WORK PLAN
FOR
PRELIMINARY SOIL AND
GROUNDWATER INVESTIGATION

AT

STERN PROPERTY COMPANY SITE
PIEDMONT PLAZA PROJECT
175 41ST STREET
OAKLAND, CALIFORNIA

INTRODUCTION

Exceltech, Inc. at the request of Stern Property Company, proposes the following work plan to determine the extent of petroleum hydrocarbon contamination at the proposed Piedmont Plaza site at 175 41st Street, Oakland, California (see Figures 1 and 2). This site was previously occupied by a gasoline service station with underground storage tanks and a hydraulic hoist which may have released petroleum hydrocarbon products into the surrounding soil.

SITE HISTORY

In October and November 1990, Exceltech removed three underground fuel storage tanks, one underground waste oil tank and another firm removed the hydraulic hoist. Laboratory analyses of soil samples collected from beneath the underground storage tanks detected low levels of petroleum hydrocarbons and metals, and analyses of soil samples from beneath the hydraulic hoist detected high levels of petroleum hydrocarbons. Addition excavation around the hydraulic hoist revealed an approximately 2 feet thick layer of what appeared to be highly contaminated soil at a depth interval of approximately 5 feet to 7 feet below the surface. The lateral extent of this layer is not known (Exceltech, 1990).

PROPOSED SCOPE OF WORK

Exceltech recommends a scope of work which will include exploratory borings and soil sampling for laboratory analyses to obtain information regarding the vertical and lateral extent of contamination; the depth to groundwater; and the various soil types beneath the site from the ground surface to the groundwater. In addition, at selected locations groundwater samples for laboratory analyses will be collected from borings through the use of a HydroPunch™ groundwater sampling device. The work will be conducted in two phases consisting of; exploratory drilling and soil sampling with

HydroPunch™ sampling and exploratory drilling and soil sampling without HydroPunch™ sampling.

Two or three borings will involve HydroPunch™ sampling. One will be located near the former hydraulic hoist, one near the former underground fuel tanks and a possible HydroPunch™ sample located near a boring drilled by a geotechnical firm in which petroleum hydrocarbon odors were noted (see Figure 3). The decision to use HydroPunch™ sampling at this last boring will be made by the on-site Exceltech geologist. If, in the opinion of the geologist, the groundwater at this location appears to be contaminated with petroleum hydrocarbons a HydroPunch™ water sample will be obtained.

Exploratory borings in which it is not anticipated that the HydroPunch™ technique will be utilized include a boring located between the underground fuel storage tanks and the geotechnical boring located near the northern corner of the site (see Figure 3). This boring will be sampled and advanced to a depth of 20 feet. If in the opinion of the on-site Exceltech geologist the soil sample recovered from the 20 feet sampling interval is contaminated the boring will be advanced in 5 foot increments until the end of contamination, as determined by field examination, has been reached or groundwater is encountered.

The rest of the exploratory borings will be drilled for the purpose of determining the extent of the layer of apparently contaminated soil discovered near the hydraulic hoist. These borings will advanced to the depth of the apparently contaminated layer and then advanced to the next sampling interval. If in the opinion of the on-site Exceltech geologist, the soil from this sampling interval appears to be contaminated selected borings may be advanced in 5 foot increments until the end of contamination, as determined by field examination, has been reached or groundwater is encountered. These borings will be spaced at 10 to 20 foot intervals as determined by the on-site Exceltech geologist, radiating outward in four directions from the hydraulic hoist excavation until the end of the contaminated layer or the property line are reached (see Figure 3). The number of these borings cannot be determined at this time.

Exploratory Drilling and Soil Sampling

Prior to any drilling, Exceltech will contact Underground Service Alert (USA) so that the underground utilities on adjacent public right-of-ways can be marked by their respective companies. Exceltech then will drill the borings at the approximate locations shown in Figure 3 using a truck-mounted drill rig and hollow-stem auger. The auger and other tools used in the hole will be steam cleaned before use. Relatively undisturbed soil samples will be collected following Exceltech's soil sampling protocol (Appendix A) at 5-foot depth intervals or at any significant change in lithology. A pre-cleaned modified California split-spoon sampler with pre-cleaned internal brass liners

will be used to collect the samples. The boring will be advanced to the desired sampling depth and the sampler will be lowered to the bottom of the hole. It will be driven ahead of the auger, removed from the boring and disassembled into its components parts. The lowermost brass liner with sample will be capped, labeled, logged on a chain-of-custody form, and placed in a chilled ice chest for transport to a state-certified laboratory for analysis.

An Exceltech geologist will prepare a description of the subsurface conditions encountered during drilling. The encountered soils will be classified using the Unified Soil Classification System and Munsell Soil Color Charts. All boring logs will be reviewed by a California certified engineering geologist. The geologist will also conduct a field test for hydrocarbon contaminant vapors from selected soil samples using a portable photoionization detector.

Drill cuttings will be placed on and covered with plastic sheeting and left at the site. Once laboratory analytical results are known the soil will be property disposed of by Stern Property Company. After drilling and sampling are completed all boreholes will be backfilled with a cement grout mixture.

HYDROPUNCH™ GROUNDWATER SAMPLING

The HydroPunch™ groundwater sampler is constructed almost entirely of stainless steel and teflon, with vitron o-rings and a polypropylene screen. It is just over 4-1/2 feet long, has an outside diameter (O.D.) of 2-inches and weighs approximately 25 pounds. After drilling to the desired depth a 48-inch long polypropylene screen is attached to a drive point and sealed inside the sampler's stainless steel body. The sampler is attached to the drill rod, lowered to the bottom of the boring and driven to the desired depth. As the sampler is pushed or driven through the soil the polypropylene screen is shielded in a watertight housing that prevents contaminated soil or groundwater from entering the sampler. The shape of the sampler and its smooth exterior surface prevent the downward transport of the surrounding soil and liquid as the tool is advanced. When the desired sampling depth is reached the stainless steel body is withdrawn approximately 45 inches, leaving the point in the ground and exposing the screen so that groundwater and floating product can enter. A 1-inch O.D. clear acrylic bailer can be lowered through the hollow-stem of the drive casing and the HydroPunch™ body into the polypropylene screen to collect groundwater samples to check for the presence of floating product and for laboratory analyses. After sampling is complete the HydroPunch™ body is removed from the borehole leaving behind the drive point and the screen.

LABORATORY ANALYSES

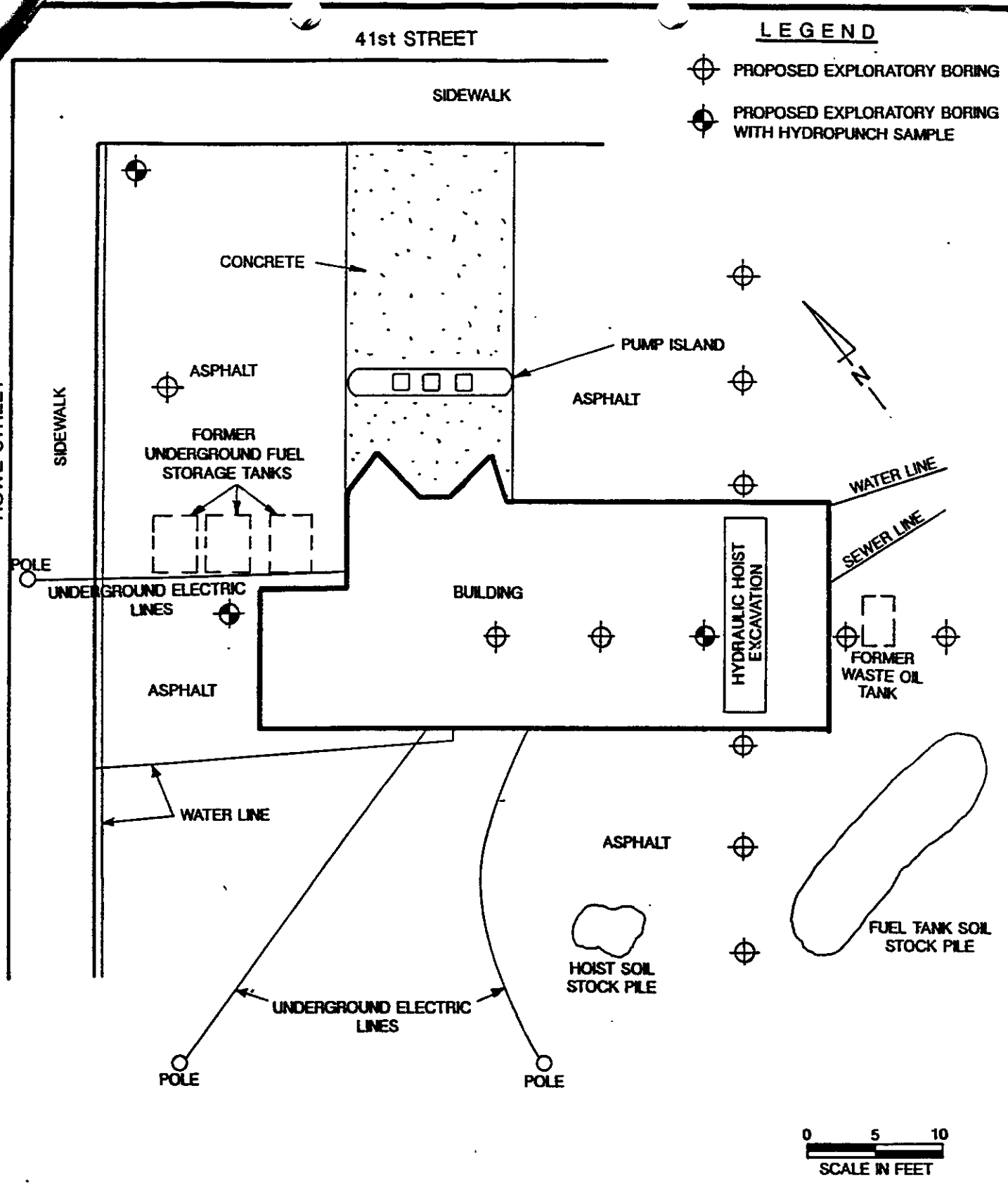
According to laboratory analyses of soil samples collected by Exceltech (Exceltech, 1990) from the hydraulic hoist excavation, high concentrations of gasoline and oil and grease were detected and low concentrations of diesel fuel were detected. Therefore in compliance with the recommendations of the California Regional Water Quality Control Board (CRWQCB), San Francisco Bay Region (CRWQCB, 1990) the soil samples from the three borings, located in the northern corner, near the underground fuel tanks and one midway between the underground fuel tanks and the northern corner will be analyzed for total petroleum hydrocarbons as gasoline (TPHG), benzene, toluene, ethyl benzene, and total xylenes (BTEX). Selected soil samples from borings located near the hydraulic hoist will be analyzed for TPHG, BTEX, and total petroleum oil and grease (TPOG).

The HydroPunch™ water samples collected from the two or three borings will be analyzed for TPHD, TPHG, and BTEX. All analyses will be performed by a laboratory certified by the California Department of Health Services to perform hazardous waste analysis.

REPORT

Exceltech will prepare a preliminary soil investigation report presenting the findings of the investigation. The report will include:

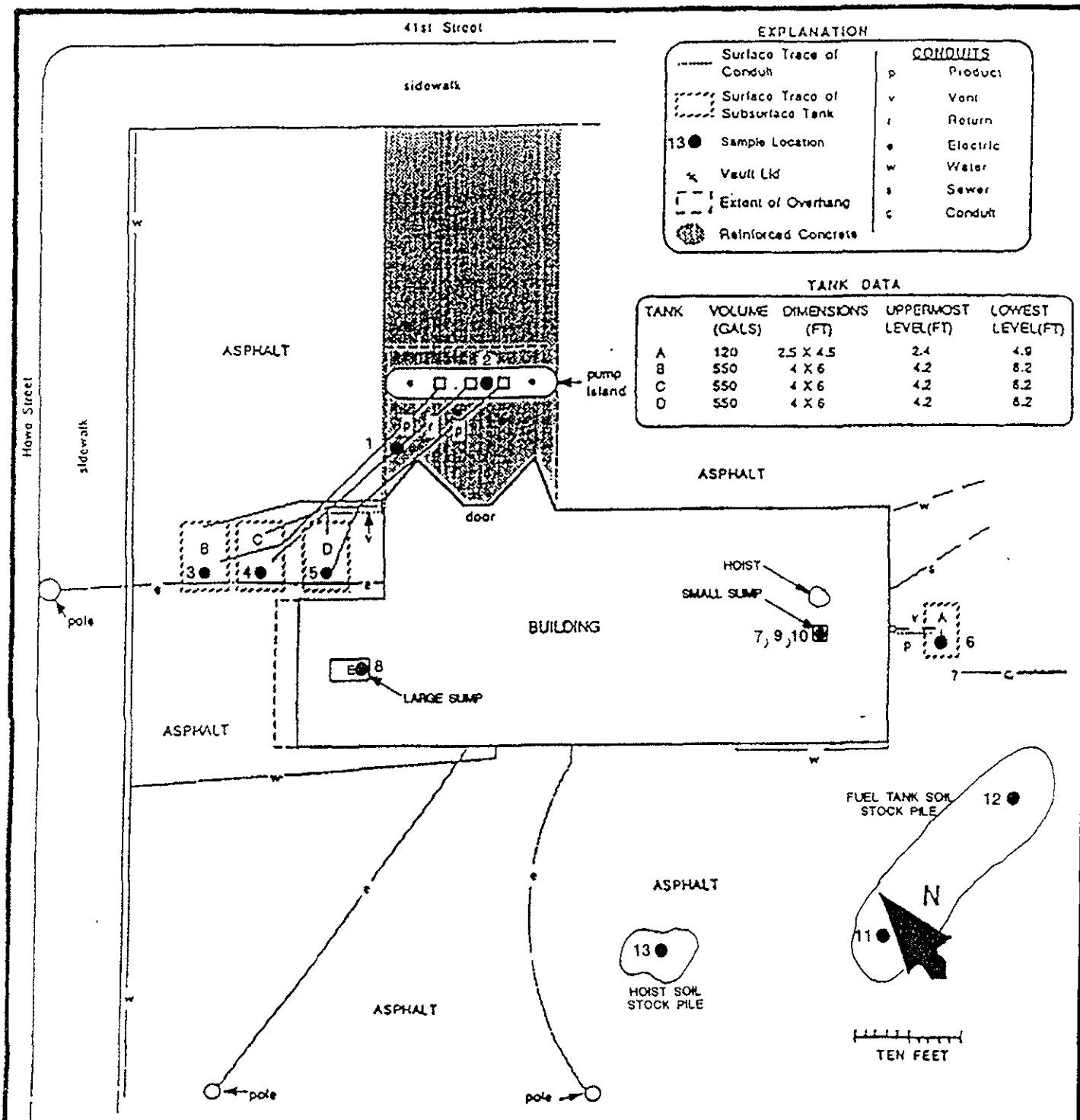
- The signature and certification number of a State of California certified engineering geologist.
- Field procedures for exploratory borings.
- Field procedures for HydroPunch™ sampling.
- Boring logs for each new exploratory boring drilled by Exceltech.
- A site map showing features relevant to the investigation.
- Results of analytical testing.
- Interpretation of data.
- Recommendations.



SOURCE: MODIFIED FORM SITE MAP BY SPECTRUM E.S.I.

EXCELTECH

SITE PLAN		
STERN PROPERTY COMPANY SITE	REVIEWED BY:	APPROVED BY:
175 41st STREET	JOB #: 3-30060-31	DRAWN BY: J.D.S.
OAKLAND, CALIFORNIA	DATE: 2/14/91	DRAWING #: FIG. 3



TANK DATA

TANK	VOLUME (GALS)	DIMENSIONS (FT)	UPPERMOST LEVEL(FT)	LOWEST LEVEL(FT)
A	120	2.5 X 4.5	2.4	4.9
B	550	4 X 6	4.2	8.2
C	550	4 X 6	4.2	8.2
D	550	4 X 6	4.2	8.2

MAP ILLUSTRATING THE POSSIBLE LOCATION OF UNDERGROUND TANKS AND BELOW GROUND FACILITIES ON A PORTION OF A PREVIOUS GASOLINE STATION

*Not all below ground facilities may be represented on this map.

ORIGINAL PLATE BY:

SPECTRUM E.S.I.
ENVIRONMENTAL GEOMETRICAL SURVEYS & UNDERGROUND LOCATION

EXCELTECH

SITE MAP

STERN PROPERTY COMPANY

175 41st STREET

OAKLAND, CALIFORNIA

REVIEWED BY:	APPROVED BY:
JOB #: 310026-11	DRAWN BY: S.G.P.
DATE: 12/6/90	DRAWING #: FIG. 1

TANK AND HOIST REMOVAL FROM 175 41ST STREET, OAKLAND | Date: 12-DEC-90 | Printer Range: A1.M120
LABORATORY TEST RESULTS | File: PPTEST2 | Directory: C:\LOTUS\RE90 | Printer Setup: \015

Sample Number	Date Tested	Location	Test Performed EPA No.	Description	Concentration (ppm)
S-1	11/08/90	Midpoint fuel product line	5030/8015	TPHG	1.9
			5030/8020	BTEX	.097, .056, .12, .37
S-2	11/08/90	Middle of fuel dispensing island	5030/8015	TPHG	6.2
			5030/8020	BTEX	.047, .076, .14, N.D.
S-3	11/08/90	South side of Tank B	5030/8015	TPHG	N.D.
			5030/8020	BTEX	N.D., N.D., N.D., N.D.
S-4	11/08/90	South side of Tank C	5030/8015	TPHG	4.7
			5030/8020	BTEX	N.D., .0050, .010, .066
			5520	O&G	N.D.
			5030/8010	HVOs	N.D.
			8270	PCBs	N.D.
			Heavy Metals	Cd, CR, Pb, ZN	N.D., 51, 3.7, 490
S-5	11/08/90	South side of Tank D	5030/8015	TPHG	6.5
			5030/8020	BTEX	N.D., N.D., .0070, .021
S-6	11/08/90	Tank A (Waste Oil)	5030/8015	TPHG	N.D.
			5030/8020	BTEX	N.D., N.D., N.D., N.D.
			5520	O&G	N.D.
			5030/8010	HVOs	N.D.
			8270	PCBs	N.D.
			Heavy Metals	Cd, CR, Pb, ZN	N.D., 47, 3.9, 280
S-7	11/08/90	Hoist excavation, backhoe bucket	5030/8015	TPHG	1200
			5030/8020	BTEX	48, 4.1, 1.6, 10
S-8	11/08/90	Underneath Sump E	5030/8015	TPHD	4.4
			5030/8020	BTEX	.15, .12, .23, N.D.
			5520	O&G	N.D.
			5030/8010	HVOs	N.D.
			8270	PCBs	N.D.
			Heavy Metals	Cd, CR, Pb, ZN	N.D., 38, 5.1, 24

Sample Number	Date Tested	Location	Test Performed EPA No.	Description	Concentration (ppm)
S-9	11/20/90	Side of hoist excavation, minus six feet, black clay	3550/8015	TPHD	[illegible]
			5030/8020	BTEX	.48, 2.8, 2.4, 15
			5520	O&G	[illegible]
			5030/8010	HVOs	N.D.
			8270	PCBs	Refer to test results
			Heavy Metals	Cd, CR, Pb, ZN	N.D., 0.88, 37, 54
S-10	11/20/90	Bottom of hoist excavation, minus ten feet, yellow clay	3550/8015	TPHD	[illegible]
			5030/8020	BTEX	N.D., 0.16, 0.19, 0.90
S-11	11/20/90	Fuel tank excavation, soil stockpile, west side	3550/8015	TPHD	[illegible]
			5030/8020	BTEX	.15, .17, .22, 3.5
S-12	11/20/90	Fuel tank excavation, soil stockpile, east side	3550/8015	TPHD	[illegible]
			5030/8020	BTEX	.40, 1.1, 2.0, 6.0
S-13	11/20/90	Hoist excavation Soil Stockpile	3550/8015	TPHD	[illegible]
			5030/8020	BTEX	N.D., .0080, .030, .15