FINAL
ENVIRONMENTAL SITE ASSESSMENT: PHASE II

at

2805 West Commodore Way
Seattle, Washington

Prepared for

Time Oil Company

April 6, 2001

Prepared by

FOSTER WHEELER

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1. INTRODUCTION

In November 2000, Foster Wheeler Environmental Corporation (Foster Wheeler Environmental) completed Phase I Environmental Site Assessments (ESAs) at seven properties owned by the Time Oil Company (TOC) located along West Commodore Way, in Seattle, Washington. The results of the Phase I ESA activity were documented in Phase I ESA reports prepared for each of the seven properties (Foster Wheeler Environmental 2000).

The Phase I ESA report prepared for the property located at 2805 West Commodore Way (Property) (Figure 1-1) indicated that additional investigation was required to better understand subsurface conditions in three areas of the Property. Consequently, Phase II ESA activities were initiated at the Property in November 2000. This report presents the results of the Phase II ESA activities of the property located at 2805 West Commodore Way, Seattle, Washington.

1.1 PURPOSE AND REPORT ORGANIZATION

The purpose of the Phase II field activities is to evaluate the subsurface conditions in specific areas identified during the Phase I ESA. This report is organized into six sections and two appendices as follows:

- Section 1 – Introduction
- Section 2 – Property History and Previous Investigations
- Section 3 – Field Activities
- Section 4 – Analytical Results
- Section 5 – Conclusions and Recommendations
- Section 6 – References
- Appendix A – Soil Boring Logs
- Appendix B – Laboratory Data Packages

1.2 PROJECT OBJECTIVES

The results of the Phase I ESA conducted at the Property suggested that further action be conducted at three areas at the Property to better quantify conditions in the subsurface. Figure 1-2 shows the layout of the Property and the areas investigated. These three areas and the justification for additional investigation are as follows:

1) Steam Cleaning Area—A steam cleaning area is located near the southeast corner of the ASKO Hydraulic, Inc. (ASKO) building. Oily water is collected in a floor drain and transferred to an oil/water separator located in the building immediately to the west. One soil boring was recommended in this area to evaluate the subsurface conditions.
2) Heating Oil Underground Storage Tank (UST)—During the employee interview process, it was discovered that a 500-gallon or smaller heating oil UST had been removed from the northeast corner of the ASKO building. There were no records or reports available to confirm this action or what the subsurface conditions were at the time of removal. Subsequently, soil borings were recommended to evaluate the subsurface conditions in the area of the suspected former UST.
3) Oil and Solvent Storage Area—An oil and solvent storage area is located just northeast of the steam cleaning area. Two soil borings were recommended in this area to evaluate the subsurface conditions.

1.3 PROPERTY DESCRIPTION

Site Address:	ASKO Hydraulic, Inc. 2805 West Commodore Way Seattle, Washington 98199
Property Owner:	Time Oil Company 2737 West Commodore Way Seattle, Washington 98199
Legal Description:	Section 11, township 25 north, range 3 east, Lawton Park, portions of Blocks 3, 4, and 5.

2. PROPERTY HISTORY AND PREVIOUS INVESTIGATIONS

Information about the history of the Property was derived from a review of available documents, historical photographs, and regulatory records. Former and current employees of TOC were also interviewed.

The Property, which was originally divided into smaller lots, was acquired by TOC from 1946 to approximately 1950. According the historical photographs, the Property was undeveloped in 1936. By 1946 the Property had been cleared and was used by TOC for the staging of empty 55-gallon drums. A photograph from 1960 showed the Property being

used as a parking lot. The current facility on the Property appears for the first time in the 1974 photograph, after being constructed in the late 1960s. The facility was originally built to service TOC's vehicles. From 1974 to 1976 the facility was used by Precision Engineering Specialists for marine and truck engine rebuilding. From 1976 to 1979 the facility was used as a warehouse and machine shop by Select Industries. Select Industries became ASKO Hydraulic in 1979.

Mr. Bill Thompson (ASKO) was interviewed during the Phase I ESA. According to Mr. Thompson, several changes have occurred at the Property since it was originally built. The oil storage shed was added around 1996. Until then petroleum products were stored on a rack in the area. The change was made in response to current regulations and the local fire marshal directives. According to Mr. Thompson, a small (<500 gallons) heating oil UST was removed outside the northeast corner of the building. No reports were available regarding the removal of this UST. However, the King County Department of Design, Construction, and Land Use has a permit application from 1964 on file for the installation of two 55-gallon USTs on the Property. The presence of a second UST could not be confirmed.

No previous investigations have been conducted at the facility.

3. FIELD ACTIVITIES

Field activities at 2805 West Commodore Way included soil borings, soil sampling, and surveying. The following sections describe the methodology used to complete the field activities.

3.1 SOIL BORINGS

3.1.1 Soil Boring Locations

Six soil borings were drilled at the following locations as part of the Phase II ESA at the Property (Figure 3-1):

Steam Cleaning Area:

- Boring SB-40 was located in the steam cleaning area and advanced to a depth of 15 feet (groundwater was not contacted).

Former Heating Oil UST:

- Boring SB-46 was located to the north of the former heating oil tank and advanced to a depth of 25 feet where groundwater was contacted.
- Boring SB-47 was located in the center of the former heating oil tank and advanced to a depth of 25 feet (groundwater was not contacted).
- Boring SB-48 was located to the east of the former heating oil tank and advanced to a depth of 25 feet (groundwater was not contacted).

Oil and Solvent Storage Area:

- Boring SB-49 was located west of the oil rack and advanced to a depth of 15 feet (groundwater was not contacted).
- Boring SB-50 was located east of the oil rack and advanced to a depth of 15 feet (groundwater was not contacted).

3.1.2 Soil Boring Methods

Five of the six soil borings drilled at the Property were drilled with a CME 75 high torque drill rig operated by Cascade Drilling. The soil boring located in the steam cleaning area was drilled with a limited access rig. The augers used on both rigs were 4.25-inch inner diameter (ID) hollow stem. Split-spoon samples were driven every 5 feet to describe lithologies and collect soil samples. An extra split-spoon sample was driven at the 2-foot-depth interval. Split-spoon samples were 12 inches long (not including the shoe), 2-inch ID, and driven by a 300-pound down-hole jar hammer. Appendix A contains the soil boring logs for the Property.

3.1.3 Soil Sampling Methods

Soil samples were collected directly from the split-spoon and placed in the appropriate laboratory-supplied sample container. The samples were analyzed for gasoline; benzene, toluene, ethylbenzene, and xylene (BTEX) using NWTPH-Gx/BTEX Method; diesel and oil using NWTPH-Dx; total metals using U.S. Environmental Protection Agency (EPA) 6010A/7000A series; and volatile organic compounds (VOCs) using EPA Method 8260. The gasoline/BTEX and VOCs samples were collected first out of each spoon. The sample containers were placed in sealed plastic bags and placed directly into a chilled cooler for transport to the laboratory. North Creek Analytical (Bothell, Washington) received the samples at the end of each day in the field.

The split-spoons were decontaminated by thoroughly washing them in soapy water, rinsing with water, rinsing with methanol, and finally rinsing with deionized water supplied by the analytical laboratory.

3.1.4 Field Screening Methods

Soil samples were screened in the field using a photoionization detector (PID) HNu Model P101 equipped with a 10.2 electron volt lamp. A few of the samples were screened using a Hanby Field Test Kit designed for detecting petroleum in soil. The Hanby Kit is a semi-quantitative kit where 5 grams of soil are mixed with a proprietary extract, then the extract is decanted and mixed with a catalyst and agitated for 4 minutes. The extract reacts with the catalyst. The color change in the extract indicates the type of fuel present and approximate concentration.

3.2 SURVEYING

The surveying of the soil boring locations was conducted by Inca Engineering, Inc. Horizontal control was specified to 0.1 foot, based on Washington State Plane Coordinate System, North America Datum (NAD) 83/91 City of Seattle. Vertical control was specified to 0.01 foot, based on the National Geodetic Vertical Datum, North America Vertical Datum (NAVD) 88 City of Seattle. Table 3-1 lists the soil borings, survey data, and total depths of each boring.

3.3 INVESTIGATION-DERIVED WASTE

Soil cuttings from the Property were collected in the bucket of a loader and taken to the stockpile on the west end of the parking lot at 2737 West Commodore Way for disposal by TOC. Decontamination water was collected by the drilling company in 55-gallon type 1A drums, transferred to TOC, and stored behind the warehouse at 2737 West Commodore Way.

4. ANALYTICAL RESULTS

Soil samples were analyzed by North Creek Analytical Labs in Bothell, Washington. Where applicable, results were compared to Washington State Department of Ecology's (Ecology) proposed Method A soil cleanup levels for unrestricted land use. Ecology's proposed rule does not differentiate between industrial property and unrestricted land use, and is expected to be adopted within 6 months. Proposed soil cleanup levels for diesel and oil are higher

than the current MTCA Method A cleanup levels, and proposed soil cleanup levels for gasoline have been divided into two categories: gasoline without benzene and less than 20 percent aromatics between EC8 and EC16 (proposed soil cleanup level of 100 mg/kg); and all other gasoline mixtures (proposed soil cleanup level of 30 mg/kg). Proposed BTEX cleanup levels for soil have been lowered. Groundwater concentrations were compared to the MTCA Method A cleanup levels for groundwater. Appendix B contains the laboratory data packages for the samples collected at the Property. In addition to the data from 2805 West Commodore Way, data packages B0K0576 and B0K0638 contain results for samples collected at other properties not related to this Property. The data packages are presented in their entirety to allow the reader to evaluate the environmental data with the associated quality assurance/quality control data.

4.1 FORMER HEATING OIL UST

Three soil borings were located near the former heating oil UST. Seventeen soil samples were collected from three soil borings and analyzed for gasoline, diesel, and oil. Summaries for the analytical results are presented in Tables 4-1 through 4-3. Gasoline was not detected above the method reporting limit (5.00 mg/kg) in any of the samples collected. Diesel was detected at 2 feet (90.8 mg/kg) and at 10 feet (10.7 mg/kg) in boring SB-46. Oil was also detected at 2 feet (147 mg/kg) in SB-46. Diesel and oil were detected at 2 feet in SB-47 at concentrations of 87.9 mg/kg and 160 mg/kg, respectively. The concentrations detected were below the Model Toxics Control Act (MTCA) Method A cleanup levels for residential soil. None of the other samples from SB-46 and SB-47 contained concentrations of gasoline, diesel, or oil above the method reporting limit.

VOCs were not detected above the method reporting limit in any of the soil samples collected near the former heating oil UST.

None of the metals detected exceeded the MTCA Method A cleanup levels for residential soil.

4.2 STEAM CLEANING AREA

One soil boring (SB-40) was installed in the center of the steam cleaning area. Gasoline was detected at a depth of 10 feet (8.05 mg/kg). Diesel and oil were not detected in the soil samples from this boring. The concentration of gasoline detected was below the MTCA Method A cleanup level for residential soils.

Trichloroethene (TCE) was detected (0.170 mg/kg) at a depth of 10 feet. Samples from the other depth intervals did not contain concentrations of VOCs above the method reporting limit.

None of the metals detected exceeded the MTCA Method A cleanup levels for residential soil.

4.3 OIL STORAGE AREA

Two soil borings (SB-49 and SB-50) were installed near the oil storage area. Gasoline, diesel, and oil were detected at a depth of 2 feet in SB-49 at concentrations above the MTCA cleanup level. Gasoline was also detected at a depth of 10 feet at concentrations above the cleanup level. Samples from the 10-foot and 15-foot-depth interval did not contain concentrations of petroleum above the method reporting limit. The drilling of soil boring SB-49 was terminated at a depth of 15 feet to reduce the potential of carrying contamination down the hole and into the groundwater. Petroleum contaminants were not detected above the method reporting limit in SB-50.

Ethylbenzene, toluene, and xylene were detected in the soil samples collected from the 2-foot and 5-foot depth interval in SB-49. The concentrations of ethylbenzene and xylene exceeded the proposed MTCA Method A cleanup levels for soil (unrestricted land use). 1,2,3-trimethylbenzene and 1,3,5-trimethylbenzene were also detected in the 2-foot and 5-foot samples in SB-49. Samples from the 10-foot and 15-foot interval in boring SB-49 contained concentrations below the method reporting limit. TCE was detected in SB-49 at a depth of 10 feet and at a level slightly above the reporting limit and above the proposed cleanup level. None of the other samples reported TCE above the method reporting limit. VOCs were not detected above the method reporting limit in SB-50.

None of the metals detected exceeded the MTCA Method A cleanup levels for residential soil in either of the soil borings.

5. CONCLUSIONS AND RECOMMENDATIONS

5.1 SITE GEOLOGY

The stratigraphy beneath the site appears fairly consistent based on the six soil borings installed on the east side of the ASKO facility. In general, the upper 10 to 15 feet of the site consists of silty fine-grained sand. The sand is dense, tan to gray, and odorless. From 15 to

25 feet the site consists of well-sorted fine-grained sand. The color changes from brown to gray, with a slight increase in grain size at the water table.

5.2 NATURE AND EXTENT OF CONTAMINATION

Concentrations of diesel and oil were detected in SB-46 and SB-47 at a depth of 2 feet, and diesel was detected in SB-46 at a depth of 10 feet. None of the concentrations detected exceeded the MTCA Method A cleanup levels for residential soil. Petroleum-impacted soil was not detected in contact with the groundwater near the former heating oil UST.

Gasoline was detected at 10 feet in the steam cleaning area at concentrations below the MTCA Method A cleanup level. None of the other petroleum or VOC analytes were detected above the method reporting limit. The concentrations of metals detected were below the MTCA Method A cleanup levels for residential soil.

Concentrations of gasoline, diesel, and oil were detected above the proposed MTCA Method A cleanup levels for unrestricted land use in the samples collected from SB-49 (gasoline, diesel, and oil) at a depth of 2 feet and in SB-49 (gas) at a depth of 5 feet. Ethylbenzene, toluene, and xylene were also detected above the proposed MTCA Method A cleanup levels for unrestricted land use in the samples collected from 2 feet and 5 feet in SB-49; however, concentrations of these constituents in the 10-foot and 15-foot samples were below the method reporting limit. In addition, the Hanby Field Test Kit, from the 15-foot-depth interval, detected no petroleum-impacted soil. When samples SB-49-2 and SB-49-5 were analyzed for BTEX using NWTPH-Gx1BTEX Method, they did not contain concentrations of BTEX above the method reporting limit; VOC analysis (EPA Method 8260B) did show detections. The difference in the analytical results between the two methods could be due to nonhomogeneity of the soil samples or the differences between the two analytical methods. None of the analytes were detected above the method reporting limits in SB-50.

5.3 RECOMMENDATIONS FOR FUTURE ACTIONS

Based on the findings of the recent field activities, contaminant concentrations beneath the former heating oil UST location and steam cleaning area appear to be below the proposed MTCA Method A cleanup levels for unrestricted soil. Subsequently, no future investigation or remedial activities are recommended for these areas. Best management practices should continue to be followed in the steam cleaning area to ensure all systems are in proper working order.

Subsurface contamination above the proposed MTCA Method A cleanup levels for residential soil was detected near the oil storage rack in SB-49. The contamination was limited to the 2-foot to 5-foot-depth interval. Because the contamination is at least 20 feet from groundwater, with clean soil in between, and capped by 4 inches of concrete, no future activities are recommended for this area.

6. REFERENCES

Foster Wheeler Environmental Corporation. 2000. Phase I Environmental Site Assessments for the 7 West Commodore Way Properties, Seattle, Washington. Prepared for Time Oil Company. Bothell, Washington. August 2000.

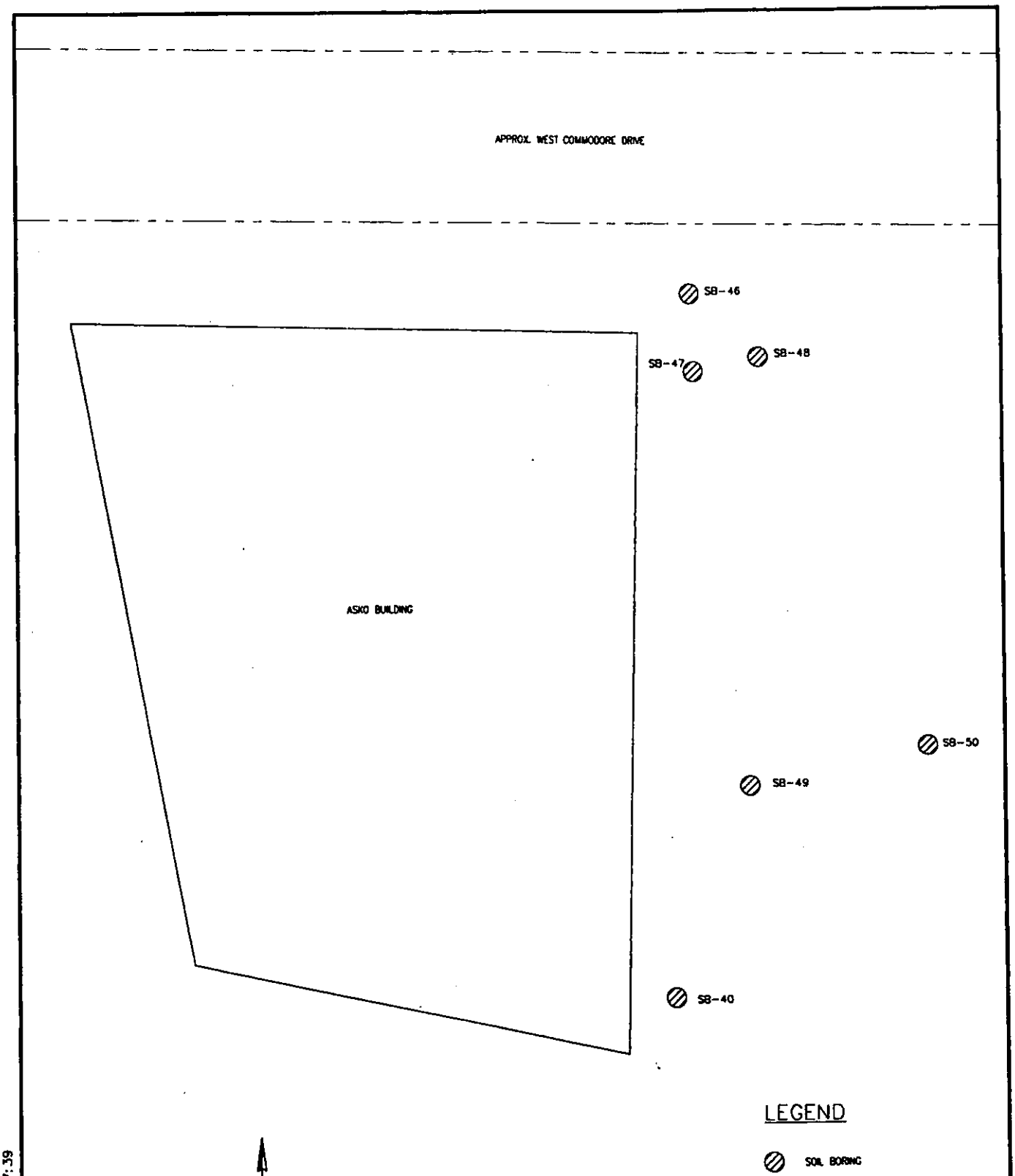

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Figure 3-1
Locations of Soil Borings at
2805 West Commodore Way
Seattle, Washington

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PROJECT NAME: Phase II Site Assessment
BORING NUMBER: SB-40
LOCATION: 2806 West Commodore Way
AREA: ASKO Steam Cleaning Area
CLIENT: Time Oil Company
SITE MANAGER: Scott Sloan

DRILLING METHOD: 4-Inch HSA
DRILLING CONTRACTOR: Cascade
DATE/TIME STARTED: 11/21/00 1315
DATE/TIME COMPLETED: 11/21/00 1350
TOTAL DEPTH: 15 feet
WATER DEPTH: 15 feet

DEPTH	ELEVATION	SAMPLES feet	BLOW COUNTS	SAMPLE NUMBER	Diesel in Soil PPM 20 30 40	PID	MOISTURE	GRAPHIC LOG	USCS SYMBOL	WELL DETAILS	DESCRIPTION AND REMARKS
0	46								SM		Concrete 0 to 3 inches Silty Sand 2 ft. Dense, moist, brown/grey, silty SAND, organics, no odor
2	44		25 22	SB-40-2		0	Moist				
4	42		16 13	SB-40-5		0	Moist		SM	NA	Silty Sand 5 ft. Dense, moist, grey, medium to fine silty SAND, organics, no odor
6	40										
8	38										
10	36		50:6"	SB-40-10		0	Moist		SM		Silty Sand 10 ft. Dense, moist, grey, silty fine grained SAND, no odor
12	34										
14	32		50:6"	SB-40-15		0	Moist		CL		Clay 15 ft. Dense, moist, grey, silty CLAY with fine sand, no odor
16	30										
18	28										
20											

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FOSTER WHEELER ENVIRONMENTAL CORP.

PROJECT NAME: Phase II Site Assessment

BORING NUMBER: SB-46

LOCATION: 2805 West Commodore Way

AREA: North of former UST

CLIENT: Time Oil Company

SITE MANAGER: Scott Sloan

DRILLING METHOD: 4-inch HSA

DRILLING CONTRACTOR: Cascade

DATE/TIME STARTED: 11/28/00 1230

DATE/TIME COMPLETED: 11/28/00 1310

TOTAL DEPTH: 25 feet

WATER DEPTH: 25 feet

DEPTH	ELEVATION	SAMPLES feet	BLOW COUNTS	SAMPLE NUMBER	Diesel in Soil PPM 50	PID	MOISTURE	GRAPHIC LOG	USCS SYMBOL	WELL DETAILS	DESCRIPTION AND REMARKS
0	44										Gravel 0 - 2 inches. Dense, dry, brown, GRAVEL
2	42		18 50:6"	SB-46-2		na	Dry		SW		Sand 2 ft. Medium to dense, dry, brown, medium to fine SAND, trace of silt and gravel, no odor
4											
6	40		24 27	SB-46-5		na	Dry		SM		Silty Sand 5 ft. Medium dense, dry, oxidized brownish red, fine silty SAND, no odor
8	38										
10	36		12 20	SB-46-10		na	Dry		SM	NA	Silty Sand 10 ft. Medium dense, dry, brown, fine silty SAND, less silt than above, no odor
12	34										
14	32										
16	30		65:6"	SB-46-15		na	Dry		SW		Sand 15 ft. Dense, dry, brownish grey, medium to fine SAND, no odor
18	28										
20	26		50:6"	SB-46-20		na	Dry		SW		Sand 20 ft. Same as above, color darkens, grain size increases, no odor
22	24										
24	22		55:6"	SB-46-25		na	Wet		SW		Sand 25 ft. Dense, wet, black/white/grey, fine to medium SAND, no odor
26	20										
28	18										
30	16										

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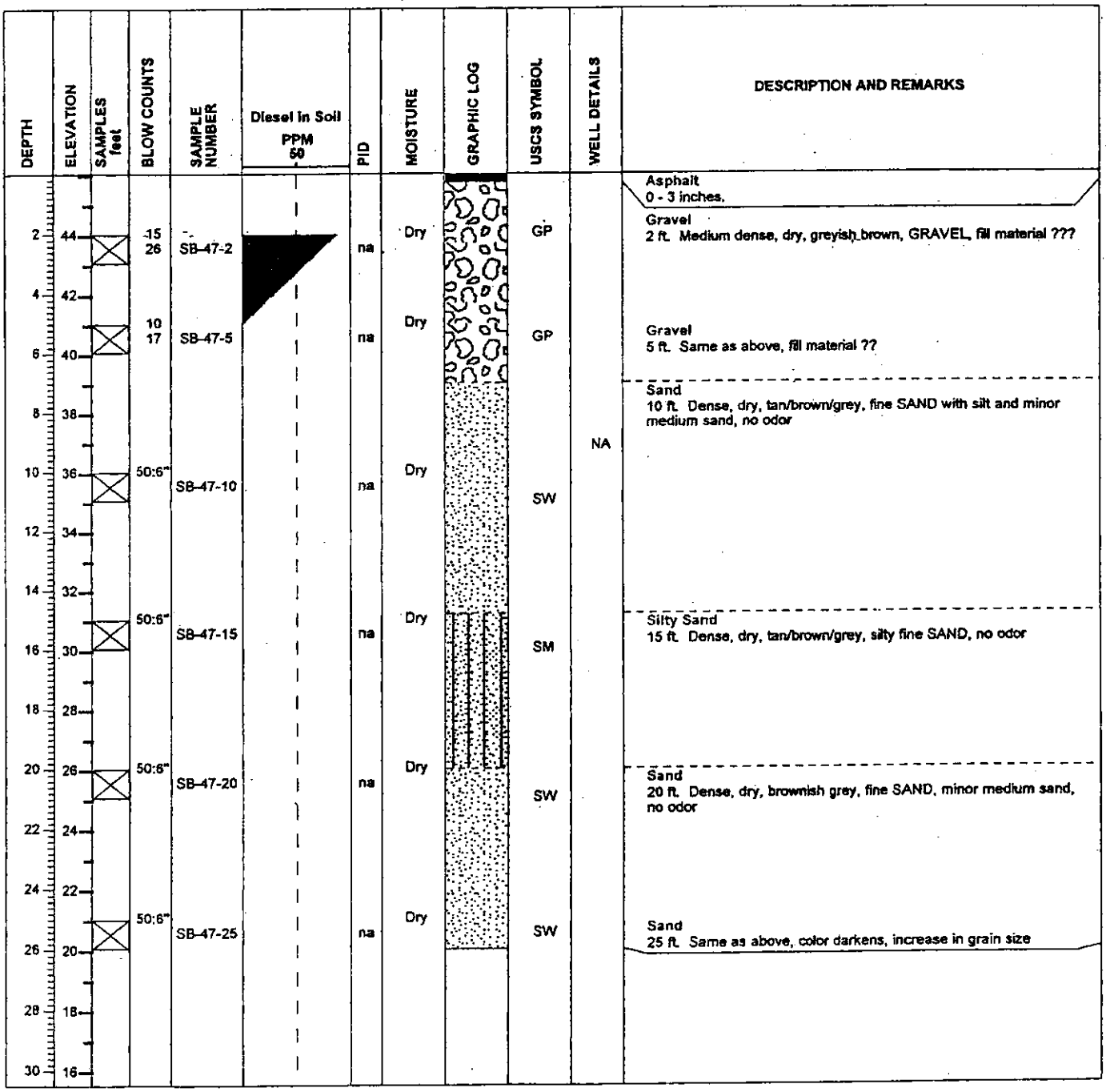
FOSTER WHEELER ENVIRONMENTAL CORP.

PROJECT NAME: Phase II Site Assessment
BORING NUMBER: SB-47
LOCATION: 2805 West Commodore Way
AREA: Center of former UST
CLIENT: Time Oil Company
SITE MANAGER: Scott Sloan

DRILLING METHOD: 4-Inch HSA
DRILLING CONTRACTOR: Cascade
DATE/TIME STARTED: 11/28/00 1400
DATE/TIME COMPLETED: 11/28/00 1440
TOTAL DEPTH: 25 feet
WATER DEPTH: na



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FOSTER WHEELER ENVIRONMENTAL CORP.

PROJECT NAME: Phase II Site Assessment

BORING NUMBER: SB-48

LOCATION: 2805 West Commodore Way

AREA: East of former UST

CLIENT: Time Oil Company

SITE MANAGER: Scott Sloan

DRILLING METHOD: 4-inch HSA

DRILLING CONTRACTOR: Cascade

DATE/TIME STARTED: 11/29/00 0800

DATE/TIME COMPLETED: 11/28/00 0845

TOTAL DEPTH: 25 feet

WATER DEPTH: na

DEPTH	ELEVATION	SAMPLES feet	BLOW COUNTS	SAMPLE NUMBER	Diesel in Soil PPM 20 30 40	PID	MOISTURE	GRAPHIC LOG	USCS SYMBOL	WELL DETAILS	DESCRIPTION AND REMARKS
0											Asphalt 0 - 3 inches.
2	44		27 25	SB-48-2		na	Dry		SM		Silty Sand 2 ft. Medium dense, dry, dark brown, silty fine SAND, trace organics, no odor
4	42										
6	40		25 30	SB-48-5		na	Dry		SW		Sand 5 ft. Medium dense, dry, brown, fine SAND with minor silt, minor medium sand, no odor
8	38										
10	36		65:6"	SB-48-10		na	Dry		SM	NA	Sandy Silt 10 ft. Dense, dry, tan/brown/grey, fine sandy SILT, organics, layering, no odor
12	34										
14	32										
16	30		50:6"	SB-48-15		na	Dry		SW		Sand 15 ft. Dense, dry, brown, fine SAND, minor medium sand, trace of silt, no odor
18	28										
20	26		55:6"	SB-48-20		na	Dry		SW		Sand 20 ft. Same as above
22	24										
24	22										
26	20		50:6"	SB-48-25		na	Dry		SW		Sand 25 ft. Same as above, color darkens, increase in grain size
28	18										
30	16										

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West Commodore Way

OWS location?

SB-46

SB-47

SB-48

FORMER HEATING OIL UST AREA

ASPHALT PAVING

ASKO HYDRAULIC BUILDING

CONCRETE PAVING

SB-50

SB-49

OIL AND SOLVENT STORAGE AREA

STEAM-CLEANING AREA

SB-40

LEGEND

PROPERTY LINE

SOIL BORING

SB-50

N

GRAPHIC SCALE

0 10 20

SCALE IN FEET

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Figure 3
Soil Boring Locations at
2805 West Commodore Way
Seattle, Washington

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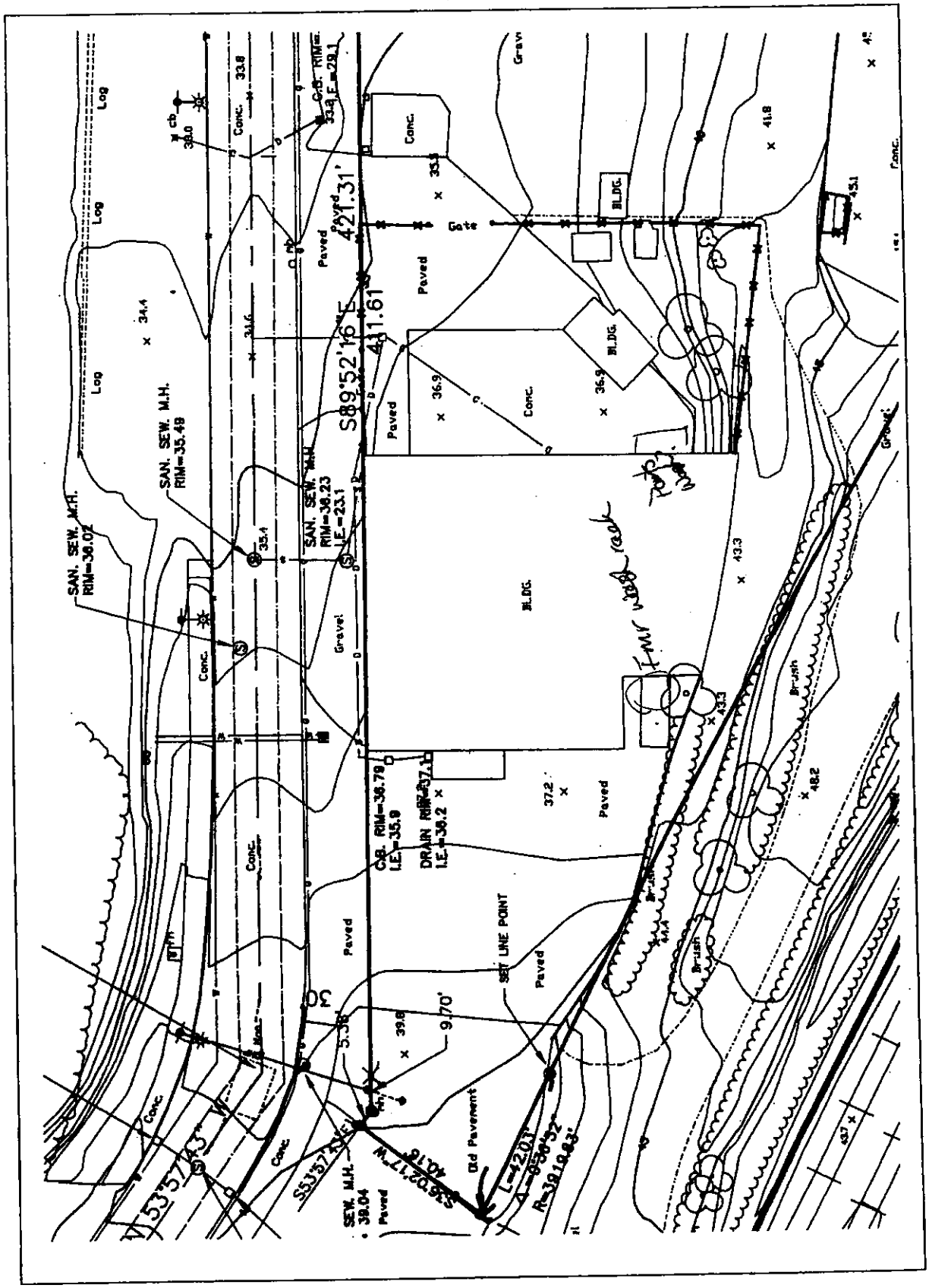

Figure 2. Layout of the Property at 2805 West Commodore Way

Main Terminal/Office Property (2737)
Areas of Potential Environmental Concern

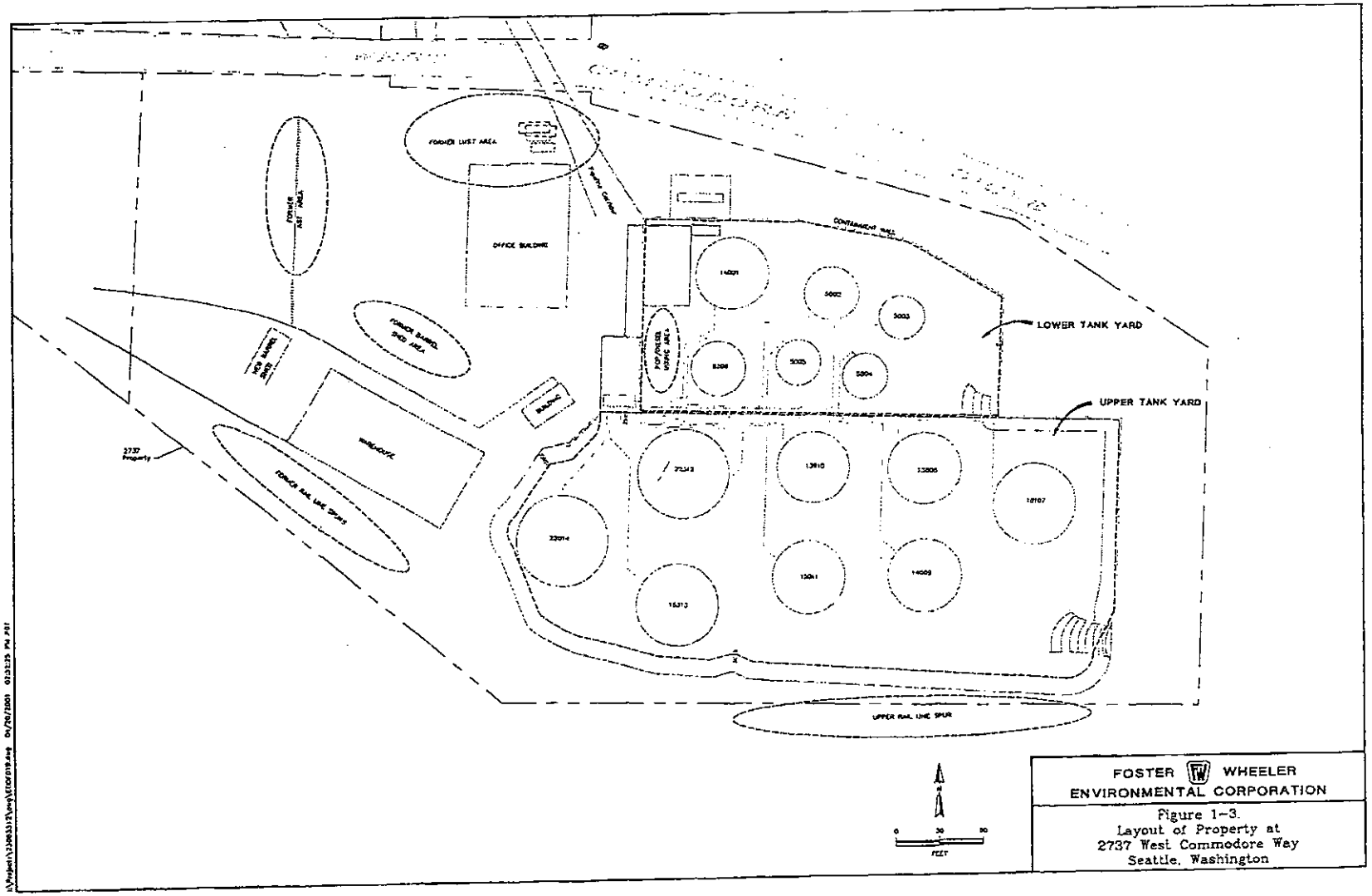

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Figure 1-3.
Layout of Property at
2737 West Commodore Way
Seattle, Washington