A RESNA Company

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

60025.07

05/05/92

FEDERAL EXPRESS

Applied GeoSystems, Inc.
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# TRANSMITTAL

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TO: MS. SUSAN HUGO
ACHCSA-DEH
80 SWAN WAY, ROOM 200
OAKLAND, CALIFORNIA 94621

DATE: 5/5/92
PROJECT NUMBER: 60025.07
SUBJECT: ARCO STATION 374 AT
6407 TELEGRAPH AVENUE, OAKLAND, CA

FROM: LOU LEET
TITLE: STAFF GEOLOGIST

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| 1 | 5/5/92 | | FINAL-FIRST QUARTER 1992 GROUNDWATER MONITORING REPORT FOR THE ABOVE SUBJECT SITE. |
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REMARKS: THIS REPORT HAS BEEN FORWARDED TO YOU AS REQUESTED BY MR. MICHAEL WHELAN OF ARCO PRODUCTS COMPANY.

Copies: 1 to project file no. 60025.07

*Revision Date: 11/21/91
*File Name: TRANSMT.PRJ

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May 5, 1992
0505MWHE
60025.07

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

Subject: First 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 first 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. The field work and laboratory analyses of groundwater samples during this quarter was performed under the direction of EMCON and included measuring depths to groundwater, subjectively analyzing groundwater for the presence of petroleum product, collecting groundwater samples from the wells for laboratory analyses, and directing a State-certified laboratory to analyze the groundwater samples. Field procedures and acquisition of field data were performed under the direction of EMCON; evaluation and warrant of their field data and field protocols is beyond RESNA Industries' (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, as shown on the Site Vicinity Map, Plate 1.

Prior to the present monitoring, RESNA (formerly Applied GeoSystems [AGS]) performed subsurface environmental investigations related to the former and new underground

gasoline-storage tanks at the site. In April 1988, prior to tank replacement activities, RESNA performed a preliminary environmental assessment which included drilling four exploratory borings (B-1 through B-4) at the site (AGS, June 1988). In June 1988, RESNA observed the removal of four underground storage tanks (USTs) situated in the southwestern portion of the site and collected soil samples in the vicinity of the USTs. Four tank pit monitoring wells were installed at the site during tank replacement activities; two in the former tank pit (W-1 and W-2) and two in the new tank pit (W-3 and W-4) (AGS, August 1, 1988). In July 1989, RESNA performed an additional subsurface investigation which included the installation of three groundwater monitoring wells (MW-1, MW-2, and MW-4) onsite and one groundwater monitoring well (MW-3) offsite (AGS, March 27, 1991). In April 1991, RESNA initiated a step-drawdown and pump and recovery test of a local water-bearing unit (RESNA, July 31, 1991). A list of reports that summarize the results of these investigations are presented in the references section at the end of this letter report. On April 1, 1992, RESNA conducted a subsurface investigation which included installation of two offsite groundwater monitoring wells MW-5 and MW-6. The results of the investigation will be reported in a forthcoming report. The locations of the groundwater monitoring wells (MW-5 and MW-6 are not shown, but will be added to the plate on the Second Quarter 1992 Quarterly Groundwater Monitoring Report) 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 January 19, February 19, and March 9, 1992. Quarterly sampling was performed by EMCON field personnel on March 9 and 10, 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-4, are presented on EMCON's field report sheets and EMCON's Summary of Groundwater Monitoring Data. 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-4 for this quarter and previous quarterly groundwater monitoring at the site are summarized in Table 1, Cumulative Groundwater Monitoring Data. EMCON's DTW measurements were used to evaluate groundwater elevations. Evidence of product or sheen was not observed by EMCON's field personal during this quarterly monitoring (see EMCON's field report sheets, Appendix A). Groundwater elevations in wells MW-1 through MW-4 increased between approximately 0.9 feet to approximately 3 feet between January 19 and March 9, 1992. The groundwater gradients interpreted from the January, February, and March 1992 groundwater monitoring episodes are shown on the Groundwater Gradient Maps, Plates 3 through 5. The

groundwater gradients interpreted from EMCON's DTW measurements average 0.05 toward the southwest. The groundwater gradients for this quarter are generally consistent with previously interpreted data.

Groundwater monitoring wells MW-1 through MW-4 were purged and sampled by EMCON field personnel on March 9 and 10, 1992. EMCON's water sample field data sheets, field report sheets, and Summary of Groundwater Monitoring Data, are included in Appendix A. The purge water was removed from the site by a licensed hazardous waste hauler; the Monitoring Well Purge Water Disposal Form is also included in Appendix A.

**Laboratory Methods and Analyses**

Under the direction of EMCON, 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-4 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. 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 attached 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 and Table 3, Cumulative Results of Laboratory Analyses of Groundwater--VOCs and Metals.

Results of this quarter's groundwater monitoring indicate:

- TPHg was detected in groundwater samples from wells MW-2, MW-3, and MW-4 at concentrations ranging from 690 parts per billion (ppb) (wells MW-2 and MW-4) to 1,200 ppb (well MW-3).

- Benzene was detected in groundwater samples from well MW-2, MW-3, and MW-4 at concentrations ranging from 170 ppb (MW-2) to 200 ppb (MW-3). These concentrations exceed the California Department of Health Services Maximum Contaminant Level (MCL) for the presence of 1.0 ppb benzene in drinking water.

- Toluene was detected in groundwater samples from wells MW-2, MW-3, and MW-4 at concentrations ranging from 25 ppb (MW-2) to 110 ppb (MW-3). These concentrations do not exceed the State recommended drinking water action level (DWAL) of 100 ppb for toluene.

- Ethylbenzene was detected in groundwater samples from wells MW-2, MW-3, and MW-4 at concentrations ranging from 18 ppb (MW-4) to 53 ppb (MW-3). These concentrations do not exceed the MCL of 680 ppb for ethylbenzene.

- Total xylenes were detected in groundwater samples from MW-2, MW-3, and MW-4 at concentrations ranging from 43 ppb (MW-4) to 130 ppb (MW-3). These concentrations do not exceed the MCL of 1,750 ppb for total xylenes.

- The groundwater samples from well MW-1 was below the laboratory detection limits for TPHg and BTEX.

The following general trends were noted in reported hydrocarbon concentrations in groundwater from the four monitoring wells since the last quarterly monitoring. Reported concentrations of TPHg and BTEX have decreased in well MW-1 from relative low concentrations to nondetectable; increased in well MW-2; remained relatively consistent in well MW-3; and decreased in well MW-4.

## Conclusions and Recommendations

Downgradient groundwater in offsite well MW-3 and onsite well MW-4 contains reported concentrations of hydrocarbons. Offsite wells have been installed to assess the extent of groundwater impacted by hydrocarbons.

RESNA recommends continuing monthly groundwater monitoring, quarterly groundwater sampling of the monitoring wells, and laboratory analyses of groundwater samples for TPHg and BTEX.

## Schedule

A subsurface investigation was initiated in April 1992, to further define the lateral extent of petroleum hydrocarbons in groundwater. The results of that investigation will be reported in a forthcoming report. Monthly groundwater monitoring and quarterly

groundwater sampling will continue to be performed by ARCO's contracted sampler. At ARCO's request, RESNA will continue to analyze and report monthly and quarterly groundwater monitoring data from this site to evaluate trends in petroleum hydrocarbons, and changes in groundwater gradient with time.

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. Eddy So
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

L. L. Leet

Lou Leet
Staff Geologist

REGISTERED GEOLOGIST
JAMES LEWIS NELSON
No. 1463
CERTIFIED ENGINEERING GEOLOGIST
STATE OF CALIFORNIA

James L. Nelson
Certified Engineering
Geologist No. 1463

cc: H.C. Winsor, ARCO Products Company

Attachments: References

Plate 1, Site Vicinity Map
Plate 2, Generalized Site Plan
Plate 3, Groundwater Gradient Map, January 19, 1992
Plate 4, Groundwater Gradient Map, February 19, 1992
Plate 5, Groundwater Gradient Map, March 9, 1992
Plate 6, TPHg Concentrations In Groundwater, March 9 and 10, 1992
Plate 7, Benzene Concentrations In Groundwater, March 9 and 10, 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 (2), 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.

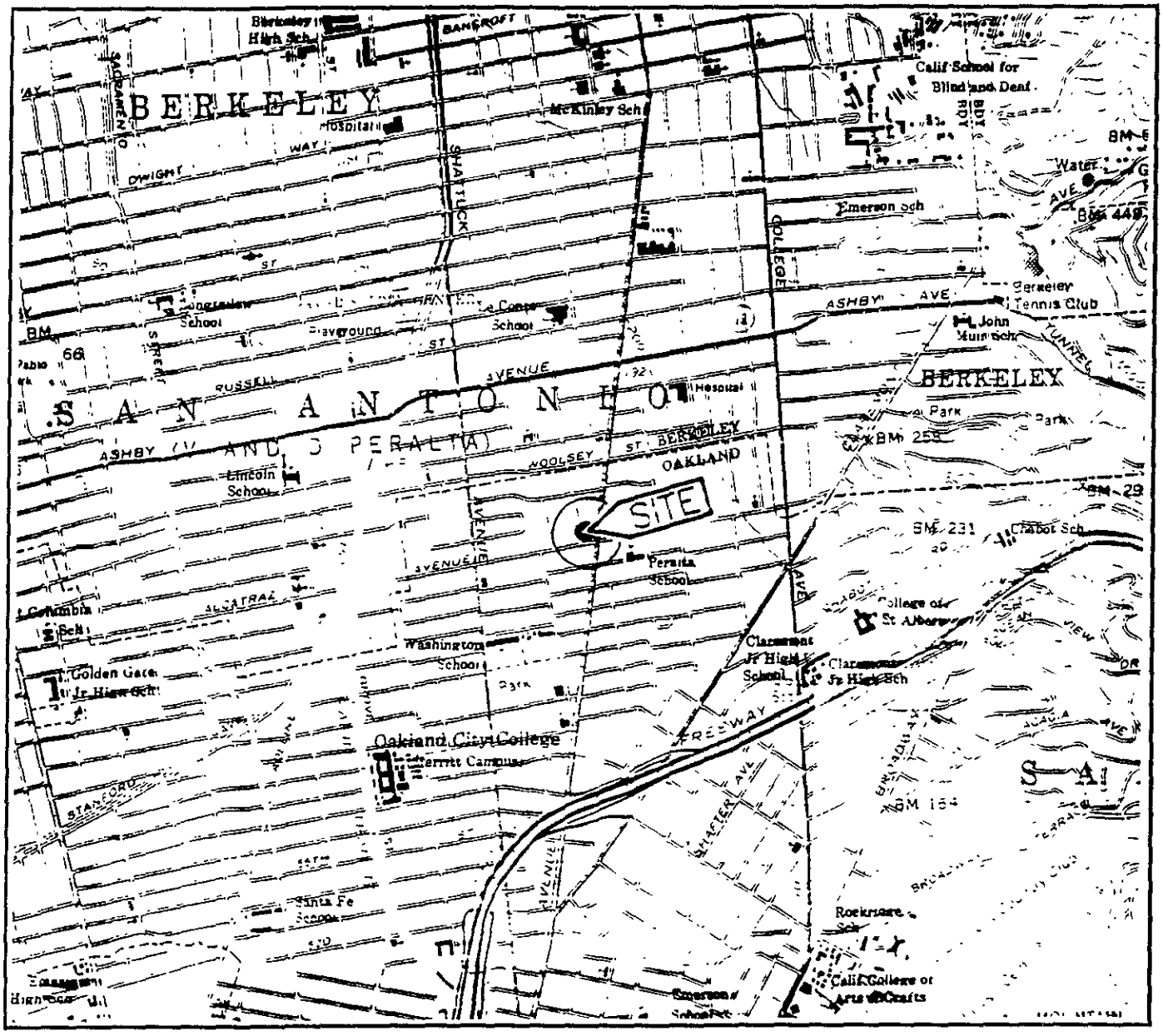
RESNA/Applied GeoSystems. July 31, 1991. Report of pumping and Recovery Test Results at ARCO 374, 6407 Telegraph Avenue, Oakland, California. 60025.04

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

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

## REFERENCES
(Continued)

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




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

N

LEGEND

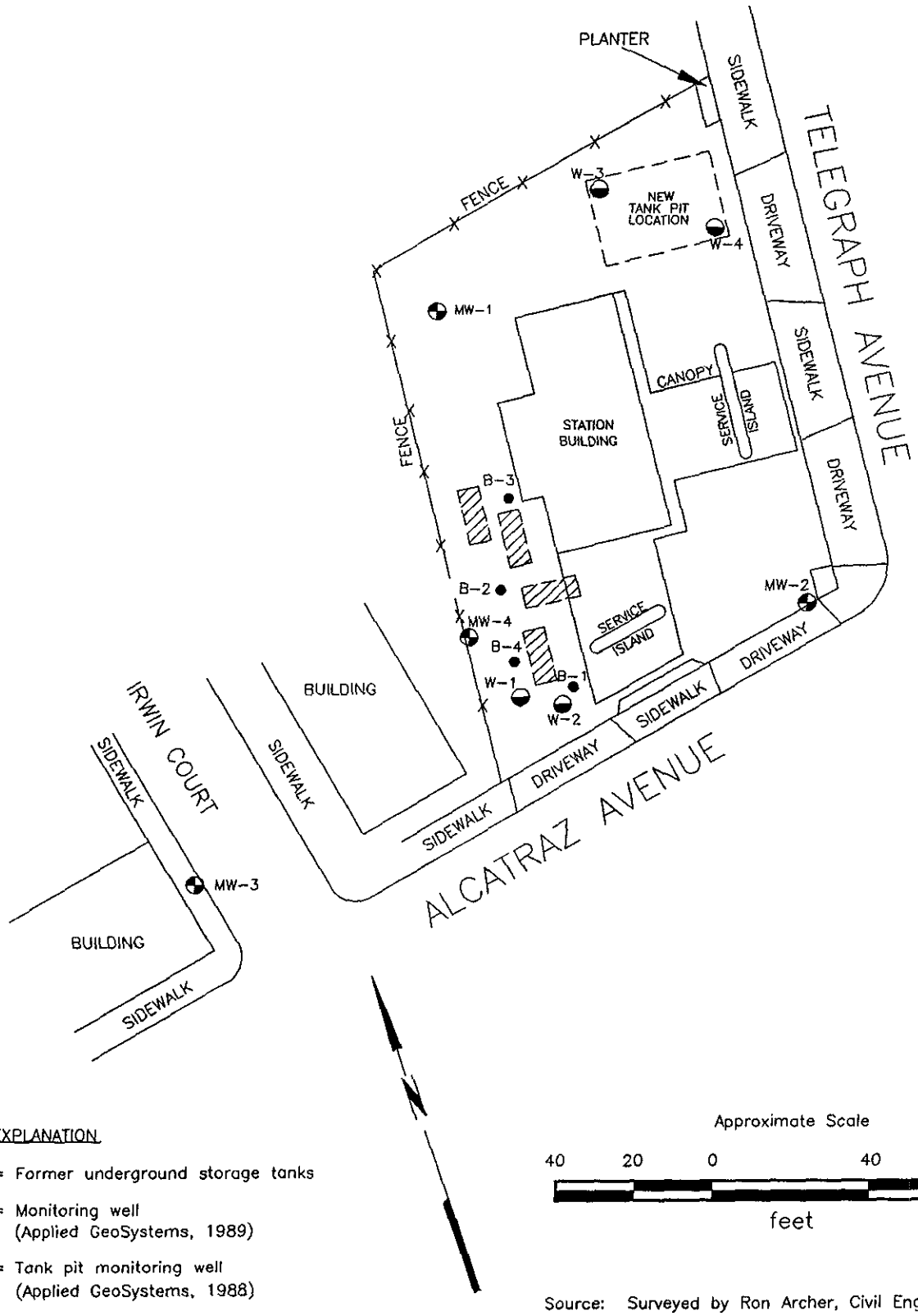
⊙ = Site Location

Approximate Scale

2000 1000 0 2000 4000

feet

| | | |
|---|---|---|
| **RESNA** | **SITE VICINITY MAP**<br>**ARCO Station 374**<br>**6407 Telegraph Avenue**<br>**Oakland, California** | **PLATE**<br>**1** |
| **PROJECT** **60025.07** | | |




EXPLANATION

= Former underground storage tanks

MW-4 = Monitoring well (Applied GeoSystems, 1989)

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

B-4 = Soil boring (Applied GeoSystems, 1988)

Approximate Scale

40 20 0 40 80

feet

Source: Surveyed by Ron Archer, Civil Engineer, Inc.

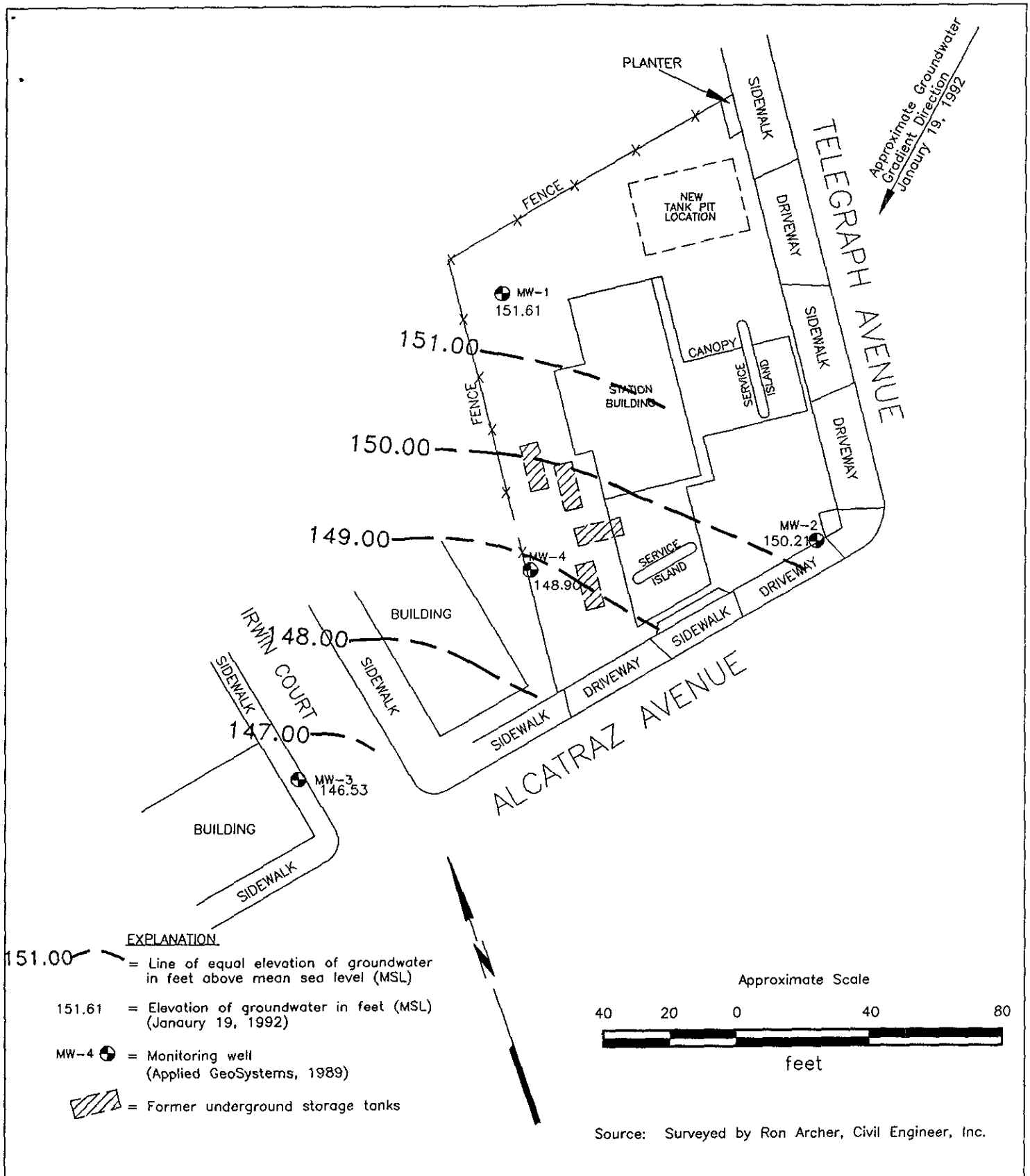
**RESNA**

**PROJECT 60025.07**

# GENERALIZED SITE PLAN

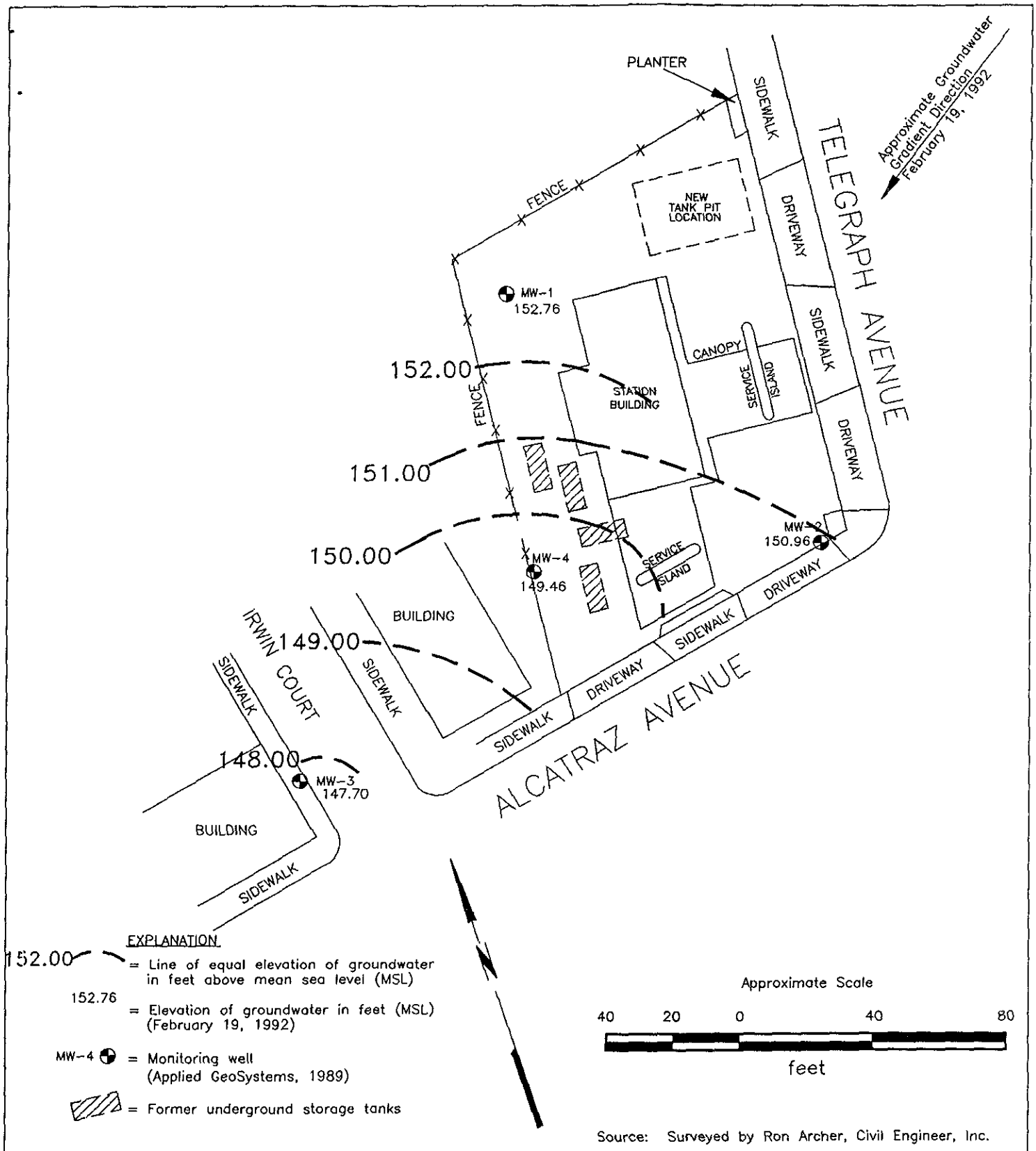
**ARCO Station 374**
**6407 Telegraph Avenue**
**Oakland, California**

**PLATE 2**

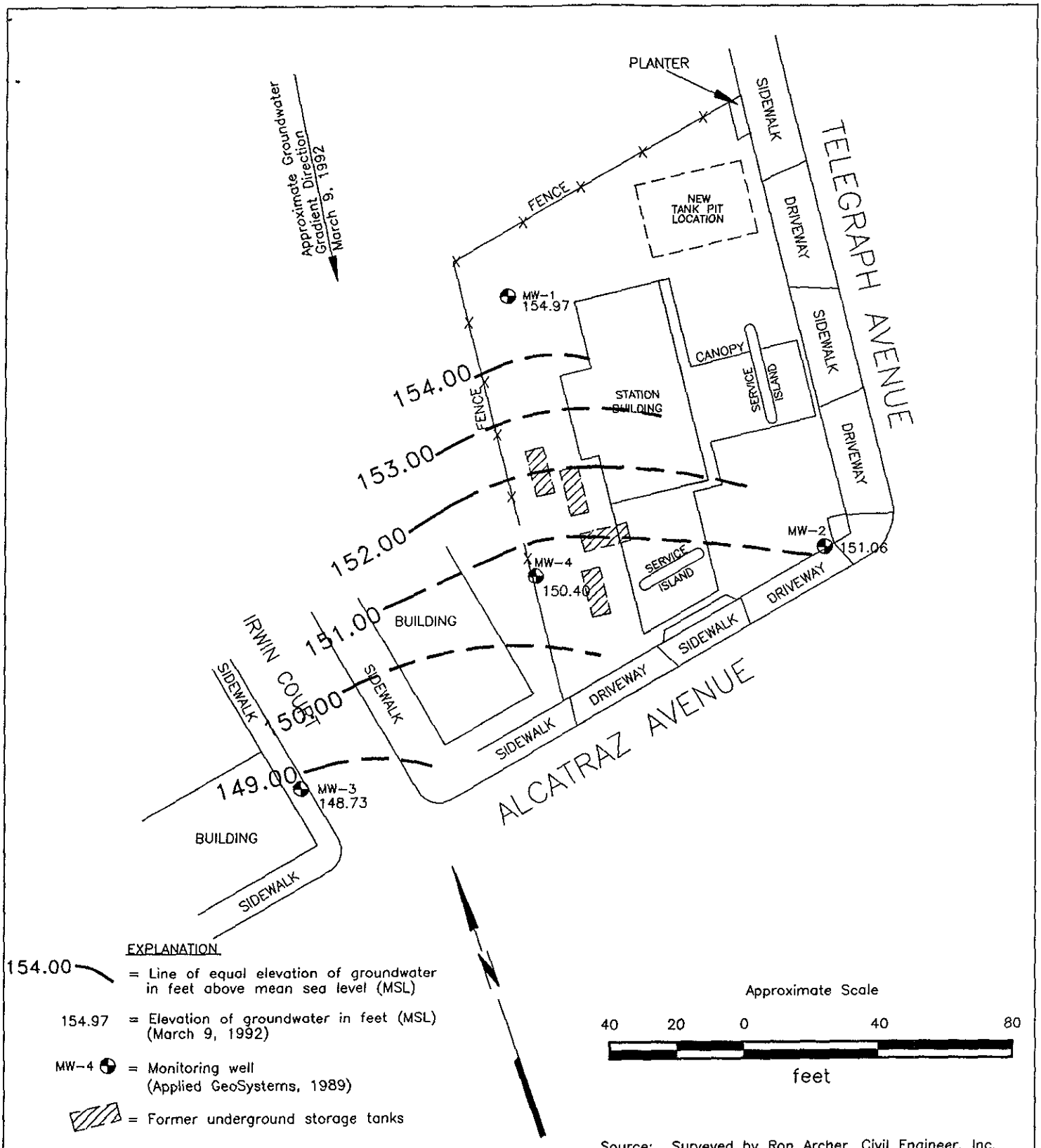



Source: Surveyed by Ron Archer, Civil Engineer, Inc.

| | | |
|---|---|---|
| **RESNA** | **GROUNDWATER GRADIENT MAP** | **PLATE** |
| | **ARCO Station 374** | **3** |
| **PROJECT** 60025.07 | **6407 Telegraph Avenue** | |
| | **Oakland, California** | |

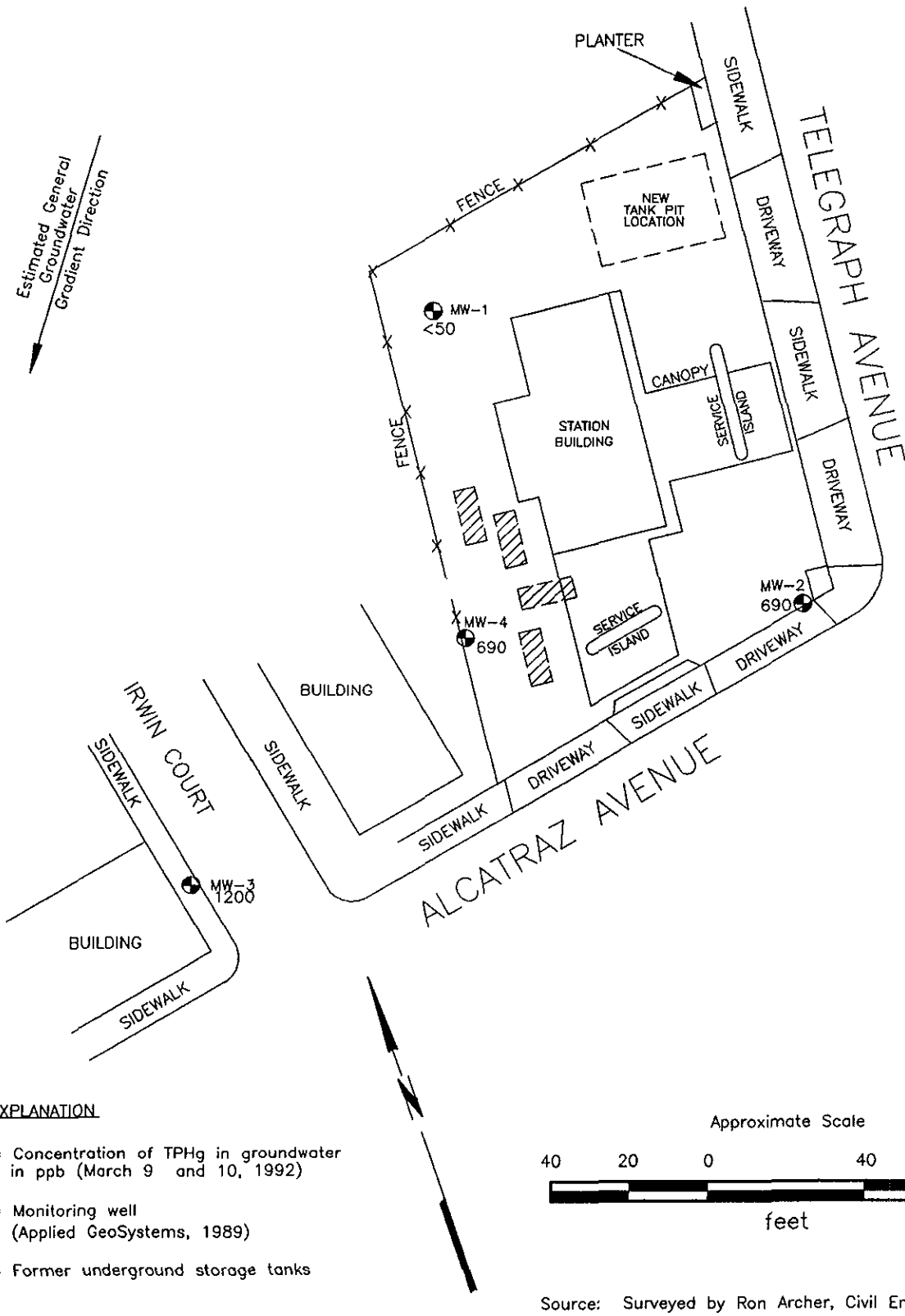



| | | |
|---|---|---|
| **RESNA** | **GROUNDWATER GRADIENT MAP**<br>**ARCO Station 374**<br>**6407 Telegraph Avenue**<br>**Oakland, California** | **PLATE**<br>**4** |
| **PROJECT** **60025.07** | | |




Source: Surveyed by Ron Archer, Civil Engineer, Inc.

| | | |
|---|---|---|
| **RESNA** | **GROUNDWATER GRADIENT MAP** | **PLATE** |
| | **ARCO Station 374** | **5** |
| **PROJECT** 60025.07 | **6407 Telegraph Avenue** | |
| | **Oakland, California** | |




EXPLANATION

1200 = Concentration of TPHg in groundwater in ppb (March 9 and 10, 1992)

MW-4 = Monitoring well (Applied GeoSystems, 1989)

= Former underground storage tanks

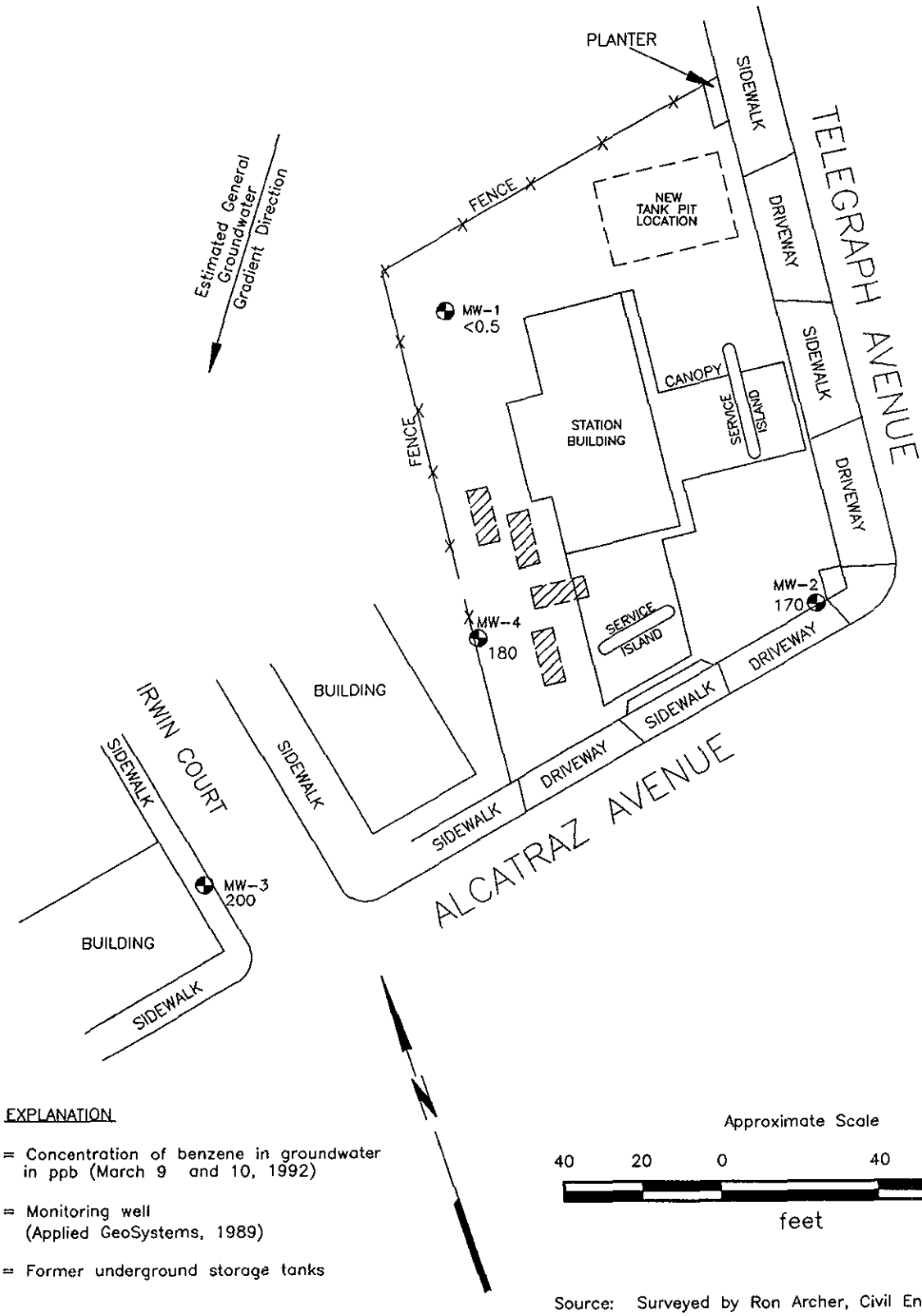
Approximate Scale

40 20 0 40 80

feet

Source: Surveyed by Ron Archer, Civil Engineer, Inc.

| | | |
|---|---|---|
| **RESNA** | **TPHg CONCENTRATIONS IN GROUNDWATER ARCO Station 374 6407 Telegraph Avenue Oakland, California** | **PLATE 6** |
| **PROJECT 60025.07** | | |




Source: Surveyed by Ron Archer, Civil Engineer, Inc.

| | | |
|---|---|---|
| **RESNA** | **BENZENE CONCENTRATIONS IN GROUNDWATER ARCO Station 374 6407 Telegraph Avenue Oakland, California** | **PLATE 7** |
| **PROJECT 60025.07** | | |

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

| 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 |
| 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 |
| 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 |

See notes on page 3 of 3

TABLE 1
CUMULATIVE GROUNDWATER MONITORING DATA
ARCO Station 374
Oakland, California
(Page 2 of 3)

| Date Well Measured | Well Elevation | Depth to Water | Water Elevation | Floating Product |
|---|---|---|---|---|
| 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 |
| 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 |

See notes on page 3 of 3

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

| Date Well Measured | Well Elevation | Depth to Water | Water Elevation | Floating Product |
|---|---|---|---|---|
| MW-4 Continued | | | | |
| 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 |

Notes:
Elevations and DTW measured in feet.
* = Floating Product.

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

| 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 |
| 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 |
| 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 |
| MW-4 | | | | | | | |
| 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 |

See notes on page 2 of 2

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

| Date/Well | TPHg | TPHd | B | T | E | X | TOG |
|---|---|---|---|---|---|---|---|
| MW-4 Continued | | | | | | | |
| 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 |
| MCL: | — | — | 1 | — | 680 | 1,750 | — |
| AL: | — | — | — | 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, T: 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.
NA: Not analyzed
*: Unregulated by California DHS, October 24, 1990.
MCL: State Maximum Contaminant Level.
AL: State recommended Action Level.

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 |

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.

# 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



Date February 25, 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, February 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: Mark Knuttel MK

REGISTERED PROFESSIONAL ENGINEER ROBERT CURTIS PORTER No. 4034 Exp. 6/30/92 INDUSTRIAL STATE OF CALIFORNIA

Robert Porter, Senior Project Engineer.

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

PROJECT # : G70-04.01 STATION ADDRESS : 6407 Telegraph Hill, Oakland, CA DATE : 2-19-92

ARCO STATION # : 374 FIELD TECHNICIAN : Mike Barlock DAY : Wednesday

| DTW Order | WELL ID | Well Box Seal | Well Lid Secure | Gasket | Lock | Locking Well Cap | FIRST DEPTH TO WATER (feet) | SECOND DEPTH TO WATER (feet) | DEPTH TO FLOATING PRODUCT (feet) | FLOATING PRODUCT THICKNESS (feet) | WELL TOTAL DEPTH (feet) | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | MW-1 | OK | YES | OK | YES | YES | 6.67 | 6.68 | ND | ND | 26.77 | Bolts loose (screw-hex) Cement seal cracked |
| 2 | MW-2 | OK | YES | OK | YES | BROKEN | 7.49 | 7.50 | ND | ND | 26.33 | Locking well cap Broken needs new one. |
| 3 | MW-3 | OK | YES | OK | YES | YES | 6.50 | 6.48 | ND | ND | ~~26~~ 26.75 | Well Cap under pressure |
| 4 | MW-4 | OK | NO | OK | YES | YES | 7.62 | 7.62 | ND | ND | 26.58 | one screw lock Broken |
| | | | | | | | | | | | | |
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Excellence Through Commitment

1971 20 YRS 1991

EMCON ASSOCIATES

Consultants in Wastes Management and Environmental Control

RECEIVED

FEB 04 1992

RESNA SAN JOSE

Date January 29, 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 | DTW/FP Survey Form, January 1992 monthly water level survey, ARCO station 374, 6407 Telegragh 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 ... No: 4094 Exp. 6/2/92 ... STATE OF CALIFORNIA

Mark Knuttel MK

Robert Porter

Robert Porter, Senior P.E. #4094

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

PROJECT # : G70-04.01 STATION ADDRESS : 6407 Telegraph Hill, Oakland, CA DATE : 1-19-91

ARCO STATION # : 374 FIELD TECHNICIAN : J. Williams DAY : Sunday

| DTW Order | WELL ID | Well Box Seal | Well Lid Secure | Gasket | Lock | Locking Well Cap | FIRST DEPTH TO WATER (feet) | SECOND DEPTH TO WATER (feet) | DEPTH TO FLOATING PRODUCT (feet) | FLOATING PRODUCT THICKNESS (feet) | WELL TOTAL DEPTH (feet) | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | MW-1 | OK | yes | ok | yes | yes | 7.83 | 7.83 | ND | ND | 26.75 | — |
| 2 | MW-2 | | | | | | 8.25 | 8.25 | ND | ND | 26.30 | — |
| 3 | MW-3 | | | | | | 7.65 | 7.65 | ND | ND | 26.78 | — |
| 4 | MW-4 | | | | | | 8.18 | 8.18 | ND | ND | 26.60 | — |
| | | | | | | | | | | | | |
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EMCON ASSOCIATES
Consultants in Wastes Management and Environmental Control

APR 0 : 1992

Date March 27, 1992
Project G70-04.01

To:
Mr. Joel Coffman
RESNA/ Applied Geosystems
3315 Alamden 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 |
| 4 | Water Sample Field Data Sheets |

For your: X Information Sent by: X Mail

Comments:

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

Mark Knuttel MK

Reviewed by:

REGISTERED PROFESSIONAL ENGINEER
ROBERT CURTIS PORTER
No: 4004
Exp. 6/30/92
INDUSTRIAL
STATE OF CALIFORNIA

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 : 3/9/92

ARCO STATION # : 374 FIELD TECHNICIAN : S. Horton DAY : Monday

| DTW Order | WELL ID | Well Box Seal | Well Lid Secure | Gasket | Lock | Locking Well Cap | FIRST DEPTH TO WATER (feet) | SECOND DEPTH TO WATER (feet) | DEPTH TO FLOATING PRODUCT (feet) | FLOATING PRODUCT THICKNESS (feet) | WELL TOTAL DEPTH (feet) | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | MW-1 | Good | ✓ | Good | 3259 | ✓ | 4.42 | 4.42 | ND | ND | 26.76 | — |
| 2 | MW-2 | Good | ✓ | Good | 3259 | ✓ | 7.40 | 7.40 | ND | ND | 26.35 | — |
| 3 | MW-3 | Good | ✓ | Good | 3259 | ✓ | 5.45 | 5.45 | ND | ND | 26.79 | — |
| 4 | MW-4 | Good | ✓ | Good | 3259 | ✓ | 6.68 | 6.68 | ND | ND | 26.61 | — |
| | | | | | | | | | | | | |
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Summary of Groundwater Monitoring Data
First 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(26) | 03/09/92 | 4.47 | ND.[2] | <50 | <0.5 | <0.5 | <0.5 | <0.5 |
| MW-2(26) | 03/09/92 | 7.40 | ND. | 690. | 170. | 25. | 21. | 58. |
| MW-3(26) | 03/10/92 | 5.45 | ND. | 1,200. | 200. | 110. | 53. | 130. |
| MW-4(26) | 03/10/92 | 6.68 | ND. | 690. | 180. | 80. | 18. | 43. |
| FB-1[3] | 03/10/92 | NA.[4] | NA. | <50 | <0.5 | <0.5 | <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.

March 20, 1992

Mark Knuttel
EMCON Associates
1921 Ringwood Avenue
San Jose, CA 95131

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

Dear Mr. Knuttel:

Enclosed are the results of the water samples submitted to our lab on March 11, 1992. For your reference, our service request number for this work is SJ92-0256.

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

Please call if you have any questions.

Respectfully submitted:

Keoni A. Murphy
COLUMBIA ANALYTICAL SERVICES, INC.

jb/KAM

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | EMCON Associates | **Date Received:** | 03/11/92 |
| **Project:** | EMCON Project No. G70-04.01 | **Work Order #:** | SJ92-0256 |
| | 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 (26) | MW-2 (26) | MW-3 (26) |
|---|---|---|---|---|
| Date Analyzed: | | 03/12/92 | 03/12/92 | 03/13/92 |
| **Analyte** | **MRL** | | | |
| Benzene | 0.5 | ND | 170. | 200. |
| Toluene | 0.5 | ND | 25. | 110. |
| Ethylbenzene | 0.5 | ND | 21. | 53. |
| Total Xylenes | 0.5 | ND | 58. | 130. |
| TPH as Gasoline | 50 | ND | 690. | 1,200. |

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

Approved by Keenan Murphy Date March 20, 1992

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | EMCON Associates | **Date Received:** | 03/11/92 |
| **Project:** | EMCON Project No. G70-04.01 | **Work Order #:** | SJ92-0256 |
| | 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-4 (26) | FB-1 | Method Blank |
|---|---|---|---|---|
| Date Analyzed: | | 03/16/92 | 03/12/92 | 03/12/92 |
| **Analyte** | **MRL** | | | |
| Benzene | 0.5 | 180. | ND | ND |
| Toluene | 0.5 | 80. | ND | ND |
| Ethylbenzene | 0.5 | 18. | ND | ND |
| Total Xylenes | 0.5 | 43. | ND | ND |
| TPH as Gasoline | 50 | 690. | 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 March 20, 1992

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | EMCON Associates | **Date Received:** | 03/11/92 |
| **Project:** | EMCON Project No. G70-04.01<br>Arco Facility No. 374 | **Work Order #:**<br>**Sample Matrix:** | SJ92-0256<br>Water |

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

| Sample Name: | | Method Blank | Method Blank |
|---|---|---|---|
| Date Analyzed: | | 03/13/92 | 03/16/92 |
| **Analyte** | **MRL** | | |
| Benzene | 0.5 | ND | ND |
| Toluene | 0.5 | ND | ND |
| Ethylbenzene | 0.5 | ND | ND |
| Total Xylenes | 0.5 | ND | ND |
| TPH as Gasoline | 50 | ND | ND |

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

Approved by Kevin Murphy Date March 20, 1992

APPENDIX A

LABORATORY QC RESULTS

| | | | |
|---|---|---|---|
| **Client:** | EMCON Associates | **Date Received:** | 03/11/92 |
| **Project:** | G70-04.01 | **Work Order #:** | SJ92-0256 |
| **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 (26) | 03/12/92 | 116. |
| MW-2 (26) | 03/12/92 | 129. |
| MW-3 (26) | 03/13/92 | 83. |
| MW-4 (26) | 03/16/92 | 77. |
| FB-1 | 03/12/92 | 107. |
| Method Blank | 03/12/92 | 127. |
| Method Blank | 03/13/92 | 76. |
| Method Blank | 03/16/92 | 76. |
| | CAS Acceptance Criteria | 70-130 |

**TPH** Total Petroleum Hydrocarbons

Approved by Kevin Murphy Date March 20, 1992

APPENDIX B

CHAIN OF CUSTODY

**ARCO Products Company**
Division of AtlanticRichfieldCompany

**Task Order No.** EMC6C-92-1

**Chain of Custody**

| | | | |
|---|---|---|---|
| ARCO Facility no. 37-1 | City (Facility) Oakland | Project manager (Consultant) Mark Kmetko | Laboratory name CAS |
| ARCO engineer Kyle Christie | Telephone no. (ARCO) 415-571-2434 | Telephone no. (Consultant) 408-453-0719 | Fax no. (Consultant) 408-453-0452 |
| Consultant name EMCON Associates | Address (Consultant) 1938 Junction Ave, San Jose, CA | | Contract number 6777 |

| 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 4 6 5 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(5.5) | 1 2 | 2 | | X | | X | HCl | 3/9/92 | 16:26 | | X | | | | | | | | | | |
| MW-2(5.5) | 3 4 | 2 | | X | | X | HCl | 3/11/92 | 17:10 | | X | | | | | | | | | | |
| MW-3(5.5) | 5-6 | 2 | | X | | X | HCl | 3/11/92 | 11 31 | | X | | | | | | | | | | |
| MW-4(5.5) | 7-8 | 2 | | X | | X | HCl | 3/11/92 | 11 55 | | X | | | | | | | | | | |
| FB-1 | 9 10 | 2 | | X | | X | HCl | 3/11/92 | 11 31 | | X | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | |
| MW-4(W) | | 1 | | X | | X | $HNO_3$ | 3/11/92 | 11 31 | | | | | | | | | | | X | |

**Special detection Limit/reporting:** Lowest possible.

**Special QA/QC:** as normal

**Remarks:** G70-04.01
TPH g / BTXE
2-40 ml VOA HCl
Total Lead
1-500 ml LPE $HNO_3$
- NOT FILTERED.

**Method of shipment:** Sampler will deliver

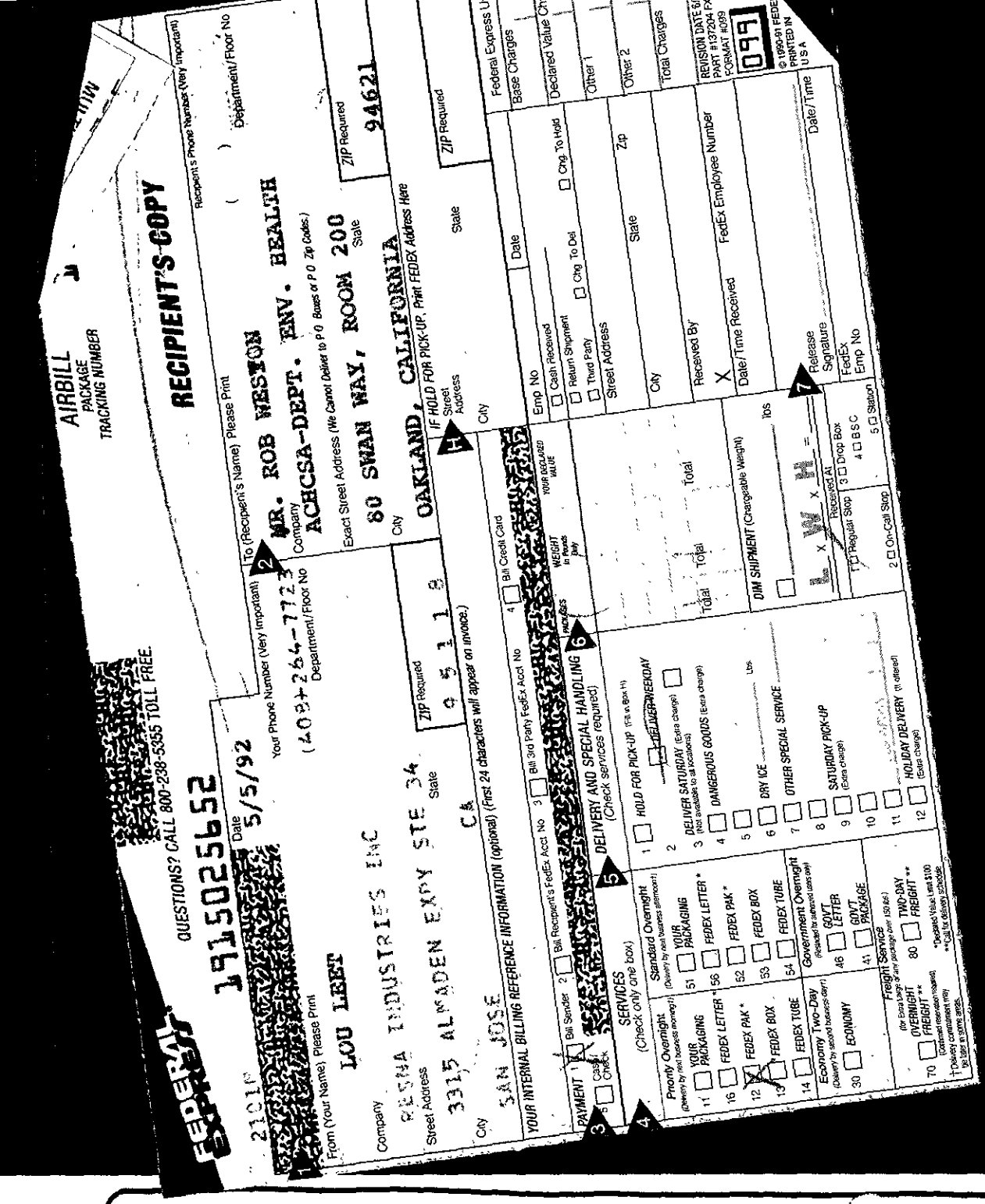
**Lab number:** 9203-0256

| | | | |
|---|---|---|---|
| Condition of sample: OK. | | Temperature received: Cool | |
| Relinquished by sampler: [signature] | Date 3/11/92 Time 9.35 | Received by: [signature] | 3-11-92 9.35 |
| Relinquished by | Date Time | Received by | |
| Relinquished by | Date Time | Received by laboratory | Date Time |

**Turnaround time**

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

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: 670.04.01 SAMPLE ID: MW-1

PURGED BY: J. Williams CLIENT NAME: ARCO #374

SAMPLED BY: J. Williams LOCATION: Oakland, CA

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

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

CASING ELEVATION (feet/MSL): NR VOLUME IN CASING (gal.): 14.65

DEPTH TO WATER (feet): 4.42 CALCULATED PURGE (gal.): 73.27

DEPTH OF WELL (feet): 26.76 ACTUAL PURGE VOL. (gal.): 74.00

DATE PURGED: 3/9/92 Start (2400 Hr) 15:45 End (2400 Hr) 16:13

DATE SAMPLED: 3/9/92 Start (2400 Hr) 16:15 End (2400 Hr) 16:20

| TIME (2400 Hr) | VOLUME (gal.) | pH (units) | E.C. (µmhos/cm @ 25° C) | TEMPERATURE (°F) | COLOR (visual) | TURBIDITY (visual) |
|---|---|---|---|---|---|---|
| 15:50 | 15 | 6.85 | 964 | 64.5 | clear | low |
| 15:54 | 30 | 6.46 | 888 | 64.6 | " | " |
| 16:01 | 45 | 6.83 | 911 | 65.5 | brown | heavy |
| ____ | 60 | Well Dry At | 45 Gallons | ____ | ____ | ____ |
| 16:13 | Recovery | 6.85 | 866 | 63.2 | brown | heavy |

D. O. (ppm): NR ODOR: slight 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 | ✓ Bailer (Teflon®) |
| ✓ Centrifugal Pump | ____ Bailer (PVC) | ____ DDL Sampler | ____ Bailer (Stainless Steel) |
| ____ Submersible Pump | ____ Bailer (Stainless Steel) | ____ Dipper | ____ Submersible Pump |
| ____ Well Wizard™ | ____ Dedicated | ____ Well Wizard™ | ____ Dedicated |
| Other: ____ | | Other: ____ | |

WELL INTEGRITY: Good LOCK #: 325T

REMARKS: ____

...IPLE PACKAGE SERVICE

**IF YOU ARE MAKING AN MPS SHIPMENT, APPLY THE SELF ADHESIVE MPS COPY HERE**

## TERMS AND CONDITIONS

### DEFINITIONS

On this Airbill, we, our and us refer to Federal Express Corporation, its employees and agents. You and your refer to the sender, its employees and agents.

### AGREEMENT TO TERMS

By giving us your package to deliver you agree to all the terms on this Airbill and in our current Service Guide, which is available on request. If there is a conflict between the current Service Guide and this Airbill, the Service Guide will control. No one is authorized to alter or modify the terms of our Agreement.

### RESPONSIBILITY FOR PACKAGING AND COMPLETING AIRBILL

You are responsible for adequately packaging your goods and for properly filling out this Airbill. Omission of the number of packages and weight per package from this Airbill will result in a billing based on our best estimate of the number of packages received from you and an estimated 'default' weight per package as determined and periodically adjusted by us.

### AIR TRANSPORTATION TAX INCLUDED

Our basic rate includes a federal tax required by Internal Revenue Code Section 4271 on the air transportation portion of this service.

### LIMITATIONS ON OUR LIABILITY AND LIABILITIES NOT ASSUMED

Our liability for loss or damage to your package is limited to your actual damages or $100, whichever is less, unless you pay for and declare a higher authorized value. We do not provide cargo liability insurance, but you may pay an additional charge for each additional $100 of declared value. If you declare a higher value and pay the additional charge, our liability will be the lesser of your declared value or the actual value of your package.

In any event we will not be liable for any damages, whether direct, incidental, special or consequential in excess of the declared value of a shipment, whether or not Federal Express had knowledge that such damages might be incurred, including but not limited to, loss of income or profits.

We won't be liable for your acts or omissions, including but not limited to improper or insufficient packing, securing, marking or addressing, or for the acts or omissions of the recipient or anyone else with an interest in the package. Also, we won't be liable if you or the recipient violates any of the terms of our agreement. We won't be liable for loss of or damage to shipments of prohibited items.

We won't be liable for loss, damage or delay caused by events we cannot control, including but not limited to acts of God, perils of the air, weather conditions, acts of public enemies, war, strikes, civil commotions or acts or omissions of public authorities (including customs and quarantine officials) with actual or apparent authority.

### DECLARED VALUE LIMITS

The highest declared value we allow for FedEx Letter and FedEx Pak shipments is $100. For other shipments, the highest declared value we allow is $25,000 unless your package contains items of extraordinary value, in which case the highest declared value we allow is $500. Items of extraordinary value, include artwork, jewelry, furs, precious metals, negotiable instruments and other items listed in our current Service Guide.

If you send more than one package on this Airbill, you may fill in the total declared value for all packages, not to exceed the $100, $500 or $25,000 per package limit described above (Example: 5 packages can have a total declared value of up to $125,000.)

If more than one package is shipped on this airbill, our liability for loss or damage will be limited to the actual value of the package(s) lost or damaged (not to exceed the lesser of the total declared value or the per package limits described above). You have the responsibility of proving the actual loss or damage.

### FILING A CLAIM

ALL CLAIMS MUST BE MADE BY YOU IN WRITING. You must notify us of your claim within strict time limits. See current Service Guide. We'll consider your claim filed if you call and notify our Customer Service Department at 800-238-5355 and notify us in writing as soon as possible.

Within 90 days after you notify us of your claim, you must send us all relevant information about it. We are not obligated to act on any claim until you have paid all transportation charges and you may not deduct the amount of your claim from those charges.

If the recipient accepts your package without noting any damage on the delivery record, we will assume that the package was delivered in good condition. In order for us to process your claim you must, to the extent possible, make the original shipping cartons and packing available for inspection.

### RIGHT TO INSPECT

We may, at our option, open and inspect your packages prior to or after you give them to us to deliver.

### NO C.O.D. SERVICES

NO C.O.D. SERVICES ON THIS AIRBILL. If C.O.D. Service is required please use a Federal Express C.O.D. airbill for this purpose.

### RESPONSIBILITY FOR PAYMENT

Even if you give us different payment instructions, you will always be primarily responsible for all delivery costs, as well as any costs we may incur in either returning your package to you or warehousing it pending disposition.

### RIGHT OF REJECTION

We reserve the right to reject a shipment at any time when such shipment would be likely to cause damage or delay to other shipments, equipment or personnel, or if the transportation of which is prohibited by law or is in violation of any rules contained in this Airbill or our current Service Guide.

### MONEY-BACK GUARANTEE

In the event of untimely delivery, Federal Express will, at your request and with some limitations, refund or credit all transportation charges. See current Service Guide for further information.

Part #137204/137205
Rev. 6/91

# WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: G70-04.01 SAMPLE ID: MW-2

PURGED BY: J. Williams CLIENT NAME: ARCO 374

SAMPLED BY: J. Williams LOCATION: 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.): 12.43

DEPTH TO WATER (feet): 7.40 CALCULATED PURGE (gal.): 62.15

DEPTH OF WELL (feet): 26.35 ACTUAL PURGE VOL. (gal.): 62.5

DATE PURGED: 3/9/92 Start (2400 Hr) 16:35 End (2400 Hr) 16:55

DATE SAMPLED: 3/9/92 Start (2400 Hr) 17:0 End (2400 Hr) 17:10

| TIME (2400 Hr) | VOLUME (gal.) | pH (units) | E.C. (µmhos/cm @ 25° C) | TEMPERATURE (°F) | COLOR (visual) | TURBIDITY (visual) |
|---|---|---|---|---|---|---|
| 16:40 | 13 | 12.98 | 669 | 64.9 | clear | low |
| 16:43 | 26 | 12.93 | 670 | 66.5 | " | " |
| 16:46 | 39 | 12.87 | 678 | 67.4 | cloudy | moderate |
| 16:50 | 52 | 12.75 | 675 | 69.7 | " | " |
| 16:55 | 62.5 | 12.55 | 679 | 70.1 | " | " |

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

COLOR (COBALT 0 - 100): NR

TURBIDITY (NTU 0 - 200): NR

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

PURGING EQUIPMENT

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

SAMPLING EQUIPMENT

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

WELL INTEGRITY: Good LOCK #: 359

REMARKS: ___

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

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

Location of previous calibration: MW-1

Signature: Steve Hooker Reviewed By: MK Page 2 of 4

# WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: 670 0401 | SAMPLE ID: MW-3

PURGED BY: S. Horton | CLIENT NAME: ARCC #374

SAMPLED BY: S. Horton | LOCATION: 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): N/A | VOLUME IN CASING (gal.): 13.77

DEPTH TO WATER (feet): 5.45 | CALCULATED PURGE (gal.): 69.88

DEPTH OF WELL (feet): 26.79 | ACTUAL PURGE VOL. (gal.): 70 CC

DATE PURGED: 03-10-92 | Start (2400 Hr) 11:15 | End (2400 Hr) 11:29

DATE SAMPLED: 3/10/92 | Start (2400 Hr) 11:29 | End (2400 Hr) 11:31

| TIME (2400 Hr) | VOLUME (gal.) | pH (units) | E.C. (µmhos/cm @ 25° C) | TEMPERATURE (°F) | COLOR (visual) | TURBIDITY (visual) |
|---|---|---|---|---|---|---|
| 11:16 | 14 | 6.72 | 781 | 66.1 | clear | light |
| 11:14 | 28 | 6.55 | 7.52 | 65.6 | " | " |
| ___ | ~~42~~ | Well | Dry At | 38 gallons | ___ | ___ |
| ___ | ~~56~~ | ___ | ___ | ~~68.18~~ | ___ | ___ |
| 11:29 | ~~70~~ Recharge | 7.10 | 6.34 | 62.5 | dark gray | heavy |

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

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

| PURGING EQUIPMENT | | SAMPLING EQUIPMENT | |
|---|---|---|---|
| ___ 2" Bladder Pump | ___ Bailer (Teflon®) | ___ 2" Bladder Pump | X Bailer (Teflon®) |
| 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 #: 359

REMARKS: ___

Meter Calibration: Date: 3/10/92 Time: 11:00 Meter Serial #: 9011 Temperature °F: 65.8

(EC 1000 1413 / 1000) (DI ___) (pH 7 7.01 / 7.00) (pH 10 10.01 / 10.00) (pH 4 3.97 / ___)

Location of previous calibration: ___

Signature: S. Horton | Reviewed By: MW | Page 3 of 4

# WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: 670-04.01 SAMPLE ID: MW-4

PURGED BY: S. Horton CLIENT NAME: ARCO #374

SAMPLED BY: S. Horton LOCATION: 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): — VOLUME IN CASING (gal.): 13.07

DEPTH TO WATER (feet): 6.68 CALCULATED PURGE (gal.): 65.37

DEPTH OF WELL (feet): 26.61 ACTUAL PURGE VOL. (gal.): 65.50

DATE PURGED: 3/10/92 Start (2400 Hr) 11:45 End (2400 Hr) 11:55

DATE SAMPLED: 3/10/92 Start (2400 Hr) 11:57 End (2400 Hr) 12:00

| TIME (2400 Hr) | VOLUME (gal.) | pH (units) | E.C. (µmhos/cm @ 25° C) | TEMPERATURE (°F) | COLOR (visual) | TURBIDITY (visual) |
|---|---|---|---|---|---|---|
| 11:47 | 13.5 | 6.81 | 7.54 | 64.9 | clear | slight |
| 11:49 | 26.5 | 6.85 | 8.62 | 65.3 | cloudy | moderate |
| 11:53 | 39.5 | 6.94 | 9.77 | 65.6 | " | " |
| ___ | ~~MEASURE~~ | Well Dry At 45 Gallons | | | | |
| 12:00 | ~~MEASURE~~ | 7.12 | 8.06 | 66.1 | " | " |

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): EB-1

| 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: ___ Time: ___ Meter Serial #: ___ Temperature °F: ___

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

Location of previous calibration: MW-3

Signature: [redacted] Sign Horton Reviewed By: MK Page 4 of 4

1017
GIB-92-024

# MONITORING WELL PURGE WATER DISPOSAL FO[illegible]

TO BE COMPLETED BY GENERATOR

NAME ARCO PRODUCTS

ADDRESS P.O. BOX 5811

CITY, STATE, ZIP SAN MATEO, CA 94402 PHONE NO (415)571-2434

Description of Water: Purge water generated during sampling or development of monitoring wells located at various ARCO sites. Auger rinsate generated during the installation of monitoring wells at various ARCO sites. The water may contain dissolved hydrocarbons.

| | STA # | ADDRESS | GAL |
|---|---|---|---|
| 1. | # 428 | 12890 SAN PABLO AVE., RICHMOND, CALIFORNIA | 81 |
| 2. | 374 | 6407 TELEGRAPH AVE., OAKLAND, CALIFORNIA | 179 |
| 3. | 276 | 10600 MACARTHUR BLVD., OAKLAND, CALIFORNIA | 143 |
| 4. | 5387 | 20200 HESPERIAN BLVD., HAYWARD, CALIFORNIA | 188 |
| 5. | 362 | 29900 MISSION BLVD., HAYWARD, CALIFORNIA | 110 |
| 6. | 2128 | 2230 BARRETT AVE., RICHMOND, CALIFORNIA | 21 |
| 7. | 2152 | 22141 CENTER ST., CASTRO VALLEY, CALIFORNIA | 118 |
| 8. | 5339 | 1840 65TH ST., SACRAMENTO, CALIFORNIA | 82 |
| 9. | 4494 | 566 HEGENBERGER RD., OAKLAND, CALIFORNIA | 85 |
| 10. | 2010 | 2110 OLD MIDDLEFIELD, MOUNTAIN VIEW, CALIFORNIA | 508 |

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

KYLE CHRISTIE Kyle Christie by Jon Odom 3/26/92
TYPED OR PRINTED FULL NAME & SIGNATURE DATE

TRANSPORTER

NAME ALLIED OIL & PUMPING / BALCH PETROLEUM

ADDRESS P.O. BOX 32128

CITY, STATE, ZIP SAN JOSE, CA

PHONE NO (408)432-0333

TRUCK UNIT I.D. NO

JERRY DRAKE 3-26-92
TYPED OR PRINTED FULL NAME & SIGNATURE DATE

TSD FACILITY

NAME GIBSON OIL & REFINING

ADDRESS 475 SEAPORT BLVD ☒ RECYCLE ☐ OTHER

CITY, STATE, ZIP REDWOOD CITY, CA 94063

PHONE NO (415)368-5511 RELEASE#11320

GAL

BILL EDIN 3-26-92
TYPED OR PRINTED FULL NAME & SIGNATURE DATE