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TRANSMITTAL

TO: Mr. Barney Chan
ACHCSA
Dept. of Environmental Health
Swan Way, Room 200
Oakland, California 94621

DATE: March 11, 1993
PROJECT NUMBER: 60026.13
SUBJECT: ARCO Station 276, 10600 MacArthur Blvd., Oakland, California

FROM: Robert Campbell
TITLE: Staff Geologist

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REMARKS:
Per ARCO's request (Mr. Michael Whelan) copies of this report have been forwarded to you for your files.

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LETTER REPORT
QUARTERLY GROUNDWATER MONITORING AND REMEDIAL PERFORMANCE EVALUATION
Fourth Quarter 1992 ✓
at
ARCO Station 276
10600 MacArthur Boulevard
Oakland, California

60026.13

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March 11, 1993
0304MWHE
60026.13

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

Subject: Fourth Quarter 1992 Groundwater Monitoring and Remedial Performance Evaluation Report for ARCO Station 276, 10600 MacArthur Boulevard, Oakland, California.

Mr. Whelan:

As requested by ARCO Products Company (ARCO), RESNA Industries Inc. (RESNA) prepared this letter report summarizing the results of fourth quarter 1992 groundwater monitoring performed by ARCO's contractor, EMCON Associates (EMCON) of San Jose, California, at the above-referenced site. Included in this report is a remedial performance evaluation of an interim vapor extraction system (VES) that has been in operation since August 25, 1992 at the subject site.

The objectives of this quarterly groundwater monitoring are to evaluate changes in the groundwater levels, and changes in concentrations of petroleum hydrocarbons in the local groundwater associated with the former gasoline-storage tanks at the site. This monitoring was also performed to evaluate changes in concentrations of halogenated volatile organic compounds (VOCs) in the local groundwater. The field work and laboratory analyses of groundwater samples during this quarter were 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's scope of work. RESNA's scope of work was limited to the following: inspecting wells MW-2 and MW-7 for the presence of floating product and, if present, removing the product; interpretating field and laboratory analytical data; and evaluating trends in reported

hydrocarbon and volatile organic compounds (VOCs) concentrations in the local groundwater, the groundwater levels, and direction of groundwater flow beneath the site.

The operating ARCO Station 276 is located on the southeastern corner of the intersection of 106th Avenue and MacArthur Boulevard in Oakland, California, as shown on the Site Vicinity Map, Plate 1. The locations of the former and existing underground storage tanks, groundwater monitoring wells and onsite vapor extraction wells are shown on the Generalized Site Plan, Plate 2.

Previous environmental work is discussed in prior subsurface investigations listed in the References section of this report.

Groundwater Sampling and Gradient Evaluation

Depth to water (DTW) levels in wells MW-1 through MW-5, MW-7, and RW-1 were measured by EMCON field personnel on October 31, November 20, and December 16, 1992 and quarterly sampling was performed by EMCON field personnel on November 20, 1992. Well MW-8 was monitored on October 31 and November 20, 1992, and was sampled on November 24, 1992 rather than November 20, 1992 because the access lid was stuck. This condition also prevented the monitoring of wells MW-2 and MW-8 on December 16, 1992. Offsite well MW-6 was not monitored or sampled during this quarter due to repaving of the parking lot adjacent to the site during late third quarter 1992, which concealed the well. 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-8 and RW-1, are presented on EMCON's Field Reports Summary of Groundwater Monitoring Data, and Water Sample Field Data sheets. Copies of these reports are included in Appendix A.

The DTW levels, wellhead elevations, groundwater elevations, and subjective observations of product in the groundwater from MW-1 through MW-8, and RW-1 for this quarter and previous quarterly groundwater monitoring at the site are summarized in Table 1, Cumulative Groundwater Monitoring Data. EMCON's DTW measurements from MW-1 through MW-8 and RW-1 were used to evaluate groundwater elevations.

Floating product (0.02 foot) was detected in wells MW-2 and MW-7 by EMCON field personnel on November 20, 1992, and was detected (0.04 foot) in MW-7 on December 16, 1992 (see EMCON's Field Reports Appendix A). RESNA field personnel conducted monthly product inspections of wells MW-2 and MW-7 on October 16, November 17, and December 30, 1992. Petroleum product was not detected in well MW-2 by RESNA field personnel during this quarter and 0.25 foot was detected in MW-7 on October 16 and

petroleum product sheen was detected in MW-7 on November 17 and December 30, 1992. Evidence of product or sheen was not observed in the other monitoring wells during this quarter. Quantities of floating product and water removed are presented in Table 2, Approximate Cumulative Product Removed. The total cumulative recovered product at the site for this quarter is 0.25 gallons; the total product recovered at this site to date by hand bailing is approximately 18.54 gallons.

Wells MW-1, MW-3, through MW-6, MW-8, and RW-1 were constructed in a deeper water-bearing zone and offsite well MW-7 and onsite well MW-2 were constructed in a shallow water-bearing zone.

Groundwater elevations of the shallow and deep water-bearing zone for this quarter are shown on the Groundwater Elevation Maps, Plates 3 through 5. Groundwater gradients were not evaluated this quarter because wells were inaccessible this quarter (MW-6 was inaccessible all quarter, and MW-2, MW-6, and MW-8 were inaccessible during December 1992, as previously discussed).

Groundwater monitoring wells MW-1, MW-3, and MW-4 were purged and sampled by EMCON field personnel on November 20, 1992 and monitoring wells MW-5, MW-8, and RW-1 were purged and sampled on November 24, 1992. Monitoring wells MW-2 and MW-7 contained floating product during EMCON's sampling at the site and were not sampled. 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.

REMEDIAL PERFORMANCE EVALUATION

Vapor Extraction System Description

The data presented in this section covers the period from October 1, 1992 to December 31, 1992. The system began continuous operation on August 25, 1992. The system was monitored by Pacific Environmental Group (PEG) during the previous quarter (from August 25, 1992 to October 5, 1992). The onsite vapor extraction system (VES) uses a 1.5 horsepower Rotron vacuum blower to extract petroleum hydrocarbon vapor from subsurface soils associated with the former USTs at the site. Plate 6, depicts the location of the eight onsite vapor extraction wells (VW-1 through VW-7, and monitoring well MW-2) that are used to extract vapor from hydrocarbon-impacted subsurface soils by use of the Rotron blower. Monitoring well MW-8 is also manifolded to the VES but is shutoff because it is screened in the lower water bearing zone. Extracted vapor is directed to a 500 standard cubic feet per minute (scfm at 70 degrees Fahrenheit) gas fired Anguil Catalytic Oxidizer (Catox) for abatement prior to discharge to the atmosphere. System operation is regulated

under the Bay Area Air Quality Management District (BAAQMD) Permit to Operate Number 5998. Sample ports are located influent and effluent to the CatOx, at the wellheads, and in the vapor manifold piping from the extraction wells to the blower, prior to fresh air dilution.

System Monitoring

The onsite VES is monitored every two weeks to evaluate the treatment system performance, at which time the following measurements are recorded: applied vacuum on the wells; average extracted air flow rates influent to the blower (prior to fresh air dilution); and extracted hydrocarbon vapor concentrations from the well field, influent to the CatOx, and effluent to the CatOx as measured by a flame-ionization detector (FID). In addition to these measurements, several other parameters such as the process temperature, stack temperature, and flame voltage are also recorded during every site visit for maintenance purposes.

LABORATORY METHODS AND RESULTS

Groundwater Samples

Under the direction of EMCON, groundwater 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 groundwater samples from MW-1, MW-3 through MW-5, MW-8, and RW-1 were analyzed for total petroleum hydrocarbons as gasoline (TPHg) and benzene, toluene, ethylbenzene,and xylenes (BTEX) using modified Environmental Protection Agency (EPA) Methods 5030/8020 DHS LUFT Method. Concentrations of TPHg and benzene in groundwater are shown on Plate 7, Concentrations of TPHg and Benzene in Groundwater. Groundwater samples from wells MW-1, MW-3 through MW-5, MW-8, and RW-1 were also analyzed for VOCs using EPA Method 624. Concentrations of VOCs in the groundwater are shown on Plate 8, Concentrations of PCE in Groundwater. In addition, well MW-4 was analyzed for total oil and grease (TOG) using EPA Method 418.1. The Chain of Custody Records and Laboratory Analysis Reports are included in Appendix A. Results of these and previous groundwater analyses are summarized in Table 3, Cumulative Results of Laboratory Analyses of Groundwater Samples--TPHg, TPHd, BTEX, and TOG and Table 4, Cumulative Results of Laboratory Analyses of Groundwater Samples--VOCs and Metals.

Since the last quarter, floating product has continued to be detected in MW-2 and MW-7 by EMCON field personnel, and product detected in offsite well MW-7 was bailed by RESNA field personnel. Laboratory analytical results of groundwater samples from wells

MW-1, MW-3 through MW-5, MW-8, and RW-1 indicated nondetectable concentrations of TPHg (less than 50 parts per billion [ppb]; except for samples collected from MW-3, MW-4, and RW-1, where detection limits were raised) and BTEX (less than 0.5 ppb; except for samples collected from wells MW-3, MW-4, and RW-1, where the detection limits were raised). Concentrations of TOG decreased in well MW-4; concentrations of PCE decreased in wells MW-1, MW-3, MW-5 and MW-8, increased in MW-4, and remained the same in RW-1. The laboratory raised the detection limits for TPHg (in MW-3 (<270 ppb), MW-4 (<680 ppb), and RW-1 (<650 ppb), and for ethylbenzene, and total xylenes in samples collected from MW-3, MW-4, and RW-1 due to matrix interference from PCE in the samples.

Air Samples

Air samples are collected from the combined well field prior to fresh air dilution at the remediation compound once a month and every time a new well is brought on line. Influent and effluent air samples to the CatOx are also collected monthly to evaluate system performance. Air samples collected were analyzed for BTEX and TPHg using modified EPA Methods 8020/8015 by GTEL Environmental Laboratories, located in Concord, California (Hazardous Waste Testing Laboratory Certification No. 058). Enclosed in Appendix B are the Chain of Custody Records and Laboratory Analysis Reports of air samples analyzed during fourth quarter 1992.

RESULTS OF REMEDIAL PERFORMANCE EVALUATION

Air Sample Results

Table 5 presents operation and performance data, and results of samples collected from the onsite VES for fourth quarter 1992. Enclosed in Appendix C are VES performance evaluation graphs depicting decreases in extracted hydrocarbon vapor concentrations observed for each well for this monitoring period.

Vapor extraction wells VW-3 and VW-4 were opened on August 25, and closed on October 22, 1992. TPHg concentrations in extracted vapor from these wells decreased rapidly by 91 percent (from 11,000 mg/m^3 at start-up, to 990 mg/m^3) during this 59 day period, prior to closing the wells.

Vapor extraction wells VW-2 and VW-5 were opened on October 23, and closed on November 16, 1992. Air samples were not collected on October 23, 1992 during the start-up of the system with these two wells operational. TPHg concentrations in extracted vapor from these wells was estimated to be 28,900 mg/m^3, based on a weighted average of the

analytical results for TPHg observed during the vapor extraction test conducted on these wells on August 25, 1992 (48,000 mg/m^3 at 38 scfm and 55 inches WC at VW-2; and 16,000 mg/m^3 at 61 scfm at 40 inches WC at VW-5). TPHg concentrations in extracted vapor from these two wells decreased rapidly by 98 percent (from 28,290 mg/m^3 at start-up, to 350 mg/m^3 on November 3, 1992) during this 25 day period, prior to closing the wells.

Vapor extraction well VW-1 was opened on November 17, and closed on December 6, 1992. TPHg concentrations in extracted vapor from VW-1 decreased from 200 mg/m^3 to below the laboratory method detection limit of 10 mg/m^3 during a 20 day period.

Vapor extraction wells VW-3 and VW-4 were reopened on December 7 and closed on December 20, 1992. Analytical results of air samples collected from these wells reported a TPHg concentration less than the detection limit of 10 mg/m^3.

Vapor extraction well VW-2 was reopened on December 21, 1992 and closed on January 4, 1993. Analytical result of the air sample collected from this well reported a TPHg concentration of 37 mg/m^3.

Emission Rates & Destruction Efficiency

Based on analytical results of influent and effluent air samples to the CatOx, and total combined air flow rate of 500 scfm through the CatOx, maximum TPHg and benzene emission rates have been estimated to be 0.8 pounds per day (lb/day) and 0.096 lb/day, respectively. The benzene emission rate is in compliance with the BAAQMD Permit-to-Operate limitation of 0.11 pounds of benzene per day. TPHg destruction efficiency by the Cat-Ox averages approximately 97%. This destruction efficiency is in compliance with the BAAQMD permit requirement of greater than 95 % for extracted hydrocarbon concentrations greater than 1000 parts per million by volume (4,158 mg/m^3).

Hydrocarbon Removal Rates

Enclosed in Appendix C are VES performance evaluation graphs depicting and summarizing the cumulative gallons and pounds of hydrocarbons extracted and abated by the onsite VES during this monitoring period. Table 5 presents hydrocarbon removal rates as pounds per hour per well (s) operating, total pounds of hydrocarbon removed for a given well (s) for a given period, and a cumulative total of pounds/gallons of hydrocarbons removed since start-up. A total of 3615 pounds (577 gallons) of gasoline have been recovered from the start of the onsite VES on August 25, 1992 through the fourth quarter 1992. Total gallons of gasoline hydrocarbons removed is calculated using the formula: total gallons gasoline removed equals total pounds of gasoline removed divided by 6.26 pounds per gallon, or

3615 pounds of gasoline divided by 6.26 pounds per gallon equals 577 gallons of gasoline recovered. The treatment system had no down time or mechanical failures during this period.

Based on analytical results for TPHg in extracted vapor and extracted air flow rates of 80 scfm with wells VW-3 and VW-4 operational during a 59 day period, an estimated maximum of 1635 pounds (261 gallons) of gasoline was removed from subsurface soils. Similarly, during the 25 day period when wells VW-2 and VW-5 were open, an estimated maximum of 1927 pounds (311 gallons) of gasoline was removed from subsurface soils.

At an extraction air flow rate of 73 scfm, and a TPHg concentration in extracted vapor of 200 mg/m^3, well VW-1 resulted in an estimated maximum recovery of 29 pounds (5 gallons) of gasoline during the 20 day period it was open.

Wells VW-3 and VW-4, and later VW-2 by itself were reopened approximately a month to a month and a half later to evaluate if hydrocarbon vapor concentrations in subsurface soils had increased in the interim period. No further increases in hydrocarbon concentrations were reported. A minimal amount of gasoline (4 pounds) was recovered on reopening these wells.

The vapor extraction wells were dry at system start-up (August 25, 1992). Water levels have continued to rise in this monitoring period due to the heavy rains resulting in loss of screened interval in the wells. By December 7, 1992, water levels in all vapor extraction wells had risen to 17.5 feet below grade resulting in a 1 foot screened interval loss. By December 21, 1992 water levels in the vapor extraction wells had risen to 15 feet below grade resulting in approximately 3 to 4 feet loss of screened interval in the wells. The loss of screened interval available to venting in the wells may have resulted in the decrease in extracted hydrocarbon vapor concentrations reported from vapor extraction wells VW-1, VW-2, VW-3, and VW-4 during late November and December 1992. The system was shut down in early January 1993 due to increasing water levels (approximately a 7 feet loss of screened interval).

CONCLUSIONS

The shallow water-bearing zone at the site has been impacted by petroleum hydrocarbons. The deeper water-bearing zone has been impacted by VOCs, but has not been impacted by gasoline hydrocarbons. Floating petroleum product was detected by EMCON field personnel in shallow onsite well MW-2 and shallow offsite well MW-7 this quarter. Floating product was detected in offsite well MW-7 by RESNA field personnel this quarter. Analytical results of groundwater samples from deeper wells MW-1, MW-3, MW-5, MW-8

and RW-1 indicated nondetectable concentrations of TPHg and BTEX. PCE is the predominant VOC in the deeper groundwater zone and appears to be migrating beneath the site from an offsite and upgradient source (near offsite deeper well MW-6). This possibility was discussed in greater detail in RESNA's recent Additional Subsurface Investigation and Interim Remediation report (RESNA, February 1, 1993).

Performance results on the operation of the onsite VES during fourth quarter 1992 indicated that extracted vapor concentrations from VW-2, VW-3, VW-4 and VW-5 decreased by at least 90 percent between roughly one month to two months of operation. Reopening of these wells approximately one month later did not result in an increase in extracted hydrocarbon vapor concentrations, suggesting that vapor extraction may not be diffusion limited at these wells. The loss of screened interval to venting due to rising water levels in the wells may also have resulted in the decrease in extracted hydrocarbon vapor concentrations reported from vapor extraction wells VW-1, VW-2, VW-3, and VW-4 during late November and December 1992. An estimated total of 3615 pounds (577 gallons) of gasoline have been recovered from the start of the onsite VES on August 25, 1992 through fourth quarter 1992. The treatment system had no down time or mechanical failures during this period. The system was shut down in early January 1993 due to increasing water levels (approximately a 7 feet loss of screened interval) in vapor extraction wells.

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

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

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

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

Sincerely,
RESNA Industries Inc.

Robert D. Campbell
Staff Geologist

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

James L. Nelson
C.E.G. No. 1463

Enclosures: References

Plate 1, Site Vicinity Map
Plate 2, Generalized Site Plan
Plate 3, Groundwater Elevation Map, October 31, 1992
Plate 4, Groundwater Elevation Map, November 20, 1992
Plate 5, Groundwater Elevation Map, December 16, 1992
Plate 6, VES Schematic
Plate 7, Concentrations of TPHg and Benzene in Groundwater, November 20, 1992
Plate 8, Concentrations of PCE in Groundwater, November 20, 1992

Table 1, Cumulative Groundwater Monitoring Data
Table 2, Approximate Cumulative Product Removed
Table 3, Cumulative Results of Laboratory Analyses of Groundwater Samples--TPHg, TPHd, BTEX, and TOG
Table 4, Cumulative Results of Laboratory Analyses of Groundwater Samples--VOCs and Metals
Table 5, Onsite Vapor Extraction System-Operation & Performance (Catalytic Oxidizer)

Appendix A: EMCON's Field Reports- Summary of Groundwater Monitoring Data- Certified Analytical Reports with Chain-of- Custody- Water Sample Field Data Sheets-Monitoring Well Purge Water Transport Form
Appendix B: Certified Analytical Reports with Chain-of-Custody
Appendix C: VES Performance Evaluation Graphs

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Applied GeoSystems. August 8, 1989. Report Limited Subsurface Environmental Investigation. AGS Job No. 19014-1.

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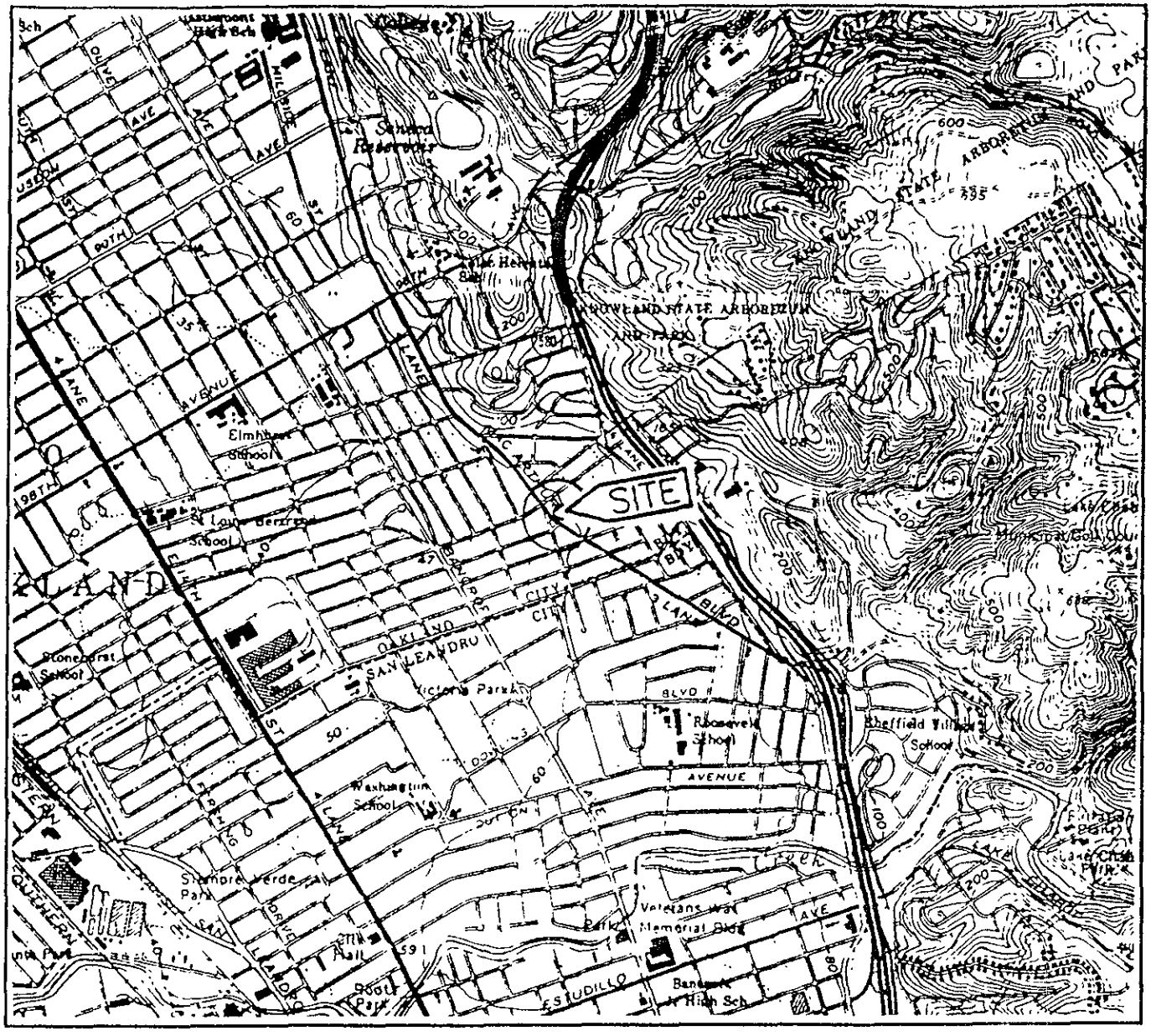
RESNA. February 1, 1993. Additional Subsurface Investigation and Interim Remediation at ARCO Station 276, 10600 MacArthur Boulevard in Oakland, California. RESNA Report 60026.05.



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

N

LEGEND

⊙ = Site Location

Approximate Scale

2000 1000 0 2000 4000

feet

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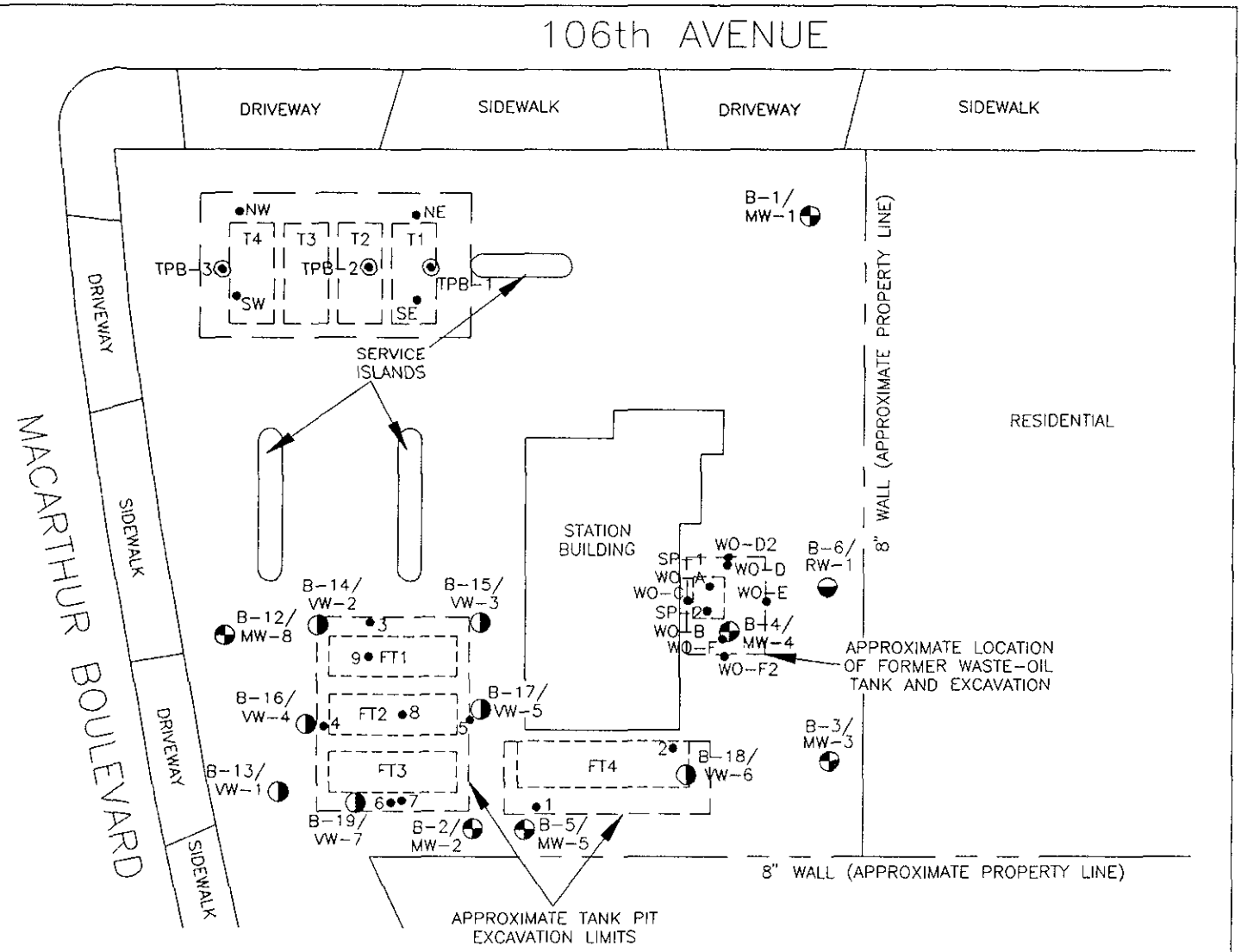
SITE VICINITY MAP
ARCO Station 276
10600 MacArthur Boulevard
Oakland, California

PLATE
1



EXPLANATION

TPB-3 ◉ = Boring in proposed new tank pit (RESNA, 1990)

B-19/ VW-7 ◑ = Vapor well (RESNA, 1992)

B-12/ MW-8 ◓ = Groundwater monitoring well (RESNA, 1989 and 1992)

B-7/ RW-1 ◒ = Recovery well (RESNA, 1991)

MW-3 (WGR) ⊗ = Groundwater monitoring well (WGR, 1988)

NW ● = New tank pit excavation bottom sample (RESNA, 1990)

9 ● = Former tank pit sample (S7-TP1SW-1 through -9, RESNA, 1990)

SP-2 WO-F ● WO-F2 = Former waste-oil tank pit excavation bottom and sidewall sample (PEG, 1988)

T4 = Existing underground storage tanks

FT4 = Former underground storage tanks

B-11/ MW-7 ◓

MW-3 (WGR) ⊗

B-10/ MW-6 ◓

MW-6 and MW-7 have not been surveyed.

Approximate Scale

30 15 0 30 60

feet

Source: Modified from plan supplied by ARCO and surveyed by Ron Archer, Civil Engineer, Inc. and John Koch, Land Surveyor.

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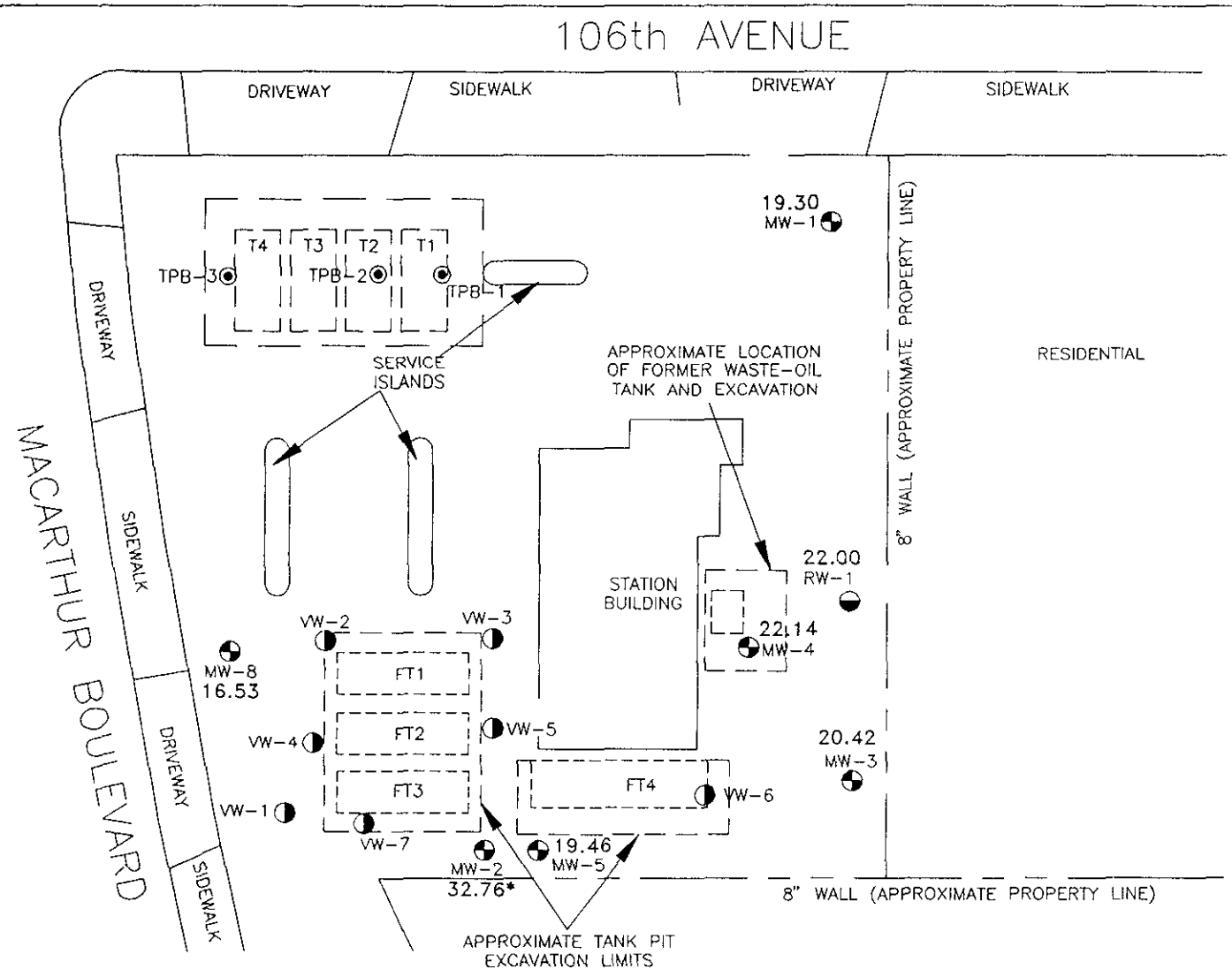
GENERALIZED SITE PLAN
ARCO Station 276
10600 MacArthur Boulevard
Oakland, California

PLATE 2



EXPLANATION

TPB-3 ◉ = Boring in proposed new tank pit (RESNA, 1990)

VW-7 ◑ = Vapor well (RESNA, 1992)

MW-8 ◒ = Groundwater monitoring well (RESNA, 1989 and 1992)

RW-1 ◒ = Recovery well (RESNA, 1991)

MW-3 (WGR) ⊠ = Groundwater monitoring well (WGR, 1988)

22.14 = Elevation of ground water in feet above MSL, October 31, 1992

* = Well screened in shallow water bearing zone, not used in gradient calculation

NM = Not monitored

22.78*
MW-7

NM
MW-3
(WGR)

NM
MW-6

MW-6 and MW-7 have not been surveyed

Approximate Scale

30 15 0 30 60

feet

Source. Modified from plan supplied by ARCO and surveyed by Ron Archer, Civil Engineer, Inc. and John Koch, Land Surveyor.

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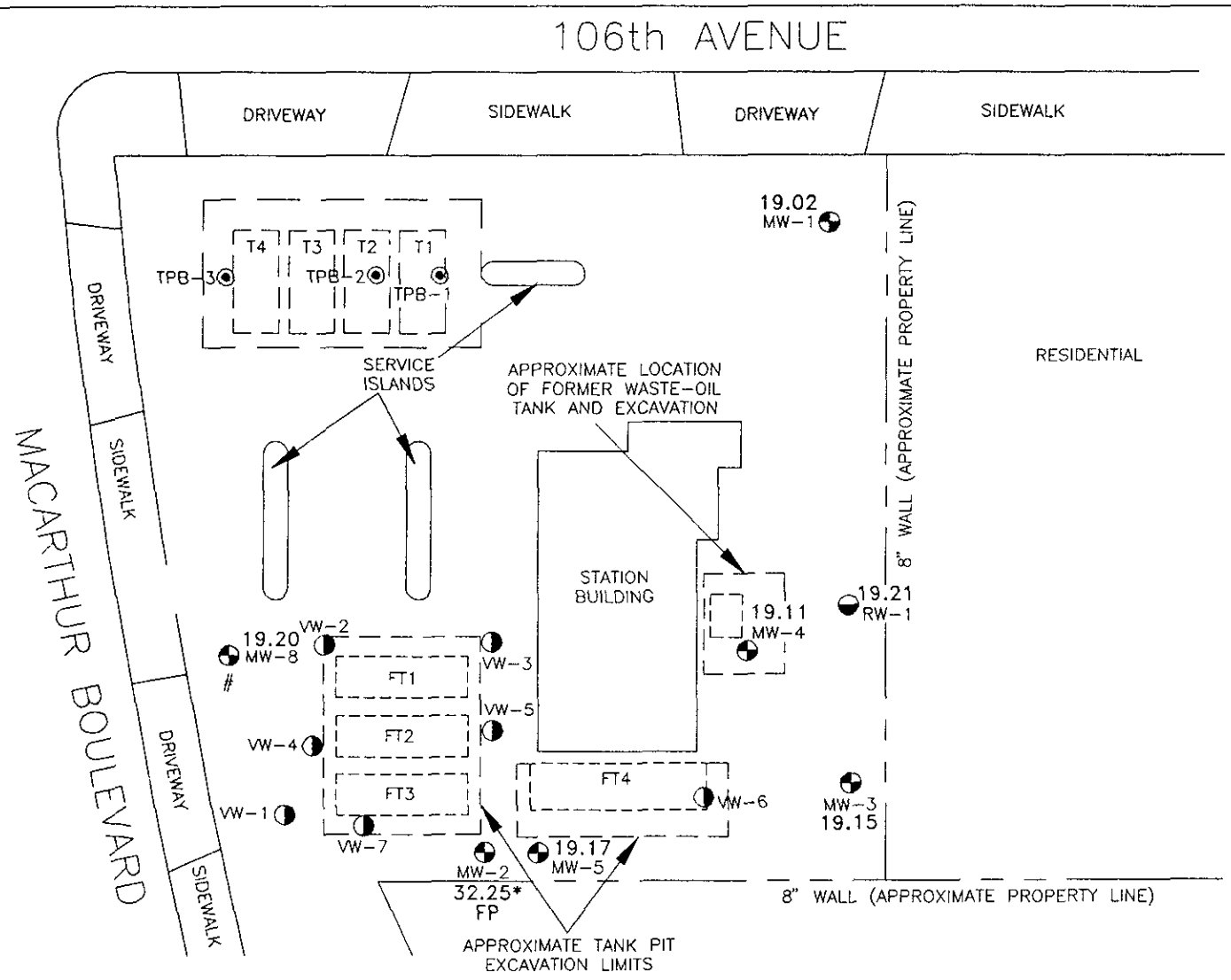
GROUNDWATER ELEVATION MAP
ARCO Station 276
10600 MacArthur Boulevard
Oakland, California

PLATE
3



EXPLANATION

TPB-3 ⊙ = Boring in proposed new tank pit (RESNA, 1990)

VW-7 ◑ = Vapor well (RESNA, 1992)

MW-8 ◓ = Groundwater monitoring well (RESNA, 1989 and 1992)

RW-1 ◒ = Recovery well (RESNA, 1991)

MW-3 (WGR) ⊗ = Groundwater monitoring well (WGR, 1988)

10.21 = Elevation of ground water in feet above MSL, November 20, 1992

NM = Not monitored

FP = Floating product

\# = Well gauged 4 days after 11/20/92

* = Well screened in shallow water bearing zone, not used in gradient calculation

FP 34.75* MW-7

NM MW-3 (WGR)

NM MW-6

MW-6 and MW-7 have not been surveyed

Approximate Scale

30 15 0 30 60

feet

Source: Modified from plan supplied by ARCO and surveyed by Ron Archer, Civil Engineer, Inc and John Koch, Land Surveyor.

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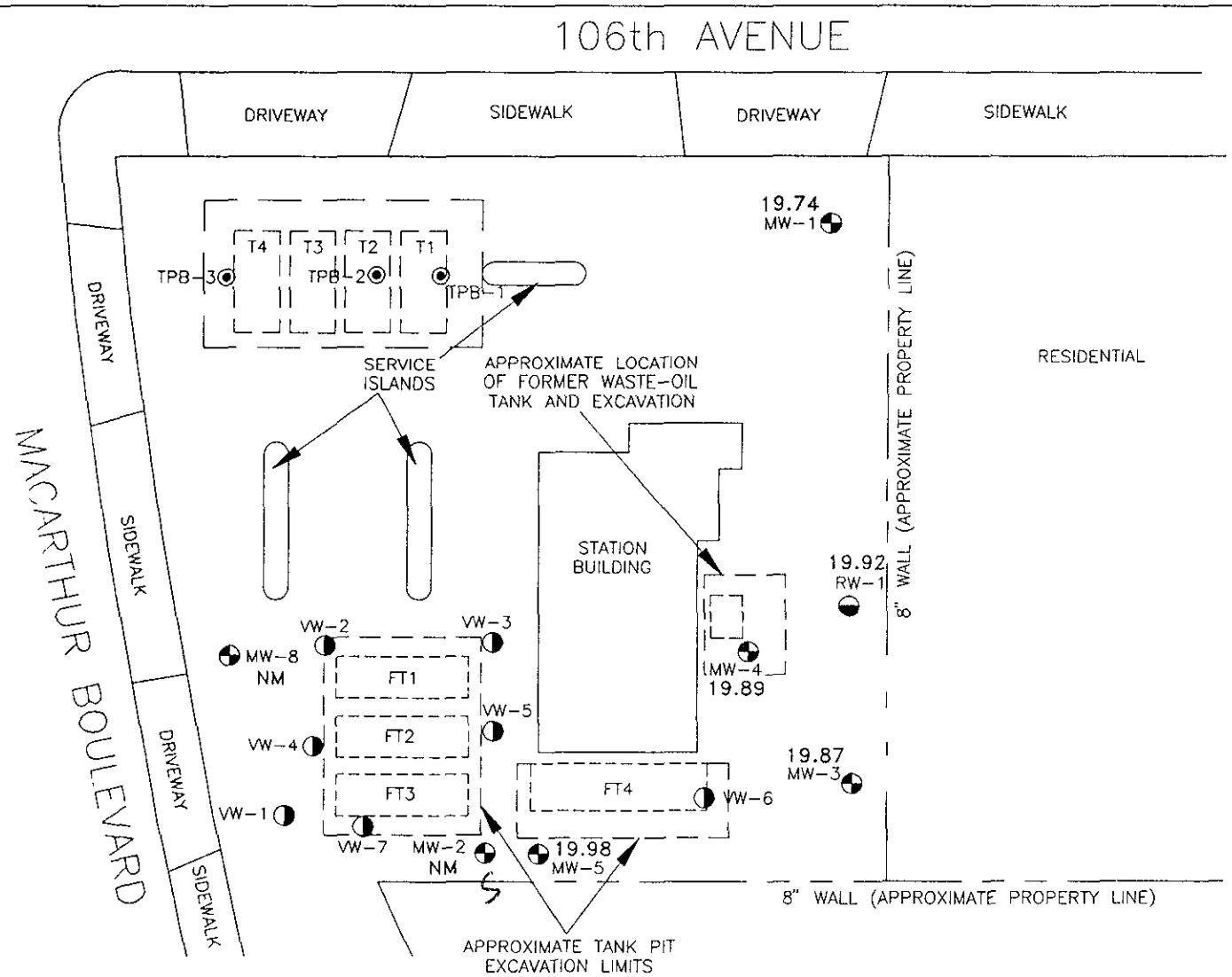
PROJECT 60026.13

GROUNDWATER ELEVATION MAP
ARCO Station 276
10600 MacArthur Boulevard
Oakland, California

PLATE 4



EXPLANATION

- TPB-3 ◉ = Boring in proposed new tank pit (RESNA, 1990)
- VW-7 ◑ = Vapor well (RESNA, 1992)
- MW-8 ◓ = Groundwater monitoring well (RESNA, 1989 and 1992)
- RW-1 ◒ = Recovery well (RESNA, 1991)
- MW-3 (WGR) ⊗ = Groundwater monitoring well (WGR, 1988)
- 19.98 = Elevation of ground water in feet above MSL, December 16, 1992
- NM = Not monitored
- FP = Floating product
- * = Well screened in shallow water bearing zone, not used in gradient calculation

FP
39.15 *
MW-7

NM
MW-3
(WGR)

NM
MW-6

MW-6 and MW-7 have not been surveyed.

Approximate Scale

30 15 0 30 60

feet

Source: Modified from plan supplied by ARCO and surveyed by Ron Archer, Civil Engineer, Inc. and John Koch, Land Surveyor.

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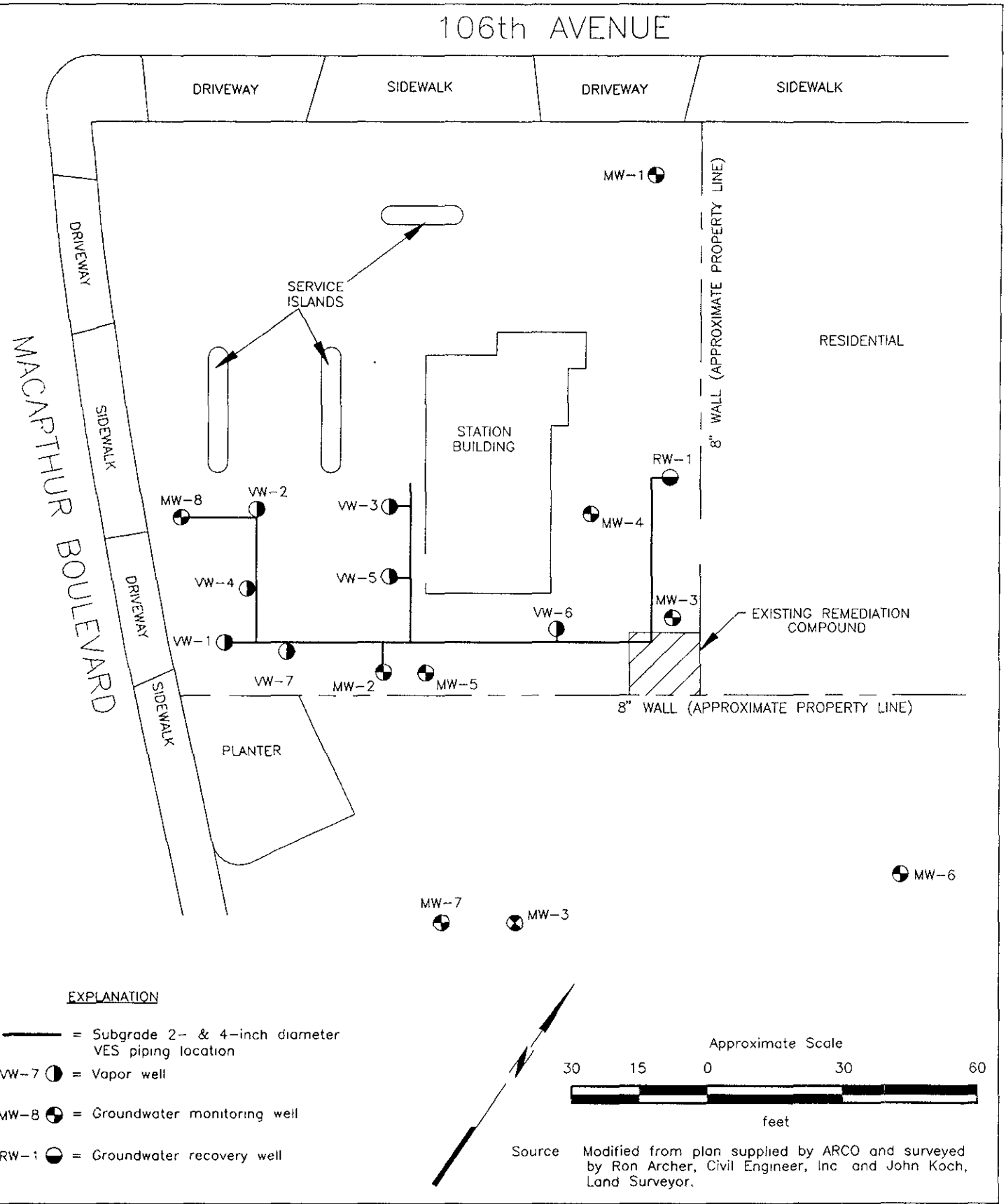
Working to Restore Nature

PROJECT 60026.13

GROUNDWATER ELEVATION MAP
ARCO Station 276
10600 MacArthur Boulevard
Oakland, California

PLATE 5



EXPLANATION

— = Subgrade 2- & 4-inch diameter VES piping location

VW-7 ◑ = Vapor well

MW-8 ◒ = Groundwater monitoring well

RW-1 ◒ = Groundwater recovery well

Approximate Scale

30 15 0 30 60

feet

Source Modified from plan supplied by ARCO and surveyed by Ron Archer, Civil Engineer, Inc and John Koch, Land Surveyor.

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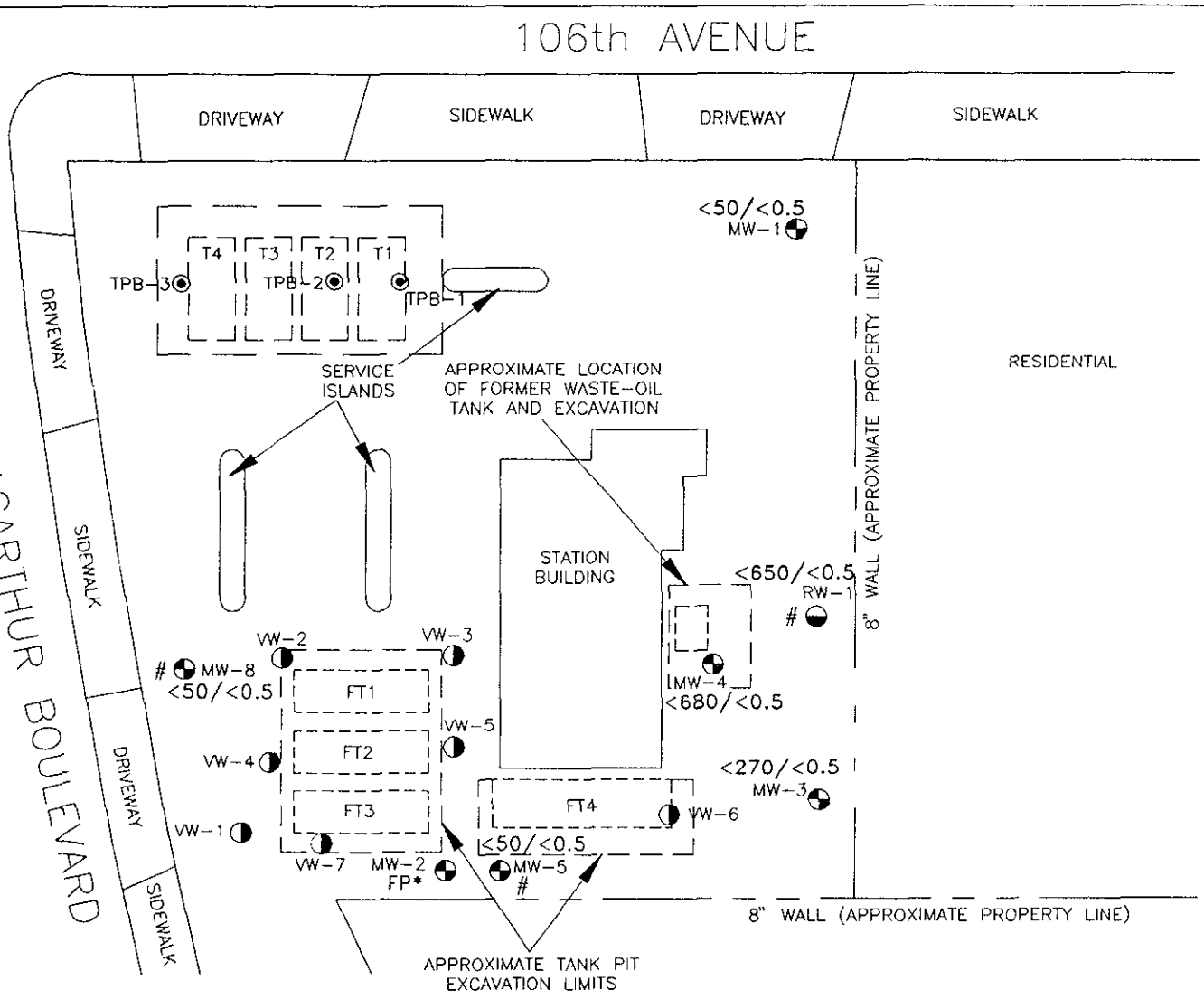
VES SCHEMATIC
ARCO Station 276
10600 MacArthur Boulevard
Oakland, California

PLATE
6



EXPLANATION

- TPB-3 ⊙ = Boring in proposed new tank pit (RESNA, 1990)
- VW-7 ◑ = Vapor well (RESNA, 1992)
- MW-8 ◔ = Groundwater monitoring well (RESNA, 1989 and 1992)
- RW-1 ◒ = Recovery well (RESNA, 1991)
- MW-3 (WGR) ⊗ = Groundwater monitoring well (WGR, 1988)
- <680/<0.5 = Concentrations of Total Petroleum Hydrocarbon as gasoline (TPHg) and Benzene in groundwater, 11/20/92 detection limit raised due to PCE interference
- # = Sampled on 11/24/92
- NS = Not sampled
- FP = Floating product
- * = Well screened in shallow water bearing zone

FP*
MW-7

NS
MW-3
(WGR)

NS
MW-6

MW-6 and MW-7 have not been surveyed

Approximate Scale

30 15 0 30 60

feet

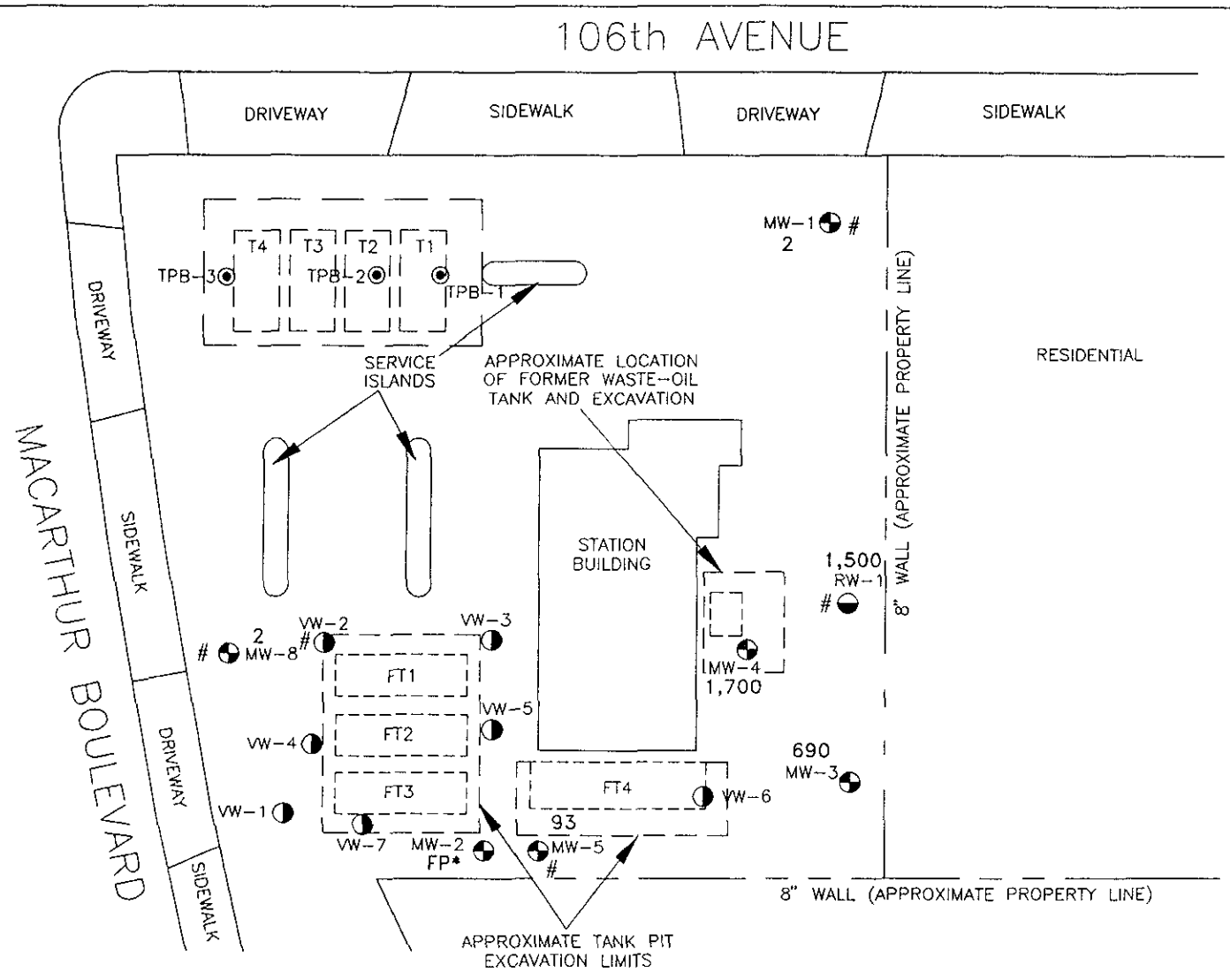
Source Modified from plan supplied by ARCO and surveyed by Ron Archer, Civil Engineer, Inc. and John Koch, Land Surveyor

RESNA
Working to Restore Nature

PROJECT 60026.13

CONCENTRATION OF TPHg AND BENZENE IN GROUNDWATER
ARCO Station 276
10600 MacArthur Boulevard
Oakland, California

PLATE 7



EXPLANATION

TPB-3 ⊙ = Boring in proposed new tank pit (RESNA, 1990)

VW-7 ◑ = Vapor well (RESNA, 1992)

MW-8 ◔ = Groundwater monitoring well (RESNA, 1989 and 1992)

RW-1 ◒ = Recovery well (RESNA, 1991)

MW-3 (WGR) ⊗ = Groundwater monitoring well (WGR, 1988)

1,700 = Concentrations of Tetrachloroethane (PCE) in groundwater, 11/20/92

\# = Sampled on 11/24/92

NS = Not sampled

FP = Floating product

* = Well screened in shallow water bearing zone

FP* MW-7

NS MW-3 (WGR)

NS MW-6

MW-6 and MW-7 have not been surveyed

Approximate Scale

30 15 0 30 60

feet

Source: Modified from plan supplied by ARCO and surveyed by Ron Archer, Civil Engineer, Inc. and John Koch, Land Surveyor

RESNA
Working to Restore Nature

PROJECT 60026.13

CONCENTRATION OF PCE IN GROUNDWATER
ARCO Station 276
10600 MacArthur Boulevard
Oakland, California

PLATE 8

TABLE 1
CUMULATIVE GROUNDWATER MONITORING DATA
ARCO Station 276
Oakland, California
(Page 1 of 6)

Date Well Measured	Well Elevation	Depth to Water	Water Elevation	Floating Product
MW-1				
04/17/89		33.04	22.87	None
04/24/89		33.84	22.07	None
10/13/89	55.91	37.19	18.72	None
02/01/90		36.73	19.18	None
07/31/90		36.42	19.49	None
08/01/90		36.41	19.50	None
08/28/90		36.88	19.03	None
10/30/90		37.73	18.18	None
11/20/90		37.92	18.37	None
12/19/90		37.90	18.01	None
01/30/91		38.06	17.85	None
02/27/91		37.66	18.25	None
03/20/91		36.77	19.14	None
04/30/91		34.63	21.28	None
05/31/91		34.83	21.08	None
07/24/91		35.96	19.95	None
08/06/91		36.21	19.70	None
09/03/91		36.74	19.17	None
10/17/91		37.57	18.34	None
11/05/91		37.65	18.26	None
12/24/91		38.14	17.77	None
01/19/92		37.62	18.29	None
02/20/92		36.23	19.68	None
03/10/92		34.58	21.33	None
04/20/92		32.82	23.09	None
05/15/92		33.17	22.74	None
06/30/92		34.55	21.36	None
07/15/92		34.90	21.01	None
08/25/92	55.92	35.34	20.58	None
09/09/92		35.71	20.21	None
10/31/92		36.62	19.30	None
11/20/92		36.90	19.02	None
12/16/92		36.18	19.74	None
MW-2				
04/17/89		17.20	38.15	None
04/24/89		17.83	37.52	None
10/13/89	55.35	20.15*	35.20*	0.03
02/01/90		NM	NM	Sheen
07/31/90		18.90	36.45	None
08/01/90		18.23*	37.03*	1.04
08/28/90		21.25*	34.10*	0.83
10/30/90		24.21*	31.14*	1.04

See notes on page 6 of 6.

TABLE 1
CUMULATIVE GROUNDWATER MONITORING DATA
ARCO Station 276
Oakland, California
(Page 2 of 6)

Date Well Measured	Well Elevation	Depth to Water	Water Elevation	Floating Product
MW-2 Cont.				
11/20/90		25.08*	30.27*	0.60
12/19/90		18.23*	37.12*	None
01/30/91		19.47*	35.88*	0.03
02/27/91		18.84*	36.51*	0.02
03/20/91		16.02*	39.33*	0.01
04/30/91		16.55	38.80	Sheen
05/31/91		18.41*	36.94*	0.01
07/24/91		19.81	35.54	Sheen
08/06/91		20.59*	34.76*	0.14
09/03/91		23.23*	32.12*	0.54
10/17/91		24.81*	30.54*	0.20
11/05/91		18.88*	36.47*	0.01
12/24/91		19.34*	36.01*	0.09
01/19/92		18.00	37.35	Sheen
02/20/92		14.81**	40.54	Skimmer
03/10/92		14.95**	40.40	Skimmer
04/20/92		16.13	39.22	None
05/15/92		17.66	37.69	None
06/30/92		19.11	36.24	Sheen
07/15/92		19.50	35.85	None
08/25/92	55.10	21.35*	33.73*	0.05
09/09/92		22.70*	32.40*	0.05
10/31/92		22.34	32.76	None
11/20/92		19.85*	32.25*	0.02[1]
12/16/92		NM	NM	NM
MW-3				
04/24/89		34.47	22.08	None
10/13/89	56.55	37.60	18.95	None
02/01/90		37.20	19.35	None
07/31/90		36.90	19.65	None
08/01/90		36.87	19.68	None
08/28/90		37.33	19.22	None
10/30/90		38.15	18.40	None
11/20/90		38.33	18.58	None
12/19/90		38.30	18.25	None
01/30/91			Well Dry	
02/27/91		38.11	18.44	None
03/20/91		37.26	19.29	None
04/30/91		35.02	21.53	None
05/31/91		35.26	21.29	None
07/24/91		36.40	20.15	None
08/06/91		36.66	19.89	None

See notes on page 6 of 6.

TABLE 1
CUMULATIVE GROUNDWATER MONITORING DATA
ARCO Station 276
Oakland, California
(Page 3 of 6)

Date Well Measured	Well Elevation	Depth to Water	Water Elevation	Floating Product
MW-3 Cont.				
09/03/91		37.20	19.35	None
10/17/91		38.04	18.51	None
11/05/91		38.08	18.47	None
12/24/91		Well	Dry	
01/19/92		38.07	18.48	None
02/20/92		36.71	19.84	None
03/10/92		34.96	21.59	None
04/20/92		33.20	23.35	None
05/15/92		33.70	22.85	None
06/30/92		34.97	21.58	None
07/15/92		35.35	21.20	None
08/25/92	56.55	35.94	20.61	None
09/09/92		36.19	20.36	None
10/31/92		36.13	20.42	None
11/20/92		37.40	19.15	None
12/16/92		36.68	19.87	None
MW-4				
04/17/89		33.87	22.07	None
04/24/89		33.76	22.18	None
10/13/89	55.94	37.03	18.91	None
02/01/90		36.57	19.37	None
07/31/90		36.39	19.55	None
08/01/90		36.32	19.62	None
08/28/90		36.79	19.15	None
10/30/90		37.62	18.32	None
11/20/90		37.82	18.52	None
12/19/90		37.74	18.20	None
01/30/91		37.97	17.97	None
02/27/91		37.52	18.42	None
03/20/91		36.69	19.25	None
04/30/91		34.48	21.46	None
05/31/91		34.73	21.21	None
07/24/91		35.86	20.08	None
08/06/91		36.15	19.79	None
09/03/91		36.66	19.28	None
10/17/91		37.49	18.45	None
11/05/91		37.54	18.40	None
12/24/91		38.01	17.93	None
01/19/92		37.48	18.46	None
02/20/92		36.11	19.83	None
03/10/92		34.96	21.54	None
04/20/92		32.60	23.34	None

See notes on page 6 of 6.

TABLE 1
CUMULATIVE GROUNDWATER MONITORING DATA
ARCO Station 276
Oakland, California
(Page 4 of 6)

Date Well Measured	Well Elevation	Depth to Water	Water Elevation	Floating Product
MW-4 Cont.				
05/15/92		33.12	22.82	None
06/30/92		34.06	21.88	None
07/15/92		NR	NR	NR
08/25/92	55.98	35.22	20.76	None
09/09/92		35.63	20.35	None
10/31/92		33.84	22.14	None
11/20/92		36.87	19.11	None
12/16/92		36.09	19.89	None
MW-5				
04/17/89		33.17	22.26	None
04/24/89		33.06	22.37	None
10/13/89	55.43	36.33	19.10	None
02/01/90		35.96	19.47	None
07/31/90		35.70	19.73	None
08/01/90		35.69	19.74	None
08/28/90		36.14	19.29	None
10/30/90		36.94	18.49	None
11/20/90		37.09	18.64	None
12/19/90		37.05	18.38	None
01/30/91		37.26	18.17	None
02/27/91		36.81	18.62	None
03/20/91		36.04	19.39	None
04/30/91		33.75	21.68	None
05/31/91		34.01	21.42	None
07/24/91		35.20	20.23	None
08/06/91		35.48	19.95	None
09/03/91		36.00	19.43	None
10/17/91		36.84	18.59	None
11/05/91		36.86	18.57	None
12/24/91		37.31	18.12	None
01/19/92		36.95	18.48	None
02/20/92		35.39	20.04	None
03/10/92		33.67	21.76	None
04/20/92		31.80	23.63	None
05/15/92		32.37	23.06	None
06/30/92		34.00	21.43	None
07/15/92		34.32	21.11	None
08/25/92	55.43	35.76	19.67	None
09/09/92		34.97	20.46	None
10/31/92		35.97	19.46	None
11/20/92		36.26	19.17	None
12/16/92		35.45	19.98	None

See notes on page 6 of 6.

TABLE 1
CUMULATIVE GROUNDWATER MONITORING DATA
ARCO Station 276
Oakland, California
(Page 5 of 6)

Date Well Measured	Well Elevation	Depth to Water	Water Elevation	Floating Product
MW-6				
06/30/92		35.50	25.71	None
07/15/92		39.89	21.32	None
08/25/92	61.21	34.90	26.31	None
09/09/92		NM	NM	NM
10/31/92		NM	NM	NM
11/20/92		NM	NM	NM
12/16/92		NM	NM	NM
MW-7	58.22			
06/30/92		23.70	34.52	None
07/15/92		23.10	35.12	None
08/25/92	58.22	34.23	23.99	None
09/09/92		26.30*	31.92*	1.31
10/31/92		35.44	22.78	None
11/20/92		23.47*	34.75*	0.02
12/16/92		19.07*	39.15*	0.04
MW-8				
08/25/92	53.65	NR	NR	NR
09/09/92		33.20	20.45	None
10/31/92		37.12	16.53	None
11/24/92		34.45	19.20	None
12/16/92		NM	NM	NM
RW-1				
11/05/91	56.32	37.89	18.43	None
12/24/91		38.35	17.97	None
01/19/92		37.82	18.50	None
02/20/92		36.42	19.90	None
03/10/92		34.74	21.58	None
04/20/92		32.90	23.42	None
05/15/92		33.43	22.89	None
06/30/92		34.74	21.58	None
07/15/92		35.12	21.20	None
08/25/92	56.32	36.75	19.57	None
09/09/92		35.99	20.33	None
10/31/92		34.32	22.00	None
11/20/92		37.11	19.21	None
12/16/92		36.40	19.92	None

See notes on page 6 of 6.

TABLE 1
CUMULATIVE GROUNDWATER MONITORING DATA
ARCO Station 276
Oakland, California
(Page 6 of 6)

Depths are in feet below top of each well casing.
Elevations are referenced in feet above mean sea level.
Floating product reported in feet.
* = Depth to water and water elevation adjusted as followed: The thickness of the floating product and the ground-water depths were recorded. The recorded thickness of the floating product was then multiplied by 0.80 to obtain an approximate value for the displacement of water by the floating product. This approximate displacement value was then subtracted from the measured depth to water to obtain a calculated depth to water (potentiometric surface).
1 = Floating product was detected after purging well.
NM = Not monitored.

TABLE 2
APPROXIMATE CUMULATIVE PRODUCT REMOVED
ARCO Station 276
Oakland, California

Year		Floating Product Removed (gallons)
1991	TOTAL:	18.15

Date	Floating Product Removed (gallons)
1992	
MW-2	
01-29-92	0.09
02-28-92	None present
03-25-92	None present
06-30-92	None present
07-31-92	None present
08-26-92	0.05
10-16-92	None present
11-17-92	None present
12-30-92	None present
MW-7	
10-16-92	0.25
11-17-92	Sheen
12-30-92	Sheen
1992 Total:	0.39 Gallons
Product Removed to Date:	18.54 gallons

TABLE 3
CUMULATIVE RESULTS OF LABORATORY ANALYSES OF GROUNDWATER SAMPLES--TPHg, TPHd, BTEX, and TOG
ARCO Station 276
Oakland, California
(Page 1 of 3)

Date/Well	TPHg (ppb)	TPHd (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	TOG (ppb)
MW-1							
04/24/89	<50	NA	<0.50	<0.50	<0.50	<0.50	NA
10/13/89	<20	NA	<0.50	<0.50	<0.50	<0.50	NA
02/01/90#	91	NA	<0.30	<0.30	<0.30	0.36	NA
07/31/90	<20	NA	<0.50	<0.50	<0.50	<0.50	NA
10/30/90	<50	NA	<0.5	<0.5	<0.5	<0.5	NA
01/30/91	<50	NA	<0.5	<0.5	<0.5	<0.5	NA
04/30/91	<30	NA	<0.30	<0.30	<0.30	<0.30	NA
08/06/91	<30	NA	<0.30	<0.30	<0.30	<0.30	NA
11/05/91	<30	NA	<0.30	<0.30	<0.30	<0.30	NA
03/10/92	<50	NA	<0.5	<0.5	<0.5	<0.5	NA
06/30/92	<50	NA	<0.5	<0.5	<0.5	<0.5	NA
09/09/92	<50	NA	<0.5	<0.5	<0.5	<0.5	NA
11/20/92	<50	<0.5	<0.5	<0.5	<0.5	<0.5	NA
MW-2							
04/24/89	165,000	NA	13,000	21,000	2,100	12,700	NA
10/13/89	Not sampled--floating product						
02/01/90	Not sampled--sheen						
07/31/90	240,000	NA	14,000	24,000	3,000	17,000	NA
10/30/90	Not sampled--floating product						
01/30/91	Not sampled--floating product						
04/30/91	Not sampled--sheen						
08/06/91	Not sampled--floating product						
11/05/91	Not sampled--floating product						
03/10/92	220,000	NA	8,200	13,000	4,500	22.000	NA
06/30/92	130,000	NA	10,000(9,300)	16,000(18,000)	4,700(4,200)	24,000(27,000)	NA
09/09/92	Not Sampled--floating product						
11/20/92	Not Sampled--floating product						
MW-3							
04/24/89#	560	NA	0.54	0.75	<0.50	<0.50	NA
10/13/89#	450	NA	<0.50	<0.50	<0.50	<0.50	NA
02/01/90#	360	NA	<0.30	<0.30	<0.30	0.85	NA
08/01/90#	440	NA	<0.50	<0.50	<0.50	<0.50	NA
10/30/90#	340	NA	<0.5	<0.5	<0.5	<0.5	NA
01/30/91	Not sampled--well dry						
04/30/91	Not sampled--well inaccessible due to construction						
08/06/91#	430	NA	<0.30	<0.30	<0.30	<0.30	NA
11/05/91#	290	NA	<1.5	<1.5	<1.5	<1.5	NA
03/10/92	<360**	NA	<0.5	<0.5	<0.5	<0.5	NA
06/30/92	<530**	NA	<0.5	<0.5	<0.5	<0.5	NA
09/09/92	<290**	NA	<0.5	<0.5	<0.5	<0.5	NA
11/20/92	<270**	NA	<0.5	<0.5	<2.4*	<1.8*	NA

See notes on Page 3 of 3.

TABLE 3
CUMULATIVE RESULTS OF LABORATORY ANALYSES OF GROUNDWATER SAMPLES--TPHg, TPHd, BTEX, and TOG
ARCO Station 276
Oakland, California
(Page 2 of 3)

Date/Well	TPHg (ppb)	TPHd (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	TOG (ppb)
MW-4							
04/24/89#	2,500	NA	270	1.4	<0.50	85	NA
10/13/89#	760	NA	0.86	<0.50	1.2	<0.50	NA
02/01/90#	680	NA	<0.30	<0.30	<0.30	1.6	NA
07/31/90#	470	240	<0.50	<0.50	<0.50	<0.50	<5,000
10/30/90#	430	<100	<0.5	<0.5	<0.5	<0.5	<5,000
01/30/91	<50	<100	<0.5	<0.5	1.2	<0.5	<5,000
04/30/91#	600	NA	<0.30	0.30	<0.30	0.43	NA
08/06/91#	520	NA	<0.30	<0.30	<0.30	<0.30	NA
11/05/91#	900	NA	<3.0	<3.0	<3.0	<3.0	NA
03/10/92	<730**	NA	<0.5	<0.5	<0.5	<0.5	<2500
06/30/92	<670**	NA	<0.5	<0.5	<2.3**	500	500
09/09/92	<470**	NA	<0.5	<0.5	<0.5	<0.5	3,600
11/20/92	<680**	NA	<0.5	<0.5	<6.3*	<3.2*	800
MW-5							
04/24/89#	130	NA	0.67	<0.50	<0.50	<0.50	NA
10/13/89#	75	NA	<0.50	<0.50	<0.50	<0.50	NA
02/01/90#	81	NA	0.94	0.88	<0.30	1.8	NA
07/31/90#	110	NA	<0.50	<0.50	<0.50	<0.50	NA
10/30/90	<50	NA	<0.5	<0.5	<0.5	<0.5	NA
01/30/91	<50	NA	<0.5	<0.5	<0.5	<0.5	NA
04/30/91#	120	NA	<0.30	<0.30	<0.30	<0.30	NA
08/06/91	<30	NA	<0.30	<0.30	<0.30	<0.30	NA
11/05/91#	77	NA	1.0	3.6	0.60	2.6	NA
03/10/92	<110**	NA	<0.5	<0.5	<0.5	<0.6*	NA
06/30/92	<50	NA	<0.5	<0.5	<0.5	<0.5	NA
09/09/92	<50	NA	<0.5	<0.5	<0.5	<0.5	NA
11/24/92	<50	NA	<0.5	<0.5	<0.5	<0.5	NA
MW-6							
06/30/92	<850**	NA	<0.5	<0.5	<0.5	<0.5	NA
09/09/92	NS	NS	NS	NS	NS	NS	NS
11/20/92	NS	NS	NS	NS	NS	NS	NS
MW-7							
06/30/92	71,000	NA	5,100(5,100)	6,600(6,800)	2,300(2,300)	14,000(16,000)	NA
09/09/92		Not sampled--floating product					
11/20/92		Not Sampled--floating product					
MW-8							
09/09/92	<50	NA	3.4(4)	<0.5	<0.5	0.7	NA
11/24/92	<50	NA	<0.5	<0.5	<0.5	<0.5	NA

See notes on page 3 of 3.

TABLE 3
CUMULATIVE RESULTS OF LABORATORY ANALYSES OF GROUNDWATER SAMPLES--TPHg, TPHd, BTEX, and TOG
ARCO Station 276
Oakland, California
(Page 3 of 3)

Date/Well	TPHg (ppb)	TPHd (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	TOG (ppb)
RW-1							
11/05/91#	750	NA	4.8	3.7	<3.0	<3.0	NA
03/10/92	<140**	NA	<0.5	<0.5	<0.5	<0.6*	NA
06/30/92	<400**	NA	<0.5	<0.5	<0.5	<0.5	NA
09/09/92	<520**	NA	<0.5	<0.5	<0.5	<0.5	NA
11/24/92	<650**	NA	<0.5	<0.5	<8.6*	<7.2*	NA
January 1990							
MCLs	—	—	1.0	—	680	1,750	—
DWAL	—	—	—	100	—	—	—

Results in parts per billion (ppb).
TPHg and
BTEX: Total petroleum hydrocarbons as gasoline and benzene, toluene, ethylbenzene, and xylenes by EPA method 5030/8020/California DHS LUFT Method.
TPHd: Total petroleum hydrocarbons as diesel by EPA method 3550/3510.
B: Benzene, T: Toluene, E: Ethylbenzene, T: Total Xylene isomers
BTEX: Measured by EPA method 8020/602.
TOG: Total oil and grease by EPA Method 418.1.
NA: Not analyzed.
NS: Not sampled.
<: Results reported as less than detection limit.
#: Based on new results, the chromatograph peaks previously interpreted to be TPHg and BTEX have been reinterpreted to be a single peak hydrocarbon possibly (PCE).
*: Detection limit reportedly raised by laboratory due to matrix interference.
**: Detections limit reportedly raised by laboratory because matrix contains a discrete non-fuel peak (PCE).
( ): BTEX as measured by EPA Method 624
1: Analyte concentration is an estimate because this analyte was also found in the method blank.
MCL: Maximum contaminant level
DWAL: Drinking water action level

TABLE 4
CUMULATIVE RESULTS OF LABORATORY ANALYSES OF GROUNDWATER SAMPLES--VOCs and Metals
ARCO Station 276
Oakland, California
(Page 1 of 3)

Date/Well	Compound	VOCs (ppb)	Cd (ppm)	Cr (ppm)	Pb (ppm)	Zn (ppm)	Ni (ppm)
MW-1							
09/03/91	Tetrachloroethene	4.5	NA	NA	NA	NA	NA
11/06/91	All Compounds	<2.0	NA	NA	NA	NA	NA
03/10/92	Tetrachloroethene	8.2	NA	NA	NA	NA	NA
06/30/92	Tetrachloroethene	15	NA	NA	NA	NA	NA
09/09/92	Tetrachloroethene	6	NA	NA	NA	NA	NA
11/20/92	Tetrachloroethene	2	NA	NA	NA	NA	NA
MW-2							
09/03/91	----------	Not sampled--floating product					
11/06/91	----------	Not sampled--floating product					
03/10/92	Tetrachlorethene	0.9	NA	NA	NA	NA	NA
	1,2-Dichloroethene	5.4					
06/30/92**	All Compounds	<2,000	NA	NA	NA	NA	NA
09/09/92	----------	Not sampled--floating product					
11/20/92		Not Sampled--floating product					
MW-3							
09/03/91	Tetrachloroethene	1,600	NA	NA	NA	NA	NA
11/06/91	Tetrachloroethene	400	NA	NA	NA	NA	NA
03/10/92	Freon 12	3.4	NA	NA	NA	NA	NA
	cis-1,2-Dichloroethene	1.0					
	Trichloroethene	5.6					
	Tetrachloroethene	980					
06/30/92**	Tetrachloroethene	1,500	NA	NA	NA	NA	NA
09/09/92	Tetrachloroethene	800	NA	NA	NA	NA	NA
11/20/92	Tetrachloroethene	690	NA	NA	NA	NA	NA
MW-4							
07/31/90	Trichloroethene	7.5	NA	NA	NA	NA	NA
	Tetrachloroethene	1600	NA	NA	NA	NA	NA
	1,2 Dichloroethene	0.7	NA	NA	NA	NA	NA
10/30/90	Trichloroethene	8.1	NA	NA	NA	NA	NA
	Tetrachloroethene	3600	NA	NA	NA	NA	NA
	1,2 Dichloroethene	0.7	NA	NA	NA	NA	NA
01/30/91	Trichloroethene	12	NA	NA	NA	NA	NA
	Tetrachloroethene	4,900	NA	NA	NA	NA	NA
04/30/91	Tetrachloroethene	2,200	NA	NA	NA	NA	NA
08/06/91	Tetrachloroethene	1,700	<0.010	0.065	0.0067	0.14	0.096
09/03/91	Tetrachloroethene	2,000	NA	NA	NA	NA	NA
11/06/91	Tetrachloroethene	1,000	NA	NA	NA	NA	NA
	Trichloroethene	6.3	NA	NA	NA	NA	NA

See notes on Page 3 of 3.

TABLE 4
CUMULATIVE RESULTS OF LABORATORY ANALYSES OF GROUNDWATER SAMPLES--VOCs and Metals
ARCO Station 276
Oakland, California
(Page 2 of 3)

Date/Well	Compound	VOCs (ppb)	Cd (ppm)	Cr (ppm)	Pb (ppm)	Zn (ppm)	Ni (ppm)
MW-4 Cont.							
03/10/92	cis-1,2-Dichloroethene	4.0	NA	NA	NA	NA	NA
	Trichloroethene	13					
	Tetrachloroethene	2,300					
06/30/92**	Tetrachloroethene	1,800	NA	NA	NA	NA	NA
09/09/92	Tetrachloroethene	1,300	NA	NA	NA	NA	NA
11/20/92	Tetrachloroethene	1,700	NA	NA	NA	NA	NA
MW-5							
08/06/91	Tetrachloroethene	7.3	NA	NA	NA	NA	NA
09/03/91	Tetrachloroethene	25	NA	NA	NA	NA	NA
11/06/91	Tetrachloroethene	12	NA	NA	NA	NA	NA
03/10/92	Trichloroethene	1.3	NA	NA	NA	NA	NA
	Tetrachloroethene	300					
06/30/92	Tetrachloroethene	30	NA	NA	NA	NA	NA
09/09/92	Tetrachloroethene	120	NA	NA	NA	NA	NA
11/24/92	Tetrachloroethene	93	NA	NA	NA	NA	NA
MW-6							
06/30/92**	Tetrachloroethene	2,400	NA	NA	NA	NA	NA
09/09/92	————		Inaccessible well--paved over				
11/20/92	————		Inaccessible well--paved over				
MW-7							
06/30/92**	All Compounds	<1000	NA	NA	NA	NA	NA
09/09/92	————		Not sampled--floating product				
11/20/92	————		Not sampled--floating product				
MW-8							
09/09/92	Tetrachloroethene	37	NA	NA	NA	NA	NA
11/24/92	Tetrachloroethene	2					
RW-1							
11/06/91	Tetrachloroethene	980	NA	NA	NA	NA	NA
03/10/92	Trichloroethene	1.7	NA	NA	NA	NA	NA
	Tetrachloroethene	400					
06/30/92**	Tetrachloroethene	1,100	NA	NA	NA	NA	NA
09/09/92	Tetrachloroethene	1,500	NA	NA	NA	NA	NA
11/24/92	Tetrachloroethene	1,500	NA	NA	NA	NA	NA
MCLs		5	0.010	0.05	0.05	5.0	

See notes on Page 3 of 3.

TABLE 4
CUMULATIVE RESULTS OF LABORATORY ANALYSES OF GROUNDWATER SAMPLES–VOCs and Metals
ARCO Station 276
Oakland, California
(Page 3 of 3)

Results in parts per billion (ppb), except heavy metals which are in parts per million (ppm).

VOCs: Halogenated Volatile Organic Compounds by EPA method 601/8010 and 624. Compounds not shown were not detected.
Cd: Cadmium by EPA method 200.7.
Cr: Chromium by EPA method 200.7.
Pb: Lead by EPA method 239.7.
Zn: Zinc by EPA method 200.7.
Ni: Nickel by EPA method 200.7.
<: Results reported as less than the detection limit.
NA: Not analyzed. Compounds not shown not detected.
*: Exceeds the MCL of 5 ppb concentration of tetrachloroethane.
MCLs: Maximum Contaminant Levels as reported by the California Department of Health Services 10/24/90.
**: Raised Method Reporting Limit (MRL) due to high analyte concentration requiring sample dilution.

TABLE 5 - ONSITE VAPOR EXTRACTION SYSTEM - OPERATION & PERFORMANCE (CATALYTIC OXIDIZER)

ARCO Station 276, 10600 MacArthur Boulevard, Oakland, California

SYSTEM OPERATION (RESNA initiated system start-up on August 25, 1992)

Month:	August	September	October 1st Half	October 2nd Half	November 1st Half	November 2nd Half	December 1st Half	December 2nd Half
Date Begin:	8/25/92	9/09/92	10/05/92	10/23/92	11/03/92	11/17/92	12/07/92	12/21/92
Date End:	9/08/92	10/04/92	10/22/92	11/02/92	11/16/92	12/6/92	12/20/92	1/05/93
Days of Operation:	15	26	18	11	14	20	14	29
Days of Downtime:	0	0	0	0	0	0	0	0
Operating Hours [hrs]:	24	24	24	24	24	24	24	24
VAPOR EXTRACTION WELLS								
Number of Wells On-Line:	2 (VW-3 & VW-4)	2 (VW-3 & VW-4)	2 (VW-3 & VW-4)	2 (VW-2 & VW-5)	2 (VW-2 & VW-5)	1 (VW-1)	2 (VW-3 & VW-4)	1 (VW-2)
FLOW RATE								
Vent Gas Flow Rate (SCFM)**	80	80	80	54	45	73	60	44
Dilution Air Flow Rate (SCFM)**	420	420	420	446	455	427	440	456
Total Combined Flow Rate (SCFM)**	500	500	500	500	500	500	500	500
TPHG LAB ANALYSES :								
Well Field Concentration [mg/m^3]:	9,500	1,200	990	NA (28,290*)	350	200	< 10	37
Well Field Composition [% Benzene]:	2 7	1 1	1 7	NA	1 7	1.0	< 5	< 1
Combined Infl. TPHg Conc [mg/m^3]:	NA	578	240	NA	64	NA	< 10	NA
Exhaust Stack TPHg Conc. [mg/m^3]:	NA	18	12	NA	< 10	NA	< 10	NA
HYDROCARBON RECOVERY								
Recovery Rate [lbs/hr]:	2.8	0 8	0.3	7 3	0.06	0.06	0.00	0.01
Pounds Recovered This Period [lbs]:	1008	499	128	1927	20	29	0	4
TOTALS TO DATE								
Total Pounds Recovered to Date [lbs].	1008	1507	1635	3562	3582	3611	3611	3615
Total Gallons Recovered to Date [gal]:	161	240	261	569	571	576	576	577
Total Hours to Date [hrs]	360	984	1416	1680	2016	2496	2832	3528

Notes: NA = Not Analyzed *Calculated based on a weighted average of concentrations reported during the vapor extraction test. **Standard temperature is defined as 70 °F

APPENDIX A

EMCON'S FIELD REPORTS-
SUMMARY OF GROUNDWATER MONITORING DATA
CERTIFIED ANALYTICAL REPORTS WITH CHAIN-OF-CUSTODY
AND WATER SAMPLE FIELD DATA SHEETS
MONITORING WELL PURGE WATER DISPOSAL FORM

EMCON
ASSOCIATES
Consultants in Wastes
Management and
Environmental Control

RECEIVED
NOV 9 - 1992
RESNA
SAN JOSE

Date November 3, 1992
Project 0G70-002.01

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 Results
	October 1992 monthly water level survey, ARCO
	station 276, 10600 MacArthur Boulevard, 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: Jim Butera JB

REGISTERED PROFESSIONAL ENGINEER ROBERT CURTIS PORTER No. 4004 Exp. 6/30/94 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 # : 0G70-002.01 STATION ADDRESS : 10600 MacArthur Blvd. Oakland DATE : 10-31-92

ARCO STATION # : 276 FIELD TECHNICIAN : R. S. HAEFFER DAY : SAT.

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**	FINE	yes	NONE	3259	yes	~~36.62~~ ~~14.47~~	~~36.62~~ ~~14.47~~	N.D	N.D	38.8	—
2	**MW-5**	FINE	yes	NONE	3259	yes	35.97	35.97	N.D	N.D	47.0	—
3	**RW-1**	FINE	yes	NONE	3259	yes	34.32	34.32	N.D	N.D	48.8	—
4	**MW-3**	FINE	yes	NONE	3259	yes	36.13	36.13	N D	N.D	38.6	—
5	**MW-4**	FINE	yes	NONE	3259	yes	33.84	33.84	N.D	N.D	48.6	—
6	**MW-6**		COULD	NOT	LOCATE		MW-6					—
7	**MW-7**	FINE	yes	FINE	3259	yes	35.44	35.44	N D	N.D	37.0	
8	**MW-2**	FINE	yes	NONE	3259	yes	22.34	22.34	*	*	25.5	NO product IN SKIMMER
9	**MW-8**	FINE	yes	NONE	3259	yes	37.12	37.12	N.D	N D	47.5	NO product
												—

SURVEY POINTS ARE TOP OF WELL CASINGS

EMCON
ASSOCIATES
Consultants in Wastes
Management and
Environmental Control

JAN [illegible]

Date December 18, 1992
Project 0G70-002.01
6CC56.13

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 Results
	December 1992 monthly water level survey, ARCO
	station 276, 10600 MacArthur Boulevard, 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: Jim Butera JB

6/30/94

Robert Porter, Senior Project Engineer.

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

FIELD REPORT
DEPTH TO WATER / FLOATING PRODUCT SURVEY

PROJECT # : 0G70-002.01 STATION ADDRESS : 10600 MacArthur Blvd. Oakland DATE : 12-16-92

ARCO STATION # : 276 FIELD TECHNICIAN : L. RATH 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-5	good	good	good	2359	good	35.45	35.45	ND	ND	117.0	—
2	MW-1	good	good	good	2359	good	36.18	36.17	ND	ND	55.8	—
3	MW-6	N/A	—	—	—	—	—	—	—	—	— ?	Paved over
4	MW-8											unable to open Box lid to Box is stuck
5	MW-3	good	good	good	2359	good	26.68	36.68	ND	ND	38.6	—
6	MW-4	good	good	good	2359	good	36.09	36.09	ND	ND	48.5	—
7	RW-1	good	good	NA	NO LOCK	SLIP CAP	36.40	36.40	ND	ND	48.8	NEW Box
8	MW-2											unable to open Box lid to Box is stuck
9	MW-7	good	good	good	pelfin	good	19.10	19.10	18.97	0.04	37.0	Product in well.

SURVEY POINTS ARE TOP OF WELL CASINGS

EMCON ASSOCIATES
Consultants in Wastes Management and Environmental Control

Date December 16, 1992
Project 0G70-002.01

600263

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 Results
1	Summary of Groundwater Monitoring Data
1	Certified Analytical Reports with Chain-of-Custody
9	Water Sample Field Data Sheets

For your: X Information Sent by: X Mail

Comments:

Enclosed are the data from the fourth quarter 1992 monitoring event at ARCO service station 276, 10600 MacArthur Boulevard, Oakland, CA. Groundwater monitoring is conducted consistent with applicable regulatory guidelines. Please call if you have any questions: (408) 453-2266.

Jim Butera JB

Reviewed by:

Robert C Porter

Robert Porter, Senior Project Engineer.

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

FIELD REPORT
DEPTH TO WATER / FLOATING PRODUCT SURVEY

PROJECT # : 0G70-002.01 STATION ADDRESS : 10600 MacArthur Blvd. Oakland DATE : 11-20-92

ARCO STATION # : 276 FIELD TECHNICIAN : J. Williams DAY : FRI.

DTW Order	WELL ID	Well Box Seal	Well Lid Secure	Gasket	Lock	Locking Well Cap	FIRST DEPTH TO WATER (feet)	SECOND DEPTH TO WATER (feet)	DEPTH TO FLOATING PRODUCT (feet)	FLOATING PRODUCT THICKNESS (feet)	WELL TOTAL DEPTH (feet)	COMMENTS
1	MW-5	OK	YES	YES	3499	YES	36.26	36.26	ND	ND	47.0	—
2	MW-1	OK	YES	YES	3259	YES	36.90	36.90	ND	ND	38.90	—
3	MW-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
4	MW-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Could not get on 11/20 got on 11/24 (see field sheet)
5	MW-3	OK	YES	YES	3254		37.40	37.40	ND	ND	38.80	9/16 NUTS
6	MW-4	OK	YES	YES	3254	YES	36.87	36.87	ND	ND	48.70	9/16 NUTS
7	RW-1	OK	YES	YES	LID	yes	37.11	37.11	NA	ND	48.40	—
8	MW-2	OK	YES	NO	LID	SLIP	19.87	19.87	ND *	ND	24.40	STRONG
9	MW-7	OK	YES	[illegible]	3259	YES	23.49	23.49	ND *	ND	54.70	—
												* Product detected with bailer (see field sheet)

SURVEY POINTS ARE TOP OF WELL CASINGS

Summary of Analytical Results
Volatile Organic Compounds by EPA[1] Methods 624
Fourth Quarter 1992
ARCO Service Station 276
10600 MacArthur Boulevard, Oakland, California
micrograms per liter (µg/l) or parts per billion (ppb)

Well ID and Sample Depth	Sampling Date	Benzene (ppb)	PCE[2] (ppb)
MW-1(38)	09/09/92	<1.	2.
MW-2	09/09/92	FP.[3]	FP.
MW-3(38)	09/09/92	<10.	690.
MW-4(38)	09/09/92	<10.	1,700.
MW-5(47)	09/09/92	<1.	93.
MW-6	09/09/92	IW.[4]	IW.
MW-7	09/09/92	FP.	FP.
MW-8(47)	09/09/92	<1.	2.
RW-1(48)	09/09/92	<10.	1,500.
FB-1[5]	09/09/92	<1.	<1.

1. EPA = United States Environmental Protection Agency
2. PCE = Tetrachloroethene
3. FP. = Floating product detected in well, no samples were taken
4. IW. = Inaccessable well, no samples were taken
5. FB = Field blank

Columbia Analytical Services inc.

December 10, 1992

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

Re: **EMCON Project No. 0G70-002.01**
Arco Facility No. 276

Dear Mr. Butera:

Enclosed are the results of the water samples submitted to our lab on November 24, 1992. For your reference, our service request number for this work is SJ92-1496.

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

Please call if you have any questions.

Respectfully submitted:

COLUMBIA ANALYTICAL SERVICES, INC.

Keoni A. Murphy
Laboratory Manager

Annelise J. Bazar
Regional QA Coordinator

KAM/kt

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON Associates	**Date Received:**	11/24/92
Project:	EMCON Project No. 0G70-002.01	**Work Order No.:**	SJ92-1496
	Arco Facility No. 276	**Sample Matrix:**	Water

Inorganic Parameters[1]
mg/L (ppm)

Sample Name:		MW-4 (38)	Method Blank
Date Sampled:		11/20/92	
Analyte	**Method**	**MRL**	
Hydrocarbons, IR	418.1	0.5	0.8 ND

MRL Method Reporting Limit
ND None Detected at or above the method reporting limit
[1] Unless otherwise noted, all analyses were performed within EPA recommended maximum holding times specified in *Test Methods for Evaluating Solid Waste,* (SW-846, 3rd Edition) and *Methods for Chemical Analysis of Water and Waste* (EPA-600/4-79-020, Revised March 1983).

Approved by: Kevin A Murphy Date: December 10, 1992

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON Associates	**Date Received:**	11/24/92
Project:	EMCON Project No. 0G70-002.01	**Work Order No.:**	SJ92-1496
	ARCO Facility No. 276	**Sample Matrix:**	Water

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

Sample Name:		MW-1 (38)	MW-3 (38)	MW-4 (38)
Date Analyzed:		12/01/92	12/01/92	12/01/92
Analyte	**MRL**			
Benzene	0.5	ND	ND	ND
Toluene	0.5	ND	ND	ND
Ethylbenzene	0.5	ND	<2.4 *	<6.3 *
Total Xylenes	0.5	ND	<1.8 *	<3.2 *
TPH as Gasoline	50	ND	<270. **	<680. **

TPH Total Petroleum Hydrocarbons
MRL Method Reporting Limit
ND None Detected at or above the method reporting limit
* Raised MRL due to matrix interference.
** Raised MRL due to matrix interference. The sample contains discrete non-fuel peaks.

Approved by: Keith A Murphy Date: December 10, 1992

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON Associates	**Date Received:**	11/24/92
Project:	EMCON Project No. 0G70-002.01	**Work Order No.:**	SJ92-1496
	ARCO Facility No. 276	**Sample Matrix:**	Water

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

Sample Name:		MW-5 (47)	MW-8 (47)	RW-1 (48)
Date Analyzed:		12/01/92 *	12/01/92 *	12/01/92 *
Analyte	**MRL**			
Benzene	0.5	ND	ND	ND
Toluene	0.5	ND	ND	ND
Ethylbenzene	0.5	ND	ND	<8.6 **
Total Xylenes	0.5	ND	ND	<7.2 **
TPH as Gasoline	50	ND	ND	<650. ***

TPH Total Petroleum Hydrocarbons
MRL Method Reporting Limit
ND None Detected at or above the method reporting limit
* This sample was part of the analytical batch started on December 1, 1992. However, it was analyzed after midnight so the actual date analyzed is December 2, 1992.
** Raised MRL due to matrix interference.
*** Raised MRL due to matrix interference. The sample contains discrete non-fuel peaks.

Approved by: Reviewed Murphy Date: December 10, 1992

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON Associates	**Date Received:**	11/24/92
Project:	EMCON Project No. 0G70-002.01	**Work Order No.:**	SJ92-1496
	ARCO Facility No. 276	**Sample Matrix:**	Water

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

Sample Name:		FB-1	Method Blank
Date Analyzed:		12/01/92 *	12/01/92
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
***** This sample was part of the analytical batch started on December 1, 1992. However, it was analyzed after midnight so the actual date analyzed is December 2, 1992.

Approved by: Keen A Murphy Date: December 10, 1992

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON Associates
Project: EMCON Project No. 0G70-002.01
ARCO Facility No. 276

Date Received: 11/24/92
Work Order No.: SJ92-1496
Sample Matrix: Water

Volatile Organic Compounds
EPA Method 624
µg/L (ppb)

Sample Name:		MW-1 (38)	MW-3 (38) *	MW-4 (38) *
Date Analyzed:		11/30/92	12/02/92	12/02/92
Analyte	MRL			
Chloromethane	1	ND	<10.	<10.
Vinyl Chloride	1	ND	<10.	<10.
Bromomethane	1	ND	<10.	<10.
Chloroethane	1	ND	<10.	<10.
Trichlorofluoromethane (Freon 11)	1	ND	<10.	<10.
Trichlorotrifluoroethane (Freon 113)	10	ND	<100.	<100.
1,1-Dichloroethene	1	ND	<10.	<10.
Acetone	20	ND	<200.	<200.
Carbon Disulfide	1	ND	<10.	<10.
Methylene Chloride	10	ND	<100.	<100.
trans-1,2-Dichloroethene	1	ND	<10.	<10.
cis-1,2-Dichloroethene	1	ND	<10.	<10.
2-Butanone (MEK)	10	ND	<100.	<100.
1,1-Dichloroethane	1	ND	<10.	<10.
Chloroform	1	ND	<10.	<10.
1,1,1-Trichloroethane (TCA)	1	ND	<10.	<10.
Carbon Tetrachloride	1	ND	<10.	<10.
Benzene	1	ND	<10.	<10.
1,2-Dichloroethane	1	ND	<10.	<10.
Vinyl Acetate	10	ND	<100.	<100.
Trichloroethene (TCE)	1	ND	<10.	<10.
1,2-Dichloropropane	1	ND	<10.	<10.
Bromodichloromethane	1	ND	<10.	<10.
2-Chloroethyl Vinyl Ether	10	ND	<100.	<100.
trans-1,3-Dichloropropene	1	ND	<10.	<10.
2-Hexanone	10	ND	<100.	<100.
4-Methyl-2-pentanone (MIBK)	10	ND	<100.	<100.
Toluene	1	ND	<10.	<10.
cis-1,3-Dichloropropene	1	ND	<10.	<10.
1,1,2-Trichloroethane	1	ND	<10.	<10.
Tetrachloroethene (PCE)	1	2.	690.	1,700.
Dibromochloromethane	1	ND	<10.	<10.
Chlorobenzene	1	ND	<10.	<10.
Ethylbenzene	1	ND	<10.	<10.
Styrene	1	ND	<10.	<10.
Total Xylenes	1	ND	<10.	<10.
Bromoform	1	ND	<10.	<10.
1,1,2,2-Tetrachloroethane	1	ND	<10.	<10.
1,3-Dichlorobenzene	1	ND	<10.	<10.
1,4-Dichlorobenzene	1	ND	<10.	<10.
1,2-Dichlorobenzene	1	ND	<10.	<10.

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

Approved by: Keith A Murphy Date: December 10, 1992

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON Associates
Project: EMCON Project No. 0G70-002.01
ARCO Facility No. 276

Date Received: 11/24/92
Work Order No.: SJ92-1496
Sample Matrix: Water

Volatile Organic Compounds
EPA Method 624
µg/L (ppb)

Sample Name:		MW-5 (47)	MW-8 (47)	RW-1 (48) *
Date Analyzed:		11/30/92	12/02/92	12/02/92
Analyte	MRL			
Chloromethane	1	ND	ND	<10.
Vinyl Chloride	1	ND	ND	<10.
Bromomethane	1	ND	ND	<10.
Chloroethane	1	ND	ND	<10.
Trichlorofluoromethane (Freon 11)	1	ND	ND	<10.
Trichlorotrifluoroethane (Freon 113)	10	ND	ND	<100.
1,1-Dichloroethene	1	ND	ND	<10.
Acetone	20	ND	ND	<200.
Carbon Disulfide	1	ND	ND	<10.
Methylene Chloride	10	ND	ND	<100.
trans-1,2-Dichloroethene	1	ND	ND	<10.
cis-1,2-Dichloroethene	1	ND	ND	<10.
2-Butanone (MEK)	10	ND	ND	<100.
1,1-Dichloroethane	1	ND	ND	<10.
Chloroform	1	ND	ND	<10.
1,1,1-Trichloroethane (TCA)	1	ND	ND	<10.
Carbon Tetrachloride	1	ND	ND	<10.
Benzene	1	ND	ND	<10.
1,2-Dichloroethane	1	ND	ND	<10.
Vinyl Acetate	10	ND	ND	<100.
Trichloroethene (TCE)	1	ND	ND	<10.
1,2-Dichloropropane	1	ND	ND	<10.
Bromodichloromethane	1	ND	ND	<10.
2-Chloroethyl Vinyl Ether	10	ND	ND	<100.
trans-1,3-Dichloropropene	1	ND	ND	<10.
2-Hexanone	10	ND	ND	<100.
4-Methyl-2-pentanone (MIBK)	10	ND	ND	<100.
Toluene	1	ND	ND	<10.
cis-1,3-Dichloropropene	1	ND	ND	<10.
1,1,2-Trichloroethane	1	ND	ND	<10.
Tetrachloroethene (PCE)	1	93.	2.	1,500.
Dibromochloromethane	1	ND	ND	<10.
Chlorobenzene	1	ND	ND	<10.
Ethylbenzene	1	ND	ND	<10.
Styrene	1	ND	ND	<10.
Total Xylenes	1	ND	ND	<10.
Bromoform	1	ND	ND	<10.
1,1,2,2-Tetrachloroethane	1	ND	ND	<10.
1,3-Dichlorobenzene	1	ND	ND	<10.
1,4-Dichlorobenzene	1	ND	ND	<10.
1,2-Dichlorobenzene	1	ND	ND	<10.

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

Approved by: Kathleen M Murphy Date: December 10, 1992

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON Associates
Project: EMCON Project No. 0G70-002.01
ARCO Facility No. 276

Date Received: 11/24/92
Work Order No.: SJ92-1496
Sample Matrix: Water

Volatile Organic Compounds
EPA Method 624
µg/L (ppb)

Sample Name:		FB-1	Method Blank	Method Blank
Date Analyzed:		12/02/92	11/30/92	12/02/92
Analyte	MRL			
Chloromethane	1	ND	ND	ND
Vinyl Chloride	1	ND	ND	ND
Bromomethane	1	ND	ND	ND
Chloroethane	1	ND	ND	ND
Trichlorofluoromethane (Freon 11)	1	ND	ND	ND
Trichlorotrifluoroethane (Freon 113)	10	ND	ND	ND
1,1-Dichloroethene	1	ND	ND	ND
Acetone	20	ND	ND	ND
Carbon Disulfide	1	ND	ND	ND
Methylene Chloride	10	ND	ND	ND
trans-1,2-Dichloroethene	1	ND	ND	ND
cis-1,2-Dichloroethene	1	ND	ND	ND
2-Butanone (MEK)	10	ND	ND	ND
1,1-Dichloroethane	1	ND	ND	ND
Chloroform	1	ND	ND	ND
1,1,1-Trichloroethane (TCA)	1	ND	ND	ND
Carbon Tetrachloride	1	ND	ND	ND
Benzene	1	ND	ND	ND
1,2-Dichloroethane	1	ND	ND	ND
Vinyl Acetate	10	ND	ND	ND
Trichloroethene (TCE)	1	ND	ND	ND
1,2-Dichloropropane	1	ND	ND	ND
Bromodichloromethane	1	ND	ND	ND
2-Chloroethyl Vinyl Ether	10	ND	ND	ND
trans-1,3-Dichloropropene	1	ND	ND	ND
2-Hexanone	10	ND	ND	ND
4-Methyl-2-pentanone (MIBK)	10	ND	ND	ND
Toluene	1	ND	ND	ND
cis-1,3-Dichloropropene	1	ND	ND	ND
1,1,2-Trichloroethane	1	ND	ND	ND
Tetrachloroethene (PCE)	1	ND	ND	ND
Dibromochloromethane	1	ND	ND	ND
Chlorobenzene	1	ND	ND	ND
Ethylbenzene	1	ND	ND	ND
Styrene	1	ND	ND	ND
Total Xylenes	1	ND	ND	ND
Bromoform	1	ND	ND	ND
1,1,2,2-Tetrachloroethane	1	ND	ND	ND
1,3-Dichlorobenzene	1	ND	ND	ND
1,4-Dichlorobenzene	1	ND	ND	ND
1,2-Dichlorobenzene	1	ND	ND	ND

MRL Method Reporting Limit
ND None Detected at or above the method reporting limit

Approved by: Kevin A Murphy Date: December 10, 1992

APPENDIX A

LABORATORY QC RESULTS

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON Associates	**Date Received:**	11/24/92
Project:	EMCON Project No. 0G70-002.01	**Work Order No.:**	SJ92-1496
	Arco Facility No. 276	**Sample Matrix:**	Water

Continuing Calibration Summary
Inorganics
EPA Method 418.1
mg/L

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
Hydrocarbons, IR	100.	105.	105.	90-110

Approved by: Kevin A Murphy Date: December 10, 1992

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON Associates
Project: EMCON Project No. 0G70-002.01
ARCO Facility No. 276

Date Received: 11/24/92
Work Order No.: SJ92-1496
Sample Matrix: Water

Matrix Spike Summary
Total Recoverable Petroleum Hydrocarbons
EPA Method 418.1
mg/L (ppm)

Spike Level	Sample Result	Spike Result MS	Spike Result DMS	Percent Recovery MS	Percent Recovery DMS	CAS Acceptance Criteria
6.15	1.18	5 65	6.12	73.	80.	56-106

Approved by: Kevin A Murphy Date: December 10, 1992

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON Associates
Project: EMCON Project No. 0G70-002.01
ARCO Facility No. 276

Date Received: 11/24/92
Work Order No.: SJ92-1496

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

Date Analyzed: 12/01/92

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
Benzene	250.	234.	94.	85-115
Toluene	250.	248.	99	85-115
Ethylbenzene	250.	236.	94.	85-115
Total Xylenes	750.	714.	95.	85-115
TPH as Gasoline	2,500.	2,311.	92.	90-110

TPH Total Petroleum Hydrocarbons

Approved by: Kevin A Murphy Date: December 10, 1992

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON Associates	**Date Received:**	11/24/92
Project:	EMCON Project No. 0G70-002.01	**Work Order No.:**	SJ92-1496
	ARCO Facility No. 276	**Sample Matrix:**	Water

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

Sample Name	Date Analyzed	Percent Recovery α,α,α-Trifluorotoluene
MW-1 (38)	12/01/92	86.
MW-3 (38)	12/01/92	89.
MW-4 (38)	12/01/92	88.
MW-5 (47)	12/01/92	90.
MW-8 (47)	12/01/92	97.
RW-1 (48)	12/01/92	88.
FB-1	12/01/92	88.
MS	12/01/91	89.
DMS	12/01/92	90.
Method Blank	12/01/92	100.
	CAS Acceptance Criteria	70-130

TPH Total Petroleum Hydrocarbons

Approved by: Keon A Murphy Date: December 10, 1992

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON Associates
Project: EMCON Project No. 0G70-002.01
ARCO Facility No. 276

Date Received: 11/24/92
Work Order No.: SJ92-1496
Sample Matrix: Water

Matrix Spike/Duplicate Matrix Spike Summary
BTE
EPA Methods 5030/8020
µg/L (ppb)

Date Analyzed: 12/01/92

			Spike Result		Percent Recovery		CAS Acceptance
Analyte	Spike Level	Sample Result	MS	DMS	MS	DMS	Criteria
Benzene	250.	5.07	248.	251.	97.	98.	39-150
Toluene	250.	ND	246.	242.	98.	97.	46-148
Ethylbenzene	250	28.7	267.	270.	95.	96.	32-160

ND None Detected at or above the method reporting limit

Approved by: Robert A Murphy Date: December 10, 1992

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON Associates
Project: EMCON Project No. 0G70-002.01
Arco Facility No. 276

Date Received: 11/24/92
Work Order No.: SJ92-1496

Initial Calibration Verification
Volatile Organic Compounds
EPA Method 624
µg/L (ppb)

Date Analyzed: 11/30/92

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
Chloromethane	50	54.6	109.	70-130
Vinyl Chloride	50	59.0	118.	70-130
Bromomethane	50	58.6	117.	70-130
Chloroethane	50	58.5	117.	70-130
Acetone	50	58.4	117.	70-130
1,1-Dichloroethene	50	60.5	121.	70-130
Carbon Disulfide	50	61.7	123.	70-130
Methylene Chloride	50	57.2	114.	70-130
trans-1,2-Dichloroethene	50	60.8	122.	70-130
cis-1,2-Dichloroethene	50	58.6	117.	70-130
1,1-Dichloroethane	50	60.9	122.	70-130
Vinyl Acetate	50	47 0	94.	70-130
2-Butanone	50	40.1	80.	70-130
Chloroform	50	58.1	116.	70-130
1,1,1-Trichloroethane (TCA)	50	60.5	121.	70-130
Carbon Tetrachloride	50	58.5	117.	70-130
Benzene	50	58.4	117.	70-130
1,2-Dichloroethane	50	54.1	108.	70-130
Trichloroethene (TCE)	50	58.6	117.	70-130
1,2-Dichloropropane	50	56.2	112.	70-130
Bromodichloromethane	50	54.9	110.	70-130
2-Chloroethyl Vinyl Ether	50	46.3	93.	70-130
2-Hexanone	50	47.3	95.	70-130
trans-1,3-Dichloropropene	50	51.8	104.	70-130
Toluene	50	56.4	113.	70-130
cis-1,3-Dichloropropene	50	55.1	110.	70-130
1,1,2-Trichloroethane	50	51.1	102.	70-130
Tetrachloroethene (PCE)	50	57.2	114.	70-130
Dibromochloromethane	50	51.0	102.	70-130
Chlorobenzene	50	55.5	111.	70-130
Ethylbenzene	50	57.3	115.	70-130
o Xylene	50	57.1	114.	70-130
Styrene	50	54.5	109.	70-130
Bromoform	50	49.7	99.	70-130
1,1,2,2-Tetrachloroethane	50	48.0	96.	70-130

Approved by: Deanna Murphy Date: December 10, 1992

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON Associates
Project: EMCON Project No. 0G70-002.01
Arco Facility No. 276

Date Received: 11/24/92
Work Order No.: SJ92-1496

Initial Calibration Verification
Volatile Organic Compounds
EPA Method 624
µg/L (ppb)

Date Analyzed: 12/02/92

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
Chloromethane	50	45.6	91.	70-130
Vinyl Chloride	50	50.6	101.	70-130
Bromomethane	50	55.8	112.	70-130
Chloroethane	50	57.3	115.	70-130
Acetone	50	57.3	115.	70-130
1,1-Dichloroethene	50	48.9	98.	70-130
Carbon Disulfide	50	51.1	102.	70-130
Methylene Chloride	50	53.6	107.	70-130
trans-1,2-Dichloroethene	50	51.5	103.	70-130
cis-1,2-Dichloroethene	50	52.9	106.	70-130
1,1-Dichloroethane	50	53.4	107.	70-130
Vinyl Acetate	50	51.7	103.	70-130
2-Butanone	50	37.4	75.	70-130
Chloroform	50	52.7	105.	70-130
1,1,1-Trichloroethane (TCA)	50	48.8	98	70-130
Carbon Tetrachloride	50	46.1	92.	70-130
Benzene	50	59.5	119.	70-130
1,2-Dichloroethane	50	53.9	108.	70-130
Trichloroethene (TCE)	50	59.0	118.	70-130
1,2-Dichloropropane	50	59.2	118.	70-130
Bromodichloromethane	50	59.8	120.	70-130
2-Chloroethyl Vinyl Ether	50	51.8	104.	70-130
2-Hexanone	50	58.3	117.	70-130
trans-1,3-Dichloropropene	50	54.6	109.	70-130
Toluene	50	58.0	116.	70-130
cis-1,3-Dichloropropene	50	60.6	121.	70-130
1,1,2-Trichloroethane	50	54.6	109.	70-130
Tetrachloroethene (PCE)	50	48.9	98.	70-130
Dibromochloromethane	50	54.0	108.	70-130
Chlorobenzene	50	53.9	108.	70-130
Ethylbenzene	50	52.8	106.	70-130
o Xylene	50	54.6	109.	70-130
Styrene	50	54.0	108.	70-130
Bromoform	50	60.6	121.	70-130
1,1,2,2-Tetrachloroethane	50	53.8	108.	70-130

Approved by: Kevin Murphy Date December 10, 1992

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON Associates
Project: EMCON Project No. 0G70-002.01
ARCO Facility No. 276

Date Received: 11/24/92
Work Order No.: SJ92-1496
Sample Matrix: Water

Surrogate Recovery Summary
Volatile Organic Compounds
EPA Method 624

Sample Name	Date Analyzed	Percent Recovery		
		1,2-Dichloroethane - D_4	Toluene - D_8	4-Bromofluorobenzene
MW-1 (38)	11/30/92	96.	101.	99.
MW-3 (38)	12/02/92	99.	101.	99.
MW-4 (38)	12/02/92	99.	102.	99.
MW-5 (47)	11/30/92	98.	102.	98.
MW-8 (47)	12/02/92	98.	101.	98.
RW-1 (48)	12/02/92	96.	101.	99.
FB-1	12/02/92	98.	102.	98.
MW-3 (38) MS	12/02/92	98.	102.	98.
MW-3 (38) DMS	12/02/92	101.	103.	98.
Method Blank	11/30/92	97.	102.	98.
Method Blank	12/02/92	97	102.	98.
EPA Acceptance Criteria		76-114	88-110	86-115

Approved by: Keoni A Murphy Date: December 10, 1992

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON Associates
Project: EMCON Project No. 0G70-002.01
ARCO Facility No. 276

Date Received: 11/24/92
Work Order No.: SJ92-1496
Sample Matrix: Water

Matrix Spike/Duplicate Matrix Spike Summary
Volatile Organic Compounds
EPA Method 624
µg/L (ppb)

Sample Name: MW-3 (38)
Date Analyzed: 12/02/92

Analyte	Spike Level	Sample Result	Spike Result MS	Spike Result DMS	Percent Recovery MS	Percent Recovery DMS	EPA Acceptance Criteria	Relative Percent Difference
1,1-Dichloroethene	500.	ND	657.	636.	131.	127.	61-145	3.
Trichloroethene	500.	ND	594.	576.	119.	115.	71-120	3.
Chlorobenzene	500.	ND	513.	509.	103.	102.	75-130	<1.
Toluene	500.	ND	596.	574.	119.	115.	76-125	4.
Benzene	500.	ND	597.	585.	119.	117.	76-127	2.

ND None Detected at or above the method reporting limit

Approved by: Kevin M Murphy Date: December 10, 1992

APPENDIX B

CHAIN OF CUSTODY

ARCO Products Company
Division of AtlanticRichfieldCompany

Task Order No. EMCGC-92-1

Chain of Custody

ARCO Facility no: 276	City (Facility): OAKLAND	Project manager (Consultant): Jim Buteva	Laboratory name: CAS
ARCO engineer: Kyle Christie	Telephone no. (ARCO): (415) 571-2434	Telephone no (Consultant): 453-0719	Fax no (Consultant): 453-0452
Consultant name: EMCON Associates	Address (Consultant): 1938 Junction Avenue San Jose		Contract number: 07077

Method of shipment: Sampler will deliver

Sample I.D	Lab no.	Container no.	Matrix: Soil	Matrix: Water	Matrix: Other	Preservation: Ice	Preservation: Acid	Sampling date	Sampling time	BTEX 602/EPA 8020	BTEX/TPH GAS EPA M602/8020/8015	TPH Modified 8015 Gas ☐ Diesel ☐	Oil and Grease 413.1 ☐ 413.2 ☐	TPH EPA 418.1/SM503E	EPA 601/8010	EPA 624/8240	EPA 625/8270	TCLP Metals ☐ Semi VOA ☐ VOA ☐	CAM Metals EPA 6010/7000 TTLC ☐ STLC ☐	Lead Org./DHS ☐ Lead EPA 7420/7421 ☐		
MW-1 (38')	1-2	2		X		X	HCl	11/20	1339		X					X						
MW-3 (38')	3-4	2		X		X	HCl	11/20	1409		X					X						
MW-4 (38')	5-8	4		X		X	HCl	11/20	1456		X		X			X						
MW-9 (47')	9-12	4		X		X	HCl	11/24	1141		X					X						
MW-8 (47')	13-16	4		X		X	HCl	11/24	1259		X					X						
MW-1 (47')	17-20	4		X		X	HCl	11/24	1455		X					X						
FB-1	21-24	4		X		X	HCl	11/24	1455		X					X						
MW-2										* Production Well - No Sample												
MW-7										* Production well - No Sample												
MW-6										* Buried well - No Sample												
										* per J. Buteva 11-24-92 HF												

Special detection Limit/reporting: Lowest Possible

Special QA/QC: As Normal

Remarks: 4-40 ml HCl VOA's Add 2-Liter HCl TOG 418.1 0670-00201

Lab number: 5592-1496

Turnaround time

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

Condition of sample: OK		Temperature received: cool	
Relinquished by sampler: [signature]	Date: 11-24-92 Time: 1605	Received by	
Relinquished by	Date Time	Received by	
Relinquished by	Date Time	Received by laboratory: [signature]	Date: 11-24-92 Time: 16:05

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. 0670-002.01 SAMPLE ID: ~~MW-1~~ MW-1

PURGED BY: Sullivan S CLIENT NAME: ARCO 276

SAMPLED BY: Sullivan S LOCATION: 1060 MacArthur Blvd Oakland Ca

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

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

CASING ELEVATION (feet/MSL):	N/P	VOLUME IN CASING (gal.)	32
DEPTH TO WATER (feet):	36.90	CALCULATED PURGE (gal.):	1.63
DEPTH OF WELL (feet):	38.50	ACTUAL PURGE VOL. (gal.):	2.5

DATE PURGED: 11-20-92 Start (2400 Hr) 1319 End (2400 Hr) 1334

DATE SAMPLED: 11-20-92 Start (2400 Hr) ✓ End (2400 Hr) 1355

TIME (2400 Hr)	VOLUME (gal)	pH (units)	E.C. (µmnos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1323	.5	6.35	3280	68.1	Brown	Heavy
1326	1	6.40	3330	66.5	"	"
1329	1.5	6.39	3380	66.1	"	"
1331	2	6.41	3390	65.4	"	"
1334	2.5	6.40	3280	67.8	"	"

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

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

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: OK LOCK #: 3257

REMARKS: ___

Meter Calibration: Date. 11-20-92 Time: 1103 Meter Serial #: 1 Temperature °F: 72.5

(EC 1000 947 / 1000) (DI ___) (pH 7 7.00 / 7.00) (pH 10 10.07 / 10.00) (pH 4 3.93 / ___)

Location of previous calibration: MW-5

Signature: [signature] Reviewed By: [signature] Page 1 of 9

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: 0670-002.01 SAMPLE ID: MW-2

PURGED BY: J.Williams CLIENT NAME: ARCO 276

SAMPLED BY: J.Williams LOCATION: 10600 MacArthur Blvd Oakland

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

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

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

DEPTH TO WATER (feet): 19.87 CALCULATED PURGE (gal.): ___

DEPTH OF WELL (feet): 24.40 ACTUAL PURGE VOL. (gal.): ___

DATE PURGED: 11-20-92 Start (2400 Hr) ___ End (2400 Hr) ___

DATE SAMPLED: 11-20-92 Start (2400 Hr) ___ End (2400 Hr) ___

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
		NO READINGS				

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

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

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

WELL INTEGRITY: OK LOCK #: BOX

REMARKS: After purging 3 GALLON .02 of Product

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

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

Location of previous calibration: ___

Signature: [signature] Reviewed By: [signature] Page 2 of 9

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO. 0670-002.01 SAMPLE ID: MW-3

PURGED BY: S. Williams CLIENT NAME: ARCO 276

SAMPLED BY: S. Williams LOCATION: 10600 MacArthur Blvd 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.): .37

DEPTH TO WATER (feet): 37.40 CALCULATED PURGE (gal.): 1.14

DEPTH OF WELL (feet): 39.80 ACTUAL PURGE VOL. (gal.): 2.5

DATE PURGED: 11-20-92 Start (2400 Hr) 1349 End (2400 Hr) 1405

DATE SAMPLED: 11-20-92 Start (2400 Hr) 1407 End (2400 Hr) 1409

TIME (2400 Hr)	VOLUME (gal)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1353	.5	6.52	1132	650	BROWN	HEAVY
1357	1	6.64	1103	64.5	"	"
1354	1.5	6.60	1128	64.7	"	"
1402	2.0	6.64	1234	63.8	"	"
1405	2.5	6.64	1234	63.4	"	"

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): None

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: OK LOCK #: 3255

REMARKS: ____

Meter Calibration: Date: 11-20-92 Time: 1107 Meter Serial #: ____ Temperature °F: ____

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

Location of previous calibration: MW-5

Signature: [signature] Reviewed By: [signature] Page 3 of 9

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: 0670-002.01 SAMPLE ID: MW-4

PURGED BY: J. Williams CLIENT NAME: ARCO 276

SAMPLED BY: J. Williams LOCATION: 10600 MacArthur Blvd Oakland CA

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

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

CASING ELEVATION (feet/MSL):	NA	VOLUME IN CASING (gal.):	1.93
DEPTH TO WATER (feet):	36.87	CALCULATED PURGE (gal.):	9.65
DEPTH OF WELL (feet):	48.90	ACTUAL PURGE VOL. (gal.):	10

DATE PURGED: 11-20-92 Start (2400 Hr) 1418 End (2400 Hr) 1450

DATE SAMPLED: 11-20-92 Start (2400 Hr) 1454 End (2400 Hr) 1456

TIME (2400 Hr)	VOLUME (gal)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1427	2	6.97	1708	62.6	BROWN	HEAVY
1431	4	7.00	1800	63.8	"	"
1435	6	7.00	1696	63.6	"	"
1441	8	6.97	1710	63.2	"	"
1450	10	7.03	1721	63.1	"	"

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

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): ~~FB-1~~ TOG/BTEX 418.1

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

WELL INTEGRITY: OK LOCK #: 3259

REMARKS: ___

Meter Calibration: Date: 11-20-92 Time: 1103 Meter Serial #: ___ Temperature °F: ___

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

Location of previous calibration: MW-5

Signature: ___ Reviewed By: ___ Page 4 of 9

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: 2670-002.01 SAMPLE ID: MW-5

PURGED BY: M Gallegos CLIENT NAME: ARCO #274

SAMPLED BY: M Gallegos 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.): 710

DEPTH TO WATER (feet): 36.17 CALCULATED PURGE (gal.): 35.52

DEPTH OF WELL (feet): 47.0 ACTUAL PURGE VOL. (gal.): 360

DATE PURGED: 11-24-92 Start (2400 Hr) 1101 End (2400 Hr) 1129

DATE SAMPLED: 11-24-92 Start (2400 Hr) 1140 End (2400 Hr) 1141

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1110	75	6.21	535	65.8	Cloudy	Cloudy
1115	150	6.31	445	66.3	"	"
1120	225	6.36	457	67.1	"	"
1125	300	6.38	464	67.1	"	"
1129	360	6.39	469	67.4	"	"

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

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

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

WELL INTEGRITY: Good LOCK #: 1159

REMARKS: All Samples taken

Meter Calibration: Date: 11/24/92 Time: 1055 Meter Serial #: 4/572 Temperature °F: 60.7

(EC 1000 1052 / 1000) (DI ___) (pH 7 713 / 700) (pH 10 977 / 1000) (pH 4 4/00 / 400)

Location of previous calibration: ___

Signature: [signature] Reviewed By: GB Page 5 of 89

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: 0670-002.01 SAMPLE ID: MW-6

PURGED BY: NA CLIENT NAME: ARCO 276

~~SAMPLED BY:~~ JWILLIAMS LOCATION: OAKLAND CA

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

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

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

DEPTH TO WATER (feet): / CALCULATED PURGE (gal.): /

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

DATE ~~PURGED~~: 11/20/92 Start (2400 Hr) NA / End (2400 Hr) NA /

DATE ~~SAMPLED~~: NA Start (2400 Hr) / End (2400 Hr) /

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
Well was buried, No samples were taken						

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

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

PURGING EQUIPMENT

___ 2" Bladder Pump ___ Bailer (Teflon®)

___ Centrifugal Pump ___ Bailer (PVC)

___ Submersible Pump ___ Bailer (Stainless Steel)

___ Well Wizard™ ___ Dedicated

Other: NA

SAMPLING EQUIPMENT

___ 2" Bladder Pump ___ Bailer (Teflon®)

___ DDL Sampler ___ Bailer (Stainless Steel)

___ Dipper ___ Submersible Pump

___ Well Wizard™ ___ Dedicated

Other: NA

WELL INTEGRITY: NA Buried LOCK #: NA

REMARKS:

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

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

Location of previous calibration: ___

Signature: JWilliams Reviewed By: ___ Page 6 of 9

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: 0670-002.01 SAMPLE ID: MW-7

PURGED BY: J. Williams CLIENT NAME: ARCO 776

SAMPLED BY: J. Williams LOCATION: ~~[illegible]~~ OAKLAND CA

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

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

CASING ELEVATION (feet/MSL):	N/A	VOLUME IN CASING (gal.):	
DEPTH TO WATER (feet):		CALCULATED PURGE (gal.):	
DEPTH OF WELL (feet):		ACTUAL PURGE VOL. (gal.):	

DATE PURGED: 11-20-92 Start (2400 Hr) ___ End (2400 Hr) ___

DATE SAMPLED: 11-20-92 Start (2400 Hr) ___ End (2400 Hr) ___

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
			NO READING			

D. O. (ppm): ND ODOR: STRONG NT (COBALT 0 - 100) NT (NTU 0 - 200)

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): NO

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: OK LOCK #: 3259

REMARKS: .02 Product

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

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

Location of previous calibration: ___

Signature: [signature] Reviewed By: [signature] Page 7 of 9

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: 0670-002.01 SAMPLE ID: MW-8

PURGED BY: M. Gallegos CLIENT NAME: ARCO #774

SAMPLED BY: M Gallegos 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.): 8.169

DEPTH TO WATER (feet): 34.45 CALCULATED PURGE (gal.): 43.46

DEPTH OF WELL (feet): 47.7 ACTUAL PURGE VOL. (gal.): 14.0

DATE PURGED: 11-24-92 Start (2400 Hr) 1229 End (2400 Hr) 1245

DATE SAMPLED: 11-24-92 Start (2400 Hr) 1257 End (2400 Hr) 1259

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1240	9.0	7.29	564	67.4	BRN	HEAVY
~~—~~	~~18.0~~	~~7~~	~~451~~	~~66.6~~	—	—
1259	RECHARGE	7.11	451	66.6	BRN	HEAVY

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

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

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

WELL INTEGRITY: Good LOCK #: 3252

REMARKS: Well Dried at 14.0 Gallons

All Samples Taken

Meter Calibration: Date: 11/24/92 Time: ___ Meter Serial #: 4572 Temperature °F: ___

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

Location of previous calibration: MW-5

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: 0670-002.01 SAMPLE ID: RW-1

PURGED BY: M. Gallegos CLIENT NAME: ARCO H 276

SAMPLED BY: M. Gallegos LOCATION: Oakland, CA.

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

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

CASING ELEVATION (feet/MSL): NR VOLUME IN CASING (gal.): 16.44

DEPTH TO WATER (feet): 37.4 CALCULATED PURGE (gal.): 82.20

DEPTH OF WELL (feet): 48.6 ACTUAL PURGE VOL. (gal.): 82.5

DATE PURGED: 11-24-92 Start (2400 Hr) 1339 End (2400 Hr) 1438

DATE SAMPLED: 11-24-92 Start (2400 Hr) 1453 End (2400 Hr) 1455

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1357	16.5	7.03	1391	66.8	Cloudy	Heavy
1408	33.0	6.83	1376	66.4	Cloudy	Light
1419	49.5	6.64	1361	66.2	Clear	Trace
1429	66.0	6.80	1352	66.0	"	"
1438	82.5	6.83	1354	65.1	"	"

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

WELL INTEGRITY: Good LOCK #: No Lock

REMARKS: All Samples taken

Meter Calibration: Date: 11-24-92 Time: ___ Meter Serial #: 21572 Temperature °F: ___

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

Location of previous calibration: MW-5

11/11.11.18

(TF1090-2) TF NUMBER: 1090-2 GIB-92-087

MONITORING WELL PURGE WATER TRANSPORT FORM

GENERATOR INFORMATION

NAME: ARCO PRODUCTS

ADDRESS: P.O. BOX 5811

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

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

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

KYLE CHRISTIE by Jon DeFoe 12-15-92
(Typed or printed full name & signature) (Date)

SITE INFORMATION

	STA #	JOB #	ADDRESS	GALS
1	A-2182	21325-PW	1404 MCHENRY AVE., MODESTO, CA	30
2	A-2063	21323-PW	2924 MCHENRY AVE., MODESTO, CA	50
3	A-6043	21324-PW	2101 TULLY RD., MODESTO, CA	48
4	A-548	21464-PW	1612 HAMMER LANE, STOCKTON, CA	152
5	A-2130	21382-DW	7609 NO. EL DORADO ST., STOCKTON, CA	124
6	A-771	21346-PW	899 RINCON AVE., LIVERMORE, CA	82
7	A-414	21182-PW	3000 SHATTUCK AVE., BERKELEY, CA	127
8	A-276	21335-PW	10600 MACARTHUR BLVD., OAKLAND, CA	158
9	A-515	21484-PW	300 SO. DELAWARE ST., SAN MATEO, CA	117
10	A-313	21485-PW	3600 ALAMEDA DEL LAS PULGAS, MENLO PARK, CA	99
11				
				987

TRANSPORTER INFORMATION

NAME: BALCH PETROLEUM

ADDRESS: 930 AMES AVE.

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

TRUCK ID #: 102-PTRBLT HURSCHEL WARD Hurschel Ward 12-15-92
(Typed or printed full name & signature) (Date)

TSD FACILITY INFORMATION

NAME: GIBSON ENVIRONMENTAL Gor. 1888

ADDRESS: 475 SEAPORT BLVD

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

RELEASE #: 11320 SHAWN RAGLIN Shawn Raglin 12-15-92
(Typed or printed full name & signature) (Date)

{TF1074-2} TF NUMBER: 1074-2 GIB-92-075

MONITORING WELL PURGE WATER TRANSPORT FORM

GENERATOR INFORMATION

RECEIVED
JAN 25 1993
RESNA
SAN JOSE

NAME: ARCO PRODUCTS

ADDRESS: P.O. BOX 5811

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

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

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

KYLE CHRISTIE Kyle Christie by Jon DeBoer 10-7-92
(Typed or printed full name & signature) (Date)

SITE INFORMATION

	STA #	JOB #	ADDRESS	GALS
1	A-428	20969-PW	12890 SAN PABLO AVE., RICHMOND, CA	219
2	A-6135	20901-PW	3969 CAMERON PARK DR., CAMERON PARK, CA	93
3	A-6159	21013-PW	6140 GREENBACK LAND, CITRUS HEIGHTS, CA	86
4	A-6188	21023-PW	4421 FLORIN RD., SACRAMENTO, CA	163
5	A-276	21049-PW	10600 MACARTHUR BLVD., OAKLAND, CA	150
6	A-230	20974-PW	2190 CARROLL ST., SAN FRANCISCO, CA	77
7	A-5335	20970-PW	1500 CANYON RD., MORAGA, CA	95
8	A-566	20973-PW	1175 FELL ST., SAN FRANCISCO, CA	45
9	A-322	21012-PW	710 SAN JOSE AVE., SAN FRANCISCO, CA	40
10				
11				
			TOTAL GALLONS:	968

TRANSPORTER INFORMATION

NAME: BALCH PETROLEUM

ADDRESS: 930 AMES AVE.

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

TRUCK ID #: PETERBILT HURSCHEL WARD Hurschel Ward 10-8-92
(Typed or printed full name & signature) (Date)

TSD FACILITY INFORMATION

NAME: GIBSON ENVIRONMENTAL

ADDRESS: 475 SEAPORT BLVD

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

RELEASE #: 11320 BILL LEDIN Bill Ledin 10-8-92
(Typed or printed full name & signature) (Date)

GTEL
ENVIRONMENTAL
LABORATORIES, INC.

Northwest Region
4080-C Pike Lane
Concord, CA 94520
(510) 685-7852
(800) 544-3422 *from inside California*
(800) 423-7143 *from outside California*
(510) 825-0720 (FAX)

Client Number: RSN04ARC01
Facility Number: 276
Arco Representative: Mike Whelan
Work Order Number: C2-10-105

October 8, 1992

Valli Voruganti
RESNA Industries
3315 Almaden Expressway, #34
San Jose, CA 95118

Enclosed please find the analytical results for samples received by GTEL Environmental Laboratories, Inc. on 10/06/92, under task order number 276922.

A formal Quality Assurance/Quality Control (QA/QC) program is maintained by GTEL, which is designed to meet or exceed the EPA requirements. Analytical work for this project met QA/QC criteria, unless otherwise stated in the footnotes.

GTEL is certified by the California State Department of Health Services to perform analyses for drinking water, wastewater, and hazardous waste materials according to EPA protocols.

If you have any questions concerning this analysis or if we can be of further assistance, please call our Customer Service Representative.

Sincerely,
GTEL Environmental Laboratories, Inc.

Eileen F. Bullen

Eileen F. Bullen
Laboratory Director

Client Number: RSN04ARC01
Facility Number: 276
Arco Representative: Mike Whelan
Work Order Number: C2-10-105

Table 1

ANALYTICAL RESULTS

Aromatic Volatile Organics and Total Petroleum Hydrocarbons as Gasoline in Air

Modified EPA Methods 8020 and 8015[a]

GTEL Sample Number		01	02	03	04
Client Identification		AS-WELLSNFL	AS-SYSEFFL	AS-SYSSNFL	METHOD BLANK
Date Sampled		10/05/92	10/05/92	10/05/92	10/05/92
Date Analyzed		10/06/92	10/06/92	10/06/92	10/06/92
Analyte	Detection Limit, ug/L	Concentration, ug/L			
Benzene	0.5	17	0.8	3	<0.5
Toluene	0.5	17	1	3	<0.5
Ethylbenzene	0.5	4	<0.5	0.6	<0.5
Xylene, total	0.5	22	2	5	<0.5
BTEX, total	--	60	4	12	--
Gasoline	10	990	12	240	<10
Detection Limit Multiplier		1	1	1	1
BFB surrogate, % recovery		100	101	102	82.3

a. Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, US EPA November 1986. Modification for TPH as gasoline as per California State Water Resources Control Board LUFT Manual protocols, May 1988 revision.

[redacted] ARCO Products Company [redacted] Division of AtlanticRichfieldCompany [redacted] Task Order No. [redacted] Chain of Custody

ARCO Facility no. 276	City (Facility)	Project manager (Consultant) VALI VIRUGANTI	Laboratory name GTEL
ARCO engineer MIKE WHELAN	Telephone no. (ARCO) (415) 571-2434	Telephone no. (Consultant) (408) 264-7723 / Fax no. (Consultant) 264-2435	Contract number
Consultant name RESNA		Address (Consultant) 3315 ALMADEN EXPRESSWAY #34 SAN JOSE, CA. 95118	

Sample I.D.	Lab no.	Container no.	Matrix: Soil	Matrix: Water	Matrix: Other AIR	Preservation: Ice	Preservation: Acid	Sampling date	Sampling time	BTEX 602/EPA 8020	BTEX/TPH 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 ☐ VOA ☐ Semi VOA ☐	CAM Metals EPA 6010/7000 TTLC ☐ STLC ☐	Lead Org./DHS ☐ Lead EPA 7420/7421 ☐		
AS-WELL	SNFL	01			✓			10-5-92	1210		✓											
AS-SUSEFFL		02			✓			↓	1215		✓											
AS-SUSSNFL		03			✓			↓	1231		✓											
METHOD BLANK																						

PJX10

ne 10/1/92

(CEAC)

Method of shipment: COURIER

Special detection Limit/reporting

Special QA/QC

Remarks: REPORT RESULTS IN MG/M3

72 HR HOLDING T

Lab number: 105

Turnaround time

Priority Rush 1 Business Day

Rush 2 Business Days

Expedited 5 Business Days

Standard 10 Business Days

Condition of sample:

Temperature received:

Relinquished by sampler [signature]	Date 10/6/92	Time 915	Received by Richard Mullins		
Relinquished by [signature]	Date 10/6/92	Time 1134	Received by		
Relinquished by	Date	Time	Received by laboratory Jamie Slaton	Date 10/10/92	Time 12:05

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

APPC-3292 (2-91)

GTEL
ENVIRONMENTAL
LABORATORIES, INC.

Northwest Region
4080-C Pike Lane
Concord, CA 94520
(510) 685-7852
(800) 544-3422 *from inside California*
(800) 423-7143 *from outside California*
(510) 825-0720 (FAX)

Client Number: RSN04ARC01
Facility Number: 276
Arco Representative: Mike Whelan
Work Order Number: C2-11-070

November 10, 1992

Valli Voruganti
RESNA Industries
3315 Almaden Expressway, #34
San Jose, CA 95118

Enclosed please find the analytical results for samples received by GTEL Environmental Laboratories, Inc. on 11/04/92, under task order number 2765B.

A formal Quality Assurance/Quality Control (QA/QC) program is maintained by GTEL, which is designed to meet or exceed the EPA requirements. Analytical work for this project *met QA/QC criteria, unless otherwise stated in the footnotes.*

GTEL is certified by the California State Department of Health Services to perform analyses for drinking water, wastewater, and hazardous waste materials according to EPA protocols.

If you have any questions concerning this analysis or if we can be of further assistance, please call our Customer Service Representative.

Sincerely,

GTEL Environmental Laboratories, Inc.

Eileen F. Bullen

Eileen F. Bullen
Laboratory Director

Client Number: RSN04ARC01
Facility Number: 276
Arco Representative: Mike Whelan
Work Order Number: C2-11-070

Table 1

ANALYTICAL RESULTS

Aromatic Volatile Organics and
Total Petroleum Hydrocarbons as Gasoline in Air

Modified EPA Methods 8020 and 8015[a]

GTEL Sample Number		01	02	03	04
Client Identification		A1 EFF	A2 INF	A3 (AEUFEO)	METHOD BLANK
Date Sampled		11/03/92	11/03/92	11/03/92	---
Date Analyzed		11/04/92	11/04/92	11/04/92	11/05/92
Analyte	Detection Limit, mg/m^3	Concentration, mg/m^3			
Benzene	0.5	<0.5	1	6	<0.5
Toluene	0.5	<0.5	2	7	<0.5
Ethylbenzene	0.5	<0.5	<0.5	1	<0.5
Xylene, total	0.5	<0.5	6	12	<0.5
Gasoline	10	<10	64	350	<10
Detection Limit Multiplier		1	1	1	1

a. Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, US EPA November 1986. Modification for TPH as gasoline as per California State Water Resources Control Board LUFT Manual protocols, May 1988 revision.

Client Number: RSN04ARC01
Facility Number: 276
Arco Representative: Mike Whelan
Work Order Number: C2-11-070

Sample and Sample Duplicate Results

Matrix: Air

Analyte	Sample ID	Date of Analysis	Sample Results	Sample Duplicate Results	Units	RPD[a], %
Modified EPA 8020:						
Benzene	C211070-02	11/04/92	1.44	1.44	ug/L	0
Toluene	C211070-02	11/04/92	1.80	1.54	ug/L	15.6
Ethylbenzene	C211070-02	11/04/92	ND	ND	ug/L	0
Xylene, total	C211070-02	11/04/92	5.78	4.12	ug/L	33.5

a. See attached table for acceptability limits.
ND = Not Detected.

GTEL ENVIRONMENTAL LABORATORIES, INC

QC Acceptability Limits

Analyte	QC Check Sample Recovery (%)	Duplicate Water Sample RPD (%)	Duplicate Soil Sample RPD (%)	Water Matrix Spike Recovery (%)	Soil Matrix Spike Recovery (%)	Reagent Water Spike Recovery (%)
Modified EPA 8020:						
Benzene	80 - 120	30	30	55 - 129	24 - 127	70 - 147
Toluene	80 - 120	30	30	72 - 149	17 - 124	67 - 150
Ethylbenzene	80 - 120	30	30	75 - 138	19 - 129	69 - 145
Xylene, total	80 - 120	30	30	74 - 147	23 - 124	71 - 152
Modified EPA 8015:						
Gasoline	---	30	30	---	---	---

Analyte	QC Check Sample Recovery (%)	Duplicate Water Sample RPD (%)	Duplicate Soil Sample RPD (%)	Water Matrix Spike Recovery (%)	Soil Matrix Spike Recovery (%)	Reagent Water Spike Recovery (%)
Diesel	---	30	30	63 - 127	58 - 144	48 - 134
EPA 8010/8020:						
Chlorobenzene	80 - 120	30	---	34 - 134	58 - 126	62 - 111
Benzene	80 - 120	30	---	66 - 118	24 - 127	58 - 127
Toluene	80 - 120	30	---	53 - 115	17 - 124	60 - 120
Ethylbenzene	80 - 120	30	---	43 - 131	19 - 129	58 - 126
Xylene, total	80 - 120	30	---	55 - 115	23 - 124	63 - 128
1,1-Dichloroethene	80 - 120	30	---	30 - 160	72 - 116	56 - 138
Trichloroethene	80 - 120	30	---	78 - 184	79 - 120	82 - 187
EPA 8080:						
Heptachlor	80 - 120	30	---	---	34 - 111	34 - 111
Aldrin	80 - 120	30	---	---	42 - 122	42 - 122
DDE	80 - 120	30	---	---	30 - 145	30 - 145
Dieldrin	80 - 120	30	---	---	36 - 146	36 - 146
Endrin	80 - 120	30	---	---	30 - 147	30 - 147
DDD	80 - 120	30	---	---	31 - 141	31 - 114
DDT	80 - 120	30	---	---	10 - 180	10 - 180
Arochlor 1260	45 - 127	30	---	---	53 - 128	53 - 128

QC Acceptability Limits

Analyte	QC Check Sample Recovery (%)	Duplicate Water Sample RPD (%)	Duplicate Soil Sample RPD (%)	Water Matrix Spike Recovery (%)	Soil Matrix Spike Recovery (%)	Reagent Water Spike Recovery (%)
EPA 8310:						
Fluorene	80 - 120	68	---	---	---	49 - 116
Anthracene	80 - 120	41.7	---	---	---	24 - 116
Chrysene	80 - 120	65.2	---	---	---	44 - 128
Benzo(a)pyrene	80 - 120	52.8	---	---	---	26 - 126
Naphthalene	80 - 120	42.3	---	---	---	51 - 106
EPA 8240:						
All 8240 Compounds	60 - 140	---	---	---	---	---
Trichloroethene	---	14	24	71 - 120	62 - 137	71 - 120
Toluene	---	13	21	76 - 125	59 - 139	76 - 125
Chlorobenzene	---	13	21	75 - 130	60 - 133	75 - 130
1,1-Dichloroethene	---	14	22	61 - 145	59 - 172	61 - 145
Benzene	---	11	21	76 - 127	66 - 142	76 - 127
TPH/IR:	80 - 120	20	20	70 - 130	70 - 130	70 - 130
Metals:						
Arsenic	90 - 110	20	20	80 - 120	80 - 120	80 - 120
Barium	90 - 110	20	20	80 - 120	80 - 120	80 - 120
Cadmium	90 - 110	20	20	80 - 120	80 - 120	80 - 120
Chromium	90 - 110	20	20	80 - 120	80 - 120	80 - 120
Iron	90 - 110	20	20	80 - 120	80 - 120	80 - 120
Lead	90 - 110	20	20	80 - 120	80 - 120	80 - 120
Manganese	90 - 110	20	20	80 - 120	80 - 120	80 - 120
Mercury	90 - 110	20	20	80 - 120	80 - 120	80 - 120
Selenium	90 - 110	20	20	80 - 120	80 - 120	90 - 110
Silver	90 - 110	20	20	80 - 120	80 - 120	90 - 110
Wet Chemistry:						
TOC	90 - 110	20	NA	90 - 110	NA	90 -110

NA = Not Applicable.

GTEL ENVIRONMENTAL LABORATORIES, INC

QC Acceptability Limits

Analyte	QC Check Sample Recovery (%)	Duplicate Air Sample RPD (%)	Matrix Spike Recovery (%)
Modified EPA 8020:			
Benzene	---	38	---
Toluene	---	34	---
Ethylbenzene	---	48	---
Xylene, total	---	34	---
Modified EPA 8015:			
Gasoline	---	---	---

ARCO Products Company Division of AtlanticRichfieldCompany — **Task Order No.** [redacted] — Chain of Custody

ARCO Facility no. 276	City (Facility) OAKLAND	Project manager (Consultant) VALI	Laboratory name GTEL
ARCO engineer MIKE WHELAN	Telephone no. (ARCO)	Telephone no. (Consultant) (408) 264-7723	Fax no. (Consultant) 264-2435
Consultant name LEJNA	Address (Consultant) 3315 ALMADEN EXPRESSWAY SUITE 34, SAN JOSE, CA 95118		Contract number

Sample I.D.	Lab no.	Container no.	Matrix: Soil	Matrix: Water	Matrix: Other	Preservation: Ice	Preservation: Acid	Sampling date	Sampling time	BTEX 602/EPA 8020	BTEX/TPH EPA M602/8020/8015	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 ☐
A1-EFF	01				AIR			11-3-92	1325		X									
A2-INF	02				↓			↓	1335		X									
A3-WELL #0	03				↓			↓	1345		X									
method BK	04																			

Special detection Limit/reporting: REPORT RESULTS IN MG/M3

Special QA/QC: BOX 7

Remarks: 72 HOUR HOLDING TIME

Lab number: C211070

Condition of sample:		Temperature received:	
Relinquished by sampler	Date 11/4/92 Time 955	Received by Susan Horne Concord Courier	
Relinquished by Susan House	Date 11/4/92 Time 12:10	Received by John Weber	
Relinquished by	Date / Time	Received by laboratory Kathy Braun	Date 11/5/92 Time 12:11

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)

GTEL
ENVIRONMENTAL
LABORATORIES, INC.

Northwest Region
4080-C Pike Lane
Concord, CA 94520
(510) 685-7852
(800) 544-3422 *from inside California*
(800) 423-7143 *from outside California*
(510) 825-0720 (FAX)

Client Number: RSN04ARC01
Facility Number: 276
Arco Representative: Mike Whelan
Work Order Number: C2-11-394

November 24, 1992

Valli Voruganti
RESNA Industries
3315 Almaden Expressway, #34
San Jose, CA 95118

Enclosed please find the analytical results for samples received by GTEL Environmental Laboratories, Inc. on 11/18/92, under task order number 276-92-5B.

A formal Quality Assurance/Quality Control (QA/QC) program is maintained by GTEL, which is designed to meet or exceed the EPA requirements. Analytical work for this project met QA/QC criteria, unless otherwise stated in the footnotes.

GTEL is certified by the California State Department of Health Services to perform analyses for drinking water, wastewater, and hazardous waste materials according to EPA protocols.

If you have any questions concerning this analysis or if we can be of further assistance, please call our Customer Service Representative.

Sincerely,

GTEL Environmental Laboratories, Inc.

Eileen F. Bullen

Eileen F. Bullen
Laboratory Director

Client Number: RSN04ARC01
Facility Number: 276
Arco Representative: *Mike Whelan*
Work Order Number: C2-11-394

Table 1

ANALYTICAL RESULTS

Aromatic Volatile Organics and Total Petroleum Hydrocarbons as Gasoline in Air

Modified EPA Methods 8020 and 8015[a]

GTEL Sample Number		01	02		
Client Identification		AS-VW-1 NFL	METHOD BLANK		
Date Sampled		11/17/92	--		
Date Analyzed		11/19/92	11/19/92		
Analyte	Detection Limit, mg/m^3	Concentration, mg/m^3			
Benzene	0.5	2	<0.5		
Toluene	0.5	3	<0.5		
Ethylbenzene	0.5	0.6	<0.5		
Xylene, total	0.5	4	<0.5		
BTEX, total	--	10	--		
Gasoline	10	200	<10		
Detection Limit Multiplier		1	1		
BFB surrogate, % recovery		88	88		

a. Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, US EPA November 1986. Modification for TPH as gasoline as per California State Water Resources Control Board LUFT Manual protocols, May 1988 revision.

Client Number: RSN04ARC01
Facility Number: 276
Arco Representative: Mike Whelan
Work Order Number: C2-11-394

Sample and Sample Duplicate Results

Matrix: Air

Analyte	Sample ID	Date of Analysis	Sample Results	Sample Duplicate Results	Units	RPD[a], %
Modified EPA 8020:						
Benzene	C211393-01	11/19/92	15.4	15.5	ug/L	0.65
Toluene	C211393-01	11/19/92	17.1	17.3	ug/L	1.2
Ethylbenzene	C211393-01	11/19/92	2.08	1.92	ug/L	8.0
Xylene, total	C211393-01	11/19/92	15.4	15.8	ug/L	2.6

a. See attached table for acceptability limits.

QC Acceptability Limits

Analyte	QC Check Sample Recovery (%)	Duplicate Water Sample RPD (%)	Duplicate Soil Sample RPD (%)	Water Matrix Spike Recovery (%)	Soil Matrix Spike Recovery (%)	Reagent Water Spike Recovery (%)
Modified EPA 8020:						
Benzene	80 - 120	30	30	55 - 129	24 - 127	70 - 147
Toluene	80 - 120	30	30	72 - 149	17 - 124	67 - 150
Ethylbenzene	80 - 120	30	30	75 - 138	19 - 129	69 - 145
Xylene, total	80 - 120	30	30	74 - 147	23 - 124	71 - 152
Modified EPA 8015:						
Gasoline	---	30	30	---	---	---

Analyte	QC Check Sample Recovery (%)	Duplicate Water Sample RPD (%)	Duplicate Soil Sample RPD (%)	Water Matrix Spike Recovery (%)	Soil Matrix Spike Recovery (%)	Reagent Water Spike Recovery (%)
Diesel	---	30	30	63 - 127	58 - 144	48 - 134
EPA 8010/8020:						
Chlorobenzene	80 - 120	30	---	34 - 134	58 - 126	62 - 111
Benzene	80 - 120	30	---	66 - 118	24 - 127	58 - 127
Toluene	80 - 120	30	---	53 - 115	17 - 124	60 - 120
Ethylbenzene	80 - 120	30	---	43 - 131	19 - 129	58 - 126
Xylene, total	80 - 120	30	---	55 - 115	23 - 124	63 - 128
1,1-Dichloroethene	80 - 120	30	---	30 - 160	72 - 116	56 - 138
Trichloroethene	80 - 120	30	---	78 - 184	79 - 120	82 - 187
EPA 8080:						
Heptachlor	80 - 120	30	---	---	34 - 111	34 - 111
Aldrin	80 - 120	30	---	---	42 - 122	42 - 122
DDE	80 - 120	30	---	---	30 - 145	30 - 145
Dieldrin	80 - 120	30	---	---	36 - 146	36 - 146
Endrin	80 - 120	30	---	---	30 - 147	30 - 147
DDD	80 - 120	30	---	---	31 - 141	31 - 114
DDT	80 - 120	30	---	---	10 - 180	10 - 180
Arochlor 1260	45 - 127	30	---	---	53 - 128	53 - 128

QC Acceptability Limits

Analyte	QC Check Sample Recovery (%)	Duplicate Water Sample RPD (%)	Duplicate Soil Sample RPD (%)	Water Matrix Spike Recovery (%)	Soil Matrix Spike Recovery (%)	Reagent Water Spike Recovery (%)
EPA 8310:						
Fluorene	80 - 120	68	---	---	---	49 - 116
Anthracene	80 - 120	41.7	---	---	---	24 - 116
Chrysene	80 - 120	65.2	---	---	---	44 - 128
Benzo(a)pyrene	80 - 120	52.8	---	---	---	26 - 126
Naphthalene	80 - 120	42.3	---	---	---	51 - 106
EPA 8240:						
All 8240 Compounds	60 - 140	---	---	---	---	---
Trichloroethene	---	14	24	71 - 120	62 - 137	71 - 120
Toluene	---	13	21	76 - 125	59 - 139	76 - 125
Chlorobenzene	---	13	21	75 - 130	60 - 133	75 - 130
1,1-Dichloroethene	---	14	22	61 - 145	59 - 172	61 - 145
Benzene	---	11	21	76 - 127	66 - 142	76 - 127
TPH/IR:	80 - 120	20	20	70 - 130	70 - 130	70 - 130
Metals:						
Arsenic	90 - 110	20	20	80 - 120	80 - 120	80 - 120
Barium	90 - 110	20	20	80 - 120	80 - 120	80 - 120
Cadmium	90 - 110	20	20	80 - 120	80 - 120	80 - 120
Chromium	90 - 110	20	20	80 - 120	80 - 120	80 - 120
Iron	90 - 110	20	20	80 - 120	80 - 120	80 - 120
Lead	90 - 110	20	20	80 - 120	80 - 120	80 - 120
Manganese	90 - 110	20	20	80 - 120	80 - 120	80 - 120
Mercury	90 - 110	20	20	80 - 120	80 - 120	80 - 120
Selenium	90 - 110	20	20	80 - 120	80 - 120	90 - 110
Silver	90 - 110	20	20	80 - 120	80 - 120	90 - 110
Wet Chemistry:						
TOC	90 - 110	20	NA	90 - 110	NA	90 -110

NA = Not Applicable.

GTEL ENVIRONMENTAL LABORATORIES, INC

QC Acceptability Limits

Analyte	QC Check Sample Recovery (%)	Duplicate Air Sample RPD (%)	Matrix Spike Recovery (%)
Modified EPA 8020:			
Benzene	---	38	---
Toluene	---	34	---
Ethylbenzene	---	48	---
Xylene, total	---	34	---
Modified EPA 8015:			
Gasoline	---	---	---

ARCO Products Company
Division of AtlanticRichfieldCompany

Task Order No. 276-92-5B

Chain of Custody

ARCO Facility no. 276 | City (Facility) OAKLAND, CA | Project manager (Consultant) VALLI VORUGANTI

ARCO engineer MIKE WHELAN | Telephone no. (ARCO) (415) 571 2449 | Telephone no. (Consultant) (408) 264 7723 | Fax no. (Consultant) (408) 264 2435

Consultant name RESNA INDUSTRIES. | Address (Consultant) 3315 Almaden Expressway, #34 San Jose CA

Laboratory name: GTEL

Contract number:

Method of shipment:

Sample I.D.	Lab no.	Container no.	Matrix: Soil	Matrix: Water	Matrix: Other	Preservation: Ice	Preservation: Acid	Sampling date	Sampling time	BTEX 602/EPA 8020	BTEX/TPH EPA M602/8020/8015	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 ☐ VOA ☐ Semi VOA ☐	CAM Metals EPA 6010/7000 TTLC ☐ STLC ☐	Lead Org./DHS ☐ Lead EPA 7420/7421 ☐		
AS-VW-1 SNFL	01				Air			11/17	16:00		X											

11/23/92 BR

Special detection Limit/reporting: Report result in mg/m

Special QA/QC: BOX 7

Remarks: Please analyze air sample within 72 hours.

Lab number: C211394

Turnaround time

Priority Rush 1 Business Day ☐

Rush 2 Business Days ☐

Expedited 5 Business Days ☐

Standard 10 Business Days X

Condition of sample:

Temperature received:

Relinquished by sampler	Date	Time	Received by
Valli	11/18	9:00	Susan House Concord Courier 11/19 1025
Relinquished by	**Date**	**Time**	**Received by**
Susan House	11/18	1:15	
Relinquished by	**Date**	**Time**	**Received by laboratory** / Date / Time
			Jamie Davis 11/18/92 1:25

[redacted]tion [redacted] copy - [redacted]rator[redacted]ary co[redacted] ARCO [redacted]nmen[redacted]gineer[redacted]nk co[redacted] Consu[redacted]

APPC 3292 (2-91)

GTEL
ENVIRONMENTAL
LABORATORIES, INC.

Northwest Region
4080-C Pike Lane
Concord, CA 94520
(510) 685-7852
(800) 544-3422 *from inside California*
(800) 423-7143 *from outside California*
(510) 825-0720 (FAX)

Client Number: RSN04ARC01
Arco Facility Number: 276
Arco Representative: Michael Whelan
Work Order Number: C2-12-529
Date Reissued: 01-12-93

January 12, 1993

RECEIVED
JAN 1 : 1993
RESNA
SAN JOSE

Valli Voruganti
RESNA Industries
3315 Almaden Expressway, #34
San Jose, CA 95118

Enclosed please find the analytical results for samples received by GTEL Environmental Laboratories, Inc. on 12/18/92, under task order number 276-92-58.

A formal Quality Assurance/Quality Control (QA/QC) program is maintained by GTEL, which is designed to meet or exceed the EPA requirements. Analytical work for this project met QA/QC criteria, unless otherwise stated in the footnotes.

GTEL is certified by the California State Department of Health Services to perform analyses for drinking water, wastewater, and hazardous waste materials according to EPA protocols.

If you have any questions concerning this analysis or if we can be of further assistance, please call our Customer Service Representative.

Sincerely,
GTEL Environmental Laboratories, Inc.

Eileen F. Bullen

Eileen F. Bullen
Laboratory Director

Client Number: RSN04ARC01
Arco Facility Number: 276
Arco Representative: Michael Whelan
Work Order Number: C2-12-529
Date Reissued: 01-12-93

Table 1

ANALYTICAL RESULTS

Aromatic Volatile Organics and Total Petroleum Hydrocarbons as Gasoline in Air

Modified EPA Methods 8020 and 8015[a]

a. Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, US EPA November 1986. Modification for TPH as gasoline as per California State Water Resources Control Board LUFT Manual protocols, May 1988 revision.

GTEL Sample Number		01	02	03	04
Client Identification		INFL	EFFL	COMB WELLS	METHOD BLANK
Date Sampled		12/16/92	12/16/92	12/16/92	--
Date Analyzed		12/18/92	12/18/92	12/18/92	12/18/92
Analyte	Detection Limit, mg/m^3	Concentration, mg/m^3			
Benzene	0.5	<0.5	<0.5	< 0.5	< 0.5
Toluene	0.5	< 0.5	3	2	< 0.5
Ethylbenzene	0.5	< 0.5	< 0.5	< 0.5	< 0.5
Xylene, total	0.5	1	1	2	< 0.5
TPH as Gasoline	10	<10	<10	<10	<10
Detection Limit Multiplier		1	1	1	1
BFB surrogate, % recovery		95	95	91	95

GTEL ENVIRONMENTAL LABORATORIES, INC.

A[redacted] Pr[redacted]cts [redacted]mp[redacted]
Division of AtlanticRichfieldCompany

Task Order No. 276-92-313-[redacted]

ARCO Facility no. 276	City (Facility) OAKLAND, CA	Project manager (Consultant) VALLI VORUGANTI	Laboratory name GTE
ARCO engineer MICHAEL WHELAN	Telephone no. (ARCO) (415) 577-2441	Telephone no. (Consultant) (408) 264-7723	Fax no (Consultant) 408-264-2435
Consultant name RESNA INDUSTRIES	Address (Consultant) 3315 ALMADEN EXPWY, #34, SAN JOSE 95118		Contract number

Sample I.D.	Lab no.	Container no.	Matrix: Soil	Matrix: Water	Matrix: Other (Air)	Preservation: Ice	Preservation: Acid	Sampling date	Sampling time	BTEX 602/EPA 8020	BTEX/TPH EPA M602/8020/8015	TPH Modified 8015 Gas ☐ Diesel ☐	Oil and Grease 413.2 ☐ 413.1 ☐	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 ☐
INFL		01			X			12/16	15:05		X									
EFFL		02			X			↓	↓		X									
COMBWELLS		03			X			↓	↓		X									
METH. BLANK		04																		

Special detection Limit/reporting: mg/m3

Special QA/QC

Remarks: Analy[illegible] within 7[illegible] of colle[illegible] Please f[illegible] results ASA[illegible]

Lab number: C21252

BTEX 12/21/92

BOX 10

Turnaround time
- Priority Rush 1 Business Day
- Rush 2 Business Days
- Expedited 5 Business Days
- Standard 10 Business Days

Condition of sample: Cool.		Temperature received:	
Relinquished by sampler: Valli	Date 12/16 Time 6:00pm	Received by:	
Relinquished by: James Penwell	Date 12/17/92 Time 8:30	Received by:	
Relinquished by: Susan Kovac	Date 12/18/92 Time 7:40	Received by laboratory: Marianne Alexander	Date 12/18/92 Time 7:40

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

APPC-3292 (2-91)

GTEL
ENVIRONMENTAL
LABORATORIES, INC.

Northwest Region
4080-C Pike Lane
Concord, CA 94520
(510) 685-7852
(800) 544-3422 *from inside California*
(800) 423-7143 *from outside California*
(510) 825-0720 (FAX)

60026.12

Client Number: RSN04ARC01
Facility Number: 276
Arco Representative: Mike Whelan
Work Order Number: C2-12-585

January 6, 1993

Valli Voruganti
RESNA Industries
3315 Almaden Expressway, #34
San Jose, CA 95118

Enclosed please find the analytical results for samples received by GTEL Environmental Laboratories, Inc. on 12/22/92, under task order number 276-92-5B.

A formal Quality Assurance/Quality Control (QA/QC) program is maintained by GTEL, which is designed to meet or exceed the EPA requirements. Analytical work for this project met QA/QC criteria, unless otherwise stated in the footnotes.

GTEL is certified by the California State Department of Health Services to perform analyses for drinking water, wastewater, and hazardous waste materials according to EPA protocols.

If you have any questions concerning this analysis or if we can be of further assistance, please call our Customer Service Representative.

Sincerely,
GTEL Environmental Laboratories, Inc.

Eileen F. Bullen

Eileen F. Bullen
Laboratory Director

Client Number: RSN04ARC01
Facility Number: 276
Arco Representative: Mike Whelan
Work Order Number: C2-12-585

Table 1

ANALYTICAL RESULTS

Aromatic Volatile Organics and Total Petroleum Hydrocarbons as Gasoline in Air

Modified EPA Methods 602, 8020 and 8015[a]

GTEL Sample Number		01	02		
Client Identification		AVW6	METHOD BLANK		
Date Sampled		12/21/92	--		
Date Analyzed		12/22/92	12/22/92		
Analyte	Detection Limit, mg/m^3	Concentration, mg/m^3			
Benzene	0.5	<0.5	<0.5		
Toluene	0.5	5	<0.5		
Ethylbenzene	0.5	<0.5	<0.5		
Xylene, total	0.5	1	<0.5		
Gasoline	10	37	<10		
Detection Limit Multiplier		1	1		
BFB surrogate, % recovery		88.8	89.8		

a. Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, US EPA November 1986. Modification for TPH as gasoline as per California State Water Resources Control Board LUFT Manual protocols, May 1988 revision.

Client Number: RSN04ARC01
Facility Number: 276
Arco Representative: Mike Whelan
Work Order Number: C2-12-585

QC Check Sample Results

Analyte	Source	Date of Analysis	Expected Value	Units	Recovery[a], %
Modified EPA 8020:					
Benzene	Supelco	12/09/92	50	ug/L	95.0
Toluene	Supelco	12/09/92	50	ug/L	88.4
Ethylbenzene	Supelco	12/09/92	50	ug/L	86.8
Xylene, total	Supelco	12/09/92	150	ug/L	88.7

Sample and Sample Duplicate Results

Matrix: Air

Analyte	Sample ID	Date of Analysis	Sample Results	Sample Duplicate Results	Units	RPD[a], %
Modified EPA 8020:						
Benzene	C212614-01	12/22/92	792	793	ug/L	0.1
Toluene	C212614-01	12/22/92	785	857	ug/L	8.8
Ethylbenzene	C212614-01	12/22/92	57.6	66.9	ug/L	14.9
Xylene, total	C212614-01	12/22/92	196	228	ug/L	15.1

a. See attached table for acceptability limits.

GTEL ENVIRONMENTAL LABORATORIES, INC.

QC Acceptability Limits

Analyte	QC Check Sample Recovery (%)	Duplicate Water Sample RPD (%)	Duplicate Soil Sample RPD (%)	Water Matrix Spike Recovery (%)	Soil Matrix Spike Recovery (%)	Reagent Water Spike Recovery (%)
Modified EPA 8020:						
Benzene	80 - 120	30	30	55 - 129	24 - 127	70 - 147
Toluene	80 - 120	30	30	72 - 149	17 - 124	67 - 150
Ethylbenzene	80 - 120	30	30	75 - 138	19 - 129	69 - 145
Xylene, total	80 - 120	30	30	74 - 147	23 - 124	71 - 152
Modified EPA 8015:						
Gasoline	---	30	30	---	---	---

Analyte	QC Check Sample Recovery (%)	Duplicate Water Sample RPD (%)	Duplicate Soil Sample RPD (%)	Water Matrix Spike Recovery (%)	Soil Matrix Spike Recovery (%)	Reagent Water Spike Recovery (%)
Diesel	---	30	30	63 - 127	58 - 144	48 - 134
EPA 8010/8020:						
Chlorobenzene	80 - 120	30	---	34 - 134	58 - 126	62 - 111
Benzene	80 - 120	30	---	66 - 118	24 - 127	58 - 127
Toluene	80 - 120	30	---	53 - 115	17 - 124	60 - 120
Ethylbenzene	80 - 120	30	---	43 - 131	19 - 129	58 - 126
Xylene, total	80 - 120	30	---	55 - 115	23 - 124	63 - 128
1,1-Dichloroethene	80 - 120	30	---	30 - 160	72 - 116	56 - 138
Trichloroethene	80 - 120	30	---	78 - 184	79 - 120	82 - 187
EPA 8080:						
Heptachlor	80 - 120	30	---	---	34 - 111	34 - 111
Aldrin	80 - 120	30	---	---	42 - 122	42 - 122
DDE	80 - 120	30	---	---	30 - 145	30 - 145
Dieldrin	80 - 120	30	---	---	36 - 146	36 - 146
Endrin	80 - 120	30	---	---	30 - 147	30 - 147
DDD	80 - 120	30	---	---	31 - 141	31 - 114
DDT	80 - 120	30	---	---	10 - 180	10 - 180
Arochlor 1260	45 - 127	30	---	---	53 - 128	53 - 128

QC Acceptability Limits

Analyte	QC Check Sample Recovery (%)	Duplicate Water Sample RPD (%)	Duplicate Soil Sample RPD (%)	Water Matrix Spike Recovery (%)	Soil Matrix Spike Recovery (%)	Reagent Water Spike Recovery (%)
EPA 8310:						
Fluorene	80 - 120	68	---	---	---	49 - 116
Anthracene	80 - 120	41.7	---	---	---	24 - 116
Chrysene	80 - 120	65.2	---	---	---	44 - 128
Benzo(a)pyrene	80 - 120	52.8	---	---	---	26 - 126
Naphthalene	80 - 120	42.3	---	---	---	51 - 106
EPA 8240:						
All 8240 Compounds	60 - 140	---	---	---	---	---
Trichloroethene	---	14	24	71 - 120	62 - 137	71 - 120
Toluene	---	13	21	76 - 125	59 - 139	76 - 125
Chlorobenzene	---	13	21	75 - 130	60 - 133	75 - 130
1,1-Dichloroethene	---	14	22	61 - 145	59 - 172	61 - 145
Benzene	---	11	21	76 - 127	66 - 142	76 - 127
TPH/IR:	80 - 120	20	20	70 - 130	70 - 130	70 - 130
Metals:						
Arsenic	90 - 110	20	20	80 - 120	80 - 120	80 - 120
Barium	90 - 110	20	20	80 - 120	80 - 120	80 - 120
Cadmium	90 - 110	20	20	80 - 120	80 - 120	80 - 120
Chromium	90 - 110	20	20	80 - 120	80 - 120	80 - 120
Iron	90 - 110	20	20	80 - 120	80 - 120	80 - 120
Lead	90 - 110	20	20	80 - 120	80 - 120	80 - 120
Manganese	90 - 110	20	20	80 - 120	80 - 120	80 - 120
Mercury	90 - 110	20	20	80 - 120	80 - 120	80 - 120
Selenium	90 - 110	20	20	80 - 120	80 - 120	90 - 110
Silver	90 - 110	20	20	80 - 120	80 - 120	90 - 110
Wet Chemistry:						
TOC	90 - 110	20	NA	90 - 110	NA	90 -110

NA = Not Applicable.

GTEL ENVIRONMENTAL LABORATORIES, INC

QC Acceptability Limits

Analyte	QC Check Sample Recovery (%)	Duplicate Air Sample RPD (%)	Matrix Spike Recovery (%)
Modified EPA 8020:			
Benzene	---	38	---
Toluene	---	34	---
Ethylbenzene	---	48	---
Xylene, total	---	34	---
Modified EPA 8015:			
Gasoline	---	---	---

ARCO Products Company
Division of AtlanticRichfieldCompany

Task Order No. 276-92-513

Chain of Custody

ARCO Facility no. 276	City (Facility) OAKLAND	Project manager (Consultant) VAUI VORUGANTI	Laboratory name GTEL
ARCO engineer MIKE WHELAN	Telephone no. (ARCO)	Telephone no. (Consultant) (408) 264-7723	Fax no. (Consultan.) 264-2435
Consultant name RESNA	Address (Consultant) 3315 ALMADEN EXPRESSWAY #34 SAN JOSE CA 95118		Contract number

Method of shipment: COURIER

Sample I.D.	Lab no.	Container no.	Matrix: Soil	Matrix: Water	Matrix: Other	Preservation: Ice	Preservation: Acid	Sampling date	Sampling time	BTEX 602/EPA 8020	BTEX/TPH EPA M602/8020/8015	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 ☐
A-VW6	01				AIR			12/21/92	1600		✓									

Special detection Limit/reporting: MG/M3

Special QA/QC: BOX 9

Remarks: 72 HOUR HOLDING TIME

Lab number: 9212513

Turnaround time

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

Condition of sample

Temperature received:

	Date	Time	Received by	Date	Time
Relinquished by sampler	12/22/92	800			
Relinquished by	12/22/92	12:03	Received by		
Relinquished by			Received by laboratory	12/22	12:03

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

APPC-3292 (2 91)

GTEL
ENVIRONMENTAL
LABORATORIES, INC.

Northwest Region
4080-C Pike Lane
Concord, CA 94520
(510) 685-7852
(800) 544-3422 *from inside California*
(800) 423-7143 *from outside California*
(510) 825-0720 (FAX)

6002G.15

RECEIVED
JAN 21 1993
RESNA
SAN JOSE

Client Number: RSN04ARC01
Facility Number: 276
Arco Representative: Mike Whelan
Work Order Number: C3-01-070

January 19, 1993

Valli Voruganti
RESNA Industries
3315 Almaden Expressway, #34
San Jose, CA 95118

Enclosed please find the analytical results for samples received by GTEL Environmental Laboratories, Inc. on 01/06/93, under task order number 276-93-5.

A formal Quality Assurance/Quality Control (QA/QC) program is maintained by GTEL, which is designed to meet or exceed the EPA requirements. Analytical work for this project met QA/QC criteria, unless otherwise stated in the footnotes.

GTEL is certified by the California State Department of Health Services to perform analyses for drinking water, wastewater, and hazardous waste materials according to EPA protocols.

If you have any questions concerning this analysis or if we can be of further assistance, please call our Customer Service Representative.

Sincerely,
GTEL Environmental Laboratories, Inc.

Eileen F. Bullen

Eileen F. Bullen
Laboratory Director

Client Number: RSN04ARC01
Facility Number: 276
Arco Representative: Mike Whelan
Work Order Number: C3-01-070

Table 1

ANALYTICAL RESULTS

Aromatic Volatile Organics and Total Petroleum Hydrocarbons as Gasoline in Air

Modified EPA Methods 5030, 8020 and 8015[a]

GTEL Sample Number		01	02	03	04
Client Identification		WELL INFL A-1	INFL A-2	EFFL A-3	METHOD BLANK
Date Sampled		01/05/93	01/05/93	01/05/93	--
Date Analyzed		01/06/93	01/06/93	01/06/93	01/06/93
Analyte	Detection Limit, mg/m^3	Concentration, mg/m^3			
Benzene	0.5	<0.5	<0.5	<0.5	<0.5
Toluene	0.5	0.8	1	8	<0.5
Ethylbenzene	0.5	<0.5	<0.5	<0.5	<0.5
Xylene, total	0.5	3	3	1	<0.5
Gasoline	10	34	53	17	<10
Detection Limit Multiplier		1	1	1	1
BFB surrogate, % recovery		114	117	123	109

a. Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, US EPA November 1986. Modification for TPH as gasoline as per California State Water Resources Control Board LUFT Manual protocols, May 1988 revision.

Client Number: RSN04ARC01
Facility Number: 276
Arco Representative: Mike Whelan
Work Order Number: C3-01-070

QC Check Sample Results

Analyte	Source	Date of Analysis	Expected Value	Units	Recovery[a], %
Modified EPA 8020:					
Benzene	Supelco	12/09/92	50.0	ug/L	95.0
Toluene	Supelco	12/09/92	50.0	ug/L	88.4
Ethylbenzene	Supelco	12/09/92	50.0	ug/L	86.8
Xylene, total	Supelco	12/09/92	150	ug/L	88.7

Sample and Sample Duplicate Results

Matrix: Water

Analyte	Sample ID	Date of Analysis	Sample Results	Sample Duplicate Results	Units	RPD[a], %
Modified EPA 8020:						
Benzene	C212634-20	01/06/93	0.850	0.372	ug/L	78.2*
Toluene	C212634-20	01/06/93	39.1	38.1	ug/L	2.6
Ethylbenzene	C212634-20	01/06/93	ND	ND	ug/L	0
Xylene, total	C212634-20	01/06/93	0.449	0.748	ug/L	29.9

a. See attached table for acceptability limits.
* Reproducibility is difficult due to low levels.
ND = Not Detected.

GTEL ENVIRONMENTAL LABORATORIES, INC

QC Acceptability Limits

Analyte	QC Check Sample Recovery (%)	Duplicate Water Sample RPD (%)	Duplicate Soil Sample RPD (%)	Water Matrix Spike Recovery (%)	Soil Matrix Spike Recovery (%)	Reagent Water Spike Recovery (%)
Modified EPA 8020:						
Benzene	80 - 120	30	30	55 - 129	24 - 127	70 - 147
Toluene	80 - 120	30	30	72 - 149	17 - 124	67 - 150
Ethylbenzene	80 - 120	30	30	75 - 138	19 - 129	69 - 145
Xylene, total	80 - 120	30	30	74 - 147	23 - 124	71 - 152
Modified EPA 8015:						
Gasoline	---	30	30	---	---	---
Analyte	**QC Check Sample Recovery (%)**	**Duplicate Water Sample RPD (%)**	**Duplicate Soil Sample RPD (%)**	**Water Matrix Spike Recovery (%)**	**Soil Matrix Spike Recovery (%)**	**Reagent Water Spike Recovery (%)**
Diesel	---	30	30	63 - 127	58 - 144	48 - 134
EPA 8010/8020:						
Chlorobenzene	80 - 120	30	---	34 - 134	58 - 126	62 - 111
Benzene	80 - 120	30	---	66 - 118	24 - 127	58 - 127
Toluene	80 - 120	30	---	53 - 115	17 - 124	60 - 120
Ethylbenzene	80 - 120	30	---	43 - 131	19 - 129	58 - 126
Xylene, total	80 - 120	30	---	55 - 115	23 - 124	63 - 128
1,1-Dichloroethene	80 - 120	30	---	30 - 160	72 - 116	56 - 138
Trichloroethene	80 - 120	30	---	78 - 184	79 - 120	82 - 187
EPA 8080:						
Heptachlor	80 - 120	30	---	---	34 - 111	34 - 111
Aldrin	80 - 120	30	---	---	42 - 122	42 - 122
DDE	80 - 120	30	---	---	30 - 145	30 - 145
Dieldrin	80 - 120	30	---	---	36 - 146	36 - 146
Endrin	80 - 120	30	---	---	30 - 147	30 - 147
DDD	80 - 120	30	---	---	31 - 141	31 - 114
DDT	80 - 120	30	---	---	10 - 180	10 - 180
Arochlor 1260	45 - 127	30	---	---	53 - 128	53 - 128

QC Acceptability Limits

Analyte	QC Check Sample Recovery (%)	Duplicate Water Sample RPD (%)	Duplicate Soil Sample RPD (%)	Water Matrix Spike Recovery (%)	Soil Matrix Spike Recovery (%)	Reagent Water Spike Recovery (%)
EPA 8310:						
Fluorene	80 - 120	68	---	---	---	49 - 116
Anthracene	80 - 120	41.7	---	---	---	24 - 116
Chrysene	80 - 120	65.2	---	---	---	44 - 128
Benzo(a)pyrene	80 - 120	52.8	---	---	---	26 - 126
Naphthalene	80 - 120	42.3	---	---	---	51 - 106
EPA 8240:						
All 8240 Compounds	60 - 140	---	---	---	---	---
Trichloroethene	---	14	24	71 - 120	62 - 137	71 - 120
Toluene	---	13	21	76 - 125	59 - 139	76 - 125
Chlorobenzene	---	13	21	75 - 130	60 - 133	75 - 130
1,1-Dichloroethene	---	14	22	61 - 145	59 - 172	61 - 145
Benzene	---	11	21	76 - 127	66 - 142	76 - 127
TPH/IR:	80 - 120	20	20	70 - 130	70 - 130	70 - 130
Metals:						
Arsenic	90 - 110	20	20	80 - 120	80 - 120	80 - 120
Barium	90 - 110	20	20	80 - 120	80 - 120	80 - 120
Cadmium	90 - 110	20	20	80 - 120	80 - 120	80 - 120
Chromium	90 - 110	20	20	80 - 120	80 - 120	80 - 120
Iron	90 - 110	20	20	80 - 120	80 - 120	80 - 120
Lead	90 - 110	20	20	80 - 120	80 - 120	80 - 120
Manganese	90 - 110	20	20	80 - 120	80 - 120	80 - 120
Mercury	90 - 110	20	20	80 - 120	80 - 120	80 - 120
Selenium	90 - 110	20	20	80 - 120	80 - 120	90 - 110
Silver	90 - 110	20	20	80 - 120	80 - 120	90 - 110
Wet Chemistry:						
TOC	90 - 110	20	NA	90 - 110	NA	90 -110

NA = Not Applicable.

GTEL ENVIRONMENTAL LABORATORIES, INC

QC Acceptability Limits

Analyte	QC Check Sample Recovery (%)	Duplicate Air Sample RPD (%)	Matrix Spike Recovery (%)
Modified EPA 8020:			
Benzene	---	38	---
Toluene	---	34	---
Ethylbenzene	---	48	---
Xylene, total	---	34	---
Modified EPA 8015:			
Gasoline	---	---	---

ARCO Facility no. [redacted] City (Facility) [redacted] AK[redacted]ND[redacted] CA [redacted] Project manager (Consultant) [redacted] V[redacted] [redacted] [redacted] Laboratory name [redacted] GTEL

ARCO engineer: Mike Whelan	Telephone no. (ARCO): (415) 571-2449	
Telephone no. (Consultant): (408) 264-7723	Fax no. (Consultant): 264-2436	
Consultant name: RESNA Industries	Address (Consultant): 2315 Almaden Exp, #34, San Jose 95118	Contract number

Sample I.D.	Lab no.	Container no.	Matrix: Soil	Matrix: Water	Matrix: Other (Air)	Preservation: Ice	Preservation: Acid	Sampling date	Sampling time	BTEX 602/EPA 8020	BTEX/TPH 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 ☐ VOA ☐ Semi VOA ☐	CAM Metals EPA 6010/7000 TTLC ☐ STLC ☐	Lead Org./DHS ☐ Lead EPA 7420/7421 ☐		
Well Inf. A-1	01				X			1/05 ~~12/05~~	15:00		X											
Infl. A-2	02				X			↓	15:05		X											
A-3	03				X			↓	15:10		X											
Blank	04																					

RL 1/5/93 48

Method of shipment

Special detection Limit/reporting: mg/m³

Special QA/QC

Remarks: Analyze w/ 72 hrs

Lab number: C301071

Turnaround time
- Priority Rush 1 Business Day
- Rush 2 Business Days
- Expedited 5 Business Days
- Standard 10 Business Days ✓

Condition of sample:

Temperature received:

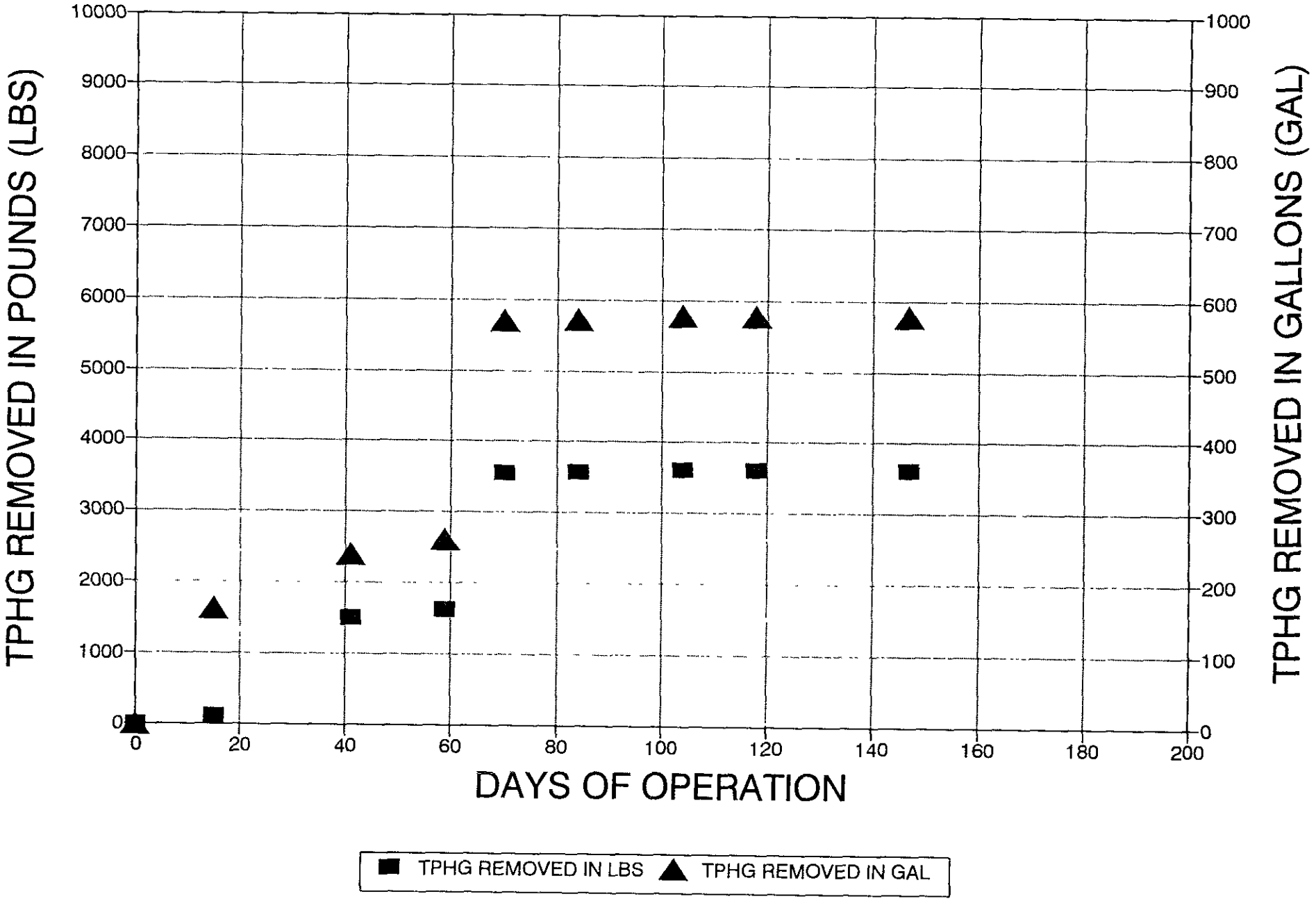
Relinquished by	Date	Time	Received by
Relinquished by sampler: [signature]	1/05 ~~12/06~~	9:00 pm	10:05 1-6-93 Susan Horse Covered Courier
Relinquished by: Susan Horse	1/6	11:25	Received by:
Relinquished by:	Date	Time	Received by laboratory: Corinne Belskey Date: 1/6/93 Time: 11:25

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

APPENDIX C

VES PERFORMANCE EVALUATION GRAPHS

VES PERFORMANCE EVALALUATION ARCO 276
TOTAL TPHG REMOVED VS. TIME



VES PERFORMANCE EVALALUATION ARCO 276
EXTRACTED TPHG VAPOR CONCS VS. TIME