

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

LETTER REPORT
QUARTERLY GROUNDWATER MONITORING
Second Quarter 1993
at
ARCO Station 2185
9800 East 14th Street
Oakland, California

62026.04

11/30/93
BC

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

July 24, 1993
0611MWHE
62026.04

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

Subject: Second Quarter 1993 Groundwater Monitoring Report for ARCO Station
2185 at 9800 East 14th Street, Oakland, California.

Mr. Whelan:

As requested by ARCO Products Company (ARCO), RESNA Industries Inc. (RESNA) presents this letter report which summarizes the results of second quarter 1993 groundwater monitoring performed by EMCON Associates (EMCON) of San Jose, California, and RESNA at the above-referenced site. The objectives of this quarterly groundwater monitoring event are to evaluate changes in the groundwater flow direction and gradient, and changes in concentrations of gasoline hydrocarbons in the local groundwater associated with former underground gasoline-storage tanks (USTs) at the site. Field work performed by RESNA included purging and sampling the groundwater in monitoring well MW-7. Field work performed under the direction of EMCON included: measuring depths to groundwater; subjectively analyzing groundwater for the presence of gasoline product; collecting groundwater samples from wells MW-1 through MW-6 for laboratory analyses; and directing a State-certified laboratory to analyze the groundwater samples. Evaluation and warrant of field procedures, acquisition of field data, and field protocols, performed by EMCON, is beyond RESNA's scope of work. RESNA's scope of work was limited to interpreting 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 2185 is located on the southeastern corner of the intersection of 98th Avenue and East 14th Street in Oakland, California, as shown on the Site Vicinity Map, Plate 1.

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ARCO Station 2185, Oakland, California

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Previous environmental work at the site is summarized in RESNA's Initial Subsurface Investigation Report (RESNA, September 1992), and in reports listed in the References section.

Groundwater Sampling and Gradient Evaluation

Depth to water level (DTW) measurements and quarterly sampling of groundwater monitoring wells MW-1 through MW-6 were performed by EMCON field personnel on April 9, 1993. RESNA performed DTW measurement and quarterly sampling of groundwater monitoring well MW-7 on May 14, 1993. EMCON performed DTW measurements on groundwater monitoring wells MW-1 through MW-6 on April 9, May 19, and June 17, 1993. 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 wells MW-1 through MW-6, are presented on EMCON's Field Reports, Summary of Groundwater Monitoring Data, and Water Sample Field Data Sheets. Results of RESNA's field work at the site including DTW measurement and subjective analysis for the presence of product in the groundwater in monitoring well MW-7 are presented on RESNA's Well Purge Data Sheet. These data are included in Appendix A.

The DTW levels, wellhead elevations, groundwater elevations, and subjective observations of product in the groundwater (if present) from MW-1 through MW-6 for this quarter are summarized in Table 1, Cumulative Groundwater Monitoring Data. EMCON's DTW measurements were used to evaluate groundwater elevations, gradients, and flow directions in April, May, and June 1993. No evidence of floating hydrocarbon product or sheen was observed in the wells during this quarter (see EMCON's Field Report Sheets, Appendix A). The groundwater gradients interpreted for April, May, and June 1993, are shown on Groundwater Gradient Maps, Plates 3 through 5. The interpreted average groundwater gradient and flow direction for this quarter are approximately 0.003 ft/ft toward the west-northwest. The groundwater gradient and flow direction evaluated for this quarter are generally consistent with the previous quarter.

Groundwater monitoring wells MW-1 through MW-6 were purged and sampled by EMCON field personnel on April 9, 1993. Groundwater monitoring well MW-7 was purged and sampled by RESNA field personnel on May 14, 1993. EMCON's Water Sample Field Data Sheets and RESNA's Well Purge Data Sheet, are included in Appendix A. The purge water was removed from the site by a licensed hazardous waste hauler.

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ARCO Station 2185, Oakland, California

July 24, 1993
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Laboratory Methods and Results

Water samples collected from wells MW-1 through MW-6 were analyzed by Columbia Analytical Services, Inc., located in San Jose, California (Hazardous Waste Testing Laboratory Certification No. 1426) for benzene, toluene, ethylbenzene, total xylenes (BTEX) and total petroleum hydrocarbons as gasoline (TPHg) using Environmental Protection Agency (EPA) Methods 5030/8020/California DHS LUFT Method. Water samples collected from monitoring well MW-7 were analyzed by Sequoia Analytical Laboratories, located in Redwood City, California (Hazardous Waste Testing Laboratory Certification No. 1210) for TPHg and BTEX using EPA Method 5030/8015/8020. Results of these water analyses are summarized in Table 2, Cumulative Results of Laboratory Analyses of Groundwater Samples--TPHg and BTEX. 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.

Distribution

It is recommended that copies of this report be forwarded to:

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

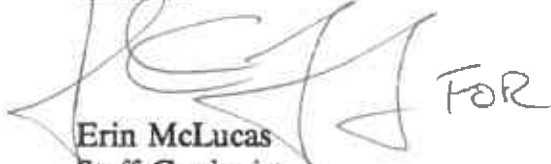
Mr. Richard Hiatt
Regional Water Quality Control Board
San Francisco Bay Region
2101 Webster Street, Suite 500
Oakland, California 94612

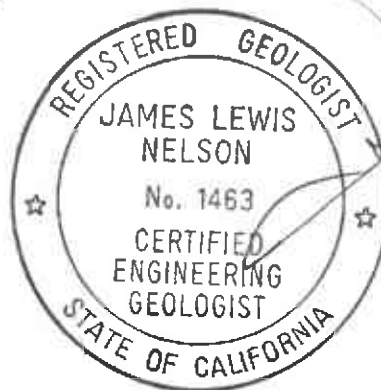
Quarterly Groundwater Monitoring
ARCO Station 2185, Oakland, California


July 24, 1993
62026.04

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

Sincerely,
RESNA Industries Inc.


Erin McLucas
Staff Geologist




James L. Nelson
Certified Engineering
Geologist No. 1463

Enclosures: References

- Plate 1, Site Vicinity Map
- Plate 2, Generalized Site Plan
- Plate 3, Groundwater Gradient Map, April 9, 1993
- Plate 4, Groundwater Gradient Map, May 19, 1993
- Plate 5, Groundwater Gradient Map, June 17, 1993
- Plate 6, TPHg/Benzene Concentrations in Groundwater, April 9, 1993

- Table 1, Cumulative Groundwater Monitoring Data
- Table 2, Cumulative Results of Laboratory Analyses of Groundwater Samples-
TPHg and BTEX.

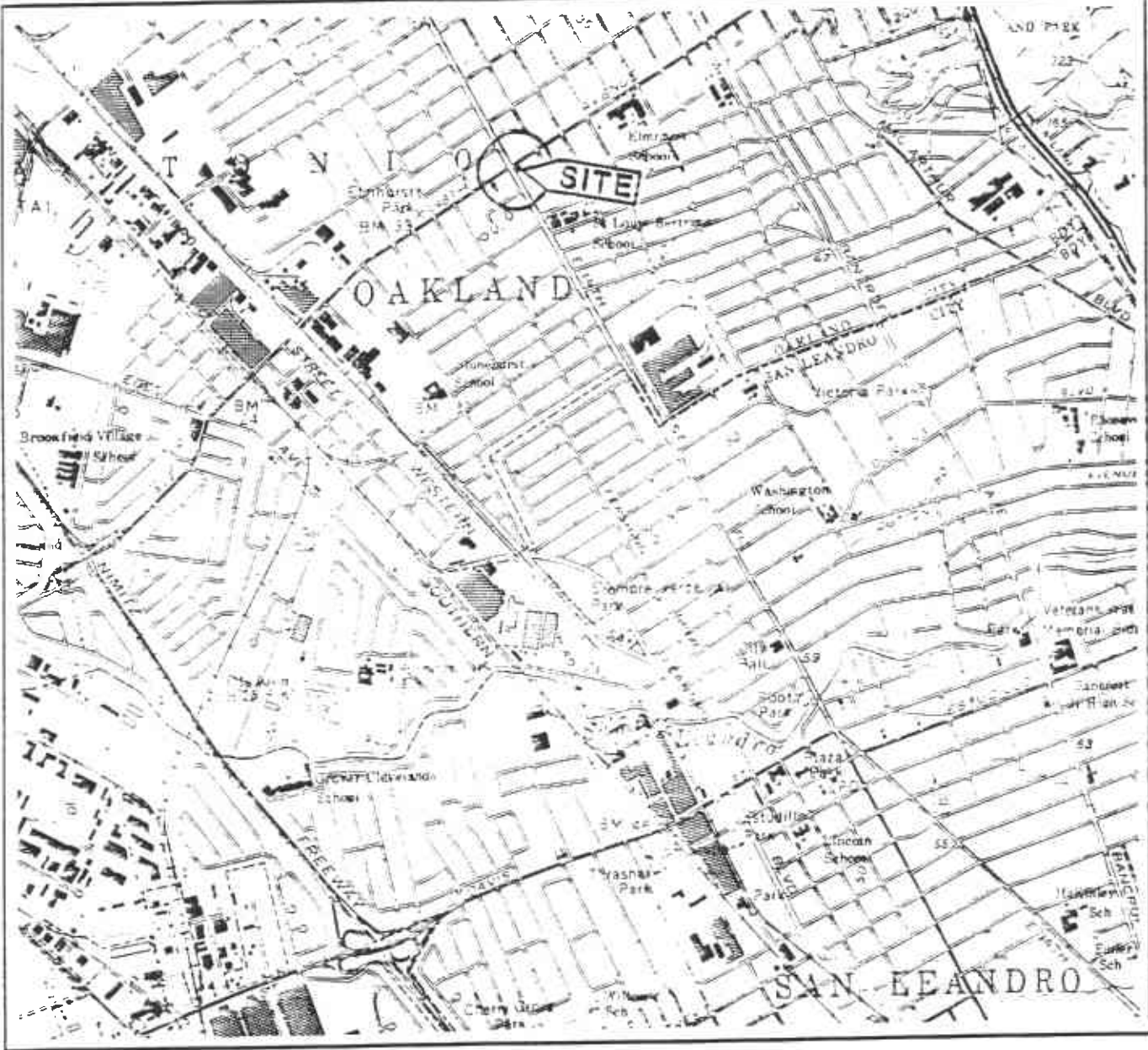
- Appendix A: EMCON's Field Reports, EMCON's Water Sample Field Data
Sheets, RESNA's Well Purge Data Sheet, and Certified
Analytical Reports with Chain of Custody Record

Quarterly Groundwater Monitoring
ARCO Station 2185, Oakland, California

July 24, 1993
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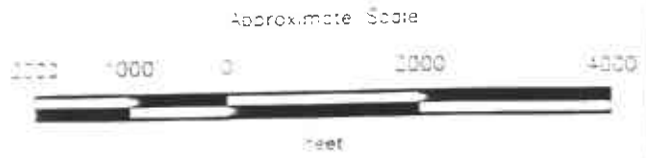
REFERENCES

- RESNA, June 16, 1992. Site Safety Plan for ARCO Station 2185, 9800 E. 14th Street, Oakland California. 62026.01.
- RESNA, September 28, 1992. Initial Subsurface Investigation at ARCO Station 2185, 9800 East 14th Street, Oakland, California. 62026.01.
- RESNA, December 4, 1992. Letter Report Quarterly Groundwater Monitoring Third Quarter 1992 at ARCO Station 2185, 9800 East 14th Street, Oakland California. 62026.03
- RESNA, March 15, 1993. Letter Report Quarterly Groundwater Monitoring Fourth Quarter 1992 at ARCO Station 2185, 9800 East 14th Street, Oakland California. 62026.03
- RESNA, April 21, 1993. Letter Report Quarterly Groundwater Monitoring First Quarter 1993 at ARCO Station 2185, 9800 East 14th Street, Oakland California. 62026.04
- Roux, July 16, 1991. Letter Report Limited Soil Performance Test, ARCO Facility No. 2185, 9800 East 14th Street, Oakland, California. Doc #A102W02.1.1
- Roux, August 8, 1991. Preliminary Tank Replacement Assessment, ARCO Facility No. 2185, 9800 East 14th Street, Oakland, California. Doc #A102W01.1.8
- Roux, November 22, 1991. Limited Subsurface Soil Investigation, ARCO Facility No. 2185, 9800 East 14th Street, Oakland, California. Doc #A102W03.1.1
- Roux, December 18, 1991. Site Investigation Work Plan, ARCO Facility No. 2185, 9800 East 14th Street, Oakland California. Doc #A119W02.1.1
- Roux, June 17, 1992. Underground Storage Tank Removal and Soil Sampling, ARCO Facility No. 2185, East 14th Street, Oakland California. Doc #A119W01.1.2



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

LEGEND
 ● = Site Location



RESNA
 Working to Restore Nature

PROJECT 62026.04

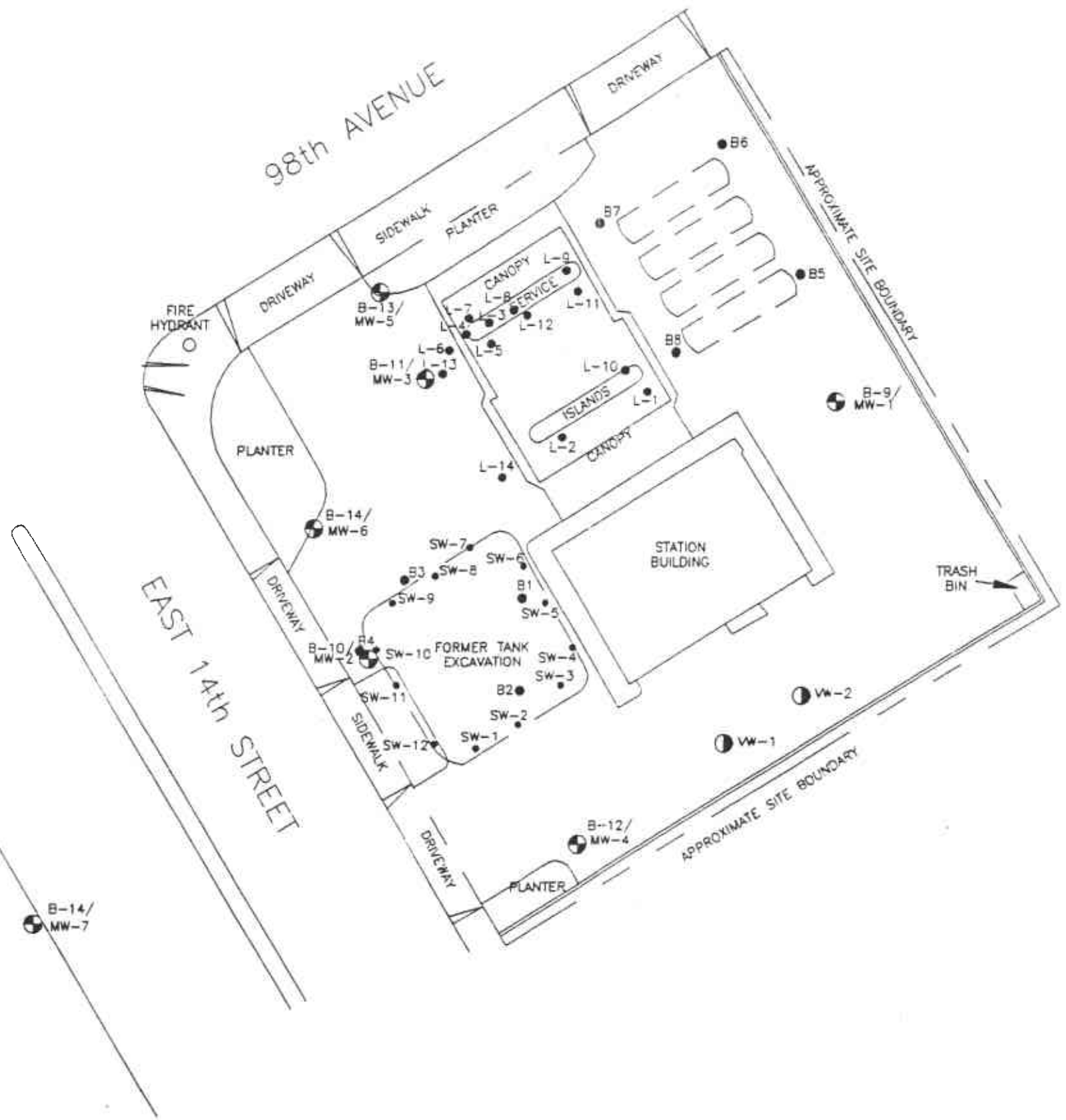
**SITE VICINITY MAP
 ARCO Station 2185
 9800 East 14th Street
 San Leandro, California**

PLATE

1

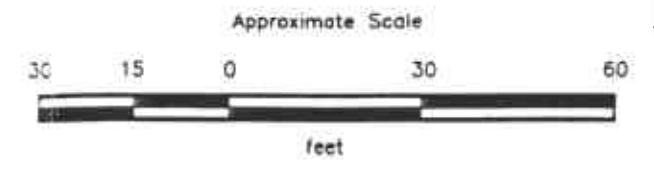
98th AVENUE

EAST 14th STREET



EXPLANATION

- B-14/
MW-7 = Monitoring well
(RESNA, July 1992)
- B8 = Soil boring
(Roux Associates, May and September 1991)
- VW-2 = Vapor extraction well
(Roux Associates, May 1991)
- L-13 = Soil boring
(Roux Associates, November 1991)
- SW-12 = Tank pit soil sample
(Roux Associates, November 1991)
- = Existing underground storage tanks



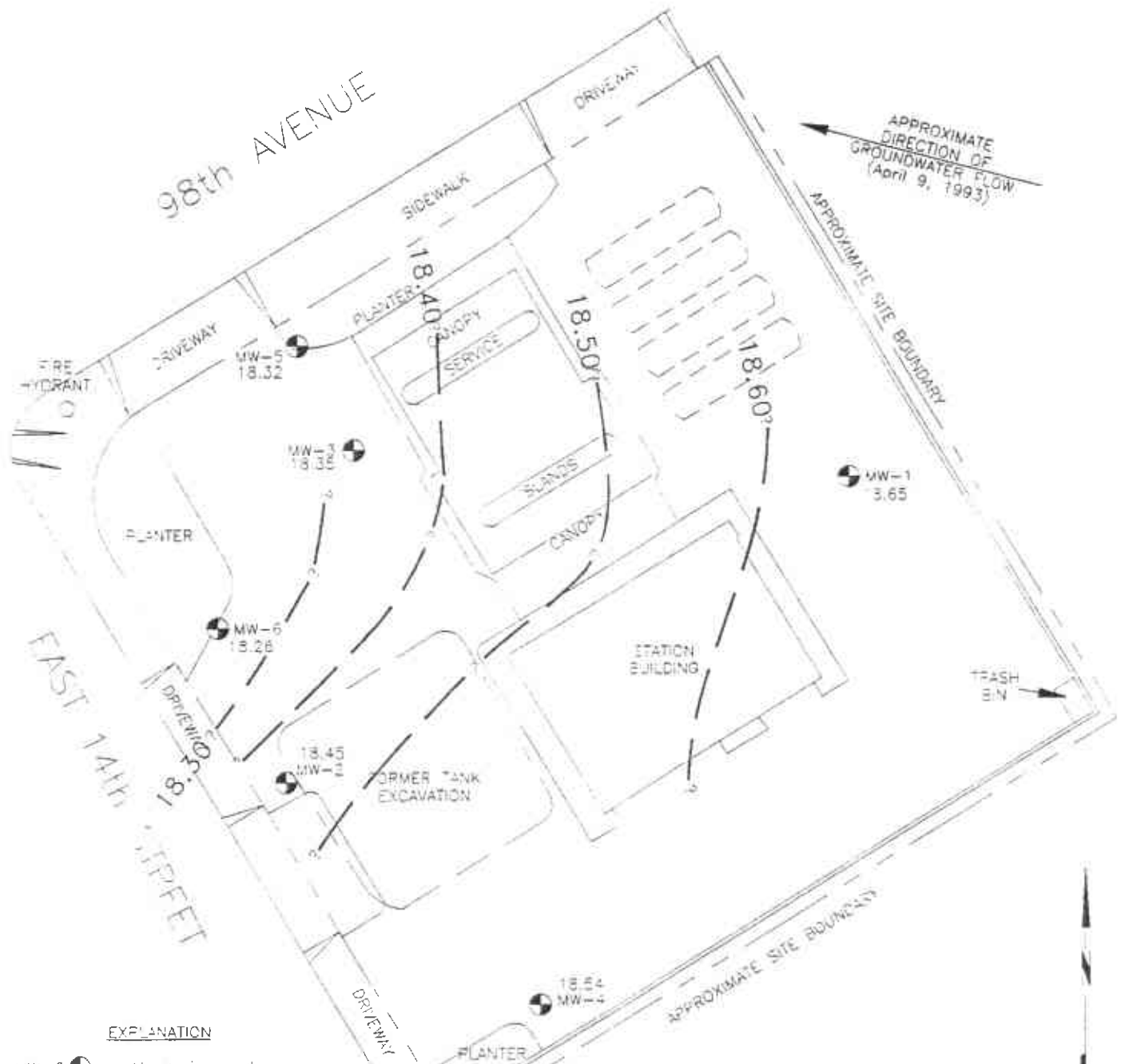
Source: Modified from a site plan provided by Roux Associates dated December 1991. Also surveyed by John Koch, Licensed Land Surveyor, July 1992.




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
GENERALIZED SITE PLAN
ARCO Station 2185
9800 East 14th Street
Oakland, California

PLATE
2

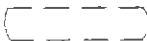


EXPLANATION

MW-6  = Monitoring well (RESNA, July 1992)

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

18.65 = Elevation of groundwater in feet above MSL, April 9, 1993

 = Existing underground storage tanks

Source: Modified from a site plan provided by Roux Associates dated December 1991. Also surveyed by John Koch, Licensed Land Surveyor, July 1992.

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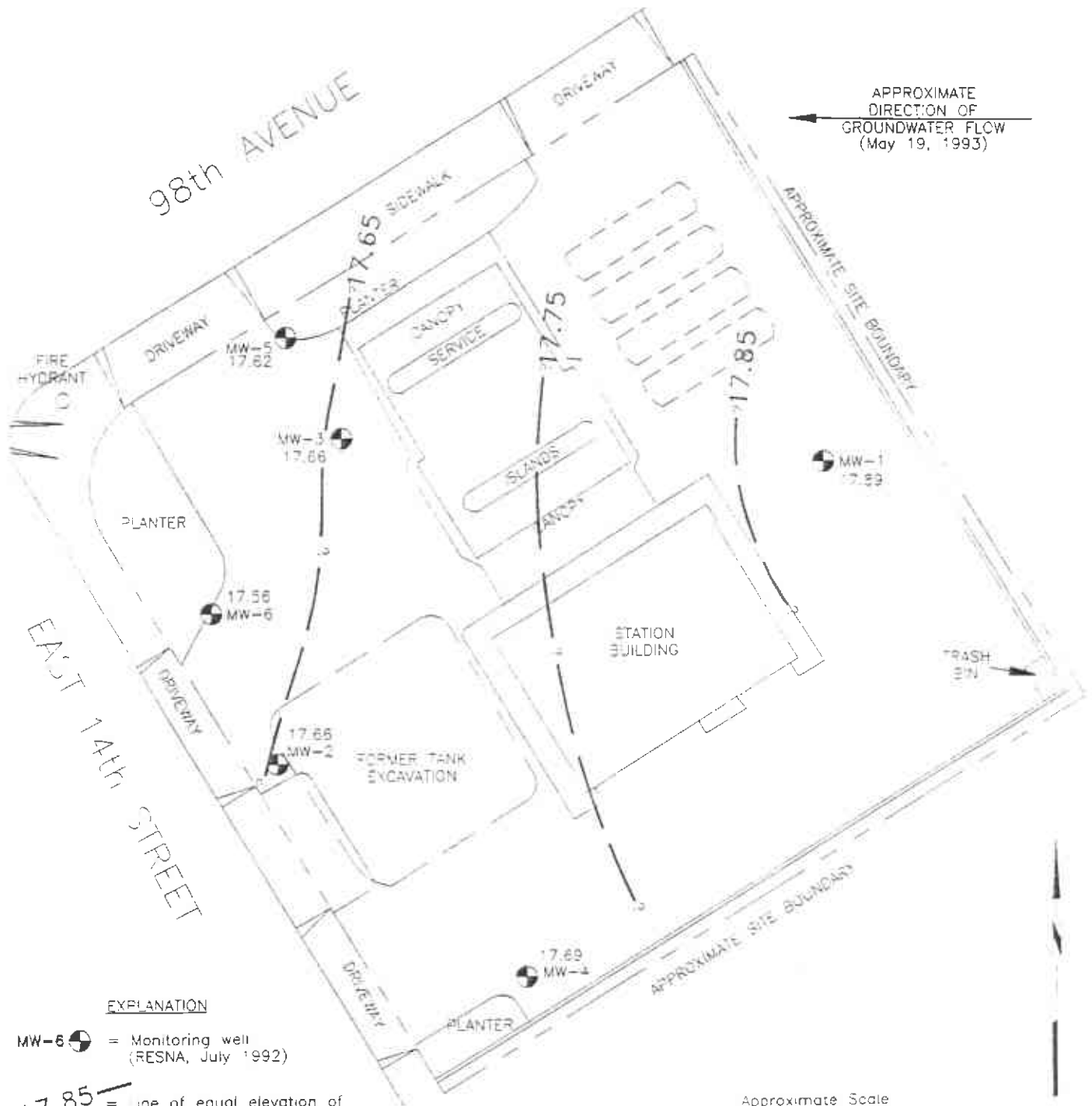
**GROUNDWATER GRADIENT MAP
ARCO Station 2185
9800 East 14th Street
Oakland, California**

PLATE

3


PROJECT 62026.04

APPROXIMATE
DIRECTION OF
GROUNDWATER FLOW
(May 19, 1993)

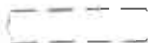


EXPLANATION

MW-6  = Monitoring well
(RESNA, July 1992)

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

17.89 = Elevation of groundwater in feet
above MSL, May 19, 1993

 = Existing underground storage tanks

Approximate Scale



Source: Modified from a site plan provided by Roux Associates
dated December 1991. Also surveyed by John Koch,
Licensed Land Surveyor, July 1992.

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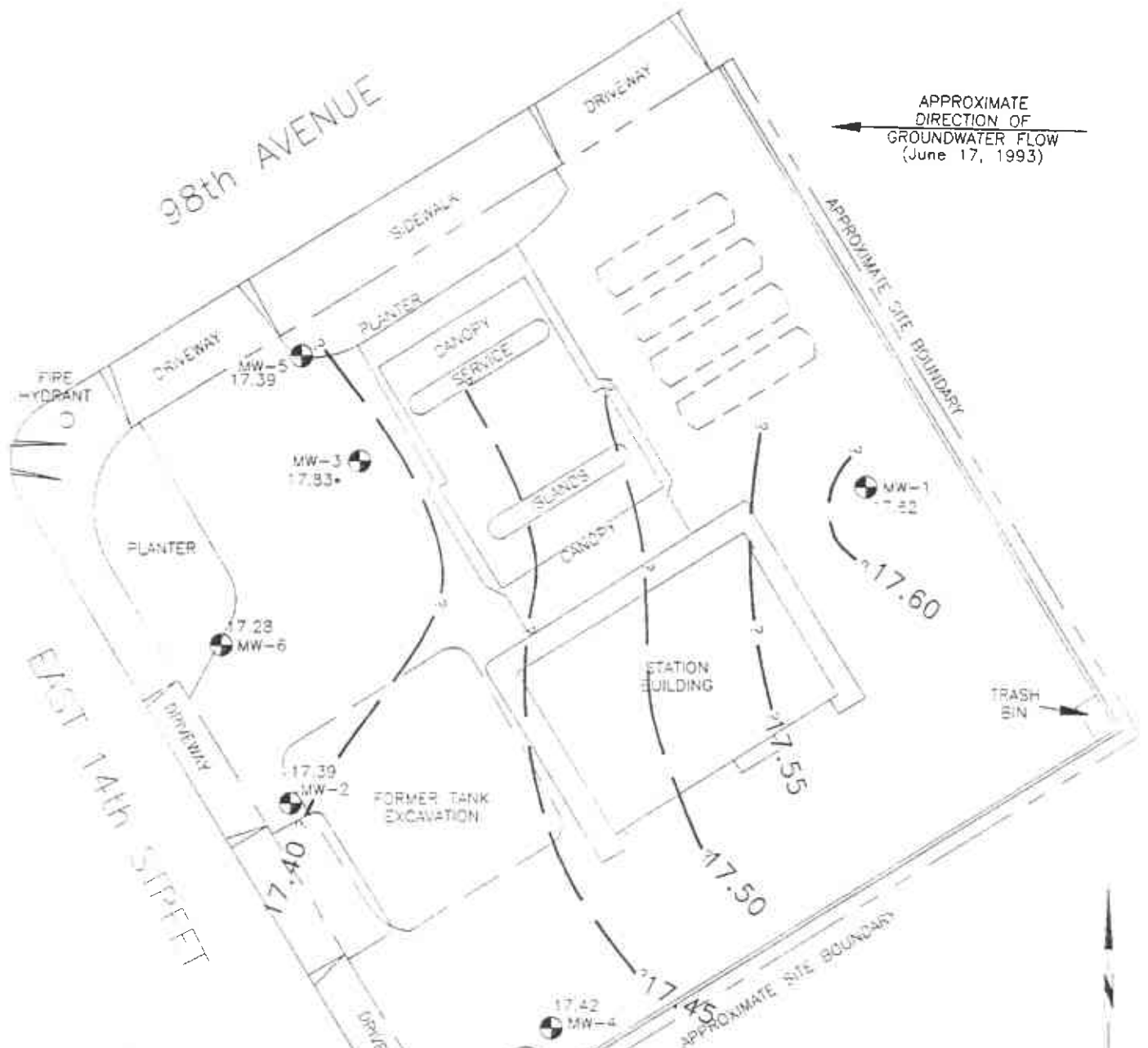
GROUNDWATER GRADIENT MAP

**ARCO Station 2185
9800 East 14th Street
Oakland, California**

PLATE

4

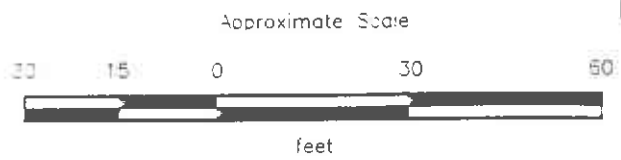
PROJECT 62026.04



APPROXIMATE
DIRECTION OF
GROUNDWATER FLOW
(June 17, 1993)

EXPLANATION

- MW-6 = Monitoring well (RESNA, July 1992)
- 17.60 = Line of equal elevation of groundwater in feet above mean sea level (MSL)
- 17.62 = Elevation of groundwater in feet above MSL, June 17, 1993
- = Anomalously high groundwater elevation. Not used to evaluate groundwater gradient or flow direction
- = Existing underground storage tanks



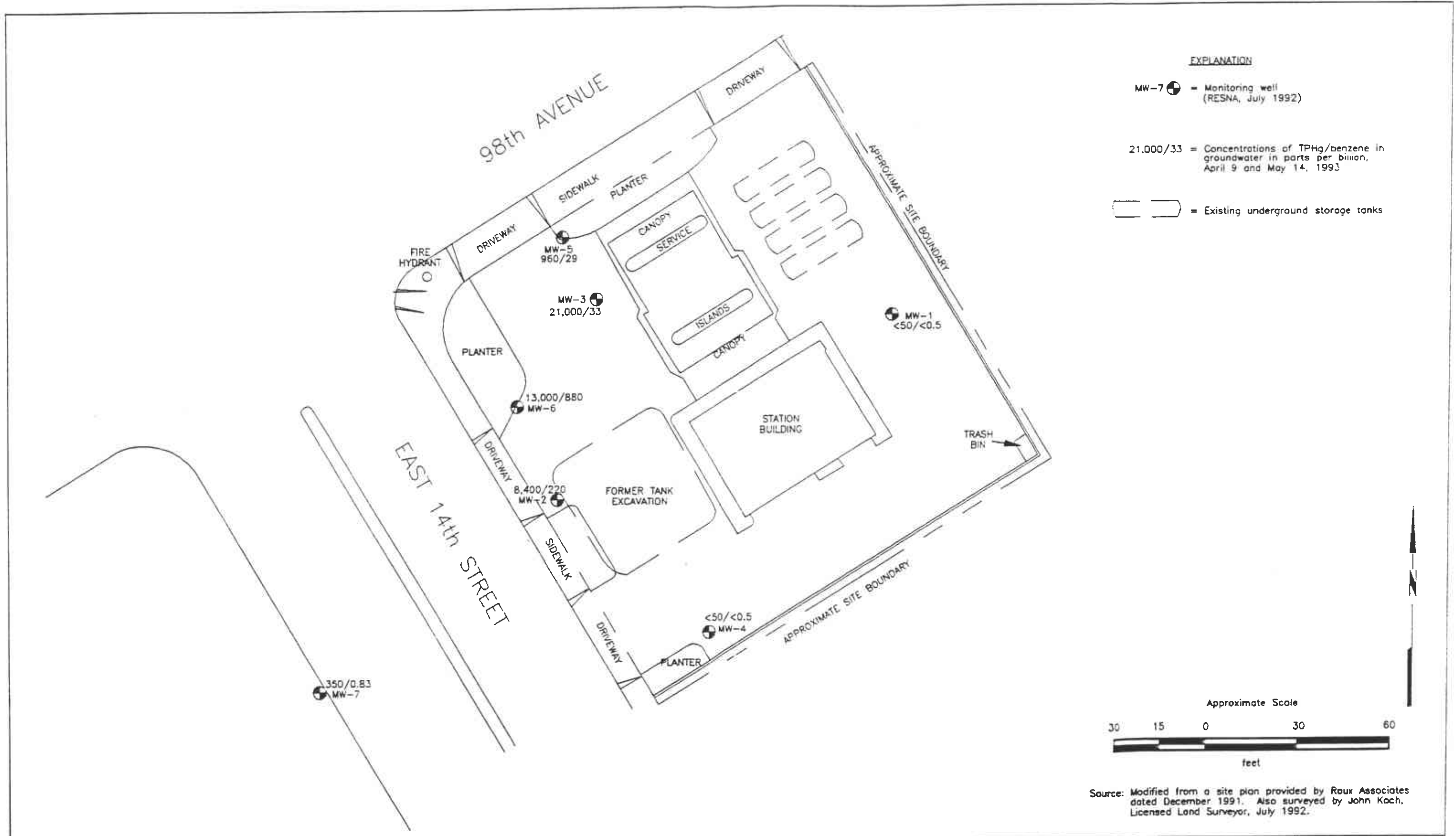
Source: Modified from a site plan provided by Roux Associates dated December 1991. Also surveyed by John Koch, licensed Land Surveyor, July 1992.



GROUNDWATER GRADIENT MAP
ARCO Station 2185
9800 East 14th Street
Oakland, California

PLATE
5

PROJECT 62026.04



Quarterly Groundwater Monitoring
ARCO Station 2185, Oakland, CaliforniaJuly 24, 1993
62026.04TABLE 1
CUMULATIVE GROUNDWATER MONITORING DATA
ARCO Station 2185
Oakland, California
(Page 1 of 2)

Date Well Measured	Well Elevation	Depth to Water	Water Elevation	Floating Product
<u>MW-1</u>				
7-24-92	29.15	13.38	15.77	None
8-26-92		13.92	15.23	None
9-22-92		14.18	14.97	None
10-19-92		14.52	14.63	None
11-23-92		14.54	14.61	None
12-16-92		12.20	16.95	None
01-14-93		9.32	19.83	None
02-26-93		9.38	19.77	None
03-26-93		10.04	19.11	None
04-09-93		10.50	18.65	None
05-19-93		11.26	17.89	None
06-17-93		11.53	17.62	None
<u>MW-2</u>				
7-24-92	28.47	12.95	15.52	None
8-26-92		13.55	14.92	None
9-22-92		13.78	14.69	None
10-19-92		14.09	14.38	None
11-23-92		14.06	14.41	None
12-16-92		11.70	16.77	None
01-14-93		8.87	19.60	None
02-26-93		8.98	19.49	None
03-26-93		9.57	18.90	None
04-09-93		10.02	18.45	None
05-19-93		10.81	17.66	None
06-17-93		11.08	17.39	None
<u>MW-3</u>				
7-24-92	28.57	12.90	15.67	Sheen
8-26-92		13.51	15.06	None
9-22-92		13.73	14.84	None
10-19-92		14.04	14.53	None
11-23-92		14.02	14.55	None
12-16-92		11.73	16.84	None
01-14-93		9.17	19.40	None
02-26-93		9.30	19.27	None
03-26-93		9.83	18.74	None
04-09-93		10.22	18.35	None
05-19-93		10.91	17.66	None
06-17-93		10.74	17.83	None

See notes on page 2 of 2

Quarterly Groundwater Monitoring
 ARCO Station 2185, Oakland, California

July 24, 1993
 62026.04

TABLE 1
 CUMULATIVE GROUNDWATER MONITORING DATA
 ARCO Station 2185
 Oakland, California
 (Page 2 of 2)

Date Well Measured	Well Elevation	Depth to Water	Water Elevation	Floating Product
<u>MW-4</u>				
7-24-92	29.21	13.68	15.53	None
8-26-92		14.12	15.09	None
9-22-92		14.46	14.75	None
10-19-92		14.74	14.47	None
11-23-92		14.75	14.46	None
12-16-92		12.45	16.76	None
01-14-93		9.46	19.75	None
02-26-93		9.54	19.67	None
03-26-93		10.19	19.02	None
04-09-93		10.67	18.54	None
05-19-93		11.52	17.69	None
06-17-93	11.79	17.42	None	
<u>MW-5</u>				
02-26-93	28.12	9.00	19.12	None
03-26-93		9.41	18.71	None
04-09-93		9.80	18.32	None
05-19-93		10.50	17.62	None
06-17-93		10.73	17.39	None
<u>MW-6</u>				
02-26-93	27.79	8.47	19.32	None
03-26-93		9.07	18.72	None
04-09-93		9.53	18.26	None
05-19-93		10.23	17.56	None
06-17-93		10.51	17.28	None

All measurements in feet.

Well Elevation if top-of-casing (TOC) in feet above mean sea level (msl).

Depth-to-Water (DTW) is measured in feet below TOC

Groundwater Elevation = TOC - DTW

Floating Product = Subjective evidence of floating product noted.

Wells surveyed on July 23, 1992 (Benchmark #24/D, near the corner of 98th Avenue [5' feet west of west curb] and East 14th Street [7' feet east of the south curb] in Oakland).

Quarterly Groundwater Monitoring
ARCO Station 2185, Oakland, California

July 24, 1993
62026.04

TABLE 2
CUMULATIVE RESULTS OF LABORATORY ANALYSES OF
GROUNDWATER SAMPLES-TPHg AND BTEX
ARCO Station 2185
Oakland, California
(Page 1 of 1)

Well	TPHg	B	T	E	X
<u>MW-1</u>					
7-24-92	<50	<0.5	<0.5	<0.5	<0.5
10-19-92	<50	<0.5	<0.5	<0.5	<0.5
01-14-93	<50	<0.5	<0.5	<0.5	<0.5
04-09-93	<50	<0.5	<0.5	<0.5	<0.5
<u>MW-2</u>					
7-24-92	5,900	510	<10*	370	430
10-19-92	4,100	110	<10*	100	62
01-14-93	12,000	700	10	720	680
04-09-93	8,400	220	<10*	480	320
<u>MW-3</u>					
7-24-92		Not sampled -- sheen			
10-19-92	42,000	740	1,100	1,500	5,700
01-14-93	44,000	1,100	840	2,200	9,600
04-09-93	21,000	33	69	350	1,600
<u>MW-4</u>					
7-24-92	<50	<0.5	<0.5	<0.5	<0.5
10-19-92	<50	<0.5	<0.5	<0.5	<0.5
01-14-93	<50	<0.5	<0.5	<0.5	<0.5
04-09-93	<50	<0.5	<0.5	<0.5	<0.5
<u>MW-5</u>					
02-11-93	9,300	620	<50*	890	2,200
04-09-93	960	29	<1*	100	96
<u>MW-6</u>					
02-11-93	4,800	630	<10*	490	460
04-09-93	13,000	880	<10*	1,000	1,000
<u>MW-7</u>					
05-14-93	350	0.83	<0.50	<0.50	<0.50
MCL	—	1.0	—	680	1,750
DWAL	—	—	100	—	—

Results in parts per billion (ppb).

TPHg = Total petroleum hydrocarbons as gasoline using EPA Method 5030/8020/DHS LUFT.

B = benzene, T = toluene, E = ethylbenzene, X = total xylenes using EPA Method 5030/8020/DHS LUFT

< = Below indicated laboratory detection limits.

* = Laboratory raised Method Reporting Limit (MRL) due to high analyte concentration requiring sample dilution.

MCL = State Maximum Contaminant Level (California Department of Health Services, October 1990).

DWAL = State Recommended Drinking Water Action Level (California Department of Health Services, October 1990).

APPENDIX A

**RESNA'S WELL PURGE DATA SHEETS, EMCON'S FIELD REPORTS,
EMCON'S WATER SAMPLE FIELD DATA SHEETS, AND CERTIFIED
ANALYTICAL REPORTS WITH CHAIN OF CUSTODY RECORD**



SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

1,20212.02

RESNA
3315 Almaden Expwy., Suite 34
San Jose, CA 95118
Attention: Erin McLucas

Project: Arco 2185-92-2A

Enclosed are the results from 1 water sample received at Sequoia Analytical on May 14, 1993. The requested analyses are listed below:

SAMPLE #	SAMPLE DESCRIPTION	DATE OF COLLECTION	TEST METHOD
3E58101	Water, W-10-MW7	5/14/93	EPA 5030/8015/8020

Please contact me if you have any questions. In the meantime, thank you for the opportunity to work with you on this project.

Very truly yours,

SEQUOIA ANALYTICAL

Vickie Tague
Project Manager



SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

RESNA
3315 Almaden Expwy., Suite 34
San Jose, CA 95118
Attention: Erin McLucas

Client Project ID: Arco 2185-92-2A
Sample Matrix: Water
Analysis Method: EPA 5030/8015/8020
First Sample #: 3E58101

Sampled: May 14, 1993
Received: May 14, 1993
Reported: May 17, 1993

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

Analyte	Reporting Limit µg/L	Sample I.D. 3E58101 W-10-MW7
Purgeable Hydrocarbons	50	350
Benzene	0.50	0.83
Toluene	0.50	N.D.
Ethyl Benzene	0.50	N.D.
Total Xylenes	0.50	N.D.
Chromatogram Pattern:		Discrete Peaks

Quality Control Data

Report Limit	
Multiplication Factor:	1.0
Date Analyzed:	5/14/93
Instrument Identification:	GCHP-3
Surrogate Recovery, %: (QC Limits = 70-130%)	94

Purgeable Hydrocarbons are quantitated against a fresh gasoline standard.
Analytes reported as N.D. were not detected above the stated reporting limit.

SEQUOIA ANALYTICAL

V. Tague
Vickie Tague
Project Manager



SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

RESNA
3315 Almaden Expwy., Suite 34
San Jose, CA 95118
Attention: Erin McLucas

Client Project ID: Arco 2185-92-2A
Matrix: Water

QC Sample Group: 3E58101

Reported: May 17, 1993

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl-Benzene	Xylenes
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Analyst:	M. Nipp	M. Nipp	M. Nipp	M. Nipp
Conc. Spiked:	10	10	10	30
Units:	µg/L	µg/L	µg/L	µg/L
LCS Batch#:	BLK051493	BLK051493	BLK051493	BLK051493
Date Prepared:	N/A	N/A	N/A	N/A
Date Analyzed:	5/14/93	5/14/93	5/14/93	5/14/93
Instrument I.D.#:	GCHP-2	GCHP-2	GCHP-2	GCHP-2
LCS % Recovery:	110	110	110	110
Control Limits:	80-120	80-120	80-120	80-120

MS/MSD Batch #:	3E49103	3E49103	3E49103	3E49103
Date Prepared:	N/A	N/A	N/A	N/A
Date Analyzed:	5/14/93	5/14/93	5/14/93	5/14/93
Instrument I.D.#:	GCHP-2	GCHP-2	GCHP-2	GCHP-2
Matrix Spike % Recovery:	110	110	110	110
Matrix Spike Duplicate % Recovery:	120	110	110	110
Relative % Difference:	8.7	0.0	0.0	0.0

SEQUOIA ANALYTICAL

Vickie Tague
Project Manager

Please Note:

The LCS is a control sample of known, interferent free matrix that is analyzed using the same reagents, preparation and analytical methods employed for the samples. The LCS % recovery data is used for validation of sample batch results. Due to matrix effects, the QC limits for MS/MSD's are advisory only and are not used to accept or reject batch results.

ARCO Facility no. 2185 City (Facility) OAKLAND Project manager (Consultant) ERIN McLUKAS
 ARCO engineer MIKE WHELAN Telephone no. (ARCO) (415) 371-2111 Telephone no. (Consultant) (408) 264-7223 Fax no. (Consultant) (408) 264-2435
 Consultant name RESNA INDUSTRIES Address (Consultant) 3315 ALMADEN EXP, SUITE 34, SAN JOSE CA 95118

Laboratory name SEQUOIA
 Contract number 07-073

Sample I.D.	Lab no.	Container no.	Matrix			Preservation		Sampling date	Sampling time	BTEX EPA 802	BTEX/TPH/PAHs EPA 802/803/8015	TPH Modified B015 Gas <input type="checkbox"/> Diesel <input type="checkbox"/>	Oil and Grease 413.1 <input type="checkbox"/> 413.2 <input type="checkbox"/>	TPH EPA 418.1/SM503E	EPA 801/8010	EPA 824/824C	EPA 625/8270	TC/PC Metals <input type="checkbox"/> VOC <input type="checkbox"/> VOA <input type="checkbox"/>	Semi-VOC <input type="checkbox"/>	CMAA Metals EPA 811/817/8000 TTLC <input type="checkbox"/> STLCL	Lead Org./PbS <input type="checkbox"/>	Lead EPA 7420/7421 <input type="checkbox"/>
			Soil	Water	Other	Ice	Acid															
<u>N-10-147</u>	<u>3</u>	<u>3</u>	<u>/</u>	<u>/</u>	<u>/</u>		<u>5/14/93</u>	<u>12:40</u>	<input checked="" type="checkbox"/>								<u>9305581</u>	<u>-01</u>				

Method of shipment

Special detection Limit/reporting

Special QA/QC

Remarks

Lab number 93-05-581

Turnaround time

Priority Rush 1 Business Day

Rush 2 Business Days

Expedited 5 Business Days

Standard 10 Business Days

Condition of sample: Good Temperature received:
 Relinquished by sample: [Signature] Date 5/14/93 Time 1:45 Received by: [Signature]
 Relinquished by: [Signature] Date: Date Time Received by: [Signature]
 Relinquished by: Date: Date Time Received by: [Signature] Date 5-14-93 Time 1:45 pm

WELL PURGE DATA SHEET

Project Name: ARCO Station 2185

Job No. 62026.04

Date: May 14, 1993

Page 1 of 1

Well No. MW-7

Time Started 12:00

Time	Gallons	Temperature	pH	Conductivity
12:00	Started pumping.			
12:00	0	69.9	9.68	7.87
12:03	3	68.3	9.15	7.17
12:06	6	66.9	8.67	6.26
12:09	10	66.3	8.98	6.18
12:09	Stopped pumping.			
Notes:				
Well Diameter (inches) : 2"				
Depth to Bottom (feet) : 25.10				
Depth to Water - initial (feet) : 10.80				
Depth to Water - final (feet) : 10.81				
% recovery : 100				
Time Sampled : 12:40				
Gallons per Well Casing Volume : 2.4				
Gallons Purged : 10				
Well Casing Volume Purged : 4.2				
Approximate Pumping Rate (gpm) : 1.1				



Date April 28, 1993
Project OG70-054.01

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

We are enclosing:

Copies	Description
<u>1</u>	<u>Depth To Water / Floating Product Survey Results</u>
<u>1</u>	<u>Summary of Groundwater Monitoring Data</u>
<u>1</u>	<u>Certified Analytical Reports with Chain-of-Custody</u>
<u>6</u>	<u>Water Sample Field Data Sheets</u>

For your: X Information Sent by: X Mail

Comments:

Enclosed are the data from the second quarter 1993 monitoring event at ARCO service station 2185, 9800 East 14th Street, Oakland, California. Groundwater monitoring is conducted consistent with applicable regulatory guidelines. Please call if you have any questions: (408) 453-2266.

Reviewed by:



Jim Butera *JB*

Robert Porter
Robert Porter, Senior Project Engineer.



**FIELD REPORT
DEPTH TO WATER / FLOATING PRODUCT SURVEY**

PROJECT # : OG70-054.01

STATION ADDRESS : 9800 East 14th Street, Oakland

DATE : April 9, 1993

ARCO STATION # : 2185

FIELD TECHNICIAN : S. Horton / M. Gallegos

DAY : Friday

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-5	good	yes	na	3259	yes	9.80	9.80	ND	ND	26.8	
2	MW-6	good	yes	na	3259	yes	9.53	9.53	ND	ND	27.8	
3	MW-1	good	yes	na	3259	yes	10.50	10.50	ND	ND	23.6	
4	MW-4	good	yes	na	3259	yes	10.67	10.67	ND	ND	23.8	
5	MW-2	good	yes	na	3259	yes	10.02	10.02	ND	ND	23.6	
6	MW-3	good	yes	na	3259	yes	10.22	10.22	ND	ND	23.2	

SURVEY POINTS ARE TOP OF WELL CASINGS

Summary of Groundwater Monitoring Data
 Second Quarter 1993
 ARCO Service Station 2185
 9800 East 14th Street, Oakland, California
 micrograms per liter ($\mu\text{g/l}$) 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)
MW-1(23)	04/09/93	10.50	ND. ²	<50.	<0.5	<0.5	<0.5	<0.5
MW-2(23)	04/09/93	10.02	ND.	8,400.	220.	<10.	480.	320.
MW-3(23)	04/09/93	10.22	ND.	21,000.	33.	69.	350.	1,600.
MW-4(23)	04/09/93	10.67	ND.	<50.	<0.5	<0.5	<0.5	<0.5
MW-5(26)	04/09/93	9.80	ND.	960.	29.	<1.	100.	96.
MW-6(27)	04/09/93	9.53	ND.	13,000.	880.	<10.	1,000.	1,000.

1. TPH. = Total petroleum hydrocarbons
 2. ND. = Not detected



April 22, 1993

Service Request No. SJ93-0490

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

Re: **EMCON Project No. 0G70-054.01**
ARCO Facility No. 2185

Dear Mr. Butera:

Attached are the results of the water samples submitted to our lab on April 12, 1993. For your reference, these analyses have been assigned our service request number SJ93-0490.


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/kt

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON Associates
 Project: EMCON Project No. 0G70-054.01
 ARCO Facility No. 2185

Date Received: 04/12/93
 Service Request No.: SJ93-0490
 Sample Matrix: Water

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

Sample Name:	<u>MW-1 (23)</u>	<u>MW-2 (23)</u>	<u>MW-3 (23)</u>
Date Analyzed:	04/19/93	04/19/93	04/20/93

<u>Analyte</u>	<u>MRL</u>			
Benzene	0.5	ND	220.	33.
Toluene	0.5	ND	< 10. *	69.
Ethylbenzene	0.5	ND	480.	350.
Total Xylenes	0.5	ND	320.	1,600.
TPH as Gasoline	50	ND	8,400.	21,000.

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

Approved by: Keenan Murphy Date: April 22, 1993

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON Associates
 Project: EMCON Project No. 0G70-054.01
 ARCO Facility No. 2185

Date Received: 04/12/93
 Service Request No.: SJ93-0490
 Sample Matrix: Water

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

Sample Name:	<u>MW-4 (23)</u>	<u>MW-5 (26)</u>	<u>MW-6 (27)</u>
Date Analyzed:	04/19/93	04/19/93	04/19/93

<u>Analyte</u>	<u>MRL</u>			
Benzene	0.5	ND	29.	880.
Toluene	0.5	ND	< 1. *	< 10. *
Ethylbenzene	0.5	ND	100.	1,000.
Total Xylenes	0.5	ND	96.	1,000.
TPH as Gasoline	50	ND	960.	13,000.

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

Approved by: *Kenneth M. ...* Date: *April 22, 1993*

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON Associates
 Project: EMCON Project No. OG70-054.01
 ARCO Facility No. 2185

Date Received: 04/12/93
 Service Request No.: SJ93-0490
 Sample Matrix: Water

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

Sample Name: Method Blank Method Blank
 Date Analyzed: 04/19/93 04/20/93

<u>Analyte</u>	<u>MRL</u>		
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

Approved by: Kenneth Murphy Date: April 22, 1993

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON Associates
 Project: EMCON Project No. 0G70-054.01
 ARCO Facility No. 2185

Date Received: 04/12/93
 Service Request No.: SJ93-0490

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

Date Analyzed: 04/19/93

<u>Analyte</u>	<u>True Value</u>	<u>Result</u>	<u>Percent Recovery</u>	<u>CAS Percent Recovery Acceptance Criteria</u>
Benzene	25.	25.4	102.	85-115
Toluene	25.	26.9	107.	85-115
Ethybenzene	25.	25.8	103.	85-115
Total Xylenes	75.	75.8	101.	85-115
TPH as Gasoline	250.	244.	97.	90-110

TPH Total Petroleum Hydrocarbons

Approved by: *K. C. Smith* Date: April 22, 1993

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON Associates
Project: EMCON Project No. 0G70-054.01
ARCO Facility No. 2185

Date Received: 04/12/93
Service Request No.: SJ93-0490
Sample Matrix: Water

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

<u>Sample Name</u>	<u>Date Analyzed</u>	<u>Percent Recovery</u> <i>a,a,a</i> -Trifluorotoluene
MW-1 (23)	04/19/93	90.
MW-2 (23)	04/19/93	104.
MW-3 (23)	04/20/93	105.
MW-4 (23)	04/19/93	89.
MW-5 (26)	04/19/93	91.
MW-6 (27)	04/19/93	103.
MW-2 (23) MS	04/19/93	116.
MW-2 (23) DMS	04/19/93	112.
Method Blank	04/19/93	84.
Method Blank	04/20/93	93.

CAS Acceptance Criteria 70-130

TPH Total Petroleum Hydrocarbons

Approved by: *Kenneth Murphy* Date: *April 22, 1993*

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON Associates
 Project: EMCON Project No. 0G70-054.01
 ARCO Facility No. 2185

Date Received: 04/12/93
 Service Request No.: SJ93-0490
 Sample Matrix: Water

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

Sample Name: MW-2 (23)
 Date Analyzed: 04/19/93

Percent Recovery

<u>Analyte</u>	<u>Spike Level</u>	<u>Sample Result</u>	<u>Spike Result</u>		<u>MS</u> <u>DMS</u>		<u>CAS Acceptance Criteria</u>
			<u>MS</u>	<u>DMS</u>	<u>MS</u>	<u>DMS</u>	
TPH as Gasoline	5,000.	8,400.	13,500.	13,400.	102.	100.	76-130

TPH Total Petroleum Hydrocarbons

Approved by: *Kenneth Murphy* Date: *April 22 1993*

ARCO Facility no. **2185** City (Facility) **OAKLAND** Project manager (Consultant) **JIM BUTERA**
 ARCO engineer **Kyle Christie** Telephone no. (ARCO) **571-2434** Telephone no. (Consultant) **453-0719** Fax no. (Consultant) **453-0452**
 Consultant name **EMCON ASSOCIATES** Address (Consultant) **1938 Junction Avenue San Jose**

Laboratory name **CAS**
 Contract number **07017**

Sample I.D.	Lab no	Container no	Matrix			Preservation		Sampling date	Sampling time	BTEX EPA 802	BTEX/TPH EPA 1602/802/8015	TPH Modified 8015 Gas Diesel	Oil and Grease 413.1 413.2	TPH EPA 418 1/SM503E	EPA 601/8010	EPA 624/824C	EPA 625/827D	TCLP Metals VOA VOA	Semi Metals VOA VOA	CAMP Metals EPA 601/700C TLC STC	Lead Org./DHS Lead EPA 7420/7421	
			Soil	Water	Other	Ice	Acid															
MW-1 (23)	1-2	2		X		X	HCl	4/9/93	10:30		X											
MW-2 (23)	3-4	2		X		X	HCl	4/9/93	11:09		X											
MW-3 (23)	5-6	2		X		X	HCl	4/9/93	11:11		X											
MW-4 (23)	7-8	2		X		X	HCl	4/9/93	10:27		X											
MW-5 (26)	9-10	2		X		X	HCl	4/9/93	9:55		X											
MW-6 (27)	11-12	2		X		X	HCl	4/9/93	9:54		X											

Method of shipment
Sampler will deliver

Special detection
 Limit/reporting
Lowest possible

Special QA/QC
AS Normal

Remarks
**2.40ml HCl
 VOA'S**

670-054.01

Lab number
5593-0190

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 **Steve Horton** Date **4/12/93** Time **10:10am** Received by _____
 Relinquished by _____ Date _____ Time _____ Received by _____
 Relinquished by _____ Date _____ Time _____ Received by laboratory **[Signature]** Date **4-12-93** Time **10:10**



EMCON ASSOCIATES

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

PROJECT NO: CG70-054.01

SAMPLE ID: MW-1 (23)

PURGED BY: S. Horton

CLIENT NAME: ARCO #2185

SAMPLED BY: S. Horton

LOCATION: Oakland, CA

TYPE: Ground Water Surface Water _____ Treatment Effluent _____ Other _____

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

CASING ELEVATION (feet/VMSL): <u>NR</u>	VOLUME IN CASING (gal.): <u>9.55</u>
DEPTH TO WATER (feet): <u>10.50</u>	CALCULATED PURGE (gal.): <u>75.67</u>
DEPTH OF WELL (feet): <u>73.6</u>	ACTUAL PURGE VOL. (gal.): <u>76.0</u>

DATE PURGED: <u>4/9/93</u>	Start (2400 Hr) <u>10:11</u>	End (2400 Hr) <u>10:27</u>
DATE SAMPLED: <u>4/9/93</u>	Start (2400 Hr) <u>10:29</u>	End (2400 Hr) <u>10:30</u>

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
<u>10:16</u>	<u>9</u>	<u>7.15</u>	<u>736</u>	<u>64.2</u>	<u>brown</u>	<u>heavy</u>
<u>10:21</u>	<u>17.5</u>	<u>6.38</u>	<u>737</u>	<u>63.4</u>	<u>brown</u>	<u>heavy</u>
<u>10:27</u>	<u>26</u>	<u>6.29</u>	<u>729</u>	<u>63.1</u>	<u>brown</u>	<u>heavy</u>
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____

D. O. (ppm): NR ODOR: none NR NR
(CCBALT 0 - 100) (NTU 0 - 200)

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

PURGING EQUIPMENT

SAMPLING EQUIPMENT

- | | | | |
|---|---|--|---|
| <input type="checkbox"/> 2" Bladder Pump | <input type="checkbox"/> Bailor (Teflon &) | <input type="checkbox"/> 2" Bladder Pump | <input checked="" type="checkbox"/> Bailor (Teflon &) |
| <input type="checkbox"/> Centrifugal Pump | <input checked="" type="checkbox"/> Bailor (PVC) | <input type="checkbox"/> DDL Sampler | <input type="checkbox"/> Bailor (Stainless Steel) |
| <input type="checkbox"/> Submersible Pump | <input type="checkbox"/> Bailor (Stainless Steel) | <input type="checkbox"/> Dipper | <input type="checkbox"/> Submersible Pump |
| <input type="checkbox"/> Well Wizard™ | <input type="checkbox"/> Dedicated | <input type="checkbox"/> Well Wizard™ | <input type="checkbox"/> Dedicated |
| Other: _____ | | Other: _____ | |

WELL INTEGRITY: Good LOCK #: 3259

REMARKS: _____

Meter Calibration: Date: 4/9/93 Time: 9:19 Meter Serial #: 9208 Temperature °F: _____

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

Location of previous calibration: MW-5

Signature: S. Horton Reviewed By: _____ Page 1 of 6

WATER SAMPLE FIELD DATA SHEET



EMCON
ASSOCIATES

PROJECT NO: 0670-054.01

SAMPLE ID: MW-2

PURGED BY: M. Gallegos

CLIENT NAME: ARCO H 2185

SAMPLED BY: M. Gallegos

LOCATION: oakland, ca

TYPE: Ground Water Surface Water _____ Treatment Effluent _____ Other _____

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

CASING ELEVATION (feet/MSL): <u>NR</u>	VOLUME IN CASING (gal.): <u>874</u>
DEPTH TO WATER (feet): <u>10 12</u>	CALCULATED PURGE (gal.): <u>26 22</u>
DEPTH OF WELL (feet): <u>23 5</u>	ACTUAL PURGE VOL. (gal.): <u>26 5</u>

DATE PURGED: 4-9-93 Start (2400 Hr) 1050 End (2400 Hr) 1101

DATE SAMPLED: 4-9-93 Start (2400 Hr) 1107 End (2400 Hr) 1109

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
<u>1053</u>	<u>9 0</u>	<u>6.72</u>	<u>818</u>	<u>66.3</u>	<u>grey</u>	<u>Heavy</u>
<u>1057</u>	<u>18.0</u>	<u>6.46</u>	<u>814</u>	<u>64.5</u>	<u>"</u>	<u>"</u>
<u>1101</u>	<u>26 5</u>	<u>6.46</u>	<u>816</u>	<u>64.1</u>	<u>"</u>	<u>"</u>
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____

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

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

PURGING EQUIPMENT

SAMPLING EQUIPMENT

- | | | | |
|---|---|--|--|
| <input type="checkbox"/> 2" Bladder Pump | <input type="checkbox"/> Bailor (Teflon®) | <input type="checkbox"/> 2" Bladder Pump | <input checked="" type="checkbox"/> Bailor (Teflon®) |
| <input type="checkbox"/> Centrifugal Pump | <input checked="" type="checkbox"/> Bailor (PVC) | <input type="checkbox"/> DCL Sampler | <input type="checkbox"/> Bailor (Stainless Steel) |
| <input type="checkbox"/> Submersible Pump | <input type="checkbox"/> Bailor (Stainless Steel) | <input type="checkbox"/> Dipper | <input type="checkbox"/> Submersible Pump |
| <input type="checkbox"/> Well Wizard™ | <input type="checkbox"/> Dedicated | <input type="checkbox"/> Well Wizard™ | <input type="checkbox"/> Dedicated |
| Other: _____ | | Other: _____ | |

WELL INTEGRITY: Good LOCK #: 3258

REMARKS: Light Sheen on lot of water
All samples failed

Meter Calibration: Date: 7-9-93 Time: _____ Meter Serial #: 4972 Temperature °F: _____

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

Location of previous calibration: _____

Signature: [Signature] Reviewed By: [Signature] Page 2 of 6



EMCON ASSOCIATES

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

PROJECT NO: CG70-05401

SAMPLE ID: MW-3(23)

PURGED BY: S. Horton

CLIENT NAME: ARCO#2185

SAMPLED BY: S. Horton

LOCATION: Oakland, CA

TYPE: Ground Water Surface Water _____ Treatment Effluent _____ Other _____

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

CASING ELEVATION (feet/MSL): <u>NR</u>	VOLUME IN CASING (gal.): <u>8.48</u>
DEPTH TO WATER (feet): <u>10.22</u>	CALCULATED PURGE (gal.): <u>25.44</u>
DEPTH OF WELL (feet): <u>23.2</u>	ACTUAL PURGE VOL. (gal.): <u>25.5</u>

DATE PURGED: <u>4/9/93</u>	Start (2400 Hr) <u>10:52</u>	End (2400 Hr) <u>11:08</u>
DATE SAMPLED: <u>4/9/93</u>	Start (2400 Hr) <u>11:10</u>	End (2400 Hr) <u>11:11</u>

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
<u>10:56</u>	<u>8.5</u>	<u>6.50</u>	<u>544</u>	<u>65.4</u>	<u>gray</u>	<u>heavy</u>
<u>11:03</u>	<u>17.0</u>	<u>6.36</u>	<u>584</u>	<u>66.5</u>	<u>gray</u>	<u>heavy</u>
<u>11:08</u>	<u>25.5</u>	<u>6.35</u>	<u>589</u>	<u>65.8</u>	<u>gray</u>	<u>heavy</u>
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
D. O. (ppm): <u>NR</u>	ODOR: <u>strong</u>	_____	_____	_____	<u>NR</u> (CCBALT 0 - 100)	<u>NR</u> (NTU 0 - 200)

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

PURGING EQUIPMENT

SAMPLING EQUIPMENT

<input type="checkbox"/> 2" Bladder Pump	<input type="checkbox"/> Bailer (Teflon &)	<input type="checkbox"/> 2" Bladder Pump <input checked="" type="checkbox"/>	<input type="checkbox"/> Bailer (Teflon &)
<input type="checkbox"/> Centrifugal Pump	<input checked="" type="checkbox"/> Bailer (PVC)	<input type="checkbox"/> DDL Sampler	<input type="checkbox"/> Bailer (Stainless Steel)
<input type="checkbox"/> Submersible Pump	<input type="checkbox"/> Bailer (Stainless Steel)	<input type="checkbox"/> Dipper	<input type="checkbox"/> Submersible Pump
<input type="checkbox"/> Well Wizard™	<input type="checkbox"/> Dedicated	<input type="checkbox"/> Well Wizard™	<input type="checkbox"/> Dedicated
Other: _____		Other: _____	

WELL INTEGRITY: Good LOCK #: 3259

REMARKS: Sheen noticed on surface of purge water

Meter Calibration: Date: 4/9/93 Time: 9:19 Meter Serial #: 9208 Temperature °F: _____

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

Location of previous calibration: H-5

Signature: S. Horton Reviewed By: [Signature] Page 2 of 6



EMCON
ASSOCIATES

WATER SAMPLE FIELD DATA SHEET

PROJECT NO: 0670-054.01

SAMPLE ID: MW-4

PURGED BY: M Galleso

CLIENT NAME: ARCO H2185

SAMPLED BY: M Galleso

LOCATION: OAKLAND, CA

TYPE: Ground Water Surface Water _____ Treatment Effluent _____ Other _____

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

CASING ELEVATION (feet/MSL): 42 VOLUME IN CASING (gal.): 850
 DEPTH TO WATER (feet): 10.78 CALCULATED PURGE (gal.): 25.51
 DEPTH OF WELL (feet): 23.8 ACTUAL PURGE VOL. (gal.): 260

DATE PURGED: 4-9-93 Start (2400 Hr) 1010 End (2400 Hr) 1021
 DATE SAMPLED: 4-9-93 Start (2400 Hr) 1025 End (2400 Hr) 1027

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
<u>1013</u>	<u>9.0</u>	<u>7.31</u>	<u>585</u>	<u>68.6</u>	<u>BRN</u>	<u>HEAVY</u>
<u>1017</u>	<u>18.0</u>	<u>6.67</u>	<u>582</u>	<u>65.5</u>	<u>LT BRN</u>	<u>HEAVY</u>
<u>1021</u>	<u>26.0</u>	<u>6.61</u>	<u>580</u>	<u>64.6</u>	<u>"</u>	<u>"</u>
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____

D. O. (ppm): NI ODOR: NONE _____
 (COBALT 0 - 100) (NTU 0 - 200)

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

PURGING EQUIPMENT

SAMPLING EQUIPMENT

- | | | | |
|---|---|--|--|
| <input type="checkbox"/> 2" Bladder Pump | <input type="checkbox"/> Bailer (Teflon®) | <input type="checkbox"/> 2" Bladder Pump | <input checked="" type="checkbox"/> Bailer (Teflon®) |
| <input type="checkbox"/> Centrifugal Pump | <input checked="" type="checkbox"/> Bailer (PVC) | <input type="checkbox"/> DDL Sampler | <input type="checkbox"/> Bailer (Stainless Steel) |
| <input type="checkbox"/> Submersible Pump | <input type="checkbox"/> Bailer (Stainless Steel) | <input type="checkbox"/> Dipper | <input type="checkbox"/> Submersible Pump |
| <input type="checkbox"/> Well Wizard™ | <input type="checkbox"/> Dedicated | <input type="checkbox"/> Well Wizard™ | <input type="checkbox"/> Dedicated |
| Other: _____ | | Other: _____ | |

WELL INTEGRITY: Good LOCK #: 3259

REMARKS: All samples taken.

Meter Calibration: Date: 4-9-93 Time: _____ Meter Serial #: 4572 Temperature °F: _____

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

Location of previous calibration: MW-6

Signature: [Signature] Reviewed By: [Signature] Page 4 of 6

WATER SAMPLE FIELD DATA SHEET



EMCON
ASSOCIATES

PROJECT NO: OG70-054.01
PURGED BY: S.Horton
SAMPLED BY: S.Horton

SAMPLE ID: MW-5(76)
CLIENT NAME: ARCO #2185
LOCATION: Oakland, CA

TYPE: Ground Water Surface Water _____ Treatment Effluent _____ Other _____
CASING DIAMETER (inches): 2 _____ 3 _____ 4 4.5 _____ 6 _____ Other _____

CASING ELEVATION (feet/MSL): NR VOLUME IN CASING (gal.): 11.5
DEPTH TO WATER (feet): 9.80 CALCULATED PURGE (gal.): 33.32
DEPTH OF WELL (feet): 26.8 ACTUAL PURGE VOL. (gal.): 33.5

DATE PURGED: 4/9/93 Start (2400 Hr) 9:24 End (2400 Hr) 9:49
DATE SAMPLED: 4/9/93 Start (2400 Hr) 9:54 End (2400 Hr) 9:55

9:30

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
9:30	<u>11.5</u>	<u>8.95</u>	<u>502</u>	<u>66.0</u>	<u>brown</u>	<u>heavy</u>
<u>9:38</u>	<u>22.5</u>	<u>7.77</u>	<u>512</u>	<u>65.8</u>	<u>brown</u>	<u>heavy</u>
<u>9:49</u>	<u>33.5</u>	<u>7.18</u>	<u>512</u>	<u>65.8</u>	<u>brown</u>	<u>heavy</u>
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
D. O. (ppm):	<u>NR</u>	ODOR: <u>slight</u>			<u>NR</u> (COBALT 0 - 100)	<u>NR</u> (NTU 0 - 200)

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

PURGING EQUIPMENT

SAMPLING EQUIPMENT

- | | | | |
|---|---|--|--|
| <input type="checkbox"/> 2" Bladder Pump | <input type="checkbox"/> Bailor (Teflon®) | <input type="checkbox"/> 2" Bladder Pump | <input checked="" type="checkbox"/> Bailor (Teflon®) |
| <input type="checkbox"/> Centrifugal Pump | <input checked="" type="checkbox"/> Bailor (PVC) | <input type="checkbox"/> DDL Sampler | <input type="checkbox"/> Bailor (Stainless Steel) |
| <input type="checkbox"/> Submersible Pump | <input type="checkbox"/> Bailor (Stainless Steel) | <input type="checkbox"/> Dipper | <input type="checkbox"/> Submersible Pump |
| <input type="checkbox"/> Well Wizard™ | <input type="checkbox"/> Dedicated | <input type="checkbox"/> Well Wizard™ | <input type="checkbox"/> Dedicated |
| Other: _____ | | Other: _____ | |

WELL INTEGRITY: Good LOCK #: 3259

REMARKS: _____

Meter Calibration: Date: 4/9/93 Time: 9:19 Meter Serial #: 9208 Temperature °F: 67.0
(EC 1000 955 / 1000) (DI _____) (pH 7 7.16 / 7.00) (pH 10 _____ / 1000) (pH 4 4.00 / _____)
Location of previous calibration: _____

Signature: S.Horton Reviewed By: [Signature] Page 5 of 6



WATER SAMPLE FIELD DATA SHEET

EMCON
ASSOCIATES

PROJECT NO. 1470-25471 SAMPLE ID. MS-6

PURGED BY: M. Collier CLIENT NAME: ARCO - 2125

SAMPLED BY: M. Collier LOCATION: Oakland, CA

TYPE: Ground Water Surface Water Treatment Effluent Other

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

CASING ELEVATION (feet/MSL): 107 VOLUME IN CASING (gal.): 1102

DEPTH TO WATER (feet): 952 CALCULATED PURGE (gal.): 22392580

DEPTH OF WELL (feet): 278 ACTUAL PURGE VOL. (gal.): 360

DATE PURGED: 4/5/93 Start (2400 Hr): 0906 End (2400 Hr): 0946

DATE SAMPLED: 4/5/93 Start (2400 Hr): 0952 End (2400 Hr): 0954

TIME (2400 Hr)	VOLUME (gal)	PH (units)	E.C. (umhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
<u>0936</u>	<u>120</u>	<u>7.80</u>	<u>823</u>	<u>67.7</u>	<u>32N</u>	<u>1.5</u>
<u>0938</u>	<u>240</u>	<u>6.99</u>	<u>817</u>	<u>66.0</u>	<u>32N</u>	<u>1.5</u>
<u>0942</u>	<u>360</u>	<u>6.91</u>	<u>828</u>	<u>65.4</u>	<u>32N</u>	<u>1.5</u>

D. G. (ppm): ND COOR: Strong COBALT (0-100): ND INTU (0-200): ND

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

BYPASSING EQUIPMENT

SAMPLING EQUIPMENT

Diaphragm Pump Bailor (Teflon) Diaphragm Pump Bailor (Teflon)

Centrifugal Pump Bailor (PVC) DCU Sampler Bailor (Stainless Steel)

Submersible Pump Bailor (Stainless Steel) Dipper Submersible Pump

Well Wizard™ Dedicated Well Wizard™ Dedicated

Other: _____ Other: _____

WELL INTEGRITY: Good LOCK #1: 30572

REMARKS: All samples taken

Meter Calibration: Date: 4-5-93 Time: _____ Meter Serial #: 41572 Temperature # 7610

EO 1000 933 (MFL) (DI) 716 700 (MFL) (DI) 965 1000 (MFL) (DI) _____

Location of previous calibration: _____
M. S. X. Moor



EMCON Associates

1933 Junction Avenue • San Jose, California 95131-2102 • (408) 453-0719 • Fax (408) 453-0452

Date June 3, 1993

Project 0G70-054.01

To:

Mr. John Young

RESNA

3315 Almaden Expressway, Suite 34

San Jose, California 95118

We are enclosing:

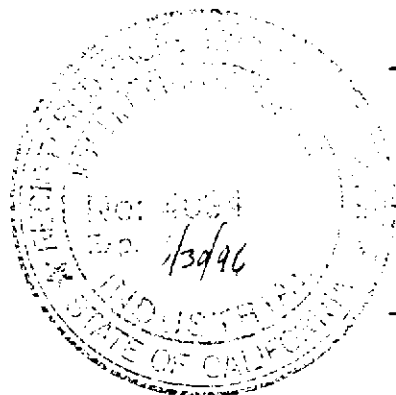
Copies	Description
<u>1</u>	<u>Depth To Water/Floating Product Survey Results</u>
<u> </u>	<u>May 1993 monthly water level survey, ARCO</u>
<u> </u>	<u>station 2185, 9800 East 14th Street, Oakland, CA</u>

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
Robert Porter, Senior Project Engineer.



**FIELD REPORT
DEPTH TO WATER / FLOATING PRODUCT SURVEY**

PROJECT # : 0G70-054.01

STATION ADDRESS : 9800 East 14th Street, Oakland

DATE : 5-19-93

ARCO STATION # : 2185

FIELD TECHNICIAN : J. BUTEKA

DAY : WEDNESDAY

DIW 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-1	OK	YES	YES	3259	YES	11.26	11.26	ND	ND	23.6	-
2	MW-4	OK	YES	YES	3259	YES	11.52	11.52	ND	ND	23.8	-
3	MW-5	OK	YES	YES	3259	YES	10.50	10.50	ND	ND	26.9	-
4	MW-2	OK	YES	YES	3259	YES	10.81	10.81	ND	ND	23.6	-
5	MW-6	OK	YES	YES	3259	YES	10.23	10.23	ND	ND	21.8	-
6	MW-3	OK	YES	YES	3259	YES	10.91	10.91	ND	ND	23.3	-

SURVEY POINTS ARE TOP OF WELL CASINGS



05/16/93

Date June 21, 1993
Project OG70-054.01

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

We are enclosing:

Copies	Description
<u>1</u>	<u>Depth To Water/Floating Product Survey Results</u>
	<u>June 1993 monthly water level survey, ARCO</u>
	<u>station 2185, 9800 East 14th Street, Oakland, CA</u>

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.

Jim Butera JB

Reviewed by:

6/30/93

Robert Porter
Robert Porter, Senior Project Engineer.



**FIELD REPORT
DEPTH TO WATER / FLOATING PRODUCT SURVEY**

PROJECT # : 0G70-054.01

STATION ADDRESS : 9800 East 14th Street, Oakland

DATE : 6-17-93

ARCO STATION # : 2185

FIELD TECHNICIAN : L. RATH

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-1	OK	15/16	OK	3259	OK	11.53	11.53	ND	ND	236	-
2	MW-4	OK	15/16	OK	3259	OK	11.79	11.79	ND	ND	235	-
3	MW-5	OK	15/16	OK	3259	OK	10.73	10.73	ND	ND	268	-
4	MW-2	OK	15/16	OK	3259	OK	11.08	11.08	ND	ND	236	-
5	MW-6	OK	15/16	OK	3259	OK	10.51	10.51	ND	ND	278	-
6	MW-3	OK	15/16	OK	3259	OK	10.74	10.74	ND	ND	233	-

SURVEY POINTS ARE TOP OF WELL CASINGS

FIELD REPORT
SKIMMER INSPECTION/FLOATING PRODUCT REMOVAL

DATE: 4/22/93
 SITE: 771
 ADDRESS: 899 Rincon Ave, Livermore
 JOB #: 60000.15
 FIELD TECHNICIAN: B. Siler

WELL NO/ TIME	ODOR (OBS)	SHEEN (H, M, S-EMUL., COLOR)	PROD (FRESH (TRANSCLU-SCENT), DEGRADED (D K. BR.), ASPHALTINE (D K, VISCOUS)	WELL ELEV	DTP	DTW	TOT. DET.	WAT. EL.
MW-1	yes	yes	no			26.70		
MW-2	yes	yes	no			24.26		
PRODUCT REMOVED: <u>0</u>								

Notes: