, Emcon's Water Sample Field Data Sheets, Monitoring Well Purge Water Disposal Form

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.

RESNA Industries, November 22, 1991, Letter Report Quarterly Groundwater Monitoring, Third Quarter 1991 at ARCO Station 601, 712 Lewelling Boulevard, San Leandro, California. RESNA 69034.03.

REFERENCES
(Continued)

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

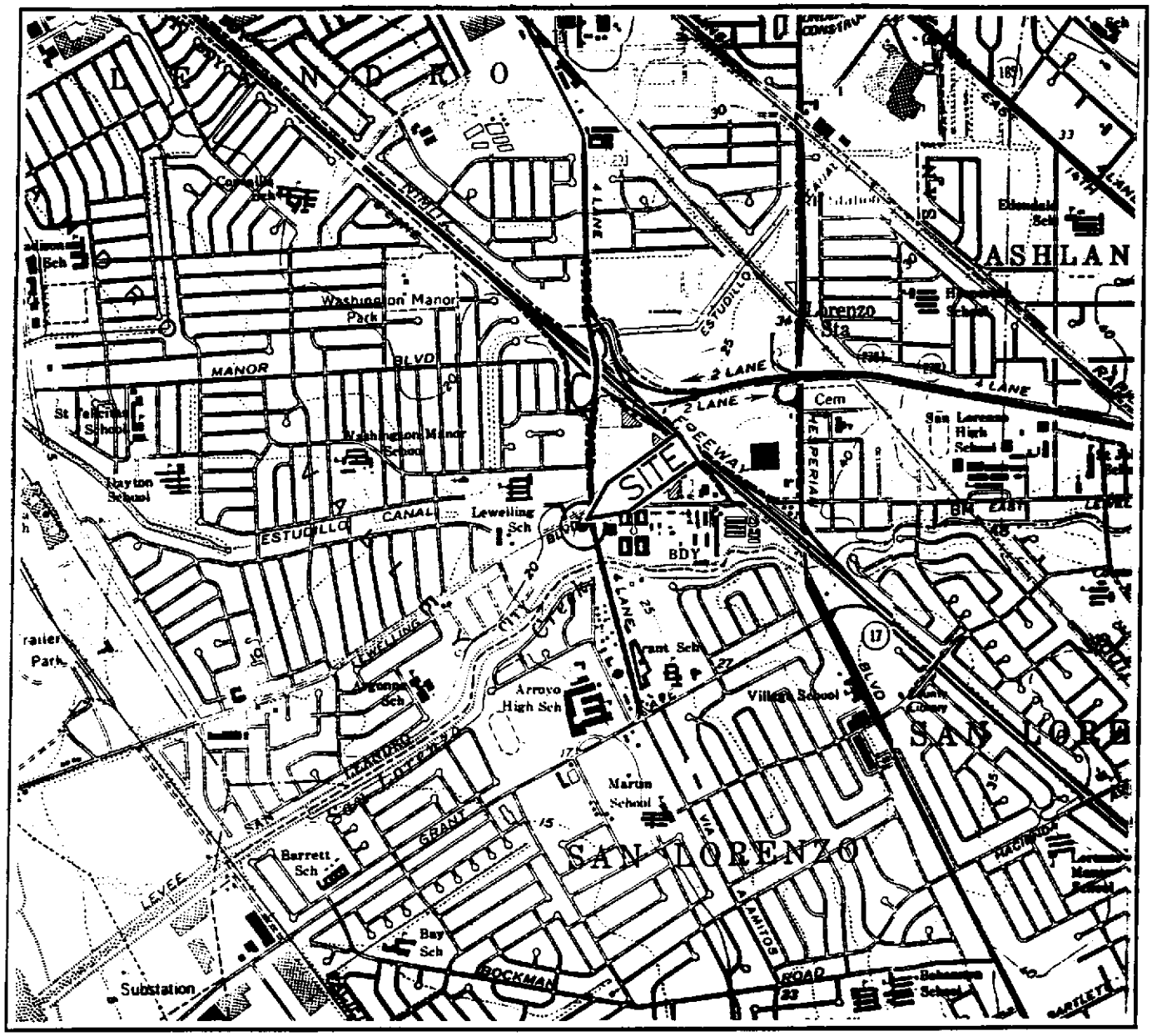
RESNA Industries, April 9, 1992, Letter Report Quarterly Groundwater Monitoring, Fourth Quarter 1991, at ARCO Station 601, 712 Lewelling Boulevard, San Leandro, California. RESNA 69034.06.

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.

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



Base: U.S. Geological Survey
7.5–Minute Quadrangles
Hayward/San Leandro, California.
Photorevised 1980

N

LEGEND

⊙ = Site Location

Approximate Scale

2000 1000 0 2000 4000

feet

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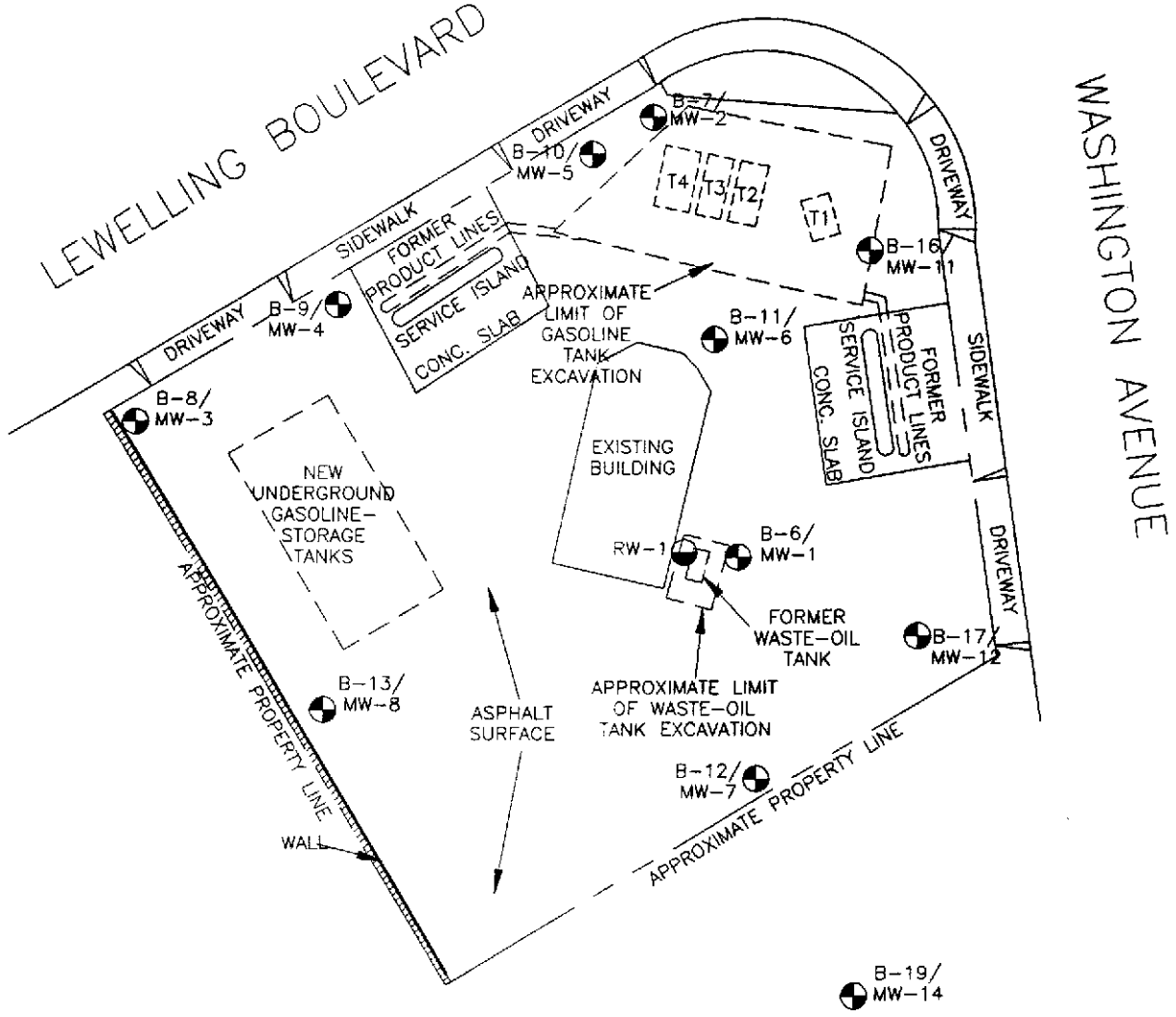
SITE VICINITY MAP
ARCO Station 601
712 Lewelling Boulevard
San Leandro, California

PLATE
1



EXPLANATION

B-19/ MW-14 = Groundwater monitoring well (RESNA, 1990, 1991, and 1992)

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

T4 = Former underground gasoline storage tank

N

Approximate Scale

40 20 0 40 80

feet

Source: Surveyed by John Koch, Licensed Land Surveyor.

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

PLATE 2

EXPLANATION

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

12.86 = Elevation of groundwater in feet above MSL, July 15, 1992

** = Residual water or no water; not used in gradient evaluation

MW-8 = Groundwater monitoring well (RESNA, 1990, 1991, and 1992)

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

T4 = Former underground gasoline storage tank

Approximate Scale

40 20 0 40 80

feet

Source: Surveyed by John Koch, Licensed Land Surveyor.

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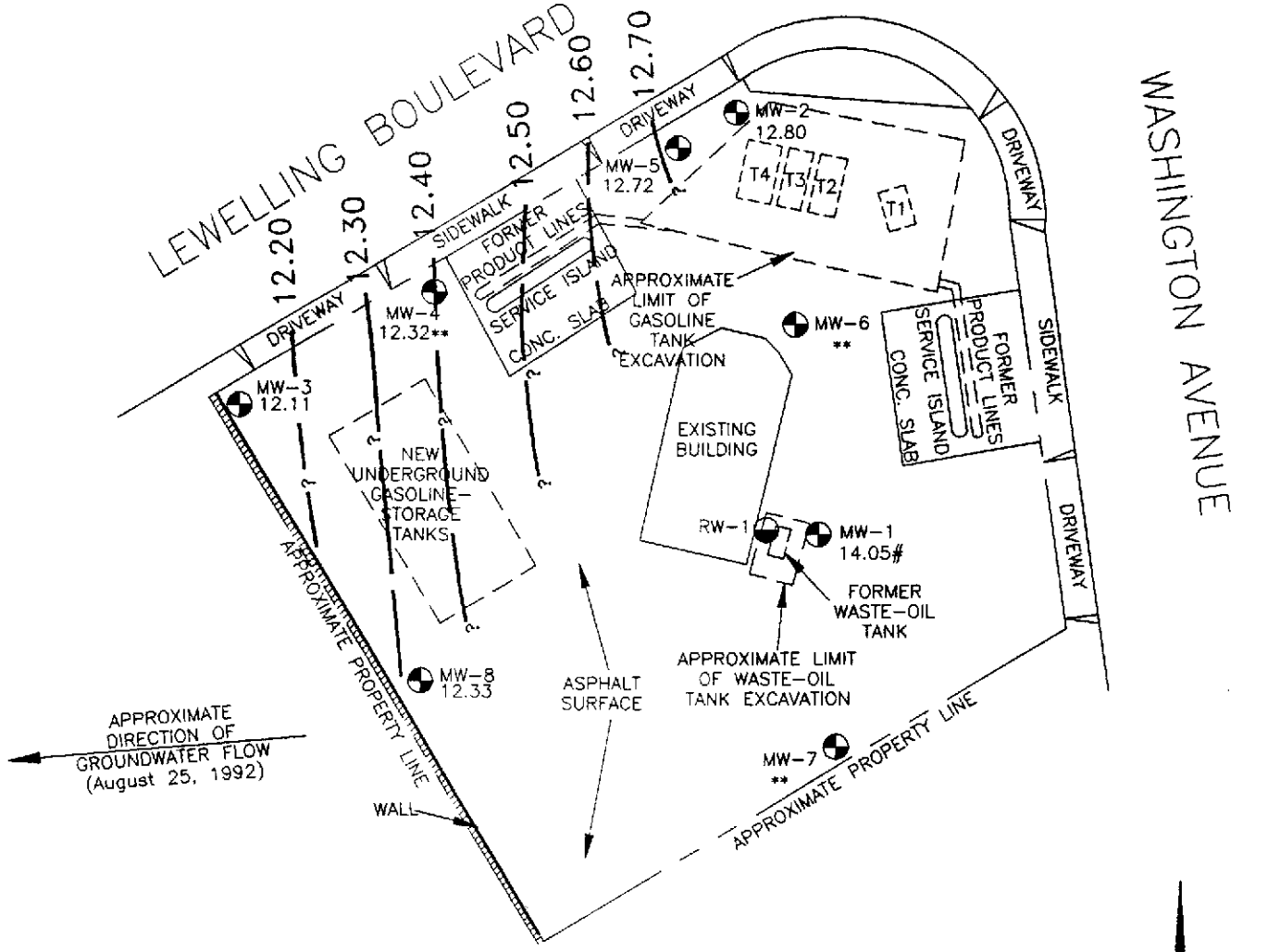
GROUNDWATER GRADIENT MAP
ARCO Station 601
712 Lewelling Boulevard
San Leandro, California

PLATE 3



EXPLANATION

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

12.80 = Elevation of groundwater in feet above MSL, August 25, 1992

** = Residual water or no water; not used in gradient evaluation

= Anamolously high reading due to local recharge; not used in gradient evaluation

MW-8 = Groundwater monitoring well (RESNA, 1990, 1991, and 1992)

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

T4 = Former underground gasoline storage tank

Approximate Scale

40 20 0 40 80

feet

Source: Surveyed by John Koch, Licensed Land Surveyor.

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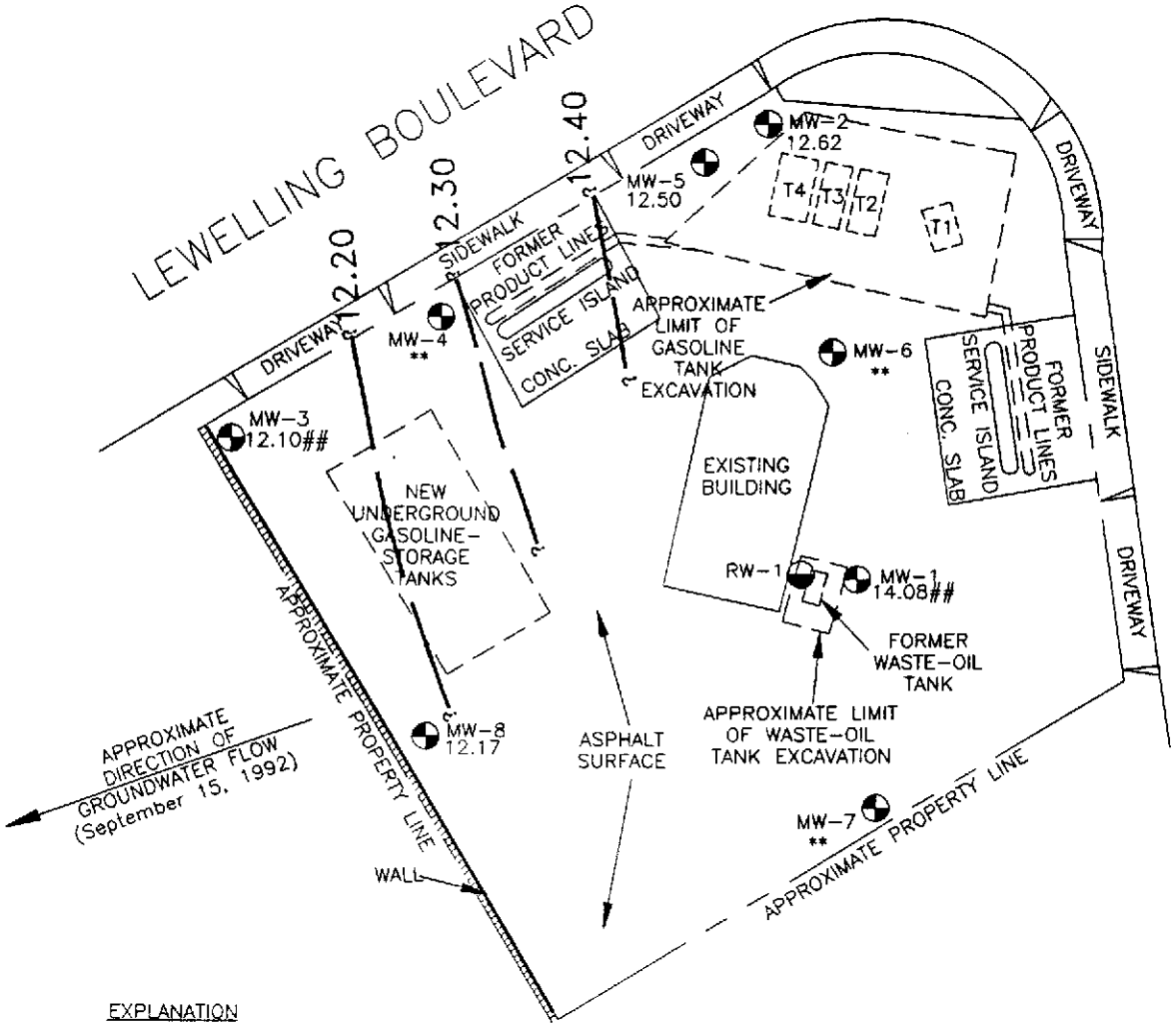
PROJECT 69034.06

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

PLATE 4



EXPLANATION

−12.40 = Line of equal elevation of groundwater in feet above mean sea level (MSL)

12.62 = Elevation of groundwater in feet above MSL, September 15, 1992

** = Residual water or no water; not used in gradient evaluation

= Anomalously high reading due to local recharge; not used in gradient evaluation

= Corrected for floating product

MW-8 = Groundwater monitoring well (RESNA, 1990, 1991, and 1992)

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

T4 = Former underground gasoline storage tank

Approximate Scale

40 20 0 40 80

feet

Source: Surveyed by John Koch, Licensed Land Surveyor.

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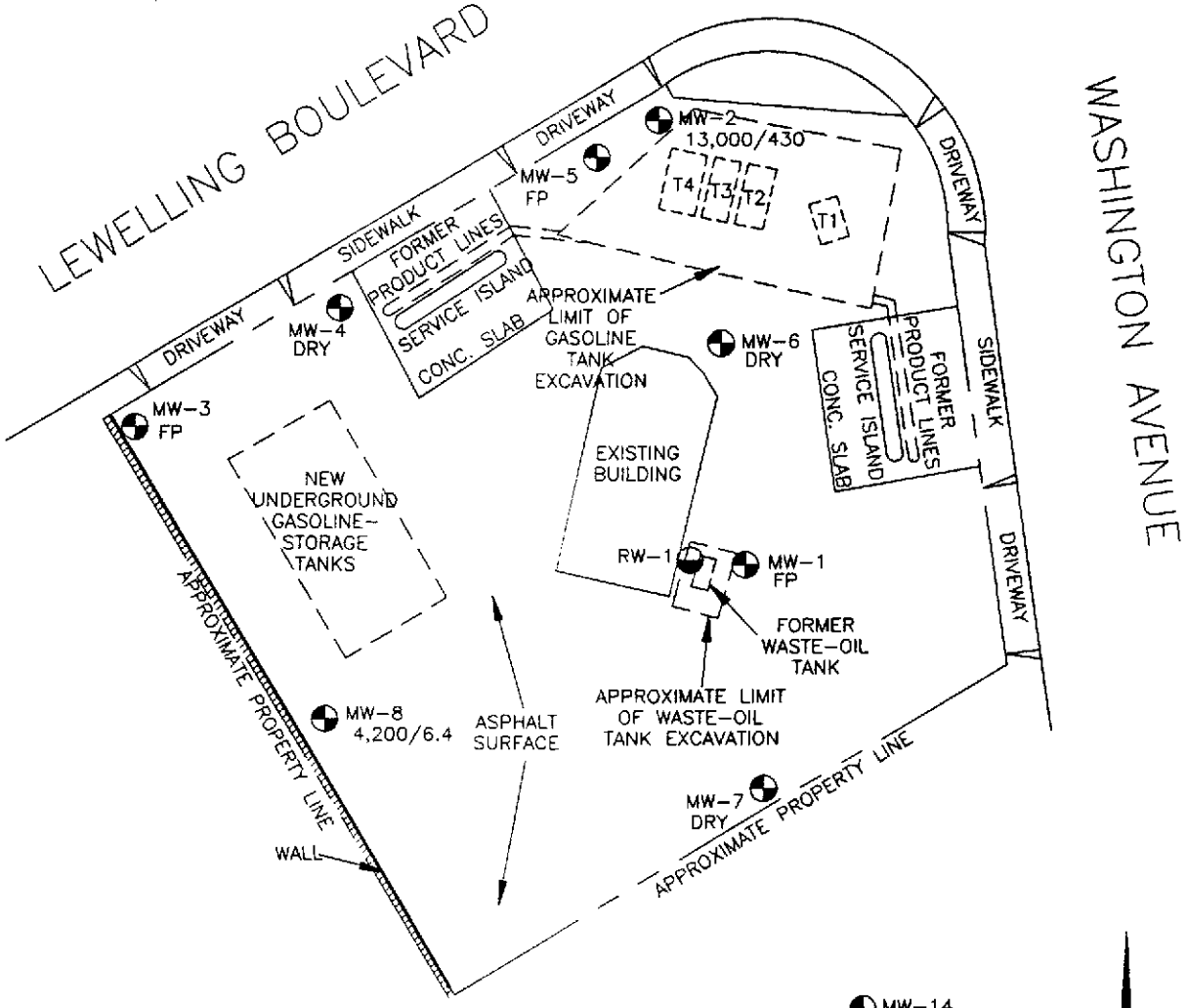
PROJECT 69034.06

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

PLATE 5



EXPLANATION

13,000/430 = Concentration of TPHg/benzene in groundwater in parts per billion, September 15, 1992

FP = Floating product

MW-14 = Groundwater monitoring well (RESNA, 1990, 1991, and 1992)

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

T4 = Former underground gasoline storage tank

Approximate Scale

40 20 0 40 80

feet

Source: Surveyed by John Koch, Licensed Land Surveyor.

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PROJECT 69034.06

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

PLATE 6

Quarterly Groundwater Monitoring
ARCO Station 601, San Leandro, California

December 7, 1992
69034.06

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

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		22.26	8.60*	13.66*	0.01
06/10/91			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
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
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		22.79****	7.52	15.27	None
06/10/91			7.91	14.88	None

See notes on page 5 of 5.

TABLE 1
CUMULATIVE GROUNDWATER MONITORING DATA
ARCO Station 601
San Leandro, California
(Page 2 of 5)

Date Well Measured	Depth of Well	Well Elevation	Depth-to-Water	Water Elevation	Floating Product
MW-2					
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		21.33	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
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
05/16/91		20.11	7.50	12.61	None
06/10/91			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

See notes on page 5 of 5.

TABLE 1
CUMULATIVE GROUNDWATER MONITORING DATA
ARCO Station 601
San Leandro, California
(Page 3 of 5)

Date Well Measured	Depth of Well	Well Elevation	Depth-to-Water	Water Elevation	Floating Product
MW-3					
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
MW-4					
06/10/91	8.30	20.75	Dry	—	—
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	—	—
12/24/91			Dry	—	—
01/19/92	***		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
07/15/92	8.90		8.81	Residual Water	None
08/25/92			8.39	Residual Water	None
09/15/92			Dry	—	—
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+

See notes on page 5 of 5.

TABLE 1
CUMULATIVE GROUNDWATER MONITORING DATA
ARCO Station 601
San Leandro, California
(Page 4 of 5)

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	----	----
07/18/91			Dry	----	----
08/22/91			Dry	----	----
09/18/91			Dry	----	----
10/10/91			Dry	----	----
11/21/91			Dry	----	----
12/24/91			Dry	----	----
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	----	----
07/15/92			8.81	Residual Water	None
08/25/92			8.42	Residual Water	None
09/15/92			Dry	----	----
MW-7					
06/10/91	9.36	22.89	Dry	----	----
07/18/91			Dry	----	----
08/22/91			Dry	----	----
09/18/91			Dry	----	----
10/10/91			Dry	----	----
11/21/91			Dry	----	----
12/24/91			Dry	----	----
01/19/92	9.55		Dry	----	----
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
08/25/92			9.33	Residual Water	None
09/15/92			Dry	----	----
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

See notes on page 5 of 5.

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

Date Well Measured	Depth of Well	Well Elevation	Depth-to-Water	Water Elevation	Floating Product
MW-8					
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
MW-14					
09/15/92	13.0		10.66		

Measurements in feet.
Datum mean sea level.
Depth-to-Water measured in feet below top of casing.
ND : Not detected.
*The recorded thickness of the floating product was then multiplied by 0.80 to obtain an approximate value for the displacement of water by the floating product. This approximate displacement value is then subtracted from the measured depth to water to obtain a calculated depth to water. These calculated groundwater depths were subtracted from wellhead elevations measured by Ron Archer, Civil Engineer, Inc., of Pleasanton, California, a licensed land surveyor, to calculate the differences in groundwater elevations.
** Anomalous due to extensive rainfall and non-functioning storm drain.
*** A misreading of 12.02 feet was recorded on EMCON's Field Report.
**** Well elevation of MW-2 incorrect; corrected 4/21/92.
+ 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.

Quarterly Groundwater Monitoring
ARCO Station 601, San Leandro, California

December 7, 1992
69034.06

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

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								
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
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								
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								
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								

See Notes on page 2 of 2.

Quarterly Groundwater Monitoring
ARCO Station 601, San Leandro, California

December 7, 1992
69034.06

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

Sample	TPHg	TPHd	B	T	E	X	TOG	BNAs	VOCs	Cd	Cr	Pb	Ni	Zn
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								
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								
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
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[redacted]**	**6.4**	<5*	**120**	<5*	NA	**6***	ND	ND	**59**	**18**	**78**	**128**
MW-14														
09/15/92	<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

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, possibly reflecting weathered gasoline.**

( ): BTEX results analyzed as VOCs.

TPHg: Total petroleum hydrocarbons as gasoline by EPA method 8015.

TPHd: Total petroleum hydrocarbons as diesel by EPA method 3550/3510.

B: Benzene, T: Toluene, E: Ethylbenzene, X: Total Xylene isomers.

BTEX: Measured by EPA method 8020/602.

TOG: Total oil and grease measured by Standard Method 503A/E.

BNAs: Base neutral and acid extractables including polynuclear aromatics concentrations are below laboratory reporting limits for respective compounds except as indicated. **(* = Bis (2-ethylhexyl) Phthalate)**

VOCs: volatile organics except for BTEX concentrations are below laboratory reporting limits for respective compounds except as indicated.

Cd: Cadmium (By EPA Method 6010)

Cr: Chromium (By EPA Method 6010)

Pb: Lead (By EPA Method 7421)

Zn: Zinc (By 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 Removed (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
1991 + 1992	TOTAL: 3.45

* = None removed due to the inadvertent removal of the drum for product storage.

APPENDIX A

EMCON'S FIELD REPORTS, WATER SAMPLE FIELD DATA SHEET
SUMMARY OF GROUNDWATER MONITORING DATA
CERTIFIED ANALYTICAL REPORTS WITH
CHAIN-OF-CUSTODY RECORD AND
MONITORING WELL PURGE WATER DISPOSAL FORM

EMCON ASSOCIATES
Consultants in Wastes Management and Environmental Control

RECEIVED
OCT 14 1992
RESNA
SAN JOSE

Date October 7, 1992
Project 0G70-007.01

To:
Mr. Joel Coffman
RESNA/ Applied Geosystems
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
3	Certified Analytical Reports with Chain-of-Custody
10	Water Sample Field Data Sheets

For your: X Information Sent by: X Mail

Comments:
Enclosed are the data from the third quarter 1992 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.

Reviewed by: Jim Butera JB

REGISTERED PROFESSIONAL ENGINEER INDUSTRIAL HYGIENIST STATE OF CALIFORNIA No. 3034 Exp. 4/30/96

Robert Porter, Senior Project Engineer.

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

FIELD REPORT
DEPTH TO WATER / FLOATING PRODUCT SURVEY

PROJECT # : 0G70-007.01 STATION ADDRESS : 712 Lewelling Blvd. San Leandro DATE : 9-15-92

ARCO STATION # : 601 FIELD TECHNICIAN : Joe Williams DAY : TUES

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-13	OK	YES	OK	3259	OK	10.66	10.66	ND	ND	13.0	—
2	MW-7	OK	YES	OK	3259	OK	DRY	DRY	ND	ND	9.55	—
3	MW-8	OK	YES	OK	3259	OK	8.80	8.79	ND	ND	10.20	STRONG ODOR
4	MW-4	OK	YES	OK	3259	OK	DRY	DRY	ND	ND	5.40	—
5	MW-2	OK	YES	OK	3259	OK	8.71	8.72	ND	ND	12.30	—
6	MW-6	OK	YES	OK	3259	OK	DRY	DRY	ND	ND	8.5	—
7	MW-5	OK	YES	OK	3259	OK	8.40	8.40	ND	ND	10.0	STRONG ODOR
8	MW-1	OK	YES	OK	3259	OK	8.20	8.22	8.18	.02	10.0	STRONG ODOR
9	MW-3	OK	YES	OK	3259	OK	8.03	8.03	8.01	.02	12	STRONG ODOR

SURVEY POINTS ARE TOP OF WELL CASINGS

Summary of Groundwater Monitoring Data
Third Quarter 1992
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	09/15/92	8.20	0.02	FP.[3]	FP.	FP.	FP.	FP.	FP.	FP.
MW-2(12)	09/15/92	8.72	ND.[4]	13,000.	430.	500.	340.	1,800.	NR.[5]	NR.
MW-3	09/15/92	8.03	0.02	FP.	FP.	FP.	FP.	FP.	FP.	FP.
MW-4	09/15/92	Dry	ND.	NS[6]	NS.	NS.	NS.	NS.	NS.	NS.
MW 5	09/15/92	8.40	0.02+	FP.	FP.	FP.	FP.	FP.	FP.	FP.
MW-6	09/15/92	Dry	ND.	NS.	NS.	NS.	NS.	NS.	NS.	NS.
MW-7	09/15/92	Dry	ND.	NS.	NS.	NS.	NS.	NS.	NS.	NS.
MW-8(10)	09/15/92	8.80	ND.	4,200.	6.4	<5.	120.	<5.	800.*	460.
MW-14(13)	09/15/92	10.66	ND.	<50.	<0.5	<0.5	<0.5	<0.5	NR.	NR.
FB-1[7]	09/15/92	NA.[8]	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. NS. = Not sampled due to insufficient amount of water for sample collection.
7. FB. = Field blank
8. NA. = Not applicable

\+ = Product entered as well was being purged

* = 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
Third Quarter 1992
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	Chromium (ppb)	Lead (ppb)	Nickle (ppb)	Zinc (ppb)
MW-8(10)	09/18/92	59.	18.	78.	128.

1. EPA = United States Environmental Protection Agency

Columbia Analytical Services inc.

November 4, 1992

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:

Enclosed are the results of the water samples submitted to our lab on September 16, 1992. For your reference, our service request number for this work is SJ92-1159.

This is a revision of the report issued September 30, 1992. The sample previously labelled MW-13 is now relabelled MW-14, as you requested. All analyses were performed in accordance with the laboratory's quality assurance program.

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 408/437-9356

Analytical Report

Client:	EMCON Associates	**Date Received:**	09/16/92
Project:	EMCON Project No. 0G70-007.01	**Work Order #:**	SJ92-1159
	Arco Facility No. 601	**Sample Matrix:**	Water

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

Sample Name:		MW-2 (12)	MW-8 (10)	MW-14 (13)
Date Analyzed:		09/21/92 *	09/21/92 *	09/21/92 *
Analyte	**MRL**			
Benzene	0.5	430.	6.4	ND
Toluene	0.5	500.	<5. **	ND
Ethylbenzene	0.5	340.	120.	ND
Total Xylenes	0.5	1,800.	<5. **	ND
TPH as Gasoline	50	13,000.	4,200.	ND

TPH Total Petroleum Hydrocarbons
MRL Method Reporting Limit
ND None Detected at or above the method reporting limit
* This sample was part of the analytical batch started on September 21, 1992. However, it was analyzed after midnight so the actual date analyzed is September 22, 1992.
** Raised MRL due to high analyte concentration requiring sample dilution.

Approved by Kevin Murphy Date November 4, 1992

1921 Ringwood Avenue • San Jose, California 95131 • Telephone 408/437-2400 • Fax 408/437-9356

Analytical Report

Client:	EMCON Associates	**Date Received:**	09/16/92
Project:	EMCON Project No. 0G70-007.01	**Work Order #:**	SJ92-1159
	Arco Facility No. 601	**Sample Matrix:**	Water

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

Sample Name:		FB-1	Method Blank
Date Analyzed:		09/21/92 *	09/21/92
Analyte	**MRL**		
Benzene	0.5	ND	ND
Toluene	0.5	ND	ND
Ethylbenzene	0.5	ND	ND
Total Xylenes	0.5	ND	ND
TPH as Gasoline	50	ND	ND

TPH Total Petroleum Hydrocarbons
MRL Method Reporting Limit
ND None Detected at or above the method reporting limit
* This sample was part of the analytical batch started on September 21, 1992. However, it was analyzed after midnight so the actual date analyzed is September 22, 1992.

Approved by Kevin Murphy Date November 4, 1992

1921 Ringwood Avenue • San Jose, California 95131 • Telephone 408/437-2400 • Fax 408/437-9356

Analytical Report

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

Date Received: 09/16/92
Work Order #: SJ92-1159
Sample Matrix: Water

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

Sample Name:	MW-8 (10)	Method Blank
Date Analyzed:	09/22/92	09/22/92

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	0.5	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 K. Edward Murphy Date November 4, 1992

1921 Ringwood Avenue • San Jose, California 95131 • Telephone 408/437-2400 • Fax 408/437-9356

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

Date Received: 09/16/92
Work Order #: SJ92-1159

QA/QC Report
Initial Calibration Verification
BTEX and TPH as Gasoline
EPA Methods 5030/8020/DHS LUFT Method
Nanograms

Date Analyzed: 09/21/92

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
Benzene	250.	255.	102.	85-115
Toluene	250.	272.	109.	85-115
Ethylbenzene	250.	265.	106.	85-115
Total Xylenes	750.	833.	111.	85-115
TPH as Gasoline	2,500.	2,580.	103.	90-110

TPH Total Petroleum Hydrocarbons

Approved by Keenan Mingley Date November 4, 1992

1921 Ringwood Avenue • San Jose, California 95131 • Telephone 408/437-2400 • Fax 408/437-9356

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

Date Received: 09/16/92
Work Order #: SJ92-1159
Sample Matrix: Water

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

Sample Name	Date Analyzed	Percent Recovery α,α,α-Trifluorotoluene
MW-2 (12)	09/21/92	108.
MW-8 (10)	09/21/92	118.
MW-14 (13)	09/21/92	104.
FB-1	09/21/92	106.
MS	09/21/92	120.
DMS	09/21/92	119.
Method Blank	09/21/92	107.

CAS Acceptance Criteria 70-130

TPH Total Petroleum Hydrocarbons

Approved by Kevin A Murphy Date November 4, 1992

1921 Ringwood Avenue • San Jose, California 95131 • Telephone 408/437-2400 • Fax 408/437-9356

Client:	EMCON Associates	**Date Received:**	09/16/92
Project:	EMCON Project No. 0G70-007.01	**Work Order #:**	SJ92-1159
	Arco Facility No. 601	**Sample Matrix:**	Water

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

Date Analyzed: 09/21/92

			Spike Result		Percent Recovery		
Analytes	Spike Level	Sample Result	MS	DMS	MS	DMS	Acceptance Criteria
TPH as Gasoline	250.	ND	269.	271.	108.	108.	70-130

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

Approved by Kevin A Murphy Date November 4, 1992

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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: 09/16/92
Work Order #: SJ92-1159

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

Date Analyzed: 09/21/92

Analyte	True Value	Result	Percent Recovery	EPA Percent Recovery Acceptance Criteria
Chloromethane	50	47.	94.	D-193
Vinyl Chloride	50	58.	116.	28-163
Bromomethane	50	55.	110.	D-144
Chloroethane	50	63.	126.	46-137
Trichlorofluoromethane (Freon 11)	50	59.	118.	21-156
1,1-Dichloroethene	50	72.	144.	28-167
Methylene Chloride	50	64.	128.	25-162
trans-1,2-Dichloroethene	50	61.	122.	38-155
1,1-Dichloroethane	50	60.	120.	47-132
Chloroform	50	66.	132.	49-133
1,1,1-Trichloroethane (TCA)	50	63.	126.	41-138
Carbon Tetrachloride	50	57.	114.	43-143
1,2-Dichloroethane	50	66.	132.	51-147
Trichloroethene (TCE)	50	59.	118.	35-146
1,2-Dichloropropane	50	62.	124.	44-156
Bromodichloromethane	50	59.	118.	42-172
trans-1,3-Dichloropropene	50	64.	128.	22-178
cis-1,3-Dichloropropene	50	54.	108.	22-178
1,1,2-Trichloroethane	50	59.	118.	39-136
Tetrachloroethene (PCE)	50	61.	122.	26-162
Dibromochloromethane	50	56.	112.	24-191
Chlorobenzene	50	62.	124.	38-150
Bromoform	50	51.	102.	13-159
1,1,2,2-Tetrachloroethane	50	57.	114.	8-184
1,3-Dichlorobenzene	50	61.	122.	7-187
1,4-Dichlorobenzene	50	65.	130.	42-143
1,2-Dichlorobenzene	50	65.	130.	D-208

D Detected

Approved by Kevin Murphy Date November 4, 1992

1921 Ringwood Avenue • San Jose, California 95131 • Telephone 408/437-2400 • Fax 408/437-9356

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

Date Received: 09/16/92
Work Order #: SJ92-1159
Sample Matrix: Water

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

Sample Name	Date Analyzed	Percent Recovery 4-Bromofluorobenzene
MW-8 (10)	09/22/92	123.
MW-8 (10) MS	09/22/92	130.
MW-8 (10) DMS	09/22/92	130.
Method Blank	09/22/92	125.
	CAS Acceptance Criteria	70-130

Approved by Kevin Murphy Date November 4, 1992

1921 Ringwood Avenue • San Jose, California 95131 • Telephone 408/437-2400 • Fax 408/437-9356

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

Date Received: 09/16/92
Work Order #: SJ92-1159
Sample Matrix: Water

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

Sample Name: MW-8 (10)
Date Analyzed: 09/22/92

Analyte	Spike Level	Sample Result	Spike Result MS	Spike Result DMS	Percent Recovery MS	Percent Recovery DMS	EPA Acceptance Criteria
1,1-Dichloroethene	10.	ND	14.0	13.8	140.	138.	28-167
Trichloroethene	10.	ND	12.5	11.9	125.	119.	35-146
Tetrachloroethene	10.	ND	12.7	12.7	127.	127.	26-162

ND None Detected at or above the method reporting limit

Approved by Kevin Murphy Date November 4, 1992

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AR[redacted]Pro[redacted]ts Company
Division of AtlanticRichfieldCompany

Task Order No. EMCCC-92-1

Chain of Custody

ARCO Facility no: 601
City (Facility): San Leandro
Project manager (Consultant): Jim Butera
ARCO engineer: Kyle Christie
Telephone no. (ARCO): 415 571-2434
Telephone no. (Consultant): 408 453-0719
Fax no. (Consultant): (408) 453-0452
Consultant name: EMCON Associates
Address (Consultant): 1938 Junction Ave 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 ☐ (357C?)	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)	1-E?	2		X		X	NP	9-18-92	1015			X					X					
MW-8(10)	2	1		X		X	HCl	9-18-92	1015				X									
MW-8(10)		1		X		X	HNO_3	9-18-92	1015											X	X	

Laboratory name: CAS

Contract number: 07077

Method of shipment: Sampler will deliver

Special detection Limit/reporting: Lowest Possible

Special QA/QC: As Normal / No O&G 8270, diesel 418.1 due to limited sample vol[illegible]

Remarks: ok per J. Butera LAB ONLY ONE BOTTLE FOR EACH GLASS SAMPLE DUE TO LOW YEILD WELL 2670-007.01

Lab number: SJ92-117[illegible]

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] / MADER — Date: 9-18-92 — Time: 1640

Received by: [signature] — 9-18-92 — 1640

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
APPC-3292 (2-91)

Columbia Analytical Services inc.

September 30, 1992

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:

Enclosed are the results of the water samples submitted to our lab on September 16, 1992. For your reference, our service request number for this work is SJ92-1159.

All analyses were performed in accordance with the laboratory's quality assurance program.

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 408/437-9356

Analytical Report

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

Date Received: 09/16/92
Work Order #: SJ92-1159
Sample Matrix: Water

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

Sample Name:		MW-2 (12)	MW-8 (10)	MW-13 (13)
Date Analyzed:		09/21/92 *	09/21/92 *	09/21/92 *
Analyte	**MRL**			
Benzene	0.5	430.	6.4	ND
Toluene	0.5	500.	<5. **	ND
Ethylbenzene	0.5	340.	120.	ND
Total Xylenes	0.5	1,800.	<5. **	ND
TPH as Gasoline	50	13,000.	4,200.	ND

TPH Total Petroleum Hydrocarbons
MRL Method Reporting Limit
ND None Detected at or above the method reporting limit
* This sample was part of the analytical batch started on September 21, 1992. However, it was analyzed after midnight so the actual date analyzed is September 22, 1992.
** Raised MRL due to high analyte concentration requiring sample dilution.

Approved by Kenneth Morgan Date September 30, 1992

1921 Ringwood Avenue • San Jose, California 95131 • Telephone 408/437-2400 • Fax 408/437-9356

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON Associates	**Date Received:**	09/16/92
Project:	EMCON Project No. 0G70-007.01	**Work Order #:**	SJ92-1159
	Arco Facility No. 601	**Sample Matrix:**	Water

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

		Sample Name:	FB-1	Method Blank
		Date Analyzed:	09/21/92 *	09/21/92
Analyte	MRL			
Benzene	0.5		ND	ND
Toluene	0.5		ND	ND
Ethylbenzene	0.5		ND	ND
Total Xylenes	0.5		ND	ND
TPH as Gasoline	50		ND	ND

TPH Total Petroleum Hydrocarbons
MRL Method Reporting Limit
ND None Detected at or above the method reporting limit
* This sample was part of the analytical batch started on September 21, 1992. However, it was analyzed after midnight so the actual date analyzed is September 22, 1992.

Approved by Keenan Murphy Date September 30, 1992

1921 Ringwood Avenue • San Jose, California 95131 • Telephone 408/437-2400 • Fax 408/437-9356

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

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

Date Received: 09/16/92
Work Order #: SJ92-1159
Sample Matrix: Water

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

Sample Name:	MW-8 (10)	Method Blank
Date Analyzed:	09/22/92	09/22/92

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	0.5	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 Kenneth Miyata Date September 30, 1992

1921 Ringwood Avenue • San Jose, California 95131 • Telephone 408/437-2400 • Fax 408/437-9356

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

Date Received: 09/16/92
Work Order #: SJ92-1159

QA/QC Report
Initial Calibration Verification
BTEX and TPH as Gasoline
EPA Methods 5030/8020/DHS LUFT Method
Nanograms

Date Analyzed: 09/21/92

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
Benzene	250.	255.	102.	85-115
Toluene	250.	272.	109.	85-115
Ethylbenzene	250.	265.	106.	85-115
Total Xylenes	750.	833.	111.	85-115
TPH as Gasoline	2,500.	2,580.	103.	90-110

TPH Total Petroleum Hydrocarbons

Approved by _____ Date September 30, 1992

1921 Ringwood Avenue • San Jose, California 95131 • Telephone 408/437-2400 • Fax 408/437-9356

Client:	EMCON Associates	**Date Received:**	09/16/92
Project:	EMCON Project No. 0G70-007.01	**Work Order #:**	SJ92-1159
	Arco Facility No. 601	**Sample Matrix:**	Water

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

Sample Name	Date Analyzed	Percent Recovery *a,a,a*-Trifluorotoluene
MW-2 (12)	09/21/92	108.
MW-8 (10)	09/21/92	118.
MW-13 (13)	09/21/92	104.
FB-1	09/21/92	106.
MS	09/21/92	120.
DMS	09/21/92	119.
Method Blank	09/21/92	107.

CAS Acceptance Criteria 70-130

TPH Total Petroleum Hydrocarbons

Approved by Kevin Murphy Date September 30, 1992

1921 Ringwood Avenue • San Jose, California 95131 • Telephone 408/437-2400 • Fax 408/437-9356

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

Date Received: 09/16/92
Work Order #: SJ92-1159
Sample Matrix: Water

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

Date Analyzed: 09/21/92

Analytes	Spike Level	Sample Result	Spike Result MS	Spike Result DMS	Percent Recovery MS	Percent Recovery DMS	Acceptance Criteria
TPH as Gasoline	250.	ND	269.	271.	108.	108.	70-130

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

Approved by Robert Murphy Date September 30, 1992

1921 Ringwood Avenue • San Jose, California 95131 • Telephone 408/437-2400 • Fax 408/437-9356

QA/QC Report

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

Date Received: 09/16/92
Work Order #: SJ92-1159

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

Date Analyzed: 09/21/92

Analyte	True Value	Result	Percent Recovery	EPA Percent Recovery Acceptance Criteria
Chloromethane	50	47.	94.	D-193
Vinyl Chloride	50	58.	116.	28-163
Bromomethane	50	55.	110.	D-144
Chloroethane	50	63.	126.	46-137
Trichlorofluoromethane (Freon 11)	50	59.	118.	21-156
1,1-Dichloroethene	50	72.	144.	28-167
Methylene Chloride	50	64.	128.	25-162
trans-1,2-Dichloroethene	50	61.	122.	38-155
1,1-Dichloroethane	50	60.	120.	47-132
Chloroform	50	66.	132.	49-133
1,1,1-Trichloroethane (TCA)	50	63.	126.	41-138
Carbon Tetrachloride	50	57.	114.	43-143
1,2-Dichloroethane	50	66.	132.	51-147
Trichloroethene (TCE)	50	59.	118.	35-146
1,2-Dichloropropane	50	62.	124.	44-156
Bromodichloromethane	50	59.	118.	42-172
trans-1,3-Dichloropropene	50	64.	128.	22-178
cis-1,3-Dichloropropene	50	54.	108.	22-178
1,1,2-Trichloroethane	50	59.	118.	39-136
Tetrachloroethene (PCE)	50	61.	122.	26-162
Dibromochloromethane	50	56.	112.	24-191
Chlorobenzene	50	62.	124.	38-150
Bromoform	50	51.	102.	13-159
1,1,2,2-Tetrachloroethane	50	57.	114.	8-184
1,3-Dichlorobenzene	50	61.	122.	7-187
1,4-Dichlorobenzene	50	65.	130.	42-143
1,2-Dichlorobenzene	50	65.	130.	D-208

D Detected

Approved by Kevin Murphy Date September 30, 1992

1921 Ringwood Avenue • San Jose, California 95131 • Telephone 408/437-2400 • Fax 408/437-9356

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

Date Received: 09/16/92
Work Order #: SJ92-1159
Sample Matrix: Water

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

Sample Name	Date Analyzed	Percent Recovery 4-Bromofluorobenzene
MW-8 (10)	09/22/92	123.
MW-8 (10) MS	09/22/92	130.
MW-8 (10) DMS	09/22/92	130.
Method Blank	09/22/92	125.
	CAS Acceptance Criteria	70-130

Approved by Kenneth Murphy Date September 30, 1992

1921 Ringwood Avenue • San Jose, California 95131 • Telephone 408/437-2400 • Fax 408/437-9356

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

Date Received: 09/16/92
Work Order #: SJ92-1159
Sample Matrix: Water

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

Sample Name: MW-8 (10)
Date Analyzed: 09/22/92

Analyte	Spike Level	Sample Result	Spike Result MS	Spike Result DMS	Percent Recovery MS	Percent Recovery DMS	EPA Acceptance Criteria
1,1-Dichloroethene	10.	ND	14.0	13.8	140.	138.	28-167
Trichloroethene	10.	ND	12.5	11.9	125.	119.	35-146
Tetrachloroethene	10.	ND	12.7	12.7	127.	127.	26-162

ND None Detected at or above the method reporting limit

Approved by [signature] Date September 30, 1992

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[redacted]AR[redacted]Pro[redacted]ts [redacted]mpany [redacted]
Division of AtlanticRichfieldCompany

Task Order No. EMCGC-92-1

Chain of Custody

ARCO Facility no.	601
City (Facility)	San Leandro
Project manager (Consultant)	Jim Betera
ARCO engineer	Kyle Christie
Telephone no. (ARCO)	(415)571-2434
Telephone no. (Consultant)	(408)453-0719
Fax no. (Consultant)	(408)453-0452
Consultant name	EMCON Associates
Address (Consultant)	1938 Junction Ave 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 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 ☐ Semi VOA ☐	CAM Metals EPA 6010/7000 TTLC ☐ STLC ☐	Lead Org./DHS ☐ Lead EPA 7420/7421 ☐		
MW-1(		2		X		X	HCl	No sample			X											
MW-2(12)	1-2	2		X		X	HCl	9-15-92	1434		X											
MW-3(		2		X		X	HCl	[illegible]			X											
MW-4(		2		X		X	HCl	[illegible]			X											
MW-5(		2		X		X	HCl	[illegible]			X											
MW-6(		2		X		X	HCl	[illegible]			X											
MW-7(…)		2		X		X	HCl	No sample dry			X											
MW-8(10)	1-6	6		X		X	HCl	9-15-92	1205		X		X		X							
MW-8(13)	7-8	2		X		X	HCl	9-15-92 1203	1203		X											
FB-1	9-10	2		X		X	HCl	[illegible]			X											
MW-8(		4		X		X	NP	No sample				X					X					
MW-8(		1		X		X	HNO_3	No sample											X	X		

Laboratory name: CAS

Contract number: 07077

Method of shipment: ~~Courier~~ ~~Pick up~~ sampler will deliver

Special detection Limit/reporting: Lowest Possible

Special QA/QC: As normal

6270-00701

Remarks:
2-40ml HCl VOA GAS
2-40 ml HCl VOA 601
2-Liter HCl Glass TOG
2-Liter NP TPHd
2-Liter NP 8270
1-500ml HNO3 Plastic Metal

Lab number: SJ92-1159

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

Condition of sample: OK, received only 4 VOAs for MW-8, no liters

Temperature received: cool

Relinquished by sampler [illegible]	Date 9-15-92	Time [illegible]	Received by
Relinquished by	Date	Time	Received by
Relinquished by	Date	Time	Received by laboratory [signature] — Date 9-16-92 — Time 16:25

Distribution: White copy — Laboratory; Canary copy — ARCO Environmental Engineering; Pink copy — Consultant
APPC 3292 (2-91)

Columbia Analytical Services INC.

September 30, 1992

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:

Enclosed are the results of the water sample submitted to our lab on September 18, 1992. For your reference, our service request number for this work is SJ92-1171.

All analyses were performed in accordance with the laboratory's quality assurance program.

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 408/437-9356

Analytical Report

Client:	EMCON Associates	**Date Received:**	09/18/92
Project:	EMCON Project No. 0G70-007.01 Arco Facility No. 601	**Work Order #:** **Sample Matrix:**	SJ92-1171 Water

Inorganic Parameters[1]
mg/L (ppm)

Sample Name:			MW-8 (10)	Method Blank
Date Sampled:			09/18/92	
Analyte	**Method**	**MRL**		
TRPH	418.1	0.5	0.8	ND

TRPH Total Recoverable Petroleum Hydrocarbons
MRL Method Reporting Limit
ND None Detected at or above the method reporting limit
[1] Unless otherwise noted, all analyses were performed within EPA recommended maximum holding times specified in *Test Methods for Evaluating Solid Waste,* (SW-846, 3rd Edition) and *Methods for Chemical Analysis of Water and Waste* (EPA-600/4-79-020, Revised March 1983).

Approved by Kenneth Murphy Date September 30, 1992

1921 Ringwood Avenue • San Jose, California 95131 • Telephone 408/437-2400 • Fax 408/437-9356

Analytical Report

Client:	EMCON Associates	**Date Received:**	09/18/92
Project:	EMCON Project No. 0G70-007.01	**Date Extracted:**	09/21/92
	Arco Facility No. 601	**Date Analyzed:**	09/21/92
Sample Matrix:	Water	**Work Order #:**	SJ92-1171

TPH as Diesel
EPA Method 3510/California DHS LUFT Method
µg/L (ppb)

Sample Name	MRL	TPH as Diesel
MW-8 (10)	50.	460. *
Method Blank	50.	ND

MRL Method Reporting Limit
TPH Total Petroleum Hydrocarbons
ND None Detected at or above the method reporting limit
* Sample contains a lower boiling point hydrocarbon mixture quantitated as diesel. The chromatogram does not match the typical diesel fingerprint.

Approved by Keelin Murphy Date September 30, 1992

1921 Ringwood Avenue • San Jose, California 95131 • Telephone 408/437-2400 • Fax 408/437-9356

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

Date Received: 09/18/92
Work Order #: SJ92-1171
Sample Matrix: Water

QA/QC Report
Continuing Calibration Summary
Inorganics
EPA Method 418.1
mg/L

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
TRPH	100.	110.	110.	80-120

TRPH Total Recoverable Petroleum Hydrocarbons

Approved by Kenneth Murphy Date September 30, 1992

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COLUMBIA ANALYTICAL SERVICES, INC.

Client:	EMCON Associates	**Date Received:**	09/18/92
Project:	EMCON Project No. 0G70-007.01	**Work Order #:**	SJ92-1171
	ARCO Facility No. 601	**Sample Matrix:**	Water

QA/QC Report
Matrix Spike Summary
Inorganic Parameters
mg/L (ppm)

Parameter	Spike Level	Sample Result	Spike Result MS	Spike Result DMS	Percent Recovery MS	Percent Recovery DMS	Acceptance Criteria
TRPH	6.1	0.9	4.5	4.5	59.	59.	53-149

TRPH Total Recoverable Petroleum Hydrocarbons

Approved by Keith Murphy Date September 30, 1992

1921 Ringwood Avenue • San Jose California 95131 • Telephone 408/437-2400 • Fax 408/437-9356

Client:	EMCON Associates	**Date Received:**	09/18/92
Project:	EMCON Project No. 0G70-007.01	**Work Order #:**	SJ92-1171
	Arco Facility No. 601	**Sample Matrix:**	Water

QA/QC Report
Initial Calibration Verification
TPH as Diesel
EPA Methods 3510/DHS LUFT Method
mg/L (ppm)

Date Analyzed: 09/21/92

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
TPH as Diesel	1,000.	1,091.	109.	90-110

TPH Total Petroleum Hydrocarbons

Approved by Kevin Murphy Date September 30, 1992

1921 Ringwood Avenue • San Jose, California 95131 • Telephone 408/437-2400 • Fax 408/437-9356

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

Date Received: 09/18/92
Work Order #: SJ92-1171
Sample Matrix: Water

QA/QC Report
Surrogate Recovery Summary
TPH as Diesel
EPA Method 3510/DHS LUFT Method

Sample Name	Date Analyzed	Percent Recovery P-Terphenyl
MW-8 (10)	09/21/92	109.
MS	09/21/92	121.
DMS	09/21/92	122.
Method Blank	09/21/92	92.
	CAS Acceptance Criteria	55-145

TPH Total Petroleum Hydrocarbons

Approved by Kevin Murphy Date September 30, 1992

1921 Ringwood Avenue • San Jose, California 95131 • Telephone 408/437-2400 • Fax 408/437-9356

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

Date Received: 09/18/92
Work Order #: SJ92-1171
Sample Matrix: Water

QA/QC Report
Matrix Spike/Duplicate Matrix Spike Summary
Total Petroleum Hydrocarbons as Diesel
DHS LUFT Method
µg/L (ppb)

Date Analyzed: 09/21/92

Parameter	Spike Level	Sample Result	Spike Result MS	Spike Result DMS	Percent Recovery MS	Percent Recovery DMS	Acceptance Criteria
Diesel	4,000.	810.	5,420.	5,280.	115.	112.	55-145

Approved by _____ Date September 30, 1992

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ARCO Products Company
Division of AtlanticRichfieldCompany

Task Order No. EMCCC-92-1

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): 415 571-2434
Telephone no. (Consultant): 408 453-0719
Fax no. (Consultant): (408) 453-0452

Contract number: 07077

Consultant name: EMCON ASSOCIATES
Address (Consultant): 1938 Junction Ave 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 ☒ 3510	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)	1	2		X		X	NP	9-18-92	1015			X					X					
MW-8(10)	2	1		X		X	HCl	9-18-92	1015				X									
MW-8(10)		1		X		X	HNO_3	9-18-92	1015											X	X	

Method of shipment: Sampler will deliver

Special detection Limit/reporting: Lowest Possible

Special QA/QC: As normal. No QC for 8270, diesel, 418.1 due to limited sample vol. ok per J. Butera

Remarks: LAB ONLY. ONE BOTTLE FOR EACH CLASS SAMPLE DUE TO LOW YEILD WELL. 2670-007.01

Lab number: SJ92-1171

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	Date	Time	Received by	Date	Time
M. Mader / M MADER	9-18-92	1640	[signature]	9-18-92	1640
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
APPC-3292 (2-91)

Columbia Analytical Services INC.

October 1, 1992

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

Re: **ARCO #601 - San Leandro/Project #OG70-007.01/SJ921171**

Dear Jim:

Enclosed are the results of the sample submitted to our lab on September 18, 1992. For your reference, these analyses have been assigned our work order number K925808C.

All analyses were performed in accordance with our laboratory's quality assurance program. Reproduction of reports is allowed only in whole, not in part. Results apply only to the samples analyzed.

Please call if you have any questions.

Respectfully submitted,

Columbia Analytical Services, Inc.

Colin B. Elliott
Senior Project Chemist

Columbia Analytical Services, Inc.

Kevin DeWhitt
Quality Assurance Coordinator

CBE/eaw

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON Associates	**Date Received:**	09/18/92
Project:	ARCO #601 - San Leandro/#OG70-007.01	**Work Order No.:**	K925808C
Sample Matrix:	Water		

Total Metals
µg/L (ppb)

	Sample Name:		MW-8	Method Blank
	Lab Code:		K5808-1	K5808-MB
Analyte	**EPA Method**	**MRL**		
Cadmium	6010	3	ND	ND
Chromium	6010	5	59	ND
Lead	7421	2	18	ND
Nickel	6010	20	78	ND
Zinc	6010	10	128	ND

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

Approved by Colin Elliott Date 10/1/92

001

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON Associates	**Date Received:**	09/18/92
Project:	ARCO #601 - San Leandro/#OG70-007.01	**Date Extracted:**	09/21/92
Sample Matrix:	Water	**Date Analyzed:**	09/25/92
		Work Order No.:	K925808C

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

Sample Name: MW-8
Lab Code: K5808-1

Base Neutral Analyte	**MRL**	**Result**	**Base Neutral Analyte**	**MRL**	**Result**
N-Nitrosodimethylamine	5	ND	2,6-Dinitrotoluene	5	ND
Aniline	20	ND	Diethyl Phthalate	5	ND
Bis(2-chloroethyl) Ether	5	ND	4-Chlorophenyl Phenyl Ether	5	ND
1,2-Dichlorobenzene	5	ND	Fluorene	5	ND
1,3-Dichlorobenzene	5	ND	4-Nitroaniline	20	ND
1,4-Dichlorobenzene	5	ND	N-Nitrosodiphenylamine	5	ND
Bis(2-chloroisopropyl) Ether	5	ND	4-Bromophenyl Phenyl Ether	5	ND
N-Nitrosodi-n-propylamine	5	ND	Hexachlorobenzene	5	ND
Hexachloroethane	5	ND	Phenanthrene	5	ND
Nitrobenzene	5	ND	Anthracene	5	ND
Isophorone	5	ND	Di-n-butyl Phthalate	5	ND
Bis(2-chloroethoxy)methane	5	ND	Fluoranthene	5	ND
1,2,4-Trichlorobenzene	5	ND	Pyrene	5	ND
Naphthalene	5	ND	Butylbenzyl Phthalate	5	ND
4-Chloroaniline	5	ND	3,3'-Dichlorobenzidine	20	ND
Hexachlorobutadiene	5	ND	Benz(a)anthracene	5	ND
2-Methylnaphthalene	5	ND	Bis(2-ethylhexyl) Phthalate	5	6
Hexachlorocyclopentadiene	10	ND	Chrysene	5	ND
2-Chloronaphthalene	5	ND	Di-n-octyl Phthalate	5	ND
2-Nitroaniline	20	ND	Benzo(b)fluoranthene	5	ND
Dimethyl Phthalate	5	ND	Benzo(k)fluoranthene	5	ND
Acenaphthylene	5	ND	Benzo(a)pyrene	5	ND
3-Nitroaniline	20	ND	Indeno(1,2,3-c,d)pyrene	5	ND
Acenaphthene	5	ND	Dibenz(a,h)anthracene	5	ND
Dibenzofuran	5	ND	Benzo(g,h,i)perylene	5	ND
2,4-Dinitrotoluene	5	ND			

Acid Analyte	**MRL**	**Result**	**Acid Analyte**	**MRL**	**Result**
Phenol	5	ND	2,4-Dichlorophenol	5	ND
2-Chlorophenol	5	ND	4-Chloro-3-methylphenol	5	ND
Benzyl Alcohol	5	ND	2,4,6-Trichlorophenol	5	ND
2-Methylphenol	5	ND	2,4,5-Trichlorophenol	5	ND
3- and 4-Methylphenol♦	5	ND	2,4-Dinitrophenol	50	ND
2-Nitrophenol	5	ND	4-Nitrophenol	50	ND
2,4-Dimethylphenol	5	ND	2-Methyl-4,6-dinitrophenol	20	ND
Benzoic Acid	50	ND	Pentachlorophenol	30	ND

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

Approved by Colin Elliott Date 10/1/92

00072

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON Associates
Project: ARCO #601 - San Leandro/#OG70-007.01
Sample Matrix: Water

Date Extracted: 09/21/92
Date Analyzed: 09/23/92
Work Order No.: K925808C

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

Sample Name: Method Blank
Lab Code: K5808-MB

Base Neutral Analyte	MRL	Result	Base Neutral Analyte	MRL	Result
N-Nitrosodimethylamine	5	ND	2,6-Dinitrotoluene	5	ND
Aniline	20	ND	Diethyl Phthalate	5	ND
Bis(2-chloroethyl) Ether	5	ND	4-Chlorophenyl Phenyl Ether	5	ND
1,2-Dichlorobenzene	5	ND	Fluorene	5	ND
1,3-Dichlorobenzene	5	ND	4-Nitroaniline	20	ND
1,4-Dichlorobenzene	5	ND	N-Nitrosodiphenylamine	5	ND
Bis(2-chloroisopropyl) Ether	5	ND	4-Bromophenyl Phenyl Ether	5	ND
N-Nitrosodi-n-propylamine	5	ND	Hexachlorobenzene	5	ND
Hexachloroethane	5	ND	Phenanthrene	5	ND
Nitrobenzene	5	ND	Anthracene	5	ND
Isophorone	5	ND	Di-n-butyl Phthalate	5	ND
Bis(2-chloroethoxy)methane	5	ND	Fluoranthene	5	ND
1,2,4-Trichlorobenzene	5	ND	Pyrene	5	ND
Naphthalene	5	ND	Butylbenzyl Phthalate	5	ND
4-Chloroaniline	5	ND	3,3'-Dichlorobenzidine	20	ND
Hexachlorobutadiene	5	ND	Benz(a)anthracene	5	ND
2-Methylnaphthalene	5	ND	Bis(2-ethylhexyl) Phthalate	5	ND
Hexachlorocyclopentadiene	10	ND	Chrysene	5	ND
2-Chloronaphthalene	5	ND	Di-n-octyl Phthalate	5	ND
2-Nitroaniline	20	ND	Benzo(b)fluoranthene	5	ND
Dimethyl Phthalate	5	ND	Benzo(k)fluoranthene	5	ND
Acenaphthylene	5	ND	Benzo(a)pyrene	5	ND
3-Nitroaniline	20	ND	Indeno(1,2,3-c,d)pyrene	5	ND
Acenaphthene	5	ND	Dibenz(a,h)anthracene	5	ND
Dibenzofuran	5	ND	Benzo(g,h,i)perylene	5	ND
2,4-Dinitrotoluene	5	ND			

Acid Analyte	MRL	Result	Acid Analyte	MRL	Result
Phenol	5	ND	2,4-Dichlorophenol	5	ND
2-Chlorophenol	5	ND	4-Chloro-3-methylphenol	5	ND
Benzyl Alcohol	5	ND	2,4,6-Trichlorophenol	5	ND
2-Methylphenol	5	ND	2,4,5-Trichlorophenol	5	ND
3- and 4-Methylphenol♦	5	ND	2,4-Dinitrophenol	50	ND
2-Nitrophenol	5	ND	4-Nitrophenol	50	ND
2,4-Dimethylphenol	5	ND	2-Methyl-4,6-dinitrophenol	20	ND
Benzoic Acid	50	ND	Pentachlorophenol	30	ND

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

Approved by Colin Elliott Date 10/1/92

APPENDIX A

LABORATORY QC RESULTS

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COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON Associates
Project: ARCO #601 - San Leandro/#OG70-007.01
Sample Matrix: Water

Date Received: 09/18/92
Work Order No.: K925808C

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

Sample Name: MW-8
Lab Code: K5808-1

						Percent Recovery			
Analyte	MRL	Spike Level	Sample Result	Spiked Sample Result	Duplicate Spiked Sample Result	Spiked Sample	Duplicate Spiked Sample	CAS Acceptance Criteria	Relative Percent Difference
Cadmium	3	50	ND	50	49	100	98	75-125	2
Chromium	5	200	59	254	244	98	92	75-125	4
Lead	2	20	18	35	34	88	85	75-125	3
Nickel	20	500	78	536	543	92	93	75-125	1
Zinc	10	500	128	580	581	90	91	75-125	<1

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

Approved by Glenn Elliott Date 10/1/92

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COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON Associates
Project: ARCO #601 - San Leandro/#OG70-007.01

Date Analyzed: 09/23/92
Work Order No.: K925808C

Initial Calibration Verification (ICV) Summary
µg/L (ppb)

Analyte	EPA Method	True Value	Result	Percent Recovery
Cadmium	6010	1,250	1,280	102
Chromium	6010	500	516	103
Lead	7421	98.4	102	104
Nickel	6010	1,250	1,270	102
Zinc	6010	1,250	1,260	101

ICV Source: EPA ICV

Approved by Alan Elliott Date 10/1/92

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON Associates
Project: ARCO #601 - San Leandro/#OG70-007.01
Sample Matrix: Water

Date Extracted: 09/21/92
Date Analyzed: 09/23/92
Work Order No.: K925808C

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
Batch QC	K5758-6	48	41	95	70	72	82
Batch QC	K5758-6MS	49	43	90	50	57	77
Batch QC	K5758-6DMS	60	46	99	76	73	81
Method Blank	K5808-MB	47	42	78	73	71	76
Laboratory Control Sample	K5808-LCS	43	32	83	70	69	76
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}

Approved by [signature] Date 10/1/92

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON Associates	**Date Received:**	09/18/92
Project:	ARCO #601 - San Leandro/#OG70-007.01	**Date Extracted:**	09/21/92
Sample Matrix:	Water	**Date Analyzed:**	09/25/92
		Work Order No.:	K925808C

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	K5808-1	36	33	82	55	52	66
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}

Approved by John Elliott Date 10/1/92

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON Associates
Project: ARCO #601 - San Leandro/#OG70-007.01
Sample Matrix: Water

Date Extracted: 09/21/92
Date Analyzed: 09/23/92
Work Order No.: K925808C

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: K5758-6

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	430	430	ND	170	190	40	44	12-89	10
2-Chlorophenol	430	430	ND	190	250	44	58	27-123	27
1,4-Dichlorobenzene	85	85	ND	42	60	49	71	36-97	37
N-Nitrosodi-n-propylamine	85	85	ND	50	69	59	81	41-116	31
1,2,4-Trichlorobenzene	85	85	ND	47	65	55	76	39-98	32
4-Chloro-3-methylphenol	430	430	ND	270	310	63	72	23-97	13
Acenaphthene	85	85	ND	59	71	69	84	46-118	20
4-Nitrophenol	430	430	ND	160	180	37	42	10-80	13
2,4-Dinitrotoluene	85	85	ND	63	73	74	86	24-96	15
Pentachlorophenol	430	430	ND	380	420	88	98	9-103	11
Pyrene	85	85	ND	68	75	80	88	26-127	10

ND None Detected at or above the method reporting limit

Approved by Colin Elliott Date 10/1/92

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON Associates	**Date Extracted:**	09/21/92
Project:	ARCO #601 - San Leandro/#OG70-007.01	**Date Analyzed:**	09/23/92
LCS Matrix:	Water	**Work Order No.:**	K925808C

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	200	39	20	5-112
2-Chlorophenol	200	103	52	23-134
1,4-Dichlorobenzene	40	17	42	20-124
N-Nitrosodi-n-propylamine	40	31	78	D-230
1,2,4-Trichlorobenzene	40	18	45	44-142
4-Chloro-3-methylphenol	200	116	58	22-147
Acenaphthene	40	28	70	47-145
4-Nitrophenol	200	61	30	D-132
2,4-Dinitrotoluene	40	32	80	39-139
Pentachlorophenol	200	164	82	14-176
Pyrene	40	33	82	52-115

* Prepared using a source of target parameters separate from the calibration standards.
D Detected; result must be greater than zero.

Approved by Chris Elliott Date 10/1/92

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ARCO Products Company
Division of AtlanticRichfieldCompany

Task Order No. EMCGC-92-1

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) 415 571-2434	Telephone no. (Consultant) 408 453-0719	Fax no. (Consultant) (408) 453-0452
Consultant name EMCON ASSOCIATES	Address (Consultant) 1938 JUNCTION AVE San Jose		Contract number 07077

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 ☐ (3510)	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 ☐ Semi VOA ☐ VOA ☐	CAM Metals EPA 6010/7000 TTLC ☐ STLC ☐	Lead Org./DHS ☐ Lead EPA 7420/7421 ☑	TOTAL METALS (Cd,Cr, Pb, Zn Ni)
MW1(10)		2		X		X	NP	9-18-92	1015			X					X				
MW2(10)		1		X		X	HCl	9-18-92	1015				X								
MW3(10)		1		X		X	HNO_3	9-18-92	1015											X	X

Method of shipment: Sampler will deliver

Special detection Limit/reporting: Lowest Possible

Special QA/QC: AS Normal

Remarks: LAB ONLY ONE BOTTLE FOR EACH GLASS SAMPLE DUE TO LOW YEILD WELL 06-70-007.01

Lab number: SJ92-1171

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: MADER	Date: 9-18-92	Time: 1640	Received by: 9-18-92 1640
Relinquished by	Date	Time	Received by
Relinquished by	Date	Time	Received by laboratory: Tom K. CAS — Date: 9/19/92 — Time: 0930

Distribution: White copy — Laboratory; Canary copy — ARCO Environmental Engineering; Pink copy — Consultant
APPC-3292 (2-91)

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: 0270-007.01 SAMPLE ID: MW-1

PURGED BY: J. Williams CLIENT NAME: ARCO 601

SAMPLED BY: J. Williams LOCATION: 712 Lewelling

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

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

CASING ELEVATION (feet/MSL): ND VOLUME IN CASING (gal.): N/A

DEPTH TO WATER (feet): 4.22 CALCULATED PURGE (gal.): N/A

DEPTH OF WELL (feet): 11 ACTUAL PURGE VOL. (gal.): N/A

DATE PURGED: 09-15-97 Start (2400 Hr) NA / End (2400 Hr) NA /

DATE SAMPLED: 09-15-97 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)
		product				

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		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: ___ LOCK #: 32,58

REMARKS: Product @ 7

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

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

Location of previous calibration: ___

Signature: [signature] Reviewed By: JB Page 1 of 10

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: 0670-007.01 SAMPLE ID: MW-2

PURGED BY: J. Williams CLIENT NAME: ARCO 601

SAMPLED BY: J. Williams LOCATION: 712 Bancroft Blvd

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

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

CASING ELEVATION (feet/MSL): N/A VOLUME IN CASING (gal.): 2.36

DEPTH TO WATER (feet): 8.70 CALCULATED PURGE (gal.): 11.80

DEPTH OF WELL (feet): 17.30 ACTUAL PURGE VOL. (gal.): 12

DATE PURGED: 09-15-92 Start (2400 Hr) 1404 End (2400 Hr) 1429

DATE SAMPLED: 09-15-92 Start (2400 Hr) 1433 End (2400 Hr) 1434

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1410	2.5	6.74	1805	73.9	GREY	HEAVY
1415	5	6.77	1645	95.4	〃	〃
1420	7.5	6.81	1665	75.0	〃	〃
1424	10	6.85	1655	74.8	〃	〃
1429	12	6.84	1665	74.8	〃	〃

D. O. (ppm): N/A ODOR: STRONG

COLOR (COBALT 0 - 100): N/A

TURBIDITY (NTU 0 - 200): N/A

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

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 #: 3259

REMARKS:

Meter Calibration: Date: 9-15-92 Time: 1105 Meter Serial #: ___ Temperature °F: ___

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

Location of previous calibration: MW-13

Signature: [signature] Reviewed By: JF Page 2 of 10

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.

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.):	NR
DEPTH TO WATER (feet):	8.08	CALCULATED PURGE (gal.):	NR
DEPTH OF WELL (feet):	12.	ACTUAL PURGE VOL. (gal.):	NR

DATE PURGED: 05-15-92 Start (2400 Hr) NR End (2400 Hr) ___

DATE SAMPLED: 05-15-92 Start (2400 Hr) NA End (2400 Hr) ___

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

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	✓ 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: ___ LOCK #: 3259

REMARKS: .02 Product Skimmer in WELL

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

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

Location of previous calibration: ___

Signature: [signature] Reviewed By: JR Page 3 of 10

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: 0670-007.01 SAMPLE ID: MW-4

PURGED BY: S.W.Hamc CLIENT NAME: ARCO 601

SAMPLED BY: S.W.Hamc LOCATION: 712 Lewelling Blvd

TYPE: Ground Water ✓ 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.): NA / ___

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

DEPTH OF WELL (feet): 8.46 ACTUAL PURGE VOL. (gal.): ___ / ___

DATE ~~PURGED~~: 09-15-92 Start (2400 Hr) NA / End (2400 Hr) NA /

DATE ~~SAMPLED~~: 09-15-92 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)
			DRY			

D. O. (ppm): ___ ODOR: ___ (COBALT 0 - 100) (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 #: 3259

REMARKS: ___

Meter Calibration: Date: 9-16-92 Time: 1105 Meter Serial #: ___ Temperature °F: ___

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

Location of previous calibration: MW-12

Signature: [signature] Reviewed By: JB Page 4 of 10

WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 067-007.01 SAMPLE ID: MW-5

PURGED BY: J Williams CLIENT NAME: ARCO 601

SAMPLED BY: J Williams LOCATION: 712 Lewelling Blvd

TYPE: Ground Water ✓ Surface Water ____ Treatment Effluent ____ Other ____

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

CASING ELEVATION (feet/MSL):	N/A	VOLUME IN CASING (gal.):	1.01
DEPTH TO WATER (feet):	8.45	CALCULATED PURGE (gal.):	5.09
DEPTH OF WELL (feet):	10.	ACTUAL PURGE VOL. (gal.):	NA

DATE PURGED: 09-15-92 Start (2400 Hr) 1451 End (2400 Hr) NA

DATE SAMPLED: 09-15-92 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	Sample			

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
- ____ Centrifugal Pump
- ____ Submersible Pump
- ____ Well Wizard™
- ____ Bailer (Teflon®)
- ____ Bailer (PVC)
- ____ Bailer (Stainless Steel)
- ____ Dedicated

Other: ____

SAMPLING EQUIPMENT

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

Other: ____

WELL INTEGRITY: Fine LOCK #: 3259

REMARKS: After Bailing 1 casing .02 of product ~~[illegible]~~ measured.

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

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

Location of previous calibration: ____

Signature: [signature] Reviewed By: JR Page 5 of 10

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: 0670-007.01 SAMPLE ID: MW-6

PURGED BY: Swillivan C CLIENT NAME: ARCO 601

SAMPLED BY: Swillivan S LOCATION: 712 Lewelling Blvd

TYPE: Ground Water ___ 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): 02 CALCULATED PURGE (gal.): NR

DEPTH OF WELL (feet): 8.5 ACTUAL PURGE VOL. (gal.): NR

DATE ~~PURGED~~: 09-15-92 Start (2400 Hr) NA End (2400 Hr) NA

DATE ~~SAMPLED~~: 09-15-92 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)

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	___ 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 #: 3259

REMARKS: ___

Meter Calibration: Date: 9-15-92 Time: 1105 Meter Serial #: ___ Temperature °F: ___

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

Location of previous calibration: MW-13

Signature: [signature] Reviewed By: JB Page 6 of 10

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: 0670-007.01 SAMPLE ID: MW-7

PURGED BY: S. Williams CLIENT NAME: ARCO 601

SAMPLED BY: S. Williams LOCATION: 712 Lewelling Blvd

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.): NR

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

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

DATE PURGED: 09-15-92 Start (2400 Hr) NR End (2400 Hr) NR

DATE SAMPLED: 09-15-92 Start (2400 Hr) NR End (2400 Hr) NR

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

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	___ 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 #: 3254

REMARKS: ___

Meter Calibration: Date: 9-15-92 Time: 1105 Meter Serial #: ___ Temperature °F: ___

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

Location of previous calibration: MW-13

Signature: [signature] Reviewed By: JTR Page 7 of 10

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: 0680-007.01 SAMPLE ID: MW-8

PURGED BY: J Williams SAMPLED BY: J Williams CLIENT NAME: ARCO-601

LOCATION: 712 Lewelling Blvd

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.): .91

DEPTH TO WATER (feet): 8.80 CALCULATED PURGE (gal.): 4.5

DEPTH OF WELL (feet): 10.20 ACTUAL PURGE VOL (gal.): 1

DATE PURGED: 09-15-92 Start (2400 Hr) 1238 End (2400 Hr) 1242

DATE SAMPLED: 09-15-92 Start (2400 Hr) 1243 End (2400 Hr) 1305

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1243	1	6.95	2340	70.7	GREY	HEAVY
	DRIED	DRIED	Time 1243			
	Carbonate	NOT enough volume				

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

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

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 #: 3259

REMARKS: 4 Liter 9-15-92 1305

Meter Calibration: Date: 9-15-92 Time: 1105 Meter Serial #: ___ Temperature °F: ___

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

Location of previous calibration: MW-13

Signature: [signature] Reviewed By: JB Page 8 of 10

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: 0670-007-01 SAMPLE ID: MW-8

PURGED BY: M. Gallegos CLIENT NAME: ARCO #0001

SAMPLED BY: ~~M. Gallegos~~ M. Adler LOCATION: 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.): 0.23

DEPTH TO WATER (feet): 8.77 CALCULATED PURGE (gal.): 1.16

DEPTH OF WELL (feet): 10.2 ACTUAL PURGE VOL. (gal.): .75

DATE PURGED: 9-17-92 Start (2400 Hr) 1051 End (2400 Hr) 1055

DATE SAMPLED: 9-18-92 Start (2400 Hr) 1015 End (2400 Hr) 1545

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1052	0.25	6.27	1810	69.9	Lt grey	heavy
1055	.5	6.59	1890	71.2	"	"
1058	.75	6.67	1891	71.3	"	"
	recharge	not enough volume for reading				

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

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	X Bailer (Teflon®)	___ 2" Bladder Pump	X 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: Good LOCK #: 3259

REMARKS: well dried at .75 gal slow recharge

This is a very low yielding well. It also has a very slow recharge rate.

DTW 8.72 on 9-18-92 @ 10:12 removed 2750 ml for sampling @ 1015

(removed 300 ml for sample @ 13:00) (DTW 10.04 @ 1409) DTW 9.97 @ 1439)

removed 450 mls. @ 15:45

Meter Calibration: Date: 9-17-92 Time: 1045 Meter Serial #: 5477 Temperature °F: 69.2

(EC 1000 1062 / 1000) (DI ___) (pH 7 706 / 700) (pH 10 993 / 1000) (pH 4 397 / ___)

Location of previous calibration: FC

Signature: [signature] Reviewed By: JB Page 9 of 10

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: 0670-007.01 SAMPLE ID: MW-13

PURGED BY: J. Williams CLIENT NAME: ARCO 601

SAMPLED BY: J. Williams LOCATION: 712 Lewelling Blvd

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.): .37

DEPTH TO WATER (feet): 10.68 CALCULATED PURGE (gal.): 1.89

DEPTH OF WELL (feet): 13 ACTUAL PURGE VOL. (gal.): 1.5

DATE PURGED: 09-15-92 Start (2400 Hr) 1135 End (2400 Hr) 1153

DATE SAMPLED: 09-15-92 Start (2400 Hr) 1201 End (2400 Hr) 1201

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1142	0.2	6.86	1827	69.4	BROWN	HEAVY
1147	0.4	6.96	1826	70.6	〃	〃
1152	0.6	7.09	1817	70.6	〃	〃
	DRIED					
1206	RECHARGE	6.94	1829	69.5	BROWN	HEAVY

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

(COBALT 0 - 100) (NTU 0 - 200)

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): NO

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 #: 3259

REMARKS: DRIED AFTER 2 REMOVALS

Meter Calibration: Date: 9-15-92 Time: 1105 Meter Serial #: ___ Temperature °F: ~~70~~ 74

(EC 1000 1004 / 1000) (DI ___) (pH 7 7.03 / 7.00) (pH 10 10.02 / 10.00) (pH 4 4.02 / ___)

Location of previous calibration: MW-13

Signature: [signature] Reviewed By: JB Page 10 of 10

EMCON ASSOCIATES
Consultants in Wastes Management and Environmental Control

Date July 20, 1992
Project G70-07.01

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
	July 1992 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.

Robert Porter, Senior Project Engineer.

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

FIELD REPORT
DEPTH TO WATER / FLOATING PRODUCT SURVEY

PROJECT # : G70-07.01 STATION ADDRESS : 712 Lewelling Blvd. San Leandro DATE : 7.15.92

ARCO STATION # : 601 FIELD TECHNICIAN : Rich Schaeffer DAY : Wednes

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-2	Yes	Yes	Yes	3259	Yes	8.45	8.45	N.D	N.D	12.58	—
2	MW-8	Yes	Yes	Yes	3259	Yes	8.46	8.46	N.D	N.D	10.51	—
3	MW-4	Yes	Yes	Yes	3259	Yes	8.81	8.81	N.D	N.D	8.95	—
4	MW-7	Yes	Yes	Yes	3259	Yes	9.78	9.78	N.D	N.D	9.9	—
5	MW-6	Yes	Yes	Yes	3259	Yes	8.81	8.81	N.D	N.D	8.9	—
6	MW-5	Yes	Yes	Yes	3259	Yes	8.34	8.34	N.D	N.D	10.6	—
7	MW-1	Yes	Yes	Yes	NO	NO	9.40	9.40	N.D	N.D	11.1	—
8	MW-3	Yes	NO	Yes	3259	Yes	7.92	7.92	N.D	N.D	12.3	Skimmer - No product

SURVEY POINTS ARE TOP OF WELL CASINGS

EMCON ASSOCIATES
Consultants in Wastes Management and Environmental Control

Date Sept 01, 1992
Project G70-07.01

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

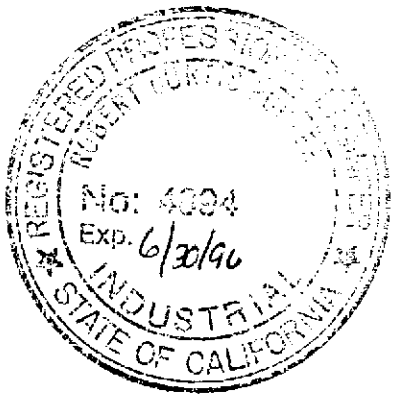
We are enclosing:

Copies	Description
1	Depth To Water/Floating Product Survey Results
	August 1992 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

Robert Porter, Senior Project Engineer.

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

FIELD REPORT
DEPTH TO WATER / FLOATING PRODUCT SURVEY

PROJECT # : G70-07.01 STATION ADDRESS : 712 Lewelling Blvd. San Leandro DATE : 8.25.97

ARCO STATION # : 601 FIELD TECHNICIAN : Rich Schaeffer DAY : TUES

DTW Order	WELL ID	Well Box Seal	Well Lid Secure	Gasket	Lock	Locking Well Cap	FIRST DEPTH TO WATER (feet)	SECOND DEPTH TO WATER (feet)	DEPTH TO FLOATING PRODUCT (feet)	FLOATING PRODUCT THICKNESS (feet)	WELL TOTAL DEPTH (feet)	COMMENTS
1	MW-7	FINE	YES	FINE	3259	YES	9.33	9.33	N.D	N.D	9.5	-
2	MW-8	FINE	YES	FINE	3259	YES	8.64	8.64	N.D	N.D	10.1	-
3	MW-4	FINE	YES	FINE	3259	YES	8.59	8.59	N.D	N.D	8.5	-
4	MW-2	FINE	YES	FINE	3259	YES	8.53	8.53	N.D	N.D	12.3	-
5	MW-6	FINE	YES	FINE	3259	YES	8.42	8.42	N.D	N.D	8.6	-
6	MW-5	FINE	YES	FINE	3259	YES	8.18	8.18	N.D	N.D	10.1	-
7	MW-1	FINE	YES	FINE	3259	YES	8.21	8.21	N.D	N.D	11.1	-
8	MW-3	FINE	YES	~~NONE~~	3259	YES	8.00	8.00	N.D	N.D	11.9	NO PRODUCT IN SKIMMER

SURVEY POINTS ARE TOP OF WELL CASINGS

MONITORING WELL PURGE WATER TRANSPORT FORM

GENERATOR INFORMATION

NAME: ARCO PRODUCTS

ADDRESS: P.O. BOX 5811

CITY,STATE,ZIP: SAN MATEO, CA 94402 PHONE #: (415) 571-2434

DESCRIPTION OF WATER: PURGE WATER GENERATED DURING SAMPLING OR DEVELOPMENT OF MONITORING WELLS LOCATED AT VARIOUS SITES. AUGER RINSATE GENERATED DURING THE INSTALLATION OF MONITORING WELLS AT VARIOUS SITES. THE WATER MAY CONTAIN DISSOLVED HYDROCARBONS.

THE GENERATOR CERTIFIES THAT THIS WATER AS DESCRIBED IS NON-HAZARDOUS

Kyle Christie by Stephen R. Yanik 9-24-92
(Typed or printed full name & signature) (Date)

SITE INFORMATION

	STA #	JOB #	ADDRESS	GALS
1	A-601	21089-PW	712 LEWELLING BLVD., SAN LEANDRO, CA	17
2	A-6168	21021-PW	222 JIBBOOM ST., SACRAMENTO, CA	36
3	A-6185	20976-PW	5898 MISSION ST., SAN FRANCISCO, CA	103
4	A-548	21022-PW	1612 HAMMER LANE, STOCKTON, CA	117
5	A-1316	21034-PW	1800 OLIVE DR., DAVIS, CA	128
6	A-2141	21047&21056	211 RESERVATION RD., MARINA, CA	413
7	A-335	21072-PW	4595 E. CLINTON ST., FRESNO, CA	17
8				
9				
10				
11				
			TOTAL GALLONS:	831

TRANSPORTER INFORMATION

NAME: BALCH PETROLEUM

ADDRESS: 930 AMES AVE.

CITY,STATE,ZIP: MILPITAS, CA 95035 PHONE #: (408) 942-8686

TRUCK ID #: PETERBILT HURSCHEL WARD Hurschel Ward 9-24-92
(Typed or printed full name & signature) (Date)

TSD FACILITY INFORMATION

NAME: GIBSON ENVIRONMENTAL Gov. 1464

ADDRESS: 475 SEAPORT BLVD

CITY,STATE,ZIP: REDWOOD CITY, CA 94063 PHONE #: (415) 368-5511

RELEASE #: 11320 Shawn Pacheli Shawn Pacheli
(Typed or printed full name & signature) (Date)

P.O. GIB-92-074 9-24-92