



PACIFIC
ENVIRONMENTAL
GROUP, INC.

April 25, 1989
Project 330-40.01

Mr. Kyle Christie
ARCO Petroleum Products Company
P.O. Box 5811
San Mateo, CA 94403

Re: ARCO Station No. 0276
10600 MacArthur Boulevard
Oakland, California

Dear Mr. Christie:

Pacific Environmental Group, Inc. (PACIFIC) is pleased to submit this report which describes the work performed for the removal of one waste oil tank at the subject site. PACIFIC's tasks included soil sampling during the removal of the existing tank and during extensions of the excavation, and laboratory analysis of the samples and advising the contractor on the extent of excavation.

BACKGROUND

ARCO Station No. 0276 is an operating service station located at 10600 MacArthur Boulevard, Oakland, California (see Figure 1). A 280-gallon tank located east of the station building was used to store waste oil (see Figure 2).

SUMMARY OF WORK

Crosby and Overton, Inc. was contracted by ARCO to perform the construction activities associated with removal and disposal of the existing waste oil tank and soils containing petroleum hydrocarbons. PACIFIC performed soil sampling and analysis. The objective of PACIFIC's sampling and analysis was to direct the contractor to remove unsaturated soil containing petroleum hydrocarbons.

An "Underground Tank Closure/Modification" was submitted to Alameda County Health Care Services Agency, Department of Environmental Health by Crosby & Overton on September 2, 1988 and accepted with modification on September 26, 1988. Tank removal was performed on September 29, 1988 and was witnessed by Mr. Robert Dawson of Oakland Fire Department Fire Prevention Bureau, and Ms. Mary Jo Meyers of Alameda County Department of Health Services. Additional soil was excavated on November 4, 1988 and on December 6, 1988.

REMOVAL OF EXISTING WASTE OIL TANK AND DEGRADED SOIL

On September 29, 1988 when the 280-gallon waste oil tank was removed, visible signs of oil staining were present on the side walls and soils underlying the tank. To obtain samples at two feet below the tank, a sampling zone specified by the County in the closure plan, the excavation was extended to approximately 7-feet deep. Even though the soils were still visibly contaminated and subject to removal, two samples were collected in this zone. Soil removed during the excavation was stockpiled on site for disposal as hazardous waste.

A PACIFIC sampling technician collected the two samples, one sample, SP-1, was taken from directly beneath the fill pipe and the other, SP-2, from a similar location at the opposite end of the tank (see Figure 2). To collect the samples, a backhoe bucket of native soil was scooped immediately following removal of the tank. Approximately three inches of soil was scraped from the surface of the soil in the backhoe bucket, then a clean brass ring was manually driven into the soil. The ends of the tube were covered with aluminum foil, capped with plastic end caps and placed in a sealed glass jar. The samples are labeled and logged onto chain-of-custody forms (enclosed). The samples were then immediately placed on ice for transport to International Technology Corporation in San Jose California, a state-certified laboratory.

The soil samples were analyzed for parameters specified within the "Regional Board Staff Recommendations for Initial Evaluation and Investigation of Underground Tanks, June 2, 1988". Analysis included volatile organic compounds according to EPA Methods 624 and 8240, high

boiling hydrocarbons total oil and grease according to EPA Method 3550, and low boiling hydrocarbons by a technique taken from EPA Methods 8015, 8020, and 5030. These laboratory methods are described on the enclosed certified analytical report. Total oil and grease was detected in SP-1 and SP-2 at 5,600 ppm and 3,300 ppm, respectively. High boiling hydrocarbons (calculated as oil) were detected at 7,300 ppm and 4,800 ppm, respectively. A summary of all analytical results is presented on Tables 1 and 2.

On November 4, 1988, the waste oil tank excavation was extended to a depth of 10 feet. The PACIFIC sampling technician directed the contractor to excavate visibly contaminated soil, evident by the dark, oily appearance. When visibly contaminated soil is removed, petroleum hydrocarbon concentrations in the remaining soil are typically absent. The excavated soil was stockpiled on site for subsequent disposal as hazardous waste.

After the excavation was extended, PACIFIC obtained two soil samples (W0-A and W0-B) at the 10-foot depth, at locations directly below samples SP-1 and SP-2 using the sample collection method described above. These samples were analyzed for metals according to EPA Method 6010, semi-volatile organic compounds according to EPA Method 8270, volatile organic compounds according to EPA Method 624 and 8240, total oil and grease by EPA Method 3350, and low or high boiling point hydrocarbons. Total oil and grease was detected in W0-A and W0-B at 30 ppm and 220 ppm, respectively. High boiling hydrocarbons (calculated as oil) were detected at 30 ppm and 110 ppm, respectively. Chromium and zinc were detected in both samples, at concentrations ranging from 35 ppm to 53 ppm. Analyses detected no semi-volatile or volatile organic compounds.

To define the lateral extent of hydrocarbons in the soil, PACIFIC also collected four soil samples (W0-C, W0-D, W0-E, and W0-F) from the side walls, at a depth of 7 feet. The side wall samples were analyzed for oil and grease and high boiling hydrocarbons. Laboratory analyses detected total oil and grease in the north, east, south, and west side walls at 880 ppm, 10 ppm, 15,000 ppm, and 380 ppm, respectively. High boiling hydrocarbons (calculated as oil) were detected at 1,100 ppm, <10 ppm, 21,000 ppm, and 500 ppm, respectively.

On December 6, 1988, PACIFIC directed the contractor to laterally extend the waste oil tank excavation 6 1/2 feet on the south side and 1 foot on the north side. The southern portion of the pit was deepened to 12 feet to remove residual petroleum hydrocarbons beneath SP-2 and WO-B. Although analytical results showed that the west side wall contained petroleum hydrocarbons, additional soil excavation into this wall was not possible because of the wall's proximity to the station building. Water was encountered at 10 feet only slightly beneath where samples WO-A and WO-B had been collected. No floating product or sheen was visible on the water surface. Sidewall samples WO-D2 and WO-F2 were taken from the north and south side walls of the extended pit at an approximate depth of 8 feet. Analyzed for oil and grease and high boiling hydrocarbons, the samples did not contain detectable petroleum hydrocarbons.

Disposal of approximately 50 tons excavated soil as hazardous waste was handled by ARCO and their disposal contractor, Dillard Trucking. Soil was hauled to Chemical Waste Management's Kettleman Hills facility. Manifest are maintained by ARCO.

CONCLUSION

The excavation program achieved removal of petroleum hydrocarbons in soil, with the exception of the soil on the west side wall of the excavation. Oil and grease was detected in the west side wall soil sample at 380 ppm, and high boiling hydrocarbons (calculated as oil) were detected at 500 ppm. The excavation was not extended on the west side wall because further soil removal would have threatened the foundation of the station building.

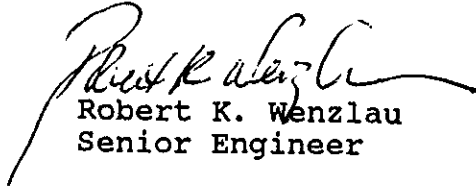
Based on the finding of the investigation, an "Underground Storage Tank Unauthorized Release (Leak)/Contamination Site Report" was issued on October 14, 1988.

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If you have any questions concerning the content of this report, please call.

Sincerely,

PACIFIC ENVIRONMENTAL GROUP, INC.


Robert K. Wenzlau
Senior Engineer

RKW/jj

enclosures

cc: Chris Winsor, ARCO
Lawrence Seto, Alameda County Department
of Environmental Health
Don Dalke, Regional Water Quality Control Board



TABLE 1

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

Sample ID	Depth	<u>Low Boiling Hydrocarbons</u>	<u>High Boiling Hydrocarbons</u>			<u>Oil & Grease</u>
		Gasoline	Diesel	Oil	Stoddard	
(Beneath Tank Ends)						
SP-1	7'	40.*	<300.	7,300.	160.	5,600.
WO-A	10'	<5.	<10.	30.	ND	30.
SP-2	7'	50.*	<300.	4,800.	110.	3,300.
WO-B	10'	<5.	10.	110.	ND	220.
(Side Walls)						
NO. NTH WO-C	7'	NT	60.	500.	ND	380.
EAST WO-D	7'	NT	140.	1,100.	ND	880.
SOUTH WO-E	7'	NT	<10.	<10.	ND	10.
WEST WO-F	7'	NT	2,500.	21,000.	ND	15,000.
EAST WO-D2	7'	NT	<10.	<10.	ND	<20.
WEST WO-F2	7'	NT	<10.	<10.	ND	<20.

SP1, SP2 TAKEN
 SEPT 29, 1988

WO-A, WO-B TAKEN
 NOV. 4, 1988

WO-C, D, E, F TAKEN
 NOV 4, 88

WO-D2 & WO-F2 TAKEN

ND = Not Detected

NT = Not Tested

* = Chromatographic pattern of compounds detected and calculated as gasoline does not match that of the gasoline standard.

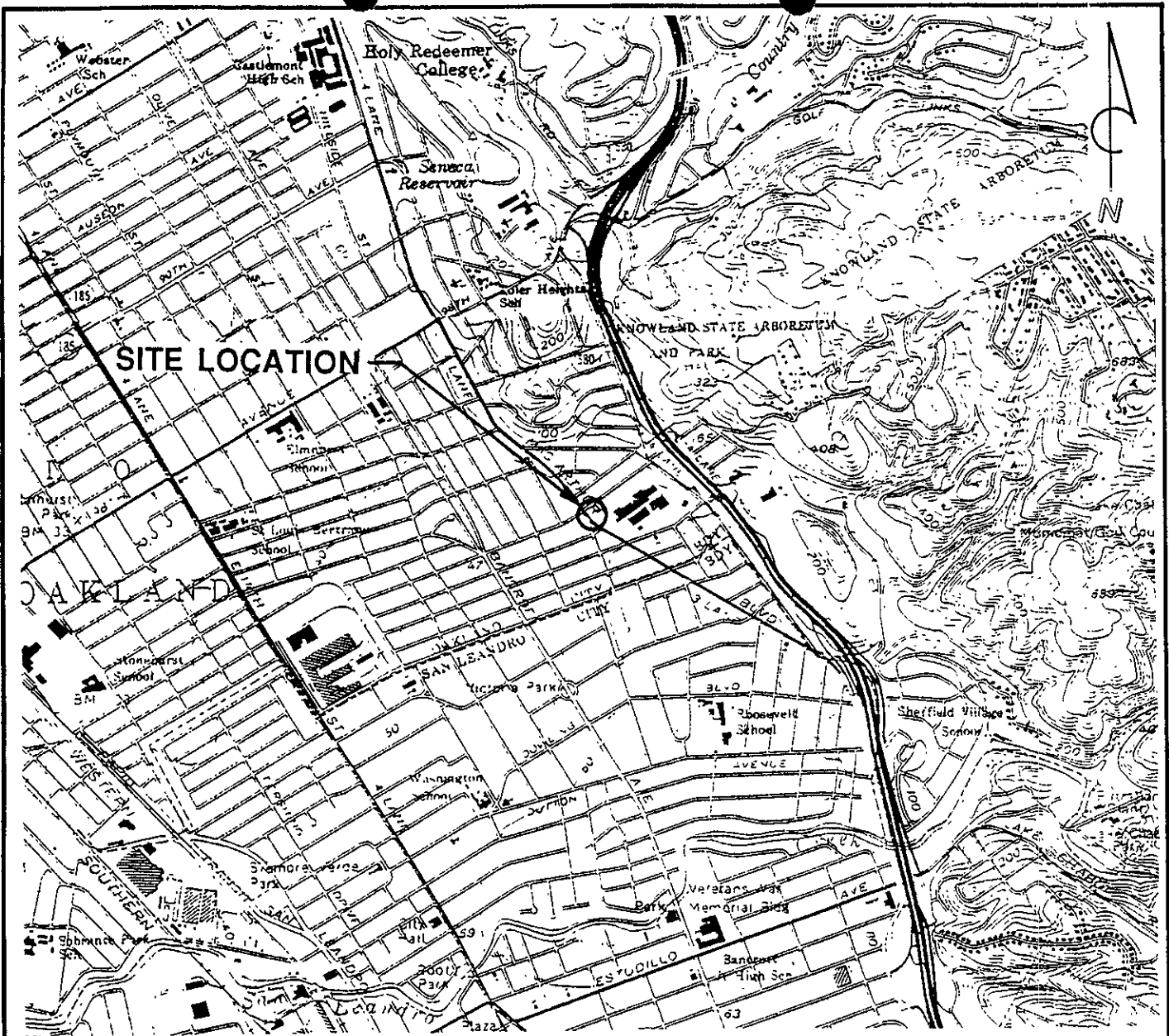
TABLE 2

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

<u>Sample ID:</u>	SP-1	SP-2	WO-A	WO-B
<u>Volatile Organic Compounds</u>	Toluene: 0.76 Other tested compounds: ND	Xylenes: 0.1 Other tested compounds: ND	ND	ND
<u>Semi-volatile Organic Compounds</u>	NT	NT	ND	ND
<u>Metals</u>				
Cadmium	NT	NT	ND	ND
Chromium	NT	NT	48.	53.
Lead	NT	NT	ND	ND
Zinc	NT	NT	35.	48.

NT = Not tested

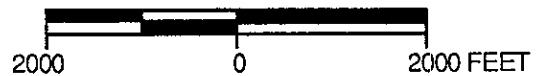
ND = None detected. See attached Certified Analytical Report
for detection limits.



QUADRANGLE LOCATION

REFERENCE:
 USGS 7.5 MIN. TOPOGRAPHIC MAP
 TITLED: OAKLAND EAST, CALIFORNIA
 DATED: 1959 REVISED: 1980
 TITLED: SAN LEANDRO, CALIFORNIA
 DATED: 1959 REVISED: 1980

SCALE



PACIFIC ENVIRONMENTAL GROUP, INC.

ARCO STATION #0276
 10600 MacArthur Boulevard
 Oakland, California

SITE LOCATION MAP

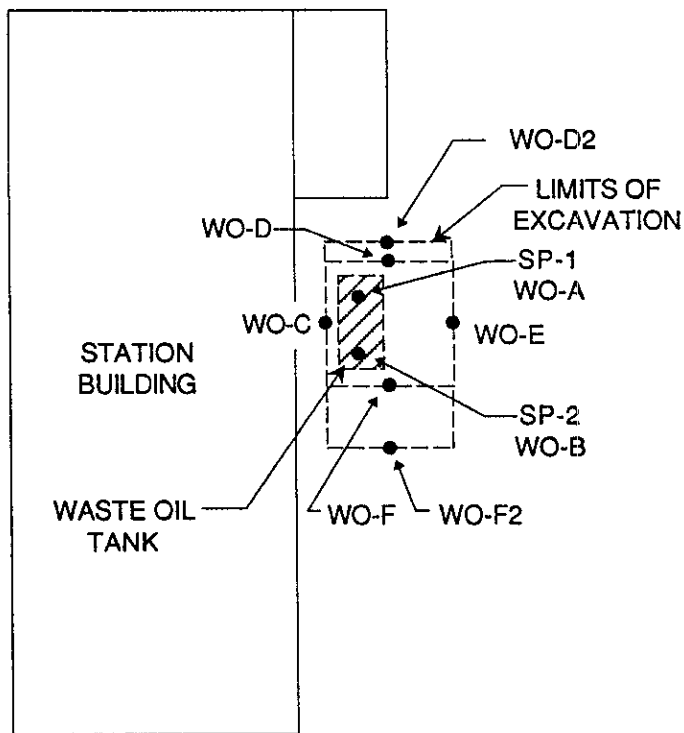
FIGURE:
 1
 PROJECT:
 330-40.01

106th AVENUE



MACARTHUR BOULEVARD

PRODUCT ISLANDS



NOT TO SCALE



PACIFIC ENVIRONMENTAL GROUP, INC.

ARCO STATION #0276
10600 MacArthur Boulevard
Oakland, California

SITE MAP

FIGURE:
2
PROJECT:
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