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3315 Almaden Expressway, Suite 34
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LETTER REPORT
QUARTERLY GROUNDWATER MONITORING
Third Quarter 1992
at
ARCO Station 374
6407 Telegraph Avenue
Oakland, California

60025.07

12/18/92

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TRANSMITTAL

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

DATE: December 18, 1992
PROJECT NUMBER: 60025.07
SUBJECT: ARCO Station 374, 6407 Telegraph Avenue, Oakland, California

FROM: Erin McLucas
TITLE: Staff Geologist

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REMARKS: cc: Mr. Michael Whelan, ARCO Products Company
Mr. Richard Hiett, RWQCB, San Francisco Bay Region

Copies to RESNA project file no. 60025.07

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3315 Almaden Expressway, Suite 34
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December 18, 1992
1106MWHE
60025.07

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

Subject: Third Quarter 1992 Groundwater Monitoring Report for ARCO Station 374, 6407 Telegraph Avenue, Oakland, California.

Mr. Whelan:

As requested by ARCO Products Company (ARCO), this letter report summarizes the results of third quarter 1992 groundwater monitoring performed by ARCO's contractor, EMCON Associates (EMCON) of San Jose, California, at the above-referenced site. The objectives of this quarterly groundwater monitoring are to evaluate changes in the groundwater flow direction and gradient, and changes in concentrations of petroleum hydrocarbons in the local groundwater associated with the former gasoline-storage tanks at the site. Field work and laboratory analyses of groundwater samples during this quarter performed under the direction of EMCON included measuring depths to groundwater, subjectively analyzing groundwater for the presence of petroleum product, collecting groundwater samples from the wells for laboratory analyses, and directing a State-certified laboratory to analyze the groundwater samples. Field procedures and acquisition of field data were performed under the direction of EMCON; warrant of their field data and evaluation of their field protocols is beyond RESNA Industries' Inc. (RESNA's) scope of work. RESNA's scope of work was limited to interpretation of field and laboratory analyses data, which included evaluating trends in reported hydrocarbon concentrations in the local groundwater, the groundwater gradient, and direction of groundwater flow beneath the site.

The operating Arco Station 374 is located on the northwestern corner of the intersection of Alcatraz and Telegraph Avenues in Oakland, California. The site location is shown on the Site Vicinity Map, Plate 1.

Results of previous environmental investigations at the site are presented in the reports listed in the references section of this report. The locations of the groundwater monitoring wells and pertinent site features are shown on the Generalized Site Plan, Plate 2.

Groundwater Sampling and Gradient Evaluation

Depth-to-water measurements (DTW) were performed by EMCON field personnel on July 14, August 7, and September 22, 1992. Quarterly sampling was performed by EMCON field personnel on July 14 and 15, 1992. The results of EMCON's field work on the site, including DTW measurements and subjective analysis for the presence of product in the groundwater in MW-1 through MW-6, are presented on EMCON's Field Reports, Summary of Groundwater Monitoring Data, and Water Sample Field Data Sheets. These data are included in Appendix A.

The DTW levels, wellhead elevations, groundwater elevations, and subjective observations for product in the groundwater from MW-1 through MW-6 for previous quarterly groundwater monitoring at the site are summarized in Table 1, Cumulative Groundwater Monitoring Data. Evidence of product or sheen was not observed by EMCON's field personnel during this quarterly monitoring (see Appendix A). The groundwater gradients and flow directions interpreted from EMCON's DTW measurements from July, August and September 1992 are shown on the Groundwater Gradient Maps, Plates 3 through 5. These interpreted groundwater gradients and flow directions average about 0.04 toward the southwest. The groundwater gradients for this quarter are generally consistent with previously interpreted data.

Groundwater monitoring wells MW-1 through MW-6 were purged and sampled by EMCON field personnel on July 14 and 15, 1992. Pertinent field sampling information is presented on EMCON's Water Sample Field Data Sheets (see Appendix A). The purge water was removed from the site by a licensed hazardous waste hauler; the Monitoring Well Purge Water Disposal Form is also included in Appendix A.

Laboratory Methods and Analyses

Under the direction of EMCON, 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-6 were analyzed for total petroleum hydrocarbons as gasoline (TPHg) and benzene, toluene, ethylbenzene, and total xylenes (BTEX) using Environmental Protection Agency (EPA) Methods 5030/8020/DHS LUFT. Concentrations of TPHg and benzene in the groundwater

are shown on Plate 6, TPHg Concentrations in Groundwater, and Plate 7, Benzene Concentrations in Groundwater. The Chain of Custody Records and Laboratory Analysis Reports are included in Appendix A. Results of these and previous water analyses are summarized in Table 2, Cumulative Results of Laboratory Analyses of Groundwater--TPHg, TPHd, BTEX, and TOG. Results of previous analyses are presented in Table 3, Cumulative Results of Laboratory Analyses of Groundwater--VOCs and Metals.

The following general trends were noted in reported hydrocarbon concentrations in groundwater from monitoring wells MW-1 through MW-6 since the last quarterly monitoring: reported concentrations of TPHg and BTEX have remained nondetectable, or just above nondetectable, in onsite well MW-1, and have remained nondetectable in offsite wells MW-5 and MW-6. Concentrations of TPHg and BTEX have generally increased in onsite wells MW-2, and MW-4, and in offsite well MW-3.

RESNA recommends that copies of this report be forwarded to:

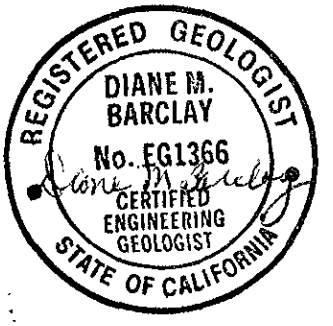
Ms. Susan Hugo
Alameda County Health Care Services Agency
Department of Environmental Health
80 Swan Way, Room 200
Oakland, California 94621

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

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

Sincerely,
RESNA Industries Inc.

Erin McLucas
Staff Geologist



Diane M. Barclay
Certified Engineering
Geologist No. 1366

Attachments: References

Plate 1, Site Vicinity Map
Plate 2, Generalized Site Plan
Plate 3, Groundwater Gradient Map, July 14, 1992
Plate 4, Groundwater Gradient Map, August 7, 1992
Plate 5, Groundwater Gradient Map, September 22, 1992
Plate 6, TPHg Concentrations In Groundwater, July 14, 1992
Plate 7, Benzene Concentrations In Groundwater, July 14, 1992

Table 1, Cumulative Groundwater Monitoring Data
Table 2, Cumulative Results of Laboratory Analyses of Groundwater--TPHg, TPHd, BTEX, and TOG
Table 3, Cumulative Results of Laboratory Analyses of Groundwater--VOCs and Metals

Appendix A: EMCON's Field Reports Depth To Water/Floating Product Survey Results, Summary of Groundwater Monitoring Data, Certified Analytical Reports with Chain of Custody, Water Sample Field Data Sheets Monitoring Well Purge Water Disposal Form

REFERENCES

Applied GeoSystems. June 15, 1988. Limited Environmental Site Assessment at ARCO Service Station No. 374, Telegraph Avenue and Alcatraz Avenue, Oakland, California. Job 18039-1.

Applied GeoSystems. August 1, 1988. Report Environmental Investigation Related to Underground Tank Removal at ARCO Service Station No. 374, Telegraph Avenue and Alcatraz Avenue, Oakland, California. Job 18039-2.

Applied GeoSystems. August 30, 1990. Letter Report, Quarterly Ground-Water Monitoring Third Quarter 1990 at ARCO Station 374, 6407 Telegraph Avenue, Oakland, California. AGS 60025-1.

Applied GeoSystems. February 20, 1991. Letter Report, Quarterly Ground-Water Monitoring Fourth Quarter 1990 at ARCO Station 374, 6407 Telegraph Avenue, Oakland, California. AGS 60025-1.

Applied GeoSystems. March 27, 1991. Report Limited Subsurface Environmental Investigation at ARCO Station 374, 6407 Telegraph Avenue, Oakland, California. AGS Report No. 18039-3.

Applied GeoSystems. April 16, 1991. Letter Report, Quarterly Ground-Water Monitoring First Quarter 1991 at ARCO Station 374, 6407 Telegraph Avenue, Oakland, California. AGS 60025-2.

Applied GeoSystems. May 15, 1991. Work Plan for Subsurface Investigations and Remediation at ARCO Station 374, 6407 Telegraph Avenue, Oakland, California. AGS 60025-3.

RESNA/Applied GeoSystems. July 31, 1991. Report of pumping and Recovery Test Results at ARCO 374, 6407 Telegraph Avenue, Oakland, California. 60025.04

RESNA. September 4, 1991. Letter Report, Quarterly Ground-Water Monitoring Second Quarter 1991 at ARCO Station 374, 6407 Telegraph Avenue, Oakland, California. RESNA 60025-2.

REFERENCES
(Continued)

RESNA. November 21, 1991. Letter Report, Quarterly Groundwater Monitoring Third Quarter 1991 at ARCO Station 374, 6407 Telegraph Avenue, Oakland, California. RESNA 60025-2.

RESNA. March 6, 1992. Letter Report, Quarterly Groundwater Monitoring Fourth Quarter 1991 at ARCO Station 374, 6407 Telegraph Avenue, Oakland, California. RESNA 60025-2.

RESNA. May 5, 1992. Letter Report, Quarterly Groundwater Monitoring First Quarter 1992 at ARCO Station 374, 6407 Telegraph Avenue, Oakland, California. RESNA 60025-2.

RESNA. August 28, 1992. Letter Report, Quarterly Groundwater Monitoring Second Quarter 1992 at ARCO Station 374, 6407 Telegraph Avenue, Oakland, California. RESNA 60025-7.

RESNA. September 23, 1992. Report on Offsite Subsurface Environmental Investigation at ARCO Station 374, 6407 Telegraph Avenue, Oakland, California. RESNA 60035-5.

Base: U.S. Geological Survey
7.5-Minute Quadrangles
Oakland East/West, California
Photorevised 1980

N

LEGEND

⊙ = Site Location

Approximate Scale

2000 1000 0 2000 4000

feet

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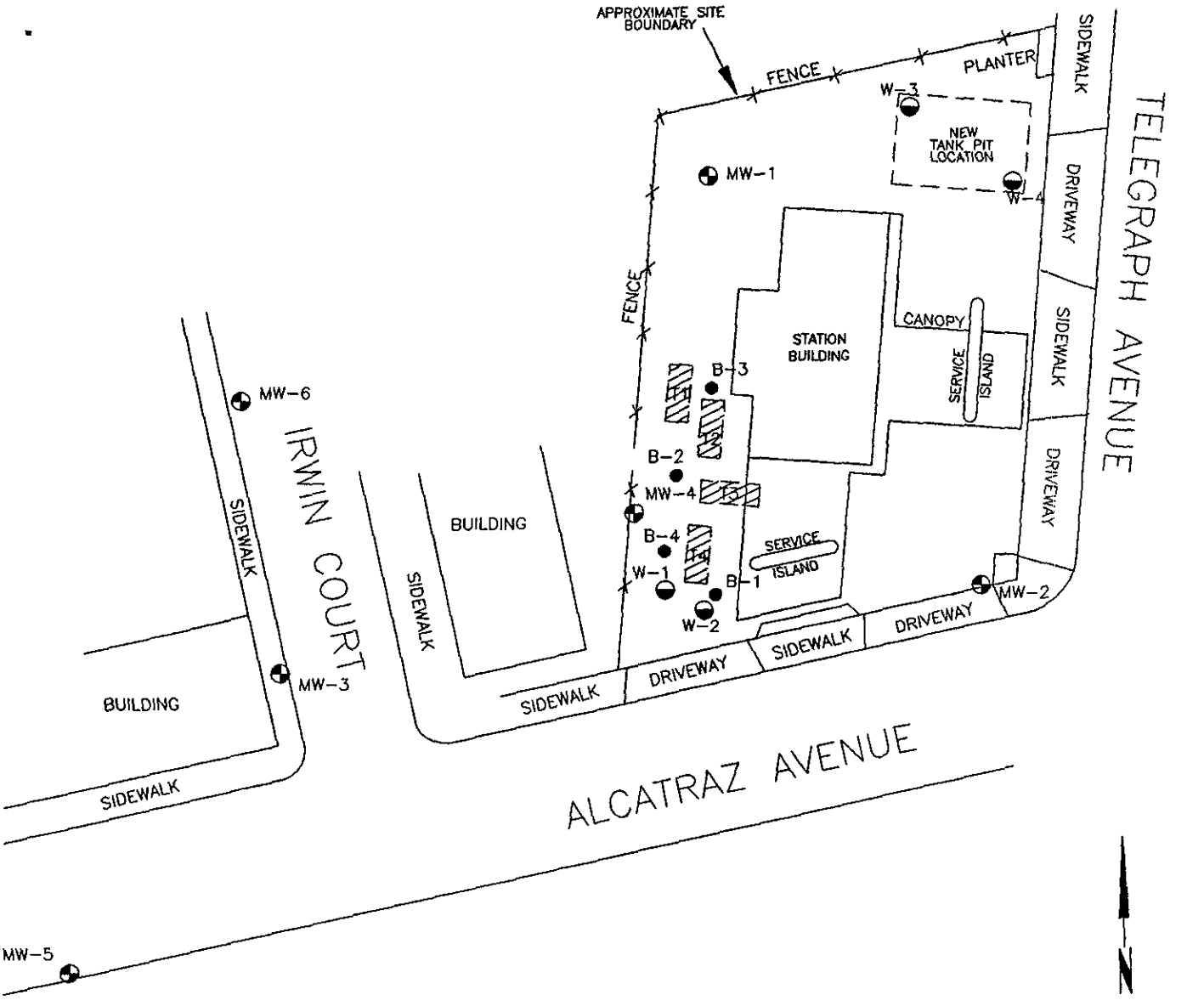
SITE VICINITY MAP
ARCO Station 374
6407 Telegraph Avenue
Oakland, California

PLATE
1



EXPLANATION

B-4 ● = Soil boring (RESNA, 1988)

MW-6 ◓ = Monitoring well (RESNA, July 1989, and April 1992)

W-4 ◒ = Tank pit monitoring well (RESNA, 1988)

= Former underground storage tanks

Approximate Scale

40 20 0 40 80

feet

Source: Surveyed by John Koch, Licensed Land Surveyor.

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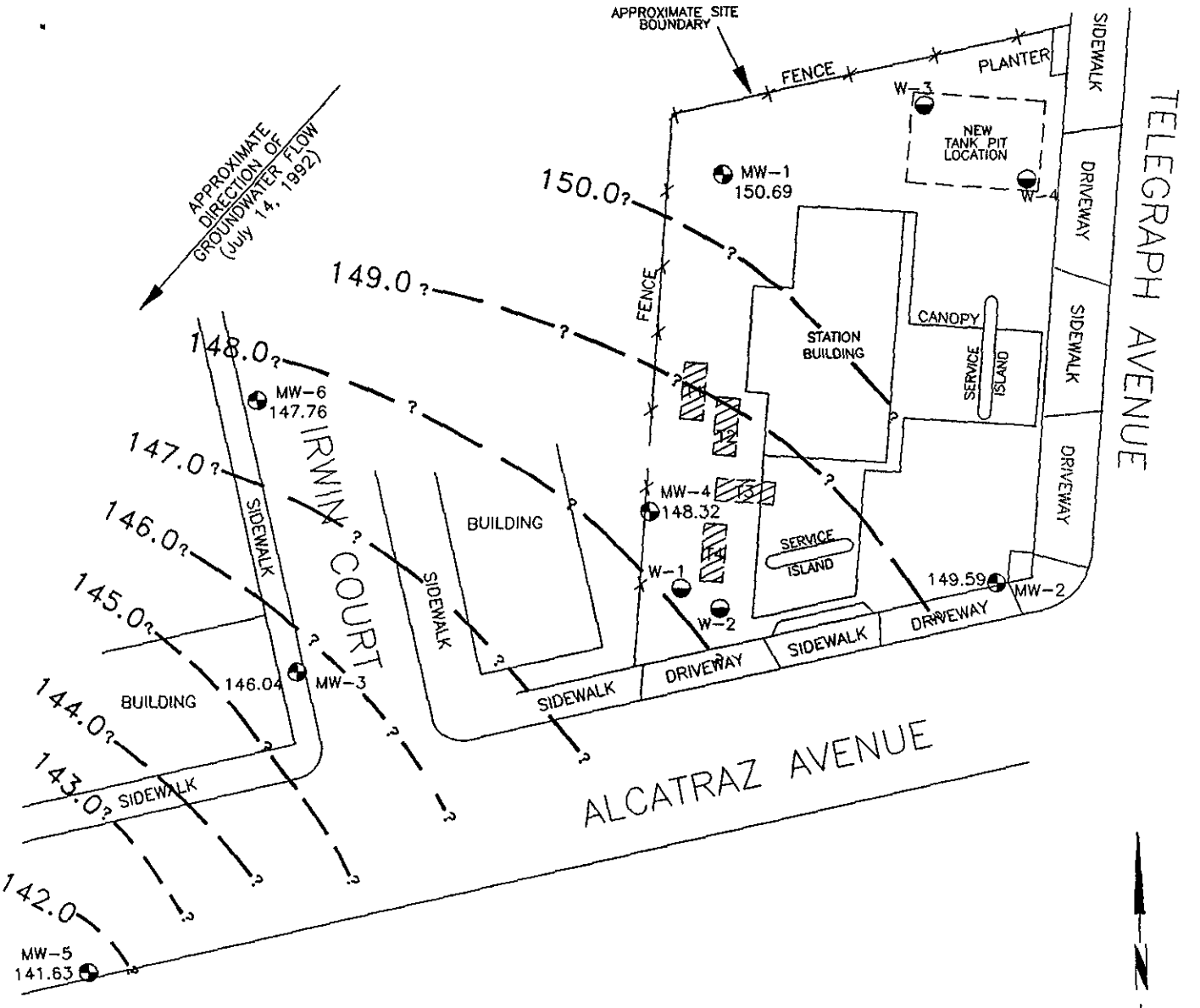
GENERALIZED SITE PLAN
ARCO Station 374
6407 Telegraph Avenue
Oakland, California

PLATE 2



EXPLANATION

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

150.69 = Elevation of groundwater in feet above MSL July 14, 1992

MW-6 = Monitoring well (RESNA, July 1989, and April 1992)

W-4 = Tank pit monitoring well (RESNA, 1988)

= Former underground storage tanks

Approximate Scale

40 20 0 40 80

feet

Source: Surveyed by John Koch, Licensed Land Surveyor.

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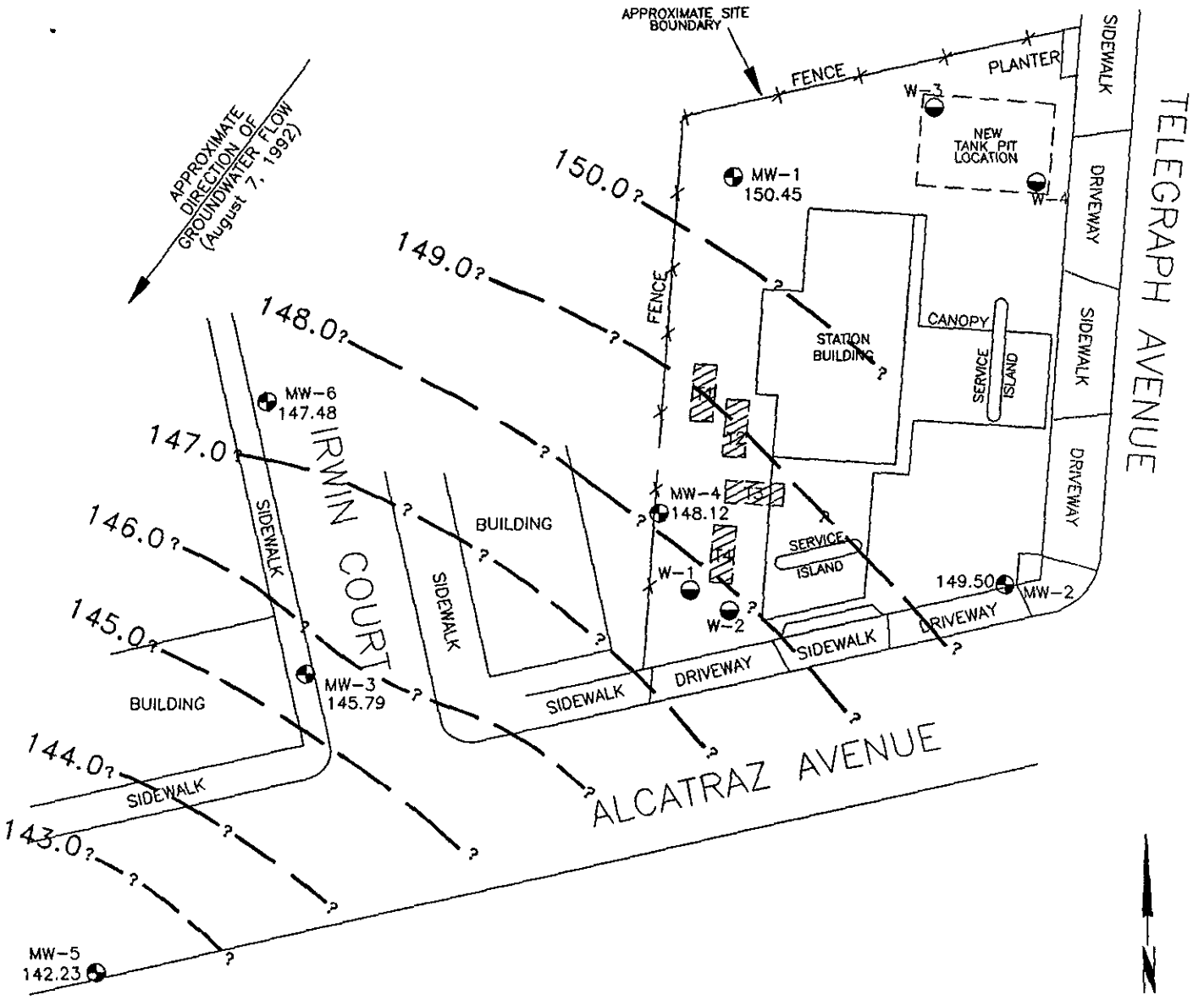
GROUNDWATER GRADIENT MAP
ARCO Station 374
6407 Telegraph Avenue
Oakland, California

PLATE 3



EXPLANATION

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

150.45 = Elevation of groundwater in feet above MSL August 7, 1992

MW-6 = Monitoring well (RESNA, July 1989, and April 1992)

W-4 = Tank pit monitoring well (RESNA, 1988)

= Former underground storage tanks

Approximate Scale

40 20 0 40 80

feet

Source: Surveyed by John Koch, Licensed Land Surveyor.

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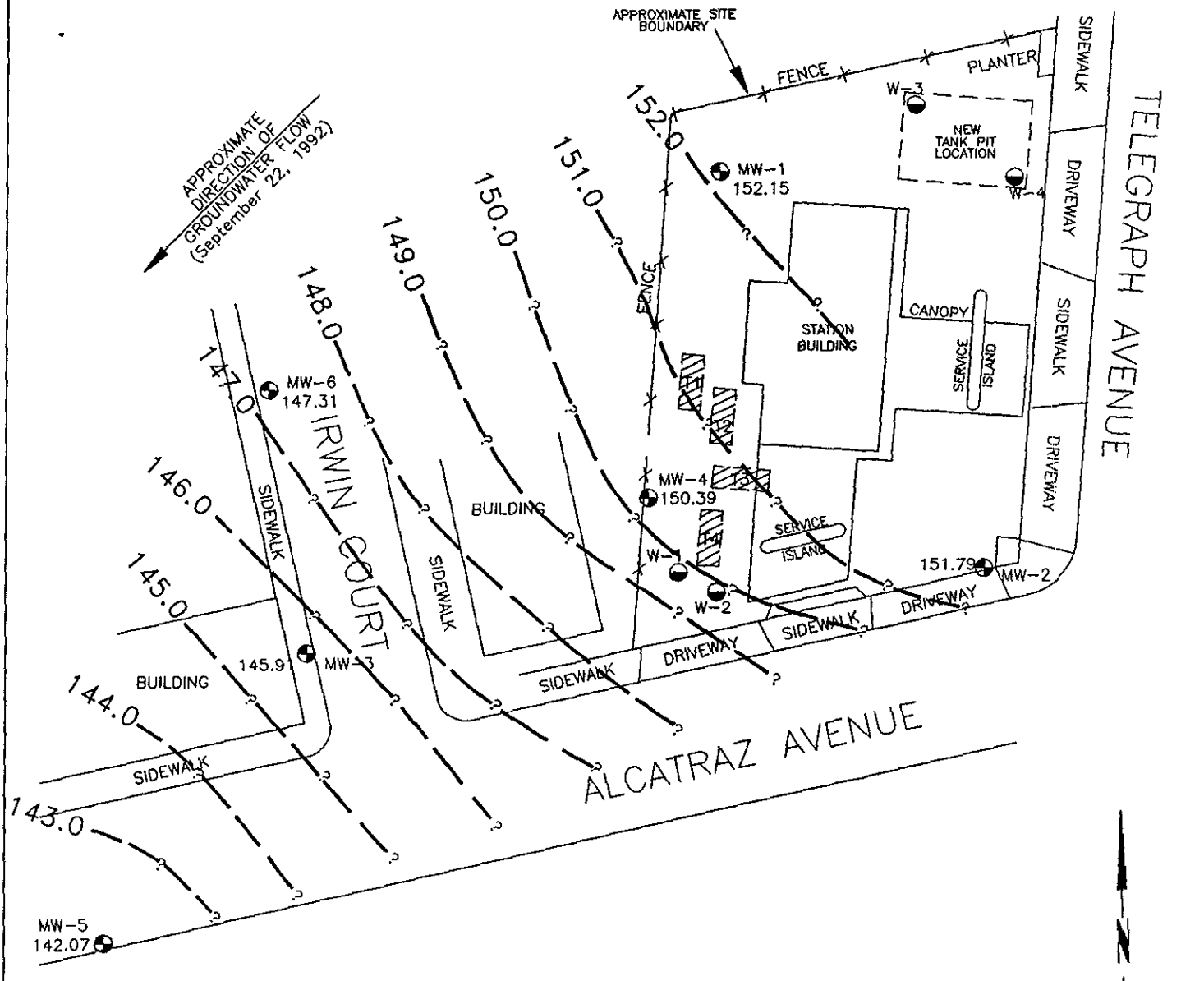
GROUNDWATER GRADIENT MAP
ARCO Station 374
6407 Telegraph Avenue
Oakland, California

PLATE 4



EXPLANATION

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

152.15 = Elevation of groundwater in feet above MSL September 22, 1992

MW-6 = Monitoring well (RESNA, July 1989, and April 1992)

W-4 = Tank pit monitoring well (RESNA, 1988)

= Former underground storage tanks

Approximate Scale

40 20 0 40 80

feet

Source: Surveyed by John Koch, Licensed Land Surveyor.

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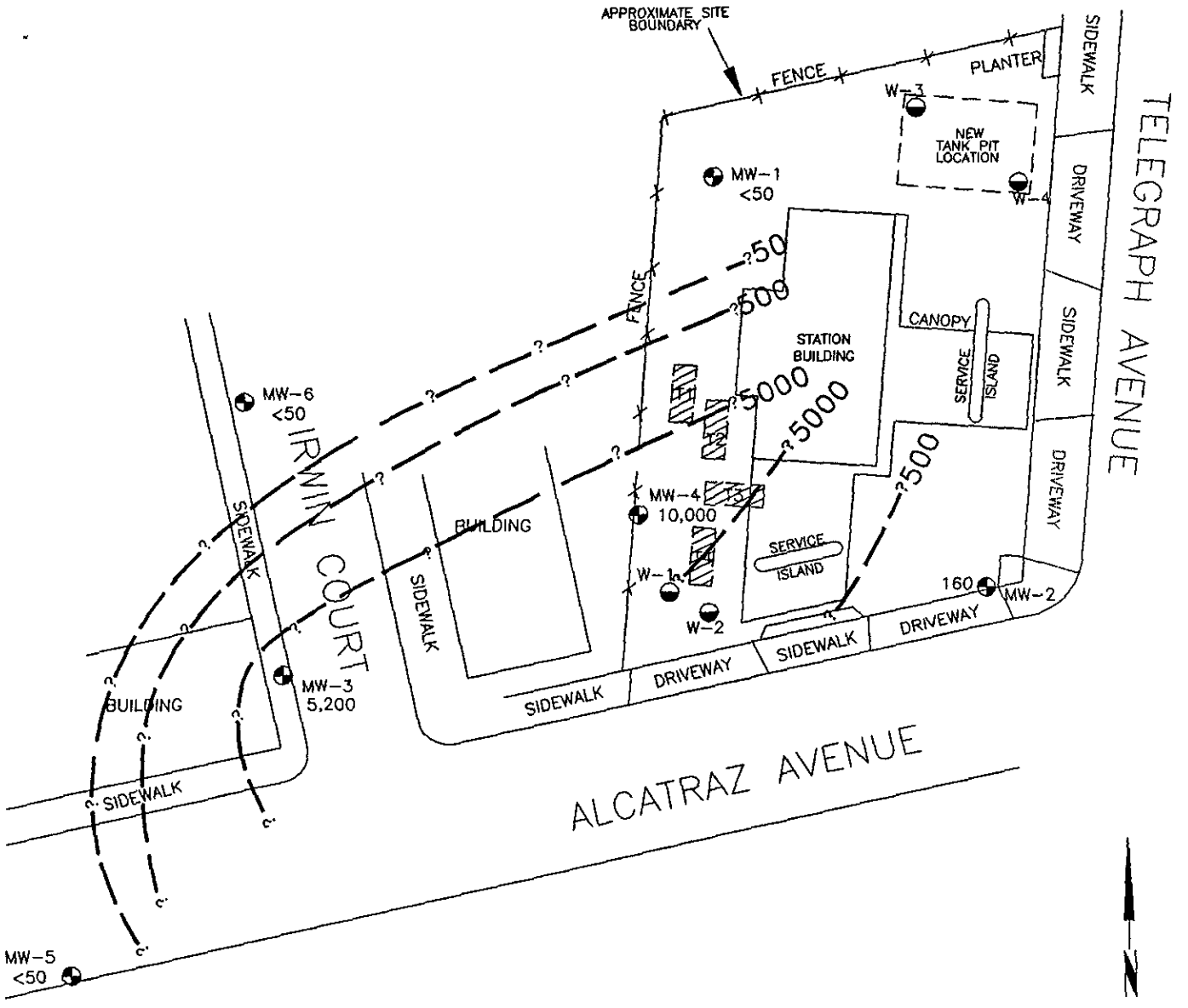
GROUNDWATER GRADIENT MAP
ARCO Station 374
6407 Telegraph Avenue
Oakland, California

PLATE 5



EXPLANATION

?5000 = Line of equal concentration of TPHg in groundwater, in parts per billion (ppb)

10,000 = Concentration of TPHg in groundwater, in ppb, July 14&15, 1992

MW-6 = Monitoring well (RESNA, July 1989, and April 1992)

W-4 = Tank pit monitoring well (RESNA, 1988)

= Former underground storage tanks

Approximate Scale

40 20 0 40 80

feet

Source: Surveyed by John Koch, Licensed Land Surveyor.

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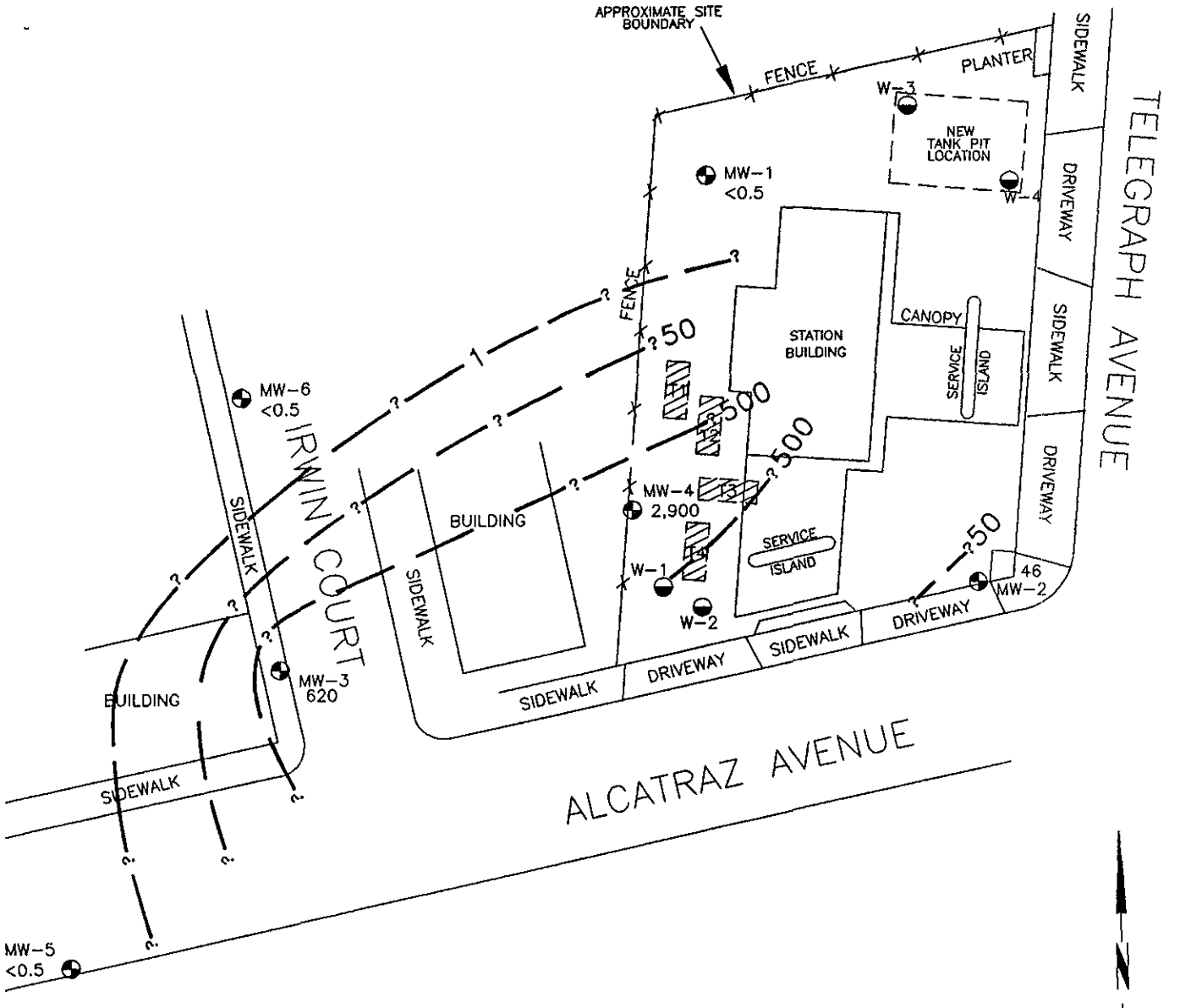
TPHg CONCENTRATIONS IN GROUNDWATER
ARCO Station 374
6407 Telegraph Avenue
Oakland, California

PLATE 6



EXPLANATION

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

2,900 = Concentration of benzene in groundwater, in ppb, July 14&15, 1992

MW-6 = Monitoring well (RESNA, July 1989, and April 1992)

W-4 = Tank pit monitoring well (RESNA, 1988)

= Former underground storage tanks

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 374
6407 Telegraph Avenue
Oakland, California

PLATE 7

TABLE 1
CUMULATIVE GROUNDWATER MONITORING DATA
ARCO Station 374
Oakland, California
(Page 1 of 4)

Date Well Measured	Well Elevation	Depth to Water	Water Elevation	Floating Product
MW-1				
07/20/89		8.04	151.40	None
08/30/89		8.47	150.97	None
10/04/89	159.44	8.50	150.94	None
01/10/90		6.74	152.70	None
08/07/90		6.87	152.57	None
12/06/90		7.35	152.09	None
12/19/90		7.22	152.22	None
01/29/91		8.28	151.16	None
02/20/91		7.98	151.46	None
04/25/91		6.89	152.55	None
05/31/91		7.64	151.80	None
07/08/91		8.17	151.27	None
08/09/91		8.58	150.86	None
09/25/91		8.82	150.62	None
10/17/91		8.96	150.48	None
11/20/91		8.60	150.84	None
12/27/91		8.71	150.73	None
01/19/92		7.83	151.61	None
02/19/92		6.68	152.76	None
03/09/92		4.47	154.97	None
04/15/92	158.91**	6.44	152.47	None
05/12/92		7.31	151.60	None
06/16/92		7.97	150.94	None
07/14/92		8.22	150.69	None
08/07/92		8.46	150.45	None
09/22/92		6.76	152.15	None
MW-2				
07/20/89		8.15	150.31	None
08/30/89		8.42	150.04	None
10/04/89	158.46	8.40	150.06	None
01/10/90		6.12	152.34	None
08/07/90		6.35	152.11	None
12/06/90		7.15	151.31	None
12/19/90		7.38	151.08	None
01/29/01		8.41	150.05	None
02/20/91		8.26	150.20	None
04/25/91		7.70	150.76	NM
05/31/91		8.10	150.36	None
07/08/91		8.34	150.12	None

See notes on page 4 of 4

TABLE 1
CUMULATIVE GROUNDWATER MONITORING DATA
ARCO Station 374
Oakland, California
(Page 2 of 4)

Date Well Measured	Well Elevation	Depth to Water	Water Elevation	Floating Product
MW-2 cont				
08/09/91		8.51	149.95	None
09/25/91		8.66	149.80	None
10/17/91		8.80	149.66	None
11/20/91		8.66	149.80	None
12/27/91		8.57	149.89	Sheen
01/19/92		8.25	150.21	None
02/19/92		7.50	150.96	None
03/09/92		7.40	151.06	None
04/15/92	157.92**	7.72	150.20	None
05/12/92		8.01	149.91	None
06/16/92		8.25	149.67	None
07/14/92		8.33	149.59	None
08/07/92		8.42	149.50	None
09/22/92		6.13	151.79	None
MW-3				
07/20/89		7.58	146.60	None
08/30/89		8.00	146.18	None
10/04/89	154.18	7.73	146.45	Emulsion
01/10/90		7.78	146.40	None
08/07/90		7.66	146.52	None
12/06/90		7.75	146.43	None
12/19/90		7.58	146.60	None
01/29/91	154.18	7.60	146.58	None
02/20/91		7.51	146.67	None
04/25/91		6.37	147.81	None
05/31/91		7.19	146.99	None
07/08/91		7.60	146.58	None
08/09/91		7.94	146.24	None
09/25/91		8.23	145.95	None
10/17/91		8.44	145.74	None
11/20/91		8.78	145.40	None
12/27/91		8.05	146.13	Sheen
01/19/92		7.65	146.53	None
02/19/92		6.48	147.70	None
03/09/92		5.45	148.73	None
04/15/92	153.64**	7.75	145.89	None
05/12/92		7.45	146.19	None
06/16/92		7.51	146.13	None

See notes on page 4 of 4

TABLE 1
CUMULATIVE GROUNDWATER MONITORING DATA
ARCO Station 374
Oakland, California
(Page 3 of 4)

Date Well Measured	Well Elevation	Depth to Water	Water Elevation	Floating Product
MW-3 cont				
07/14/92		7.60	146.04	None
08/07/92		7.85	145.79	None
09/22/92		7.73	145.91	None
MW-4				
07/20/89		8.09	148.99	None
08/30/89		8.45	148.63	Sheen
10/04/89	157.08	8.57	148.51	Sheen
01/10/90		7.26	149.82	None
08/07/90		6.87	150.21	None
12/06/90		8.02*	149.06*	Sheen
12/19/90		7.69	149.39	None
01/29/91		8.39	148.69	Sheen
02/20/91		8.16	148.92	None
04/25/91		7.14	149.94	None
05/31/91		7.64	149.44	None
07/08/91		8.34	148.74	None
08/09/91		8.60	148.48	None
09/25/91		8.80	148.28	None
10/17/91		8.98	148.10	None
11/20/91		8.78	148.30	None
12/27/91		8.82	148.26	Sheen
01/19/92		8.18	148.90	None
02/19/92		7.62	149.46	None
03/09/92		6.68	150.40	None
04/15/92	156.53**	6.96	149.57	None
05/12/92		7.45	149.08	None
06/16/92		7.94	148.59	None
07/14/92		8.21	148.32	None
08/07/92		8.41	148.12	None
09/22/92		6.14	150.39	None
MW-5				
04/15/92	151.33**	8.05	143.28	None
05/12/92		8.44	142.89	None
06/16/92		8.74	142.59	None
07/14/92		9.70	141.63	None
08/07/92		9.10	142.23	None
09/22/92		9.26	142.07	None
MW-6				
04/15/92	153.84**	4.55	149.29	None

See notes on page 4 of 4

TABLE 1
CUMULATIVE GROUNDWATER MONITORING DATA
ARCO Station 374
Oakland, California
(Page 4 of 4)

Date Well Measured	Well Elevation	Depth to Water	Water Elevation	Floating Product
MW-6 cont				
05/12/92		5.32	148.52	None
06/16/92		5.91	147.93	None
07/14/92		6.08	147.76	None
08/07/92		6.36	147.48	None
09/22/92		6.53	147.31	None

Notes:
Elevations and DTW measured in feet.
* = Floating Product.
** = Wellheads surveyed by John E. Koch on April 27, 1992. Well elevation datum is mean sea level (MSL).

TABLE 2
CUMULATIVE RESULTS OF LABORATORY ANALYSES OF GROUNDWATER–TPHg, TPHd, BTEX, AND TOG
ARCO Service Station 374
Oakland, California
(Page 1 of 3)

Date/Well	TPHg	TPHd	B	T	E	X	TOG
MW-1							
07/21/89	33	NA	0.77	1.6	1.5	5.0	NA
08/30/89	<20	NA	<0.50	<0.50	<0.50	<0.50	NA
10/04/89	<20	NA	<0.50	<0.50	<0.50	<0.50	NA
01/10/90	<20	NA	<0.50	<0.50	<0.50	<0.50	NA
08/07/90	<20	NA	<0.50	<0.50	<0.50	<0.50	NA
12/06/90	<50	NA	3.6	2.7	0.60	5.80	NA
02/20/91	<50	NA	<0.50	<0.50	<0.50	<0.50	NA
07/08/91	<30	NA	<0.30	<0.30	<0.30	<0.30	NA
09/25/91	<30	NA	0.57	0.57	0.54	1.7	NA
11/20/91	57	NA	9.2	3.7	0.63	2.5	NA
03/09/92	<50	NA	<0.5	<0.5	<0.5	<0.5	NA
04/15/92	<50	NA	<0.5	<0.5	<0.5	<0.5	NA
07/14/92	<50	NA	<0.5	0.7	<0.5	1.3	NA
MW-2							
07/21/89	4,200	NA	280	210	38	24	NA
08/30/89	4,200	NA	160	260	45	240	NA
10/04/89	4,300	NA	860	300	29	330	NA
01/10/90	8,000	NA	890	710	120	760	NA
08/07/90	6,000	NA	880	76	25	80	NA
12/06/90	1,600	NA	330	69	18	63	NA
02/20/91	1,300	NA	160	46	13	48	NA
07/08/91	310	NA	76	18	7.7	24	NA
09/25/91	83	NA	17	0.69	2.2	4.1	NA
11/20/91	180	NA	46	6.1	3.0	8.7	NA
03/09/92	690	NA	170	25	21	58	NA
04/15/92	86	NA	20	2.3	3.8	8.5	NA
07/14/92	160	NA	46	1.4	1.2	3.5	NA
MW-3							
07/21/89	430	NA	9	4.8	<0.50	50	NA
08/30/89	1,200	NA	85	46	8.4	55	NA
10/04/89	7,000	NA	580	900	120	670	NA
01/10/90	940	NA	130	59	21	73	NA
08/07/90	2,300	NA	180	64	59	120	NA
12/06/90	460	350	52	55	14	39	NA
02/20/91	470	<100	36	30	9.3	31	<5,000
07/08/91	2,500	NA	240	470	74	320	NA
09/25/91	1,100	NA	120	110	34	120	NA
11/20/91	1,000	NA	180	140	43	140	NA
03/10/92	1,200	NA	200	110	53	130	NA
04/15/92	1,600	NA	200	13	110	81	NA
07/14/92	5,200	NA	620	44	310	250	NA

See notes on page 3 of 3

TABLE 2
CUMULATIVE RESULTS OF LABORATORY ANALYSES OF GROUNDWATER--TPHg, TPHd, BTEX, AND TOG
ARCO Service Station 374
Oakland, California
(Page 2 of 3)

Date/Well	TPHg	TPHd	B	T	E	X	TOG
MW-4							
07/21/89	8,700	NA	720	360	120	640	NA
8/30/89	7,300	NA	630	220	72	320	NA
10/04/89	21,000	NA	2,300	1,300	280	1,300	NA
01/10/90	4,300	NA	470	250	63	430	NA
08/07/90	69,000	28,000	8,700	4,200	540	4,600	<5,000
12/06/90		Not sampled--product sheen					
02/20/91	5,200	<100	690	200	95	580	<5,000
07/08/91	1,700	NA	280	68	37	170	NA
09/25/91	6,300	NA	2,100	290	210	590	NA
11/20/91	2,700	NA	1,200	200	110	320	NA
03/10/92	690	NA	180	80	18	43	NA
04/15/92	8,500	NA	2,100	750	280	1,000	NA
07/14/92	10,000	NA	2,900	530	290	930	NA
MW-5							
04/15/92	<50	NA	<0.5	<0.5	<0.5	<0.5	NA
07/14/92	<50	NA	<0.5	<0.5	<0.5	<0.5	NA
MW-6							
04/15/92	<50	NA	<0.5	<0.5	<0.5	<0.5	NA
07/15/92	<50	NA	<0.5	<0.5	<0.5	<0.5	NA
MCL:	—	—	1	—	680	1,750	—
DWAL:	—	—	—	100	—	—	—

Results in micrograms per liter (ug/L) = parts per billion (ppb).
TPHg: Total petroleum hydrocarbons as gasoline by EPA method 5030/8015.
TPHd: Total petroleum hydrocarbons as diesel by EPA method 3510/8015.
BTEX: B: Benzene, T: Toluene, E: Ethylbenzene, X: Total Xylene isomers; measured by EPA method 8020/602.
TOG: Total oil and grease measured by Standard Method 5520 B/F.
<: Results reported as less than the detection limit.

See notes on page 3 of 3

TABLE 2
CUMULATIVE RESULTS OF LABORATORY ANALYSES OF GROUNDWATER--TPHg, TPHd, BTEX, AND TOG
ARCO Service Station 374
Oakland, California
(Page 3 of 3)

Date/Well	TPHg	TPHd	B	T	E	X	TOG

NA: Not analyzed
MCL: State Maximum Contaminant Level (October 1990).
DWAL: State recommended Drinking Water Action Level (October 1990).

TABLE 3
CUMULATIVE RESULTS OF LABORATORY ANALYSES OF GROUNDWATER--VOCs and Metals
ARCO Service Station 374
Oakland, California

Date/Well	VOC (ppb)	Cd (ppm)	Cr (ppm)	Pb (ppm)	Ni (ppm)	Zn (ppm)
MW-4						
07/31/90	Nondetectable for thirty one compounds tested (<1.0)	NA	NA	NA	NA	NA
02/20/91	Chloromethane* 3.4; nondetectable for twenty eight other compounds tested (<0.5)	NA	NA	NA	NA	NA
11/20/91	NA	<0.010	<0.010	<0.0050	<0.050	0.019
03/10/92	NA	NA	NA	NA	NA	NA
04/15/92	NA	NA	NA	NA	NA	NA
07/14/92	NA	NA	NA	NA	NA	NA

VOC results in micrograms per liter (ug/L) = parts per billion (ppb).
Metal results in milligrams per liter (mg/L) = parts per million (ppm).
Halogenated Volatile Organics measured by EPA method 601/8010.
NA = Not Analyzed

APPENDIX A

EMCON'S FIELD REPORTS, DEPTH TO WATER/FLOATING PRODUCT SURVEY RESULTS, SUMMARY OF GROUNDWATER MONITORING DATA, CERTIFIED ANALYTICAL REPORTS WITH CHAIN OF CUSTODY, WATER SAMPLE FIELD DATA SHEETS

MONITORING WELL PURGE WATER DISPOSAL FORM

EMCON ASSOCIATES
Consultants in Wastes Management and Environmental Control

RECEIVED
SEP 8 1992
RESNA
SAN JOSE

Date Sept 01, 1992
Project G70-04.01

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

We are enclosing:

Copies	Description
1	Depth To Water/Floating Product Survey Form, August 1992 monthly water level survey, ARCO station 374, 6407 Telegraph Hill, Oakland, 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.

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

FIELD REPORT
DEPTH TO WATER / FLOATING PRODUCT SURVEY

PROJECT # : G70-04.01 STATION ADDRESS : 6407 Telegraph Hill, Oakland, CA DATE : 8-7-92

ARCO STATION # : 374 FIELD TECHNICIAN : Rick Schaeffer DAY : FRI

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	OK	Yes	OK	3259	Yes	9.10	9.10	N.D	N.D	23.1	—
2	MW-6	OK	Yes	OK	~~0964~~ ~~3259~~	Yes	6.36	6.36	N.D	N.D	14.6	—
3	MW-1	OK	Yes	OK	0909	Yes	8.46	8.46	N.D	N.D	26.6	—
4	MW-2	OK	Yes	OK	3259	Yes	8.42	8.42	N.D	N.D	26.2	—
5	MW-3	OK	Yes	~~NONE~~ OK	3259	Yes	7.85	7.85	N.D	N.D	26.7	—
6	MW-4	OK	NO	OK	3259	Yes	8.41	8.41	N.D	N.D	26.5	—

WELL SURVEY POINTS ARE TOP OF CASING (TOC)

EMCON ASSOCIATES
Consultants in Wastes
Management and
Environmental Control

RECEIVED
OCT 14 1992
RESNA
SAN JOSE

Date October 3, 1992
Project 0G70-004.01

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

We are enclosing:

Copies	Description
1	Depth To Water/Floating Product Survey Form, September 1992 monthly water level survey, ARCO station 374, 6407 Telegraph Hill, Oakland, 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 GEOLOGIST NO: 4004 Exp. 6/30/96 INDUSTRIAL STATE OF CALIFORNIA

Jim Butera JB

Robert C. Porter

Robert Porter, Senior Project Engineer.

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

FIELD REPORT
DEPTH TO WATER / FLOATING PRODUCT SURVEY

PROJECT # : 0G70-004.01 STATION ADDRESS : 6407 Telegraph Hill, Oakland, CA DATE : Sept. 22, 1992

ARCO STATION # : 374 FIELD TECHNICIAN : Steve Horton DAY : Tuesday

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	yes	yes	no	0464	yes	9.26	9.26	ND	ND	23.10	—
2	MW-6	yes	yes	no	0464	yes	6.53	6.53	ND	ND	14.60	—
3	MW-1	yes	yes	no	0909	yes	6.76	6.77	ND	ND	26.80	—
4	MW-2	yes	yes	no	3259	yes	6.13	6.14	ND	ND	26.30	—
5	MW-3	yes	yes	no	3259	yes	7.73	7.73	ND	ND	26.80	strong odor
6	MW-4	yes	yes	no	3259	yes	6.14	6.14	ND	ND	26.60	strong odor

WELL SURVEY POINTS ARE TOP OF CASING

EMCON ASSOCIATES
Consultants in Wastes Management and Environmental Control

RECEIVED
AUG 4 1992
RESNA
SAN JOSE

Date July31, 1992
Project G70-04.01

To:
Mr. Joel Coffman
RESNA/ Applied Geosystems
3315 Almaden Expressway, Suite 34
San Jose, California 95050

We are enclosing:

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

For your: X Information Sent by: X Mail

Comments:
Enclosed are the data from the third quarter 1992 monitoring event at ARCO service station 374, 6407 Telegraph Hill, Oakland, California. Please call if you have any questions: (408) 453-2266.

Reviewed by: Jim Butera JB.

REGISTERED PROFESSIONAL ENGINEER ROBERT C. PORTER NO. [illegible] 6/30/96

Robert Porter, Senior Project Engineer.

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

FIELD REPORT
DEPTH TO WATER / FLOATING PRODUCT SURVEY

PROJECT # : G70-04.01 STATION ADDRESS : 6407 Telegraph Hill, Oakland, CA DATE : 7-14-92

ARCO STATION # : 374 FIELD TECHNICIAN : L. RATH DAY : Tuesday

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	good	3259	good	9.70	9.70	ND	ND	23.00	—
2	MW-6	good	yes	good	0464	good	6.08	6.08	~~7.64~~ ND	ND	14.50	Cap on well - LR
3	MW-1	good	yes	good	0909	good	8.22	8.22	ND	ND	27.00	—
4	MW-2	good	yes	good	3259	good	8.33	8.33	ND	ND	26.00	—
5	MW-3	good	yes	good	3259	good	7.60	7.61	ND	ND	27.00	—
6	MW-4	good see comment	yes	good	3259	good	8.21	8.20	ND	ND	26.50	well Box cover is Broken

WELL SURVEY POINTS ARE TOP OF CASING (TOC)

Summary of Groundwater Monitoring Data
Third Quarter 1992
ARCO Service Station 374
6407 Telegraph Hill, Oakland, California
micrograms per liter (µg/l) or parts per billion (ppb)

Well ID and Sample Depth	Sampling Date	Depth To Water (feet)	Floating Product Thickness (feet)	TPH[1] as Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Total Xylenes (ppb)
MW-1(25)	07/14/92	8.22	ND.[2]	<50	<0.5	0.7	<0.5	1.3
MW-2(25)	07/14/92	8.33	ND.	160.	46.	1.4	1.2	3.5
MW-3(25)	07/14/92	7.60	ND.	5,200.	620.	44.	310.	250.
MW-4(25)	07/14/92	8.21	ND.	10,000.	2,900.	530.	290.	930.
MW-5(22)	07/14/92	9.70	ND.	<50	<0.5	<0.5	<0.5	<0.5
MW-6(13)	07/15/92	6.08	ND.	<50	<0.5	<0.5	<0.5	<0.5
FB-1[3]	07/14/92	NA.[4]	NA.	<50	<0.5	0.6	<0.5	<0.5

1. TPH. = Total petroleum hydrocarbons
2. ND. = Not detected
3. FB. = Field blank
4. NA. = Not applicable

Columbia Analytical Services, Inc.

July 27, 1992

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

Re: **EMCON Project No. G70-04.01**
Arco Facility No. 374

Dear Mr. Butera:

Enclosed are the results of the water samples submitted to our lab on July 14 and 16, 1992. For your reference, our service request numbers for this work are SJ92-0858 and SJ92-0865, respectively.

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

Please call if you have any questions.

Respectfully submitted:

COLUMBIA ANALYTICAL SERVICES, INC.

Keoni A. Murphy
Laboratory Manager

Annelise J. Bazar
Regional QA Coordinator

le/KAM

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

Analytical Report

Client:	EMCON Associates	**Date Received:**	07/14 & 16/92
Project:	EMCON Project No. G70-04.01	**Work Order #:**	SJ92-0858/0865
	Arco Facility No. 374	**Sample Matrix:**	Water

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

Sample Name:		MW-1 (25)	MW-2 (25)	MW-3 (25)
Date Analyzed:		07/20/92	07/20/92	07/21/92
Analyte	**MRL**			
Benzene	0.5	ND	46.	620.
Toluene	0.5	0.7	1.4	44.
Ethylbenzene	0.5	ND	1.2	310.
Total Xylenes	0.5	1.3	3.5	250.
TPH as Gasoline	50	ND	160.	5,200.

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

Approved by Kevin Murphy Date JULY 27, 1992

1994 Rigaud Avenue • San Jose, California 95124 • Telephone 408/437-2400 • Fax 408/437-9356

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON Associates
Project: EMCON Project No. G70-04.01
Arco Facility No. 374

Date Received: 07/14 & 16/92
Work Order #: SJ92-0858/0865
Sample Matrix: Water

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

		Sample Name:	MW-4 (25)	MW-5 (22)	MW-6 (13)
		Date Analyzed:	07/20/92	07/20/92	07/20/92
Analyte	**MRL**				
Benzene	0.5		2,900.	ND	ND
Toluene	0.5		530.	ND	ND
Ethylbenzene	0.5		290.	ND	ND
Total Xylenes	0.5		930.	ND	ND
TPH as *Gasoline*	50		10,000.	ND	ND

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

Approved by [signature] Date July 27, 1992

Analytical Report

Client:	EMCON Associates	**Date Received:**	07/14 & 16/92
Project:	EMCON Project No. G70-04.01 Arco Facility No. 374	**Work Order #:** **Sample Matrix:**	SJ92-0858/0865 Water

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

Sample Name:		FB-1	Method Blank	Method Blank
Date Analyzed:		07/20/92	07/20/92	07/21/92
Analyte	**MRL**			
Benzene	0.5	ND	ND	ND
Toluene	0.5	0.6	ND	ND
Ethylbenzene	0.5	ND	ND	ND
Total Xylenes	0.5	ND	ND	ND
TPH as Gasoline	50	ND	ND	ND

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

Approved by Kevin A Murphy Date July 27, 1992

1904 Rheem Avenue • San Jose, California 95131 • Telephone 408/437-2400 • Fax 408/437-9356

APPENDIX A

LABORATORY QC RESULTS

4024 Ringwood Avenue • San Jose, California 95131 • Telephone 408/437-2400 • Fax 408/437-9356

Client: EMCON Associates
Project: EMCON Project No. G70-04.01
Arco Facility No. 374

Date Received: 07/14 & 16/92
Work Order #: SJ92-0858/0865

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

Date Analyzed: 07/20/92

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
Benzene	250.	270.	108.	85-115
Toluene	250.	276.	110.	85-115
Ethylbenzene	250.	266.	106.	85-115
Total Xylenes	750.	796.	106.	85-115
TPH as Gasoline	2,500.	2,714.	109.	90-110

Date Analyzed: 07/21/92

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
Benzene	250.	272.	109.	85-115
Toluene	250.	277.	111.	85-115
Ethylbenzene	250.	266.	106.	85-115
Total Xylenes	750.	792.	105.	85-115
TPH as Gasoline	2,500.	2,684.	107.	90-110

TPH Total Petroleum Hydrocarbons

Approved by Keon A Murphy Date July 27, 1992

4024 Ringwood Avenue • San Jose, California 95131 • Telephone 408/437-2400 • Fax 408/437-9356

Client: EMCON Associates
Project: *EMCON Project No.* G70-04.01
Arco Facility No. 374

Date Received: 07/14 & 16/92
Work Order #: SJ92-0858/0865
Sample Matrix: Water

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

Sample Name	Date Analyzed	Percent Recovery *α,α,α*-Trifluorotoluene
MW-1 (25)	07/20/92	117.
MW-2 (25)	07/20/92	122.
MW-3 (25)	07/21/92	116.
MW-4 (25)	07/20/92	111.
MW-5 (22)	07/20/92	114.
MW-6 (13)	07/20/92	114.
FB-1	07/20/92	114.
MW-1 (25) (MS)	07/20/92	120.
MW-1 (25) (DMS)	07/20/92	122.
Method Blank	07/20/92	114.
Method Blank	07/21/92	112.
	CAS Acceptance Criteria	70-130

TPH Total Petroleum Hydrocarbons

Approved by Karen A Murphy Date July 27, 1992

1924 Ringwood Avenue • San Jose, California 95131 • Telephone 408/437-2400 • Fax 408/437-9356

Client: EMCON Associates
Project: EMCON Project No. G70-04.01
Arco Facility No. 374

Date Received: 07/14 & 16/92
Work Order #: SJ92-0858/0865
Sample Matrix: Water

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

Sample Name: MW-1 (25)
Date Analyzed: 07/20/92

Analytes	Spike Level	Sample Result	Spike Result MS	Spike Result DMS	Percent Recovery MS	Percent Recovery DMS	Acceptance Criteria
TPH as Gasoline	250.	ND	274.	278.	110.	111.	70-140

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

Approved by Kevin Murphy Date July 27, 1992

4924 Ringwood Avenue • San Jose, California 95131 • Telephone 408/437-2400 • Fax 408/437-9356

APPENDIX B

CHAIN OF CUSTODY

1924 Ringwood Avenue • San Jose, California 95131 • Telephone 408/437-2400 • Fax 408/437-9356

ARCO Products Company
Division of AtlanticRichfieldCompany

Task Order No. EMCGC-92-1

Chain of Custody

ARCO Facility no: 374	City (Facility): OAKLAND	Project manager (Consultant): JIM BUTERA	Laboratory name: CAS
ARCO engineer: Kyle Christie	Telephone no. (ARCO):	Telephone no. (Consultant): (408) 453-2266	Fax no. (Consultant): (408) 453-0452
Consultant name: EMCON ASSOCIATES	Address (Consultant): 1938 Junction Ave San Jose CA		Contract number: 07077

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(GAS) EPA M602/8020/8015	TPH Modified 8015 Gas ☐ Diesel ☐	Oil and Grease 413.1 ☐ 413.2 ☐	TPH EPA 418.1/SM503E	EPA 601/8010	EPA 624/8240	EPA 625/8270	TCLP Metals ☐ Semi VOA ☐ VOA ☐	CAM Metals EPA 6010/7000 TTLC ☐ STLC ☐	Lead Org./DHS ☐ Lead EPA 7420/7421 ☐		
MW-1(25)	1-2	2		X		X	HCl	7-14-92	0940		X											
MW-2(25)	3-4	2		X		X	HCl	7-14-92	1125		X											
MW-3(25)	5-6	2		X		X	HCl	7-14-92	1305		X											
MW-4(25)	7-8	2		X		X	HCl	7-14-92	1220		X											
MW-5(22)	9-10	2		X		X	HCl	7-14-92	1030		X											
~~MW-6(~~	)	2		X		X	HCl				X			NO Sample taken								
FB-1	11-12	2		X		X	HCl	7-14-92	0900		X											

Special detection Limit/reporting: lowest possible

Special QA/QC: As Normal

Remarks: 2-40ml VOA's per well

G70-0401

Lab number: SJ92-0858

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: room temp.	
Relinquished by sampler: Laura Rich	Date: 7-14-92 Time: 1435	Received by:	Date: 7-14-92 Time: 1451
Relinquished by:	Date: Time:	Received by:	
Relinquished by:	Date: Time:	Received by laboratory:	Date: Time:

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

ARCO Products Company
Division of AtlanticRichfieldCompany

Task Order No. EMCGC-92-1

Chain of Custody

ARCO Facility no. 374	City (Facility) OAKLAND	Project manager (Consultant) JIM Bateva	Laboratory name CAS
ARCO engineer Kyle Christie	Telephone no. (ARCO)	Telephone no. (Consultant) (408)453-0719	Fax no. (Consultant) (408)453-0457
Consultant name EMCON ASSOCIATES	Address (Consultant) 1938 JUNCTION AVE		Contract number 07077

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 GAS EPA M602/8020/8015	TPH Modified 8015 Gas ☐ Diesel ☐	Oil and Grease 413.1 ☐ 413.2 ☐	TPH EPA 418.1/SM503E	EPA 601/8010	EPA 624/8240	EPA 625/8270	TCLP Metals ☐ Semi VOA ☐ VOA ☐	CAM Metals EPA 6010/7000 TTLC ☐ STLC ☐	Lead Org./DHS ☐ Lead EPA 7420/7421 ☐		
MW6(13)-12	12	2		X		X	HCl	7-15-92	1405		X											

Special detection Limit/reporting: Lowest Possible

Special QA/QC: As Normal

Remarks: 2-40 ml VOA's

G70-0401

Lab number: SJ92-0865

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: room temp	
Relinquished by sampler: [signature]	Date 7-16-92 Time 0832	Received by [signature]	7-16-92 0832
Relinquished by	Date Time	Received by	
Relinquished by	Date Time	Received by laboratory	Date Time

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

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: G70-041.01 | SAMPLE ID: MW-1 (25)

PURGED BY: L. RATH | CLIENT NAME: ARCO 374

SAMPLED BY: L. RATH | LOCATION: ~~San~~ - Oakland CA
6407 Telegraph Hill

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

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

CASING ELEVATION (feet/MSL): NR | VOLUME IN CASING (gal.): 12.19

DEPTH TO WATER (feet): 8.21 | CALCULATED PURGE (gal.): ~~18.59~~ 60.97

DEPTH OF WELL (feet): 20.80 ~~18.59~~ | ACTUAL PURGE VOL. (gal.): 40.00

DATE PURGED: 7-14-92 | Start (2400 Hr) 0914 | End (2400 Hr) 0931

DATE SAMPLED: 7-14-92 | Start (2400 Hr) 0940 | End (2400 Hr) ___

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
0918	12.25	5.34	933	~~72~~ 67.3	Brown	mod
0921	24.50	5.63	934	67.0	Brown	Heavy
0927	36.75	5.76	943	66.6	Brown	Heavy
0931	~~49.00~~	well Dried out 40 gal				
0940	~~Gloe~~ Recharge	5.83	965	66.4	Brown	Heavy

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

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): FB-1 0900

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

WELL INTEGRITY: Good | LOCK #: 0909

REMARKS: ___

Meter Calibration: Date: 7-14-92 Time: 0900 Meter Serial #: 9111 Temperature °F: 72

(EC 1000 1020 / 1000) (DI 995) (pH 7 7.07 / 7.00) (pH 10 9.90 / 10.00) (pH 4 3.90 / ___)

Location of previous calibration: ___

Signature: [signature] | Reviewed By: JB | Page 1 of 7

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: 670-041.01 SAMPLE ID: MW-2 (25)

PURGED BY: L. RATH CLIENT NAME: ARCO 374

SAMPLED BY: L. RATH LOCATION: 6407 Telegraph Hill Oak CA

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

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

CASING ELEVATION (feet/MSL):	NR	VOLUME IN CASING (gal.):	11.82
DEPTH TO WATER (feet):	8.33	CALCULATED PURGE (gal.):	39.10
DEPTH OF WELL (feet):	26.35 (18.02)	ACTUAL PURGE VOL. (gal.):	55.00

DATE PURGED: 7-14-92 Start (2400 Hr) 1055 End (2400 Hr) 1112

DATE SAMPLED: 7-14-92 Start (2400 Hr) 1125 End (2400 Hr) —

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1057	12	6.53	795	72.9	cloudy	light
1059	24	6.58	752	71.2	cloudy	light
1104	36	6.61	778	70.9	cloudy	light
1109	48	6.54	803	72.8	cloudy	light
1112	~~60~~ Well Recharge	Dried 6.89	at 55 gal 871	72.5	cloudy	mod
1122						

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

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

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

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

WELL INTEGRITY: good LOCK #: 3259

REMARKS: Well Dried out 55 gal at 1112 HRS

Meter Calibration: Date: 7-14-92 Time: 0900 Meter Serial #: 9111 Temperature °F: ___

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

Location of previous calibration: MW-1

Signature: Susan Rath Reviewed By: JB Page 2 of 7

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: G20-041.01 | SAMPLE ID: MW-3 (25')

PURGED BY: L.RATH | CLIENT NAME: ARCO 374

SAMPLED BY: L.RATH | LOCATION: 6407 telegraph hill Oak Ck

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

CASING DIAMETER (inches): 2 ___ | 3 ___ | 4 1 | 4.5 ___ | 6 ___ | Other ___

CASING ELEVATION (feet/MSL):	NR	VOLUME IN CASING (gal.):	12.58
DEPTH TO WATER (feet):	7.61	CALCULATED PURGE (gal.):	62.94
DEPTH OF WELL (feet):	26.80 / 19.19	ACTUAL PURGE VOL. (gal.):	33.00

DATE PURGED: 7-14-92 | Start (2400 Hr) 1244 | End (2400 Hr) 1255

DATE SAMPLED: 7-14-92 | Start (2400 Hr) 1305 | End (2400 Hr) —

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1248	12.50	5.77	1336	75.4	Cloudy	mod
1252	25.00	5.48	1342	74.3	Cloudy	mod
1255	~~37.50~~ Recharge	well Dried at 33 gal				
1305	50.00	5.78	1290	73.8	Brown	mod
	63.00					

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

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

PURGING EQUIPMENT		SAMPLING EQUIPMENT	
___ 2" Bladder Pump	___ Bailer (Teflon®)	___ 2" Bladder Pump	1 Bailer (Teflon®)
X Centrifugal Pump	___ Bailer (PVC)	___ DDL Sampler	___ Bailer (Stainless Steel)
___ Submersible Pump	___ Bailer (Stainless Steel)	___ Dipper	___ Submersible Pump
___ Well Wizard™	___ Dedicated	___ Well Wizard™	___ Dedicated
Other: ___		Other: ___	

WELL INTEGRITY: good | LOCK #: 3259

REMARKS: ___

Meter Calibration: Date: 7-14-92 Time: 0900 Meter Serial #: 911 Temperature °F: ___

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

Location of previous calibration: MW-1

Signature: Laura Rath | Reviewed By: JB | Page 3 of 7

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: 7020.04.01 | SAMPLE ID: mw-4 (25')

PURGED BY: L. RATH | CLIENT NAME: ARCO 374

SAMPLED BY: L. RATH | LOCATION: 6407 telegraph hill Oak. CA

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

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

CASING ELEVATION (feet/MSL): NR | VOLUME IN CASING (gal.): 12.07

DEPTH TO WATER (feet): 8.20 | CALCULATED PURGE (gal.): 60.35

DEPTH OF WELL (feet): 26.60 18.40 | ACTUAL PURGE VOL. (gal.): 42.00

DATE PURGED: 7-14-92 | Start (2400 Hr) 1155 | End (2400 Hr) 1210

DATE SAMPLED: 7-14-92 | Start (2400 Hr) 1220 | End (2400 Hr) —

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1157	12	5.71	1557	76.2	cloudy	light
1201	24	4.83	1584	71.3	cloudy	mod
1207	36	5.75	1436	69.7	Brown	mod
1210	~~48~~	well Pried at 42 gal				
1220	~~60~~ Recharge	5.80	1481	69.5	Brown	Heavy

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

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

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

WELL INTEGRITY: good | LOCK #: 3259

REMARKS: ___

Meter Calibration: Date: 7-14-92 Time: 0900 Meter Serial #: 9111 Temperature °F: ___

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

Location of previous calibration: mw-1

Signature: Steve Ruth | Reviewed By: JB | Page 4 of 7

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: G70-04.01 SAMPLE ID: MW-5 (22)

PURGED BY: L.RATH CLIENT NAME: ARCO 374

SAMPLED BY: L.RATH LOCATION: 6407 Telegraph Hill Oakland CA

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

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

CASING ELEVATION (feet/MSL): NR VOLUME IN CASING (gal.): 8.79

DEPTH TO WATER (feet): 9.69 CALCULATED PURGE (gal.): 43.98

DEPTH OF WELL (feet): 23.10 (13.41) ACTUAL PURGE VOL. (gal.): 29.00

DATE PURGED: 7-14-92 Start (2400 Hr) 1000 End (2400 Hr) 1018

DATE SAMPLED: 7-14-92 Start (2400 Hr) 1030 End (2400 Hr) —

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1008	9	6.00	795	69.1	cloudy	light
1011	18	6.14	835	67.7	Brown	mod
1014	27	6.40	8.45	67.6	Brown	mod
1018	~~36~~	well Dried at 29 gal				
1028	~~[illegible]~~ Recharge	6.48	9.01	67.4	Brown	mod

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

COLOR (COBALT 0 - 100): NR

TURBIDITY (NTU 0 - 200): NR

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

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

WELL INTEGRITY: Good LOCK #: 3259

REMARKS: well Dried at 29 gal at 1018 1425

Meter Calibration: Date: 7-14-92 Time: 0900 Meter Serial #: 914 Temperature °F: ___

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

Location of previous calibration: MW-1

Signature: [signature] Reviewed By: JB Page 5 of 7

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: G70 041 01 | SAMPLE ID: MW-6

PURGED BY: L. RATH | CLIENT NAME: ARCO 374

SAMPLED BY: L. RATH | LOCATION: 6407 telegraph hill Oak CA

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

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

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

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

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

DATE PURGED: 7-14-92 | Start (2400 Hr) ____ | End (2400 Hr) ____

DATE SAMPLED: ____ | Start (2400 Hr) ____ | End (2400 Hr) ____

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

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

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

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

WELL INTEGRITY: ____ LOCK #: ____

REMARKS: Unable to access well due to a gray Honda Auto parked on well. 1035 HRS. Unable to find owner of the car 1330 HRS

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

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

Location of previous calibration: ____

Signature: [signature] Reviewed By: JB Page 6 of 7

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: 670-04 01 | SAMPLE ID: MW-6 (13)

PURGED BY: L. RATH | CLIENT NAME: ARCO 374

SAMPLED BY: L. RATH | LOCATION: 6407 telegraph hill Oakland

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

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

CASING ELEVATION (feet/MSL): NR | VOLUME IN CASING (gal.): 5.61

DEPTH TO WATER (feet): 6.08 | CALCULATED PURGE (gal.): 28.07

DEPTH OF WELL (feet): 12.64 5.56 | ACTUAL PURGE VOL. (gal.): 18.00

DATE PURGED: 7-15-92 | Start (2400 Hr) 1345 | End (2400 Hr) 1355

DATE SAMPLED: 7-15-92 | Start (2400 Hr) 1405 | End (2400 Hr) ~

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1348	5.75	6.27	736	69.6	Brown	Mod
1351	11.50	6.45	710	69.3	Brown	Mod
1354	17.25	6.54	713	69.0	Brown	Heavy
1355	~~23.00~~	well	Dried at	18 gal		
1405	~~28.75~~ Recharge	6.60	718	68.8	Brown	Heavy

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

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

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

WELL INTEGRITY: good | LOCK #: 0464

REMARKS:

Meter Calibration: Date: 7-15-92 Time: 1330 Meter Serial #: 911 Temperature °F: 83.4

(EC 1000 1015 / 1000) (DI 564) (pH 7 5.13 / 7.00) (pH 10 1010 / 10.00) (pH 4 4.08 / ~)

Location of previous calibration: ___

Signature: [signature] | Reviewed By: JB | Page 7 of 7

1110321, L04

MONITORING WELL PURGE WATER TRANSPORT FORM

RECEIVED
OCT 3 2 1992
RESNA
SAN JOSE

GENERATOR INFORMATION

NAME: ARCO PRODUCTS

ADDRESS: P.O. BOX 5811

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

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

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

Kyle Christie by Jon Dolan 7-22-92
(Typed or printed full name & signature) (Date)

SITE INFORMATION

	STA #	JOB #	ADDRESS	GALS
1	A-276	20817-DW	10600 MACARTHUR BLVD., OAKLAND, CA	45
2	A-2169	20798-PW	889 WEST GRAND AVE., OAKLAND, CA	250
3	A-374	20793-PW	6407 TELEGRAPH AVE., OAKLAND, CA	151
4	A-515	20645-DW	300 SO. DELAWARE, SAN MATEO, CA	138
5	A-2164	20806-DW	5751 HILLSDALE BLVD., SACRAMENTO, CA	163
6	A-2119	20781-PW	13405 LINCOLN WAY, AUBURN, CA	318
7	A-5329	20783-PW	1139 DOUGLAS BLVD., ROSEVILLE, CA	185
8	A-4968	20782-PW	3501 FAIR OAKS BLVD., SACRAMENTO, CA	80
9				
10				
			TOTAL GALLONS:	1,330

TRANSPORTER INFORMATION

NAME: BALCH PETROLEUM

ADDRESS: 930 AMES AVE.

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

TRUCK ID #: ALLIED JERRY DRAKE 7-22-92
(Typed or printed full name & signature) (Date)

TSD FACILITY INFORMATION

NAME: GIBSON OIL & REFINING

ADDRESS: 475 SEAPORT BLVD

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

RELEASE #: 11320 BILL LEDW 7-22-92
(Typed or printed full name & signature) (Date)

GOR 1166