QUARTERLY SUMMARY REPORT
Alameda County
January 1990

ARCO Service Station No. 4494
566 Hegenberger Road
Oakland, California. 621

Brief History

- February 19, 1988, vapor/vent line leaks were detected in the unleaded and regular systems during annual tank testing at the site. The systems were reportedly repaired.

- March 11, 1988, an Underground Storage Tank Unauthorized Release (Leak) Report was sent from Brown and Caldwell to Alameda County Division of Environmental Health on March 24, 1988.

- December 16, 1988, a 280-gallon waste-oil tank was removed from the site by Crosby and Overton Environmental Management, Inc. ("Figure 2", PEG). The waste-oil tank pit was excavated to a depth of 7 feet and a soil sample was collected by Pacific Environmental Group, Inc. (PEG) for laboratory analysis. Because a strong odor was noted in this sample, a portion of the pit was further excavated to a depth of 10 feet, and another soil sample was collected. Results of analyses of these samples indicated elevated levels of high boiling point hydrocarbons (370 ppm diesel and 4,800 ppm oil), and oil and grease at 4,500 ppm in the sample collected from a depth of 7 feet; and nondetectable concentrations of hydrocarbons in the sample collected from a depth of 10 feet (see Tables 1 and 2 attached, PEG, May 1989).

- January 4, 1989, the entire waste-oil tank pit was further excavated to a depth of 10 feet to remove stained soil. Four soil samples were collected by PEG from each sidewall of the pit at a depth of 7 feet (see attached Table 1 for laboratory results). Elevated levels of hydrocarbons (190 and 400 ppm) were detected in samples collected from the east and north sidewalls. On January 18, 1989, PEG oversaw further excavation of the waste-oil tank pit along the north sidewall and collected a sample from a depth of 7 feet for laboratory analysis. Laboratory analysis of this sample indicated nondetectable levels of diesel and oil, and 10 ppm oil and grease (Table 1). Further excavation of the east sidewall could not be performed due to the proximity to the station building. Approximately 30 tons of waste-oil contaminated soil were transported to Chemical Waste Management's landfill in Kettleman Hills, California. The pit was backfilled with clean fill; the tank was not replaced.

member?

- April 19, 1989, an Underground Storage Tank Unauthorized Release (Leak) Report was sent from PEG to Alameda County Division of Environmental Health as a result of the elevated levels of hydrocarbons discovered during removal of the waste-oil tank.

Work Performed during Third Quarter 1989

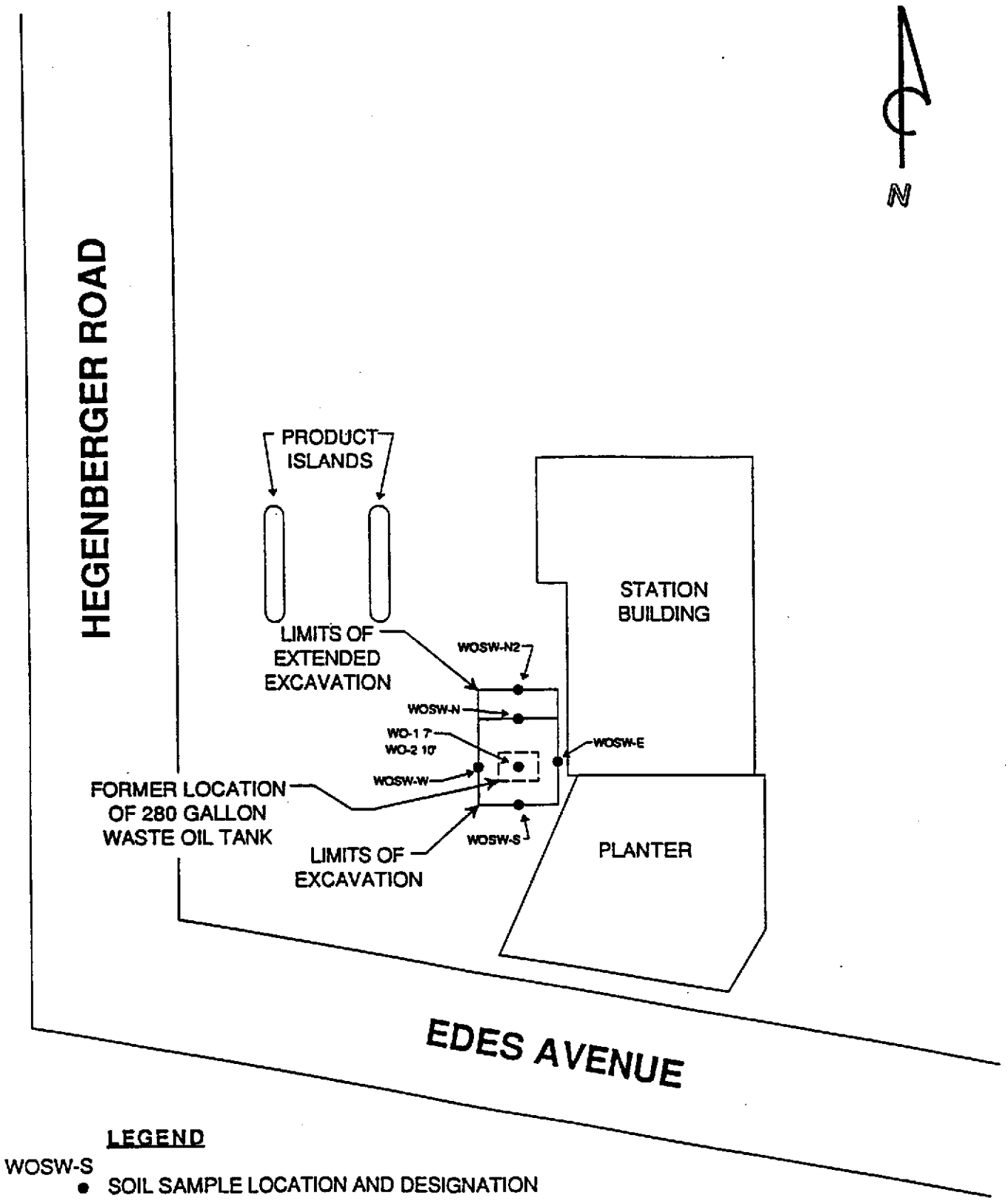
- A Work Plan for initial assessment of hydrocarbon contamination (Applied GeoSystems Report No. 69038-1, dated September 29, 1989) was completed and submitted to the Regional Water Quality Control Board, San Francisco Region; the Alameda County Health Agency; and the City of Oakland Department of Environmental Health.

Work Performed during Fourth Quarter 1989

- October 30 and 31, and November 1, 1989, initiated subsurface investigation, including the drilling of two borings (B-1 and B-2), collecting soil samples from borings, constructing monitoring wells (MW-1 and MW-2), and collecting water samples from wells MW-1 and MW-2. Encountered approximately two feet of product within boring B-2. Initial ground-water elevations in wells MW-1 and MW-2 vary by approximately four feet. Proposed boring/well B-3/MW-3 could not be installed due to refusal (industrial glass-slag type material). The work plan was suspended on November 9, 1989 by Katherine Chesich of the Alameda County Division of Environmental Health. A Site History Report was requested by Katherine Chesich to serve as a starting point for compiling a revised Site Work Plan (on 11/9/89).

Future Work - First and Second Quarter 1990

- An off-site Environmental Site History Investigation was initiated.
- A revised Work Plan will be prepared. where this?



LEGEND

WOSW-S
● SOIL SAMPLE LOCATION AND DESIGNATION

PACIFIC ENVIRONMENTAL GROUP, INC.	ARCO SERVICE STATION #4494 566 Hegenberger Road Oakland, California	FIGURE: 2
	SITE MAP	PROJECT: 330-41.01

Project No. 330-41.01
May 3, 1989

TABLE 1

Summary of Analytical Results
Low Boiling Hydrocarbons, High Boiling Hydrocarbons, Oil & Grease
Soil Samples From Waste Oil Tank Excavation
Results in Parts per Million - Dry Soil Basis

		Low Boiling Hydrocarbons	High Boiling Hydrocarbons		Oil & Grease
Sample	Depth (ft)	Gasoline	Diesel	Oil	
WO-1	7	11.	370.*	4,800.	4,500.
WO-2	10	<5.	<10.	<10.	<20.
(Side Walls)					
WOSW-E	7	NT	<10.	50.	190.
WOSW-S	7	NT	<10.	<10.	<10.
WOSW-W	7	NT	<10.	<10.	<10.
WOSW-N	7	NT	33.*	400.	200.
WOSW-N2	7	NT	<10.	<10.	10.

NT = Not Tested
* = Chromatographic pattern of compounds detected and calculated as diesel does not match that of the diesel standard used for calibration.

Project No. 330-41.01
May 3, 1989

TABLE 2

Summary of Analytical Results
Volatile Organic Compounds, Semi-volatile Organic Compounds, Metals
Soil Samples from Waste Oil Tank Excavation
Results in Parts per Million - Dry Soil Basis

Sample ID:	WO-1	WO-2	Designated Level*
Volatile Organic Compounds - HSL			
Xylenes	.008	ND	
Other tested compounds	ND	ND	
Volatile Organic Compounds - Non-HSL**			
1,3,5-Trimethylbenzene	.05	ND	
1,2,4-Trimethylbenzene	.03	ND	
Diethylbenzene	.02	ND	
Methyl(1-methylethyl)benzene	.03	ND	
2-ethyl-1,4-dimethylbenzene	.03	ND	
Other tested compounds	ND	ND	
Semi-volatile Organic Compounds - HSL			
2-Methylnapthalene	ND	.09	(NO DATA)
Other tested compounds	ND	ND	
Metals			
Cadmium	ND	ND	
Chromium	48.	44.	500.
Lead	150.	ND	
Zinc	76.	45.	200.

ND = None detected. See Certified Analytical Report for detection limits.
HSL = Compounds on the hazardous substances list.
** = Estimate only. See Certified Analytical Report.
* = Levels to protect drinking water when compounds occur in a solid, for a hypothetical "average" site. Converted to parts per million. Source: "Water Quality Goals and Hazardous and Designated Levels for Chemical Constituents," California Regional Water Quality Control Board (prepared by Jon Marshack), September 1986.

SUMMARY REPORT
First Quarter 1990

ARCO Service Station No. 4494
566 Hegenberger Road
Oakland, California. 94621
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.

Request this report

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: Soil sample
- 10: Approximate sample depth in feet
- B1: Boring Number

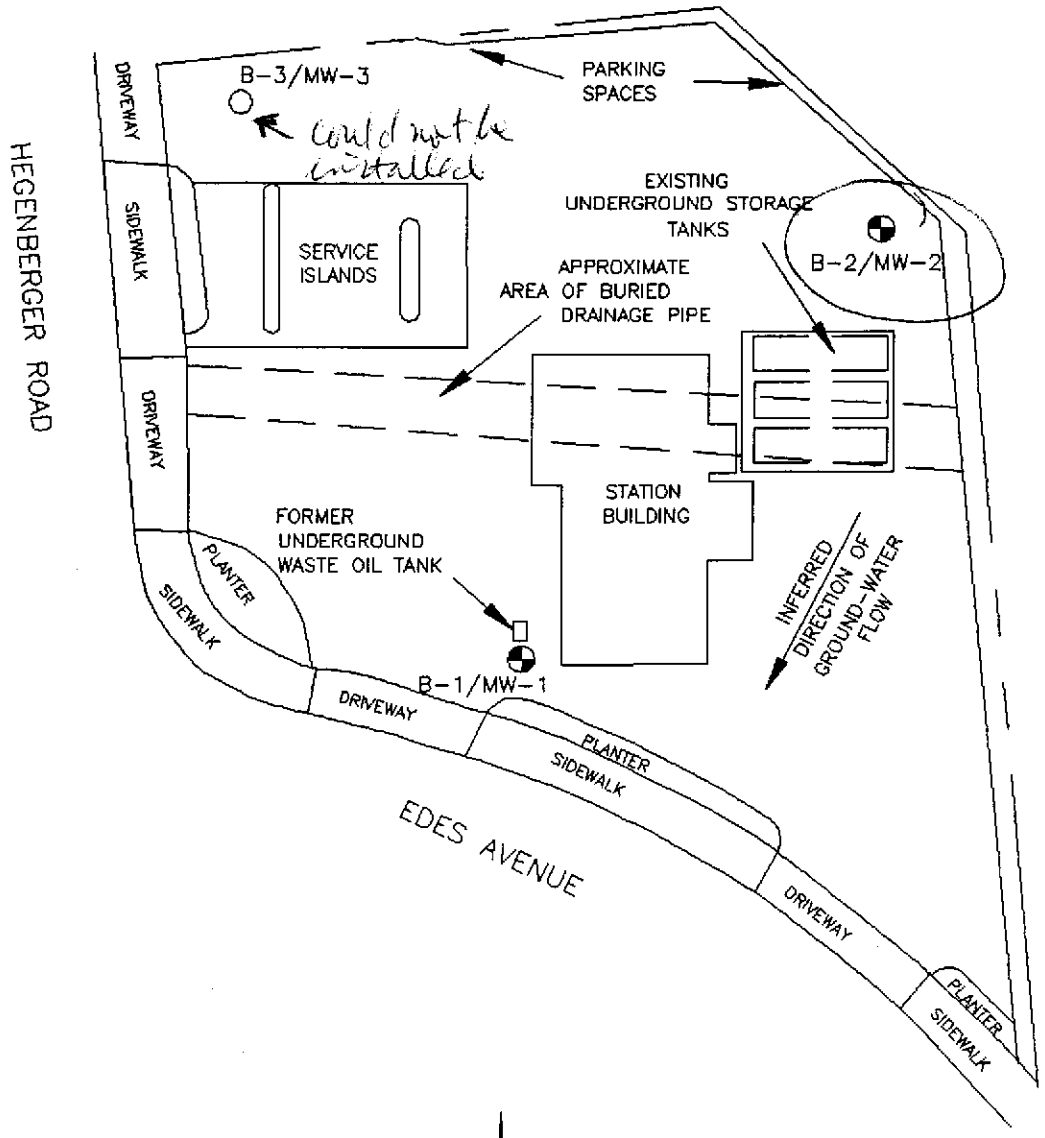
TABLE 1
RESULTS OF LABORATORY ANALYSIS OF SOIL SAMPLES
ARCO Station No. 4494
Hegenberger Road and Edes Avenue
Oakland, California

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)

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
Third Quarter 1990

ARCO Service Station 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.

- October 1989 - a work plan (Applied GeoSystems 69038-1, dated September 29, 1989) for the installation of three monitoring wells at the site was approved by the Alameda County Health Agency (ACHA). Two monitoring wells (MW-1 and MW-2) were installed in October 1989 (Plate 1). A third well could not be installed due to industrial glass and metallic slag materials encountered throughout the northwestern portion of the site.

- December 1989 - the work plan was suspended by ACHA until a site history investigation could be performed.

- March 1990 - a site history and offsite investigation to identify potential fuel leak sites near the subject site was performed by Applied GeoSystems.

- August 10, 1990 - Applied GeoSystems drilled two additional borings (B-3 and B-4); wells MW-3 and MW-4 were installed in these borings. Ground water encountered at approximately 9 and 14-1/2 feet; ground water appears to be confined in wells MW-1, MW-2, and MW-4; and semiconfined in well MW-3 which appears to be located in an old tidal channel. Direction of ground-water flow appears to be towards the northeast (away from San Francisco Bay) and opposite the local topography.

- October 1990 - a draft version of the site history and environmental records review report (Applied GeoSystems, 69038-3) was sent to ARCO. This report documented potential onsite and offsite sources of the petroleum hydrocarbons detected in well MW-2.

SOIL CONDITIONS

Refer to Tables 1 and 2 for laboratory results of soil samples collected from the borings at the site.

QUARTERLY GROUND-WATER MONITORING

- June 18, 1990 - well MW-1 sampled by Applied GeoSystems. Results of laboratory analyses of water samples from MW-1 indicated nondetectable TPHg, TPHd, BTEX, BNA's, and VOC's. Approximately 1 foot of black, floating product was measured in MW-2.

- August 16, 1990 - wells MW-1, MW-3, and MW-4 sampled by Applied GeoSystems. Results of laboratory analyses of water samples indicated nondetectable TPHg, TPHd, BTEX, and TOG. Approximately 1/2 inch of floating product was measured in well MW-2. Refer to Tables 3 and 4 for laboratory results of water samples collected from wells MW-1, MW-3, and MW-4.

STATUS SUMMARY: REMEDIATION

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

ANTICIPATED WORK FOR THE NEXT QUARTER

- Finish subsurface environmental assessment report summarizing the results of the ongoing assessment; submit this report to ARCO, then to the ACHA and RWQCB.

- Initiate quarterly monitoring in fourth quarter 1990.

- Initiate recovery of floating product in MW-2.

566 Hegenberger Oak
94621 CC

TABLE 1
RESULTS OF LABORATORY ANALYSIS OF SOIL SAMPLES
ARCO Station 4494
Hegenberger Road and Edes Avenue
Oakland, California
(Page 1 of 2)

Sample Identifier	TPHg	TPHd	B	T	E	X	TOG
S- 5-B1	<1.0	200	<0.005	<0.005	<0.005	<0.005	1,600
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- 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*	52,000	5,700	120	1,400	490	3,200	2,300
S-19-B2	11	14	0.25	1.2	0.22	1.5	<30
S-21-B2	<1.0	<10	<0.005	0.012	<0.005	0.021	<30
S- 5-B3	<2.0	<10	<0.050	<0.050	<0.050	<0.050	<50
S-20-B3	<2.0	<10	<0.050	<0.050	<0.050	<0.050	<50
S- 7-B4	<2.0	36	<0.050	<0.050	<0.050	<0.050	110
S-10-B4	<2.0	<10	<0.050	<0.050	<0.050	<0.050	<50
S-19-1/2-B4	<2.0	15	<0.050	<0.050	<0.050	<0.050	<50
S-22-B4	NA	<10	NA	NA	NA	NA	NA
S- 6-B5	<2.0	<10	<0.050	<0.050	<0.050	<0.050	<50

See notes at the bottom of page 2 of 2.

10/30,31 + 11/1 89
drilled B1 & B2 and
installed MW1 + MW2
Encountered ~ 2 feet of
free product.
"Work plan suspended" by LC 11/3/89
and told them to submit revised site workplan

1. which way is groundwater flow?
2. tank tests results? yes, October 90 Tank leak rates below .05 gallons
3. overfill protection?
4. determine extent of contamination
5. didn't sample MW2 - why not?

TABLE 1
RESULTS OF LABORATORY ANALYSIS OF SOIL SAMPLES
ARCO Station 4494
Hegenberger Road and Edes Avenue
Oakland, California
(Page 2 of 2)

Sample ID	TPHg	TPHd	B	T	E	X	Pb
Composite Soil Sample (Borings B-1 and B-2)							
SP-0619-1A							
SP-0619-1B							
SP-0619-1C	19	110	<0.050	<0.050	0.087	0.67	<0.5
SP-0619-1D							
Composite Soil Sample (Borings B-3 and B-4)							
S-B3-1							
S-B3-2							
S-B4-1	<2.0	<10	<0.050	<0.050	<0.050	<0.050	<0.5
S-B4-2							
S-B4-3							

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. Pb: Organic Lead
* : Results of analysis by EPA Method 8240.
B: 120 ppm T: 930 ppm E: 440 ppm X: 2,700 ppm
Naphthalene: 11.000 ppm 2-Methylnaphthalene: 6.000 ppm
Chrysene: 0.600 ppm Butylbenzylphthalate: 0.770 ppm

Sample Identification:

S-22-B4
| | |
| | └── Boring number
| └──── Approximate sample depth in feet
└────── Soil sample SP = soil sample from Stock Pile

TABLE 2
RESULTS OF LABORATORY ANALYSIS OF SOIL SAMPLES
ARCO Station 4494
Hegenberger Road and Edes Avenue
Oakland, California
(Page 1 of 2)

Sample Identifier	Total Cadmium	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
S- 5-B3	1.1	49.0	66.0	48.0
S-20-B3	2.1	55.0	79.0	45.0

See notes at the bottom of page 2 of 2.

TABLE 2
RESULTS OF LABORATORY ANALYSIS OF SOIL SAMPLES
ARCO Station 4494
Hegenberger Road and Edes Avenue
Oakland, California
(Page 2 of 2)

Sample Identifier	Total Cadmium	Chromium	Lead	Zinc
S- 7-B4	4.8	85.0	170.0	31.0
S-10-B4	2.7	63.0	88.0	44.0
S-19-1/2-B4	2.3	66.0	94.0	52.0
S- 6-B5	3.4	58.0	84.0	41.0
TTLC	**100**	**2,500**	**1,000**	**5,000**

Results in milligrams per kilogram (mg/kg), or parts per million (ppm).
TTLC: Total Threshold Limit Concentration values (Title 22 of Federal Register, January 1988)

Sample Identification:

S-11-B5

- S = Soil sample
- 11 = Approximate sample depth in feet
- B5 = Boring number

TABLE 3
RESULTS OF LABORATORY ANALYSIS OF WATER SAMPLES
ARCO Station 4494
Hegenberger Road and Edes Avenue
Oakland, California

Well Date	TPHg	TPHd	B	T	E	X	TOG
MW-1							
06/19/90	<50	<100	<0.500	<0.500	<0.500	<0.500	<5000
08/16/90	<20	NA	<0.500	<0.500	<0.500	<0.500	NA
09/07/90	NA	NA	NA	NA	NA	NA	<30
MW-3							
08/16/90	<20	<100	<0.500	<0.500	<0.500	<0.500	NA
09/07/90	NA	NA	NA	NA	NA	NA	<30
MW-4							
08/16/90	<20	<100	<0.500	<0.500	<0.500	<0.500	NA
09/07/90	NA	NA	NA	NA	NA	NA	<30

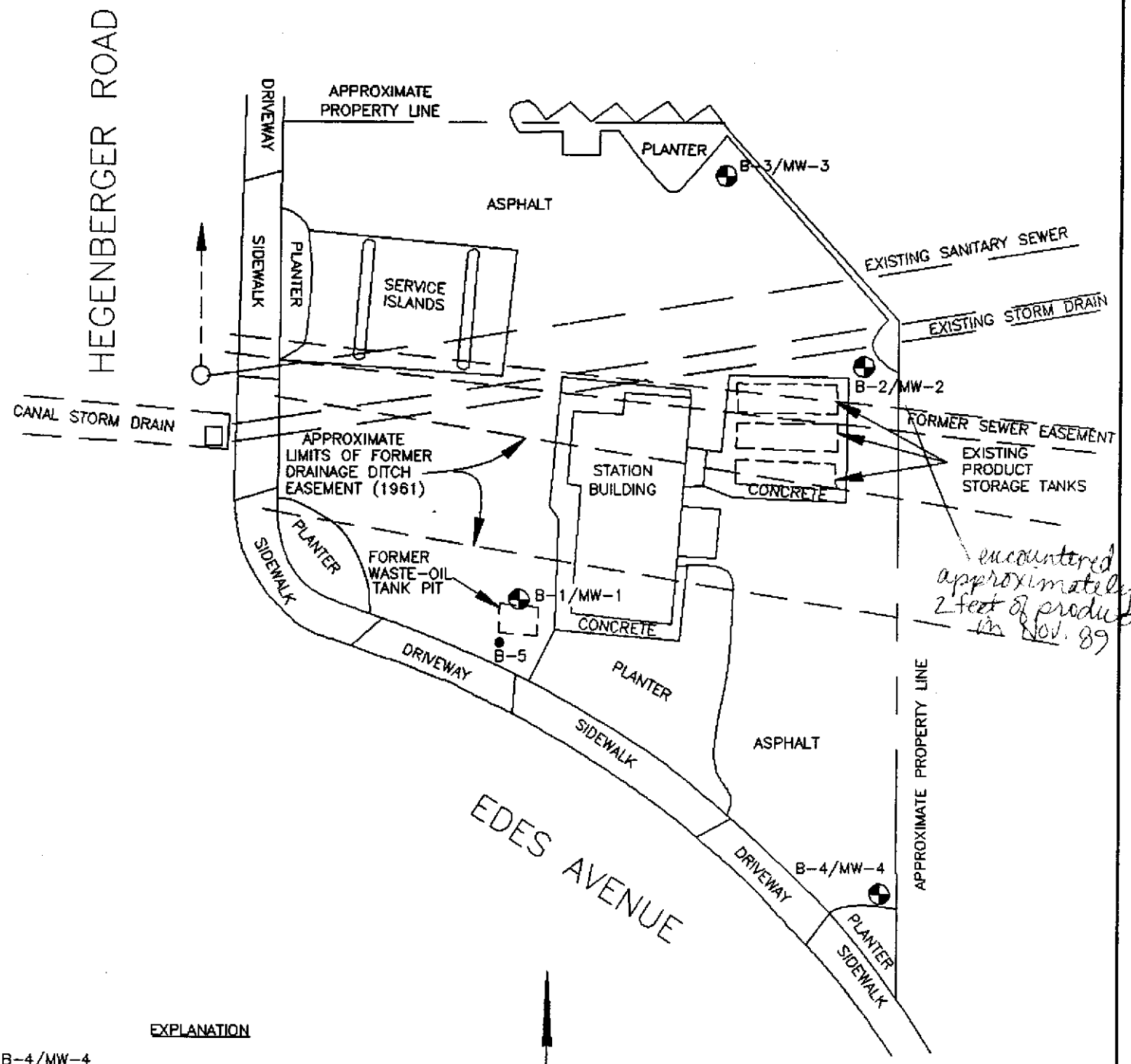
Results in micrograms per liter (ug/l), or parts per billion (ppb).
TPHg: Total petroleum hydrocarbons as gasoline.
TPHd: Total petroleum hydrocarbons as diesel.
B: benzene, T: toluene, E: ethylbenzene, X: total xylene isomers
TOG: Total oil and grease.

TABLE 4
RESULTS OF LABORATORY ANALYSIS OF WATER SAMPLES
ARCO Station 4494
Hegenberger Road and Edes Avenue
Oakland, California

Well Date	Total Cadmium	Chromium	Lead	Zinc
MW-1				
06/19/90	0.024	<0.05	0.10	0.049
08/16/90	NA	NA	NA	NA
MW-3				
08/16/90	<0.01	0.06	0.07	0.07
MW-4				
08/16/90	<0.01	<0.02	<0.02	0.03
STLC	**1.0**	**560**	**5.0**	**250**

Results in milligrams per liter (mg/l), or parts per million (ppm).

STLC: Soluble Threshold Limit Concentration values (Title 22 of Federal Register, January 1988)



Source: Modified from plans supplied by ARCO Products Co. (dated August 12, 1982) and City of Oakland Dept. of Public Works (dated December 19, 1961).

Applied GeoSystems

PROJECT 19011-1

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

PLATE 1