ALCO
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RESNA
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3315 Almaden Expressway, Suite 34
San Jose, CA 95118
Phone: (408) 264-7723
FAX: (408) 264-2435

TRANSMITTAL

TO: Ms. Susan Hugo
Alameda County Health
Care Services Agency
Department of Environmental Health
80 Swan Way, Room 200
Oakland, California 94621

DATE: November 24, 1993
PROJECT NUMBER: 60000.15
SUBJECT: ARCO Station 771

FROM: Erin D. Krueger

WE ARE SENDING YOU:

COPIES	DATED	DESCRIPTION
1	11/22/93	Letter Report, Quarterly Groundwater Monitoring, Third Quarter 1993 at ARCO Station 771, 899 Rincon Avenue, Livermore, California.

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REMARKS:
Copies: 1 to RESNA project file no. 60000.15

Erin D. Krueger, Staff Geologist

cc: Mr. Kyle Christie, ARCO
Mr. Eddy So, RWQCB
Mr. Danielle Stefani, Livermore Fire Dept.

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3315 Almaden Expressway, Suite 34
San Jose, CA 95118
Phone: (408) 264-7723
FAX: (408) 264-2435

LETTER REPORT
QUARTERLY GROUNDWATER MONITORING
Third Quarter 1993
at
ARCO Station 771
899 Rincon Avenue
Livermore, California

60000.15 Nov 1993

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3315 Almaden Expressway, Suite 34
San Jose, CA 95118
Phone: (408) 264-7723
FAX: (408) 264-2435

November 22, 1993
3rdqtrqm
60000.15

Mr. Michael Whelan
ARCO Products Company
P.O. Box 5811
San Mateo, California 94402

Subject: Letter Report, Quarterly Groundwater Monitoring, Third Quarter 1993
ARCO Station 771, 899 Rincon Avenue, Livermore, California.

Mr. Whelan:

As requested by ARCO Products Company (ARCO), RESNA Industries Inc. (RESNA) prepared this letter report which summarizes the results of third quarter 1993 groundwater monitoring performed by ARCO's contractor, EMCON Associates (EMCON) of San Jose, California, at the above-referenced site. The scope of work for quarterly monitoring at this site was reduced starting September 1, 1993, from monthly monitoring (depth-to-water measurements and subjective analyses) and quarterly sampling, to quarterly monitoring and sampling. The reduced monitoring is in response to a relatively stable groundwater gradient and flow direction.

The objectives of this quarterly groundwater monitoring event are to evaluate changes in the groundwater flow direction and gradient, and changes in concentrations of petroleum hydrocarbons in the local groundwater associated with former underground gasoline-storage tanks and a former underground waste-oil tank at the site. The field work and laboratory analyses performed under the direction of EMCON during this quarter 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 samples. Field procedures and acquisition of field data were performed under the direction of EMCON; warrant of their field data and evaluation of their field protocols is beyond RESNA's scope of work. RESNA's scope of work was limited to monthly inspections of the Horner EZY Floating Product Skimmers, interpretation of field and laboratory analytical 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 771 is located on the southwestern corner of the intersection of Rincon Avenue and Pine Street in Livermore, California. The site location is shown on the Site Vicinity Map, Plate 1.

Results of previous environmental investigations at the site are summarized in reports listed in the References section. A performance evaluation of the recently installed Vapor Extraction System (VES) will be presented in a forthcoming report. The locations of soil borings, groundwater monitoring wells, and other pertinent site features are shown on the Generalized Site Plan, Plate 2.

Groundwater Sampling and Gradient Evaluation

Depth to water levels (DTW) were measured by EMCON field personnel on July 27, August 26, and September 14, 1993. Quarterly sampling was performed by EMCON field personnel on September 15 and 16, 1993. The results of EMCON's field work on the site, including DTW measurements and subjective analyses for the presence of product in the groundwater in MW-1 through MW-11 and RW-1, are presented on EMCON's Field Reports, Water Sample Data Sheets, and Summary of Groundwater Monitoring Data. These data are included in Appendix A.

The DTW levels, wellhead elevations, groundwater elevations, and subjective observations of product in the groundwater from MW-1 through MW-11 and RW-1 for this and previous quarterly groundwater monitoring at the site are summarized in Table 1, Cumulative Groundwater Monitoring Data. The groundwater gradient interpreted from the July monitoring event indicated a gradient of about 0.04 ft/ft with components of flow to the north-northeast and to the south, away from a groundwater ridge across the site. The groundwater gradients interpreted from the August and September 1993 monitoring events were approximately 0.07 and 0.06 ft/ft, respectively, with flow directions to the north-northeast. The groundwater gradients and flow directions are shown on Plates 3 through 5, Groundwater Gradient Maps. The presence of product sheen was noted on the purge water from monitoring wells MW-1 and MW-2 during purging of these wells on September 16, 1993; although no floating product or product sheen was observed in the samples collected from these wells for subjective analyses during this quarter. No evidence of floating product or sheen was observed in the other wells by EMCON's field personnel during this quarter (see EMCON's Field Reports, Appendix A).

Groundwater monitoring wells MW-1 through MW-11, and RW-1 were purged and sampled by EMCON field personnel on September 15 and 16, 1993. Purge water generated during purging and sampling of the monitoring wells was transported to Gibson Environmental in Redwood City, California for recycling.

Laboratory Methods and Results

Under the direction of EMCON, water samples collected from the wells were analyzed by Columbia Analytical Services, Inc., located in San Jose, California (Hazardous Waste Testing Laboratory Certification No. 1426). The water samples from MW-1 through MW-11, and RW-1 were analyzed for benzene, toluene, ethylbenzene, and total xylenes (BTEX) and total petroleum hydrocarbons as gasoline (TPHg) using modified Environmental Protection Agency (EPA) Methods 5030/8020/California DHS LUFT Method. Concentrations of TPHg and benzene in the groundwater are shown on Plate 6, TPHg Concentrations in Groundwater, and Plate 7, Benzene Concentrations in Groundwater. Groundwater samples from well MW-6, the nearest downgradient well to the former waste-oil tank, were also analyzed for total petroleum hydrocarbons as diesel (TPHd) and total oil and grease (TOG) using EPA Methods 3510/California DHS LUFT Method and Standard Methods 5520 C and F, respectively. The Chain of Custody Records and Laboratory Analyses Reports are attached in Appendix A. Results of these and previous water analyses are summarized in Table 2, Cumulative Results of Laboratory Analyses of Groundwater Samples.

The following is a general summary of changes in the concentrations of TPHg and BTEX in the groundwater from wells MW-1 through MW-11, and RW-1 since last quarter. Concentrations of TPHg and BTEX generally decreased in wells MW-1 through MW-7 and RW-1, with the exception of benzene and toluene in well MW-1 and benzene in well MW-2, which increased. Concentrations of TPHg and BTEX remained nondetected in offsite wells MW-8 through MW-11. Concentrations of TPHd and TOG decreased in MW-6.

Product Recovery

Floating product was measured and recovered monthly, as summarized in Table 3, Approximate Cumulative Product Recovered. In January 1992, Horner EZY Skimmers were installed in wells MW-1, MW-2, and MW-5, for interim remediation at the site. In November 1992 the product skimmers were temporarily removed from the wells due to the installation of new wellhead fittings that connected the wells to the vapor extraction system. The skimmers were reinstalled in wells MW-1 and MW-2 in February 1993. The skimmer in well MW-5 could not be reinstalled because the new L-shaped wellhead fitting blocked

access to the well. RESNA inspected wells MW-1, MW-2 and MW-5 for the presence of floating product on September 30, 1993. No measurable floating product was detected in wells during this inspection, however, a product sheen was observed in all three wells. No floating product was recovered during this quarter. The total product recovered at the site for 1991 through 1993 is approximately 3.06 gallons.

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

Ms. Susan Hugo
Alameda County Health Care Services Agency
Department of Environmental Health
80 Swan Way, Room 200
Oakland, California 94621

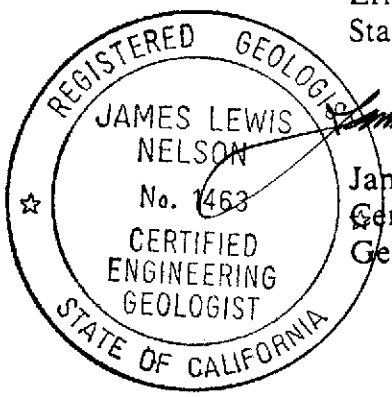
Mr. Eddy So
Regional Water Quality Control Board
San Francisco Bay Region
2101 Webster Street, Suite 500
Oakland, California 94612

Ms. Danielle Stefani
Livermore Fire Department
4550 East Avenue
Livermore, California 94550

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

Sincerely,
RESNA Industries Inc.

Erin D. Krueger
Staff Geologist



James L. Nelson
Certified Engineering
Geologist No. 1463

Enclosures: References

Plate 1, Site Vicinity Map
Plate 2, Generalized Site Plan
Plate 3, Groundwater Gradient Map, July 27, 1993
Plate 4, Groundwater Gradient Map, August 26, 1993
Plate 5, Groundwater Gradient Map, September 14, 1993
Plate 6, TPHg Concentrations in Groundwater, September 15 and 16, 1993
Plate 7, Benzene Concentrations in Groundwater, September 15 and 16, 1993

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

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

REFERENCES

Applied GeoSystems, June 22, 1990. Limited Subsurface Environmental Assessment, ARCO Station No. 771, Livermore, California. AGS 60000-1.

Brown and Caldwell, September 16, 1987. Soil Sample Results for Waste-Oil tank Removal, ARCO Station 771, 899 Rincon Avenue, Livermore, California. 17/3456-02/3.

California Department of Health Services, Office of Drinking Water, October 24, 1990, Summary of Drinking Water Standards.

RESNA/Applied Geosystems, April 12, 1991. Supplemental Subsurface Investigation at ARCO Station No. 771, Livermore, California. AGS 60000.

RESNA/Applied GeoSystems, July 12, 1991. Letter Report Quarterly Ground-Water Monitoring Second Quarter 1991 at ARCO Station 771, 899 Rincon Avenue, Livermore, California. AGS 60000.05

RESNA, October 17, 1991. Report on Additional Subsurface Investigation at ARCO Station 771, 899 Rincon Avenue, Livermore, California. 60000.06

RESNA, November 21, 1991. Letter Report Quarterly Ground-Water Monitoring Third Quarter 1991 at ARCO Station 771, 899 Rincon Avenue, Livermore, California. 60000.05

RESNA, April 7, 1992. Letter Report Quarterly Groundwater Monitoring Fourth Quarter 1991 at ARCO Station 771, 899 Rincon Avenue, Livermore, California. 60000.05

RESNA, May 1, 1992. Letter Report Quarterly Groundwater Monitoring First Quarter 1992 at ARCO Station 771, 899 Rincon Avenue, Livermore, California. 60000.05

RESNA, September 28, 1992. Letter Report Quarterly Groundwater Monitoring Second Quarter 1992 at ARCO Station 771, 899 Rincon Avenue, Livermore, California. 60000.13

RESNA, December 4, 1992. Letter Report Quarterly Groundwater Monitoring Third Quarter 1992 at ARCO Station 771, 899 Rincon Avenue, Livermore, California. 60000.13

REFERENCES

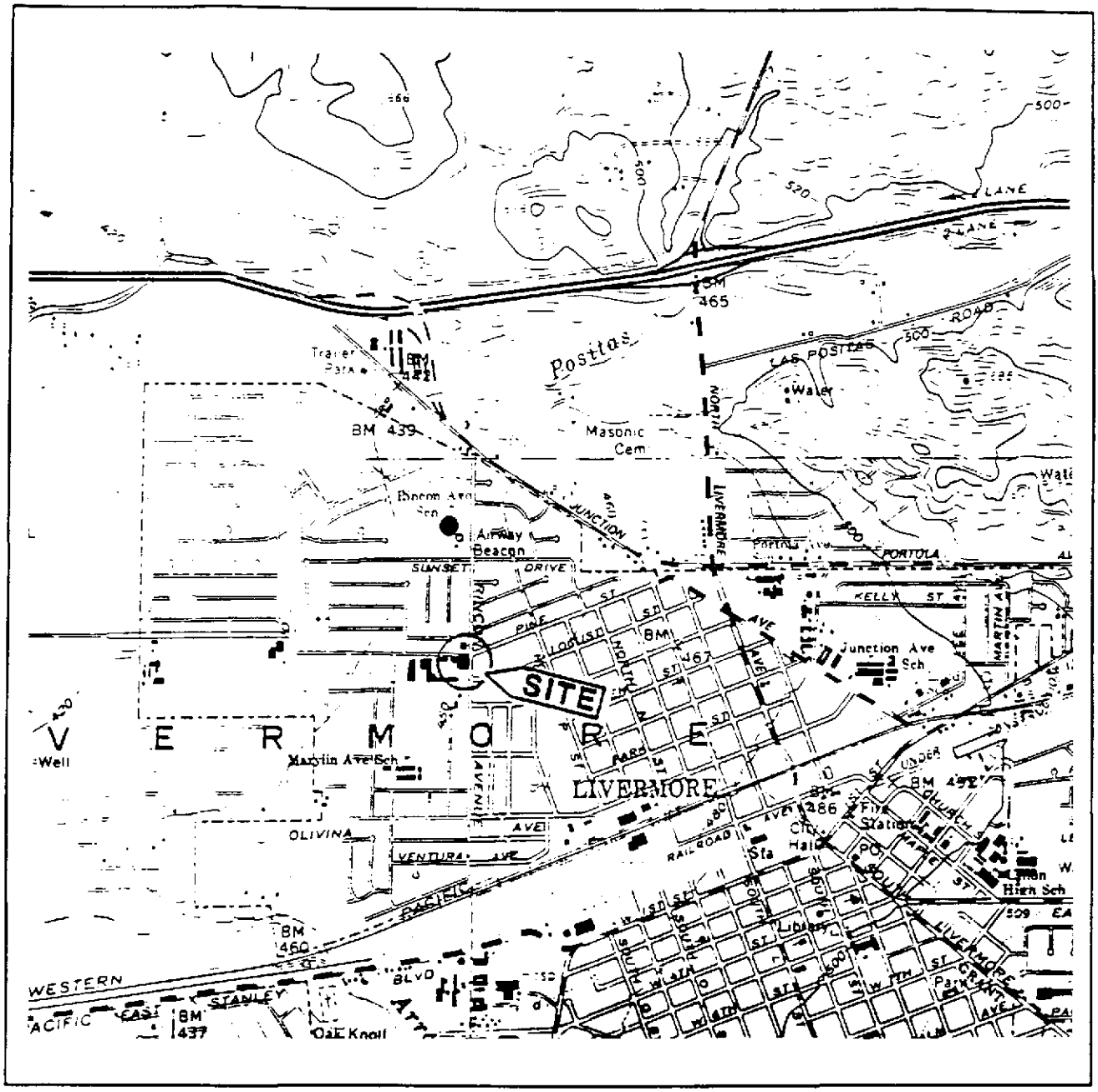
RESNA, February 26, 1993. Report on Additional Onsite and Initial Offsite Subsurface Investigation at ARCO Station 771, 899 Rincon Avenue, Livermore, California. 60000.09

RESNA, March 18, 1993. Letter Report Quarterly Groundwater Monitoring Fourth Quarter 1992 at ARCO Station 771, 899 Rincon Avenue, Livermore, California. 60000.13

RESNA, May 3, 1993. Letter Report Quarterly Groundwater Monitoring First Quarter 1993 at ARCO Station 771, 899 Rincon Avenue, Livermore, California. 60000.15

RESNA, July 27, 1993. Letter Report Quarterly Groundwater Monitoring Second Quarter 1993 at ARCO Station 771, 899 Rincon Avenue, Livermore, California. 60000.15

Roux, July 10, 1992. Underground Storage Tank Removal and Soil Sampling, ARCO Facility No. 771, 899 Rincon Avenue, Livermore, California. A135W01



Source: U.S. Geological Survey
7.5–Minute Quadrangle
Livermore, California
Photorevised 1980

Approximate Scale
2000 1000 0 2000
feet

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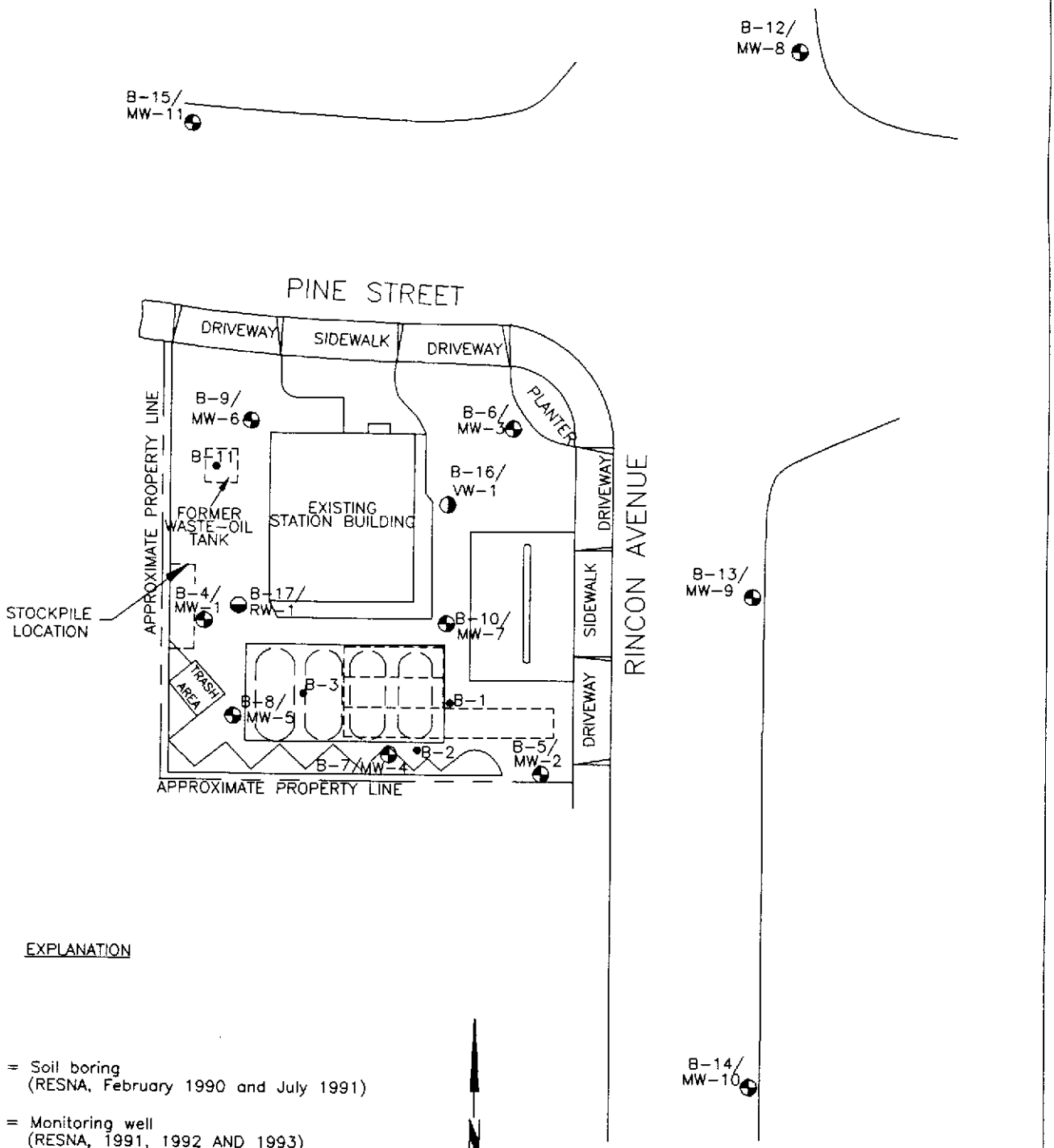
SITE VICINITY MAP
ARCO Station 771
899 Rincon Avenue
Livermore, California

PLATE
1



Source: Surveyed by John Koch, Licensed Land Surveyor.

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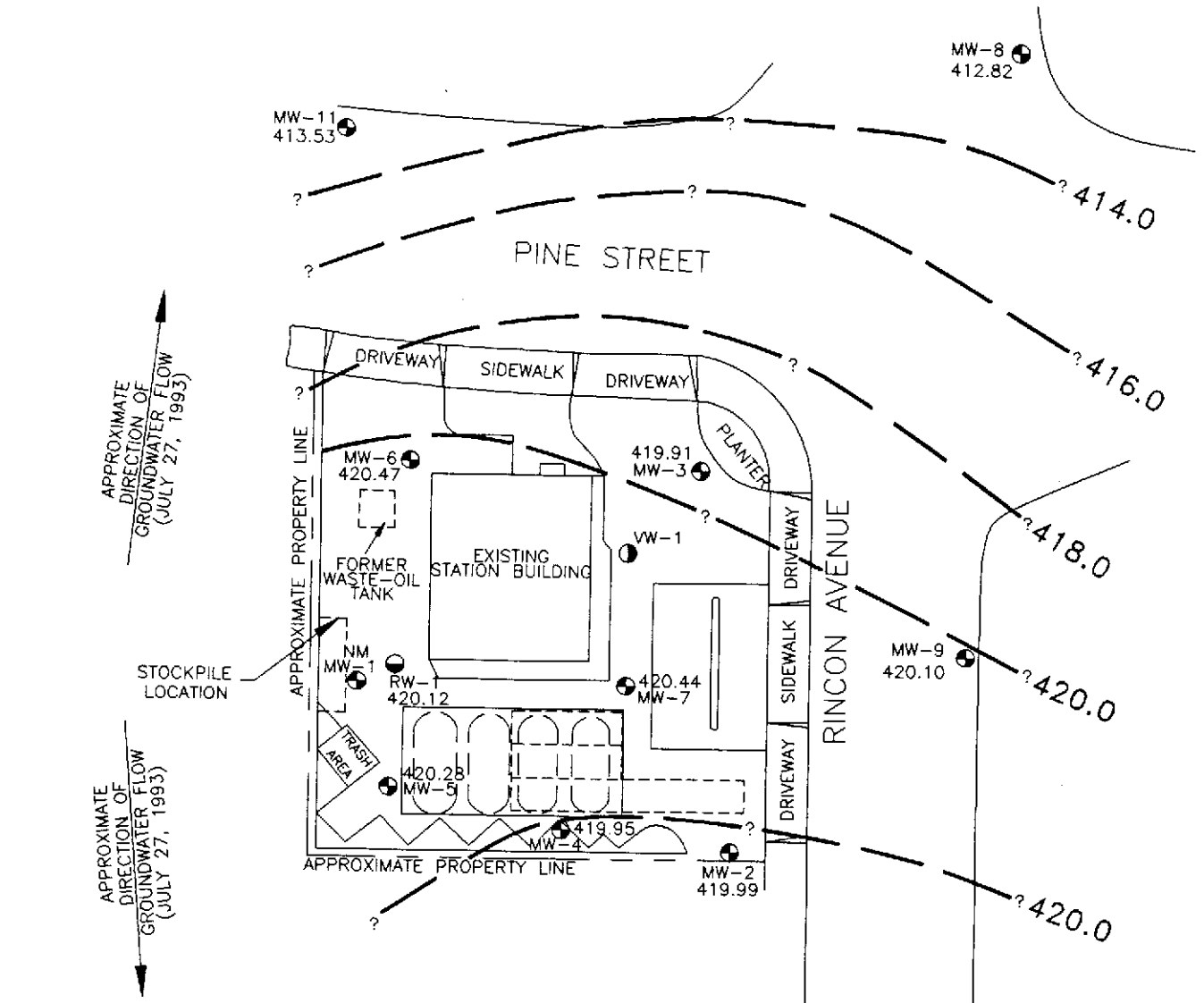
GENERALIZED SITE PLAN
ARCO Station 771
899 Rincon Avenue
Livermore, California

PLATE
2



Source: Surveyed by John Koch, Licensed Land Surveyor.

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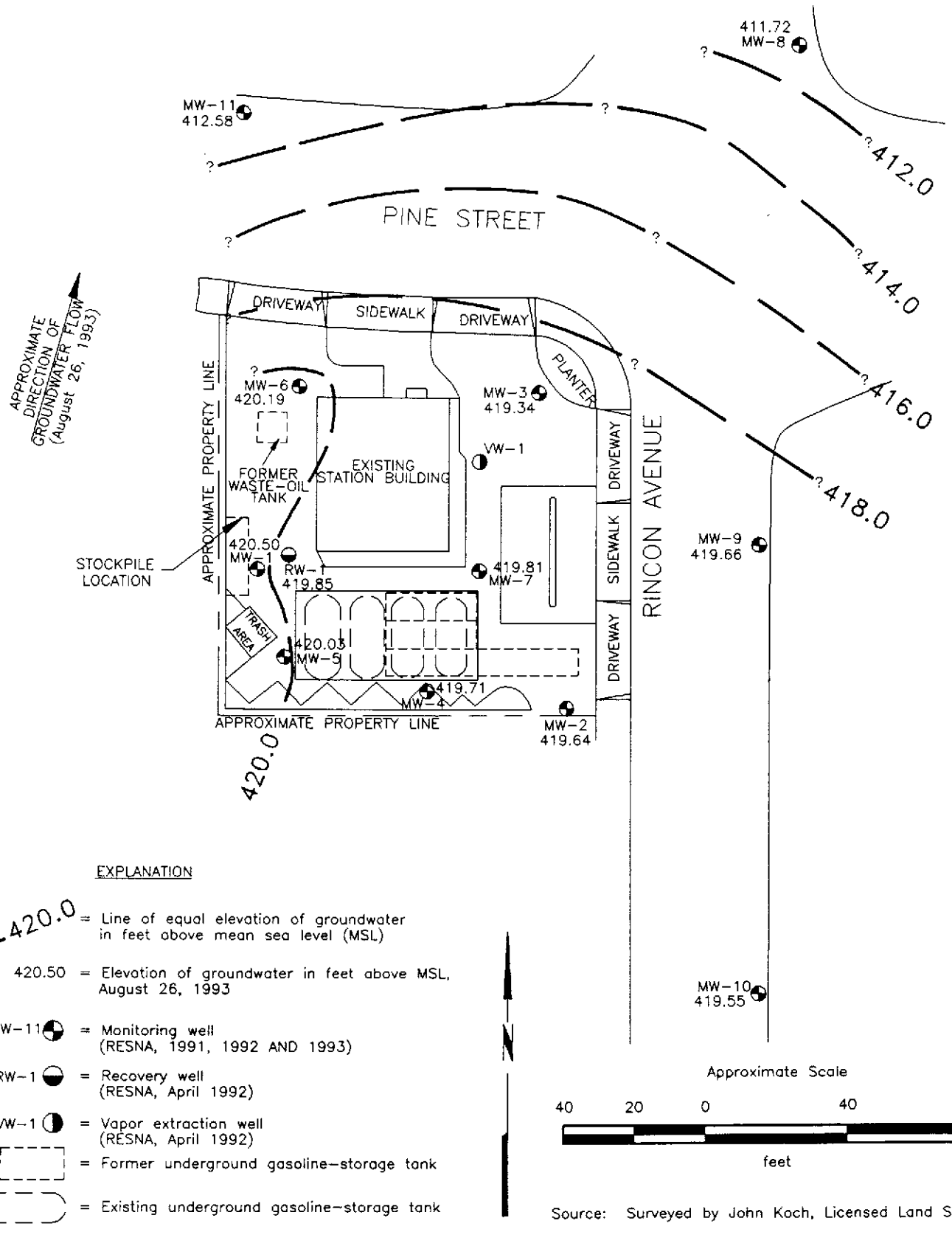
GROUNDWATER GRADIENT MAP
ARCO Station 771
899 Rincon Avenue
Livermore, California

PLATE 3



EXPLANATION

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

420.50 = Elevation of groundwater in feet above MSL, August 26, 1993

MW-11 = Monitoring well (RESNA, 1991, 1992 AND 1993)

RW-1 = Recovery well (RESNA, April 1992)

VW-1 = Vapor extraction well (RESNA, April 1992)

= Former underground gasoline-storage tank

= Existing underground gasoline-storage tank

Source: Surveyed by John Koch, Licensed Land Surveyor.

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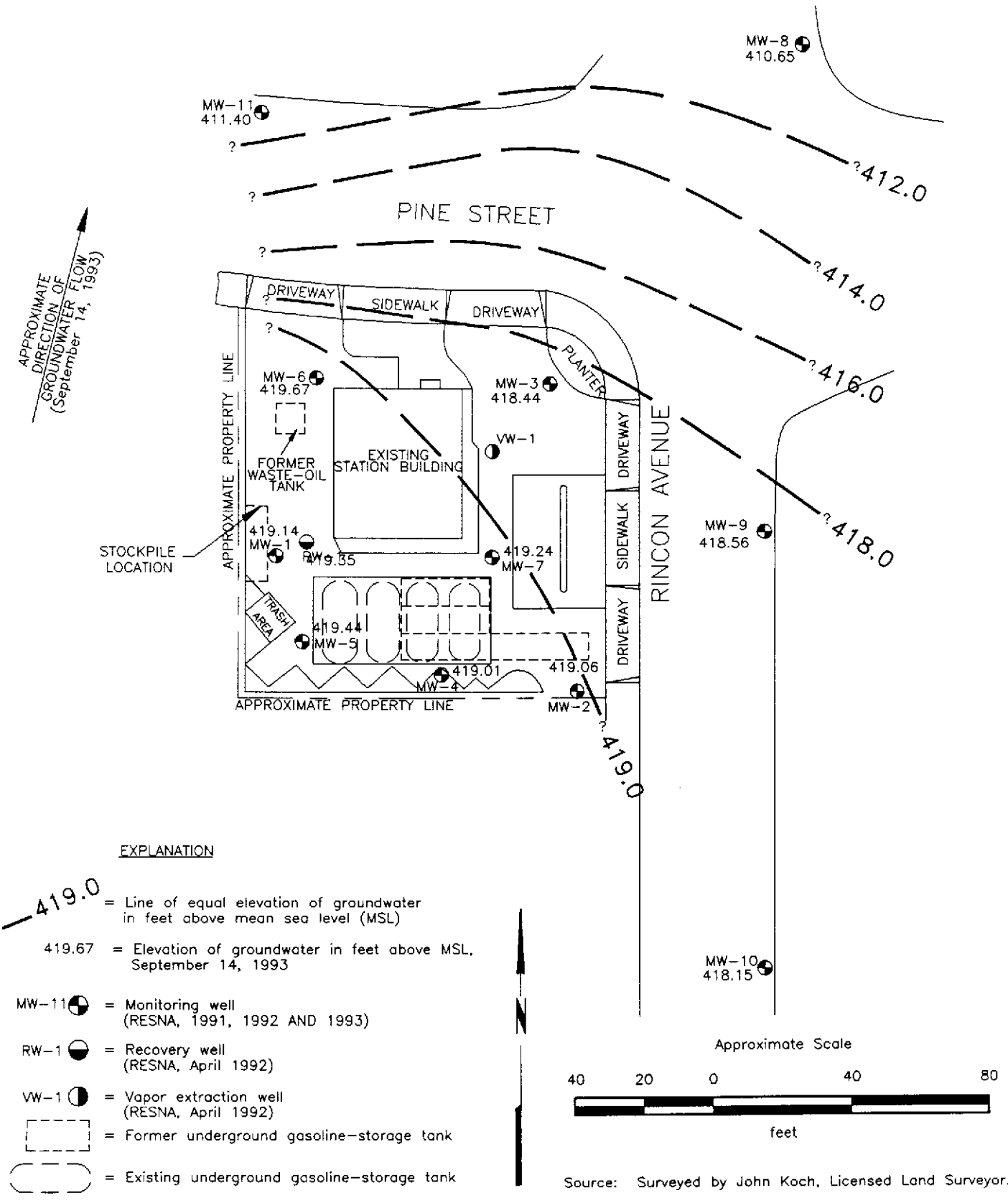
PROJECT 60000.15 00001503

GROUNDWATER GRADIENT MAP
ARCO Station 771
899 Rincon Avenue
Livermore, California

PLATE 4



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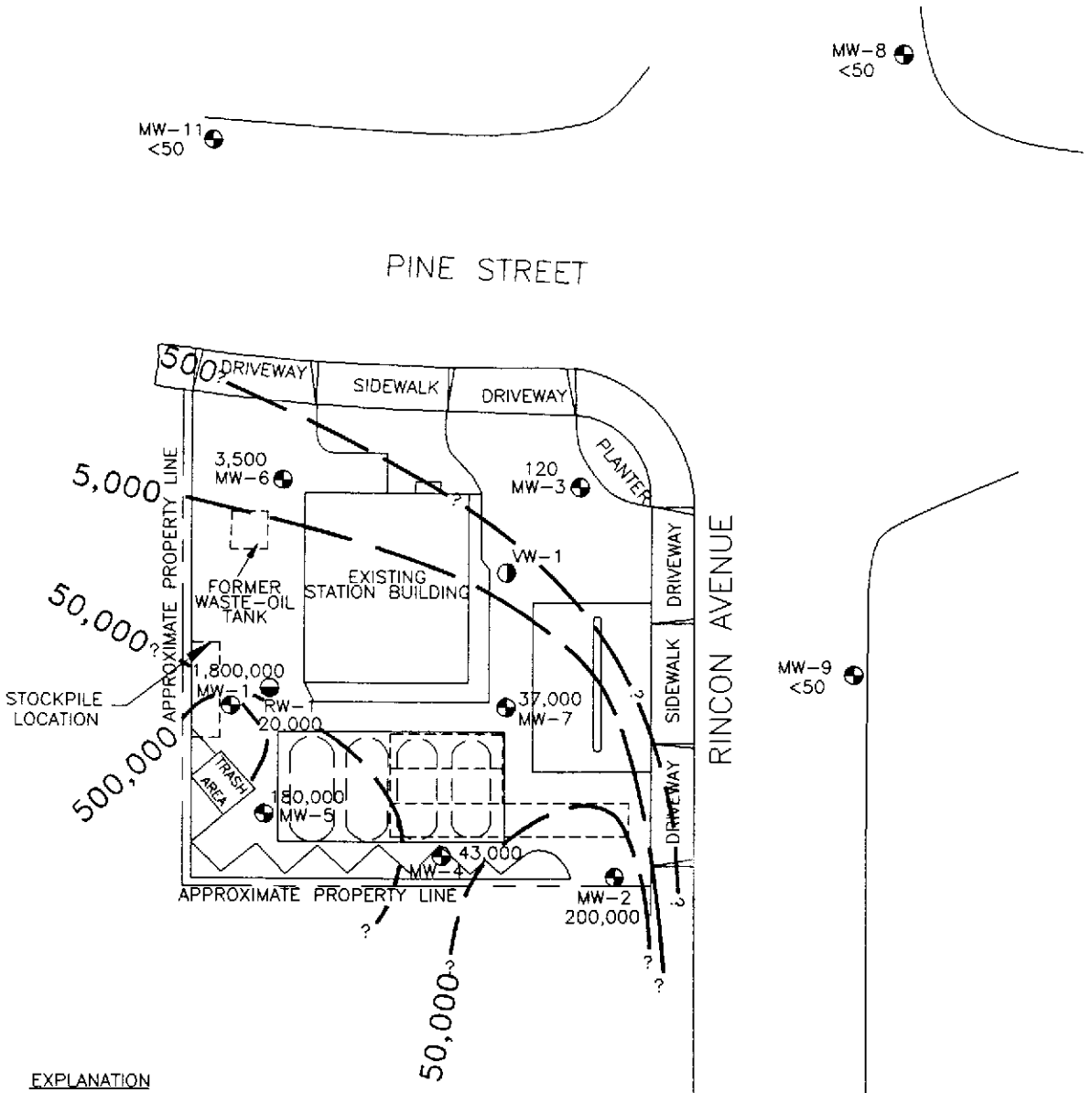
GROUNDWATER GRADIENT MAP
ARCO Station 771
899 Rincon Avenue
Livermore, California

PLATE 5



Source: Surveyed by John Koch, Licensed Land Surveyor.

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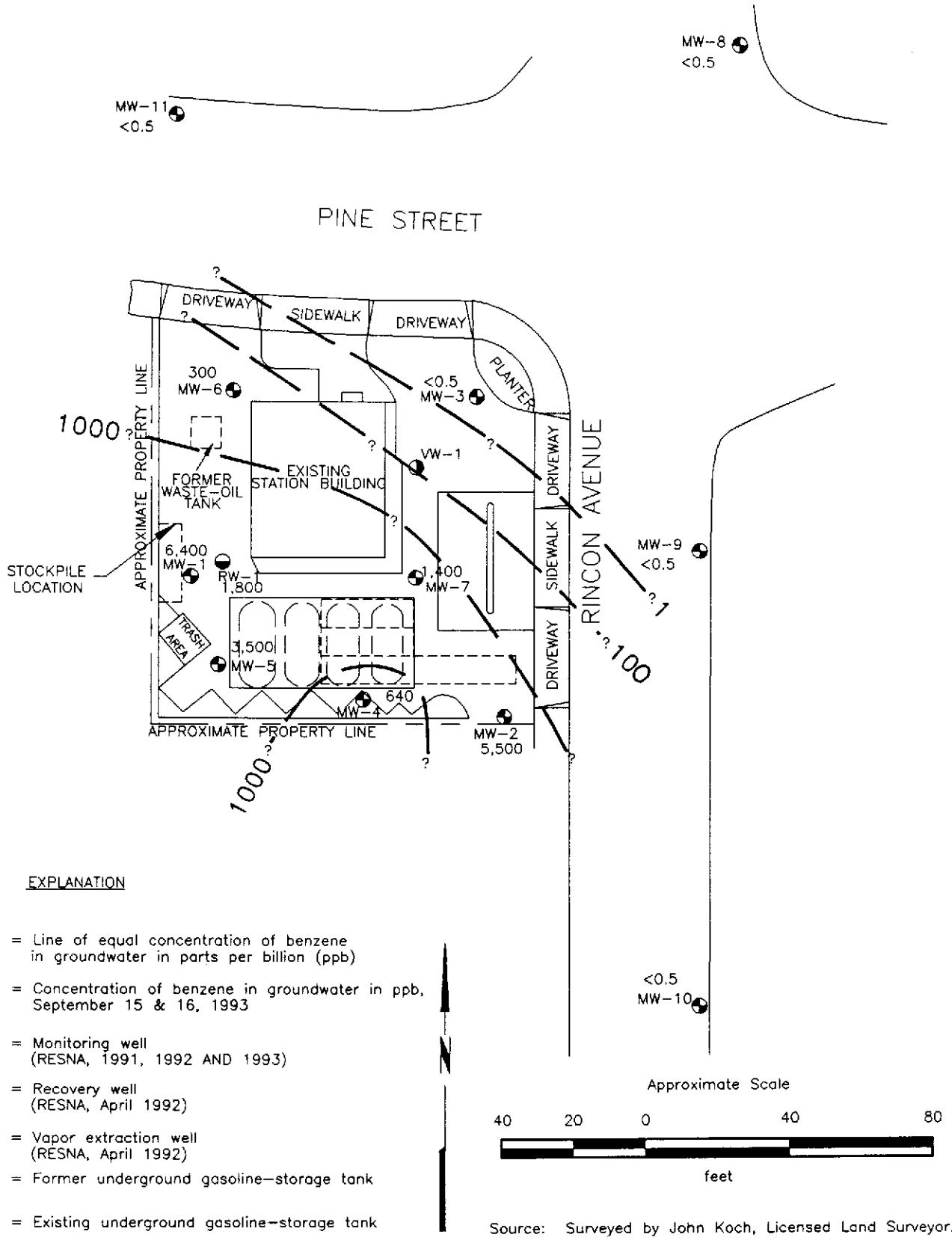
TPHg CONCENTRATIONS IN GROUNDWATER
ARCO Station 771
899 Rincon Avenue
Livermore, California

PLATE 6



EXPLANATION

1000 = Line of equal concentration of benzene in groundwater in parts per billion (ppb)

6,400 = Concentration of benzene in groundwater in ppb, September 15 & 16, 1993

MW-11 = Monitoring well (RESNA, 1991, 1992 AND 1993)

RW-1 = Recovery well (RESNA, April 1992)

VW-1 = Vapor extraction well (RESNA, April 1992)

= Former underground gasoline-storage tank

= Existing 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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BENZENE CONCENTRATIONS IN GROUNDWATER
ARCO Station 771
899 Rincon Avenue
Livermore, California

PLATE 7

Quarterly Groundwater Monitoring
ARCO Station 771, Livermore, California

November 22, 1993
60000.15

TABLE 1
CUMULATIVE GROUNDWATER MONITORING DATA
ARCO Station 771
Livermore, California
(Page 1 of 8)

Well / Date	Well Elevation	Depth-to-Water	Water Elevation	Floating Product
MW-1				
01-15-91	451.80[a]	32.77	419.03	Sheen
02-27-91		32.23	419.57	None
03-20-91		27.38	424.42	Sheen
04-10-91		26.49	425.31	None
05-20-91	451.80[b]	Not measured - interface probe failure		
06-20-91		33.95	417.85	Sheen
07-25-91		36.59*	415.21*	0.10
08-13-91		37.72*	414.08*	0.20
09-12-91		39.25*	412.55*	0.23
10-30-91		39.14*	412.66*	0.20
11-13-91		Dry	Dry	None
12-26-91		39.30*	412.50	0.01
01-18-92		37.81**	NC	Skimmer
02-21-92		Well inaccessible due to construction		
03-31-92		31.90**	NC	Skimmer
04-24-92	451.42[c]	Well inaccessible due to construction		
05-20-92		33.00	418.42	Skimmer
06-12-92		33.25	418.17	0.02
07-28-92		32.31	419.11	None
08-24-92		30.87	420.55	None
09-15-92		32.24*	419.18*	0.01
10-29-92		32.29	419.13	None
11-25-92	451.73[d]	32.15	419.58	Floating product**
12-14-92		30.54	421.19	None
01-29-93		23.49	428.24	None
02-26-93		25.23	426.50	None
03-29-93		25.66	426.07	None
04-27-93		28.02	423.71	None
05-10-93		30.38	421.35	None
06-17-93		30.81	420.92	None
07-27-93		Not monitored-truck parked on well		
08-26-93		31.23	420.50	None
09-14-93		32.59	419.14	None
MW-2				
01-15-91	449.52[a]	30.89*	418.63*	0.16
02-27-91		29.11*	420.41*	0.02
03-20-91		24.57*	424.95*	0.02
04-10-91		22.85*	426.67*	0.05
05-20-91	449.51[b]	NM	NM	NM
06-20-91		31.42*	418.09*	0.15

See notes on Page 8 of 8.

TABLE 1
CUMULATIVE GROUNDWATER MONITORING DATA
ARCO Station 771
Livermore, California
(Page 2 of 8)

Well / Date	Well Elevation	Depth-to-Water	Water Elevation	Floating Product
MW-2 (cont.)				
07-25-91		33.69*	415.82*	0.49
08-13-91		34.80*	414.71*	0.47
09-12-91		36.39*	413.12*	0.45
10-30-91		Dry	Dry	None
11-13-91		Dry	Dry	None
12-26-91		36.45	413.06	Sheen
01-18-92		Well inaccessible due to construction		
02-21-92	449.51[b]	26.27	NC	Skimmer
03-31-92		28.85	NC	Skimmer
04-24-92		30.95	418.56	Skimmer
05-20-92		30.69	418.82	Skimmer
06-12-92		31.25	418.26	None
07-28-92		30.31	419.20	None
08-24-92		29.83	419.68	None
09-15-92		30.06	419.45	Sheen
10-29-92		30.90	418.61	None
11-25-92	449.49[d]	31.13	418.36	Floating Product**
12-14-92		29.24	420.25	None
01-29-93		20.12	429.39	None
02-26-93		22.59	426.90	None
03-29-93		22.83	426.66	None
04-27-93		25.10	424.39	None
05-10-93		27.23	422.26	None
06-17-93		28.26	421.23	None
07-27-93		29.50	419.99	None
08-26-93		29.85	419.64	None
09-14-93		30.43	419.06	None
MW-3				
01-15-91	450.29[a]	32.34	417.95	None
02-27-91		31.78	418.51	None
03-20-91		27.74	422.55	None
04-10-91		25.05	425.24	None
05-20-91	450.28[b]	27.06	423.22	None
06-20-91		32.35	417.93	None
07-25-91		35.02	415.26	None
08-13-91		36.50	413.78	None
09-12-91		38.47	413.81	None
10-30-91		Dry	Dry	None
11-13-91		Dry	Dry	None
12-26-91		38.53	411.75	None
01-18-92		Well inaccessible due to construction		

See notes on Page 8 of 8.

TABLE 1
CUMULATIVE GROUNDWATER MONITORING DATA
ARCO Station 771
Livermore, California
(Page 3 of 8)

Well / Date	Well Elevation	Depth-to-Water	Water Elevation	Floating Product
MW-3 (cont.)				
02-21-92		Well inaccessible due to construction		
03-31-92		30.61	NC	None
04-24-92	450.28[c]	32.83	417.45	None
05-20-92		33.85	416.43	None
06-12-92		34.51	415.77	None
07-28-92		34.42	415.86	None
08-24-92		32.46	417.82	None
09-15-92		34.29	415.99	None
10-29-92		33.40	416.88	None
11-25-92		33.67	416.61	None
12-14-92		34.26	416.02	None
01-29-93		21.88	428.40	None
02-26-93		24.71	425.57	None
03-29-93	450.28[c]	24.74	425.54	None
04-27-93		25.96	424.32	None
05-10-93		27.61	422.67	None
06-17-93		28.73	421.55	None
07-27-93		30.37	419.91	None
08-26-93		30.94	419.34	None
09-14-93		31.84	418.44	None
MW-4				
07-25-91	451.56[b]	36.07	415.49	None
08-13-91		37.54	414.02	None
09-12-91		38.73	412.83	None
10-10-91	451.56[b]	39.90	411.66	None
11-13-91		40.56	411.00	None
12-26-91	450.99[e]	38.78	412.78	None
01-18-92		38.71	NC	None
02-21-92		31.91	NC	None
03-31-92		30.36	NC	None
04-24-92		32.65	418.34	None
05-20-92		32.62	418.37	None
06-12-92		32.73	418.26	None
07-28-92		31.48	419.51	None
08-24-92		32.84	418.15	None
09-15-92		31.37	419.62	None
10-29-92		32.58	418.41	None
11-25-92	451.09[d]	32.37	418.72	None
12-14-92		30.99	420.10	None
01-29-93		22.30	428.79	None

See notes on Page 8 of 8.

TABLE 1
CUMULATIVE GROUNDWATER MONITORING DATA
ARCO Station 771
Livermore, California
(Page 4 of 8)

Well / Date	Well Elevation	Depth-to-Water	Water Elevation	Floating Product
MW-4(cont.)				
02-26-93		24.47	426.62	None
03-29-93		24.67	426.42	None
04-27-93		26.68	424.41	None
05-10-93		28.64	422.45	None
06-17-93		29.28	421.81	None
07-27-93		31.14	419.95	None
08-26-93		31.38	419.71	None
09-14-93		32.00	419.01	None
MW-5				
07-25-91	451.41[b]	36.67	414.74	Sheen
08-13-91		37.98[a]	413.43[a]	0.01
09-12-91		39.01[a]	412.40[a]	0.05
10-30-91		38.28	412.13	Sheen
11-13-91		39.24	412.17	Sheen
12-26-91		39.11	412.30	Sheen
01-18-92		38.15	NC	Skimmer
02-21-92		30.59	NC	Skimmer
03-18-92		30.84	NC	Skimmer
04-24-92	451.40[c]	33.00	418.40	Skimmer
05-20-92		32.86	418.54	Skimmer
06-12-92		33.03	418.37	None
07-28-92		31.92	419.48	None
08-24-92		32.17	419.23	None
09-15-92		31.90	419.50	None
10-29-92		32.94	418.46	None
11-25-92	Not measured - new L-shape wellhead fitting prevented sounder from going down well			
12-14-92		30.90[a,e]	NC	None
01-29-93		23.25[a,e]	NC	None
02-26-93		25.02[a,e]	NC	None
03-29-93		24.72[a,e]	NC	None
04-27-93		27.11[a,e]	NC	None
05-10-93		29.04[a,e]	NC	None
06-17-93		29.33[a,e]	NC	None
07-27-93		31.12	420.28	None
08-26-93		31.37	420.03	None
09-14-93		31.96	419.44	None
MW-6				
07-25-91	451.38[b]	37.68	413.70	None
08-13-91		39.17	412.21	None

See notes on Page 8 of 8.

TABLE 1
CUMULATIVE GROUNDWATER MONITORING DATA
ARCO Station 771
Livermore, California
(Page 5 of 8)

Well / Date	Well Elevation	Depth-to-Water	Water Elevation	Floating Product
MW-6(cont.)				
09-12-91		41.14	410.24	None
10-30-91		42.10	409.28	None
11-13-91		41.45	409.93	None
12-26-91		41.23	410.15	None
01-18-92		38.23	NC	None
02-21-92	451.37*	35.21	NC	None
03-31-92		32.26	NC	None
04-24-92		33.24	418.13	None
05-20-92		33.14	418.23	None
06-12-92		33.43	417.94	None
07-28-92		32.52	418.85	None
08-24-92		32.57	418.80	None
09-15-92		32.58	418.79	None
10-29-92		32.33	419.04	None
11-25-92		32.43	418.94	None
12-14-92		31.52	419.85	None
01-29-93		23.70	427.67	None
02-26-93		26.22	425.15	None
03-29-93		26.13	425.24	None
04-27-93		27.27	424.10	None
05-10-93		29.74	421.63	None
06-17-93		30.92	420.45	None
07-27-93		30.90	420.47	None
08-26-93		31.18	420.19	None
09-14-93		31.70	419.67	None
MW-7				
07-25-91	450.65*	34.88	415.77	Sheen
08-13-91		36.17	414.48	None
09-12-91		37.81	412.84	None
10-30-91		38.50	412.15	None
11-13-91		38.31	412.34	None
12-26-91		37.90	412.75	None
01-18-92		Well inaccessible due to construction		
02-21-92		31.50	NC	None
03-31-92		29.40	NC	None
04-24-92	450.63*	32.14	418.49	None
05-20-92		32.51	418.12	None
06-12-92		32.45	418.18	None
07-28-92		32.08	418.55	None

See notes on Page 8 of 8.

TABLE 1
CUMULATIVE GROUNDWATER MONITORING DATA
ARCO Station 771
Livermore, California
(Page 6 of 8)

Well Date	Well Elevation	Depth-to- Water	Water Elevation	Floating Product
MW-7(cont.)				
08-24-92		32.29	418.34	None
09-15-92		31.93	418.70	None
10-29-92		32.37	418.26	None
11-25-92	450.33[d]	31.80	418.53	None
12-14-92		30.44	419.89	None
01-29-93		21.76	428.57	None
02-26-93		24.16	426.17	None
03-29-93		24.32	426.01	None
04-27-93		25.44	424.89	None
05-10-93		27.40	422.93	None
06-17-93		28.80	421.53	None
07-27-93		29.89	420.44	None
08-26-93		30.52	419.81	None
09-14-93		31.09	419.24	None
MW-8				
01-29-93	449.43[d]	23.23	426.20	None
02-26-93		29.20	420.23	None
03-29-93		29.77	419.66	None
04-27-93		31.52	417.91	None
05-10-93		33.88	415.55	None
06-17-93		35.25	414.18	None
07-27-93		36.61	412.82	None
08-26-93		37.71	411.72	None
09-14-93		38.78	410.65	None
MW-9				
01-29-93	449.21[d]	18.91	430.30	None
02-26-93		21.35	427.86	None
03-29-93		21.78	427.43	None
04-27-93		24.70	424.51	None
05-10-93		26.19	423.02	None
06-17-93		27.50	421.71	None
07-27-93		29.11	420.10	None
08-26-93		29.55	419.66	None
09-14-93		30.65	418.56	None

See notes on Page 8 of 8.

TABLE 1
CUMULATIVE GROUNDWATER MONITORING DATA
ARCO Station 771
Livermore, California
(Page 7 of 8)

Well Date	Well Elevation	Depth-to- Water	Water Elevation	Floating Product
MW-10				
01-29-93	449.22[a]	19.27	429.95	None
02-26-93		21.34	427.88	None
03-29-93		20.89	428.33	None
04-27-93		25.40	423.82	None
05-10-93		26.77	422.45	None
06-17-93		26.80	422.42	None
07-27-93		29.87	419.35	None
08-26-93		29.67	419.55	None
09-14-93		31.07	418.15	None
MW-11				
04-24-92	448.02[c]	35.06	412.96	None
05-20-92		34.10	413.92	None
06-12-92		34.48	413.54	None
07-28-92		35.13	412.89	None
08-24-92		33.32	414.70	None
09-15-92		35.72	412.30	None
10-29-92		35.26	412.76	None
11-25-92		36.44	411.58	None
12-14-92		33.18	414.84	None
01-29-93		23.89	424.13	None
02-26-93		27.31	420.71	None
03-29-93		27.27	420.75	None
04-27-93		30.61	417.41	None
05-10-93		32.78	415.24	None
06-17-93		33.25	414.77	None
07-27-93		34.49	413.53	None
08-26-93		35.44	412.58	None
09-14-93		36.62	411.40	None
RW-1				
04-24-92	451.44[e]	32.85	418.59	None
05-20-92		32.60	418.84	None
06-12-92	451.44[e]	32.72	418.72	None
07-28-92		31.94	419.50	None
08-24-92		31.73	419.71	None
09-15-92		31.94	419.50	None
10-29-92		32.15	419.29	None
11-25-92	451.67[a]	32.21	419.46	None
12-14-92		30.58	421.09	None

See notes on Page 8 of 8.

TABLE 1
CUMULATIVE GROUNDWATER MONITORING DATA
ARCO Station 771
Livermore, California
(Page 8 of 8)

Well Date	Well Elevation	Depth-to- Water	Water Elevation	Floating Product
RW-1 (cont.)				
01-29-93		22.89	428.78	None
02-26-93		23.97	427.70	None
03-29-93		23.98	427.69	None
04-27-93		27.26	424.41	None
05-10-93		29.64	422.03	None
06-17-93		30.18	421.49	None
07-27-93		31.55	420.12	None
08-26-93		31.82	419.85	None
09-14-93		32.32	419.35	None

Measurements in feet.

* = Floating product present in well; DTW with floating product present was calculated using the following: The recorded thickness of the floating product was multiplied by 0.80 to obtain an approximate value for the displacement of water by the floating product. This approximate displacement value was then subtracted from the measured depth to water to obtain an adjusted depth to water. These adjusted groundwater depths were subtracted from wellhead elevations to correct the groundwater elevations.

** = Floating product not initially present but came into well during purging.

*** = DTW measurement may not be accurate due to L-shape wellhead fitting.

[a] = Surveyed by Ron Archer, Civil Engineer, in January 1991.

[b] = Surveyed by John Koch, Licensed Land Surveyor, in July 1991.

[c] = Surveyed by John Koch, Licensed Land Surveyor, in May 1992.

[d] = Surveyed by John Koch, Licensed Land Surveyor, in January 1993.

Wellhead elevations based on benchmark: top of pin in standard monument, west side of intersection of Rincon Avenue and Pine Street. Elevation taken as 448.741 feet. City of Livermore Datum.

NC = Elevation not calculated; wellhead elevations may no longer be correct due to construction of remediation system.

TABLE 2
CUMULATIVE RESULTS OF LABORATORY ANALYSES OF GROUNDWATER SAMPLES
ARCO Station 771
Livermore, California
(Page 1 of 4)

Sample	TPHg	B	T	E	X	TPHd	TOG
MW-1							
01-15-91	Not sampled--sheen						
04-10-91	98,000	11,000	18,000	2,800	20,000	NA	NA
07-25-91	Not sampled--floating product						
10-30-91	Not sampled--floating product						
03-31-92	Not sampled--floating product						
06-12-92	Not sampled--floating product						
09-16-92	Not sampled--floating product						
11-25-92	Not sampled--floating product						
01-29-93	360,000	2,500	9,300	5,100	41,000	NA	NA
05-10-93	1,900,000	4,100	15,000	21,000	140,000	NA	NA
09-16-93	1,800,000	6,400	21,000	19,000	140,000	NA	NA
MW-2							
01-15-91	Not sampled--floating product						
04-10-91	Not sampled--floating product						
07-25-91	Not sampled--floating product						
10-30-91	Not sampled--sheen						
03-31-92	270,000	7,000	12,000	4,400	40,000	NA	NA
06-12-92	110,000	8,900	13,000	2,800	16,000	NA	NA
09-16-92	Not sampled--sheen						
11-25-92	Not sampled--floating product						
01-29-93	89,000	4,600	5,700	1,800	15,000	NA	NA
05-10-93	440,000	3,900	4,300	4,400	36,000	NA	NA
09-16-93	200,000	5,500	4,300	2,300	19,000	NA	NA
MW-3							
01-15-91	230	<0.5	<0.5	2.2	2.1	NA	NA
04-10-91	530	12	8.4	4.0	7.0	NA	NA
07-25-91	110	0.32	0.75	1.2	1.0	NA	NA
10-30-91	Not sampled--dry						
03-31-92	670	12	1.1	7.4	27	NA	NA
06-12-92	280	<0.5	<0.5	2.1	2.0	NA	NA
09-15-92	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
11-25-92	220	1.0	<0.5	4.9	1.2	NA	NA
01-29-93	380***	0.8	0.6	2.1	2.0	NA	NA
05-10-93	170	<0.5	<0.5	2.0	0.6	NA	NA
09-15-93	120	<0.5	<0.5	<0.5	<0.5	NA	NA
MW-4							
07-25-91	23,000	590	730	360	3,500	NA	NA
10-30-91	19,000	320	340	230	180	NA	NA

See notes on Page 4 of 4.

TABLE 2
CUMULATIVE RESULTS OF LABORATORY ANALYSES OF GROUNDWATER SAMPLES
ARCO Station 771
Livermore, California
(Page 2 of 4)

Sample	TPHg	B	T	E	X	TPHd	TOG
MW-4 (cont.)							
03-31-92	30,000	1,300	740	770	4,800	NA	NA
06-12-92	28,000	990	440	550	3,200	NA	NA
09-16-92	21,000	740	240	350	1,300	NA	NA
11-25-92	26,000	1,200	300	350	730	NA	NA
01-29-93	23,000	2,000	580	770	2,500	NA	NA
05-10-93	74,000	2,200	890	1,400	4,000	NA	NA
09-16-93	43,000	640	90	360	690	NA	NA
MW-5							
07-25-91	57,000	2,300	4,200	77	14,000	NA	NA
10-30-91		Not sampled--sheen					
03-31-92	80,000	7,100	9,100	2,000	16,000	NA	NA
06-12-92	69,000	4,000	5,300	2,200	12,000	NA	NA
09-16-92	65,000	2,300	2,600	1,700	9,900	NA	NA
11-25-92	Inaccessible for sampling, L-shape fitting installed at wellhead for use in interim remediation system						
01-29-93	Inaccessible for sampling, L-shape fitting installed at wellhead for use in interim remediation system						
05-10-93	220,000	3,900	3,700	3,400	15,000	NA	NA
09-16-93	180,000	3,500	3,300	2,700	10,000	NA	NA
MW-6							
07-25-91	10,000	3,000	200	340	1,000	NA	NA
10-30-91	970	150	4.4	4.9	6.6	NA	NA
03-31-92	16,000	3,600	1,500	660	1,700	2,400*	2.5[a], 4.0[b]
06-12-92	2,900	480	17	190	170	1,100*	1.2[c]
09-16-92	2,300	220	<5**	92	43	810*	1.5[d]
11-25-92	2,700	240	11	103	32	720*	1.6[a], 1.8[b]
01-29-93	20,000	1,800	1,700	490	2,600	2,300*	3.6[a], 4.0[b]
05-10-93	43,000	3,000	1,700	1,100	4,800	3,900*	16[a], 110[b]
09-15-93	3,500	300	10	100	180	1,100*	1.0[a], 1.0[b]
MW-7							
07-25-91	45,000	1,500	2,700	1,200	9,200	NA	NA
10-30-91	93,000	1,800	770	780	6,700	NA	NA
03-31-92	35,000	960	350	300	5,900	NA	NA
06-12-92	27,000	900	270	340	4,800	NA	NA
09-16-92	39,000	1,900	410	470	5,000	NA	NA
11-25-92	49,000	2,900	810	750	5,300	NA	NA
01-29-93	38,000	3,200	1,100	740	4,300	NA	NA
05-10-93	54,000	1,600	160	560	3,100	NA	NA
09-16-93	37,000	1,400	170	560	2,700	NA	NA

See notes on Page 4 of 4.

TABLE 2
CUMULATIVE RESULTS OF LABORATORY ANALYSES OF GROUNDWATER SAMPLES
ARCO Station 771
Livermore, California
(Page 3 of 4)

Sample	TPHg	B	T	E	X	TPHd	TOG
MW-8							
01-29-93	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
05-10-93	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
09-15-93	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
MW-9							
01-29-93	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
05-10-93	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
09-15-93	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
MW-10							
01-29-93	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
05-10-93	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
09-15-93	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
MW-11							
06-12-92	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
09-15-92	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
11-25-92	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
01-29-93	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
05-10-93	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
09-15-93	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
RW-1							
06-12-92	54,000	2,300	4,400	1,200	12,000	NA	NA
09-15-92	49,000	1,500	2,200	870	6,900	NA	NA
11-25-92	32,000	1,500	2,500	1,000	5,500	NA	NA
01-29-93	43,000	3,100	2,500	990	7,400	NA	NA
05-10-93	30,000	2,900	1,100	690	4,300	NA	NA
09-16-93	20,000	1,800	580	620	2,300	NA	NA

See notes on **Page 4 of 4.**

TABLE 2
CUMULATIVE RESULTS OF LABORATORY ANALYSES OF GROUNDWATER SAMPLES
ARCO Station 771
Livermore, California
(Page 4 of 4)

MCLs	---	1	---	680	1,750
DWAL	---	---	100	---	---

Results in parts per billion (ppb), except TOG, which is reported in parts per million (ppm).

TPHg: Total petroleum hydrocarbons as gasoline (measured using EPA Method 5030/8015).

B: Benzene T: toluene E: ethylbenzene X: total xylene isomers

BTEX: Measured using EPA Method 5030/8020.

TPHd: Total petroleum hydrocarbons as diesel (measured using EPA Method 3510). May be weathered gasoline.

TOG: Total oil and grease: [a] using method 5520F-IR; [b] using method 5520C; [c] using method 413.2; [d] using method 418.1

NA: Not analyzed.

<: Less than the laboratory detection limit.

*: Sample contains a lower boiling point hydrocarbon mixture quantified as diesel. The chromatogram does not match the typical diesel fingerprint.

**: Method Reporting Limit raised due to high analyte concentration requiring sample dilution.

***: Sample contained components eluting in the gasoline range that were quantitated as gasoline. The chromatogram did not match the typical gasoline fingerprint.

MCL: State Maximum Contaminant Level in ppb (October 1990).

DWAL: State Recommended Drinking Water Action Level in ppb (October 1990).

TABLE 3
APPROXIMATE CUMULATIVE PRODUCT RECOVERED
ARCO Station 771
Livermore, California
(Page 1 of 2)

Year/Date	Floating Product Recovered (gallons)
1991	TOTAL: 2.77 Gallons
MW-1	
01-15-92	Well inaccessible due to construction
02-28-92	Well inaccessible due to construction
03-26-92	0.25
04-27-92	Well inaccessible due to construction
05-14-92	None present
06-30-92	0.02
07-27-92	Sheen
08-28-92	Sheen
09-28-92	Sheen
10-26-92	Sheen
11-30-92	Sheen
12-30-92	Sheen
MW-2	
01-15-92	Well inaccessible due to construction
02-28-92	None present
03-26-92	0.01
04-27-92	None present
05-14-92	None present
06-30-92	None present
07-27-92	Sheen
08-28-92	Sheen
09-28-92	Sheen
10-26-92	Sheen
11-30-92	Sheen
12-30-92	Sheen
MW-5	
01-15-92	Well inaccessible due to construction
02-28-92	None present
03-26-92	0.01
04-27-92	None present
05-14-92	None present
06-30-92	None present
07-27-92	Sheen
08-28-92	Sheen
09-28-92	Sheen
10-26-92	Sheen
11-30-92	Sheen
12-30-92	Sheen
1992	TOTAL: 0.29 Gallons

TABLE 3
APPROXIMATE CUMULATIVE PRODUCT RECOVERED
ARCO Station 771
Livermore, California
(Page 2 of 2)

Year/Date		Floating Product Recovered (gallons)
MW-1		
01-15-93		Sheen
02-26-93		Sheen
03-26-93		Sheen
04-22-93		Sheen
05-18-93		None
06-18-93		None
07-27-93		None
08-26-93		None
09-14-93		None
MW-2		
01-15-93		Sheen
02-26-93		Sheen
03-26-93		Sheen
04-22-93		Sheen
05-18-93		None
06-18-93		None
07-27-93		None
08-26-93		None
09-14-93		None
MW-5		
01-15-93		Sheen
02-26-93		Sheen
03-26-93		Sheen
04-22-93		Not Monitored
05-18-93		None
06-18-93		None
07-27-93		None
08-26-93		None
09-14-93		None
1993	**TOTAL:**	0.00 Gallons
1991-1993	**TOTAL:**	**3.06 Gallons**

RESNA
Working to Restore Nature

APPENDIX A
EMCON'S FIELD REPORTS, SUMMARY OF GROUNDWATER MONITORING DATA, CERTIFIED ANALYTICAL REPORTS WITH CHAIN-OF-CUSTODY, WATER SAMPLE FIELD DATA SHEETS, AND

RESNA'S FIELD REPORT

EMCON Associates

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

Date August 5, 1993

Project 0G70-012.01

To:

Mr. John Young

RESNA

3315 Almaden Expressway, Suite 34

San Jose, California 95118

We are enclosing:

Copies	Description
1	Depth To Water/Floating Product Survey Results
	July 1993 monthly water level survey, ARCO
	station 771, 899 Rincon Avenue, Livermore, CA

For your: X Information Sent by: X Mail

Comments:

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

Reviewed by:

REGISTERED PROFESSIONAL ENGINEER ROBERT CURTIS PORTER No: 4094 Exp 6/30/96 INDUSTRIAL STATE OF CALIFORNIA

Jim Butera JB

Robert Porter, Senior Project Engineer.

FIELD REPORT
DEPTH TO WATER / FLOATING PRODUCT SURVEY

Please send Monitoring Data for July → Thank you — Regina / Ezequiel

PROJECT # : 0G70-012.01 STATION ADDRESS : 899 Rincon Avenue, Livermore, CA DATE : 7-31-93

ARCO STATION # : 771 FIELD TECHNICIAN : S 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-8**	OK	YES	OK	3499	OK	36.61	36.61	ND	ND	41.7	—
2	**MW-9**	OK	YES	OK	3499	OK	29.11	29.11	ND	ND	40.2	—
3	**MW-10**	OK	YES	OK	3476	OK	29.87	29.87	ND	ND	36.1	—
4	**MW-11**	OK	YES	OK	3476	OK	34.49	34.49	ND	ND	38.6	—
5	**MW-3**	OK	YES	OK	3476	OK	30.37	30.37	ND	ND	39.3	—
6	**RW-1**	OK	3/4	OK	NONE	Slip	31.55	31.55	ND	ND	39.7	T tool
7	**MW-6**	OK	YES	OK	3259	OK	30.90	30.90	ND	ND	43.2	—
8	**MW-7**	OK	3/4	OK	NONE	Slip	29.89	29.89	ND	ND	39.70	—
9	**MW-4**	OK	3/4	OK	NONE	Slip	31.14	31.14	ND	ND	41.1	—
10	**MW-5**	OK	3/4	OK	NONE	Slip	31.12	31.12	ND	ND	40.1	[illegible]
11	**MW-2**	OK	3/4	OK	3259	Skimmer	29.50	29.50	ND	ND	37.9	—
12	**MW-1**	NA	3/4	—	NONE	Slip	—	—	—	—	→	Thick new Lid

SURVEY POINTS ARE TOP OF WELL CASINGS

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

RECEIVED
1993
RESNA
SAN JOSE

Date September 23, 1993
Project 0G70-012.01

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

We are enclosing:

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

For your: X Information Sent by: X Mail

Comments:

Enclosed are the data from the third quarter 1993 monitoring event at ARCO service station 771, located at 899 Rincon Avenue, Livermore,CA. Groundwater monitoring is conducted consistent with applicable regulatory guidelines. Please call if you have any questions. (408) 453-2266.

Jim Butera JB

Reviewed by:

Robert Porter

Robert Porter, Senior Project Engineer.

FIELD REPORT
DEPTH TO WATER / FLOATING PRODUCT SURVEY

PROJECT # : 0G70-012.01 STATION ADDRESS : 899 Rincon Avenue, Livermore, CA DATE : 8/26/93

ARCO STATION # : 771 FIELD TECHNICIAN : DAY : THURSDAY

DTW Order	WELL ID	Well Box Seal	Well Lid Secure	Gasket	Lock	Locking Well Cap	FIRST DEPTH TO WATER (feet)	SECOND DEPTH TO WATER (feet)	DEPTH TO FLOATING PRODUCT (feet)	FLOATING PRODUCT THICKNESS (feet)	WELL TOTAL DEPTH (feet)	COMMENTS
1	MW-8	OK	~~YES~~	OK	3499	OK	37.71	37.71	ND	NR	41.7	
2	MW-9	OK	15/16	OK	3499	OK	29.55	29.55	ND	NR	39.2	
3	MW-10	OK	15/16	OK	3476	OK	29.67	29.67	ND	NR	36.2	
4	MW-11	OK	15/16	OK	3476	OK	35.44	35.44	ND	NR	38.6	INSIDE GROUT IS BAD
5	MW-3	OK	15/16	OK	3476	OK	30.94	30.94	ND	NR	39.6	
6	~~RW-1~~ MW-1	OK	3/4	OK	NONE	Slip	31.23	31.23	ND	NR		NEEDS NEW CAP HAS SKIMMER (STRONGODOR)
7	MW-6	OK	15/16	OK	3259	OK	31.18	31.18	ND	NR	43.2	
8	MW-7	OK	3/4	OK	NONE	Slip	30.52	30.52	ND	NR	39.7	
9	MW-4	OK	3/4	OK	NONE	Slip	31.38	31.38	ND	NR	41.0	
10	MW-5	OK	3/4	OK	NONE	Slip	31.37	31.37	ND	NR	40.2	
11	MW-2	OK	3/4	OK	3259	OK	29.85	29.85	ND	NR	37.8	STRONG ODOR SKIMMER IN WELL
12	~~MW-1~~ RW-1	OK	3/4	OK	NONE	Slip	31.82	31.82	ND	NR	39.8	

SURVEY POINTS ARE TOP OF WELL CASINGS

FIELD REPORT
DEPTH TO WATER / FLOATING PRODUCT SURVEY

PROJECT # : 0G70-012.01 STATION ADDRESS : 899 Rincon Avenue, Livermore, CA DATE : 9/14/93

ARCO STATION # : 771 FIELD TECHNICIAN : B. Stafford DAY : Wednesday

DTW Order	WELL ID	Well Box Seal	Well Lid Secure	Gasket	Lock	Locking Well Cap	FIRST DEPTH TO WATER (feet)	SECOND DEPTH TO WATER (feet)	DEPTH TO FLOATING PRODUCT (feet)	FLOATING PRODUCT THICKNESS (feet)	WELL TOTAL DEPTH (feet)	COMMENTS
1	MW-8	Good	Yes	Good	3499	yes	38.78	38.78	ND	ND	41.7	—
2	MW-9	Good	Yes	Good	3499	Yes	30.65	30.65	ND	ND	39.2	—
3	MW-10	OK	Yes	Good	3476	Yes	31.07	31.07	ND	ND	36.1	—
4	MW-11	Good	Yes	Good	3476	yes	36.62	36.62	ND	ND	38.6	—
5	MW-3	Good	Yes	Good	~~3476~~ 3257	Yes	31.84	31.84	ND	ND	39.7	—
6	RW-1	Good	~~Yes~~ 3/4	OK	NONE	Slip	32.32	32.32	ND	ND	39.8	Rusty tool for lid "T" handle odor
7	MW-6	Good	Yes	Good	3259	Yes	31.70	31.70	ND	ND	43.2	—
8	MW-7	Good	~~Yes~~ 3/4	OK	NONE	Slip	31.09	31.09	ND	ND	39.7	3/4" Bolts 2 bolts missing.
9	MW-4	OK	3/4	OK	NONE	Slip	32.00	32.00	ND	ND	41.3	6 Bolts missing. odor.
10	MW-5	OK	3/4	OK	NONE	Slip	31.96	31.96	ND	ND	40.2	3 Bolts missing.
11	MW-2	OK	3/4	OK	3259	Yes	30.43	30.43	ND	ND	37.9	3 Bolts missing. odor. Skimmer in well
12	MW-1	OK	3/4	OK	NONE	Slip	32.59	32.59	ND	ND	40.5	L.W.C. was off casing. Skimmer in well

SURVEY POINTS ARE TOP OF WELL CASINGS

Summary of Groundwater Monitoring Data
Third Quarter 1993
ARCO Service Station 771
899 Rincon Avenue, Livermore, California
micrograms per liter (µg/l) and milligrams per liter (mg/l)

Well ID and Sample Depth	Sampling Date	Depth To Water (feet)	Floating Product Thickness (feet)	TPH[1] as Gasoline (µg/l)	Benzene (µg/l)	Toluene (µg/l)	Ethyl-benzene (µg/l)	Total Xylenes (µg/l)	TPH as Diesel (ug/l)	Total Oil and Grease, 5520C/F (mg/l)
MW-1(39)	09/14/93	32.59	ND.[2]	1,800,000.	6,400.	21,000.	19,000.	140,000.	NR.[3]	NR.
MW-2(36)	09/14/93	30.43	ND.	200,000.	5,500.	4,300.	2,300.	19,000.	NR.	NR.
MW-3(38)	09/14/93	31.84	ND.	120.	<0.5	<0.5	<0.5	<0.5	NR.	NR.
MW-4(40)	09/14/93	32.00	ND.	43,000.	640.	90.	360.	690.	NR.	NR.
MW-5(39)	09/14/93	31.96	ND.	180,000.	3,500.	3,300.	2,700.	10,000.	NR.	NR.
MW-6(42)	09/14/93	31.70	ND.	3,500.	300.	10.	100.	180.	1,100.	1.0/1.0
MW-7(38)	09/14/93	31.09	ND.	37,000.	1,400.	170.	560.	2,700.	NR.	NR.
MW-8(40)	09/14/93	38.78	ND.	<50.	<0.5	<0.5	<0.5	<0.5	NR.	NR.
MW-9(38)	09/14/93	30.65	ND.	<50.	<0.5	<0.5	<0.5	<0.5	NR.	NR.
MW-10(35)	09/14/93	31.07	ND.	<50.	<0.5	<0.5	<0.5	<0.5	NR.	NR.
MW-11(37)	09/14/93	36.62	ND.	<50	<0.5	<0.5	<0.5	<0.5	NR.	NR.
RW-1(38)	09/14/93	32.32	ND.	20,000.	1,800.	580.	620.	2,300.	NR.	NR.
FB-1.[4]	09/14/93	NA.[5]	NA.	<50	<0.5	<0.5	<0.5	<0.5	NR.	NR.

1. TPH. = Total petroleum hydrocarbons
2. ND. = Not detected
3. NR. = Not reported; sample was not scheduled for analysis of the selected parameter
4. FB. = Field blank
5. NA. = Not applicable

Columbia
Analytical
Services INC.

September 22, 1993

Service Request No. SJ93-1147

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

Re: **EMCON Project No. 0G70-012.01**
ARCO Facility No. 771

Dear Mr. Butera:

Attached are the results of the water samples submitted to our lab on September 17, 1993. For your reference, these analyses have been assigned our service request number SJ93-1147.

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

Please call if you have any questions.

Respectfully submitted:

COLUMBIA ANALYTICAL SERVICES, INC.

Keoni A. Murphy
Laboratory Manager

Annelise J. Bazar
Regional QA Coordinator

KAM/kmh

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

Acronyms

ASTM	American Society for Testing and Materials
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LUFT	Leaking Underground Fuel Tank
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MRL	Method Reporting Limit
NA	Not Applicable
NAN	Not Analyzed
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected at or above the MRL
NR	Not Requested
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
VPH	Volatile Petroleum Hydrocarbons

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON Associates	Date Received:	09/17/93
Project:	ARCO Project No. 0G70-012.01	Service Request No.:	SJ93-1147
	ARCO Facility No. 771	Sample Matrix:	Water

Inorganic Parameters[1]
mg/L (ppm)

Sample Name:			MW-6 (42)	Method Blank
Date Sampled:			09/15/93	
Analyte	EPA Method	MRL		
Total Oil and Grease	SM 5520C	0.5	1.0	ND
Hydrocarbons, IR	SM 5520F	0.5	1.0	ND

[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).

SM Standard Method

Approved by: Keenan Murphy Date: September 22, 1993

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON Associates	**Date Received:**	09/17/93
Project:	EMCON Project No. 0G70-012.01	**Date Extracted:**	09/17/93
	ARCO Facility No. 771	**Service Request No.:**	SJ93-1147
Sample Matrix:	Water		

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

Sample Name	Date Analyzed	TPH as Diesel
MW-6 (42)	09/17/93	1,100. *
Method Blank	09/17/93	ND
MRL		50

* The sample contains a lower boiling point hydrocarbon mixture quantitated as diesel. The chromatogram does not match the typical diesel fingerprint.

Approved by: K Eoni A Murphy Date: September 22, 1993

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON Associates	**Date Received:**	09/17/93
Project:	EMCON Project No. 0G70-012.01	**Service Request No.:**	SJ93-1147
	ARCO Facility No. 771	**Sample Matrix:**	Water

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

Sample Name:		MW-1 (39)	MW-2 (36)	MW-3 (38)
Date Analyzed:		09/17/93 *	09/17/93	09/17/93 *
Analyte	**MRL**			
Benzene	0.5	6,400.	5,500.	ND
Toluene	0.5	21,000.	4,300.	ND
Ethylbenzene	0.5	19,000.	2,300.	ND
Total Xylenes	0.5	140,000.	19,000.	ND
TPH as Gasoline	50	1,800,000.	200,000.	120.

Sample Name:		MW-4 (40)	MW-5 (39)	MW-6 (42)
Date Analyzed:		09/20/93	09/17/93 *	09/20/93
Analyte	**MRL**			
Benzene	0.5	640.	3,500.	300.
Toluene	0.5	90.	3,300.	10.
Ethylbenzene	0.5	360.	2,700.	100.
Total Xylenes	0.5	690.	10,000.	180.
TPH as Gasoline	50	43,000.	180,000.	3,500.

* This sample was part of the analytical batch started on September 17, 1993. However, it was analyzed after midnight so the actual date analyzed is September 18, 1993.

Approved by: Kevin Murphy Date: September 22, 1993

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON Associates	**Date Received:**	09/17/93
Project:	EMCON Project No. 0G70-012.01	**Service Request No.:**	SJ93-1147
	ARCO Facility No. 771	**Sample Matrix:**	Water

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

Sample Name:		MW-7 (38)	MW-8 (40)	MW-9 (38)
Date Analyzed:		09/17/93 *	09/17/93 *	09/17/93 *
Analyte	**MRL**			
Benzene	0.5	1,400.	ND	ND
Toluene	0.5	170.	ND	ND
Ethylbenzene	0.5	560.	ND	ND
Total Xylenes	0.5	2,700.	ND	ND
TPH as Gasoline	50	37,000.	ND	ND

Sample Name:		MW-10 (35)	MW-11 (37)	RW-1 (38)
Date Analyzed:		09/17/93 *	09/17/93 *	09/17/93 *
Analyte	**MRL**			
Benzene	0.5	ND	ND	1,800.
Toluene	0.5	ND	ND	580.
Ethylbenzene	0.5	ND	ND	620.
Total Xylenes	0.5	ND	ND	2,300.
TPH as Gasoline	50	ND	ND	20,000.

* This sample was part of the analytical batch started on September 17, 1993. However, it was analyzed after midnight so the actual date analyzed is September 18, 1993.

Approved by: Keonia Murphy Date: September 23, 1993

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON Associates	Date Received:	09/17/93
Project:	EMCON Project No. 0G70-012.01	Service Request No.:	SJ93-1147
	ARCO Facility No. 771	Sample Matrix:	Water

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

Sample Name:		FB-1	Method Blank	Method Blank
Date Analyzed:		09/17/93 *	09/17/93	09/20/93
Analyte	**MRL**			
Benzene	0.5	ND	ND	ND
Toluene	0.5	ND	ND	ND
Ethylbenzene	0.5	ND	ND	ND
Total Xylenes	0.5	ND	ND	ND
TPH as Gasoline	50	ND	ND	ND

* This sample was part of the analytical batch started on September 17, 1993. However, it was analyzed after midnight so the actual date analyzed is September 18, 1993.

Approved by: Kevin Murphy Date: September 22, 1993

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COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON Associates	Date Received:	09/17/93
Project:	EMCON Project No. 0G70-012.01	Service Request No.:	SJ93-1147
	Arco Facility No. 771	Sample Matrix:	Water

Continuing Calibration Summary
Oil and Grease, IR
SM 5520-C

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
Hydrocarbon Mix	40.	41.2	103.	90-110

SM Standard Method

Approved by: Keonia Murphy Date: September 22, 1993

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COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON Associates	Date Received:	09/17/93
Project:	EMCON Project No. 0G70-012.01	Service Request No.:	SJ93-1147
	ARCO Facility No. 771	Sample Matrix:	Water

Matrix Spike/Duplicate Matrix Spike Summary
Oil and Grease, IR
SM 5520-C
mg/L (ppm)

Sample Name	Spike Level	Sample Result	Spike Result MS	Spike Result DMS	Percent Recovery MS	Percent Recovery DMS	CAS Acceptance Criteria
MW-6 (42)	8.0	0.95	9.15	8.34	102.	92.	56-151

SM Standard Method

Approved by: Karen A Murphy Date: September 22, 1993

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COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON Associates
Project: EMCON Project No. 0G70-012.01
ARCO Facility No. 771

Date Received: 09/17/93
Service Request No.: SJ93-1147
Sample Matrix: Water

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

Sample Name	Date Analyzed	Percent Recovery *p*-Terphenyl
MW-6 (42)	09/17/93	115.
MW-6 (42) MS	09/17/93	116.
MW-6 (42) DMS	09/17/93	116.
Method Blank	09/17/93	128.
	CAS Acceptance Criteria	46-133

Approved by: Kevin Murphy Date: September 27, 1993

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COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON Associates	Date Received:	09/17/93
Project:	EMCON Project No. 0G70-012.01	Service Request No.:	SJ93-1147
	ARCO Facility No. 771	Sample Matrix:	Water

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

Date Analyzed: 09/17/93

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
TPH as Diesel	500.	547.	109.	90-110

Approved by: Kenneth Murphy Date: September 22, 1993

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COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON Associates
Project: EMCON Project No. 0G70-012.01
ARCO Facility No. 771

Date Received: 09/17/93
Service Request No.: SJ93-1147
Sample Matrix: Water

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

Sample Name: MW-6 (42)
Date Analyzed: 09/17/93

Analyte	Spike Level	Sample Result	Spike Result MS	Spike Result DMS	Percent Recovery MS	Percent Recovery DMS	Acceptance Criteria
Diesel	4,000.	1,100. *	5,500.	5,620.	110.	113.	61-121

* The sample contains a lower boiling point hydrocarbon mixture quantitated as diesel. The chromatogram does not match the typical diesel fingerprint.

Approved by: Kevin Murphy Date: September 22, 1993

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COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON Associates
Project: EMCON Project No. 0G70-012.01
ARCO Facility No. 771

Date Received: 09/17/93
Service Request No.: SJ93-1147
Sample Matrix: Water

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

Sample Name	Date Analyzed	Percent Recovery α,α,α-Trifluorotoluene
MW-1 (39)	09/17/93	105.
MW-2 (36)	09/17/93	89.
MW-3 (38)	09/17/93	91.
MW-4 (40)	09/20/93	109.
MW-5 (39)	09/17/93	92.
MW-6 (42)	09/20/93	106.
MW-7 (38)	09/17/93	92.
MW-8 (40)	09/17/93	85.
MW-9 (38)	09/17/93	84.
MW-10 (35)	09/17/93	81.
MW-11 (37)	09/17/93	79.
RW-1 (38)	09/17/93	86.
FB-1	09/17/93	81.
MW-2 (36) MS	09/17/93	100.
MW-2 (36) DMS	09/17/93	102.
Method Blank	09/17/93	88.
Method Blank	09/20/93	90.
CAS Acceptance Criteria		70-130

Approved by: Keant Murphy Date: September 22, 1993

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COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON Associates
Project: EMCON Project No. 0G70-012.01
ARCO Facility No. 771

Date Received: 09/17/93
Service Request No.: SJ93-1147

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

Date Analyzed: 09/17/93

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
Benzene	25.	25.3	101.	85-115
Toluene	25.	26.2	105.	85-115
Ethylbenzene	25.	24.2	97.	85-115
Total Xylenes	75.	75.7	101.	85-115
TPH as Gasoline	250.	255.	102.	90-110

Approved by: Kevin Murphy Date: September 22, 1993

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COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON Associates
Project: EMCON Project No. 0G70-012.01
ARCO Facility No. 771

Date Received: 09/17/93
Service Request No.: SJ93-1147
Sample Matrix: Water

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

Sample Name: MW-2 (36)
Date Analyzed: 09/17/93

			Spike Result		Percent Recovery		
Analyte	Spike Level	Sample Result	MS	DMS	MS	DMS	CAS Acceptance Criteria
TPH as Gasoline	500,000.	202,000.	702,000.	718,000.	100.	103.	76-130

Approved by: Kenneth Murphy Date: September 22, 1993

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ARCO Products Company

Division of AtlanticRichfieldCompany

Chain of Custody

Task Order No. EMC-93-5

ARCO Facility no. 771	City (Facility) LIVERMORE	Project manager (Consultant) JIM BUTERA		Laboratory name CAS	
ARCO engineer KYLE CHRISTIE	Telephone no. (ARCO) 571-2534	Telephone no. (Consultant) 453-7300	Fax no. (Consultant) 453-0452	Contract number 07077	
Consultant name EMCON ASSOCIATES	Address (Consultant) 1921 RINGWOOD AVE.			Method of shipment SAMPLER WILL DELIVER	

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 (CAS)	TPH Modified 8015 Gas ☐ Diesel ☒ (5720 CA)	Oil and Grease 413.1 ☐ 413.2 ☐	TPH EPA 418.1/SM503E	EPA 601/8010	EPA 624/8240	EPA 625/8270	TCLP Metals ☐ Semi VOA ☐ VOA ☐	CAM Metals EPA 6010/7000 TTLC ☐ STLC ☐	Lead Org./DHS ☐ Lead EPA 7420/7421 ☐	
MW-1(37)	1-2	2		X		X	HCl	9/14/93	1718		X										
MW-2(36)	3-4	2						9/16/93	1629												
MW-3(38)	5-6	2						9/15/93	1510												
MW-4(40)	7-8	2						9/16/93	1454												
MW-5(39)	9-10	2						9/16/93	15:53												
1-14 MW-6(42)	11-12	X (4)						9/15/93	16:06				X								
MW-7(38)	15-16	2						9/16/93	14:05												
MW-8(40)	17-18	2						9/15/93	14:05												
MW-9(38)	19-20	2						9/15/93	13:32												
MW-10(35)	21-22	2						9/15/93	13:10												
MW-11(37)	23 24	2						9/15/93	14:31												
MW-12																					
RW-1(38)	25-26	2		X		X	X	9/16/93	13:20		X										
FB-1	27-28	2		X		X	X	9/15/93			X										
		(EW9(1))																			
MW-6(42)	29-30	X 2		X		X	NP	9/15/93	16:06			X									

Condition of sample: OK

Temperature received: COOL

Relinquished by sampler: Dave Shelton	Date 9/17/93	Time	Received by
Relinquished by	Date	Time	Received by
Relinquished by	Date	Time	Received by laboratory: Kevin Howard

Date: 9-17-93 Time: 0350

Special detection Limit/reporting: LOWEST POSSIBLE

Special QA/QC: AS NORMAL

Remarks: 2-40 ml VOA HCl; TOG - 2 Liter Glass HCl; TPHD 2 Liter Glass NP

Lab number: SJ93-1147

Turnaround time

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

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

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: 0670-012-01 | SAMPLE ID: MW-1 (31)

PURGED BY: B. Stafford | CLIENT NAME: Arco 771

SAMPLED BY: B. Stafford | LOCATION: 899 Rincon Ave Livermore, CA

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

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

CASING ELEVATION (feet/MSL): NA | VOLUME IN CASING (gal.): 4.73

DEPTH TO WATER (feet): 33.25 | CALCULATED PURGE (gal.): 14.2

7.25 DEPTH OF WELL (feet): 40.5 | ACTUAL PURGE VOL. (gal.): 15.0/14.0

DATE PURGED: 9/16/93 | Start (2400 Hr) 17:00 | End (2400 Hr) 17:14

DATE SAMPLED: 9/16/93 | Start (2400 Hr) 17:18 | End (2400 Hr) 17:20

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
17:03	5.0	6.86	1323.	67.8	Grey	Heavy
17:06	10.0	6.86	1278.	66.8	↓	↓
17:14	14.0	6.88	1242.	65.9	↓	↓

D. O. (ppm): NA | ODOR: X strong | NA (COBALT 0 - 100) | NA (NTU 0 - 200)

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

PURGING EQUIPMENT

___ 2" Bladder Pump | ___ Bailer (Teflon®)

___ Centrifugal Pump | X Bailer (PVC)

___ Submersible Pump | ___ Bailer (Stainless Steel)

___ Well Wizard™ | ___ Dedicated

Other: ___

SAMPLING EQUIPMENT

___ 2" Bladder Pump | X Bailer (Teflon®)

___ ODL Sampler | ___ Bailer (Stainless Steel)

___ Dipper | ___ Submersible Pump

___ Well Wizard™ | ___ Dedicated

Other: ___

WELL INTEGRITY: Good | LOCK #: Slip Cap

REMARKS: Sheen on purge H2O

Meter Calibration: Date: 9/16/93 | Time: 1511 | Meter Serial #: 9072 | Temperature °F: ___

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

Location of previous calibration: MW-5

Signature: Brent Stafford | Reviewed By: JB | Page 1 of 12

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: 0670-012-01 SAMPLE ID: MW-2 (36)

PURGED BY: B. Stafford CLIENT NAME: Arco 771

SAMPLED BY: B. Stafford LOCATION: 899 Rincon Ave Livermore, 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):	N/A	VOLUME IN CASING (gal.):	4.83
DEPTH TO WATER (feet):	30.50	CALCULATED PURGE (gal.):	14.48
DEPTH OF WELL (feet):	37.9 (7.40)	ACTUAL PURGE VOL (gal.):	15.00

DATE PURGED: 9/16/93 Start (2400 Hr) 1611 End (2400 Hr) 1627

DATE SAMPLED: 9/16/93 Start (2400 Hr) 1629 End (2400 Hr) 1633

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1616	5.0	6.701	1210.	65.9	Gray	Heavy
1622	10.0	6.83	1167.	65.8	↓	↓
1627	15.0	6.83	1142.	65.3	↓	↓

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

WELL INTEGRITY: Good LOCK #: 1

REMARKS: Shoon on purge H2O

Meter Calibration: Date: 9/16/93 Time: 1511 Meter Serial #: 9072 Temperature °F: ___

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

Location of previous calibration: MW-5

Signature: Brad Stafford Reviewed By: JB Page 2 of 12

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: 0670-012.01 | SAMPLE ID: MW-3 (38)

PURGED BY: B. Stafford | CLIENT NAME: Arco 771

SAMPLED BY: B. Stafford | LOCATION: 899 Rincon Ave, Livermore, 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):	NA	VOLUME IN CASING (gal.):	5.14
DEPTH TO WATER (feet):	31.82	CALCULATED PURGE (gal.):	15.42
7.98 DEPTH OF WELL (feet):	39.7	ACTUAL PURGE VOL. (gal.):	16.0

DATE PURGED: 9/15/93 | Start (2400 Hr) 1451 | End (2400 Hr) 15:06

DATE SAMPLED: 9/15/93 | Start (2400 Hr) 1510 | End (2400 Hr) 1513

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1457	5.0	7.17	1098	73.3	Moderate-High	Tan
15:00	10.0	7.05	1095	68.5	Heavy	Tan
15:05	16.0	7.09	1110	69.6	Heavy	Tan

D. O. (ppm): NA | ODOR: None | NA (COBALT 0 - 100) | NA (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	X Bailer (Teflon®)
___ Centrifugal Pump	X Bailer (PVC)	___ DDL Sampler	___ Bailer (Stainless Steel)
___ Submersible Pump	___ Bailer (Stainless Steel)	___ Dipper	___ Submersible Pump
___ Well Wizard™	___ Dedicated	___ Well Wizard™	___ Dedicated
Other: ___		Other: ___	

WELL INTEGRITY: Good | LOCK #: 3254

REMARKS: ___

Meter Calibration: Date: 9/15/93 | Time: 12:45 | Meter Serial #: 9072 | Temperature °F: ___

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

Location of previous calibration: MW-10

Signature: Bart Stafford | Reviewed By: JB | Page 3 of 12

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: 0670-012.01 SAMPLE ID: MW-4 (4D)

PURGED BY: B. Stafford CLIENT NAME: Arco 771

SAMPLED BY: B. Stafford LOCATION: 899 Rincon Ave Livermore, 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): N/A VOLUME IN CASING (gal.): 6.05

DEPTH TO WATER (feet): 32.02 CALCULATED PURGE (gal.): 18.16

DEPTH OF WELL (feet): 413 (7.82) ACTUAL PURGE VOL. (gal.): 18.0

DATE PURGED: 5/16/93 Start (2400 Hr) 1425 End (2400 Hr) 1452

DATE SAMPLED: 5/16/93 Start (2400 Hr) 1454 End (2400 Hr) 1457

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1432	6.00	6.90	1297.	68.4	L. Gray	Heavy
1438	12.0	6.91	1255.	67.9	↓	↓
1451	18.0	6.94	1233.	~~66~~ 67.1	↓	↓

D. O. (ppm): N/A ODOR: Yes N/A (COBALT 0 - 100) N/A (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	X Bailer (Teflon®)
___ Centrifugal Pump	X Bailer (PVC)	___ DDL Sampler	___ Bailer (Stainless Steel)
___ Submersible Pump	___ Bailer (Stainless Steel)	___ Dipper	___ Submersible Pump
___ Well Wizard™	___ Dedicated	___ Well Wizard™	___ Dedicated
Other: ___		Other: ___	

WELL INTEGRITY: Good LOCK #: Slip cap

REMARKS: ___

Meter Calibration: Date: 5/16/93 Time: 10:45 Meter Serial #: 9072 Temperature °F: ___

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

Location of previous calibration: MW-1

Signature: [signature] Reviewed By: JB Page 4 of 12

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: 0670-012.01 | SAMPLE ID: MW-5 (37)

PURGED BY: B. Stafford | CLIENT NAME: Arco 771

SAMPLED BY: B. Stafford | LOCATION: 899 Rincon Ave, Livermore, 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):	N/A	VOLUME IN CASING (gal.):	5.35
DEPTH TO WATER (feet):	32.00	CALCULATED PURGE (gal.):	16.05
40.20 DEPTH OF WELL (feet):	40.2	ACTUAL PURGE VOL (gal.):	16.0

DATE PURGED: 9/16/93 | Start (2400 Hr) 15:28 | End (2400 Hr) 1551

DATE SAMPLED: 9/16/93 | Start (2400 Hr) 15:53 | End (2400 Hr) 15:55

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1537	5.5	5.83	1266.	67.3	Cloudy	Heavy
1541	10.0	6.45	1222.	66.7	Cloudy	low
1550	16.0	6.55	1218.	66.1	↓	↓

D. O. (ppm): N/A | ODOR: Strong | N/A (COBALT 0 - 100) | N/A (NTU 0 - 200)

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

PURGING EQUIPMENT

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

SAMPLING EQUIPMENT

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

WELL INTEGRITY: Good | LOCK #: S/D Cap

REMARKS: ___

Meter Calibration: Date: 9/16/93 Time: 15:11 / 15:45 Meter Serial #: 7072 Temperature °F: 70.9

(EC 1000 1014 / 1000.) (DI 4.65) (pH 7 7.03 / 7.00) (pH 10 9.87 / 10.00) (pH 4 3.99 / ___)

Location of previous calibration: RW-1

Signature: Brad Stafford | Reviewed By: JB | Page 5 of 12

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: 6670-012.01 SAMPLE ID: MW-6 (42)

PURGED BY: B. Stafford CLIENT NAME: Arco 771

SAMPLED BY: B. Stafford LOCATION: 899 Rincon Ave Livermore, 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): N/A VOLUME IN CASING (gal.): 7.43

DEPTH TO WATER (feet): 31.81 CALCULATED PURGE (gal.): 22.29

11.39 DEPTH OF WELL (feet): 43.2 ACTUAL PURGE VOL. (gal.): 18.0

DATE PURGED: 9/15/93 Start (2400 Hr) 15:42 End (2400 Hr) 1556

DATE SAMPLED: 9/15/93 Start (2400 Hr) 16:06 End (2400 Hr) 16:18

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1546	7.5	7.13	1278.	69.0	Gray	Moderate
1552	15.0	7.04	1263.	66.8	↓	↓
Well ~~22.5~~	dried at	18.0 gallons	at 1556			
1619	Recharge	7.33	1285.	68.3	Gray	Heavy
					N/A (COBALT 0 - 100)	N/A (NTU 0 - 200)

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

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

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

WELL INTEGRITY: Good LOCK #: 3259

REMARKS: L.W.C. Broken. DTW = 39.69 @ 16:05 Sampling.

Meter Calibration: Date: 9/15/93 Time: 12:45 Meter Serial #: 7072 Temperature °F: ___

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

Location of previous calibration: MW-10

Signature: Brad Shelton Reviewed By: JB Page 6 of 12

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: 0670-012.01 SAMPLE ID: MW-7 (38)

PURGED BY: B. Stafford CLIENT NAME: Arco 771

SAMPLED BY: B. Stafford LOCATION: 899 Rincon Ave Livermore, 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): NA VOLUME IN CASING (gal.): 5.66

DEPTH TO WATER (feet): 31.01 CALCULATED PURGE (gal.): 17.00

B.U.T DEPTH OF WELL (feet): 39.80 ACTUAL PURGE VOL. (gal.): 12.5

DATE PURGED: 9/16/93 Start (2400 Hr) 13:43 End (2400 Hr) 14:01

DATE SAMPLED: 9/16/93 Start (2400 Hr) 14:05 End (2400 Hr) 14:07

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
13:48	5.5	6.98	1179.	66.9	Cloudy White	Heavy
13:55	11.0	6.89	1164.	65.4	Tan-White	Heavy
- Well -	17.0 -	dried	at 12.5 gallons	@ 14:01		
14:07	Recharge	6.90	1169.	6.90	Gray	Heavy

D. O. (ppm): NA ODOR: Slight

COLOR (COBALT 0 - 100): NA

TURBIDITY (NTU 0 - 200): NA

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

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

WELL INTEGRITY: Good LOCK #: Slip Cap

REMARKS: ___

Meter Calibration: Date: 9/16/93 Time: 10:45 Meter Serial #: 907Z Temperature °F: ___

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

Location of previous calibration: RW-1

Signature: Brent Stafford Reviewed By: JP Page 7 of 12

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: 6670-012.01 SAMPLE ID: MW-8 (40)

PURGED BY: B. Stafford CLIENT NAME: Arco 771

SAMPLED BY: B. Stafford LOCATION: 899 Rincon Ave Livermore, CA

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

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

CASING ELEVATION (feet/MSL): N/A VOLUME IN CASING (gal.): 0.47

DEPTH TO WATER (feet): 38.76 CALCULATED PURGE (gal.): 1.50

1.99 DEPTH OF WELL (feet): 41.7 ACTUAL PURGE VOL. (gal.): 1.50

DATE PURGED: 9/15/93 Start (2400 Hr) 13:50 End (2400 Hr) 1403

DATE SAMPLED: 9/15/93 Start (2400 Hr) 14:05 End (2400 Hr) 14:08

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
13:56	0.5	7.41	1067.	73.0	Brown	Heavy
13:59	1.0	7.30	1023.	69.2	Brown	Heavy
14:02	1.5	7.27	1013.	68.0	Brown	Heavy

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

COLOR (COBALT 0 - 100): NA

TURBIDITY (NTU 0 - 200): NA

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

PURGING EQUIPMENT

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

SAMPLING EQUIPMENT

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

WELL INTEGRITY: Good LOCK #: 3459

REMARKS: ___

Meter Calibration: Date: 9/15/93 Time: 12:45 Meter Serial #: 9072 Temperature °F: ___

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

Location of previous calibration: MW-10

Signature: [signature] Reviewed By: JB Page 5 of 12

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: 0670-012.01 | SAMPLE ID: MW-9 (38)

PURGED BY: B. Stafford | CLIENT NAME: Arco 771

SAMPLED BY: B. Stafford | LOCATION: 899 Rincon Ave Livermore, CA

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

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

CASING ELEVATION (feet/MSL): NA | VOLUME IN CASING (gal.): 1.39

DEPTH TO WATER (feet): 30.65 | CALCULATED PURGE (gal.): 4.18

DEPTH OF WELL (feet): 39.2 (8.55) | ACTUAL PURGE VOL. (gal.): 4.50

DATE PURGED: 9/15/93 | Start (2400 Hr) 13:21 | End (2400 Hr) 1330

DATE SAMPLED: 9/15/93 | Start (2400 Hr) 13:32 | End (2400 Hr) 13:34

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
13:24	1.5	7.14	1216.	70.2	Brown	Heavy
13:27	3.0	7.20	1181.	68.7	Brown	Heavy
13:29	4.5	7.19	1166.	68.1	Brown	Heavy

D. O. (ppm): NA | ODOR: None | NA (COBALT 0 - 100) | NA (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	X Bailer (Teflon®)
___ Centrifugal Pump	X Bailer (PVC)	___ ODL Sampler	___ Bailer (Stainless Steel)
___ Submersible Pump	___ Bailer (Stainless Steel)	___ Dipper	___ Submersible Pump
___ Well Wizard™	___ Dedicated	___ Well Wizard™	___ Dedicated
Other: ___		Other: ___	

WELL INTEGRITY: Good | LOCK #: 3499

REMARKS: ___

Meter Calibration: Date: 9/15/93 | Time: 12:45 | Meter Serial #: 9072 | Temperature °F: ___

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

Location of previous calibration: MW-10

Signature: Brad Stafford | Reviewed By: JB | Page 9 of 12

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: 0670-012-01 SAMPLE ID: MW-10 (35)

PURGED BY: B. Stafford CLIENT NAME: Arco 771

SAMPLED BY: B. Stafford LOCATION: 899 Rincon Ave Livermore, CA

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

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

CASING ELEVATION (feet/MSL): NA VOLUME IN CASING (gal.): 0.8

DEPTH TO WATER (feet): 31.07 CALCULATED PURGE (gal.): 2.46

5.03 DEPTH OF WELL (feet): 36.10 ACTUAL PURGE VOL. (gal.): 3.0

DATE PURGED: 9/15/93 Start (2400 Hr) 12:56 End (2400 Hr) 13:06

DATE SAMPLED: 9/15/93 Start (2400 Hr) 13:10 End (2400 Hr) 13:12

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
12:58	1.0	6.15	1374.	68.3	Brown	Heavy
13:02	2.0	6.63	1349.	66.5	Brown	Heavy
13:05	3.0	6.70	1337.	65.7	Brown	Heavy

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

COLOR (COBALT 0 - 100): NA

TURBIDITY (NTU 0 - 200): NA

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

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

WELL INTEGRITY: Good LOCK #: 3476

REMARKS: Well dried after purging.

Meter Calibration: Date: 9/15/93 Time: 12:45 Meter Serial #: ~~7679~~ 9072 Temperature °F: 76.9

(EC 1000 974. / 1000.) (DI 1256) (pH 7 6.97 / 7.00) (pH 10 9.97 / 10.00) (pH 4 3.98 / ___)

Location of previous calibration: NA

Signature: [signature] Reviewed By: JB Page 10 of 12

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: 0670-012.01 | SAMPLE ID: MW-11 (37)

PURGED BY: B. Stafford | CLIENT NAME: Arco 771

SAMPLED BY: B. Stafford | LOCATION: 899 Rincon Ave, Livermore, CA

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

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

CASING ELEVATION (feet/MSL): NA | VOLUME IN CASING (gal.): 0.32

DEPTH TO WATER (feet): 36.59 | CALCULATED PURGE (gal.): 0.98

DEPTH OF WELL (feet): 38.6 (2.01) | ACTUAL PURGE VOL (gal.): 1.50

DATE PURGED: 9/15/93 | Start (2400 Hr) 14:21 | End (2400 Hr) 1430

DATE SAMPLED: 9/15/93 | Start (2400 Hr) 1431 | End (2400 Hr) 14:33

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
14:24	0.5	7.10	1132.	70.6	Brown	Heavy
14:26	1.0	7.09	1103.	69.0	Brown	Heavy
14:29	1.5	7.09	1075.	68.2	Brown	Heavy

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

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

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

WELL INTEGRITY: Good | LOCK #: 3476

REMARKS: ___

Meter Calibration: Date: 9/15/93 | Time: 12:45 | Meter Serial #: 9072 | Temperature °F: ___

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

Location of previous calibration: MW-10

Signature: [signature] | Reviewed By: JB | Page 11 of 12

Rev. 2, 5/91

WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 0670-012.01 SAMPLE ID: RW-1 (38)

PURGED BY: B. Stafford CLIENT NAME: Arco 771

SAMPLED BY: B. Stafford LOCATION: 899 Rincon Ave Livermore, CA

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

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

CASING ELEVATION (feet/MSL): NA VOLUME IN CASING (gal.): 10.98

DEPTH TO WATER (feet): 32.32 CALCULATED PURGE (gal.): 32.9

7.48 DEPTH OF WELL (feet): 39.80 ACTUAL PURGE VOL. (gal.): 24.0

DATE PURGED: 9/16/93 Start (2400 Hr) 12:46 End (2400 Hr) 1317

DATE SAMPLED: 9/16/93 Start (2400 Hr) 13:20 End (2400 Hr) 1324

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
12:55	11.0	6.41	1339.	73.4	Clear	low
13:09	22.0	6.67	1341.	71.4	↓	↓
Well	dried	~~after~~	~~[illegible]~~ at	24.0 gallons		
1325	Recharge	6.77	1312.	70.0	Black	Heavy

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

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

PURGING EQUIPMENT

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

SAMPLING EQUIPMENT

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

WELL INTEGRITY: Good LOCK #: Slip Cap

REMARKS: DTW = 36.90' at 1310. Well dried ~~[illegible]~~ ~~[illegible]~~. A total of 24 gallons purged.

Meter Calibration: Date: 9/16/93 Time: 1045 Meter Serial #: 9072 Temperature °F: 67.5

(EC 1000 1041 / 1000) (DI 10.48 NA) (pH 7 6.96 / 7.00) (pH 10 10.02 / 10.00) (pH 4 3.96 / ___)

Location of previous calibration: ___

Signature: [signature] Reviewed By: JB Page 12 of 12

RESNA
Working to Restore Nature

DAILY FIELD REPORT

SHEET 1 OF ____

PROJECT NAME: [illegible]

JOB NO. [illegible]

DATE: 9/2/93

WORK SCOPE: [illegible]

TIME: 2:10

	FLOATING PRODUCT	DTW	DTB
MW-1	NONE	32.53	40.73
MW-2	NONE	30.72	37.55
MW-5	NONE	32.22	39.93

ATTACHMENTS: _____

INITIAL: _____