SUMMARY REPORT
First Quarter 1990

ARCO Service Station No. 2112
1260 Park Street/Encinal Avenue
Alameda, California
Alameda County 01

BACKGROUND

For site history prior to 1990 refer to the October-December 1989 Quarterly Summary Report issued in January 1990.

- January 22 and 29, 1990 - Applied GeoSystems performed a Limited Environmental Site Assessment, including drilling six soil borings to depths ranging from 11-1/2 to 13 feet, with the exception of B-1, which was drilled to 25 feet (Plate 1). Soil samples were collected from B-1 for soils engineering purposes. Soil samples were collected from the borings for laboratory analysis of hydrocarbons. This assessment was performed prior to future tank replacement activities at the site. Ground water was encountered in the borings at the site at 12 feet. (Applied GeoSystems Report 69048-1, dated February 20, 1990).

SOIL CONDITIONS

Analysis of soil samples collected from the soil borings on January 22 and 29, 1990, drilled in the area of the gasoline-storage tanks, indicated concentrations of total petroleum hydrocarbons as gasoline (TPHg) up to 21,000 parts per million (ppm) and concentrations of benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) up to 210, 1,100, 320, and 2,600 ppm, respectively (Table 1).

QUARTERLY GROUND-WATER MONITORING

No monitoring wells onsite.

STATUS SUMMARY: REMEDIATION

No remediation taking place at present time. Options for soil remediation will be considered in the future.

ANTICIPATED WORK FOR THE NEXT QUARTER

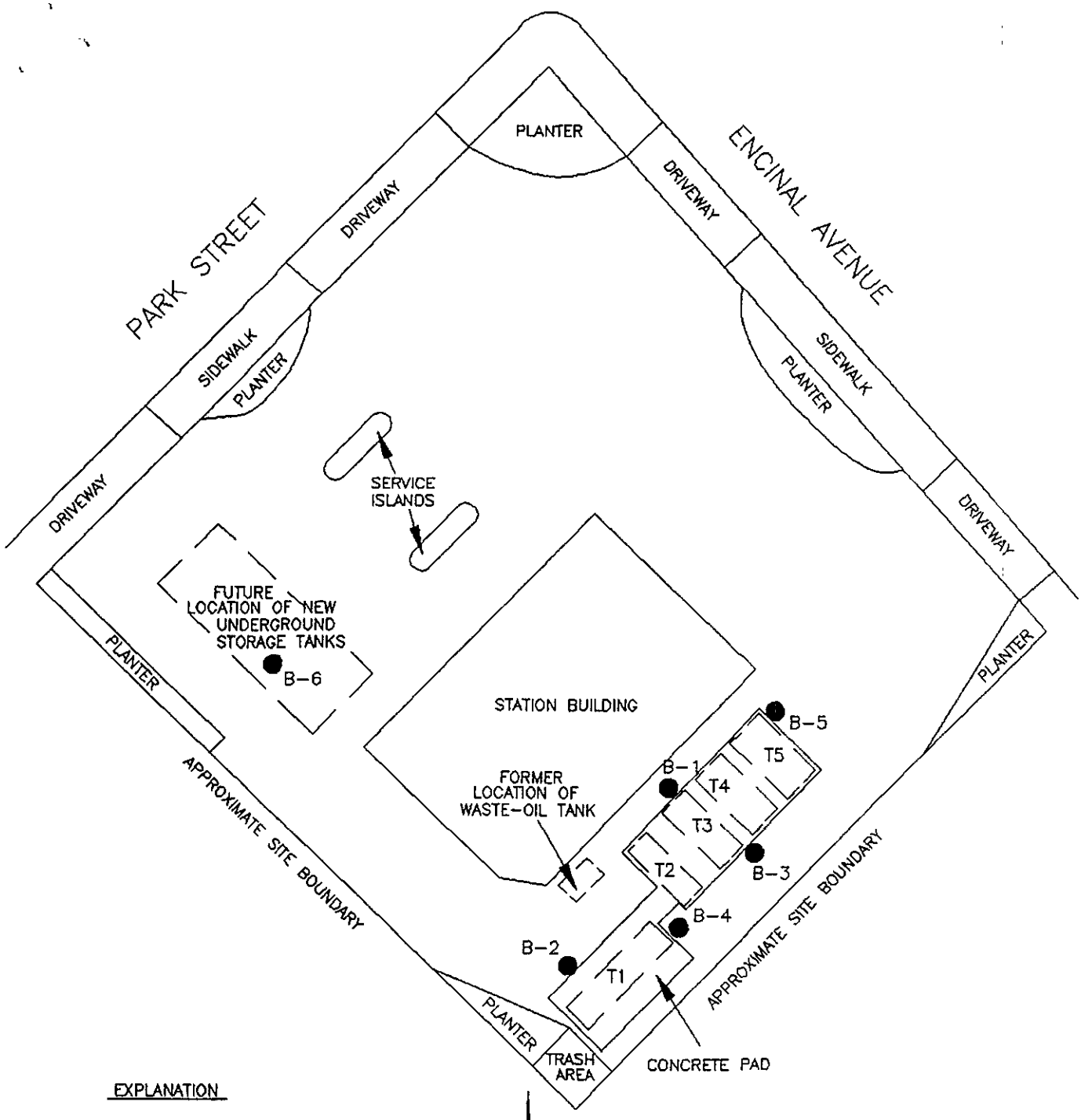
- ARCO plans to replace the underground storage tanks during 1990.
- An assessment to evaluate the extent hydrocarbons in soil adjacent to the tanks will be performed during tank replacement activities at the site.
- Prepare a Work Plan to evaluate the extent of hydrocarbons in soil and potential hydrocarbons in first-encountered ground water beneath the site, and direction and magnitude of the ground-water gradient.

TABLE 1
RESULTS OF LABORATORY ANALYSIS OF SOIL SAMPLES
ARCO Station 2112
1260 Park Street
Alameda, California

Sample Number	TPHg	B	T	E	X
S-6-B1	12	0.16	0.34	0.14	1.3
S-10-B1	1,700	15	72	22	180
S-6-B2	<2.0	<0.050	<0.050	<0.050	<0.050
S-11-B2	570	3.9	13	11	82
S-6-B3	<2.0	0.097	<0.050	<0.050	0.20
S-11-B3	10,000	47	350	120	940
S-6-B4	<2.0	0.063	0.096	<0.050	0.20
S-11-B4	21,000	210	1,100	320	2,600
S-6-B5	3.7	<0.050	0.081	<0.050	0.18
S-11-B5	5,400	8.8	27	66	160
S-5.5-B6	<2.0	<0.050	<0.050	<0.050	<0.050
S-10-B6	<2.0	<0.050	<0.050	<0.050	<0.050

Results in milligrams per kilogram or parts per million
TPHg = Total petroleum hydrocarbons as gasoline
B = benzene E = ethylbenzene T = toluene X = total xylene isomers
< = indicates less than the reported limit
Sample identification:

S-10-B6
- S-10-B6 — Soil sample
- S-10-B6 — Approximate sample depth in feet
- S-10-B6 — Boring number



EXPLANATION

B-6 ● = Soil boring (Applied GeoSystems, January 23, 1990)

T5 = Existing underground storage tanks

N

Approximate Scale

30 15 0 30 60

feet

Source: Modified from plan supplied by ARCO.

Applied GeoSystems

PROJECT 19011-1

GENERALIZED SITE PLAN
ARCO Station 2112
1260 Park Street
Alameda, California

PLATE 1

SUMMARY REPORT
First Quarter 1990

ARCO Service Station No. 2035
1001 San Pablo Avenue
Albany, California
Alameda County

BACKGROUND

For site history prior to 1990 refer to the October-December 1989 Quarterly Summary Report issued in January 1990.

- o *January 24, 1990 - submitted Limited Environmental Site Assessment report to the Regional Water Quality Control Board, San Francisco Bay Region; the Alameda County Health Agency; and the City of Albany Fire Department, Fire Prevention Bureau. Five borings were drilled to a maximum depth of approximately 20 feet as part of a site assessment prior to tank replacement (Plate 1). Ground water was encountered at a depth of approximately 20 feet in each boring. (Applied GeoSystems Report 69036-1, dated January 24, 1990).*

SOIL CONDITIONS

Soil samples collected from the borings during the limited site assessment at a depth of approximately 10 feet indicated levels of total petroleum hydrocarbons as gasoline (TPHg) ranging from less than 1 part per million (ppm) to 2,400 ppm. Soil samples collected from a depth of approximately 15 feet indicated levels of TPHg less than 1 ppm, with the exception of one sample which indicated 520 ppm TPHg. Soil sampled collected from a depth of approximately 20 feet indicated concentrations of TPHg at less than 1 ppm (Table 1).

QUARTERLY GROUND-WATER MONITORING

No monitoring wells onsite.

STATUS SUMMARY: REMEDIATION

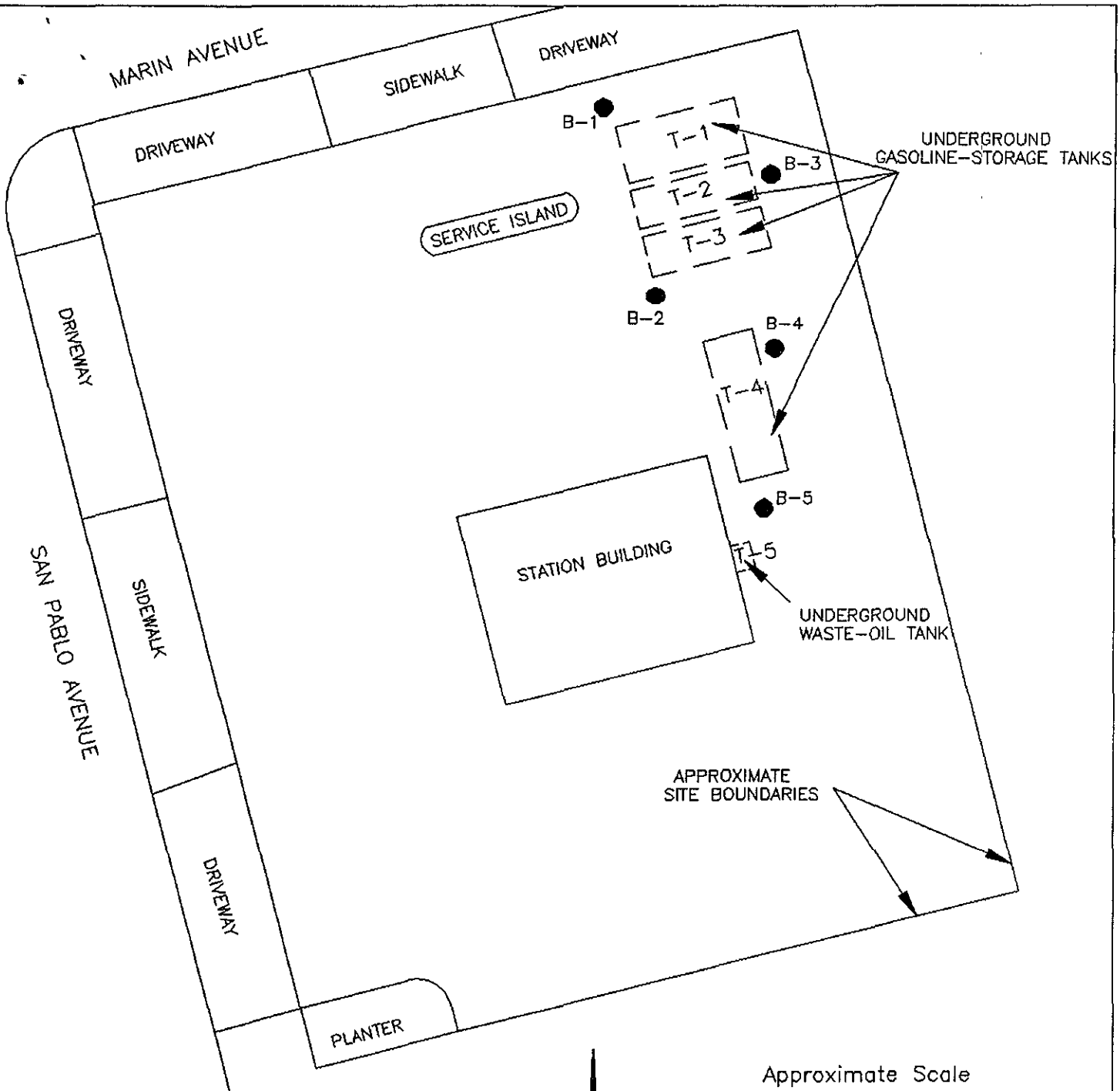
No remediation taking place at present time. Options for soil remediation will be considered in the future.

TABLE 1
RESULTS OF LABORATORY ANALYSIS OF SOIL SAMPLES
ARCO Station No. 2035
Southeast Corner of Marin and San Pablo Avenues
Albany, California

Sample Identifier	TPHg	B	T	E	X
S-10-B1	1,900	<4	15	8	53
S-15-B1	<1	<.005	.006	<.005	<.005
S-19-1/2-B1	<1	<.005	<.005	<.005	<.005
S-10-B2	51	1.9	.35	.81	4.0
S-14-1/2-B2	<1	.063	<.005	<.005	<.005
S-20-B2	<1	.039	.044	.007	.041
S-10-B3	75	3.1	8.2	1.8	11.0
S-14-1/2-B3	<1	.21	<.025	<.025	.039
S-20-B3	<1	<.005	<.005	<.005	<.005
S-10-B4	2,400	33	140	40	220
S-15-B4	520	<1	6.9	6.2	6.3
S-19-B4	<1	<.005	.007	<.005	<.005
S-9-1/2-B5	<1	.007	.006	<.005	<.005
S-15-B5	<1	<.005	.006	<.005	<.005
S-20-B5	<1	<.005	<.005	<.005	<.005

Results in milligrams per kilogram (mg/kg), or parts per million (ppm).
TPHg: Total petroleum hydrocarbons as gasoline
B:benzene E:ethylbenzene T:toluene X:total xylene isomers
<: indicates less than the reported limit.
Sample identification:

S-20-B5
| | | |
| | | └— Boring number
| | └——— Approximate sample depth in feet
| └——————— Soil sample



EXPLANATION

B-5 ● = Soil boring (Applied GeoSystems, August 9, 1989)

Source: Modified from plan supplied by ARCO.

Applied GeoSystems

PROJECT 19011-1

GENERALIZED SITE PLAN
ARCO Service Station 2035
Marin and San Pablo Avenues
Albany, California

PLATE 1

SUMMARY REPORT
First Quarter 1990

ARCO Service Station No. 414
3000 Shattuck Avenue
Berkeley, California
Alameda County

BACKGROUND

For site history prior to 1990 refer to the October-December 1989 Quarterly Summary Report issued in January 1990.

SOIL CONDITIONS

No change from last quarter.

QUARTERLY GROUND-WATER MONITORING

No monitoring wells onsite.

STATUS SUMMARY: REMEDIATION

No remediation planned.

ANTICIPATED WORK FOR NEXT QUARTER

ARCO plans no further work at this time.

SUMMARY REPORT
First Quarter 1990

ARCO Service Station No. 2152
22141 Center Street
Castro Valley, California
Alameda County

BACKGROUND

For site history prior to 1990 refer to the October-December 1989 Quarterly Summary Report issued in January 1990.

- January 19, 1990 - submitted report Environmental Investigation Related to Tank Removal to the Regional Water Quality Control Board, San Francisco Bay Region; the Alameda County Health Agency; and the City of Castro Valley Fire Department, Fire Prevention Bureau (Applied GeoSystems Report 69013-2, dated January 18, 1990).

SOIL CONDITIONS

Elevated levels of TPHg were present in the soil beneath the removed tanks. Results of laboratory analysis indicated TPHg concentrations of up to 1,400 ppm and 3,800 ppm in soil beneath the northeastern ends of the tanks at depths of approximately 14 and 19 feet, respectively. Elevated levels of TPHg were present in the soil beneath the former vapor-recovery system. Results of laboratory analysis indicated TPHg concentrations of 2,300 ppm and 37,000 ppm in the soil at depths of approximately 14 feet and 22 feet, respectively.

QUARTERLY GROUND-WATER MONITORING

No monitoring wells onsite.

STATUS SUMMARY: REMEDIATION

Approximately 1,750 cubic yards of backfill and native soil removed from the gasoline-tank pit and approximately 100 cubic yards of soil removed from the areas of the former product-transfer lines were stockpiled onsite. The soil was aerated in accordance with Bay Area Air Quality Management District guidelines. Composite samples of the stockpiled soil were collected and analyzed in the laboratory to confirm that TPHg concentrations were less than 100 ppm. Paradiso Construction of Oakland, California, arranged with Conrad Trucking of

Escalon, California, to have the aerated soil and backfill transported to Redwood Landfill in Novato, California, which is a Class III landfill.

Options for further soil remediation will be considered.

ANTICIPATED WORK FOR NEXT QUARTER

- Prepare a Work Plan to evaluate the extent of hydrocarbons in soil and potential hydrocarbons in first-encountered ground water beneath the site, and direction and magnitude of the ground-water gradient.

SUMMARY REPORT
First Quarter 1990

ARCO Service Station No. 4977
2770 Castro Valley Road
Castro Valley, California
Alameda County

BACKGROUND

For site history prior to 1990 refer to the October-December 1989 Quarterly Summary Report issued in January 1990.

SOIL CONDITIONS

No change from last quarter.

QUARTERLY GROUND-WATER MONITORING

No monitoring wells onsite.

STATUS SUMMARY: REMEDIATION

No remediation planned.

ANTICIPATED WORK FOR NEXT QUARTER

ARCO plans no further work at this time.

SUMMARY REPORT

First Quarter, 1990

ARCO Service Station No. 2147
40055 Blacow Road
Fremont, California
Alameda County

Background

For site history before 1990, refer to the October through December 1989 Quarterly Summary Report issued in January 1990. The following technical report was submitted during 1990:

- February 15, 1990, On-Site Environmental Assessment

Soil Conditions

No change from last quarter. Soil data characterizing the extent of petroleum hydrocarbon-impacted soils were presented to the RWQCB, the ACWD, and the City of Fremont in the following reports:

- October 11, 1988, Preliminary Tank Removal Environmental Assessment Report
- June 21, 1989, Waste Oil Tank and Soil Removal Report
- February 15, 1990, On-Site Environmental Assessment

Quarterly Ground-Water Monitoring

Quarterly monitoring of wells MW-1 through MW-8 (see attached site plan). Ground-water analyses are presented in table 1. Ground-water flow is to the south.

Status Summary: Remediation

No change from last quarter.

Anticipated Work for the Next Quarter

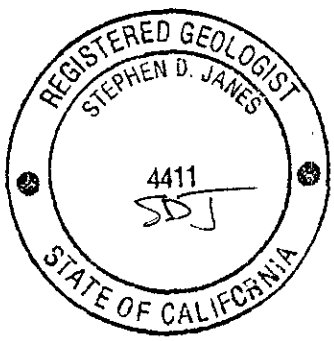
Remediation options will be considered for gasoline-impacted ground water.

Very truly yours,

EMCON Associates

Joe V. Meigs
Project Manager

Stephen D. Janes, Ph.D.
Executive Manager
R.G. 4411



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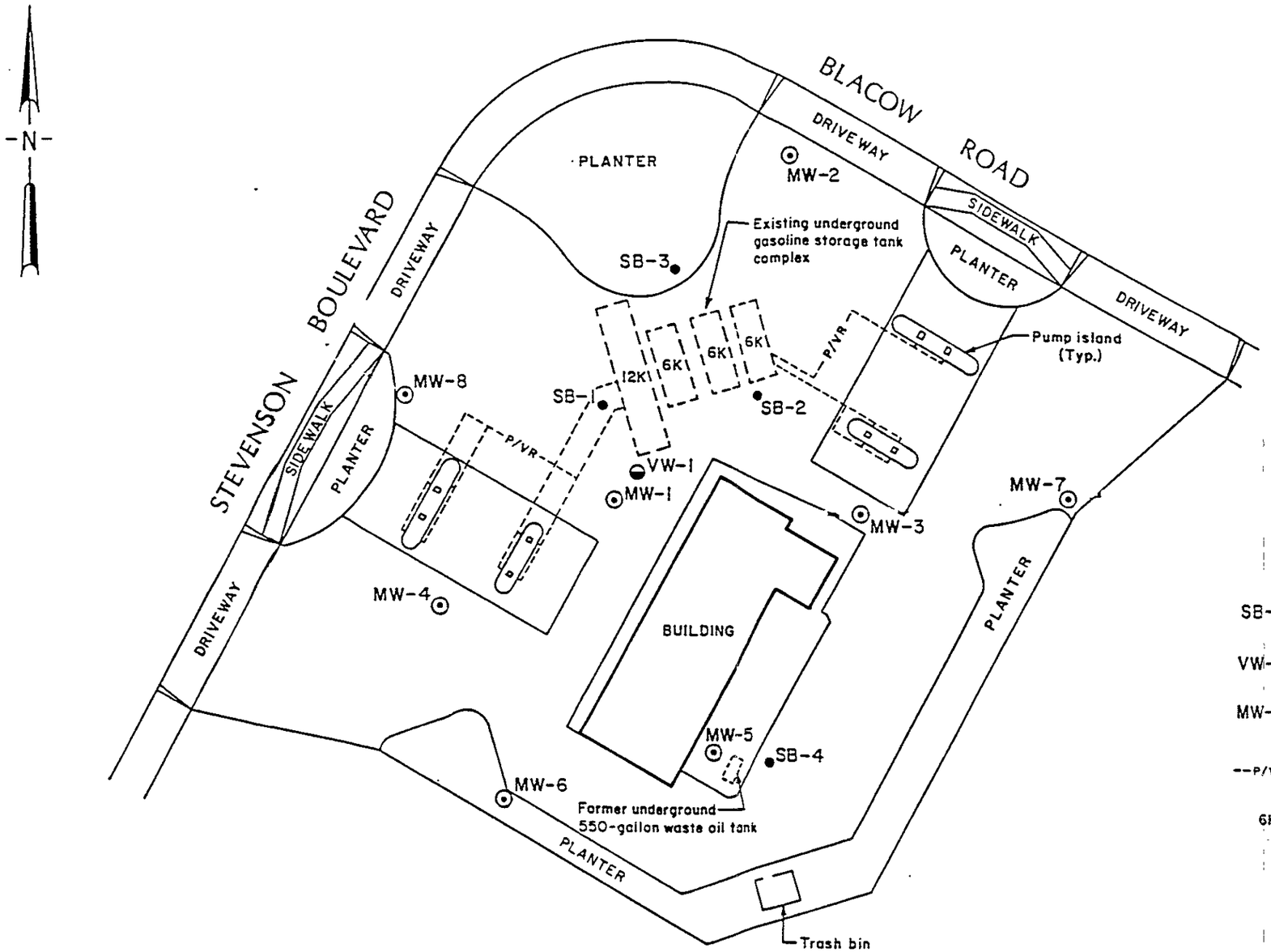
Attachments: Table 1 - Summary of Ground-Water Analyses
Site Plan

Table 1
Summary of Ground-Water Analyses
(ppb)

Well Identification	Date Sampled	TPH as Gasoline	Benzene	Toluene	Ethylbenzene	Xylenes	High-Boiling-Point Hydrocarbons
MW-1	02/13/90	4,600	680	280	<13	260	NA
MW-2	02/13/90	320	37	2	<1	<3	NA
MW-3	02/13/90	7,600	1,500	820	<50	350	NA
MW-4	02/13/90	9,400	1,600	1,200	<33	540	NA
MW-5	02/13/90	<50	<0.5	<1	<1	<3	ND
MW-6	02/13/90	2,300	560	170	<13	130	NA
MW-7	02/13/90	8,100	1,900	930	98	420	NA
MW-8	02/13/90	<50	4.5	<1	<1	<3	NA

NA = Not analyzed
ND = None detected



EXPLANATION

- SB-2 ● Soil boring
- VW-1 ⊖ Vadose zone monitoring well
- MW-3 ⊙ Ground-water monitoring well
- --P/VR-- Product/vapor return lines
- 6K Capacity of underground gasoline storage tank (thousands of gallons)

11/89

EMCON Associates

Scale: 0 30 60 90 120 Feet

ARCO PRODUCTS COMPANY
ENVIRONMENTAL SITE ASSESSMENT
SERVICE STATION NO. 2.47, STEVENSON BLVD. AND BLACOW RD
FREMONT, CALIFORNIA

SITE PLAN

FIGURE 2

PROJECT NO. 805-3505

SUMMARY REPORT

First Quarter, 1990

ARCO Service Station No. 2158
35900 Fremont Boulevard
Fremont, California
Alameda County

Background

For site history before 1990, refer to the October through December 1989 Quarterly Summary Report issued in January 1990.

Soil Conditions

No change from last quarter. The extent of impacted soil has been characterized. Soil data characterizing the extent of gasoline-impacted soils were presented to the RWQCB, the ACWD, and the City of Fremont in the following reports:

- May 1988, Brown and Caldwell Site Investigation Report
- April 26, 1989, Tank and Soil Removal Report
- December 21, 1989, Final On-Site Environmental Assessment Report

Quarterly Ground-Water Monitoring

Quarterly monitoring of wells MW-1 through MW-3 and EW-1 through EW-3 (see attached site plan). Ground-water analyses are presented in table 1. Ground-water flow direction is variable.

Status Summary: Remediation

No change from last quarter.

Anticipated Work for the Next Quarter

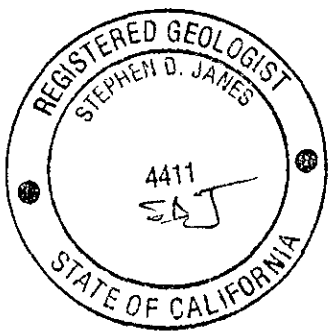
Remediation options will be considered for gasoline-impacted soil.

Very truly yours,

EMCON Associates

Joe V. Meigs
Project Manager

Stephen D. Janes, Ph.D.
Executive Manager
R.G. 4411

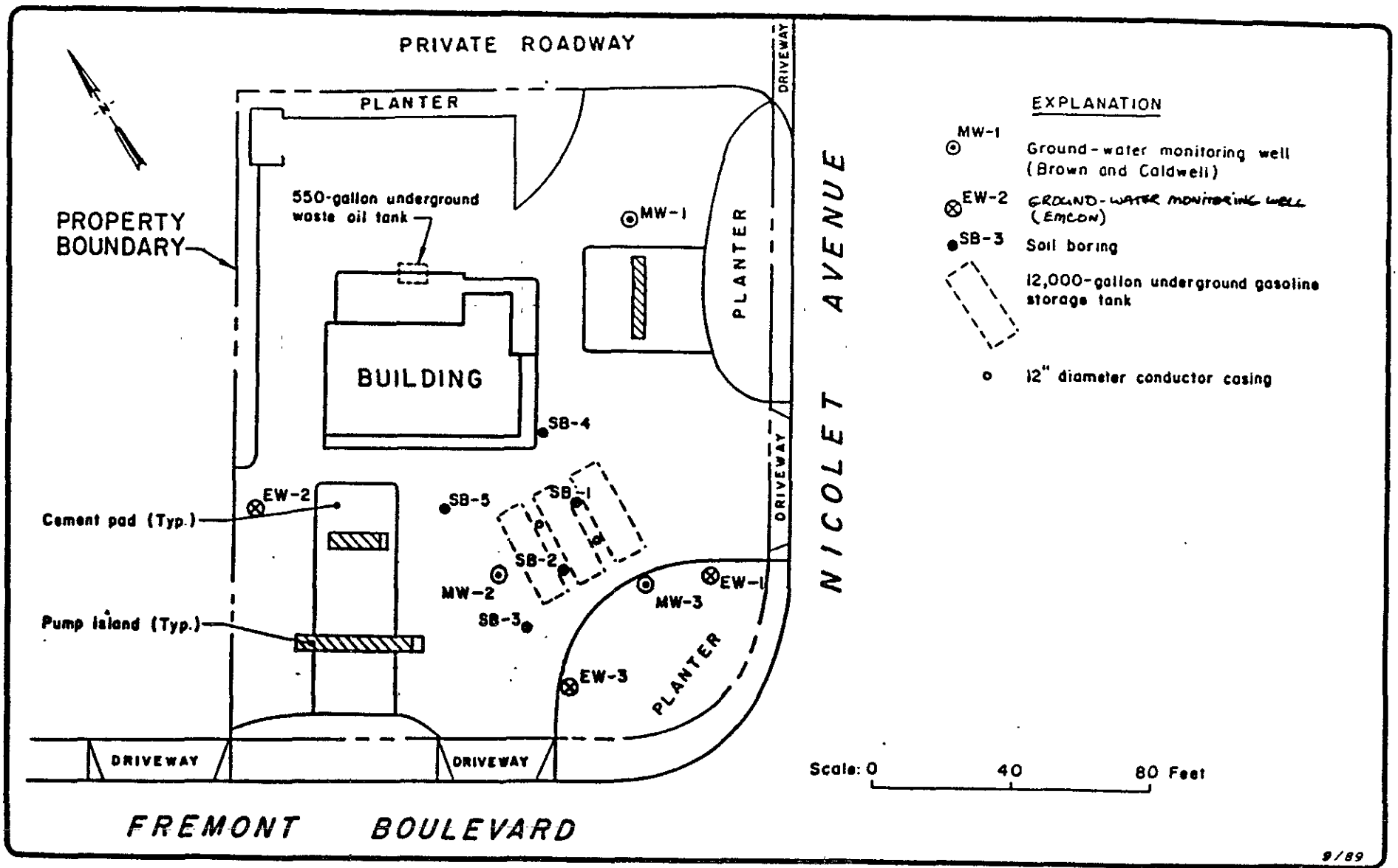


JVM/SDJ:etk

Attachment: Table 1 - Summary of Analytical Results
Site Plan

Table 1
Summary of Analytical Results
(ppb)

Well	Date Sampled	TPH (gasoline)	Benzene	Toluene	Ethylbenzene	Xylenes
MW-1	01/22/90	<50	<0.5	<1	<1	<3
MW-2	01/22/90	550	61	2	20	11
MW-3	01/22/90	<50	<0.5	<1	<1	<3
EW-1	01/22/90	<50	<0.5	<1	<1	<3
EW-2	01/22/90	<50	0.8	<1	<1	<3
EW-3	01/22/90	98	0.8	<1	<1	<3



EMCON Associates

ARCO PETROLEUM PRODUCTS COMPANY
SERVICE STATION NO. 2158, FREMONT BLVD. & NICOLET AVE.
ENVIRONMENTAL ASSESSMENT
FREMONT, CALIFORNIA

SITE PLAN

FIGURE 1

PROJECT NO. 805-48.07

SUMMARY REPORT

First Quarter, 1990

ARCO Service Station No. 6201
40077 Mission Boulevard
Fremont, California
Alameda County

Background

For site history before 1990, refer to the October through December 1989 Quarterly Summary Report issued in January 1990. The following technical report was submitted during 1990:

- January 1990, Preliminary on-site report was submitted to the RWQCB, ACWD, and the City of Fremont.

Soil Conditions

No change from last quarter. Soil data were presented to the RWQCB, ACWD, and City of Fremont in the following reports:

- February 1989, Preliminary Tank Removal Environmental Assessment Report
- July 1989, Tank and Soil Removal Report
- January 1990, Preliminary On-Site Report

Quarterly Ground-Water Monitoring

Quarterly monitoring of wells MW-1 through MW-4 (see attached site plan). Ground-water analyses are presented in table 1. Ground-water flow varies from north to west.

Status Summary: Remediation

No change from last quarter.

Anticipated Work for the Next Quarter

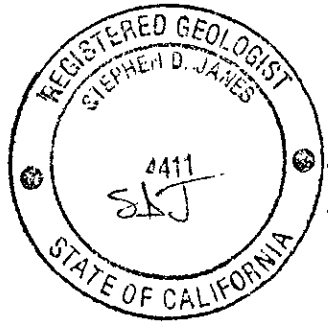
Remediation options will be considered for gasoline-impacted soil.

Very truly yours,

EMCON Associates

Joe V. Meigs
Project Manager

Stephen D. Janes, Ph.D.
Executive Manager
R.G. 4411



JVM/SDJ:etk

Attachment: Table 1 - Summary of Ground-Water Analyses
Site Plan

Table 1
Summary of Ground-Water Analyses
(ppb)

Well	Date Sampled	Gasoline	Benzene	Toluene	Ethylbenzene	Xylenes
MW-1	02/12/90	<50	<0.5	<1	<1	<3
MW-2	02/12/90	<50	<0.5	<1	<1	<3
MW-3	02/12/90	<50	<0.5	<1	<1	<3
MW-4	02/12/90	<50	<0.5	<1	<1	<3

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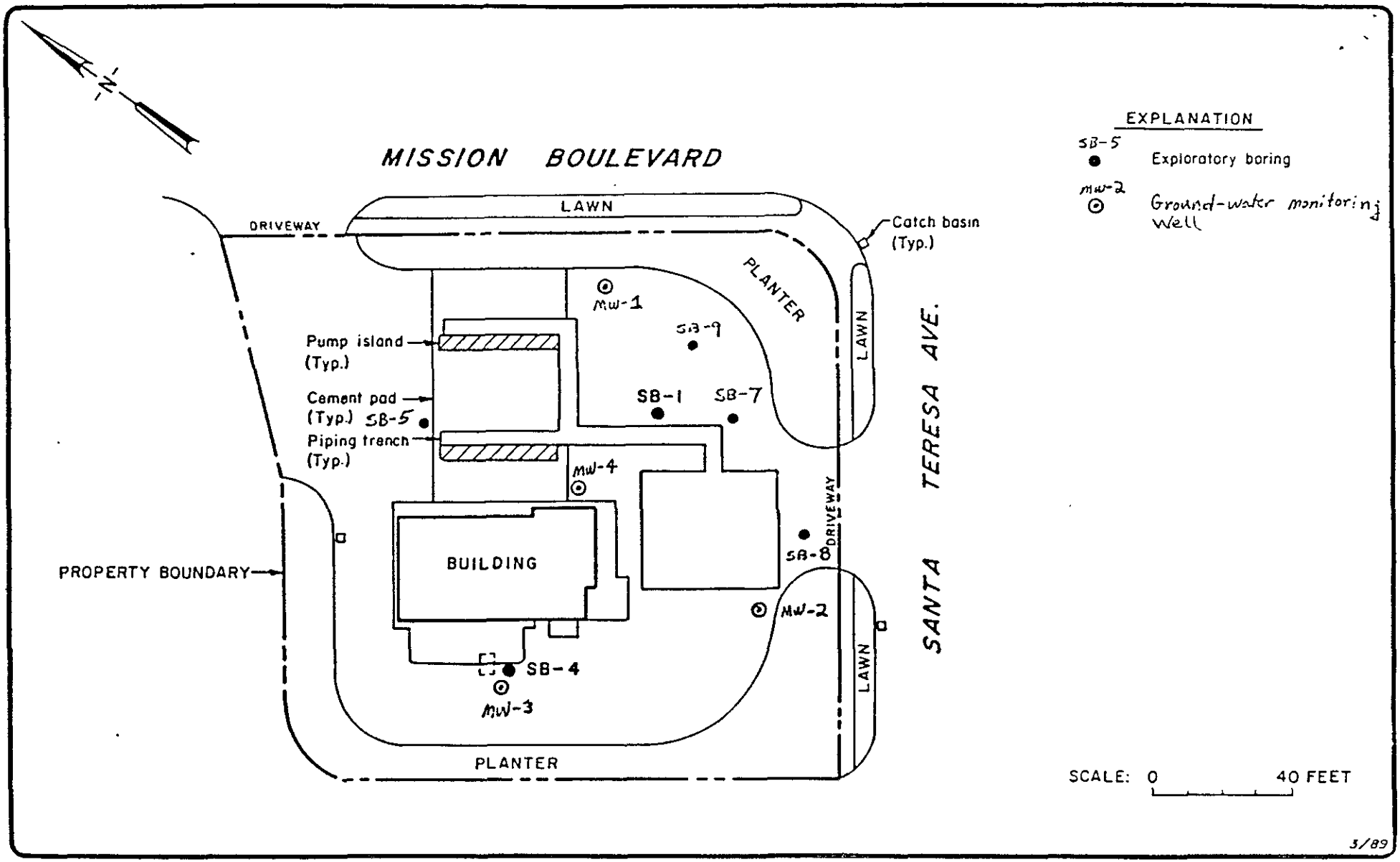


EMCON Associates

ARCO PETROLEUM PRODUCTS COMPANY
ENVIRONMENTAL ASSESSMENT
SERVICE STATION NO. 6201, MISSION BLVD. AND SANTA TERESA AVE.
FREMONT, CALIFORNIA

SITE PLAN

FIGURE 1

PROJECT NO. 805-49.0

SUMMARY REPORT

First Quarter, 1990

ARCO Service Station No. 6206
43500 Grimmer Boulevard
Fremont, California
Alameda County

Background

For site history before 1990, refer to the October through December 1989 Quarterly Summary Report issued in January 1990.

Soil Conditions

No change from last quarter. The extent of gasoline-impacted soil has been characterized. Soil data were presented to the ACWD, RWQCB, and the City of Fremont in the following reports:

- February 16, 1989, Revised Preliminary Tank Replacement Environmental Assessment Report
- December 6, 1989, Tank Removal and Soil Aeration Report
- July 1989, Phase II Site Assessment Report

Quarterly Ground-Water Monitoring

Quarterly monitoring of wells MW-1 through MW-6 (see attached site plan). Ground-water analyses are presented in table 1. Floating product is present in well MW-1. Ground-water flow is to the east-southeast.

Status Summary: Remediation

Monthly product recovery from well MW-1.

Anticipated Work for the Next Quarter

Continued quarterly monitoring and monthly product recovery activities.

Very truly yours,

EMCON Associates

Joe V. Meigs
Project Manager

Stephen D. Janes, Ph.D.
Executive Manager
R.G. 4411

REGISTERED GEOLOGIST
STEPHEN D. JANES
4411
STATE OF CALIFORNIA

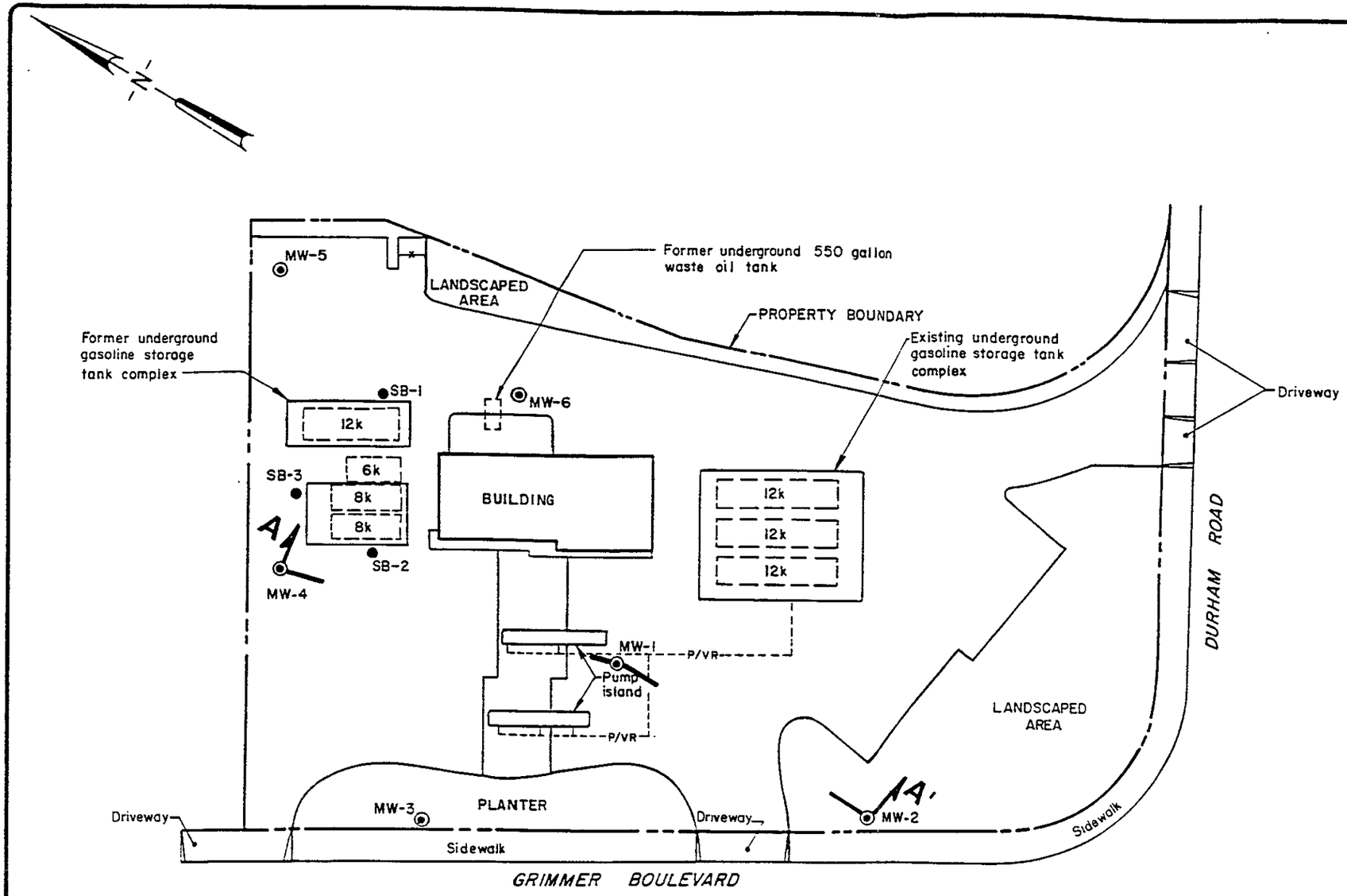
JVM/SDJ:etk

Attachments: Table 1 - Analytical Results
Site Plan

Table 1
Analytical Results

Well Identification	Date	TPH (gasoline)	Benzene	Toluene	Ethylbenzene	Xylenes
MW-2	01/18/90	<50	<0.5	<1	<1	<3
MW-3	01/17/90	<50	<0.5	<1	<1	<3
MW-4	01/17/89	<50	<0.5	<1	<1	<3
MW-5	01/17/89	<50	<0.5	<1	<1	<3
MW-6	01/17/90	50	13	<1	<1	<3

1. Monitoring well MW-1 was not sampled because of the presence of floating product.



EXPLANATION

- MW-1 ◉ — Ground-water monitoring well
- SB-1 ● — Soil boring
- 12k — Capacity of underground gasoline storage tank (thousands of gallons)
- ----P/VR--- Product and vapor recovery line
- A — A' Line of geologic cross section

NOTE: Refer to Fig. 4 for geologic cross section A-A'

7/89

EMCON Associates

Scale 0 40 80 120 160 Feet

ARCO PRODUCTS COMPANY
ENVIRONMENTAL ASSESSMENT
SERVICE STATION NO. 6206, DURHAM ROAD AND GRIMMER BOULEVARD
FREMONT, CALIFORNIA

SITE PLAN

FIGURE 2

PROJECT NO 805-47 07

SUMMARY REPORT
First Quarter 1990

ARCO Service Station No. 1319
365 Jackson Street/Sycamore Avenue
Hayward, California
Alameda County

BACKGROUND

For site history prior to 1990 refer to the October-December 1989 Quarterly Summary Report issued in January 1990.

- Submitted draft Work Plan report to ARCO February 12, 1990.

SOIL CONDITIONS

No change from last quarter.

QUARTERLY GROUND-WATER MONITORING

No monitoring wells onsite.

STATUS SUMMARY: REMEDIATION

No remediation taking place at present time.

ANTICIPATED WORK FOR NEXT QUARTER

- Submit Work Plan to the City of Hayward, Alameda County Health Agency and Regional Water Quality Control Board, San Francisco Bay Region.

SUMMARY REPORT
First Quarter 1990

ARCO Service Station No. 771
899 Rincon Avenue/Pine Street
Livermore, California
Alameda County

BACKGROUND

For site history prior to 1990 refer to the October-December 1989 Quarterly Summary Report issued in January 1990.

- February 1 and 2, 1990 - Applied GeoSystems performed a Limited Environmental Site Assessment, including drilling three soil borings to depths ranging from 30 to 34 feet in the area of the underground storage tanks (Plate 1). A report summarizing the results of the assessment is presently in draft form.

SOIL CONDITIONS

Analysis of soil samples collected from the soil borings on February 1 and 2, 1990 indicated elevated concentrations of TPHg and BTEX compounds in seven samples analyzed. The highest concentrations of TPHg, benzene, and ethylbenzene (190 ppm, 0.047 ppm and 0.011 ppm respectively) were detected in samples from depths of 25 and 32-1/2 feet in boring B-3 (Table 1). Approximately 1/8 inch of floating gasoline product was present on the ground water that entered boring B-1 at a depth of 33 feet.

QUARTERLY GROUND-WATER MONITORING

No monitoring wells onsite.

STATUS SUMMARY REMEDIATION

No remediation taking place at present time.

ANTICIPATED WORK FOR THE NEXT QUARTER

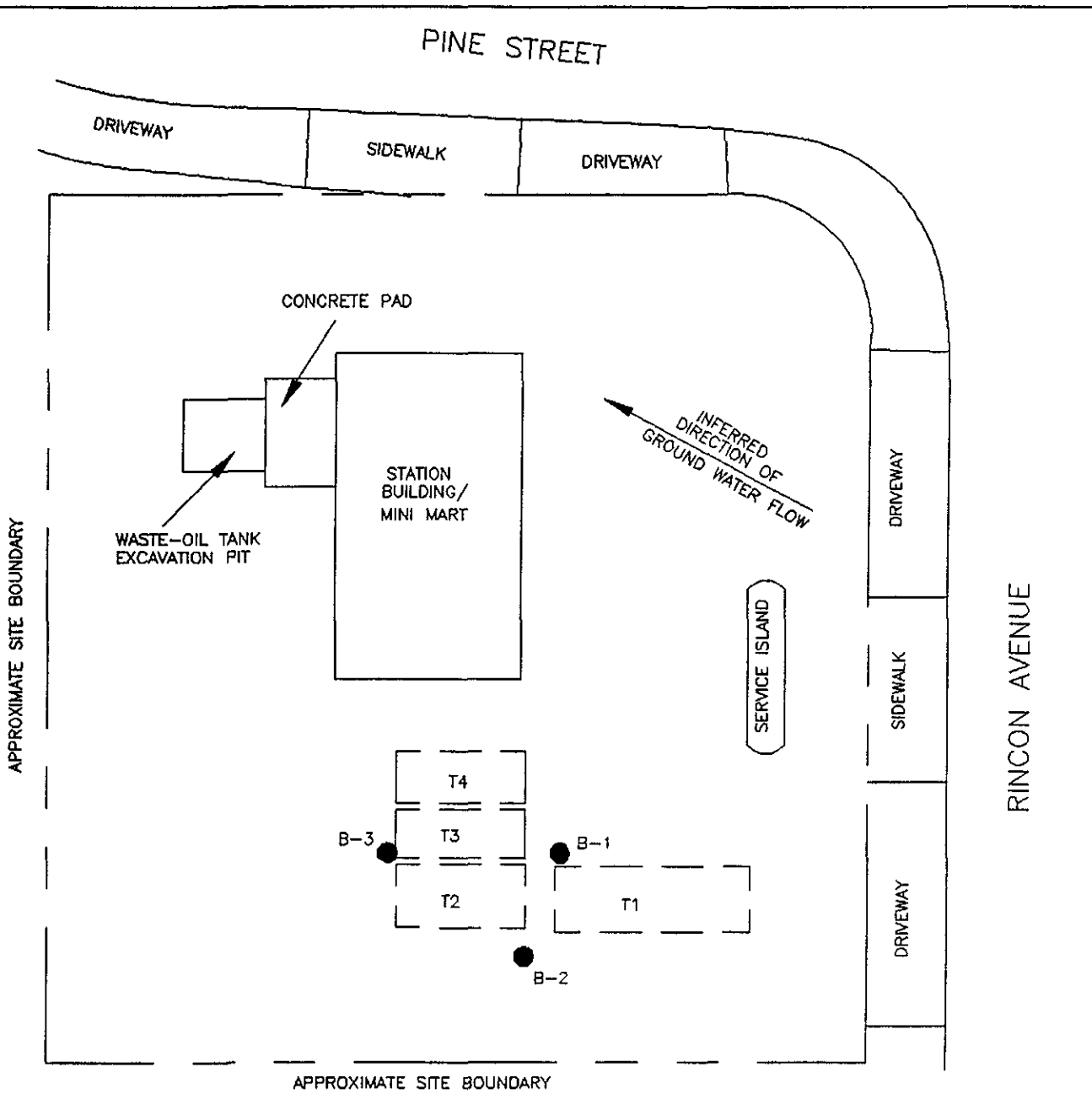
- Prepare a Work Plan to evaluate the extent of hydrocarbons in soil and confirm the presence of floating product.

TABLE 1
RESULTS OF LABORATORY ANALYSES
OF SOIL SAMPLES
ARCO Station 771
899 Rincon Avenue
Livermore, California

Sample ID	Date	TPHg	Benzene	Toluene	Ethyl-benzene	Total Xylenes
S-10-B1	2/1/90	<1.0	<0.005	<0.005	<0.005	<0.005
S-19.5-B1	2/1/90	<1.0	0.022	0.024	<0.005	0.022
S-24.5-B1	2/1/90	<1.0	0.022	0.015	0.010	0.048
S-29.5-B1	2/1/90	<1.0	<0.005	<0.005	<0.005	<0.005
S-10-B2	2/1/90	<1.0	<0.005	<0.005	<0.005	<0.005
S-20-B2	2/1/90	<1.0	0.016	0.020	<0.005	0.025
S-25-B2	2/1/90	1.4	<0.01	<0.01	<0.01	0.018
S-31-B2	2/1/90	<1.0	<0.005	<0.005	<0.005	<0.005
S-10-B3	2/2/90	<1.0	<0.005	<0.005	<0.005	<0.005
S-19.5-B3	2/2/90	<1.0	0.028	<0.005	<0.005	0.017
S-25-B3	2/2/90	4.5	0.047	<0.01	0.011	0.038
S-32.5-B3	2/2/90	190	<1.0	<1.0	<1.0	1.7

Results in parts per million (ppm)
TPHg = Total Petroleum Hydrocarbons as gasoline
< = Indicates less than the detection limit for the specified method of analysis.

S-32.5-B3
- S: Soil sample
- 32.5: Approximate sample depth
- B3: Boring number



EXPLANATION

B-3 ● = Soil boring (Applied GeoSystems, February 1 and 2, 1990)

N

Approximate Scale

20 10 0 20 40

feet

Source: Modified from plan supplied by ARCO

Applied GeoSystems

PROJECT 19011-1

GENERALIZED SITE PLAN
ARCO Station 771
899 Rincon Avenue
Livermore, California

PLATE 1

SUMMARY REPORT
First Quarter 1990

ARCO Service Station No. 276
10600 MacArthur Blvd.
Oakland, California
Alameda County

BACKGROUND

For site history prior to 1990 refer to the October-December 1989 Quarterly Summary Report issued in January 1990.

- Tank removal and tank pit soil sampling was performed in February 1990.
- Drilled three exploratory soil borings in the area of the new tank pit in February 1990 (Plate 1) and collected soil samples from the borings.
- Aeration of soil excavated from the former tank pit was performed in February 1990.
- Meeting with the Alameda County Health Care Services Agency to discuss the status and future direction of our investigation.
- A pilot study and initial design of a soil vapor extraction system to be used for removing onsite and offsite hydrocarbon compounds from the unsaturated zone was completed during the first quarter of 1990.
- Quarterly ground-water monitoring and sampling.

SOIL CONDITIONS

- Laboratory analyses of soil samples collected from the former tank pit detected hydrocarbon compounds with TPHg levels ranging from nondetectable to 360 ppm (Table 1).
- Laboratory analyses of soil samples collected from the proposed tank pit detected TPHg levels ranging from nondetectable to 290 ppm (Table 2).

- Elevated levels of hydrocarbon compounds appear to be associated with porous stream channel deposits and a perched water table that is occasionally saturated during the year.

QUARTERLY GROUND-WATER MONITORING

- Ground-water flow direction is toward the northeast.

- Wells MW-1 and MW-3 through MW-5 are screened in a water-occurrence zone that continuously yields water. Well MW-2 was terminated in a clay because of the presence of small volume of free product and accesses a variably saturated "perched water table". Small volumes of floating product were initially recovered from the well. Well MW-2 is presently dry.

- Quarterly monitoring of wells MW-1 and MW-3 through MW-5 during February detected dissolved-phase hydrocarbon compounds with levels of TPHg ranging from 0.081 to 0.61 ppm (Table 3). Analysis of February's samples for volatile organic compounds detected the presence of tetrachloroethene at levels ranging from non-detectable to 3.9 ppm (Table 4).

- The detected levels of chloride, iron, manganese, specific conductance, sulfate, and total dissolved solids, exceed the maximum contaminant levels of these compounds that are established for secondary drinking water supplies. The detected levels of bicarbonate and carbonate alkalinity, calcium, sodium, and the physical characteristic of hardness (Table 5), exceed or are within the range of values considered significant for drinking water supplies by USGS Water Supply Paper 2220 (1983).

- The levels of total dissolved solids in the ground water is at the limit (3,000 ppm) that can be considered suitable, or potentially suitable, for municipal or domestic water supply (as defined by California State Water Resources Control Board Resolution 88-63); and ground water beneath the site may not qualify as being of beneficial use to the state.

STATUS SUMMARY REMEDIATION

- The station is currently closed pending installation of new underground gasoline storage tanks. Contaminated soil excavated from the former tank pit was aerated and then removed to a Class III landfill.

ANTICIPATED WORK FOR THE NEXT QUARTER

- Offsite soil vapor extraction.
- Following completion of the offsite vapor extraction, the system will be installed to address onsite hydrocarbon vapors in the unsaturated zone.

TABLE 1
SOIL SAMPLE ANALYSES FROM FORMER TANK PIT
ARCO Station No. 276
10600 MacArthur Boulevard
Oakland, California
(collected February 8, 1990)

Sample Number	Data Point	TPHg	Benzene	Toluene	Ethyl-benzene	Total Xylenes
S-7-TP1SW	1	<2.0	0.13	<0.050	<0.050	0.15
S-8-TP1NE	2	<2.0	0.088	<0.050	<0.050	<0.050
S-13-TP2N	3	45	0.32	0.46	0.083	0.68
S-13-TP2W	4	3.9	0.24	0.15	0.094	0.67
S-13-TP2E	5	23	0.43	0.95	0.36	3.7
S-10-TP2S	6	2.5	0.13	0.10	<0.050	0.29
S-12-TP2S	7	210	1.8	14	3.4	29
S-12-TP2BM	8	42	0.33	1.2	0.77	6.1
S-13-TP2BN	9	360	0.86	5.5	6.7	43

Results in parts per million (ppm)
TPHg = Total petroleum hydrocarbons as gasoline.
Sample designation: S-13-TP2BN
- S = Water sample
- 13 = Sample depth in feet
- TP2BN = Sample collection location

TABLE 2
SOIL SAMPLE ANALYSES FROM PROPOSED TANK PIT
ARCO Station No. 276
10600 MaCarthur Boulevard
Oakland, California
(collected February 9, 1990)

Sample Number	TPHg	Benzene	Toluene	Ethyl-benzene	Xylenes
Boring 1					
S-9.5-TPB1	<2.0	<0.050	<0.050	<0.050	<0.050
S-15-TPB1	290	0.19	0.47	3.3	6.6
S-18.5-TPB1	58	<0.050	0.069	0.14	0.22
S-21-TPB1	<2.0	<0.050	<0.050	<0.050	<0.050
Boring 2					
S-11-TPB2	<2.0	<0.050	<0.050	<0.050	<0.050
S-16-TPB2	<2.0	<0.050	<0.050	<0.050	<0.050
S-18.5-TPB2	<2.0	<0.050	<0.050	<0.050	<0.050
Boring 3					
S- 5-TPB3	<2.0	<0.050	<0.050	<0.050	<0.050
S-10-TPB3	<2.0	0.075	<0.050	<0.050	<0.050
S-15-TPB3	<2.0	<0.050	<0.050	<0.050	<0.050
S-20-TPB3	2.1	0.46	<0.050	0.086	<0.050

Results = milligrams/kilogram (mg/kg) = parts per million (ppm)
TPHg = Total petroleum hydrocarbons
< = Less than method detection limit
Sample designation: S-20-TPB3
- S = soil sample
- 20 = depth of sample in feet
- TPB3 = tank pit borehole number

TABLE 3
ANALYTICAL RESULTS OF WATER SAMPLES
ARCO Service Station 276
10600 MacArthur Boulevard
Oakland, California

Well/ Date	TPHg	Benzene	Toluene	Ethyl-benzene	Total Xylenes
MW-1					
4/24/89	<0.050	<0.00050	<0.00050	<0.00050	<0.00050
10/13/89	<0.020	<0.00050	<0.00050	<0.00050	<0.00050
2/01/80	0.091	<0.00030	<0.00030	<0.00030	0.00036
MW-2					
4/24/89	165	13	21	2.1	12.7
10/13/89	-floating product/heavy sheen present-				
2/01/90	-sheen present-				
MW-3					
4/24/89	0.56	0.00054	0.00075	<0.00050	<0.00050
10/13/89	0.45	<0.00050	<0.00050	<0.00050	<0.00050
2/01/80	0.36	<0.00030	<0.00030	<0.00030	0.00085
MW-4					
4/24/89	2.5	0.27	0.0014	<0.00050	0.085
10/13/89	0.76	0.00086	<0.00050	0.0012	<0.00050
2/01/80	0.68	<0.00030	<0.00030	<0.00030	0.0016
MW-5					
4/24/89	0.13	0.00067	<0.00050	<0.00050	<0.00050
10/13/89	0.075	<0.00050	<0.00050	<0.00050	<0.00050
2/01/80	0.081	0.00094	0.00088	<0.00030	0.0018

Results are in parts per million (ppm)
TPHg = total petroleum hydrocarbons as gasoline
< = below the reporting limits of the analysis

TABLE 4
RESULTS OF EPA 624 WATER SAMPLE ANALYSIS
ARCO Service Station 276
10600 MacArthur Boulevard
Oakland, California
(February 1, 1990)

Well	Tetrachloroethene
MW-1	<0.002
MW-3	2.000
MW-4	3.900
MW-5	0.180

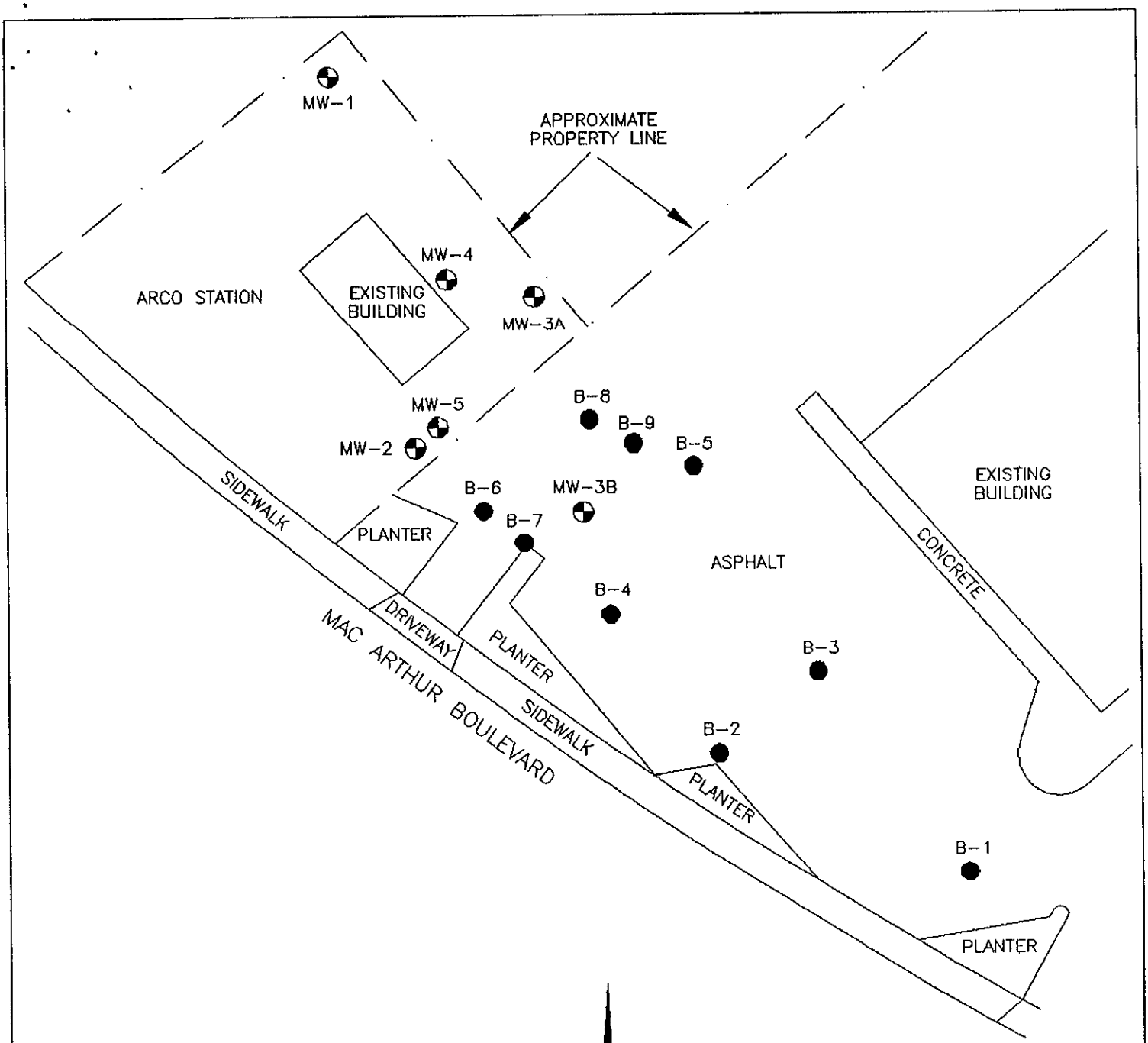
Results are in parts per million (ppm)
Only positive results reported.
< = below the reporting limits of the analysis

TABLE 5
RESULTS OF MINERAL ANALYSES
ARCO Service Station 276
10600 MacArthur Boulevard
Oakland, California
October 10, 1989

Constituent	MW-1	MCL	COS	
Bicarbonate Alkalinity	330	*	150-200	+
Calcium	320	*	25-50	+
Carbonate Alkalinity	<0.5	*	150-200	
Chloride	1,900	250	NA	+
Copper	0.11	1.0	NA	
Hardness	1,500	*	>180=v.hard	+
Hydroxide Alkalinity	<0.001	*	NA	
Iron	33	0.3	NA	+
Magnesium	170	*	NA	
Manganese	3.0	0.05	NA	+
pH	7.1	6.5-8.5	NA	
Sodium	130	*	20-170	+
Specific Conductance(SP)	3,800	900	NA	+
Sulfate	410	250	NA	+
Surfactants	<0.02	0.05	NA	
Total Dissolved Solids	3,000	500-1,000	NA	+
Zinc	0.33	5.0	5.0	

Results and Values in parts per million. SP in micromhos.
MCL = Maximum Contamination Level for Secondary Drinking Water Standards established under Title 40, Code of Federal Regulations Part 143 and Title 22, California Administrative Code Section 64445.1.
COS = Range of Concentration Of Significant as reported in United States Geological Survey Water-Supply Paper 2220, page 65, 1983.
* = No maximum contaminant level value established for this constituent.
+ = Signifies mineral constituent which exceeds or is within the range of maximum contaminant levels established for secondary drinking water standards, or the concentration considered significant by USGS Water-Supply Paper 2220

NA = Regulatory information not applicable/available.



MW-5 ⊕ = Approximate location of ground-water monitoring well

B-9 ● = Approximate location of soil boring

Source: Surveyed by Ron Archer Civil Engineer, Inc.

N

Approximate Scale

50 25 0 50 100

feet

Applied GeoSystems

PROJECT NO. 19011-1

GENERALIZED SITE PLAN
ARCO Station No. 276
10600 Mac Arthur Boulevard
Oakland, California

PLATE
1

SUMMARY REPORT
First Quarter 1990

ARCO Service Station No. 374
6407 Telegraph Avenue
Oakland, California
Alameda County

BACKGROUND

For site history prior to 1990 refer to the October-December 1989 Quarterly Summary Report issued in January 1990.

- Report describing drilling, well installation, soil and ground-water analyses, hydrogeologic conditions, an assessment of the beneficial use of the ground water, and the results of a records search to identify any potential offsite sources of soil or ground-water hydrocarbon contamination, has been drafted and will be submitted to ARCO shortly. Quarterly ground-water sampling of four existing monitoring wells was performed in January 1990.

- Records on file with state and local regulatory agencies indicate a tank leak occurred at 6392 Telegraph Avenue, in the upgradient ground-water flow direction, at some time before March 17, 1986. Available records do not indicate that any additional investigation was performed. Potentially, this event could have adversely impacted soil and ground water quality beneath ARCO Station 374.

SOIL CONDITIONS

- Laboratory analyses of soil samples collected from borings onsite indicated detectable hydrocarbon compounds of TPHg and BTEX. TPHg levels range from nondetectable to 560 ppm (Table 1). See Plate 1 for soil boring locations.

QUARTERLY GROUND-WATER MONITORING

- Quarterly monitoring and sampling of wells in January 1990 detected hydrocarbon compounds (BTEX) and TPHg levels ranging from nondetectable to 8 ppm (Table 2). Ground-water flow direction has consistently been toward the southwest.

- Quality of native ground water is relatively poor based on results of a general mineral analysis (Table 3). Four constituents exceed maximum contaminant level

established for secondary drinking water supplies and four other constituents (for which MCL's have not been established) have levels considered significant by the USGS for drinking water.

- An estimate from one onsite well suggests the saturated zone beneath the site is not capable of producing an average sustained yield of 200 gpd, as is required for a water source to be considered suitable as a domestic or municipal water supply (California State Water Resources Control Board Resolution 88-63).

STATUS SUMMARY: REMEDIATION

- Assess feasibility of using the former tank-pit as a French drain for collecting contaminated ground water.

ANTICIPATED WORK FOR THE NEXT QUARTER

- Submit formal report of subsurface environmental investigation to state and local regulatory agencies.

- Perform quarterly monitoring and ground-water sampling.

- Petition the Alameda County Health Care Services Agency to request an environmental investigation of the tank leak which occurred at 6392 Telegraph.

TABLE 1
ANALYTICAL RESULTS OF SOIL SAMPLES
ARCO Service Station 374
6407 Telegraph
Oakland, California
(July 1989)

Sample Number	TPHg	Benzene	Toluene	Ethyl-benzene	Total Xylenes
S-3.5-B1	<2	<0.05	<0.05	<0.05	<0.05
S-8.5-B1	60	0.66	2.9	0.99	5.2
S-3.5-B2	<2	<0.05	<0.05	<0.05	<0.05
S-13.5-B2	<2	<0.05	<0.05	<0.05	<0.05
S-18.5-B2	<2	<0.05	<0.05	<0.05	<0.05
S-3.5-B3	<2	<0.05	<0.05	<0.05	<0.05
S-3.5-B4	<5.0	<0.05	<0.05	<0.05	<0.05
S-8.5-B4	310	0.36	4.9	5.2	22
S-13.5-B4	560	12	5.8	12	49
S-0731-B4 * (1a,b,c,d)	21	<0.05	<0.05	<0.05	0.37

Results are in parts per million (ppm)
TPHg = total petroleum hydrocarbons as gasoline
< = below the reporting limits of the analytical method.
* = signifies composite sample following aeration.
Sample designation = S-13.5-B4
S = Soil sample
13.5 = Sample depth in feet
B4 = Boring number

TABLE 2
ANALYTICAL RESULTS OF WATER SAMPLES
ARCO Service Station 374
6074 Telegraph Avenue
Oakland, California

Sample Number	TPHg	Benzene	Toluene	Ethyl-benzene	Total Xylenes
MW-1					
7/21/89	0.033	0.00077	0.0016	0.0015	0.0050
8/30/89	<0.020	<0.00050	<0.00050	<0.00050	<0.00050
10/04/89	<0.020	<0.00050	<0.00050	<0.00050	<0.00050
1/10/90	<0.020	<0.00050	<0.00050	<0.00050	<0.00050
MW-2					
7/20/89	4.2	0.28	0.21	0.038	0.024
8/30/89	4.2	0.16	0.26	0.045	0.24
10/04/89	4.3	0.86	0.30	0.029	0.33
1/10/90	8.0	0.89	0.71	0.12	0.76
MW-3					
7/21/89	0.43	0.0090	0.0048	<0.00050	0.050
8/31/89	1.2	0.085	0.046	0.0084	0.055
10/04/89	7.0	0.58	0.90	0.12	0.67
1/10/90	0.94	0.13	0.059	0.021	0.073
MW-4					
7/21/89	8.7	0.72	0.36	0.12	0.64
8/30/89	7.3	0.63	0.22	0.072	0.32
10/04/89	21	2.3	1.3	0.28	1.3
1/10/90	4.3	0.47	0.25	0.063	0.43

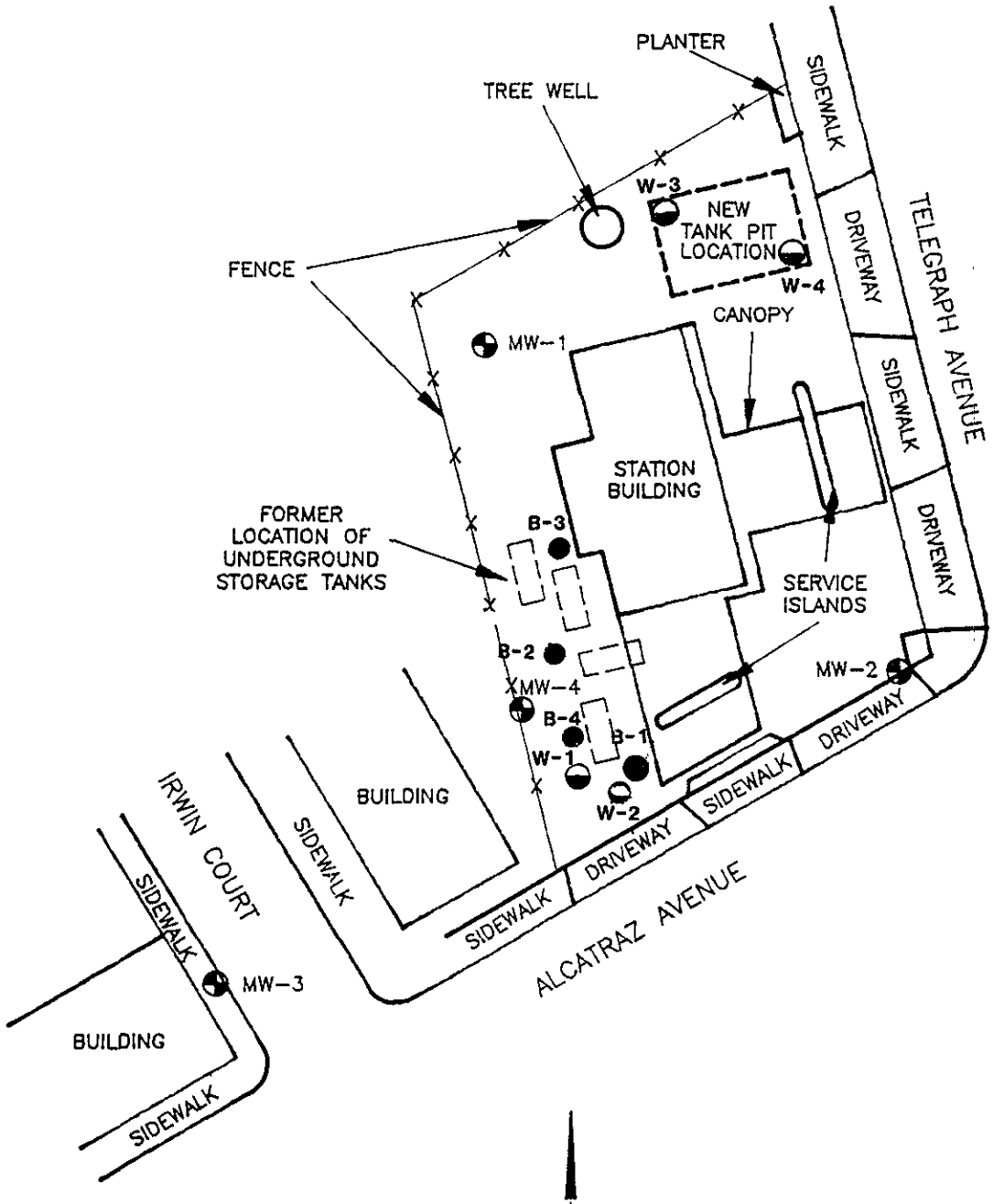
Results are in parts per million (ppm)
TPHg = total petroleum hydrocarbons as gasoline
< = below the reporting limits of the analytical method.

TABLE 3
RESULTS OF GENERAL MINERAL ANALYSIS
ARCO Service Station 374
6074 Telegraph Avenue
Oakland, California

Constituent	MW-1	SMCL/COS	
Bicarbonate Alkalinity	180	150-200 *	+
Calcium	130	25-50 *	+
Carbonate Alkalinity	<0.5	150-200 *	
Chloride	330	250-500	+
Copper	<0.5	1.0	
Hardness	520	>180=v.hard *	+
Hydroxide Alkalinity	<0.001	NA	
Iron	0.23	0.3	
Magnesium	48	NA	
Manganese	0.061	0.05	+
pH	6.9	6.5-8.5	
Sodium	100	20-170 *	+
Specific Conductance	1,600	900-1,600	+
Sulfate	120	250-500	
Surfactants	<0.02	0.5	
Total Dissolved Solids	1,000	500-1,000	+
Zinc	0.011	5.0	

Results and Values in parts per million with exception of Specific Conductance (micro-mhos/cm or micro-Siemens/cm)

SMCL = Maximum Contamination Level for Secondary Drinking Water Standards established by Title 40 of the Code of Federal Regulations Section 143 and Title 22 Section 64445.1 of the California Administrative Code.
COS = Concentration of Significance as defined in USGS Water Supply Paper 2220, page 65, 1983.
* = No SMCL values established for this constituent. Signifies concentrations considered significant as described in the United States Geological Survey Water Supply Paper 2220.
+ = Constituent in ground water which exceeds established SMCL or COS values for drinking water.
NA = Regulatory information not available



B-4 ● = **Soil boring**

MW-4 ◒ = Monitoring well installed by Applied GeoSystems (July 1989)

M-2 ◒ = Tank pit monitoring well installed by Applied GeoSystems (1988)

Source: Surveyed by Ron Archer
Civil Engineer, Inc.

N

Approximate Scale

40 20 0 40 80

feet

Applied GeoSystems

PROJECT 19011-1

GENERALIZED SITE PLAN
ARCO Station No. 374
6407 Telegraph Avenue
Oakland, California

PLATE

1

SUMMARY REPORT
First Quarter 1990

Former ARCO Service Station No. 623
2110 Mountain/Merced
Oakland, California
Alameda County

BACKGROUND

For site history prior to 1990 refer to the October-December 1989 Quarterly Summary Report issued in January 1990.

SOIL CONDITIONS

No change from last quarter.

QUARTERLY GROUND-WATER MONITORING

No monitoring wells onsite.

STATUS SUMMARY: REMEDIATION

No remediation planned.

ANTICIPATED WORK FOR NEXT QUARTER

ARCO plans no further work at this time.

SUMMARY REPORT
First Quarter 1990

ARCO Service Station No. 2107
3310 Park Boulevard/34th Street
Oakland, California
Alameda County

BACKGROUND

For site history prior to 1990 refer to the October-December 1989 Quarterly Summary Report issued in January 1990.

- Applied GeoSystems prepared a Work Plan for Subsurface Investigation, dated February 27, 1990, on behalf of ARCO to evaluate the presence of hydrocarbons related to the underground storage tanks at the site in the soil and ground water. The Work Plan was requested by the Alameda County Health Care Services Agency (ACHCSA) as stated in their February 7, 1990 letter to ARCO. The Work Plan was approved by the ACHCSA. The proposed work includes installation of four ground - water monitoring wells at the site (Plate 1).

SOIL CONDITIONS

No change from last quarter.

QUARTERLY GROUND-WATER MONITORING

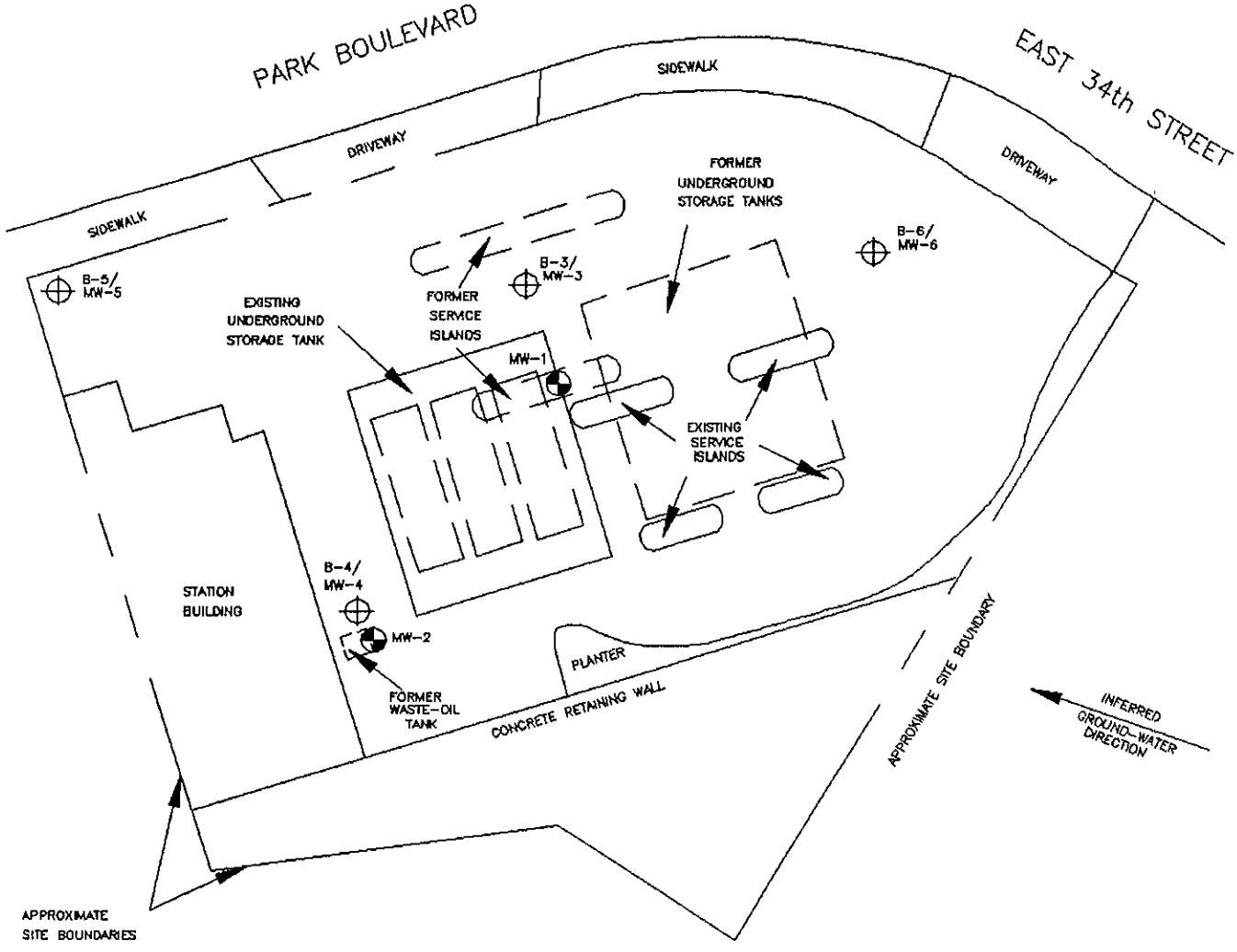
Initiate ground-water monitoring after proposed monitoring wells are installed at the site.

STATUS SUMMARY: REMEDIATION

No change from last quarter.

ANTICIPATED WORK FOR NEXT QUARTER

- Initiate work outlined in the February 1990 Work Plan.



EXPLANATION

MW-2 = Monitoring well (S.C.S. Engineers, January 1987)

B-6/ MW-6 = Proposed monitoring well

N

Approximate Scale

20 10 0 20 40

feet

Source: Supplied by ARCO, 1987.

Applied GeoSystems

PROJECT 19011-1

GENERALIZED SITE PLAN
ARCO Station 2107
3310 Park Boulevard
Oakland, California

PLATE 1

SUMMARY REPORT
First Quarter 1990

ARCO Service Station No. 2169
889 West Grand Avenue
Oakland, California
Alameda County

BACKGROUND

For site history prior to 1990 refer to the October-December 1989 Quarterly Summary Report issued in January 1990.

SOIL CONDITIONS

No change from last quarter.

QUARTERLY GROUND-WATER MONITORING

No monitoring wells onsite.

STATUS SUMMARY: REMEDIATION

No remediation planned.

ANTICIPATED WORK FOR NEXT QUARTER

ARCO plans no further work at this time.

SUMMARY REPORT
First Quarter 1990

ARCO Service Station No. 4494
566 Hegenberger Road
Oakland, California.
Alameda County

BACKGROUND

For site history prior to 1990 refer to the October-December 1989 Quarterly Summary Report issued in January 1990.

- A work plan (Applied GeoSystems Report No. 69038-1, dated September 29, 1989) for the installation of three monitoring wells at the site was approved by the Alameda County Health Department in mid-October 1989. Two monitoring wells were installed in October 1989 (Plate 1). A third well could not be installed due to industrial glass slag materials encountered throughout the northwestern portion of the site. The work plan was suspended by the Alameda County Health Department until a site history investigation could be performed. A site history and offsite investigation to identify potential fuel leak sites near the subject site was conducted during March 1990. A report summarizing the results of the site history and preliminary site assessment is presently in draft form.

SOIL CONDITIONS

Analysis of soil samples collected from the soil borings drilled on October 30 and 31, 1990 indicated elevated concentrations of TPHg and BTEX compounds in five samples analyzed. The highest concentrations of TPHg, TPHd, TOG, toluene, ethylbenzene, and total xylene isomers (52,000 ppm, 5,700 ppm, 2,300 ppm, 1,400 ppm, 490 ppm, and 3,200 ppm respectively) were detected in a sample collected from a depth of 16 feet in boring B-2 (Table 1).

QUARTERLY GROUND-WATER MONITORING

Monitoring wells will be sampled upon approval of revised work plan by the Alameda County Health Department.

STATUS SUMMARY: REMEDIATION

No remediation taking place at present time. Options for soil remediation will be considered in the future.

ANTICIPATED WORK FOR THE NEXT QUARTER

- A revised Work Plan will be prepared.
- A report summarizing the results of the assessment and site history report will be submitted to the Regional Water Quality Control Board, San Francisco Bay Region and the Alameda County Health Department.

TABLE 1
RESULTS OF LABORATORY ANALYSIS OF SOIL SAMPLES
ARCO Station No. 4494
Hegenberger Road and Edes Avenue
Oakland, California

Sample Identifier	TPHg	TPHd	B	T	E	X	TOG
S-5-B1	<1.0	200	<0.005	<0.005	<0.005	<0.005	1600
S-10-B1	<1.0	<10	<0.005	<0.005	<0.005	<0.005	<30
S-20-B1	<1.0	<10	<0.005	<0.005	<0.005	<0.005	<30
S-24-B1	<1.0	<10	<0.005	<0.005	<0.005	<0.005	<30
S-5-B2	52	<10	1.8	0.25	0.48	2.6	280
S-11-B2	30	<10	0.75	0.51	0.43	2.7	<30
S-16-B2	52000	5700	<100	1400	490	3200	2300
S-19-B2	11	14	0.25	1.2	0.22	1.5	<30
S-21-B2	<1.0	<10	<0.005	0.012	0.012	<0.005	<30

Results in milligrams per kilogram (mg/kg), or parts per million (ppm).
TPHg: Total petroleum hydrocarbons as gasoline
TPHd: Total petroleum hydrocarbons as diesel
B: benzene T: toluene E: ethylbenzene X: total xylene isomers
TOG: Total oil and grease
Sample Identification:

S-10-B1
- S-10-B1 → Soil sample
- S-10-B1 → Approximate sample depth in feet
- S-10-B1 → Boring Number

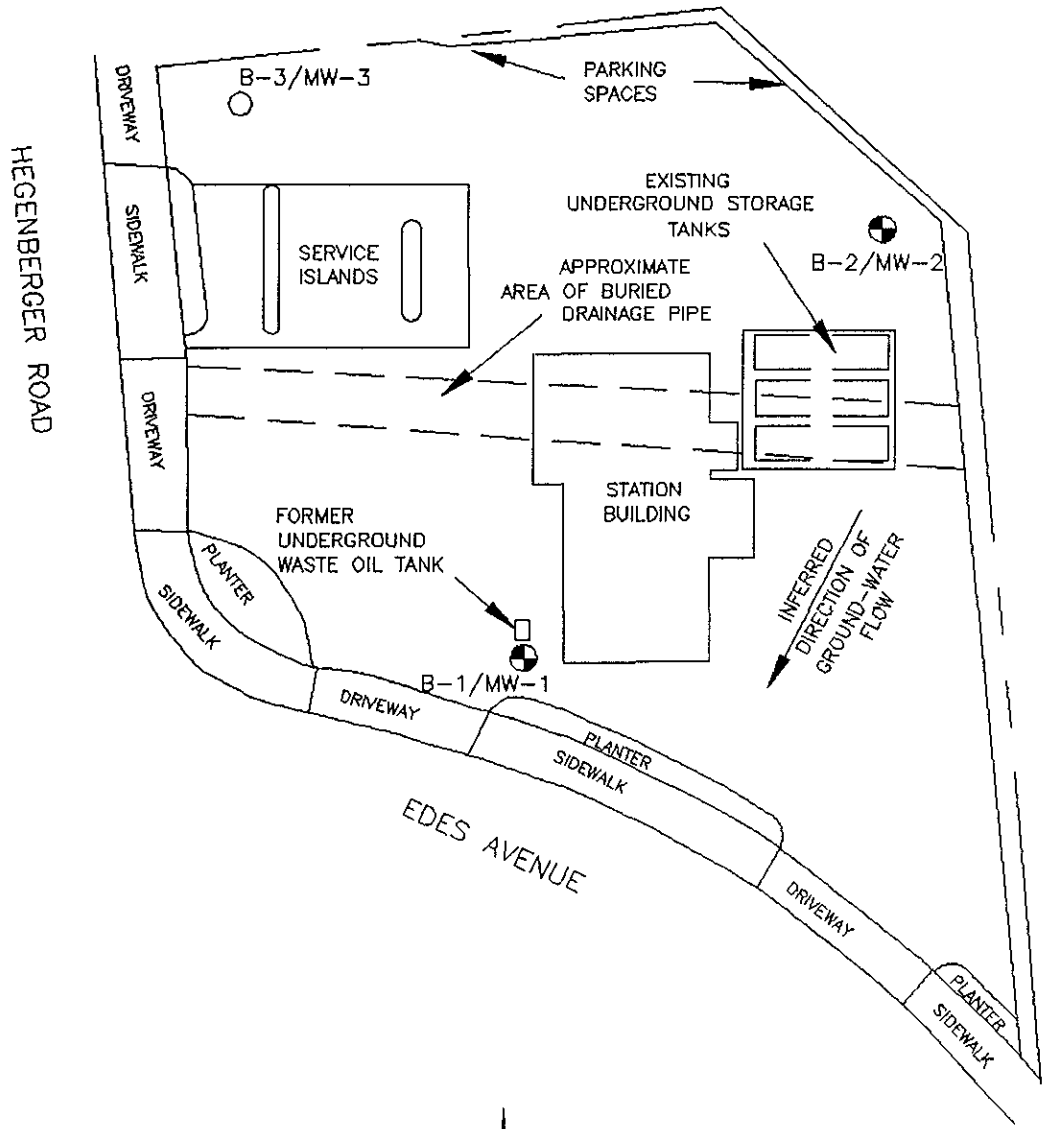
TABLE 1
RESULTS OF LABORATORY ANALYSIS OF SOIL SAMPLES
ARCO Station No. 4494
Hegenberger Road and Edes Avenue
Oakland, California

Sample Identification	Cadmium	Total Chromium	Lead	Zinc
S-5-B1	<0.5	46.8	29.8	67.3
S-10-B1	<0.5	31.2	<1.0	48.5
S-20-B1	<0.5	39.2	<1.0	62.5
S-24-B1	0.757	48.2	<1.0	81.5
S-5-B2	<0.5	32.4	19.9	64.1
S-11-B2	<0.5	22.4	2.16	33.4
S-16-B2	<0.5	27.6	10.2	43.3
S-19-B2	<0.5	40.6	<1.0	60.1
S-21-B2	<0.5	51.2	<1.0	126.0

Results in milligrams per kilogram (mg/kg), or parts per million (ppm).

Sample Identification
S-10-B1

- S = Soil Sample
- 10 = Approximate Sample Depth in Feet
- B1 = Boring Number



EXPLANATION

B-3/MW-3 ○ = Not installed due to refusal

B-2/MW-2 ◐ = Monitoring wells (Applied GeoSystems, October 30 & 31, 1989)

N

Approximate Scale

40 20 0 40 80

feet

Source: Modified from plan supplied by Arco Products Company

Applied GeoSystems

PROJECT 19011-1

GENERALIZED SITE PLAN
ARCO Service Station 4494
566 Hegenberger Road
Oakland, California

PLATE 1

SUMMARY REPORT
First Quarter, 1990

ARCO Service Station No. 4931
731 W. MacArthur Boulevard
Oakland, California

BACKGROUND

For site history prior to 1990 refer to the October-December 1989 Quarterly Summary Report issued in January, 1990.

SOIL CONDITIONS

No change from last quarter

QUARTERLY GROUNDWATER MONITORING

Groundwater samples were collected on January 15, 1990. Floating product was observed in two monitoring wells. TPH-gasoline concentrations in the wells sampled ranged from none detected to 9,900 ppb. Benzene concentrations ranged from none detected to 1,100 ppb.

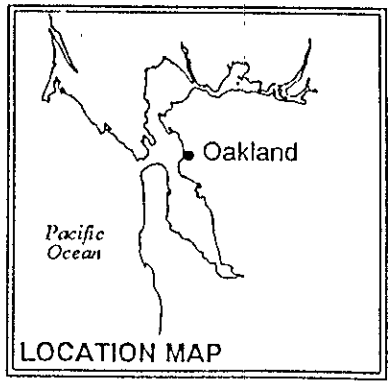
A table summarizing the historical groundwater analytical data and a site map are attached.

STATUS SUMMARY: REMEDIATION

Site remediation activities were not performed during the first quarter of 1990.

ANTICIPATED WORK FOR THE NEXT QUARTER

Groundwater samples will be collected from the monitoring wells. A report presenting the results of the quarterly groundwater sampling will be prepared.



MACARTHUR BOULEVARD

A-6
A-7
SERVICE ISLANDS
UNDERGROUND GASOLINE STORAGE COMPLEX
A-11
A-4
A-5
SERVICE ISLAND
ARCO SERVICE STATION BUILDING
A-2
WEST STREET
A-8
A-3
A-9
A-10
A-12

EXPLANATION

A-2 Ground-water monitoring well location

N

0 30 60

Scale in Feet

GSI GeoStrategies Inc.

Site Plan
Arco Service Station #4931
731 West MacArthur Boulevard
Oakland, California

PLATE 1

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
7909		9/89		

ANALYTICAL LOG

SAMPLE DATE	SAMPLE POINT	TPH (PPB)	BENZENE (PPB)	TOLUENE (PPB)	E.B. (PPB)	XYLENES * (PPB)
21-Mar-86	A-2	31000.	----	----	----	----
07-Jan-88	A-2	12000.	920.	1500.	----	4000.
20-Mar-89	A-2	22000.	1200.	1800.	1200.	7700.
24-May-89	A-2	9000.	460.	260.	250.	2400.
18-Aug-89	A-2	14000.	900.	200.	<200.	1300.
27-Oct-89	A-2	16000.	1200.	340.	90.	3100.
15-Jan-90	A-2	9900.	1100.	460.	150.	2900.
21-Mar-86	A-3	1000.	----	----	----	----
07-Jan-88	A-3	250.	2.3	8.	----	21.
20-Mar-89	A-3	230.	1.6	<1.	3.	3.
24-May-89	A-3	170.	0.9	2.	1.	<3.
18-Aug-89	A-3	180.	0.7	1.	<1.	<3.
27-Oct-89	A-3	120.	<0.5	<0.5	<0.5	<1.
15-Jan-90	A-3	<50.	<0.5	<0.5	<0.5	<1.
20-Mar-89	A-4	360000.	1500.	3700.	6500.	35000.
24-May-89	A-4	1500000.	1000.	2000.	6000.	23000.
21-Mar-86	A-5	88.	----	----	----	----
07-Jan-88	A-5	<50.	0.5	1.	----	4.
20-Mar-89	A-5	60.	0.5	1.	2.	10.
24-May-89	A-5	<50.	0.5	<1.	<1.	<3.
18-Aug-89	A-5	<50.	<0.5	<1.	<1.	<3.
27-Oct-89	A-5	<50.	<0.5	<0.5	<0.5	<1.
15-Jan-90	A-5	<50.	<0.5	<0.5	<0.5	<1.
21-Mar-86	A-6	<10.	----	----	----	----
21-Mar-86	A-6	<10.	----	----	----	----
07-Jan-88	A-6	390.	54.	89.	----	110.
20-Mar-89	A-6	220.	33.	21.	9.	39.
24-May-89	A-6	110.	13.	6.	3.	13.
18-Aug-89	A-6	<50.	2.1	1.	<1.	<3.
27-Oct-89	A-6	55.	3.8	1.6	1.7	6.
15-Jan-90	A-6	100.	12.	2.5	5.5	18.
07-Jan-88	A-7	<50.	<0.5	1.	----	4.
20-Mar-89	A-7	<50.	0.9	<1.	<1.	<3.
24-May-89	A-7	<50.	<0.5	<1.	<1.	<3.
18-Aug-89	A-7	<50.	<0.5	<1.	<1.	<3.
27-Oct-89	A-7	<50.	<0.5	<0.5	<0.5	<1.
15-Jan-90	A-7	<50.	<0.5	<0.5	<0.5	<1.
07-Jan-88	A-9	300.	45.	14.	----	43.
21-Mar-89	A-9	50.	2.8	1.	1.	3.
24-May-89	A-9	120.	26.	12.	4.	79.
18-Aug-89	A-9	14000.	400.	800.	400.	2000.

ANALYTICAL LOG

SAMPLE DATE	SAMPLE POINT	TPH (PPB)	BENZENE (PPB)	TOLUENE (PPB)	E.B. (PPB)	XYLENES * (PPB)
27-Oct-89	A-9	1700.	150.	36.	30.	110.
15-Jan-90	A-9	860.	140.	58.	38.	140.
07-Jan-88	A-10	<50.	0.6	11.	----	4.
20-Mar-89	A-10	<50.	<0.5	<1.	<1.	<3.
24-May-89	A-10	<50.	<0.5	<1.	<1.	<3.
18-Aug-89	A-10	<50.	<0.5	<1.	<1.	<3.
27-Oct-89	A-10	<50.	<0.5	<0.5	<0.5	<1.
15-Jan-90	A-10	<50.	<0.5	<0.5	<0.5	<1.
07-Jan-88	A-11	<50.	1.1	2.	----	5.
20-Mar-89	A-11	<50.	<0.5	<1.	<1.	<3.
24-May-89	A-11	<50.	<0.5	<1.	<1.	<3.
18-Aug-89	A-11	<50.	<0.5	<1.	<1.	<3.
27-Oct-89	A-11	<50.	<0.5	<0.5	<0.5	<1.
15-Jan-90	A-11	<50.	<0.5	<0.5	<0.5	<1.
07-Jan-88	A-12	<50.	<0.5	2.	----	<4.
20-Mar-89	A-12	<50.	<0.5	<1.	<1.	<3.
24-May-89	A-12	<50.	<0.5	<1.	<1.	<3.
18-Aug-89	A-12	<50.	<0.5	<1.	<1.	<3.
27-Oct-89	A-12	<50.	<0.5	<0.5	<0.5	<1.
15-Jan-90	A-12	<50.	<0.5	<0.5	<0.5	<1.

* ETHYLBENZENE & XYLENES COMBINED IN 1986 AND 1988

ALL DATA SHOWN AS <X ARE REPORTED AS ND (NONE DETECTED)

SUMMARY REPORT
First Quarter 1990

ARCO Service Station No. 6148
52nd Street/Shattuck Avenue
Oakland, California
Alameda County

BACKGROUND

For site history prior to 1990 refer to the October-December 1989 Quarterly Summary Report issued in January 1990.

SOIL CONDITIONS

No change from last quarter.

QUARTERLY GROUND-WATER MONITORING

No monitoring wells onsite.

STATUS SUMMARY: REMEDIATION

No remediation planned.

ANTICIPATED WORK FOR NEXT QUARTER

ARCO plans no further work at this time.

SUMMARY REPORT
First Quarter 1990

ARCO Service Station No. 2162
15135 Hesperian Boulevard/Ruth Court
San Leandro, California
Alameda County

BACKGROUND

For site history prior to 1990 refer to the October-December 1989 Quarterly Summary Report issued in January 1990.

SOIL CONDITIONS

No change from last quarter.

QUARTERLY GROUND-WATER MONITORING

No monitoring wells onsite.

STATUS SUMMARY: REMEDIATION

No remediation planned.

ANTICIPATED WORK FOR NEXT QUARTER

ARCO plans no further work at this time.

SUMMARY REPORT
First Quarter 1990

Project No. 330-06.05
April 13, 1990

ARCO Service Station No. 608
17601 Hesperian Boulevard at Hacienda
San Lorenzo, California

Alameda County

BACKGROUND

For site history prior to 1990 refer to the October-December 1989 Quarterly Summary Report issued in January 1990.

- January 1990, PACIFIC initiated permits and encroachment for the installation of six additional on-site and off-site groundwater monitoring wells.
- February 1990, PACIFIC continued permit and encroachment activities and pursued approval of PACIFIC's October 1989 work plan with Alameda County.
- March 1990, PACIFIC performed quarterly groundwater monitoring of site wells; prepared and transmitted the October-December 1989 groundwater monitoring report; received verbal approval of PACIFIC's October 1989 work plan from Alameda County; and initiated the installation of five additional groundwater monitoring wells (the sixth well can not be installed at this time due to Alameda County's current moratorium on issuance of encroachment permits).

SOIL CONDITIONS

No change from last quarter.

QUARTERLY GROUNDWATER MONITORING

Table 1 summarizes historical groundwater analytical results. See Figure 1 for site map. Dryness in existing site wells is attributed to current drought conditions.

STATUS SUMMARY: REMEDIATION

No change from last quarter.

ANTICIPATED WORK FOR THE SECOND QUARTER 1990

- Complete field and lab work associated with the current investigation.

- Prepare and transmit the January-March 1990 quarterly groundwater monitoring results.
- Continue quarterly groundwater monitoring of site wells (and include the new monitoring wells).
- Issue a letter on the results of the pump test conducted at the site in 1989.

TABLE 1
QUARTERLY GROUNDWATER MONITORING RESULTS
ARCO Service Station No. 0608
Low-Boiling Hydrocarbons

WELL NO.	SAMPLE DATE	DEPTH TO GROUNDWATER (FT.)*	GASOLINE (ppb)	BENZENE (ppb)	TOLUENE (ppb)	ETHYL-BENZENE (ppb)	XYLENES (ppb)
MW-1	01/88	NA		300** 20	50	10	80
	06/21/89			---------- Well not locatable ----------			
	12/12/89	NA		----------Well dry----------			
MW-2	01/88	NA		3,300** 804	115	168	166
	06/88			---------- Well destroyed ----------			
MW-3	01/88	NA		1,800** 20	20	80	60
	03/07/89	11.96	150,000	4,600	5,200	5,600	13,000
	06/21/89	12.85	63,000	2,700	5,800	3,300	12,000
	12/12/89	13.46		--Insufficient Volume of Water for Sampling--			
MW-4	01/88	NA		62,000** 2,700	7,900	850	5,200
	03/07/89	10.76	84,000	2,400	3,400	2,500	7,600
	06/21/89	11.96	31,000	400	800	200	1,500
	12/12/89	NA		----------Well dry----------			

TABLE 1 (continued)
QUARTERLY GROUNDWATER MONITORING RESULTS
ARCO Service Station No. 0608
Low-Boiling Hydrocarbons

WELL NO.	SAMPLE DATE	DEPTH TO GROUNDWATER (FT.)*	GASOLINE (ppb)	BENZENE (ppb)	TOLUENE (ppb)	ETHYL-BENZENE (ppb)	XYLENES (ppb)
MW-5	01/88	NA	31,000**	4,000	2,700	3,800	5,500
	03/07/89	12.74	1,300	340	ND	140	50
	06/21/89	13.26	1,100	200	ND	130	40
	12/12/89	NA	----------	----------	Well dry	----------	----------
E-1***	06/21/89	12.48	1,700	170	170	85	290
	12/12/89	13.16	500	26	7	8	18

Notes:
NA = Not available
ppb = parts per billion
* = Well elevations not surveyed.
** = Analysis reported as total volatile hydrocarbons
*** = Well I.D. No. is equivalent to Well I.D. No. MW-6.