

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

LETTER REPORT
QUARTERLY GROUNDWATER MONITORING
First Quarter 1993
at
ARCO Station 374
6407 Telegraph Avenue
Oakland, California

60025.12

05/03/93

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

TRANSMITTAL

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

DATE: May 12, 1993
PROJECT NUMBER: 60025.12
SUBJECT: ARCO Station No. 374

FROM: Robert Campbell
Staff Geologist

WE ARE SENDING YOU:

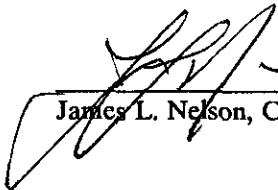
| COPIES | DATED | DESCRIPTION |
|--------|--------|--|
| 1 | 5/3/93 | Final First Quarter 1993 Groundwater Monitoring Report for ARCO Station No. 374, 6407 Telegraph Avenue, Oakland, California. |

THESE ARE TRANSMITTED as checked below:

- For review and comment Approved as submitted Resubmit ___ copies for approval
 As requested Approved as noted Submit ___ copies for distribution
 For approval Return for corrections Return ___ corrected prints
 For your files

REMARKS:

Copies: 1 to RESNA project file no. 60025.12


James L. Nelson, C.E.G. 1463

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

May 3, 1993
0503MWHE
60025.12

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

Subject: First Quarter 1993 Groundwater Monitoring Report for ARCO Station 374,
6407 Telegraph Avenue, Oakland, California.

Mr. Whelan:

As requested by ARCO Products Company (ARCO), RESNA Industries Inc. (RESNA) presents this letter report which summarizes the results of first quarter 1993 groundwater monitoring performed by ARCO's contractor, EMCON Associates (EMCON) of San Jose, California, at the above-referenced site. The objectives of this quarterly groundwater monitoring 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 underground gasoline-storage tanks (USTs) at the site. Field work and laboratory analyses of groundwater samples during this quarter was performed under the direction of EMCON and included measuring depths to groundwater, subjectively analyzing groundwater for the presence of petroleum product, collecting groundwater samples from the wells for laboratory analyses, and directing a State-certified laboratory to analyze the groundwater samples. Field procedures and acquisition of field data were performed under the direction of EMCON; warrant of their field data and evaluation of their field protocols is beyond RESNA's scope of work. RESNA's scope of work was limited to 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.

Quarterly Groundwater Monitoring
ARCO Station 374, Oakland, California

May 3, 1993
60025.12

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

Groundwater Sampling and Gradient Evaluation

Depth-to-water levels (DTW) were measured by EMCON field personnel on January 21, February 22, and March 25, 1993. Quarterly sampling was performed by EMCON field personnel on January 21, 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 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 this and 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 January, February, and March 1993 are shown on the *Groundwater Gradient Maps, Plates 3 through 5*. The average interpreted groundwater gradient is approximately 0.04 ft/ft with an average flow direction toward the southwest. The averaged groundwater gradient and flow direction this quarter are generally consistent with those previously interpreted.

Groundwater monitoring wells MW-1 through MW-6 were purged and sampled by EMCON field personnel on January 21, 1993. 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 Transport 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/California DHS LUFT Method. Monitoring well MW-4 was also

Quarterly Groundwater Monitoring
ARCO Station 374, Oakland, California

May 3, 1993
60025.12

analyzed for TPH as diesel using EPA Method 3510/California DHS LUFT Method. Concentrations of TPHg and benzene in the groundwater are shown on Plate 6, TPHg Concentrations in Groundwater, and Plate 7, Benzene Concentrations in Groundwater. 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 also 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 last quarterly monitoring: reported concentrations of TPHg and BTEX have remained nondetectable in onsite well MW-1, and 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 decreased 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

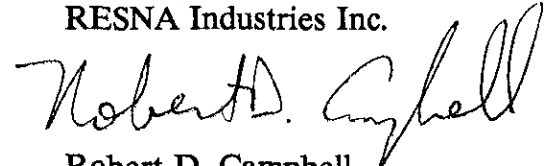
Mr. Richard Hiatt
Regional Water Quality Control Board
San Francisco Bay Region
2101 Webster Street, Suite 500
Oakland, California 94612

Quarterly Groundwater Monitoring
ARCO Station 374, Oakland, California

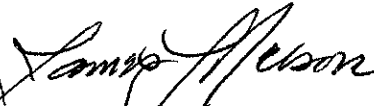
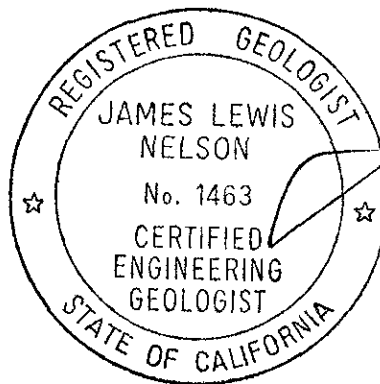
May 3, 1993
60025.12

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

Sincerely,
RESNA Industries Inc.



Robert D. Campbell
Staff Geologist



James L. Nelson
Certified Engineering
Geologist No. 1463

Attachments: References

- Plate 1, Site Vicinity Map
- Plate 2, Generalized Site Plan
- Plate 3, Groundwater Gradient Map, January 21, 1993
- Plate 4, Groundwater Gradient Map, February 22, 1993
- Plate 5, Groundwater Gradient Map, March 25, 1993
- Plate 6, TPHg Concentrations In Groundwater, January 21, 1993
- Plate 7, Benzene Concentrations In Groundwater, January 21, 1993

- 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

Quarterly Groundwater Monitoring
ARCO Station 374, Oakland, California

May 3, 1993
60025.12

REFERENCES

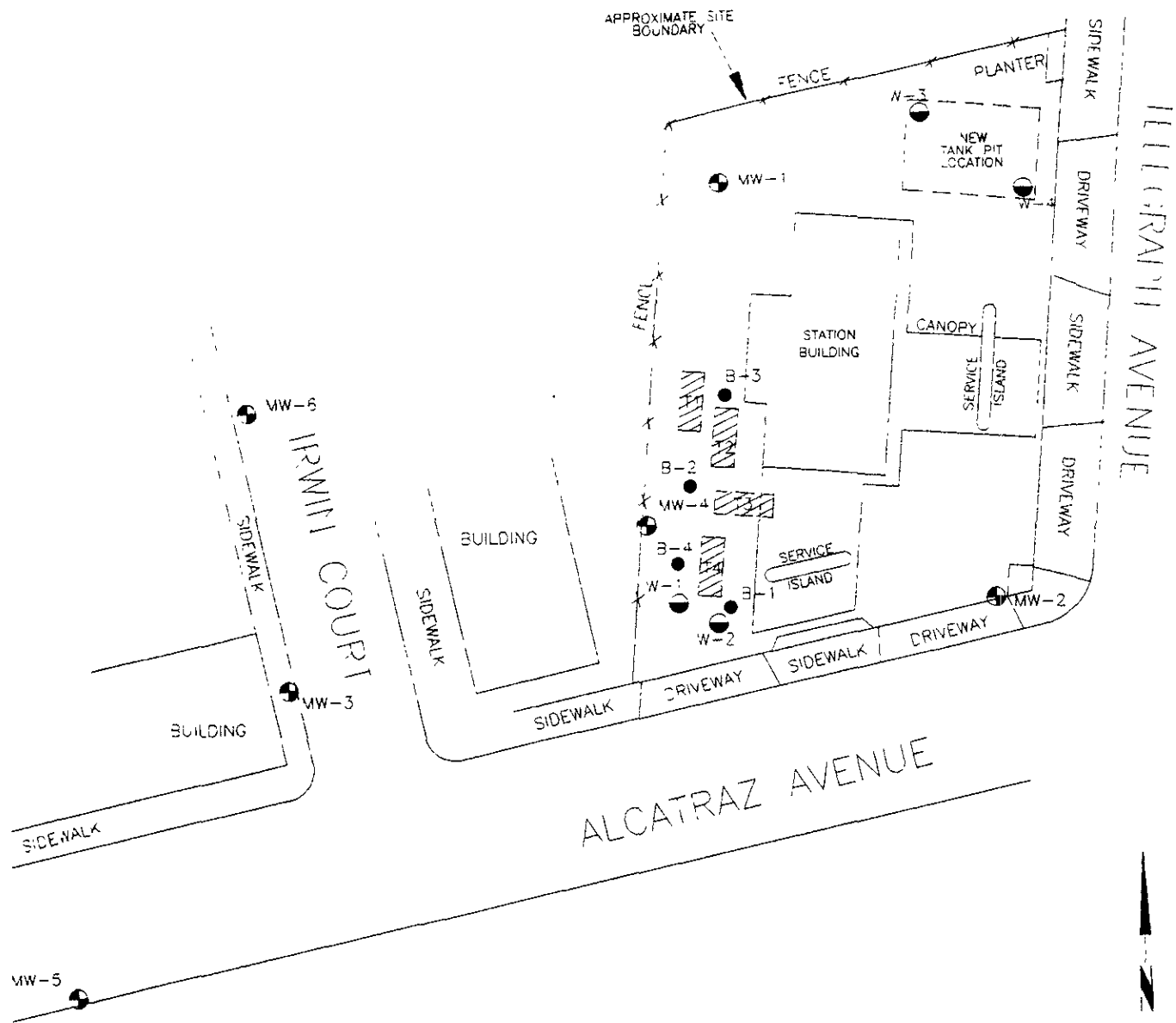
- Applied GeoSystems. June 15, 1988. Limited Environmental Site Assessment at ARCO Service Station No. 374, Telegraph Avenue and Alcatraz Avenue, Oakland, California. Job 18039-1.
- Applied GeoSystems. August 1, 1988. Report Environmental Investigation Related to Underground Tank Removal at ARCO Service 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.

Quarterly Groundwater Monitoring
ARCO Station 374, Oakland, California


May 3, 1993
60025.12

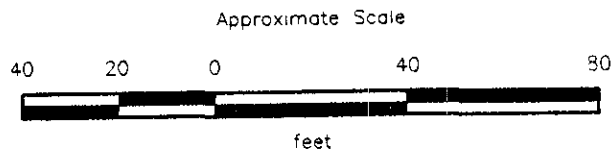
REFERENCES
(continued)

- 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. December 18, 1992. Letter Report, Quarterly Groundwater Monitoring Third 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.
- RESNA. January 15, 1993. Letter Report, Quarterly Groundwater Monitoring Fourth Quarter 1992 at ARCO Station 374, 6407 Telegraph Avenue, Oakland, California. RESNA Report 60025.10.



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



Source: Surveyed by John Koch, Licensed Land Surveyor

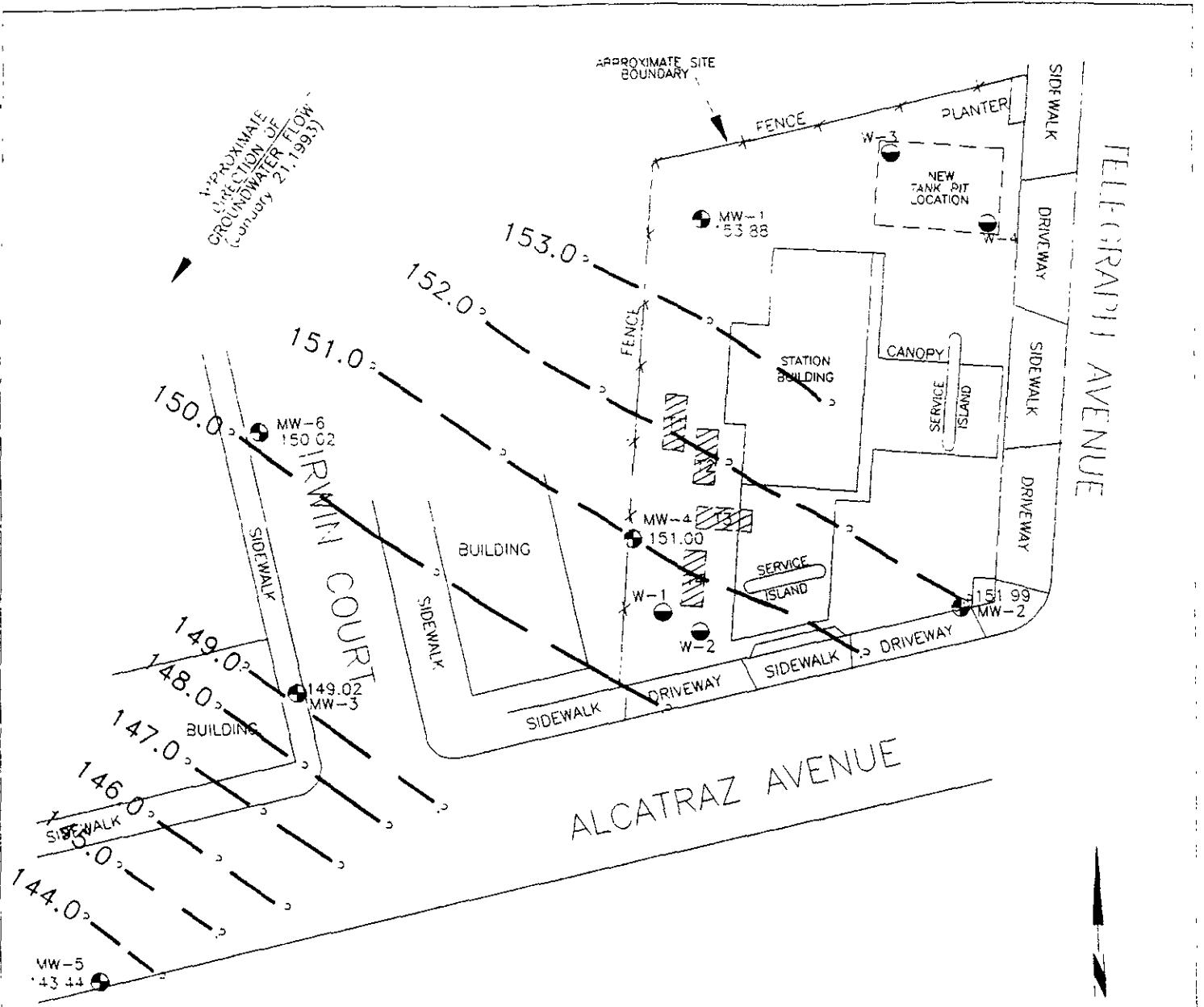
RESNA
Working to Restore Nature

PROJECT 60025.12

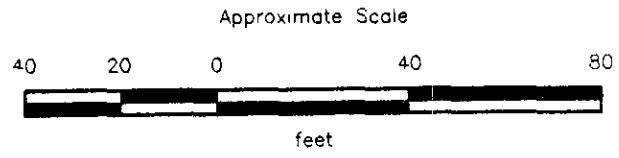
60025-12

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

PLATE
2



- 153.0 = Line of equal elevation of groundwater n feet above mean sea level (MSL)
- 153.88 = Elevation of groundwater in feet above MSL January 21, 1993
- MW-6 = Monitoring well (RESNA, July 1989, and April 1992)
- MW-4 = Tank pit monitoring well (RESNA, 1988)
- = Former underground storage tanks



Source: Surveyed by John Koch, Licensed Land Surveyor

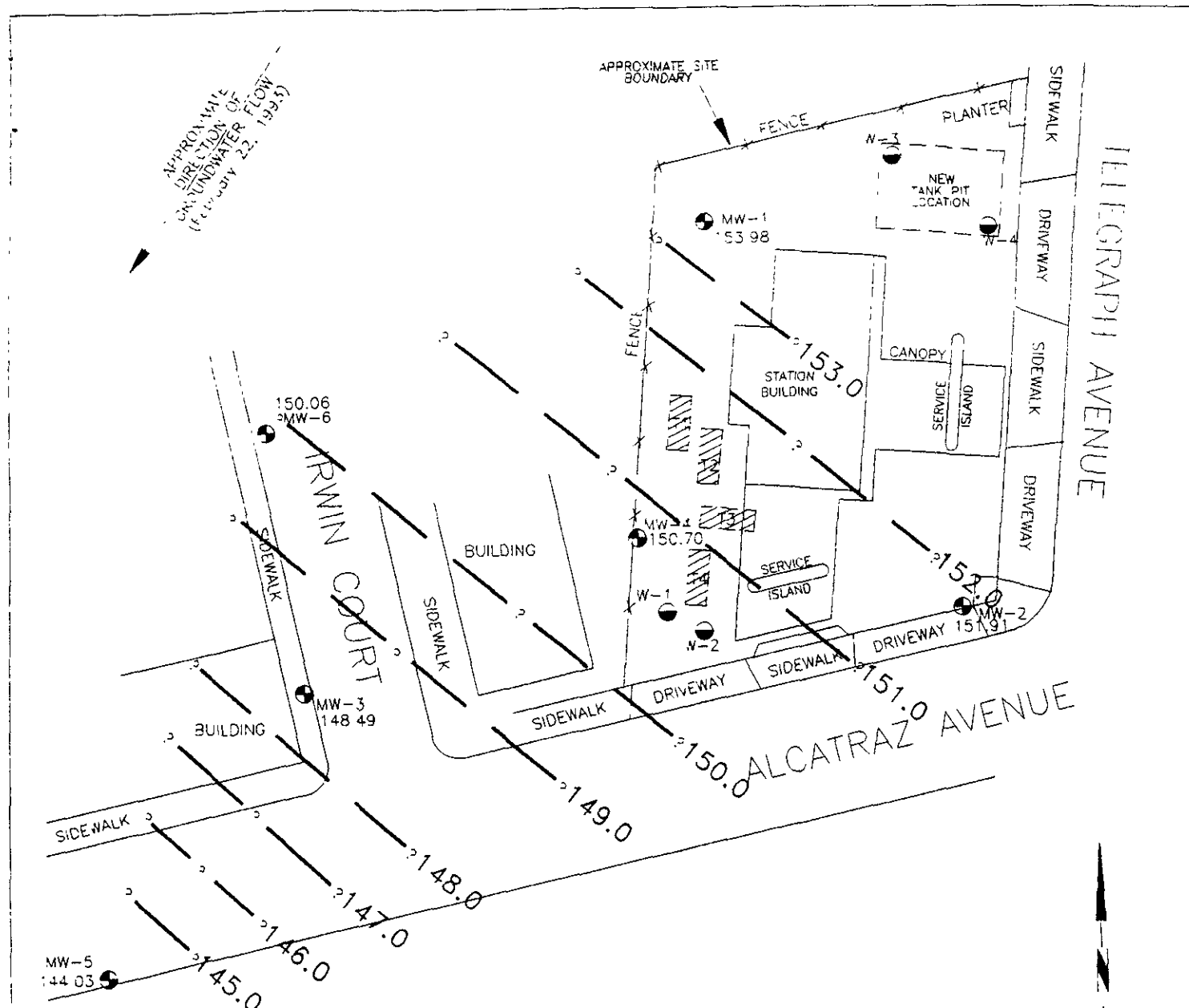
RESNA
Working to Restore Nature

PROJECT 60025.12

60025-12

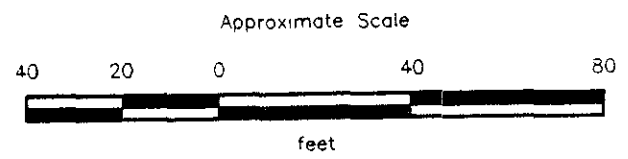
GROUNDWATER GRADIENT MAP
ARCO Station 374
6407 Telegraph Avenue
Oakland, California

PLATE
3



EXPLANATION

- 153.0 = Line of equal elevation of groundwater in feet above mean sea level (MSL)
- 53.98 = Elevation of groundwater in feet above MSL February 22, 1993
- MW-6 = Monitoring well (RESNA, July 1989, and April 1992)
- W-4 = Tank pit monitoring well (RESNA, 1988)
- [Hatched Box] = Former underground storage tanks



Source: Surveyed by John Koch, Licensed Land Surveyor

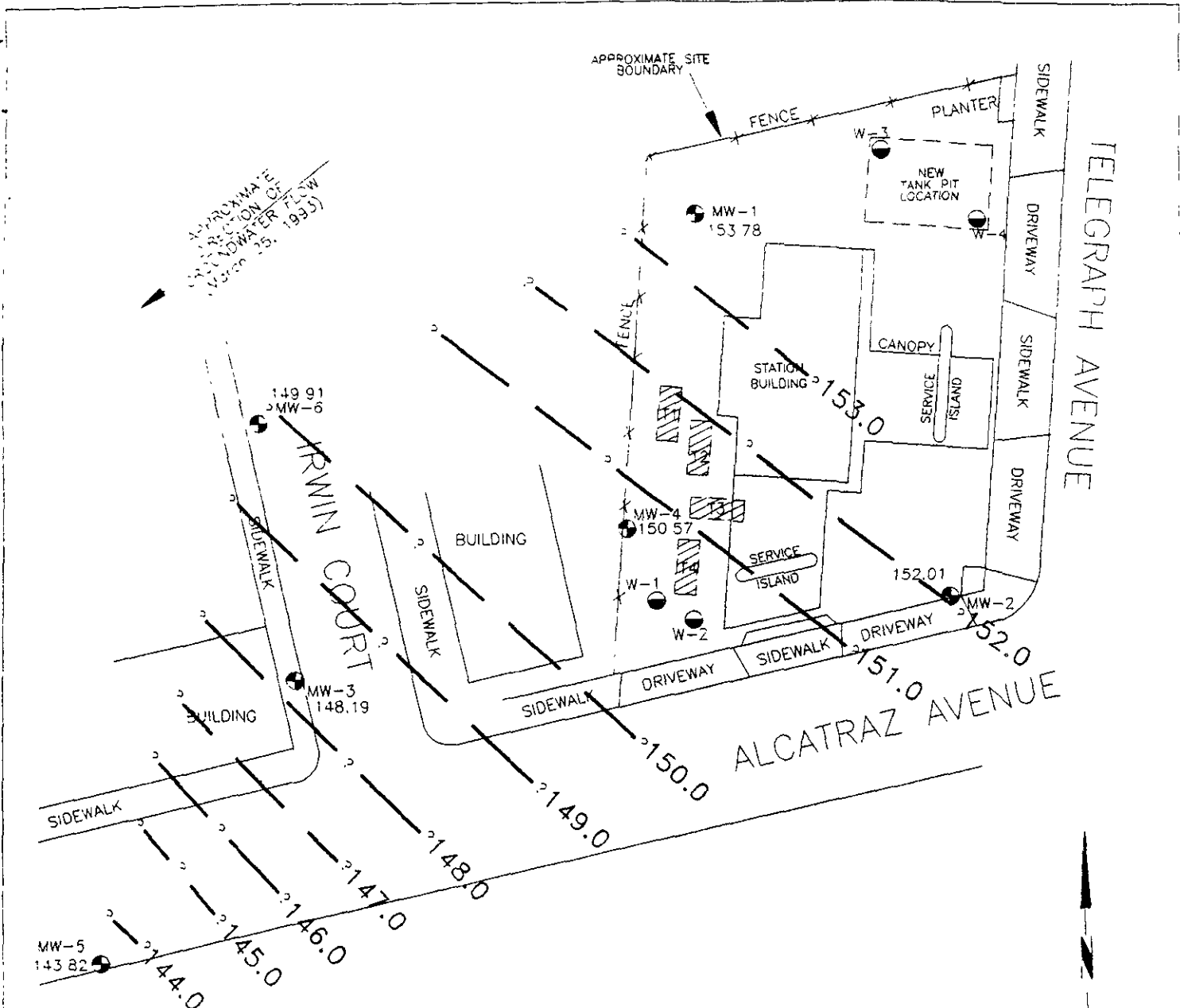
RESNA
Working to Restore Nature

PROJECT 60025.12

60025-12

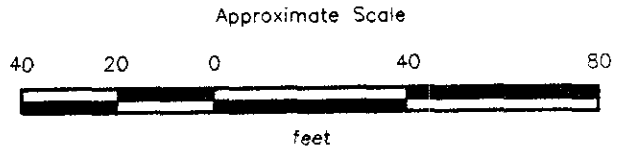
GROUNDWATER GRADIENT MAP
ARCO Station 374
6407 Telegraph Avenue
Oakland, California

PLATE
4



EXPLANATION

- 153.0 = Line of equal elevation of groundwater in feet above mean sea level (MSL)
- 153.78 = Elevation of groundwater in feet above MSL March 25, 1993
- MW-6 = Monitoring well (RESNA, July 1989, and April 1992)
- W-4 = Tank pit monitoring well (RESNA, 1988)
- = Former underground storage tanks



Source: Surveyed by John Koch, Licensed Land Surveyor.

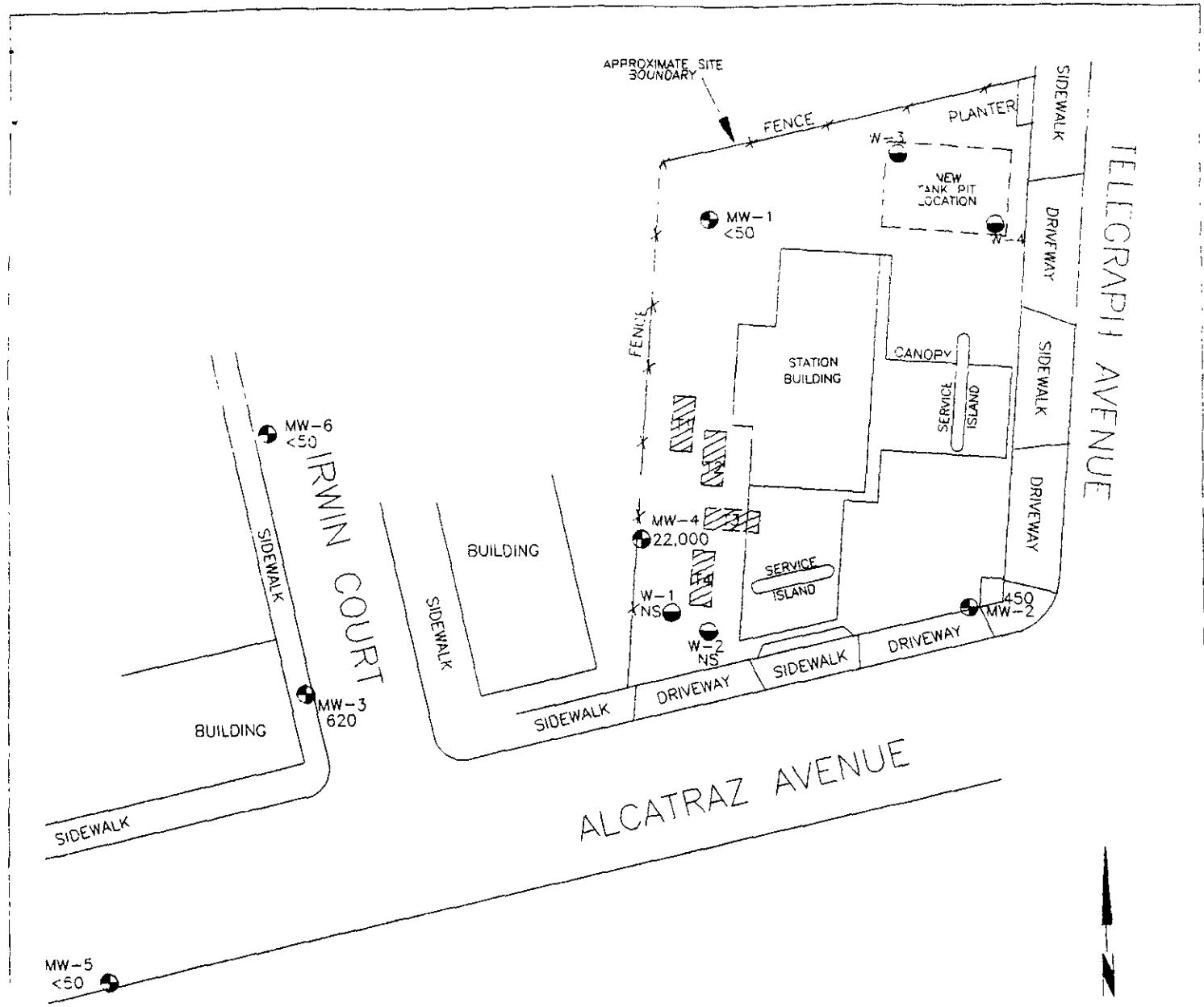
RESNA
Working to Restore Nature

PROJECT 60025.12


60025-12

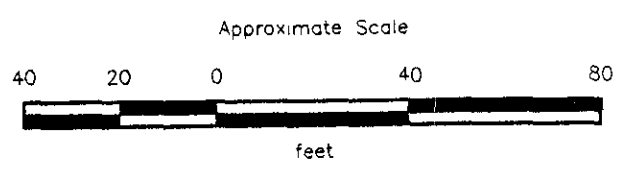
GROUNDWATER GRADIENT MAP
ARCO Station 374
6407 Telegraph Avenue
Oakland, California

PLATE
5




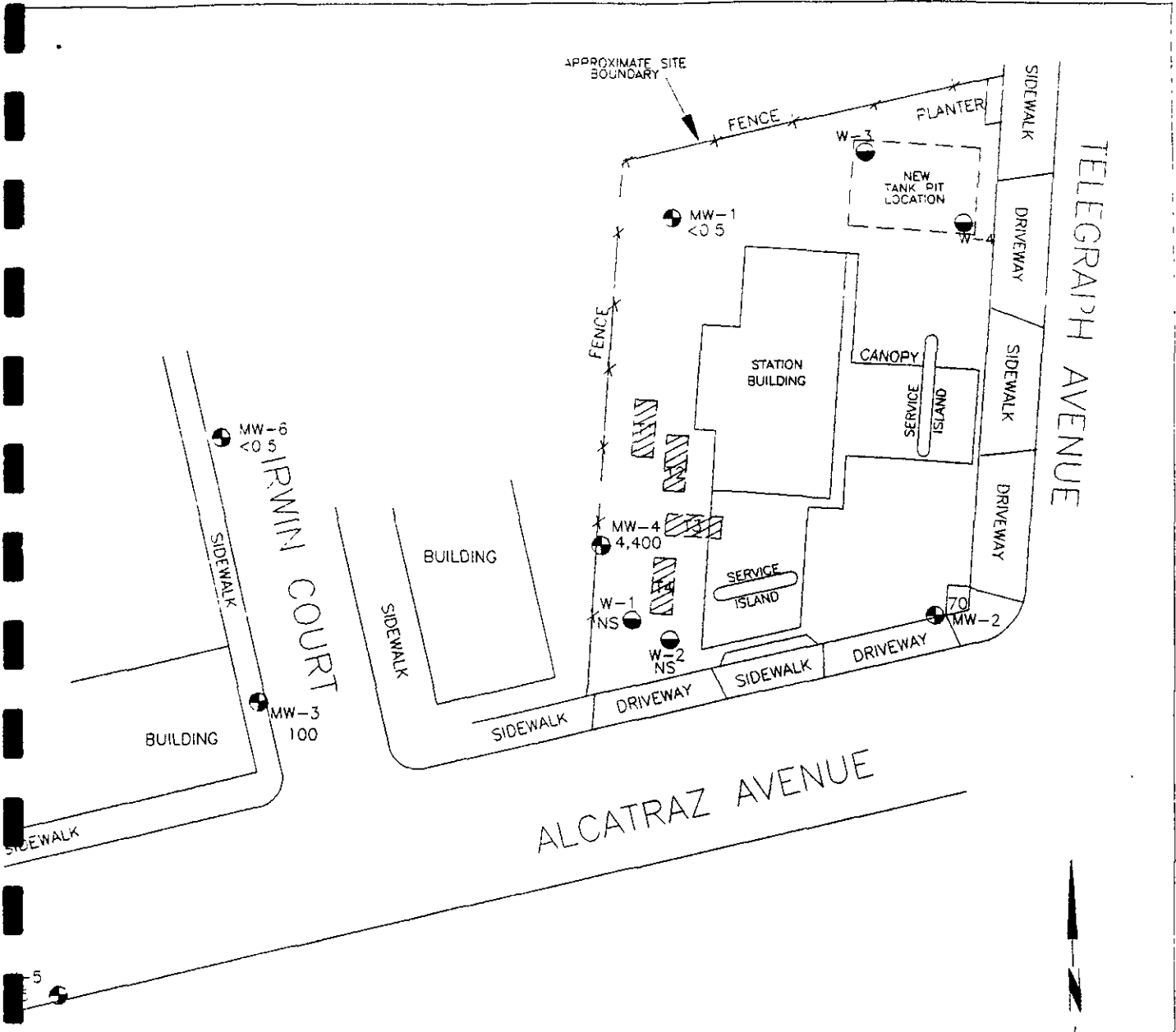
EXPLANATION

- 22,000 = Concentration of TPHg in groundwater in parts per billion, January 21, 1993
- MW-6 ● = Monitoring well (RESNA, July 1989, and April 1992)
- W-4 ● = Tank pit monitoring well (RESNA, 1988)
-  = Former underground storage tanks
- NS = Not sampled, tank pit well



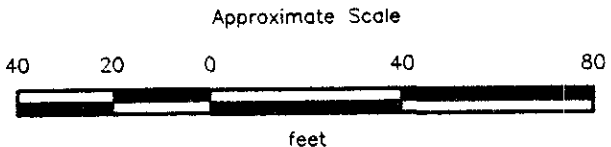
Source: Surveyed by John Koch, Licensed Land Surveyor.

| | | |
|---|---|---------------------------|
|  <p>RESNA Working to Restore Nature</p> | <p>TPHg CONCENTRATIONS IN GROUNDWATER ARCO Station 374 6407 Telegraph Avenue Oakland, California</p> | <p>PLATE 6</p> |
| <p>PROJECT 60025.12</p> <p style="font-size: small;">60025-12</p> | | |



EXPLANATION

- 4,400 = Concentration of benzene in groundwater in parts per billion, January 21, 1993
- MW-6 = Monitoring well (RESNA, July 1989, and April 1992)
- W-4 = Tank pit monitoring well (RESNA, 1988)
- = Former underground storage tanks
- NS = Not sampled, tank pit well



Source: Surveyed by John Koch, Licensed Land Surveyor.

Quarterly Groundwater Monitoring
ARCO Station 374, Oakland, California

May 3, 1993
60025.12

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 |
|--------------------|----------------|----------------|-----------------|------------------|
| <u>MW-1</u> | | | | |
| 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 |
| 10/12/92 | | 7.13 | 151.78 | None |
| 11/23/92 | | 7.24 | 151.67 | None |
| 12/16/92 | | 6.44 | 152.47 | None |
| 01/21/93 | | 5.03 | 153.88 | None |
| 02/22/93 | | 4.93 | 153.98 | None |
| 03/25/93 | | 5.13 | 153.78 | None |
| <u>MW-2</u> | | | | |
| 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 |

See notes on page 4 of 4

Quarterly Groundwater Monitoring
ARCO Station 374, Oakland, California

May 3, 1993
60025.12

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 |
|---------------------|----------------|----------------|-----------------|------------------|
| <u>MW-2 (Cont.)</u> | | | | |
| 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 |
| 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 |
| 10/12/92 | | 6.80 | 151.12 | None |
| 11/23/92 | | 7.15 | 150.77 | None |
| 12/16/92 | | 6.66 | 151.26 | None |
| 01/21/93 | | 5.93 | 151.99 | None |
| 02/22/93 | | 6.01 | 151.91 | None |
| 03/25/93 | | 5.91 | 152.01 | None |
| <u>MW-3</u> | | | | |
| 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 |

See notes on page 4 of 4

Quarterly Groundwater Monitoring
ARCO Station 374, Oakland, California

May 3, 1993
60025.12

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 |
|---------------------|----------------|----------------|-----------------|------------------|
| <u>MW-3 (Cont.)</u> | | | | |
| 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 |
| 07/14/92 | | 7.60 | 146.04 | None |
| 08/07/92 | | 7.85 | 145.79 | None |
| 09/22/92 | | 7.73 | 145.91 | None |
| 10/12/92 | | 7.83 | 145.81 | None |
| 11/23/92 | | 6.98 | 146.66 | None |
| 12/16/92 | | 5.96 | 147.68 | None |
| 01/21/93 | | 4.62 | 149.02 | None |
| 02/22/93 | | 5.15 | 148.49 | None |
| 03/25/93 | | 5.45 | 148.19 | None |
| <u>MW-4</u> | | | | |
| 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 |

See notes on page 4 of 4

Quarterly Groundwater Monitoring
ARCO Station 374, Oakland, California

May 3, 1993
60025.12

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 |
|---------------------|----------------|----------------|-------------------|------------------|
| <u>MW-4 (Cont.)</u> | | | | |
| 08/07/92 | | 8.41 | 148.12 | None |
| 09/22/92 | | 6.14 | 150.39 | None |
| 10/12/92 | | 6.45 | 150.08 | None |
| 11/23/92 | | 7.48 | 149.05 | None |
| 12/16/92 | | 6.95 | 149.58 | None |
| 01/21/93 | | 5.53 | 151.00 | None |
| 02/22/93 | | 5.83 | 150.70 | None |
| 03/25/93 | | 5.96 | 150.57 | None |
| <u>MW-5</u> | | | | |
| 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 |
| 10/25/92# | | 9.24 | 142.09 | None |
| 11/23/92 | | | Well Inaccessible | |
| 12/16/92 | | 8.20 | 143.13 | None |
| 01/21/93 | | 7.89 | 143.44 | None |
| 02/22/93 | | 7.29 | 144.03 | None |
| 03/25/93 | | 7.51 | 143.82 | None |
| <u>MW-6</u> | | | | |
| 04/15/92 | 153.84** | 4.55 | 149.29 | None |
| 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 |
| 10/25/92# | | 6.54 | 147.30 | None |
| 11/23/92 | | 5.75 | 148.09 | None |
| 12/16/92 | | 4.69 | 149.15 | None |
| 01/21/93 | | 3.82 | 150.02 | None |
| 02/22/93 | | 3.78 | 150.06 | None |
| 03/25/93 | | 3.93 | 149.91 | 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).

= Wells inaccessible on 10/12/92 due to parked cars. EMCON returned and sampled on 10/25/92.

Quarterly Groundwater Monitoring
ARCO Station 374, Oakland, California

May 3, 1993
60025.12

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 |
|-------------|-------|------|-------|-------|-------|-------|--------|
| <u>MW-1</u> | | | | | | | |
| 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 |
| 10/12/92 | <50 | NA | <0.5 | <0.5 | <0.5 | <0.5 | NA |
| 01/21/93 | <50 | NA | <0.5 | <0.5 | <0.5 | <0.5 | NA |
| <u>MW-2</u> | | | | | | | |
| 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 |
| 10/12/92 | 230 | NA | 59 | 7.0 | 5.5 | 11 | NA |
| 01/21/93 | 450 | NA | 70 | 6.6 | 22 | 54 | NA |
| <u>MW-3</u> | | | | | | | |
| 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 |

See notes on page 3 of 3.

Quarterly Groundwater Monitoring
ARCO Station 374, Oakland, California

May 3, 1993
60025.12

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 |
|------------------|---------------------------|--------|-------|-------|------|-------|--------|
| <u>MW-3 cont</u> | | | | | | | |
| 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 |
| 10/12/92 | 850 | NA | 150 | 5.2 | 55 | 46 | NA |
| 01/21/93 | 620 | NA | 100 | 12 | 35 | 35 | NA |
| <u>MW-4</u> | | | | | | | |
| 07/21/89 | 8,700 | NA | 720 | 360 | 120 | 640 | NA |
| 08/30/89 | 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 |
| 10/12/92 | 19,000 | 690* | 5,200 | 1,600 | 490 | 1,800 | NA |
| 01/21/93 | 22,000 | 1,400* | 4,400 | 1,300 | 580 | 2,200 | NA |
| <u>MW-5</u> | | | | | | | |
| 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 |
| 10/25/92 | <50 | NA | <0.5 | <0.5 | <0.5 | <0.5 | NA |
| 01/21/93 | <50 | NA | <0.5 | <0.5 | <0.5 | <0.5 | NA |
| <u>MW-6</u> | | | | | | | |
| 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 |
| 10/25/92 | <50 | NA | <0.5 | <0.5 | <0.5 | <0.5 | NA |
| 01/21/93 | <50 | NA | <0.5 | <0.5 | <0.5 | <0.5 | NA |
| MCL: | — | — | 1 | — | 680 | 1,750 | — |
| DWAL: | — | — | — | 100 | — | — | — |

See notes on page 3 of 3.

Quarterly Groundwater Monitoring
ARCO Station 374, Oakland, California

May 3, 1993
60025.12

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

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

TPHg: Total petroleum hydrocarbons as gasoline using EPA method 5030/8015.

TPHd: Total petroleum hydrocarbons as diesel using EPA method 3510/8015.

BTEX: B: Benzene, T: Toluene, E: Ethylbenzene, X: Total Xylene isomers; measured using EPA method 8020/602.

TOG: Total oil and grease measured using Standard Method 5520 B/F.

<: Results reported as less than the detection limit.

NA: Not analyzed

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

FB-1: Field blank.

MCL: State Maximum Contaminant Level (October 1990).

DWAL: State recommended Drinking Water Action Level (October 1990).

Quarterly Groundwater Monitoring
ARCO Station 374, Oakland, California

May 3, 1993
60025.12

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) |
|-------------|--|-------------|-------------|-------------|-------------|-------------|
| <u>MW-4</u> | | | | | | |
| 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 |
| 10/12/92 | NA | NA | NA | NA | NA | NA |
| 01/21/93 | 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**

60025.12



EMCON
ASSOCIATES

Consultants in Wastes
Management and
Environmental Control

FEB 11 1993

Date February 11, 1993
Project OG70-004.01

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 first quarter 1993 monitoring event at ARCO service station 374, 6407 Telegraph Avenue, Oakland, CA. Groundwater monitoring is conducted consistent with applicable regulatory guidelines. Please call if you have any questions: (408) 453-2266.

Reviewed by:



Jim Butera *JB*

Robert Porter
Robert Porter, Senior Project Engineer.



FIELD REPORT
DEPTH TO WATER / FLOATING PRODUCT SURVEY

PROJECT # : OG70-004.01

STATION ADDRESS : 6407 Telegraph Hill, Oakland, CA

DATE : 1-21-93

ARCO STATION # : 374

FIELD TECHNICIAN : Madden

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-5 | OK | Yes | OK | 3259 | OK | 7.89 7.82 | 7.89 7.82 | ND | ND | 14.623.1 | — |
| 2 | MW-6 | OK | Yes | OK | 0464 | OK | 3.82 | 3.82 | ND | ND | 14.6 | — |
| 3 | MW-1 | OK | Yes | OK | 3259 | OK | 5.03 | 5.03 | ND | ND | 26.8 | — |
| 4 | MW-2 | OK | Yes | OK | 3259 | OK | 5.93 | 5.93 | ND | ND | 26.4 | lid missing one bolt |
| 5 | MW-3 | OK | Yes | OK | 3259 | OK | 4.62 | 4.62 | ND | ND | 26.8 | — |
| 6 | MW-4 | OK | No | OK | 3259 | OK | 5.53 | 5.53 | ND | ND | 26.6 | lid broken bolts missing |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

WELL SURVEY POINTS ARE TOP OF CASING

Summary of Groundwater Monitoring Data
 First Quarter 1993
 ARCO Service Station 374
 6407 Telegraph Hill, 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) | TPH as Diesel (ppb) |
|-----------------------------------|------------------|--------------------------------|--|---|------------------|------------------|----------------------------|---------------------------|------------------------------|
| MW-1(25) | 01/21/93 | 5.03 | ND. ² | <50 | <0.5 | <0.5 | <0.5 | 0.5 | NR. ³ |
| MW-2(25) | 01/21/93 | 5.93 | ND. | 450. | 70. | 6.6 | 22. | 54. | NR. |
| MW-3(25) | 01/21/93 | 4.62 | ND. | 620. | 100. | 12. | 35. | 35. | NR. |
| MW-4(25) | 01/21/93 | 5.53 | ND. | 22,000. | 4,400. | 1,300. | 580. | 2,200. | 1,400. |
| MW-5(23) | 01/21/93 | 7.89 | ND. | <50 | <0.5 | <0.5 | <0.5 | <0.5 | NR. |
| MW-6(14) | 01/21/93 | 3.82 | ND. | <50 | <0.5 | <0.5 | <0.5 | <0.5 | NR. |
| FB-1 ⁴ | 01/21/93 | NA. ⁵ | NA. | <50 | <0.5 | <0.5 | <0.5 | <0.5 | NR. |

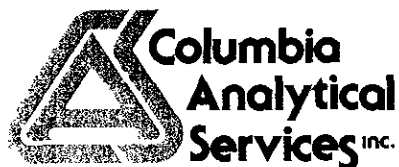
1. TPH. = Total petroleum hydrocarbons

2. ND. = Not detected

3. NR. = Not reported, well was not scheduled for sample of the above parameter

4. FB. = Field blank

5. NA. = Not applicable



February 3, 1993

Service Request No. SJ93-0087

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

Re: **EMCON Project No. 0G70-004.01**
ARCO Facility No. 374

Dear Mr. Butera:


Attached are the results of the water samples submitted to our lab on January 21, 1993. For your reference, these analyses have been assigned our service request number SJ93-0087.


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. 0G70-004.01
ARCO Facility No. 374
Sample Matrix: Water

Date Received: 01/21/93
Date Extracted: 01/25/93
Date Analyzed: 01/27/93
Service Request No.: SJ93-0087

Total Petroleum Hydrocarbons as Diesel
EPA Method 3510/California DHS LUFT Method
 $\mu\text{g/L}$ (ppb)

| <u>Sample Name</u> | <u>MRL</u> | <u>TPH as Diesel</u> |
|--------------------|------------|----------------------|
| MW-4 (25) | 50 | 1,400. * |
| Method Blank | 50 | ND |

MRL Method Reporting Limit

ND None Detected at or above the method reporting limit

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

Approved by: Kevin Murphy

Date: February 3, 1993

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON Associates
Project: EMCON Project No. 0G70-004.01
ARCO Facility No. 374

Date Received: 01/21/93
Service Request No.: SJ93-0087
Sample Matrix: Water

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

Sample Name: MW-1 (25) MW-2 (25) MW-3 (25)
Date Analyzed: 01/28/93 01/28/93 01/27/93

| <u>Analyte</u> | <u>MRL</u> | | | |
|-----------------|------------|----|------|------|
| Benzene | 0.5 | ND | 70. | 100. |
| Toluene | 0.5 | ND | 6.6 | 12. |
| Ethylbenzene | 0.5 | ND | 22. | 35. |
| Total Xylenes | 0.5 | ND | 54. | 35. |
| TPH as Gasoline | 50 | ND | 450. | 620. |

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

Approved by: *Kenneth Murphy* Date: February 3, 1993

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON Associates
Project: EMCON Project No. OG70-004.01
ARCO Facility No. 374

Date Received: 01/21/93
Service Request No.: SJ93-0087
Sample Matrix: Water

BTEX and TPH as Gasoline
EPA Methods 5030/8020/California DHS LUFT Method
 $\mu\text{g/L}$ (ppb)

Sample Name: MW-4 (25) MW-5 (23) MW-6 (14)
Date Analyzed: 01/27/93 01/27/93 01/27/93

| <u>Analyte</u> | <u>MRL</u> | | | |
|-----------------|------------|---------|----|----|
| Benzene | 0.5 | 4,400. | ND | ND |
| Toluene | 0.5 | 1,300. | ND | ND |
| Ethylbenzene | 0.5 | 580. | ND | ND |
| Total Xylenes | 0.5 | 2,200. | ND | ND |
| TPH as Gasoline | 50 | 22,000. | ND | ND |

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

Approved by: *Kevin Murphy* Date: February 3, 1993

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON Associates
Project: EMCON Project No. 0G70-004.01
ARCO Facility No. 374

Date Received: 01/21/93
Service Request No.: SJ93-0087
Sample Matrix: Water

BTEX and TPH as Gasoline
EPA Methods 5030/8020/California DHS LUFT Method
 $\mu\text{g/L}$ (ppb)

Sample Name: FB-1 Method Blank Method Blank
Date Analyzed: 01/27/93 01/27/93 01/28/93

| <u>Analyte</u> | <u>MRL</u> | | | |
|-----------------|------------|----|----|----|
| Benzene | 0.5 | ND | ND | ND |
| Toluene | 0.5 | ND | ND | ND |
| Ethylbenzene | 0.5 | ND | ND | ND |
| Total Xylenes | 0.5 | ND | ND | ND |
| TPH as Gasoline | 50 | ND | ND | ND |

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

Approved by: *K. O. Murphy* Date: February 3, 1993

APPENDIX A
LABORATORY QC RESULTS

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON Associates
Project: EMCON Project No. 0G70-004.01
ARCO Facility No. 374

Date Received: 01/21/93
Service Request No.: SJ93-0087
Sample Matrix: Water

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

Date Analyzed: 01/27/93

| <u>Analyte</u> | <u>True Value</u> | <u>Result</u> | <u>Percent Recovery</u> | <u>CAS Percent Recovery Acceptance Criteria</u> |
|----------------|-------------------|---------------|-------------------------|---|
| TPH as Diesel | 1,000. | 1,018. | 102. | 90-110 |

TPH Total Petroleum Hydrocarbons

Approved by: _____

Kevin Murphy

Date: _____

February 3, 1993

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON Associates
Project: EMCON Project No. OG70-004.01
Arco Facility No. 374

Date Received: 01/21/93
Service Request No.: SJ93-0087
Sample Matrix: Water

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

| <u>Sample Name</u> | <u>Date Analyzed</u> | <u>Percent Recovery</u> <i>p</i> -Terphenyl |
|--------------------|----------------------|--|
| MW-4 (25) | 01/27/93 | 85. |
| MS | 01/27/93 | 83. |
| DMS | 01/27/93 | 85. |
| Method Blank | 01/27/93 | 98. |

CAS Acceptance Criteria 46-133

Approved by: *Adrian Murphy* Date: February 3, 1993

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON Associates
 Project: EMCON Project No. 0G70-004.01
 ARCO Facility No. 374

Date Received: 01/21/93
 Service Request No.: SJ93-0087
 Sample Matrix: Water

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

Date Analyzed: 01/27/93

| <u>Parameter</u> | <u>Spike Level</u> | <u>Sample Result</u> | <u>Spike Result</u> | | <u>Percent Recovery</u> | | <u>Acceptance Criteria</u> |
|------------------|--------------------|----------------------|---------------------|------------|-------------------------|------------|----------------------------|
| | | | <u>MS</u> | <u>DMS</u> | <u>MS</u> | <u>DMS</u> | |
| Diesel | 4,000. | ND | 3,620. | 3,730. | 91. | 93. | 61-121 |

ND None Detected at or above the method reporting limit

Approved by: *Kednut Murphy* Date: *FEBRUARY 3, 1993*

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON Associates
 Project: EMCON Project No. 0G70-004.01
 ARCO Facility No. 374

Date Received: 01/21/93
 Service Request No.: SJ93-0087

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

Date Analyzed: 01/27/93

| <u>Analyte</u> | <u>True Value</u> | <u>Result</u> | <u>Percent Recovery</u> | <u>CAS Percent Recovery Acceptance Criteria</u> |
|-----------------|-------------------|---------------|-------------------------|---|
| Benzene | 250. | 256. | 102. | 85-115 |
| Toluene | 250. | 267. | 107. | 85-115 |
| Ethylbenzene | 250. | 260. | 104. | 85-115 |
| Total Xylenes | 750. | 769. | 102. | 85-115 |
| TPH as Gasoline | 2,500. | 2,490. | 100. | 90-110 |

Date Analyzed: 01/28/93

| <u>Analyte</u> | <u>True Value</u> | <u>Result</u> | <u>Percent Recovery</u> | <u>CAS Percent Recovery Acceptance Criteria</u> |
|-----------------|-------------------|---------------|-------------------------|---|
| Benzene | 250. | 260. | 104. | 85-115 |
| Toluene | 250. | 269. | 108. | 85-115 |
| Ethylbenzene | 250. | 261. | 104. | 85-115 |
| Total Xylenes | 750. | 768. | 102. | 85-115 |
| TPH as Gasoline | 2,500. | 2,453. | 98. | 90-110 |

TPH Total Petroleum Hydrocarbons

Approved by: *Kevin Murphy*

Date: February 3, 1993

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON Associates
Project: EMCON Project No. 0G70-004.01
ARCO Facility No. 374

Date Received: 01/21/93
Service Request No.: SJ93-0087
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>α,α,α-Trifluorotoluene</i> |
|--------------------|----------------------|--|
| MW-1 (25) | 01/28/93 | 86. |
| MW-2 (25) | 01/28/93 | 89. |
| MW-3 (25) | 01/27/93 | 95. |
| MW-4 (25) | 01/27/93 | 95. |
| MW-5 (23) | 01/27/93 | 91. |
| MW-6 (14) | 01/27/93 | 89. |
| FB-1 | 01/27/93 | 91. |
| MW-3 (25) MS | 01/27/93 | 103. |
| MW-3 (25) DMS | 01/27/93 | 99. |
| Method Blank | 01/27/93 | 93. |
| Method Blank | 01/28/93 | 95. |

CAS Acceptance Criteria 70-130

TPH Total Petroleum Hydrocarbons

Approved by: *Kenneth Murphy* Date: *February 3, 1993*

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON Associates
Project: EMCON Project No. OG70-004.01
ARCO Facility No. 374

Date Received: 01/21/93
Service Request No.: SJ93-0087
Sample Matrix: Water

Matrix Spike/Duplicate Matrix Spike Summary
Total Petroleum Hydrocarbons as Gasoline
EPA Methods 5030/California DHS LUFT Method
 $\mu\text{g/L}$ (ppb)

Sample Name: MW-3 (25)
Date Analyzed: 01/27/93

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 | 1,250. | 623. | 1,920. | 1,690. | 104. | 85. | 70-130 |

TPH Total Petroleum Hydrocarbons

Approved by: K. O'Rourke

Date: February 3, 1993

APPENDIX B
CHAIN OF CUSTODY

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) 571-2434 | Telephone no. (Consultant) 453-0719 | Contract number 57077 |
| Consultant name EMCON ASSOCIATES | | Address (Consultant) 1938 Junction Avenue San Jose | |
| | | | Method of shipment Sampler will deliver |

| Sample I.D. | Lab no. | Container no | Matrix | | | Preservation | | Sampling date | Sampling time | BTEX EPA 802 | CAS BTEX/TPH EPA M602/802/8015 | TPH Modified 8015 Gas <input checked="" type="checkbox"/> Diesel <input checked="" type="checkbox"/> | Oil and Grease 413.1 <input type="checkbox"/> 413.2 <input type="checkbox"/> | TPH EPA 418.1/SM503E | EPA 601/8010 | EPA 624/8240 | EPA 625/8270 | TCLP Metals <input type="checkbox"/> VOA <input type="checkbox"/> | Semi Metals <input type="checkbox"/> VOA <input type="checkbox"/> | CAM Metals EPA 6010/7000 TLC <input type="checkbox"/> STLC <input type="checkbox"/> | Lead Org./DHS <input type="checkbox"/> Lead EPA 7420/7421 <input type="checkbox"/> | | |
|-------------|---------|--------------|--------|-------|-------|--------------|------|---------------|---------------|-----------------|--------------------------------------|---|---|-------------------------|--------------|--------------|--------------|--|--|--|--|--|--|
| | | | Soil | Water | Other | Ice | Acid | | | | | | | | | | | | | | | | |
| MW-1(25) | 1-2 | 2 | | X | | X | HCl | 1-21-93 | 1220 | | X | | | | | | | | | | | | |
| MW-2(25) | 3-4 | 2 | | X | | X | | 1-21-93 | 1242 | | X | | | | | | | | | | | | |
| MW-3(25) | 5-6 | 2 | | X | | X | | 1-21-93 | 1313 | | X | | | | | | | | | | | | |
| MW-4(25) | 7-8 | 2 | | X | | X | | 1-21-93 | 1345 | | X | | | | | | | | | | | | |
| MW-5(23) | 9-P | 2 | | X | | X | | 1-21-93 | 1108 | | X | | | | | | | | | | | | |
| MW-6(14) | 11-12 | 2 | | X | | X | | 1-21-93 | 1143 | | X | | | | | | | | | | | | |
| FB-1 | 13-14 | 2 | | X | | X | | 1-21-93 | 1110 | | X | | | | | | | | | | | | |
| MW-4(25) | 5-10 | 2 | | | | | NP | 1-21-93 | 1345 | | | X | | | | | | | | | | | |

| |
|--|
| Special detection Limit/reporting lowest possible |
| Special QA/QC As normal |
| Remarks 2-40ml HCl / VOA's MW-4 2-liter NP GLASS 0670-0084 (04) |
| Lab number 5593-0087 |
| Turnaround time Priority Rush 1 Business Day <input type="checkbox"/> Rush 2 Business Days <input type="checkbox"/> Expedited 5 Business Days <input type="checkbox"/> Standard 10 Business Days <input checked="" type="checkbox"/> |

| | | | | | |
|--|--------------------------------------|---------------------|--|------------------------|---------------------|
| Condition of sample: OK | Temperature received: COOL | | | | |
| Relinquished by sampler: <i>[Signature]</i> | Date 1-21-93 | Time 1630 | Received by | | |
| Relinquished by | Date | Time | Received by | | |
| Relinquished by | Date | Time | Received by laboratory <i>[Signature]</i> | Date 1-21-93 | Time 1630 |



EMCON ASSOCIATES

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

PROJECT NO: 0670-004-01

SAMPLE ID: MW-1 (25)

PURGED BY: L. RATIT

CLIENT NAME: AECO 3741

SAMPLED BY: L. RATIT

LOCATION: 6407 Telegraph Hill
Oakland CA

TYPE: Ground Water Surface Water Treatment Effluent Other

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

CASING ELEVATION (feet/MSL): AIR VOLUME IN CASING (gal.): 141.22

DEPTH TO WATER (feet): ~~3.0~~ 5.03 CALCULATED PURGE (gal.): 412.66

DEPTH OF WELL (feet): 26.8 ACTUAL PURGE VOL. (gal.): 413.5
21.77

DATE PURGED: 1-21-93 Start (2400 Hr) 1206 End (2400 Hr) 1215

DATE SAMPLED: 1-21-93 Start (2400 Hr) 1220 End (2400 Hr) 1220

| TIME (2400 Hr) | VOLUME (gal.) | pH (units) | E.C. (µmhos/cm @ 25° C) | TEMPERATURE (°F) | COLOR (visual) | TURBIDITY (visual) |
|----------------|---------------|-------------|-------------------------|------------------|----------------|--------------------|
| <u>1209</u> | <u>14.5</u> | <u>6.64</u> | <u>1040</u> | <u>66.4</u> | <u>Clear</u> | <u>light</u> |
| <u>1211</u> | <u>29.0</u> | <u>6.62</u> | <u>1020</u> | <u>66.3</u> | <u>Clear</u> | <u>light</u> |
| <u>1215</u> | <u>43.5</u> | <u>6.58</u> | <u>1016</u> | <u>66.1</u> | <u>Clear</u> | <u>light</u> |
| _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ | _____ | _____ | _____ |

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

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

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 checked="" type="checkbox"/> Centrifugal Pump | <input 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: _____

Meter Calibration: Date: 1-31-93 Time: 1054 Meter Serial #: 9112 Temperature °F: _____

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

Location of previous calibration: MW-5

Signature: Jesse Renter Reviewed By: JB Page 1 of 6



EMCON ASSOCIATES

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/9

PROJECT NO: 0670-004-01

SAMPLE ID: MW-2 (25)

PURGED BY: L. RATH

CLIENT NAME: ARCO 374

SAMPLED BY: L. RATH

LOCATION: 6407 Telegraph Hill
Oakland, CA

TYPE: Ground Water Surface Water Treatment Effluent Other

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

CASING ELEVATION (feet/MSL): NIR VOLUME IN CASING (gal.): 13.39

DEPTH TO WATER (feet): 5.90 CALCULATED PURGE (gal.): 40.18

DEPTH OF WELL (feet): 26.4 ACTUAL PURGE VOL. (gal.): 41.0
20.5

DATE PURGED: 1-21-93 Start (2400 Hr) 1232 End (2400 Hr) 1240

DATE SAMPLED: 1-21-93 Start (2400 Hr) 1242 End (2400 Hr) —

| TIME (2400 Hr) | VOLUME (gal.) | pH (units) | E.C. (µmhos/cm @ 25° C) | TEMPERATURE (°F) | COLOR (visual) | TURBIDITY (visual) |
|----------------|---------------|-------------|-------------------------|------------------|----------------|--------------------|
| <u>1234</u> | <u>13.5</u> | <u>6.85</u> | <u>734</u> | <u>67.5</u> | <u>clear</u> | <u>light</u> |
| <u>1237</u> | <u>27.0</u> | <u>6.83</u> | <u>776</u> | <u>68.0</u> | <u>clear</u> | <u>light</u> |
| <u>1240</u> | <u>41.0</u> | <u>6.85</u> | <u>780</u> | <u>68.2</u> | <u>clear</u> | <u>light</u> |
| | | | | | | |
| | | | | | | |

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

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

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 checked="" type="checkbox"/> Centrifugal Pump | <input 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: _____

Meter Calibration: Date: 1-21-93 Time: 1054 Meter Serial #: 9112 Temperature °F: _____
(EC 1000 _____ / _____) (DI _____) (pH 7 _____ / _____) (pH 10 _____ / _____) (pH 4 _____ / _____)
Location of previous calibration: MW-5

Signature: L. Rath Reviewed By: JB Page 2 of 6



EMCON ASSOCIATES

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

PROJECT NO: 0670-004-01
PURGED BY: L. RATH
SAMPLED BY: L. RATH

SAMPLE ID: MW-3(25)
CLIENT NAME: ARCO 374
LOCATION: 64107 Telegraph Hill
Oakland CA

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

CASING ELEVATION (feet/MSL): NIR VOLUME IN CASING (gal.): 141.49
DEPTH TO WATER (feet): 41.62 CALCULATED PURGE (gal.): 413.47
DEPTH OF WELL (feet): 26.8 ACTUAL PURGE VOL. (gal.): 44.0
22.18

DATE PURGED: 1-23-93 Start (2400 Hr) 1255 End (2400 Hr) 1309
DATE SAMPLED: 1-23-93 Start (2400 Hr) 1313 End (2400 Hr) _____

| TIME (2400 Hr) | VOLUME (gal.) | pH (units) | E.C. (µmhos/cm @ 25° C) | TEMPERATURE (°F) | COLOR (visual) | TURBIDITY (visual) |
|----------------|---------------|-------------|-------------------------|------------------|----------------|--------------------|
| <u>1301</u> | <u>141.5</u> | <u>6.54</u> | <u>775</u> | <u>64.3</u> | <u>clear</u> | <u>light</u> |
| <u>1305</u> | <u>29.0</u> | <u>6.53</u> | <u>802</u> | <u>64.9</u> | <u>clear</u> | <u>light</u> |
| <u>1309</u> | <u>44.0</u> | <u>6.58</u> | <u>801</u> | <u>65.0</u> | <u>clear</u> | <u>light</u> |
| _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ | _____ | _____ | _____ |

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

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

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 checked="" type="checkbox"/> Centrifugal Pump | <input 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: _____ | Other: _____ | Other: _____ |

WELL INTEGRITY: good LOCK #: 3259

REMARKS: _____

Meter Calibration: Date: 1-23-93 Time: 1054 Meter Serial #: 9112 Temperature °F: _____
(EC 1000 _____ / _____) (DI _____) (pH 7 _____ / _____) (pH 10 _____ / _____) (pH 4 _____ / _____)
Location of previous calibration: MW-5

Signature: L. Rath Reviewed By: JB Page 3 of 6



EMCON ASSOCIATES

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

PROJECT NO: 0670-00-1-01
PURGED BY: L. RATH
SAMPLED BY: L. RATH

SAMPLE ID: mw-4(25)
CLIENT NAME: ARCO 374
LOCATION: 6407 Telegraph Hill, 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.): 1377
DEPTH TO WATER (feet): 5.52 CALCULATED PURGE (gal.): 41.31
DEPTH OF WELL (feet): 266 ACTUAL PURGE VOL. (gal.): 42.0
21.08

DATE PURGED: 1-21-93 Start (2400 Hr) 1328 End (2400 Hr) 1342
DATE SAMPLED: 1-21-93 Start (2400 Hr) 1345 End (2400 Hr) _____

| TIME (2400 Hr) | VOLUME (gal.) | pH (units) | EC. (µmhos/cm @ 25° C) | TEMPERATURE (°F) | COLOR (visual) | TURBIDITY (visual) |
|----------------|---------------|-------------|------------------------|------------------|----------------|--------------------|
| <u>1331</u> | <u>14.0</u> | <u>6.55</u> | <u>1992</u> | <u>64.7</u> | <u>clear</u> | <u>light</u> |
| <u>1338</u> | <u>28.0</u> | <u>6.60</u> | <u>2070</u> | <u>65.3</u> | <u>clear</u> | <u>light</u> |
| <u>1342</u> | <u>42.0</u> | <u>6.67</u> | <u>2060</u> | <u>65.9</u> | <u>clear</u> | <u>light</u> |
| _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ | _____ | _____ | _____ |

D. O. (ppm): NR ODOR: Strong _____
(COBALT 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"/> Bailer (Teflon®) | <input type="checkbox"/> 2" Bladder Pump | <input checked="" type="checkbox"/> Bailer (Teflon®) |
| <input checked="" type="checkbox"/> Centrifugal Pump | <input 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: Well Box lid is broken LOCK #: 3259

REMARKS: _____

Meter Calibration: Date: 1-23-93 Time: 1054 Meter Serial #: 9112 Temperature °F: _____
(EC 1000 _____ / _____) (DI _____) (pH 7 _____ / _____) (pH 10 _____ / _____) (pH 4 _____ / _____)
Location of previous calibration: mw-5

Signature: L. RATH Reviewed By: AB Page 4 of 6



EMCON ASSOCIATES

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

PROJECT NO: 0670-004.01
PURGED BY: M Adler
SAMPLED BY: M Adler

SAMPLE ID: MW-5 (23)
CLIENT NAME: Arco 374
LOCATION: 6407 Telegraph Hill
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.): 9.93
DEPTH TO WATER (feet): 7.89 CALCULATED PURGE (gal.): 29.81
DEPTH OF WELL (feet): 23.1 ACTUAL PURGE VOL. (gal.): 30.0

DATE PURGED: 1-21-93 Start (2400 Hr) 1057 End (2400 Hr) 1105
DATE SAMPLED: 1-21-93 Start (2400 Hr) 1108 End (2400 Hr) 1109

| TIME (2400 Hr) | VOLUME (gal.) | pH (units) | E.C. (µmhos/cm @ 25° C) | TEMPERATURE (°F) | COLOR (visual) | TURBIDITY (visual) |
|----------------|---------------|-------------|-------------------------|------------------|----------------|--------------------|
| <u>1058</u> | <u>10.0</u> | <u>6.72</u> | <u>749</u> | <u>66.3</u> | <u>clear</u> | <u>clear</u> |
| <u>1102</u> | <u>20.0</u> | <u>6.97</u> | <u>737</u> | <u>66.8</u> | <u>clear</u> | <u>light</u> |
| <u>1105</u> | <u>30.0</u> | <u>7.15</u> | <u>804</u> | <u>67.4</u> | <u>brown</u> | <u>moderate</u> |
| _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ | _____ | _____ | _____ |

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

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 checked="" type="checkbox"/> Centrifugal Pump | <input 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: 812 LOCK #: 3259

REMARKS: _____

Meter Calibration: Date: 1-21-93 Time: 1054 Meter Serial #: 9112 Temperature °F: 64.0
(EC 1000 904 / 1000) (DI _____) (pH 7 6.90 / 7.00) (pH 10 9.95 / 10.00) (pH 4 3.99 / _____)
Location of previous calibration: MW-5 (23)

Signature: M Adler Reviewed By: JB Page 5 of 6



EMCON ASSOCIATES

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/9

PROJECT NO: OG70-004.01

SAMPLE ID: MW-6 (14)

PURGED BY: M Adler

CLIENT NAME: Arco 374

SAMPLED BY: M Adler

LOCATION: 6407 Telegraph H
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>7.04</u> |
| DEPTH TO WATER (feet): | <u>3.82</u> | CALCULATED PURGE (gal.): | <u>21.12</u> |
| DEPTH OF WELL (feet): | <u>14.6</u> | ACTUAL PURGE VOL. (gal.): | <u>21.5</u> |

| | | | | | |
|---------------|----------------|-----------------|-------------|---------------|-------------|
| DATE PURGED: | <u>1-21-93</u> | Start (2400 Hr) | <u>1136</u> | End (2400 Hr) | <u>1141</u> |
| DATE SAMPLED: | <u>1-21-93</u> | Start (2400 Hr) | <u>1143</u> | End (2400 Hr) | <u>1144</u> |

| TIME (2400 Hr) | VOLUME (gal.) | pH (units) | E.C. (µmhos/cm @ 25° C) | TEMPERATURE (°F) | COLOR (visual) | TURBIDITY (visual) |
|-------------------|------------------|---------------|----------------------------|---------------------|-------------------|-----------------------|
| <u>1137</u> | <u>7.5</u> | <u>7.28</u> | <u>608</u> | <u>64.6</u> | <u>brown</u> | <u>moderate</u> |
| <u>1139</u> | <u>14.5</u> | <u>6.96</u> | <u>600</u> | <u>64.0</u> | <u>brown</u> | <u>moderate</u> |
| <u>1141</u> | <u>21.5</u> | <u>6.89</u> | <u>589</u> | <u>63.4</u> | <u>brown</u> | <u>moderate</u> |
| | | | | | | |
| | | | | | | |

D. O. (ppm): NR ODOR: NONE COLOR: NR TURBIDITY: NR
(COBALT 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"/> Bailer (Teflon®) | <input type="checkbox"/> 2" Bladder Pump | <input checked="" type="checkbox"/> Bailer (Teflon®) |
| <input checked="" type="checkbox"/> Centrifugal Pump | <input 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: OK LOCK #: 0464

REMARKS: _____

Meter Calibration: Date: 1-21-93 Time: 1054 Meter Serial #: 9112 Temperature °F: _____
 (EC 1000 _____ / _____) (DI _____) (pH 7 _____ / _____) (pH 10 _____ / _____) (pH 4 _____ / _____)
 Location of previous calibration: MW-5 (23)

Signature: M Adler Reviewed By: AB Page 6 of 6