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Grady Way - Renton
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Report
1998 Site Cleanup Activities
Grady Way Complex Property
Renton, Washington
Volume i of ii

December 23, 1998

For
Puget Sound Energy

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GeoEngineers

December 23, 1998

Consulting Engineers and Geoscientists
Offices in Washington, Oregon, and Alaska

Puget Sound Energy
Environmental Services
P.O. Box 97034 ME-04
Bellevue, Washington 98009-9734

Attention: Barry Lombard

We are pleased to submit four copies of our "1998 Site Cleanup Activities" report for Puget Sound Energy's (PSE) Grady Way Complex property in Renton, Washington. Our study was completed in general accordance with the scope of services described in our letters to PSE dated July 9, August 25, September 28 and November 19, 1998 and the conditions of our general agreement with Puget Sound Energy (Contract No. 9600000888). Changes in the scope of services were verbally authorized by Barry Lombard of PSE. The remedial actions reported herein were completed in general accordance with the Model Toxics Control Act (MTCA).

We appreciate the opportunity to assist PSE on this project. Please contact us if you have questions regarding this report.

Yours very truly,

GeoEngineers, Inc.

for Kurt R. Fraese
Associate

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EXECUTIVE SUMMARY

GeoEngineers monitored the completion of environmental site cleanup activities at Puget Sound Energy's (PSE's) Grady Way Complex property located at 915 Grady Way South in Renton, Washington from June through November 1998. The primary tasks completed during this project were as follows: (1) removal of contaminated soil from the site to achieve compliance with Model Toxics Control Act (MTCA) Method A or Method B residential cleanup levels, (2) removal/replacement of selected underground facilities, and (3) supplemental site characterization activities completed concurrent with, and independent of, remedial activities.

REMEDIAL EXCAVATION

Remedial excavation was completed to remove all known soil with contaminant [carcinogenic polycyclic aromatic hydrocarbons (cPAHs), polychlorinated biphenyls (PCBs) and/or petroleum hydrocarbons] concentrations exceeding applicable MTCA Method A or Method B residential cleanup levels. In general, the soil was removed from seven known "hot spot" areas that were identified during a previous study (see GeoEngineers' report entitled "Environmental Site Assessment," dated April 29, 1998). Additionally, petroleum-contaminated soil was removed from two locations along the site's storm drain system and at one isolated location near the south corner of the site; this contamination was identified during this study.

Contaminated soil encountered in the "hot spot" areas and along the storm drain system was successfully removed during this project and transported off-site for permitted treatment or disposal. We estimate that a volume of approximately 1,145 cubic yards of soil with contaminant concentrations exceeding MTCA Method A or Method B cleanup levels were removed from the site. Contaminants either were not detected or were detected at concentrations less than applicable MTCA cleanup levels in confirmatory soil samples obtained from the final limits of the remedial excavations. There is no known soil remaining at the site that contains contamination at concentrations exceeding applicable MTCA cleanup levels, except for cPAHs detected in near surface soil in the wetland area located in the undeveloped southern portion of the site (discussed below).

A statistical evaluation of soil analytical data obtained during this study indicates that the concentrations of petroleum hydrocarbons remaining in soil at the site do not, on average, approach the most conservative (lowest) MTCA Method B cleanup level (3,432 milligrams per kilogram [mg/kg]) calculated for the site. The calculated upper 95 percent confidence limit (UCL) for diesel- and lube oil-range hydrocarbons in site soil is 305 mg/kg and 492 mg/kg, respectively. The combined UCLs for diesel- and lube oil-range hydrocarbons equal 797 mg/kg, which does not approach the lowest site-specific MTCA Method B cleanup level. The highest concentration of diesel-range hydrocarbons detected in soil remaining at the site was 2,250 mg/kg. The highest concentration of lube oil-range hydrocarbons detected in soil remaining at the site was 1,940 mg/kg.

UNDERGROUND FACILITIES REMOVAL

Underground facilities removed during this project included three USTs located in the northern portion of the site, stormwater piping located in the southern portion of the site, and a subsurface vault located east of the site's transformer repair shop. There are no known USTs remaining at the site. The stormwater system was replaced with new piping and is currently operational. Soil sampling in the vicinity of the removed/replaced subsurface facilities identified the presence of contaminants at concentrations exceeding applicable cleanup levels only along the storm drain system, as described above.

SITE CHARACTERIZATION

General

Supplemental site characterization activities were completed concurrent with the other tasks of this project. These activities were not completed to assess the effectiveness of remedial or facilities removal activities. The purpose of these activities was to obtain site-wide subsurface information that is relevant to (1) the sale and redevelopment of the site, and (2) evaluating the site's compliance with the Model Toxics Control Act (MTCA).

The site characterization activities consisted primarily of evaluating the potential presence of contamination at concentrations exceeding specified cleanup levels in soil, sediment and ground water samples obtained from the developed portion of the site and in the wetland. Geophysical and test pit explorations also were completed to further evaluate the validity of unsubstantiated rumors that transformers may have been buried beneath specific portions of the site. These explorations did not identify the presence of buried transformers. Additionally, our site characterization activities did not identify evidence of widespread subsurface contamination in these areas.

Soil Conditions

The site characterization phase of this project identified contamination in soil at concentrations exceeding specified cleanup levels only in (1) the wetland area located in the southern-most portion of the site, and (2) one of the test pits completed to evaluate the potential presence of buried transformers. Carcinogenic PAHs were detected at concentrations exceeding the MTCA Method A cleanup level in shallow soil and sediment samples obtained from the wetland. The cPAH-related contamination is likely related to stormwater runoff from surrounding properties and the subject site. In our opinion, remediation of the wetland is not practical, and will not be required, because the area would be recontaminated by urban runoff.

Diesel- and lube oil-range hydrocarbons were detected in soil at concentrations exceeding the site-specific MTCA Method B residential cleanup level in one of the test pits (TTP-3) completed to evaluate the potential presence of buried transformers. Contaminated soil in this area, which was limited in extent, was excavated and transported off-site for permitted disposal.

Ground Water Conditions

Petroleum hydrocarbons are present in ground water at concentrations exceeding MTCA Method A cleanup levels beneath two isolated portions of the site and at one off-site location identified during this study. The petroleum-related ground water contamination was detected in the southern portion of the site (GMW-4a), the western-most corner of the site (GMW-8, GMW-13 and GMW-14), and beneath Talbot Road, immediately west of the site (GMW-7). PCBs also are present in ground water at a concentration exceeding the MTCA Method A cleanup level at one location (GMW-4a) beneath the site.

In our opinion, the source for the petroleum- and PCB-related ground water contamination detected in GMW-4a was successfully removed (excavated) during this project. Ground water samples obtained from downgradient monitoring wells indicate that the contamination in the vicinity of GMW-4a is not migrating off-site. The petroleum-related ground water contamination detected in GMW-8, GMW-13 and GMW-14 may be the result of the proximity of these wells to residual petroleum hydrocarbons that are likely present in off-site utility trenches beneath Talbot Road. Elevated concentrations of petroleum hydrocarbons were detected near utilities beneath Talbot Road in GMW-7. The petroleum-related ground water contamination detected in GMW-7 does not appear to be originating from the site. Petroleum hydrocarbons were not detected in ground water samples obtained from nearby on-site wells (GMW-6, GMW-10 and GMW-11) located immediately to the east (upgradient) of GMW-7.

Dissolved arsenic also was detected in ground water at concentrations exceeding the MTCA Method A cleanup level beneath much of the site. Analytical data suggests that the dissolved arsenic is not related to historical site activities, but is a background contaminant present in the local shallow ground water system.

In our opinion, it is unlikely that additional remedial excavation will be required to address ground water contamination beneath, or adjacent to, the site. We anticipate that concentrations of ground water contaminants that originated from former on-site sources (petroleum hydrocarbons and PCBs) will decline over time because all known contaminant sources have been removed from the site. Future monitoring activities will be required to document the concentrations of ground water contaminants at the site over time. In the event that contaminants remain in ground water beneath the site at concentrations greater than applicable cleanup levels, a restrictive covenant should be placed on the property deed of trust to prohibit ground water use for consumption or irrigation purposes. Additionally, the City of Renton should be informed of the presence of petroleum hydrocarbons in soil (see GeoEngineers' April 1998 report) and ground water beneath Talbot Road. This will allow the City to implement proper handling and disposal procedures if road or utility maintenance is performed in this area.

1998 SITE CLEANUP ACTIVITIES
GRADY WAY COMPLEX PROPERTY
RENTON, WASHINGTON
FOR
PUGET SOUND ENERGY

1.0 INTRODUCTION

This report summarizes environmental site cleanup activities completed at Puget Sound Energy's (PSE) Grady Way Complex property located at 915 Grady Way South in Renton, Washington from June through November 1998. The property is referred to herein as "the site." The location of the site relative to surrounding physical features is shown in Figure 1.

PSE purchased the site around 1903 and historically has used the site to store and/or repair transformers and other electrical equipment. The locations of past on-site activities are shown in Figure 2. Transformers and power poles treated with chemical preservative were stored in the south half of the site. The site also was used to fuel and maintain vehicles. A total of 11 underground storage tanks (USTs) historically were located on site at the approximate locations shown in Figure 2; eight of USTs were removed during prior remediation activities. Hydraulic hoists formerly located in the north end of the Stores Building also were removed from the site during prior remediation activities.

Three buildings and associated underground utilities currently are located on site at the locations shown in Figure 3. PSE vacated the facility in 1998 in preparation for the sale of the site.

2.0 PREVIOUS STUDIES

GeoEngineers has provided environmental consulting services related to the subject site since 1987. Written reports summarizing the results of our previous studies are on file with Washington State Department of Ecology (Ecology) and are summarized in our recent report entitled "Environmental Site Assessment, Grady Way Complex Property, Renton, Washington" dated April 29, 1998. The April 29, 1998 report included a summary of information gathered during each of our previous studies. Our April 1998 Environmental Site Assessment (ESA) is sometimes referred to as the "previous study" in this report.

Our previous studies indicate that fill is present beneath much of the site. The fill generally consists of gravel, silty sand, silt and/or coal fragments (from nearby historic mining activities) to depths of up to 14 feet beneath the site surface. Native sand and silt units underlie the fill. Ground water beneath the site generally is present at depths ranging between about 3 and 8 feet below ground surface (bgs). The general direction of shallow ground water flow beneath the site is toward the west based on water level measurements.

The April 1998 ESA was a combined Phase I/II environmental site assessment (ESA) and was intended to identify portions of the site in which hazardous substances were present at concentrations exceeding applicable cleanup levels. To accomplish this goal, we reviewed historical site use, previous site characterization studies and remedial actions at the site, and

performed subsurface exploration in areas of concern. The results of our April 1998 ESA study indicated that soil and ground water contamination was present at concentrations exceeding applicable cleanup levels beneath portions of the southern third of the site. A summary of our ESA (April 1998 ESA) findings, including those identified exceedances of applicable cleanup levels, is presented below:

- In general, residual soil contamination related to petroleum hydrocarbons was detected in near-surface fill soil at many locations beneath the site. Chromatograms from the chemical analyses indicated that the petroleum contamination primarily is related to transformer oil or hydraulic/lube oil, although it was quantified as diesel- and heavy oil-range hydrocarbons.
- Diesel- and heavy oil-range hydrocarbons in soil samples were detected at concentrations [23.4 to 2,120 milligrams per kilogram (mg/kg)] less than the most conservative MTCA site-specific Method B cleanup level (3,432 mg/kg) calculated during the April 1998 ESA using Ecology's Interim Interpretive and Policy Statement, Cleanup of Total Petroleum Hydrocarbons (Interim TPH Policy).
- Diesel- and heavy oil-range hydrocarbons were detected in ground water at concentrations slightly exceeding the Model Toxics Control Act (MTCA) Method A cleanup level [1 milligram per liter (mg/l)] in only one (GMW-2; 1.37 mg/l total petroleum hydrocarbons) of the seven on-site monitoring wells.
- Diesel- and heavy oil-range hydrocarbons were detected in soil and ground water at concentrations exceeding MTCA Method A cleanup levels in one off-site boring/monitoring well (GMW-7). GMW-7 is located in Talbot Road, immediately downgradient from the southern portion of the site. Petroleum hydrocarbons were not detected in ground water samples obtained from on-site monitoring wells located upgradient of GMW-7.
- PCBs were detected in soil at concentrations (1.33 to 1.85 mg/kg) exceeding the MTCA Method A cleanup level (1 mg/kg) at three locations in the southern portion of the site.
- PCBs were detected at a concentration [1.17 micrograms per liter (µg/l)] exceeding the MTCA Method A cleanup level (0.1 µg/l) in one ground water sample (GMW-4) obtained from the southern portion of the site.
- Carcinogenic PAHs (cPAHs) were detected in soil at concentrations (1.70 to 2.46 mg/kg) exceeding the MTCA Method A cleanup level (1 mg/kg) at three locations in the southern portion of the site.
- cPAHs were detected at concentrations (2.87 to 6.75 mg/kg) exceeding the MTCA Method A soil cleanup level (1 mg/kg) in two of six sediment samples obtained from catch basins in the southern portion of the site.

Our April 1998 ESA results indicated that there was a low potential for the presence of soil and/or ground water contamination at concentrations of regulatory significance beneath the northern portion of the site. Remedial activities were successfully completed in this area between 1987 and 1990. A total volume of approximately 3,750 cubic yards of soil containing residual concentrations of petroleum hydrocarbons associated with former underground storage tanks (USTs) and hydraulic hoists were removed from this portion of the site and transported off-site

for permitted disposal. The outlines of the previous remedial excavations are shown in Figure 2. Remaining petroleum hydrocarbon concentrations detected at the final limits of the UST and hoist remedial excavations were less than the remedial action level (RAL; 300 mg/kg), which was established for these areas with the concurrence of Ecology. The value of the RAL was intended to account for the effects of coal fragments on the petroleum hydrocarbon analyses used at that time. The coal in the soil samples was detected by the laboratory equipment as a petroleum constituent, indistinguishable from the actual petroleum hydrocarbon contamination; this produced analytical results that were incorrectly biased high.

3.0 PROJECT OBJECTIVE

The objective of this project was to perform remedial activities at locations where petroleum hydrocarbons, PCBs and/or cPAHs were detected at concentrations exceeding applicable cleanup levels during our April 1998 ESA, as summarized above. Additionally, subsurface facilities were removed and supplemental site characterization data was obtained to further evaluate subsurface conditions. The activities were intended to:

- Reduce the potential for future large-scale remediation projects being required at the site.
- Achieve compliance with MTCA soil cleanup regulations by removing all known soil with contaminant concentrations exceeding applicable cleanup levels (excluding the wetland area).
- Evaluate ground water contamination relative to MTCA regulations and the potential need for institutional controls.
- Obtain additional site characterization information based on discussions with Ecology.
- Address outstanding environmental issues to support the future sale and redevelopment of the site.
- Further evaluate the potential presence of buried transformers beneath portions of the equipment storage yard.

4.0 SCOPE OF SERVICES

Site cleanup activities consisted of three primary tasks: (1) supplemental site characterization, (2) removal and replacement of selected underground facilities, and (3) remedial soil excavation. Our specific scope of services completed for these tasks is presented in Appendix A. The tasks were completed from June through November 1998.

4.1 SUPPLEMENTAL SITE CHARACTERIZATION

Site characterization activities were completed in the developed portion of the site and in a wetland area, south of the equipment storage yard to supplement the results of our prior ESA. Site characterization activities consisted of drilling a total of 20 soil borings and installing monitoring wells in seven of the borings. Previously existing monitoring wells also were used to evaluate ground water conditions. Additionally, geophysical and test pit explorations were completed to evaluate the potential presence of buried transformers beneath selected portions of

the equipment storage yard. The results of the supplemental site characterization activities are described in Section 6.0.

4.2 UNDERGROUND FACILITIES REMOVAL

Underground facilities removed during this project included three USTs located in the northern portion of the site, stormwater piping and some associated catch basins located in the southern portion of the site, and a subsurface vault located east of the transformer repair shop. The approximate locations of the removed facilities are shown in Figure 4. There are no USTs remaining at the site to our knowledge. The stormwater system was replaced with new piping and currently is operational.

4.3 REMEDIAL EXCAVATION

Remedial soil excavation was completed in known areas of contamination based on analytical results from the April 1998 ESA. Remedial excavation also was completed at the following locations in the equipment storage yard: (1) adjacent to the stormwater system, (2) beneath a City of Renton sanitary sewer, and (3) in the vicinity of one test pit that was completed to evaluate the potential presence of buried transformers. The remedial excavation areas and contaminants of concern in these areas are shown in Figure 4.

4.4 REMEDIATION TEAM

The remediation team for this project consisted of:

- PSE - property owner.
- GeoEngineers – PSE's environmental consultant.
- Olympus Environmental, Inc. and Wilder - contractors responsible for soil excavation and facility removal/replacement.
- North Creek Analytical - chemical analytical services.
- Holt Drilling - hollow-stem auger drilling services.
- TEG Northwest - direct-push drilling services.
- TPS Technologies - soil treatment/disposal facility.
- Waste Management, Inc. - soil disposal facility (Olympic View Sanitary Landfill).

5.0 CLEANUP LEVELS

Remedial activities were completed at the site to attain compliance with conservatively selected Ecology MTCA cleanup levels. These were the cleanup levels applicable to this project. A site-specific MTCA Method B cleanup level of 3,432 mg/kg was used for the remediation of petroleum-contaminated soil. This is the most conservative cleanup level calculated for the petroleum hydrocarbons detected at the site using Ecology's Interim TPH Policy (see the April 1998 ESA report) based on the direct contact exposure pathway. MTCA Method A cleanup levels, if available, were used for all other contaminants detected in soil and ground water at the site. Compound-specific MTCA Method B cleanup levels from Ecology's February 1996 "CLARC II" update publication were used for those contaminants that do not have published

Method A cleanup levels. The specific soil and ground water cleanup levels used for this project are presented in the chemical analytical tables.

Analytical results for sediment samples collected from the drainage channel in the southern portion of the site were evaluated relative to MTCA Method A soil cleanup levels. Ecology has not established specific cleanup levels for freshwater sediments.

6.0 SUPPLEMENTAL SITE CHARACTERIZATION

6.1 GENERAL

Twenty-two subsurface explorations (GMW-8 through GMW-14, SP-1 through SP-12, and B-1a through B-3a) were completed at the site during this study using power drilling (hollow-stem auger or direct-push) equipment. Monitoring wells were installed in seven of the borings (GMW-8 through GMW-14). A total of 10 previously existing monitoring wells (GMW-1 through GMW-7, MW-4, MW-10 and MW-20) also were used to monitor ground water conditions beneath the site. Four of the on-site monitoring wells (GMW-2, GMW-3, GMW-4 and GMW-12) were abandoned during remedial excavation activities and subsequently replaced with GMW-2a, GMW-3a, GMW-4a and GMW-12a. Field exploration procedures and boring/well logs for the subsurface explorations are presented in Appendix B.

Additionally, five sediment samples and 11 soil samples were collected from the wetland area located south of the storage yard using hand-held digging/sampling equipment. These samples were obtained from a stormwater drainage channel (sediment samples) and adjacent wetland (soil samples).

A summary of the new and some of the previously completed (April 1998 ESA) explorations used for site characterization purposes is presented in Table 1. This table includes a summary of the potential contaminant sources targeted for evaluation with each exploration. The locations of the site characterization explorations are shown in Figures 5, 6 and 7. Soil and/or ground water samples were obtained from the explorations using the techniques described in Appendix B. Laboratory reports are presented in Appendix C (Volume II) of this report. The purpose of completing the explorations was to further evaluate the potential presence of soil and/or ground water contamination in the following general areas:

- Sumps, drains and a former acid storage tank (aboveground) in the transformer repair shop
- Sanitary sewer manholes located near the north end of the Stores Building; effluent from sumps and a vault in/near the transformer repair shop flowed through the manholes.
- Former on-site USTs and hoists.
- Portions of the site formerly used for the storage of transformers and poles treated with chemical preservative.
- Portions of the site located immediately upgradient of GMW-7 (petroleum hydrocarbons beneath Talbot Road).
- The wetland located south of the equipment storage yard.
- Oil/water separators and other components of the stormwater drainage system.

- The upgradient and downgradient boundaries of the site.
- At locations beneath the site where coal fragments comprise a large percentage of the fill soil.

In addition to the soil and ground water sampling activities described above, subsurface exploration was completed in selected portions of the equipment storage yard to further evaluate the potential presence of buried transformers. This work consisted of completing a geophysical exploration program with follow-up subsurface exploration (test pits TTP-1 through TTP-4) in four specific areas. The locations of the geophysical survey and test pits are shown in Figure 8.

6.2 GROUND WATER

6.2.1 Ground Water Levels

Ground water levels were measured in the available monitoring wells on August 27, November 3, November 24 and November 30, 1998. The ground water depths and elevations on these dates are presented in Table 2. The greatest number of ground water level measurements were obtained during our November 30 monitoring event, because all of the current monitoring wells were installed by that date. Ground water elevations based on the November 30 measurements are presented in Figure 5.

Based on the November 30, 1998 measurements, shallow ground water beneath the site generally flows toward the west and northwest except beneath the western-most corner of the site, near the intersection of Grady Way South and Talbot Road. Ground water at this location appears to flow in an easterly direction based on ground water elevations measured in GMW-8, GMW-13 and GMW-14. This localized reversal in ground water flow direction near Grady Way South and Talbot Road may be related to ground water "mounding" associated with underground utility trenches beneath the roads.

The depth to ground water in the monitoring wells ranged from about 1.42 to 7.17 feet bgs on November 30, excluding monitoring well GMW-12a. GMW-12a is located on a storage dock that is elevated several feet above site grade.

The predominantly westerly shallow ground water flow direction identified during this study is consistent with the direction of shallow ground water flow calculated during our prior studies. The localized reversal in flow direction detected in the western corner of the site was not identified during prior studies because monitoring wells GMW-8, GMW-13 and GMW-14 did not exist.

6.2.2 Ground Water Sampling and Analysis Program

In general, two site-wide ground water sampling events were conducted during this study utilizing the monitoring wells and temporary sampling points (StrataProbe explorations) summarized in Table 1. The first sampling event was conducted on August 29, 1998. Follow-up sampling was completed to further evaluate ground water conditions in specific areas, based on the results of the August 29 sampling event; the follow-up sampling was conducted on September 8 (GMW-12), September 17 (GMW-3, MW-4) and October 5 (SP-1 through SP-4). The second site-wide ground water monitoring event was conducted on November 3, 1998, with

follow-up sampling conducted on November 24, 1998. Subsequent ground water sampling events using all available site monitoring wells will be conducted on a quarterly basis.

The approximate ground water sampling locations are shown in Figure 5. Chemical analytical results for the ground water samples are presented in Table 3. Table 3 also presents analytical results for ground water samples obtained during our previous ESA (February 1998 sampling event). Ground water samples obtained from the explorations were submitted for analysis of one or more of the following:

- Gasoline-, diesel- and lube oil-range hydrocarbons using Ecology Methods NWTPH-G and NWTPH-extended
- Dissolved metals (arsenic, cadmium, chromium, lead and mercury) using EPA 6000- and 7000-Series Methodology
- PCBs using EPA Method 8082
- cPAHs and other semivolatile organic compounds (SVOCs) using EPA Method 8270
- Benzene, ethylbenzene, toluene and xylenes (BETX) using EPA Method 8021B
- Halogenated volatile organic compounds (HVOCs) using EPA Method 8021B
- pH using EPA Method 150.1

A summary of the ground water analytical results is presented below.

6.2.3 Petroleum Hydrocarbons

Diesel- and lube oil-range hydrocarbons were detected at concentrations exceeding the MTCA Method A cleanup level [1.0 mg/l] in ground water samples obtained from four on-site monitoring wells during this study. One of the monitoring wells (GMW-4a) is located in the equipment storage yard, in the southern portion of the site. The remaining monitoring wells (GMW-8, GMW-13 and GMW-14) are located in the western corner of the site, near the intersection of Grady Way South and Talbot Road. Total petroleum hydrocarbons (the sum of diesel- and lube oil-range hydrocarbons) were detected at concentrations ranging between 1.327 mg/l and 6.97 mg/l in ground water samples obtained from these wells between November 3 and November 24, 1998. Petroleum hydrocarbons were not detected in the other on-site ground water samples obtained during this study.

Remedial soil excavation was completed at the location of GMW-4a immediately prior to obtaining the November 3 ground water sample from this well. The mixing of petroleum-contaminated soil with ground water during excavation activities likely caused the elevated concentration of petroleum hydrocarbons in this well. Petroleum hydrocarbons either were not detected or were detected at concentrations less than the MTCA Method A cleanup level in ground water samples obtained from GMW-4a prior to performing remedial excavation activities. We expect that concentrations of petroleum hydrocarbons will decrease with time at this location because the source (contaminated soil) has been removed.

The source of the petroleum-related ground water contamination detected in monitoring wells GMW-8, GMW-13 and GMW-14 appears to be located beneath Talbot Road, west of the site. An off-site source for this contamination is suggested by the apparent easterly ground flow

direction at this location (see Section 6.2.1 and Figure 5). Additionally, petroleum hydrocarbon concentrations decrease in an easterly direction, away from Grady Way South and Talbot Road, based on the analysis of ground water samples obtained from GMW-8, GMW-13 and GMW-14 on November 24, 1998.

Residual petroleum hydrocarbons from an unknown source may be present in nearby utility trench backfill beneath Grady Way South and Talbot Road. Utility trench backfill can act as a permeable conduit for the migration of petroleum hydrocarbons to locations relatively far from their original source. The presence of residual petroleum hydrocarbons in utility trench backfill can cause locally elevated concentrations of these contaminants in shallow ground water, where present. The presence of petroleum hydrocarbons in off-site utility trench backfill likely is responsible for the contamination detected in two ground water samples obtained from GMW-7 during this study. GMW-7 is located south of the site, in Talbot Road. Diesel- and lube oil-range hydrocarbons were detected at concentrations exceeding the MTCA Method A cleanup level in soil (see our April 1998 ESA report) and ground water samples obtained from GMW-7.

6.2.4 Dissolved Metals

Dissolved arsenic was the only metal detected at concentrations exceeding MTCA Method A cleanup levels in ground water samples obtained from the site. Chromium was detected at concentrations less than the MTCA Method A cleanup level (50.0 µg/l) in six ground water samples obtained from the site. Other metals were not detected in the ground water samples submitted for analysis. Ground water samples obtained during the previous study (February 1998 sampling event) were not submitted for analysis of metals.

Dissolved arsenic was detected at concentrations exceeding the MTCA Method A cleanup level (5.0 µg/l) in one or more of the ground water samples obtained in August and November from the following monitoring wells: GMW-3a, GMW-8, GMW-10, GMW-11, GMW-12a and MW-4. The concentrations of arsenic detected in these wells were relatively low (less than 16 µg/l) except for MW-4. Arsenic was detected at a concentration of 55.5 µg/l in the ground water sample obtained from MW-4 on August 29, 1998. Arsenic was present at significantly lower concentrations (12.1 to 19.9 µg/l) in two subsequent ground water samples (September 17 and November 3) obtained from MW-4; these concentrations are more consistent with the results for samples obtained from other portions of the site.

The concentration of dissolved arsenic in ground water beneath the site exceeded the federal drinking water standard (maximum contaminant level; MCL) only in the August 29 ground water sample obtained from MW-4. The MCL for dissolved arsenic is 50 µg/l.

Dissolved arsenic was detected at concentrations ranging from 1.24 µg/l to 15.2 µg/l in five ground water samples (SP-1, SP-2, SP-3 and GMW-3/3a) obtained from the upgradient boundary of the site. This suggests that elevated concentrations of dissolved arsenic are a background condition in the area and are not related to historic site development and use.

6.2.5 PCBs

PCBs were detected at a concentration exceeding the MTCA Method A cleanup level (0.1 µg/l) in one ground water sample (GMW-4a; 0.506 µg/l) obtained from the site during this study. This ground water sample was obtained shortly after remedial soil excavation was performed at the location of GMW-4a. Soil disturbance during the excavation process likely contributed to the elevated PCB concentration detected. We expect that the PCB concentration will decrease at this location over time because the source (contaminated soil) was removed. PCBs were not detected in the other ground water samples obtained during this study.

6.2.6 cPAHs and other SVOCs

Ground water samples obtained from five locations in the southern portion of the site (GMW-4/4a, GMW-5, GMW-6, GMW-10 and GMW-11) were submitted for analysis of cPAHs and other SVOCs. These monitoring wells are located near the wetland and drainage channel in the southern portion of the site. Carcinogenic PAHs and other SVOCs were not detected in the ground water samples.

6.2.7 BETX and HVOCs

Ground water samples obtained from three locations (MW-4, MW-10 and MW-20) near the northern end of the Stores Building were submitted for analysis of HVOCs and/or BETX. The purpose of these analyses was to evaluate potential residual contamination related to (1) the former maintenance of vehicles, and (2) potential releases of these contaminants from former waste oil and gasoline USTs. HVOCs and BETX were not detected in the ground water samples submitted for analysis.

6.2.8 pH

The pH of ground water beneath the site appears to be relatively neutral based on the analysis of 30 samples. The pH in these samples ranged from 6.30 to 8.08 (pH units).

6.3 SOIL SAMPLES

6.3.1 Soil Sampling and Analysis Program

A total of 18 soil samples were obtained from the power borings (hollow-stem auger and direct-push borings) completed at the site and submitted for various chemical analyses. The subsurface exploration and chemical analytical program for these soil samples is summarized in Table 1. The approximate soil sample locations are shown in Figures 5 and 6. The soil samples were obtained primarily to evaluate the following: (1) the potential presence of PCBs, petroleum hydrocarbons, dioxins and furans in the vicinity of sumps in the transformer repair shop, (2) the potential presence of PCBs and petroleum hydrocarbons near sanitary sewer manholes located north of the Stores Building, and (3) metals concentrations and pH in fill comprised predominantly of coal fragments. The soil samples were submitted for chemical analysis of one or more of the following using the analytical methods previously described: diesel- and lube oil-

range hydrocarbons, PCBs, metals (arsenic, cadmium, chromium, lead and mercury) and pH. Dioxins and furans were analyzed using EPA Method 8290.

Chemical analytical results for the soil samples are presented in Tables 4 and 5. A summary of the soil and sediment analytical results is presented below.

6.3.2 Petroleum Hydrocarbons

Diesel- and lube oil-range hydrocarbons, if present, were detected at concentrations ranging from 42.0 to 179 mg/kg, and 32.4 to 510 mg/kg, respectively, in the soil samples obtained from the exploratory borings. The combined concentration of diesel- and lube oil-range hydrocarbons in each soil sample was significantly less than the site-specific MTCA Method B cleanup level (3,432 mg/kg) established for the site based on the direct contact exposure pathway.

6.3.3 PCBs

PCBs were detected in two of the 10 soil samples submitted for analysis. The concentrations of PCBs in these samples (GMW-11-3.5 and B-4a-3.5) ranged from 0.164 to 0.76 mg/kg, which are less than the MTCA Method A PCB cleanup level (1.0 mg/kg).

6.3.4 Dioxins and Furans

Dioxins were detected in one (SP9-3-8.0) of the two soil samples from the sump area submitted for analysis. Furans were not detected in either soil sample. The approximate sample locations are shown in Figure 6. Chemical analytical results for the dioxin/furan analyses are presented in Table 5. The potential health risk presented by dioxins/furans was evaluated using the toxicity equivalency factor (TEF) approach. The result was compared to the MTCA Method B cleanup level for 2,3,7,8-tetrachlorinated dibenzo-p-dioxin (2,3,7,8-TCDD). A description of this approach is presented in Appendix D.

Two 2,3,7,8-substituted dioxin congeners (1,2,3,4,6,7,8-HpCDD and OCDD) were detected in sample SP9-3-8.0, as shown in Table 5. The total 2,3,7,8-TCDD equivalent concentration of these congeners is 7.9E-08 mg/kg. This concentration is approximately two orders of magnitude less than the MTCA Method B cleanup level for 2,3,7,8-TCDD (6.67E-06 mg/kg).

6.3.5 Metals and pH

Soil samples from the explorations, including samples that were comprised largely of coal fragments, were submitted for analysis of metals and pH. Arsenic, cadmium, chromium and lead were detected in one or more of the soil samples at concentrations less than the MTCA Method A cleanup levels. Mercury was not detected in any of the soil samples submitted for analysis. Soil beneath the site, including coal fragments, appears to have a relatively neutral pH based on the analysis of nine samples. The pH in these samples ranged from 6.45 to 7.21 (pH units).

One of the soil samples (SP5-2-5) submitted for analysis of arsenic was obtained from an exploration (SP-5) completed adjacent to monitoring well MW-4. Boring SP-5 was completed at this location to explore for a potential source for the arsenic detected in ground water in MW-4

(see Section 6.2.4). A source for arsenic-contaminated ground water was not identified in soil from boring SP-5 or in any other exploration completed at the site.

6.4 WETLAND SOIL AND SEDIMENT SAMPLING

6.4.1 General

A wetland and drainage channel are present in the southern portion of the site, south of the equipment storage yard, as shown in Figures 2 and 7. The drainage channel directs surface water across the site, from upgradient off-site properties, to a culvert that is present beneath Talbot Road. Most of the water flow in the drainage channel originates from off-site properties. Stormwater from the site also discharges into the drainage channel, as shown in Figure 7. Stormwater runoff from the site flows through several oil/water separators prior to discharge into the drainage channel. Additional details concerning the drainage channel are presented in our letter report on file at Ecology entitled "Stormwater Drainage Channel Evaluation," dated July 13, 1998.

6.4.2 Sampling and Analysis Program

A total of five sediment samples and 11 soil samples were obtained from the drainage channel and adjacent wetland using hand-held sampling equipment. The approximate sampling locations are shown in Figure 7. The samples were submitted for analysis of one or more of the following analytes using the analytical methods previously described: diesel- and lube oil-range hydrocarbons, PCBs and cPAHs and other SVOCs. Chemical analytical results for the sediment and soil samples are presented in Table 6. A summary of the soil and sediment analytical results is presented below.

6.4.3 Petroleum Hydrocarbons

Diesel- and lube oil-range hydrocarbons either were not detected or were detected at concentrations less than the site-specific MTCA Method B cleanup level in the wetland soil/sediment samples that were tested. Additionally, the concentrations of diesel- and lube oil-range hydrocarbons detected in these samples were less than MTCA Method A cleanup levels.

6.4.4 PCBs

PCBs were not detected in the wetland soil/sediment samples submitted for analysis.

6.4.5 cPAHs and Other SVOCs

Carcinogenic PAHs were detected at concentrations exceeding the MTCA Method A soil cleanup level (1 mg/kg) in one of the sediment samples and 11 of the soil samples submitted for analysis from the wetland area. The concentrations of cPAHs detected in these samples ranged from 1.15 to 10.6 mg/kg. Soil with cPAH concentrations exceeding the MTCA Method A cleanup level appears to be limited to depths of less than 1.5 feet beneath the ground surface based on the analytical results. Other SVOCs either were not detected or were detected at concentrations less than MTCA Method B cleanup levels.

6.5 EXPLORATION FOR POTENTIAL BURIED TRANSFORMERS

6.5.1 Background

The potential presence of buried transformers beneath the equipment storage yard was identified and evaluated during the completion of our April 1998 ESA. The possibility of transformers being present beneath the site was based on our discussions with one of the 15 persons we interviewed during our previous Phase I ESA research. That person (a PSE employee) has stated that he heard that transformers may have been buried beneath the site. During our previous study, a total of five test pits, 22 soil borings and four monitoring wells were completed/installed in the reported vicinity of the potentially buried transformers. These explorations were performed prior to this study, during the completion of our April 1998 ESA (see Figure 5 of the April 1998 report). We did not observe physical (buried transformers) or chemical (widespread PCB-related contamination) evidence during our prior studies suggesting that transformers are buried beneath the site.

Barry Lombard of PSE conducted additional interviews during this study to provide further clarification regarding the alleged burial of transformers at the site. Based on Mr. Lombard's research, there are no individuals with first-hand knowledge that transformers were buried at the site. The alleged burial of transformers in the equipment storage yard, as discussed in our April 1998 ESA report, was based on unsubstantiated employee rumors.

The potential presence of buried transformers beneath the equipment storage yard was further evaluated during this study, as described below.

6.5.2 Geophysical Exploration Program

The potential presence of buried transformers beneath the equipment storage yard was further evaluated during this study using geophysical exploration techniques. Geophysical exploration was completed in portions of the site where transformers would most likely be present based on the chronology of fill placement in the equipment storage yard, and the time-frame of the alleged burial of transformers. The area of geophysical exploration is shown in Figure 8.

Apollo Geophysics Corporation (AGC) of Seattle, Washington completed a geophysical exploration survey on November 20, 1998. The geophysical study was completed using an electromagnetic (EM) instrument and ground penetrating radar (GPR). A summary of the geophysical exploration program, including the specifications and performance characteristics of the geophysical instruments, is presented in AGC's report dated December 2, 1998 (presented at the end of Appendix B).

Geophysical exploration was completed by initially using the EM as a screening device to identify the location of buried metal objects. This was performed by traversing the area of interest (the shaded area in Figure 8) with the EM at approximately 5-foot spacing intervals. The GPR was then used to further evaluate anomalies identified by the EM instrument. The purpose of the GPR was to evaluate whether the "EM anomalies" produced geophysical signals typical of potential transformers. Neither the EM nor GPR instruments are capable of identifying buried transformers or other objects with a high degree of accuracy. These instruments are only capable

of identifying *potentially* buried objects. Physical subsurface exploration is required to evaluate if buried objects are actually present at the location of a geophysical anomaly.

AGC identified four specific locations where the GPR instrument produced a signal potentially characteristic of buried transformers. AGC estimated that the objects of interest at these locations were buried at depths ranging from about 6 to 8 feet below ground surface (bgs). AGC recommended that physical subsurface explorations be completed in these four areas to evaluate whether transformers may be present.

6.5.3 Test Pit Explorations

GeoEngineers monitored the excavation of four test pits (TTP-1 through TTP-4) at the locations that were identified by AGC. The approximate test pit locations are shown in Figure 8. The test pits were completed to depths ranging between approximately 8 and 13 feet bgs. The depth of each test pit was at least as great as the "target depths" identified by AGC. Buried transformers were not encountered in the test pit explorations. Underground utilities or buried metal debris was encountered in all of the excavations, and was likely responsible for producing the geophysical anomalies. A general summary of our observations in the test pits is presented below. A complete description of subsurface conditions in the test pits is presented in the soil logs (Appendix B).

Test Pit TTP-1. AGC estimated that the geophysical anomaly at this location was present at a depth of about 7 feet bgs. One 2-inch-diameter metal pipe was observed in the test pit excavation at a depth of approximately 8 feet bgs. This pipe appeared to be an in-place utility, although its function/status is not known. Metal debris, other evidence of buried transformers, or field screening evidence of petroleum-related soil contamination was not observed in the test pit.

Test Pit TTP-2. The geophysical anomaly at this location was estimated to be present at a depth of about 6 feet bgs. Two utilities were encountered at depths between about 5 and 6 feet bgs in TTP-2. One 6-inch polyvinyl chloride (PVC) pipe containing several electrical copper conduits was present at a depth of about 5 feet bgs. Additionally, a 10-inch-diameter metal pipe (water utility) was present at a depth of about 6 feet bgs. Evidence of buried transformers, or field screening evidence of petroleum-related soil contamination was not observed in the test pit.

Test Pit TTP-3. AGC identified a geophysical anomaly at an estimated depth of about 8 feet bgs at this location. Metal debris was encountered at depths ranging between about 2 and 3 feet bgs in TTP-3. The debris consisted of thin metal strips that were approximately 6 inches wide and had varying lengths. Jerry McNeily of PSE inspected the metal debris to determine whether this material possibly originated from a transformer(s). Mr. McNeily, upon detailed inspection, indicated that in his opinion, this material did not appear to be related to transformers. Test pit TTP-3 was terminated at a depth of 8 feet bgs to avoid encountering a potential utility that was identified at this location during utility locating activities.

Field screening results indicated the potential presence of petroleum hydrocarbons at concentrations exceeding the site-specific MTCA Method B cleanup level in soil samples

obtained from a portion of the test pit. Soil sampling and analysis activities are described below and in Section 8.4.

Test Pit TTP-4. AGC estimated that the geophysical anomaly at this location was present at a depth of about 7 feet bgs. Three steel I-beams and an 18-inch-diameter post were encountered at a depth of about 1 foot bgs. The post had the appearance of a light or sign standard. Additionally, approximately five power lines were encountered at a depth of about 5 feet bgs. Evidence of buried transformers, or field screening evidence of petroleum-related soil contamination was not observed in the test pit.

6.5.4 Soil Conditions

Field screening results indicated the potential presence of petroleum-related soil contamination in one (TTP-3) of the four test pit explorations, as discussed above. Remedial excavation was completed in the vicinity of test pit TTP-3 to remove soil with petroleum hydrocarbon concentrations exceeding the site-specific MTCA Method B cleanup level. Soil sampling and remedial excavation activities near TTP-3 are described in Section 8.4.

7.0 FACILITIES REMOVAL

7.1 OVERVIEW

Several underground facilities were removed from the site as part of this project. The facilities included a portion of the site's stormwater drainage system, three USTs and a vault near the transformer repair shop. After the facilities were removed, soil samples were obtained from the limits of the resulting excavations and submitted for chemical analysis to evaluate the potential presence of contamination. Based on the soil analytical results from the facilities excavations, contaminant concentrations exceeding applicable cleanup levels were identified at two locations adjacent to the storm drain system. Remedial excavation subsequently was completed in these areas (described in Section 8.2). Contaminant concentrations exceeding applicable cleanup levels were not identified in the vicinity of the USTs and transformer repair shop vault. Therefore, remedial activities were not performed in these areas.

The facilities removal activities are summarized in this section, including a description of the soil sampling activities associated with removal of the USTs and transformer repair shop vault. The more extensive soil sampling activities associated with removal of the storm drain system, and the associated remedial activities, are discussed in Section 8.2.

7.2 STORMWATER SYSTEM

7.2.1 Purpose

Most of the storm drain in the southern portion of the site was removed and replaced to (1) evaluate the system condition, and (2) evaluate whether subsurface contamination was present in the trench backfill material. We anticipated that contamination may have been concentrated adjacent to the storm drains as a result of the potential infiltration of hazardous substances into porous trench backfill material. The source of the potential contamination was stored equipment and vehicles operating in the south storage yard; a large portion of the storage yard is not paved.

Additionally, our April 1998 ESA indicated that most of the soil samples in which contamination exceeded applicable cleanup levels were obtained from locations immediately adjacent to the storm drain system.

The section below describes the physical attributes of the storm drain system, and summarizes the system removal and replacement activities. Environmental conditions in the vicinity of the storm drain system are discussed in Section 8.2.

7.2.2 Stormwater System Design

The stormwater system in the southern portion of the site (equipment storage yard) directs runoff from roof drains and parking/storage areas to the drainage ditch located in the wetland, south of the equipment storage yard. A surveyed drawing of the storm drain system, prior to system removal, is shown in Figure 9. The original storm drain piping consisted of 8- to 10-inch-diameter piping that was constructed of polyvinyl chloride (PVC), concrete or cast iron. Most of the storm drain piping was present at depths ranging from about 1.5 to 3 feet bgs. Two of the storm drains were present at greater depths (about 6 feet bgs). The deeper storm drains were aligned in a north-south direction, north of catch basin #6 (CB-6) and CB-8. Stormwater from the site flows through two oil/water separators prior to off-site discharge, as shown in Figure 9.

7.2.3 Storm Drain Removal and Replacement

Approximately 1,700 feet of storm drain in the equipment storage yard was removed and replaced at the locations shown in Figure 4. The storm drain system was replaced to match its configuration prior to removal, except for the two deep storm drains. The eastern deep storm drain was reinstalled at a shallower depth (1.5 to 3 feet bgs). The western deep storm drain was modified by (1) eliminating flow into the north end of the drain by rerouting roof runoff from the Stores Building, (2) abandoning the portion of the storm drain generally located beneath the storage dock, and (3) reinstalling a portion of the storm drain at a shallower depth (1.5 to 3 feet bgs). These modifications are shown in Figure 10. Runoff from the roof of the Stores Building currently is discharged onto the parking lot surface; this water flows into a catch basin located near the northwest boundary of the site. It was necessary to install two new catch basins and replace three existing catch basins (CB-6, CB-7 and CB-8) to complete the deep storm drain modifications. Other catch basins at the site were inspected for integrity and evidence of former leakage; these catch basins appeared to be in good condition, and were cleaned and left in place.

A circular concrete vault located near CB-10 was removed and not replaced. The location of the former vault is shown in Figure 9. The vault appeared to be a remnant stormwater facility that was no longer functioning. The vault was approximately 3 feet deep and 3 feet in diameter.

The storm drain was replaced with 8- or 10-inch-diameter PVC piping. The new storm drain piping was installed on top of, and covered by, a 4-inch- thick bed of pea gravel. Clean soil originally excavated from the storm drain trenches was used as backfill above the pea gravel.

7.2.4 Storm Drain Excavation Dewatering

It was necessary to pump ground water from the deep storm drain excavations to facilitate reinstallation of the storm drain facilities. We estimate that a total volume of about 20,000 gallons of ground water were pumped from the excavations and stored in a temporary on-site tank.

Water in the on-site tank was sampled and analyzed to obtain approval for discharge into the on-site sanitary sewer system. The sample was submitted for analysis of the following: (1) dissolved metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel, silver and zinc) using EPA 6000- and 7000-Series Methodology, (2) PCBs using EPA Method 8082, (3) pH using EPA Method 150.1, (4) total cyanide using EPA Method 335.2, and (5) fats, oil and grease (FOG) using EPA Method 418.1.

Arsenic, chromium and copper were the only analytes detected in the water sample. Chemical analytical results for this sample are presented in Table 7. The pH of the water sample was 6.22. The analytical results were discussed with Hillary Holt, of King County Metro. Based the chemical analytical results, Ms. Holt authorized discharge of the water into the on-site sanitary sewer in accordance with the existing Metro permit for the site (Wastewater Discharge Permit No. 7685).

7.3 UNDERGROUND STORAGE TANKS

7.3.1 General

GeoEngineers monitored the removal of three USTs at the site. These were the only USTs known to remain at the site; six other USTs were removed from the site prior to 1990. The USTs removed during this project were located in the northern portion of the site, between the Stores Building and the Service Center, as shown in Figure 4. The size and contents of the USTs were as follows:

- UST #262 - 10,000-gallon diesel (double-walled fiberglass tank)
- UST #263 - 10,000-gallon gasoline (double-walled fiberglass tank)
- Unregistered UST - 2,000-gallon heating oil (steel tank)

The 10,000-gallon USTs were installed at the site in 1989. These USTs had spill prevention and leak detection equipment. A service island and fuel dispensers were located immediately above the USTs. The gasoline and diesel USTs were removed from a single excavation. The heating oil UST was removed from a separate excavation located immediately east of the Stores Building. The heating oil UST serviced a boiler which generated heat for the Stores Building.

All USTs, associated product piping and fuel island facilities were removed from the site and disposed of by Olympus. Documents verifying disposal of the USTs are presented in Appendix E. Site assessment activities were performed by a GeoEngineers staff member certified to conduct UST site assessments. Ecology's completed Site Assessment Notice is presented in Appendix F.

7.3.2 Gasoline/Diesel UST Removal

GeoEngineers monitored UST removal activities and completed site assessment activities in accordance with Ecology guidelines. Field screening evidence of petroleum hydrocarbons was not observed in the gasoline and diesel UST excavation. The USTs were damaged during the removal process; however, it is our opinion that the USTs were in good condition prior to removal based on our site observations. Ground water slowly collected in the base of the excavation and stabilized at a depth of about 6 feet bgs.

Soil Sampling and Analysis. Soil samples were obtained from the limits of the UST excavation in accordance with Ecology's guidelines for UST site assessments. A total of five soil samples (EX2-1-15.0 through EX2-5-6.0) were obtained from the limits of the gasoline and diesel UST excavation. The approximate locations of the soil samples are shown in Figure 11. The samples were submitted for analysis of gasoline, diesel- and lube oil-range hydrocarbons using Ecology Methods NWTPH-G and NWTPH-D extended, and BETX using EPA Method 8021B. Chemical analytical results for the UST excavation soil samples are presented in Table 8.

Diesel- and lube oil-range hydrocarbons were detected in four of the soil samples at concentrations ranging from 31.6 to 277 mg/kg, and 84.3 to 814 mg/kg, respectively. Gasoline-range hydrocarbons and BETX were not detected in the soil samples.

Our analysis of the sample chromatograms indicates that the petroleum contamination detected in these samples is not characteristic of gasoline or diesel from the USTs; rather, the petroleum contamination is characteristic of the residual hydraulic/lube oil that is present in shallow soil at many locations beneath the site. Based on this information, it is our opinion that there were no significant product releases from the on-site gasoline and diesel USTs. The petroleum-contaminated soil identified in the UST excavation was not removed because the concentrations of diesel- and lube oil-range hydrocarbons detected in the soil samples were less than the site-specific MTCA Method B cleanup level.

Excavated Soil Volume. We estimate that approximately 300 cubic yards of pea gravel and concrete debris from the UST anchors were removed from the excavation. The pea gravel and concrete debris did not exhibit field screening evidence of petroleum-related contamination. All of the pea gravel (approximately 175 cubic yards) was used to backfill in the excavation after removal of the USTs. The concrete debris (about 125 cubic yards) was transported off-site for disposal at a permitted construction debris landfill. The volume of soil/debris removed from all on-site excavations is presented in Table 9. Pea gravel was not submitted for chemical analysis prior to placing it as backfill in the UST excavation. Laboratory procedures can not effectively analyze contaminant concentrations in pea gravel because of the large grain size of this material.

7.3.3 Heating Oil UST Removal

The heating oil UST surface was rusted. However, we did not observe holes in its surface at the time the UST was removed. Field screening results identified the presence of a relatively small amount of petroleum-contaminated soil adjacent to the fill port of the heating oil UST, and in the base and sidewall of the UST excavation. The ground water level in the base of the

excavation did not appear to stabilize prior to backfilling; the water level was approximately 10 feet bgs prior to backfilling.

Soil Sampling and Analysis. A total of five soil samples (EX1-1-12.0 through EX1-5-10.0) were obtained from the limits of the heating oil UST excavation. The approximate locations of the soil samples are shown in Figure 12. The samples were submitted for analysis of diesel- and lube oil-range hydrocarbons using Ecology Method NWTPH-D extended. Chemical analytical results for the UST soil samples are presented in Table 8. Diesel- and/or lube oil-range hydrocarbons were detected in four of the soil samples at concentrations ranging from 44.8 to 413 mg/kg, and 86.7 to 611 mg/kg, respectively. One of the soil samples (EX1-1-12.0) also was submitted for analysis of BETX as part of an evaluation in accordance with Ecology's Interim TPH Policy procedures (see below). Toluene was detected in this soil sample at a concentration less than the MTCA Method A cleanup level. Benzene, ethylbenzene and xylenes were not detected in the sample.

Based on the sample chromatograms, the petroleum contamination detected in three of the excavation soil samples is not characteristic of heating oil; rather, the petroleum contamination is characteristic of the background residual hydraulic/lube oil. However, the contamination in one of the soil samples (EX1-1-12.0) appears to be related to heating oil. The heating oil contamination in this sample was quantified as diesel-range hydrocarbons at a concentration of 413 mg/kg. This sample was obtained from the base of the excavation. A MTCA Method B cleanup level was not calculated for heating oil at the site during completion of our previous ESA because heating oil was not encountered.

In our opinion, the heating oil-related contamination identified in the excavation likely was a result of overfilling the UST rather than a release (leak) from the UST because (1) the volume of contaminated soil encountered in the excavation was limited, and (2) the highest concentration of heating oil-related contamination was present in soil near the fill port (see "soil stockpile sampling" section below).

Sample EX1-1-12.0 was submitted for follow-up analysis of petroleum hydrocarbons using Ecology's Interim TPH Policy procedures. The chemical analytical procedures, test results and Interim TPH calculations for sample EX1-1-12.0 are summarized in Appendix G. The Interim TPH calculations indicate that the heating oil detected in sample EX1-1-12.0 does not present a risk to human health based on direct contact, toxic and carcinogenic effects. The hazard index for sample EX1-1-12.0 is 0.07; this would correspond to an estimated MTCA Method B cleanup level of 3,824 mg/kg. Carcinogenic compounds (benzene and cPAHs) were not detected in the soil sample. Additionally, Raoult's Law (using a dilution factor of 20) indicates that the heating oil contamination in soil will not produce ground water contamination at concentrations exceeding the MTCA Method A cleanup level for petroleum hydrocarbons (1.0 mg/l). Based on these calculations and the physical constraint of the adjacent building, the soil with heating oil-related contamination was not removed from the UST excavation.

Soil Stockpile Sampling. Three soil samples (EX1-SP1, EX1-SP2 and EX1-SP3) were obtained from the stockpile of excavated soil and submitted for analysis of diesel- and heavy oil-

range hydrocarbons. Chemical analytical results for stockpile soil samples are presented in Table 10. The samples were obtained from locations where field screening indicated the highest concentrations of petroleum hydrocarbons likely were present. The highest concentrations of petroleum hydrocarbons were detected in sample EX1-SP1; diesel-range hydrocarbons were detected at a concentration of 2,800 mg/kg in this sample. The sample chromatogram indicated that the petroleum-related contamination detected in EX1-SP1 likely was comprised of heating oil. Contaminated soil in the vicinity of sample EX1-SP1 was segregated from the stockpile using field screening techniques. This soil was transported to an off-site facility for treatment or disposal. The remainder of the stockpile (characterized by samples EX1-SP2 and EX1-SP3) was used as backfill in the excavation; relatively low concentrations of residual hydraulic/lube oil are present in this soil, similar to much of the site.

Excavated Soil Volume. We estimate that approximately 45 cubic yards of soil were removed from the heating oil UST excavation, as summarized in Table 9. About 25 cubic yards of the excavated soil were transported off-site for permitted treatment or disposal based on stockpile soil sampling (see above). The remainder of the excavated soil (about 20 cubic yards) was placed in the excavation as backfill. Approximately 25 cubic yards of clean soil were imported to the site and placed as backfill in the heating oil UST excavation.

7.4 TRANSFORMER REPAIR SHOP VAULT

A subsurface vault formerly located east of the transformer repair shop was removed during this project. The vault collected wash water from a transformer wash rack formerly located inside the transformer repair shop. The wash water was directed to the vault via a floor drain and piping, as shown in Figure 6. It also appears that the vault collected effluent from two sumps located in the transformer repair shop. We understand that the sumps collected wash water from transformer-cleaning activities. The vault discharged to a sanitary sewer that extends in a northerly direction along the east side of the Stores Building and enters the City of Renton sanitary sewer system north of the site.

Prior to removal of the vault, a sample of water (Vault-1) and sediment (Vault-1-3.0) were obtained from the vault and submitted for analysis of PCBs, diesel- and lube oil-range hydrocarbons, and/or pH. These samples were obtained to evaluate the disposal options for water and sediment removed from the vault. Chemical analytical results for these samples are summarized below. Laboratory reports for these analyses are presented in Appendix C (Volume II) of this report.

Sample	PCBs	Diesel-range hydrocarbons	Lube oil-range hydrocarbons	pH
Water sample (Vault-1)	4.04 µg/l	---	---	8.43
Sediment sample (Vault 1-3.0)	1.62 mg/kg	17,500 mg/kg	3,140 mg/kg	---

The water and sediment removed from the vault were placed in one labeled 55-gallon drum located near the former vault. Disposal plans were in progress at the time this report was

finalized. PSE will dispose of the contents of this drum at a licensed off-site facility in accordance with applicable regulations.

7.4.1 Soil Sampling and Analysis

Two soil samples (VTP-1-4.5 and VTP-2-2.5) were obtained from the limits of the excavation after the vault was removed. The locations of the soil samples are shown in Figure 6. The samples were submitted for analysis of diesel- and lube oil-range hydrocarbons, and PCBs. Analytical results for the soil samples are presented in Table 11. Diesel- and lube oil-range hydrocarbons were detected at concentrations less than the site-specific MTCA Method B cleanup level for petroleum hydrocarbons. PCBs either were not detected or were detected at concentrations less than the MTCA Method A cleanup level.

8.0 REMEDIAL EXCAVATION

8.1 HOT SPOT REMEDIAL EXCAVATIONS

8.1.1 Background

Seven areas of known contamination were excavated ("hot spot" excavations E-3 through E-9) in the equipment storage yard. These excavations were completed because the results of our April 1998 ESA indicated the presence of soil or ground water contamination (cPAHs, PCBs or petroleum hydrocarbons) at concentrations exceeding applicable cleanup levels in these areas (see Figure 9 of the April 1998 report). Presented below is a summary of the soil and ground water samples obtained during our April 1998 ESA that had contaminant concentrations exceeding applicable cleanup levels, and the remedial excavations completed to remove the contamination. The approximate locations of the remedial excavations are shown in Figure 4.

Remedial Excavation	Excavation Depth	Contaminant of Concern[1]	Sample Media[1]	Sample Idenification[1]	Sample Depth[1]
E-3	3.0 feet	PCBs	Soil	B-7	0.5 feet
E-4	6.0 feet	cPAHs	Soil	B-19	0.5 feet
E-5	3.0 feet	cPAHs	Soil	B-23	0.5 feet
E-6	7.0 feet	PCBs	Soil	B-34	0.5 feet
			GW	GMW-4	NA
E-7	3.0 feet	cPAHs	Soil	B-29	0.5 feet
E-8	6.0 feet	PCBs	Soil	TP-5	4.0 feet
E-9	8.0 feet	TPH	GW	GMW-2	NA

Notes:

[1]These details summarize all soil and ground water samples in which contaminants were detected at concentrations exceeding applicable cleanup levels during our April 1998 ESA.

GW = ground water

NA = not applicable

Excavation E-6 was completed to remove relatively shallow PCB-contaminated soil, as indicated above. However, one of the deep storm drains was present beneath the western portion

of E-6. Therefore, the western portion of E-6 was excavated to a greater depth (about 7 feet below grade) to remove petroleum-contaminated soil adjacent to the storm drain. Petroleum-contaminated soil also was removed from beneath the City of Renton sanitary sewer line in the northwestern portion of E-6.

The "hot spot" remedial excavations were completed to predetermined lateral limits and depths, followed by an initial round of soil sampling. The soil sample analytical results indicated that the first round of excavation was successful in removing contaminated soil from the "hot spot" areas, with the exception of E-6 and E-7. It was necessary to conduct additional excavation and sampling activities in portions of E-6 and E-7, as described below.

Excavated soil with contamination at concentrations exceeding applicable cleanup levels was transported off-site for treatment/disposal at TPS Technologies' facility in Tacoma, Washington or disposal at Olympic View Sanitary Landfill in Kitsap County. All tipping receipts that were received from the treatment and disposal facilities at the time this report was finalized are presented in Appendix H. The tipping receipts document soil treatment/disposal through October 26, 1998. A total weight of approximately 2,150 tons of soil from the site was received at the treatment/disposal facilities through October 26, 1998. We estimate that an additional weight of approximately 500 tons of soil was transported to Olympic View Sanitary Landfill after October 26, 1998.

8.1.2 Soil Sampling and Analysis

Soil samples were obtained from the final limits of the remedial excavations and submitted for analysis of the contaminants of concern (cPAHs, PCBs, and/or petroleum hydrocarbons). Sidewall soil samples were obtained from the depth at which contamination was identified in our April 1998 ESA (summarized above). Soil samples also were obtained from the base of the excavations at depths below the contamination, as identified in our previous study. Analytical results for the soil samples are presented in Table 11. The approximate locations of soil samples obtained from the "hot spot" excavations are shown in Figures 13 through 19.

Contaminants of concern either were not detected or were detected at concentrations less than applicable cleanup levels in the initial soil samples obtained from all of the "hot spot" excavations, with the exception of E-6 and E-7. Based on this information, subsequent excavation was not required after the first sampling event in "hot spots" E-3, E-4, E-5, E-8 and E-9. The locations of soil samples obtained from these excavations and the final limits of the excavations are shown in Figures 13, 14, 15, 18 and 19, respectively.

PCBs were detected at concentrations exceeding the MTCA Method A cleanup level (1.0 mg/kg) in three soil samples (E6-5-3.0, E6-8-0.5 and E6-12-0.5) obtained from E-6. PCBs were detected in these samples at concentrations ranging from 1.30 to 1.99 mg/kg. The approximate locations of these soil samples are shown in Figure 16. These samples were obtained from the eastern half of the excavation, at depths ranging from about 0.5 to 3.0 feet bgs. PCB-contaminated soil in this area was subsequently overexcavated to a greater depth (about 4.5 feet below grade) and the lateral limits were expanded. Samples obtained from the final

limits of the excavation indicate that soil with PCBs at concentrations exceeding the MTCA Method A cleanup level was successfully removed from E-6.

Four soil samples shown in Figure 16 (excavation E-6) were obtained to evaluate the concentration of petroleum hydrocarbons adjacent to the deep storm drain (E6-1-6.0, E6-3-6.0 and E11-10-6.0) and the City of Renton sanitary sewer (E11-7.3.5). The petroleum-related contamination adjacent to the storm drain and sanitary sewer appeared to be unrelated to the shallower PCB-related contamination in "hot spot" excavation E-6. The analytical results for these soil samples are discussed in Sections 8.2 and 8.3.

Carcinogenic PAHs were detected at a concentration exceeding the MTCA Method A cleanup level (1.0 mg/kg) in one soil sample (E7-5-0.5) obtained from the northwest sidewall of excavation E-7. Carcinogenic PAHs were detected in this sample at a total concentration of 3.41 mg/kg. The location of sample E7-5-0.5 is shown in Figure 17. This area was overexcavated and reevaluated by obtaining three additional sidewall samples and one additional base sample; cPAHs and other SVOCs either were not detected or were detected at concentrations less than the MTCA Method A cleanup level in these soil samples.

8.1.3 Soil Stockpile Sampling

Soil removed from excavations E-3 through E-8 was not sampled after it was excavated. Soil contamination was known to be present in these areas at concentrations exceeding applicable cleanup levels based on the results of our April 1998 ESA.

Soil removed from E-9 was sampled prior to off-site transport because previous analyses did not identify the presence of contamination at concentrations exceeding applicable cleanup levels; "hot spot" excavation E-9 was completed because petroleum hydrocarbons were detected in ground water in GMW-2 at a concentration exceeding the MTCA Method A cleanup level. Three soil samples (EX9-SP1, EX9-SP2 and EX9-SP3) were obtained from the stockpile of soil removed from E-9, and submitted for analysis of diesel- and lube oil-range hydrocarbons. Analytical results for the stockpile soil samples are presented in Table 10. Diesel- and lube oil-range hydrocarbons were detected at concentrations less than the MTCA Method B cleanup level in these samples.

8.1.4 Excavated Soil Volume

An estimated total volume of approximately 580 cubic yards of soil was removed from "hot spot" excavations E-3 through E-9, as summarized in Table 9. Soil removed from the excavations was transported off-site for permitted disposal/treatment. It would have been possible to use soil that was excavated from E-9 for backfill based on the concentrations of petroleum hydrocarbons detected in the stockpile soil samples (see above). However, this soil was not suitable for use as structural fill because it could not be adequately compacted. Soil from E-9 was transported off-site for permitted treatment/disposal.

8.2 STORM DRAIN REMEDIAL EXCAVATION

8.2.1 Soil Sampling and Analysis Plan

Soil samples were obtained from the storm drain excavation to evaluate whether contamination was present at concentrations exceeding applicable cleanup levels. The approximate soil sample locations are shown in Figure 20. In general, soil samples were collected at the following locations: (1) areas where field screening evidence suggested the potential presence of petroleum-related contamination, and (2) beneath piping/catch basin connections. We also were prepared to obtain soil samples beneath areas of broken piping, if observed; however, broken storm drain piping was not observed at the site.

In general, soil samples obtained from near the storm drain system were submitted for analysis of PCBs and cPAHs. Soil samples also were submitted for analysis of diesel- and lube oil-range hydrocarbons if the soil exhibited a moderate or heavy sheen (see Appendix B for a description of field screening techniques). Based on our experience, site soil with moderate or heavy sheens sometimes contains petroleum hydrocarbons at concentrations exceeding the MTCA Method B cleanup level; however, site soil exhibiting a slight sheen does not contain petroleum hydrocarbons at concentrations exceeding the MTCA Method B cleanup level.

8.2.2 Soil Sample Analytical Results

Petroleum hydrocarbons, PCBs, cPAHs and other SVOCs either were not detected or were detected at concentrations less than applicable cleanup levels in most portions of the storm drain excavation. These areas are shown as the unshaded portions of the storm drain excavation in Figure 20. Chemical analytical results for soil samples obtained from these areas are presented in Table 11 (see "Storm Drain Removal Excavation" samples).

Diesel- and lube oil-range hydrocarbons were detected at concentrations exceeding the MTCA Method B cleanup level along two portions of the storm drain system. These areas were located: (1) along the western-most section of deep storm drain, and (2) along a limited portion of the shallow storm drain near the south end of the storage yard. These areas are shown as shaded portions of the storm drain excavation in Figure 20. Remedial excavation was completed in these areas. The remedial excavation and soil sampling activities in these areas are described below.

8.2.3 Deep Storm Drain Remedial Excavation

Relatively extensive remedial excavation was required adjacent to the deep storm drain that extended from catch basin CB-6 to a location beneath the south end of the storage dock. A portion of the storage dock was removed, as necessary, to access the contaminated area. The deep storm drain extended beneath the western portion of "hot spot" excavation E-6, as previously described. The storm drain was present at depths ranging from about 4 to 5 feet below grade. Ground water in this area was approximately 1 to 2 feet above the storm drain.

Soil Sampling and Analysis. Soil samples were obtained from the limits of the remedial excavation and submitted for analysis of diesel- and lube oil-range hydrocarbons. The approximate locations of the soil samples are shown in Figure 20. Additionally, soil samples

collected adjacent to the deep storm drain within the outline of "hot spot" excavation E-6 are shown in Figure 16. Analytical results for the soil samples are presented in Table 11 (see "Deep Storm Drain Remedial Excavation" samples). The samples were obtained adjacent to, and beneath, the deep storm drain to identify the lateral and vertical limits of the soil contamination. Based on a combination of chemical analytical data and field screening results, soil with petroleum hydrocarbon concentrations exceeding the MTCA Method B cleanup level was primarily limited to backfill material surrounding the drain pipe. The petroleum-contaminated soil requiring excavation generally was present within a 2-foot radius of the drain pipe.

Diesel- and lube oil-range hydrocarbons were detected at concentrations exceeding the MTCA Method B cleanup level in four soil samples (E6-1-6.0, E6-3-6.0, E11-8-6.0 and E11-10-6.0) obtained near the deep storm drain excavation. The concentrations of diesel-range hydrocarbons detected in these soil samples ranged from 995 to 7,290 mg/kg; lube oil-range hydrocarbons were detected at concentrations ranging from 2,500 to 14,900 mg/kg in the samples. Areas in which petroleum hydrocarbons were detected at concentrations exceeding the MTCA Method B cleanup level, as identified above, were overexcavated and subsequent soil samples were obtained for confirmation. Diesel- and lube oil-range hydrocarbons were detected at concentrations less than the MTCA Method B cleanup level in the soil samples obtained from the final limits of the deep storm drain excavation.

Several soil samples obtained from the deep storm drain excavation also were submitted for analysis of PCBs and cPAHs. PCBs, cPAHs and other SVOCs either were not detected or were detected at concentrations less than MTCA Method A cleanup levels in these samples. The PCB-related contamination identified in the eastern portion of "hot spot" excavation E-6, as described in Section 8.1.2, was shallower than, and appeared to be unrelated to the deep storm drain.

Test Pits. Two test pits (RTP-2 and RTP-3) were excavated along the alignment of the deep storm drain at locations north and south of the storage dock, respectively, as shown in Figures 5 and 20 [Note: soil samples were not obtained from test pit RTP-1; see Appendix B for discussion]. These test pits were excavated during remedial activities to evaluate the lateral extent of petroleum-contaminated soil along the deep storm drain. Soil logs for the test pits are presented in Appendix B. One soil sample was obtained from each test pit (samples RTP2-1-2.5 and RTP3-1-6.0) and submitted for analysis of diesel- and lube oil-range hydrocarbons. Chemical analytical results for the soil samples are presented in Table 12. Each soil sample was representative of backfill material immediately beneath the storm drain. Diesel- and lube oil-range hydrocarbons were detected in sample RTP3-1-6.0 at concentrations (6,760 and 13,700 mg/kg, respectively) significantly exceeding the MTCA Method B cleanup level. Petroleum-contaminated soil in this area was subsequently excavated, as described above. Petroleum hydrocarbons were not detected in sample RTP2-1-2.5, which was obtained from a location north of the storage dock.

8.2.4 Shallow Storm Drain Remedial Excavation

Remedial excavation also was completed in a relatively small area along the shallow storm drain near the south end of the storage yard. The remedial excavation extent and approximate soil sample locations in this area are shown in Figure 20. The shallow storm drain was present at a depth of about 3 feet below grade, which was higher than the ground water table.

Soil Sampling and Analysis. Diesel-range hydrocarbons originally were detected at a concentration exceeding the MTCA Method B cleanup level at one location in the vicinity of the shallow storm drain (sample E10-1-2.0; 12,800 mg/kg). Analytical results for soil samples obtained from this area are presented in Table 11 (see "Shallow Storm Drain Remedial Excavation" samples). Remedial excavation was completed to remove the petroleum-contaminated soil. Four soil samples (E12-1-2.0 through E12-5-5.0) were obtained from the final limits of the excavation and submitted for analysis of diesel- and lube oil-range hydrocarbons. Diesel- and lube oil-range hydrocarbons either were not detected or were detected at concentrations less than the MTCA Method B cleanup level in these samples.

8.2.5 Stockpile Soil Sampling

Soil removed from the deep and shallow storm drain remedial excavations was temporarily stockpiled on-site. Six soil samples (SP-1 through SP-6) were obtained from the stockpile and submitted for analysis of diesel- and lube oil-range hydrocarbons, and PCBs. Fill soil that was removed from beneath the storage dock also was temporarily stockpiled on-site. Three samples (E11-BF-1 through E11-BF-3) of the stockpiled fill soil were obtained and submitted for analysis of diesel- and lube oil-range hydrocarbons. Chemical analytical results for the stockpile soil samples are presented in Table 10.

Diesel- and lube oil-range hydrocarbons were detected at concentrations exceeding the MTCA Method B cleanup level in two of the samples described above (SP-2 and SP-6). Diesel- and lube oil-range hydrocarbons were detected at concentrations less than the MTCA Method B cleanup level in the other stockpile soil samples. PCBs either were not detected or were detected at concentrations less than the MTCA Method A cleanup level in the samples tested. All of the soil characterized by samples SP-1 through SP-6 was transported off-site because it was not suitable for use as structural fill. The soil characterized by samples E11-BF-1 through E11-BF-3 was used as backfill.

8.2.6 Excavated Soil Volume

Approximately 1,105 cubic yards of soil were excavated to remove the storm drain system and perform the required remedial excavation, as shown in Table 9. Approximately 530 cubic yards of soil removed from the remedial excavation areas required off-site treatment/disposal because contaminant concentrations exceeded applicable cleanup levels. An additional 160 cubic yards of soil from these excavations were transported to the off-site treatment/disposal facilities because it was unsuitable for use as structural backfill.

8.3 SANITARY SEWER REMEDIAL EXCAVATION

8.3.1 Excavation and Soil Sampling

A City of Renton sanitary sewer is present at a depth of about 3 feet below grade in the storage yard, as shown in Figures 16 and 20. The sanitary sewer was located above, and oriented perpendicular to, the western-most deep storm drain. Petroleum-contaminated soil was encountered beneath the sanitary sewer at the location where the sewer crossed the deep storm drain. Based on our observations, it appeared that the petroleum-contaminated soil was limited to backfill surrounding the sanitary sewer. Diesel- and lube oil- range hydrocarbons were detected at concentrations exceeding the MTCA Method B cleanup level in sample E11-7-3.5 (2,420 and 5,370 mg/kg, respectively), which was obtained from beneath the sanitary sewer. PCBs were detected at a concentration less than the MTCA Method A cleanup level in sample E11-7-3.5. Chemical analytical results for soil samples obtained near the sanitary sewer are presented in Table 11. The approximate soil sample locations are shown in Figure 16.

Petroleum-contaminated soil beneath the sanitary sewer was removed during remedial excavation of the deep storm drain. The contaminated soil removed from near the sanitary sewer was combined with soil removed from the deep storm drain excavation. Four soil samples (E14-1-4.0, E14-4-4.5, E14-5-4.0 and E14-6-4.5) were obtained from locations adjacent to, and beneath, the sanitary sewer after petroleum-contaminated soil was removed. These samples were submitted or chemical analysis of diesel- and lube oil-range hydrocarbons. Diesel- and lube oil-range hydrocarbons either were not detected or were detected at concentrations less than the MTCA Method B cleanup level in these samples.

8.3.2 Test Pit Explorations

Four test pits (RTP-4 through RTP-7) were excavated along the alignment of the sanitary sewer at the locations shown in Figure 20. The purpose of the test pits was to further evaluate whether petroleum-contaminated soil was potentially present in backfill surrounding the sanitary sewer at these locations. Soil logs for the test pits are presented in Appendix B. Field screening evidence did not suggest the presence of petroleum hydrocarbons in soil at concentrations exceeding applicable cleanup levels in the test pits.

Soil samples (RTP6-1-3.5 and RTP7-1-3.0) were obtained from two of the test pits excavated near the sanitary sewer. The soil samples were obtained from backfill material beneath the sewer, and submitted for chemical analysis of diesel- and lube oil-range hydrocarbons. Chemical analytical results for the test pit soil samples are presented in Table 12. Diesel- and lube oil-range hydrocarbons either were not detected or were detected at concentrations less than the MTCA Method B cleanup level in these soil samples. Soil samples obtained from test pits RTP-4 and RTP-5 were not submitted for chemical analysis because of field screening results and the analytical results of soil samples obtained from test pits RTP-6 and RTP-7.

8.4 TEST PIT (TTP-3) REMEDIAL EXCAVATION

8.4.1 Excavation and Soil Sampling

Field screening results indicated the potential presence of petroleum-related soil contamination in one (TTP-3) of the four test pits completed to evaluate the potential presence of buried transformers, as discussed in Section 6.5.4. Test pit TTP-3 is located in the equipment storage yard, as shown in Figure 8. Five soil samples were obtained from the original limits of the test pit and one soil sample was obtained from the vicinity of the metal debris (TTP3-1-3.0) that was present in the test pit. These samples were submitted for chemical analysis of one or more of the following: diesel- and lube oil-range hydrocarbons, PCBs and cPAHs. Chemical analytical results for these soil samples are presented in Table 11 (see "Test Pit Exploration for Potential Buried Transformer" samples). The soil sample locations are shown in Figure 21. Soil samples from test pits TTP-1, TTP-2 and TTP-4 were not submitted for chemical analysis because field screening results did not suggest the potential presence of petroleum-related contamination.

Diesel- and lube oil-range hydrocarbons were detected at concentrations exceeding the site-specific MTCA Method B cleanup level in two soil samples (TTP3-1-3.0 and TTP3-5-3.0) obtained from TTP-3. Our interpretation of the sample chromatograms suggests that the petroleum-related contamination in these samples is related to transformer oil. Diesel- and lube oil-range hydrocarbons either were not detected or were detected at concentrations less than the MTCA Method B cleanup level in the other soil samples obtained from the original limits of the test pit. PCBs and cPAHs either were not detected or were detected at concentrations less than the MTCA Method A cleanup levels in the samples tested.

Soil with petroleum hydrocarbon concentrations exceeding the MTCA Method B cleanup level were removed from the vicinity of test pit TTP-3. This was accomplished by expanding the original test pit excavation approximately 15 feet to the east. The final limits of the completed remedial excavation and original outline of test pit TTP-3 are shown in Figure 21. The remedial excavation was completed to the same approximate depth (8 feet bgs) as test pit TTP-3.

Four soil samples (TTP3-7-3.0 through TTP3-10-8.0) were obtained from the limits of the remedial excavation at locations east of the original test pit and submitted for analysis of diesel- and lube oil-range hydrocarbons. The approximate locations of the soil samples are shown in Figure 21. Chemical analytical results for the soil samples are presented in Table 11.

Based on the analytical results of soil samples obtained from the original limits of test pit TTP-3, and the soil samples obtained from the adjacent remedial excavation, soil with petroleum hydrocarbon concentrations exceeding the site-specific MTCA Method B cleanup level was successfully removed from this area.

8.4.2 Excavated Soil Volume

An estimated volume of approximately 110 cubic yards of soil was removed from the combined area of test pit TTP-3 and the associated remedial excavation (see Table 9). This soil was transported off-site for permitted disposal because it contained petroleum hydrocarbons at concentrations exceeding the site-specific MTCA Method B cleanup level. An additional volume

of approximately 120 cubic yards of soil was removed from the other test pits (TTP-1, TTP-2 and TTP-4) completed to explore for potential buried transformers (see Section 6.5.3). This soil did not appear to contain petroleum hydrocarbons at concentrations exceeding the MTCA Method B cleanup level; however, this soil was transported off-site for permitted disposal because it was not suitable for use as structural fill. The test pit and remedial excavations were not backfilled at the time this report was prepared. These excavations will be backfilled using suitable imported materials and procedures, as described in Section 10.

8.5 DISCUSSION

The greatest volume and concentration of petroleum-related soil contamination encountered during this project was present in the vicinity of the western deep storm drain. A specific source for this contamination was not identified during remedial or site characterization activities. In our opinion, the most likely source for the petroleum contamination was long-term equipment storage and vehicle operation in the equipment storage yard. Relatively minor surficial spills and leaks over a long period of time likely infiltrated shallow soil in the unpaved portion of the storage yard in the vicinity of E-6. Relatively permeable backfill surrounding the deep storm drain piping apparently was a conduit for the petroleum contamination, regardless of the source.

9.0 SUMMARY OF EXCAVATED SOIL VOLUMES

We estimate that a total volume of approximately 2,260 cubic yards of soil was excavated during this project. This soil was excavated to remove underground facilities, remediate contaminated soil, and explore for potentially buried transformers, as described above. Our estimate of the volume of soil excavated to complete the various tasks of this project is presented in Table 9.

We estimate that about 1,145 cubic yards of the soil excavated at the site contained petroleum-, PCB- or cPAH-related contamination at concentrations exceeding applicable cleanup levels. This soil was transported off-site for permitted treatment or disposal. Additionally, about 505 cubic yards of soil were transported off-site for treatment/disposal because it was unsuitable for use as structural fill; contaminant concentrations in this soil were known or anticipated to be less than applicable cleanup levels. An estimated volume of 610 cubic yards of excavated soil, which was suitable for use as structural fill, was used at the site as backfill. Approximately 1,650 cubic yards of clean fill was imported to the site for use as backfill. The backfill material included quarry spalls and pea gravel for use below ground water and pipe bedding.

10.0 BACKFILLING PROCEDURES

Backfilling procedures were generally completed in accordance with the work plan. A GeoEngineers staff member was present on-site at selected times to observe the backfilling procedures, and perform compaction testing using a nuclear density gauge. Our general observations of backfilling activities are described below.

Quarry spalls were used to backfill portions of the excavations that were below the ground water level. The quarry spalls were used to backfill these excavations to a depth of about 1 foot

above the ground water level. The contractor used the backhoe bucket to tamp the quarry spalls after placement. A geotextile (filter) fabric was placed on top of the quarry spalls and imported fill (pit run) or soil excavated at the site was used to backfill the remainder of the excavations to site grade.

New storm drain piping was installed on top of a 4-inch-thick bed of pea gravel regardless of the pipe depth relative to the ground water level. Pea gravel also was placed on top of the piping to a level approximately 4 inches above the top of the pipe.

Soil placed above the quarry spalls and pea gravel was compacted using a vibratory plate. This soil was compacted to 90 percent of maximum dry density (MDD) at depths below approximately 2 feet, and 95 percent of MDD at depths shallower than approximately 2 feet. Much of the soil excavated at the site, especially if it was removed from depths below ground water, was not suitable for use as structural fill, as previously discussed. This soil was transported off-site for permitted disposal. The volume of this soil was replaced with clean imported fill. The ground surface in the excavation areas was restored with approximately 4 inches of crushed rock (5/8-inch minus).

11.0 CONCLUSIONS

11.1 GENERAL

Based on the results of our site studies, it is our opinion that the project objectives (Section 3.0) have successfully been attained. All known soil with contamination at concentrations exceeding applicable cleanup levels has been removed from the developed portion of the site. It is also our opinion that the potential for future large-scale remedial excavation projects being required at the site is low.

There are two remaining contamination-related issues that were identified at the site. Contamination remains at concentrations exceeding applicable cleanup levels in the following areas: (1) cPAH-related contamination is present in soil in the wetland located south of the developed portion of the site, and (2) contamination is present in ground water beneath isolated portions of the site. However, it is our opinion that additional remedial excavation activities will not be required to address these issues. The presence of this contamination should not significantly impact future redevelopment of the site.

Specific conclusions regarding our (1) site cleanup activities, (2) supplemental site characterization including remaining areas of contamination, and (3) facilities removal monitoring are presented below.

11.2 SITE CLEANUP ACTIVITIES

Based on field observations, field screening and chemical analytical results, it is our opinion that soil with petroleum hydrocarbon, PCB and/or cPAH concentrations exceeding applicable cleanup levels has been successfully removed from the developed portions of the site in which contamination was identified during our studies and remedial actions. Our field observations and the existing analytical data suggest that soil conditions at the site now comply with (1) the most conservative, site-specific MTCA Method B cleanup level (3,243 mg/kg) for petroleum

hydrocarbons in soil that was calculated in accordance with Ecology's Interim TPH Policy, and (2) MTCA Method A cleanup levels for PCB- and cPAH-related soil contamination. It is our opinion that the potential for a significant volume of soil contamination remaining at the site at concentrations exceeding applicable cleanup levels is low.

The chemical analytical data from soil samples obtained during this study indicates that remaining petroleum hydrocarbon concentrations do not, on average, approach the most conservative (lowest) MTCA Method B residential cleanup level calculated for the site. A total of 71 soil samples were obtained from the site characterization explorations, and facilities removal/remedial excavations during this study, excluding the soil samples obtained from areas that were subsequently overexcavated. Analytical results for these soil samples are included in Tables 4, 8, 11 and 12. We statistically evaluated the petroleum hydrocarbon concentrations in these samples in accordance with the guidance provided in Ecology's publication entitled "Statistical Guidance for Ecology Site Managers" (Publication No. 92-54), dated August 1992. The data was evaluated using Ecology's "MTCAStat" program. Our analysis was based on a one-tailed test (error level of 0.05) of the null hypothesis that the true concentration of the parameter was less than the site-specific MTCA Method B cleanup level, and a standard "t" distribution statistical method. The calculated upper 95 percent confidence limit (UCL) for diesel- and lube oil-range hydrocarbons in the sample population described above (71 soil samples) is 305 mg/kg and 492 mg/kg, respectively. The combined UCLs for diesel- and lube oil-range hydrocarbons equal 797 mg/kg, which does not approach the MTCA Method B cleanup level for TPH at the site (3,243 mg/kg). The single highest concentration of diesel-range hydrocarbons in the sample population is 2,250 mg/kg; the single highest concentration of lube oil-range hydrocarbons in the sample population is 1,940 mg/kg.

11.3 SUPPLEMENTAL SITE CHARACTERIZATION

11.3.1 Wetland Soil Conditions

Carcinogenic PAHs are present at concentrations exceeding the MTCA Method A cleanup level in shallow soil and sediment in the wetland and associated drainage channel located south of the equipment storage yard. Carcinogenic PAHs have not been detected in ground water samples obtained from monitoring wells located near the wetland. The wetland area receives stormwater runoff primarily from urban areas located upslope of the site. A much smaller volume of stormwater runoff is discharged to this area from the subject site, after passing through oil/water separators. In our opinion, much of the cPAH-related contamination in the wetland is likely a result of runoff entering this area from nearby properties, particularly during flood events. However, runoff from the subject site also may have contributed to the contamination. Based on our experience, shallow cPAH-related soil contamination often is present in areas that receive urban runoff. Remedial excavation in the wetland likely would not be effective because future stormwater runoff would introduce more cPAHs into the area.

11.3.2 Ground Water Conditions

Petroleum Hydrocarbons and PCBs. Subsurface conditions at the site have been extensively characterized during this and previous studies. Recent ground water monitoring activities indicate that residual PCBs and/or diesel- and lube oil-range hydrocarbons are present at concentrations exceeding MTCA Method A cleanup levels beneath two isolated portions of the site. One of the areas is in the equipment storage yard (GMW-4a); the other area is located in the western-most portion of the site, near the intersection of Grady Way South and Talbot Road (GMW-8, GMW-13 and GMW-14).

In our opinion, the source for the petroleum- and PCB-related ground water contamination detected in GMW-4a was successfully removed (excavated) during this project. Ground water samples obtained from downgradient monitoring wells indicate that the contamination in the vicinity of GMW-4a is not migrating off-site. The petroleum-related ground water contamination detected in GMW-8, GMW-13 and GMW-14 may be the result of the proximity of these wells to residual petroleum hydrocarbons that are likely present in off-site utility trenches beneath Talbot Road. Elevated concentrations of petroleum hydrocarbons were detected near utilities beneath Talbot Road in GMW-7. Our study did not identify a specific source of the petroleum hydrocarbons detected beneath Talbot Road. The petroleum-related ground water contamination detected in GMW-7 does not appear to be originating from the site. Petroleum hydrocarbons were not detected in ground water samples obtained from nearby on-site wells (GMW-6, GMW-10 and GMW-11) located immediately to the east (upgradient) of GMW-7.

We anticipate that the concentrations of petroleum hydrocarbons and PCBs in ground water beneath the site will decrease with time as a result of the source removal activities (remedial excavation) completed during this and previous projects. Quarterly ground water monitoring will be completed in 1999 to further evaluate ground water conditions. If contaminants in ground water beneath the site remain at concentrations greater than applicable cleanup levels, a restrictive covenant should be placed on the property deed of trust to prohibit the use of ground water for consumption or irrigation.

Arsenic. Dissolved arsenic also is present in ground water beneath the site at concentrations exceeding the MTCA Method A cleanup level. In our opinion, the source for the arsenic is not likely located on-site because: (1) soil from the site, including coal fragments, does not contain arsenic at concentrations exceeding MTCA Method A cleanup levels, (2) products or materials containing arsenic, including pesticides, have not been used at the site, and (3) conditions that would be conducive to leaching arsenic (low pH), if a source existed, are not present beneath the site. Based on this information, the dissolved arsenic appears to be a background contaminant in the local shallow ground water system. In our opinion, remedial actions likely will not be required at the site to address the arsenic-related ground water contamination.

11.3.3 Evaluation of Potential Buried Transformers

Geophysical and test pit explorations were completed to further evaluate the potential presence of buried transformers beneath portions of the equipment storage yard. The explorations

did not identify the presence of buried transformers. The geophysical responses interpreted by AGC to be potentially indicative of buried transformers appear to have been caused by the presence of subsurface utilities and buried metal debris that is unrelated to transformers. Additionally, our site characterization activities did not identify evidence of widespread subsurface contamination in these areas. Elevated concentrations of residual petroleum hydrocarbons were detected in two soil samples obtained from one of the test pits (TTP-3) completed to evaluate the potential presence of buried transformers. Contaminated soil in this area was limited in extent. The soil was excavated and transported off-site for permitted disposal.

11.4 FACILITIES REMOVAL ACTIVITIES

Several subsurface facilities were successfully removed/replaced at the site. The storm drain system in the southern portion of the site was removed, inspected for damage and areas of contamination, and replaced. Two 10,000-gallon USTs and one 2,000-gallon UST were removed from the site in accordance with Ecology guidelines. Site assessment activities indicated that petroleum products were not released from the 10,000-gallon USTs. A relatively minor release, apparently related to overfilling, appears to have occurred at the 2,000-gallon UST. Remedial activities were not required in the 2,000-gallon UST excavation based on an evaluation of the petroleum contamination using Ecology's Interim TPH Policy. No known USTs remain at the site.

12.0 LIMITATIONS

We have prepared this report for use by Puget Sound Energy, their authorized agents and regulatory agencies. This report is not intended for use by others, and the information contained herein is not applicable to other sites. If a lending agency or other parties intend to place reliance on the product of our services, we require that those parties indicate in writing their acknowledgment that the scope of services provided, and the general conditions under which the services were rendered are understood and accepted by them. This is to provide our firm with reasonable protection against open-end litigation by third parties with whom there otherwise would be no contractual limits to their actions.

GeoEngineers makes no warranties or guarantees regarding the accuracy or completeness of information provided or compiled by others. The information presented in this report is based on the above-described research, site visits and analytical results. GeoEngineers has relied upon information provided by others in our description of historical conditions. The available data do not provide definite information with regard to all past uses, operations or incidents at the site or adjacent properties.

No ESA or remedial action can wholly eliminate the potential for contamination to remain at the property at concentrations exceeding applicable cleanup levels. Performance of this practice is intended to reduce, but not eliminate, uncertainty regarding the potential for remaining contamination in connection with a property. Our conclusions are based on chemical analytical results from soil and ground water samples obtained during our site studies. There always is a

potential that areas with contamination that were not identified during our prior ESA or this study exist in portions of the site that were not sampled or tested. Further evaluation of such potential would require additional research, subsurface exploration, sampling and testing.

Some substances may be present in the site vicinity in quantities or under conditions that may have led, or may lead, to contamination of the subject site, but are not included in current local, state, or federal regulatory definitions of hazardous substances or do not otherwise present current potential liability. GeoEngineers cannot be responsible if the standards of all appropriate inquiry or regulatory definitions of hazardous substances change, or if you are required to meet more stringent standards in the future.

GeoEngineers has performed site characterization, facilities removal and remedial action monitoring at the Puget Sound Energy property at 915 Grady Way South in Renton, Washington within the limitations of scope, schedule and budget. Our services have been executed in accordance with our general agreement with Puget Sound Energy (Contract No. 9600000888) and generally accepted environmental science practices in this area at the time this report was prepared. No warranty or other conditions, express or implied, should be understood.

We appreciate the opportunity to assist Puget Sound Energy on this project. Please call if you have questions.

Yours very truly,

GeoEngineers, Inc.

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Attachments

Four copies submitted

TABLE 1 (Page 1 of 2)
SITE CHARACTERIZATION
SUBSURFACE EXPLORATION PROGRAM
Puget Sound Energy Grady Way Site
Renton, Washington

Subsurface Exploration[1]	Type of Exploration	Exploration Location[2]	Potential Source of Contamination	Media Sampled	Analyses/Contaminants of Concern							
					TPH[3]	PCBs[4]	Metals[5]	pH[6]	PAHs[7]	HVOCs[8]	BETX[9]	Dioxins[10]
GMW-1	Monitoring Well	Storage Yard	Storage Activities	GW	X	X		X				
GMW-2/2a					X	X		X				
GMW-3/3a		Upgradient Site		GW	X	X	X	X				
GMW-4/4a		Storage Yard		GW	X	X		X	X			
GMW-5		Downgradient Site Boundary		GW	X	X		X	X			
GMW-6		Storage Yard	Storage Activities, Wetland	GW	X	X		X	X			
GMW-7		Talbot Road	Unknown	GW	X	X		X				
GMW-8		Downgradient Site Boundary	Off-site Property	S/GW	X	X	X	X				
GMW-9			Storage Activities	GW	X	X	X	X				
GMW-10			Storage Activities, Wetland	S/GW	X	X	X	X	X			
GMW-11				S/GW	X	X	X	X	X			
GMW-12/12a		Transformer Repair Shop	Sumps	S/GW	X	X	X	X				
GMW-13		Downgradient Site Boundary	Off-site Property	GW	X							
GMW-14		Storage Yard			X							
MW-4		Near North End of Stores Building	Former USTs, Hydraulic Hoists	GW	X		X	X			X	
MW-10					X	X	X	X			X	
MW-20		Downgradient Site Boundary		GW	X		X	X		X	X	
SP-1	StrataProbe	Upgradient Site Boundary	Coal Debris	S/GW			X	X				
SP-2							X	X				
SP-3							X	X				
SP-4							X	X				
SP-5		North of Stores Building		S			X	X				

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Subsurface Exploration[1]	Type of Exploration	Exploration Location[2]	Potential Source of Contamination	Media Sampled	Analyses/Contaminants of Concern							
					TPH[3]	PCBs[4]	Metals[5]	pH[6]	PAHs[7]	HVOCs[8]	BETX[9]	Dioxins[10]
SP-6	StrataProbe	Transformer Repair Shop Sumps	Sumps and Former Acid Storage Tank In Transformer Repair Shop	S	X	X						X
SP-7					X	X						
SP-8												X
SP-9					X	X						
SP-10					X	X						
SP-11					X	X						
SP-12												
SED-1 through SED-5	Hand Auger	Wetland/drainage channel	Storm Water Runoff	S	X	X			X			
SOIL-1 through SOIL-11				S	X	X			X			
B-1a	Hollow Stem Auger Borings	Sanitary Sewer Manholes	Sump Discharge from Transformer Repair Shop	S	X	X						
B-2a					X	X						
B-3a					X	X						
TTP-1 through TTP-4	Test Pit	Equipment Storage Yard	Potential Buried Transformers	S	X	X			X			

Notes:

[1]Monitoring wells GMW-1 through GMW-7, MW-4, MW-10 and MW-20 were installed at the site during previous studies. Monitoring wells GMW-2, GMW-3, GMW-4 and GMW-12 were abandoned during remedial activities performed during this study; the wells were replaced by GMW-2a, GMW-3a, GMW-4a and GMW-12a.

[2]Exploration locations are shown in Figures 5, 6, 7 and 8.

[3]TPH = Total petroleum hydrocarbons using Ecology Methods NWTPH-G and/or NWTPH-D extended.

[4]PCBs = Polychlorinated biphenyls using EPA Method 8082

[5]Dissolved metals (arsenic, cadmium, chromium, lead and mercury) using EPA 6000- and 7000-Series Methodology.

[6]pH using EPA Method 150.1.

[7]PAHs = Polycyclic aromatic hydrocarbons and other semivolatile organic compounds (SVOCs) using EPA Method 8270.

[8]HVOCs = Halogenated volatile organic compounds using EPA Method 8021B.

[9]BETX = Benzene, ethylbenzene, toluene and total xylenes using EPA Method 8021B.

[10]Dioxins and furans using EPA Method 8290.

S=soil, GW=ground water

TABLE 2 (Page 1 of 2)
SUMMARY OF GROUND WATER ELEVATIONS
Puget Sound Energy Grady Way Site
Renton, Washington

Monitoring Well [1]	Date Measured	Depth to Ground Water[2] (feet)	Ground Water Elevation [3] (feet)
GMW-1	08/27/98	5.27	94.39
	11/03/98	5.00	94.66
	11/24/98	4.34	95.32
	11/30/98	3.74	95.92
GMW-2/2a [4]	08/27/98	4.80	94.82
	11/03/98	4.05	94.59
	11/24/98	2.59	96.05
	11/30/98	2.46	96.18
GMW-3/3a [4]	08/27/98	3.11	94.12
	11/03/98	2.33	94.79
	11/24/98	1.65	95.47
	11/30/98	1.42	95.70
GMW-4/4a [4]	08/27/98	4.26	92.81
	11/03/98	2.64	93.94
	11/24/98	--	--
	11/30/98	1.45	95.13
GMW-5	08/27/98	5.24	91.93
	11/03/98	4.33	92.84
	11/24/98	3.60	93.57
	11/30/98	2.93	94.24
GMW-6	08/27/98	3.27	92.91
	11/03/98	3.37	92.81
	11/24/98	2.23	93.95
	11/30/98	1.60	94.58
GMW-7	08/27/98	6.23	91.28
	11/03/98	5.58	91.93
	11/24/98	--	--
	11/30/98	4.29	93.22
GMW-8	08/27/98	6.44	91.67
	11/03/98	6.00	92.11
	11/24/98	5.00	93.11
	11/30/98	4.60	93.51
GMW-9	08/27/98	7.64	91.07
	11/03/98	6.87	91.84
	11/24/98	6.29	92.42
	11/30/98	5.85	92.86

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Monitoring Well [1]	Date Measured	Depth to Ground Water[2] (feet)	Ground Water Elevation [3] (feet)
GMW-10	08/27/98	4.73	91.11
	11/03/98	3.83	92.01
	11/24/98	3.23	92.61
	11/30/98	2.60	93.24
GMW-11	08/27/98	6.05	92.70
	11/03/98	5.28	93.44
	11/24/98	5.00	93.75
	11/30/98	4.42	94.33
GMW-12/12a [4,5]	08/27/98	--	--
	11/03/98	9.49	93.09
	11/24/98	--	--
	11/30/98	8.02	94.56
GMW-13	08/27/98	--	--
	11/03/98	--	--
	11/24/98	6.10	92.76
	11/30/98	5.86	93.00
GMW-14	08/27/98	--	--
	11/03/98	--	--
	11/24/98	6.11	92.95
	11/30/98	5.66	93.40
MW-4	08/27/98	5.76	92.45
	11/03/98	5.42	89.51
	11/24/98	4.86	90.07
	11/30/98	4.65	90.28
MW-10	08/27/99	8.38	91.86
	11/03/99	8.12	92.12
	11/24/99	7.40	92.84
	11/30/99	7.17	93.07
MW-20	08/27/99	7.23	92.31
	11/03/99	7.87	91.67
	11/24/99	7.15	92.39
	11/30/99	6.92	92.62

Notes:

[1] Approximate locations of the monitoring wells are shown in Figure 5.

[2] The depths to ground water were measured relative to the tops of the monitoring well casings.

[3] Casing elevations were surveyed relative to a temporary benchmark. The benchmark was assigned and arbitrary elevation of 100.00 feet.

[4] Monitoring well was abandoned during remedial activities and subsequently replaced.

[5] This monitoring well is located on a storage dock that is elevated several feet above site grade.

"--" = not measured.

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SUMMARY OF GROUND WATER CHEMICAL ANALYTICAL DATA[1]

Puget Sound Energy Grady Way Site
Renton, Washington

Sample Number[2]	Date Sampled	Sample Source[3]	Petroleum Hydrocarbons[4] (mg/l)		PCBs[5] (µg/l)	Dissolved Metals[6] (µg/l)		pH[7] (pH units)
			Diesel-Range	Lube Oil-Range		Arsenic	Chromium	
GMW-1	02/20/98	Monitoring Well	0.320	<0.500	–	–	–	–
	08/29/98		<0.250	<0.500	<0.100	–	–	7.08
	11/03/98		<0.250	<0.500	<0.100	–	–	6.46
GMW-2	02/20/98	Monitoring Well	0.396	0.970	–	–	–	–
	08/29/98		<0.250	<0.500	<0.100	–	–	7.12
GMW-2a[8]	11/03/98		<0.250	<0.500	<0.100	–		6.98
GMW-3	02/20/98	Monitoring Well	<0.250	<0.500	<0.100	–	–	–
	08/29/98[9]		<0.250	<0.500	<0.100	–	–	7.20
	09/17/98		–	–	–	2.56	–	–
GMW-3a[8]	11/03/98		<0.250	<0.500	<0.100	15.2	1.05	6.40
GMW-4	2/20/98[10]	Monitoring Well	0.404	<0.500	1.17[11]	–	–	–
	8/29/98[10]		<0.250	<0.500	<0.100	–	–	6.93
GMW-4a[8]	11/03/98 [10]		0.802	1.52	0.506[11]	–	–	6.30
GMW-5	02/20/98	Monitoring Well	<0.250	<0.500	<0.100	–	–	–
	08/29/98[10]		<0.250	<0.500	<0.100	–	–	6.81
	11/03/98 [10]		<0.250	<0.500	<0.100	–	–	6.30
GMW-6	02/20/98	Monitoring Well	<0.250	<0.500	<0.100	–	–	–
	08/29/98		<0.250	<0.500	<0.100	–	–	6.91
	11/03/98 [10]		<0.250	<0.500	<0.100	–	–	6.47
GMW-7	02/20/98	Monitoring Well	4.55	7.72	<0.100	–	–	–
	08/29/98		1.25	1.96	<0.100	–	–	6.74
	11/03/98		9.43	15.8	<0.100	–	–	6.52
GMW-8	08/29/98	Monitoring Well	<0.250	<0.500	<0.100	5.95	<1.00	7.31
	11/03/98		0.385	0.942	<0.100	2.28	<1.00	6.44
	11/24/98		1.84	5.13	–	–	–	–
GMW-9	08/29/98	Monitoring Well	<0.250	<0.500	<0.100	3.67	1.10	7.09
	11/03/98		<0.250	<0.500	<0.100	2.87	<1.00	6.75
GMW-10	08/29/98[10]	Monitoring Well	<0.250	<0.500	<0.100	16.0	2.35	6.88
	11/03/98 [10]		<0.250	<0.500	<0.100	5.15	1.38	6.41
GMW-11	08/29/98[10]	Monitoring Well	<0.250	<0.500	<0.100	7.36	1.91	6.88
	11/03/98 [10]		<0.250	<0.500	<0.100	1.22	1.09	6.42
MTCA Method A Cleanup Level			1.0[12]		0.1	5.0	50.0	NA

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Sample Number[2]	Date Sampled	Sample Source[3]	Petroleum Hydrocarbons[4] (mg/l)		PCBs[5] (µg/l)	Dissolved Metals[6] (µg/l)		pH[7] (pH units)
			Diesel-Range	Lube Oil-Range		Arsenic	Chromium	
GMW-12	09/08/98	Monitoring Well	<0.250	<0.500	<0.100	<1.00	1.00	6.61
GMW-12a[8]	11/03/98		<0.250	<0.500	<0.100	8.46	<1.00	6.56
GMW-13	11/24/98	Monitoring Well	0.472	1.21	–	–	–	–
GMW-14	11/24/98	Monitoring Well	1.06	2.98	–	–	–	–
MW-4	8/29/98[13]	Monitoring Well	<0.250	<0.500	–	55.6	2.70	6.99
	09/17/98		–	–	–	19.9	–	–
	11/03/98[13]		<0.250	<0.500	–	12.1	1.42	6.56
MW-10	12/22/97	Monitoring Well	<0.250	<0.500	<0.100	–	–	–
	8/29/98[13]		<0.250	<0.500	–	1.06	<1.00	7.16
	11/03/98[13]		<0.250	<0.500	<0.100	<1.00	<1.00	6.54
MW-20[14]	8/29/98[13]	Monitoring Well	<0.250	<0.500	–	4.26	<1.00	8.08
	11/03/98[13]		<0.250	<0.500	–	1.70	<1.00	6.63
SP-1	10/05/98	StrataProbe	–	–	–	1.24	–	–
SP-2	10/05/98	StrataProbe	–	–	–	2.21	–	–
SP-3	10/05/98	StrataProbe	–	–	–	2.81	–	–
SP-4	10/05/98	StrataProbe	–	–	–	<1.00	–	–
MTCA Method A Cleanup Level			1.0[12]		0.1	5.0	50.0	NA

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Notes:

[1] Chemical analyses were performed by North Creek Analytical Laboratory of Bothell, Washington.

[2] Ground water sampling locations are shown in Figure 5.

[3] On-site monitoring wells are constructed of 2-inch-diameter polyvinyl chloride (PVC) casing. StrataProbe samples were obtained from temporary sampling points that were installed using direct-push exploration equipment. Ground water sampling procedures are described in Appendix B.

[4] Diesel- and lube oil-range hydrocarbons analyzed using Ecology Method NWTPH-D extended.

[5] Polychlorinated biphenyls (PCBs) analyzed using EPA Method 8082.

[6] Dissolved metals (arsenic, cadmium, chromium, lead and mercury) analyzed using EPA 6000- and 7000-series Methodology. Arsenic and chromium were the only metals detected.

[7] pH analyzed using EPA Method 150.1.

[8] Monitoring well was abandoned during remedial activities and subsequently replaced.

[9] The ground water sample submitted for analysis of petroleum hydrocarbons was obtained on September 8, 1998.

[10] This sample also was submitted for analysis of carcinogenic polycyclic aromatic hydrocarbons (cPAHs) and other semivolatile organic compounds (SVOCs) using EPA Method 8270. cPAHs and other SVOCs were not detected in the sample.

[11] PCBs in this sample consisted entirely of Aroclor 1242.

[12] The MTCA Method A cleanup level applies to the sum of all ranges of petroleum hydrocarbons.

[13] This sample also was submitted for analysis of gasoline-range hydrocarbons using NWTPH-G, and benzene, ethylbenzene, toluene and xylenes (BETX) using EPA Method 8021B. Gasoline-range hydrocarbons and BETX were not detected in the sample.

[14] A ground water sample also was obtained from MW-20 on 09/17/98 and 11/03/98 and submitted for analysis of halogenated volatile organic compounds (HVOCs) using EPA Method 8021B. HVOCs were not detected in these samples.

"--" = not tested

NA = not applicable

mg/l = milligrams per liter

µg/l = micrograms per liter

MTCA = Model Toxics Control Act

Shaded values exceed MTCA Method A cleanup levels.

TABLE 4
SUMMARY OF SOIL CHEMICAL ANALYTICAL DATA[1]
EXPLORATORY BORINGS
Puget Sound Energy Grady Way Site
Renton, Washington

Sample Number[2]	Sample Depth (feet)	Field Screening Results[3]		Petroleum Hydrocarbons[4] (mg/kg)		PCBs[5] (mg/kg)	Total Metals[6] (mg/kg)					pH[7] (pH units)
		Headspace Vapors (ppm)	Sheen	Diesel-Range	Lube Oil-Range		As	Cd	Cr	Pb	Hg	
GMW-8-5.5	5.5	<100	NS	--	--	--	4.65	<2.50	15.5	5.12	<0.100	7.21
GMW-10-10.5	10.5	900	NS	--	--	--	2.56	0.535	18.5	2.77	<0.100	6.63
GMW-11-3.5	3.5	600	HS	63.9	32.4	0.76[8]	--	--	--	--	--	--
GMW-12-10.0	10.0	--	NS	--	--	--	4.19	<2.50	11.5	15.5	<0.100	6.45
SP1-2-5	5.0	--	NS	--	--	--	5.03	--	--	--	--	6.90
SP2-8.5	8.5	--	MS	--	--	--	4.80	--	--	--	--	7.11
SP3-6	6.0	--	SS	--	--	--	8.30	--	--	--	--	7.06
SP3-10	10.0	--	NS	--	--	--	2.12	--	--	--	--	6.85
SP4-7	7.0	--	SS	--	--	--	2.97	--	--	--	--	6.75
SP5-2-5	5.0	--	SS	--	--	--	16.5	--	--	--	--	7.04
SP7-3-10	10.0	--	SS	179	510	<0.05	--	--	--	--	--	--
SP8-3-9	9.0	--	SS	87.0	259	<0.05	--	--	--	--	--	--
SP10-3-8	8.0	--	SS	<10.0	<25.0	<0.05	--	--	--	--	--	--
SP11-3-8	8.0	--	SS	42.0	88.5	<0.05	--	--	--	--	--	--
SP12-3-8	8.0	--	NS	82.3	116.0	<0.05	--	--	--	--	--	--
B-1a-5.0	5.0	--	NS	86.6	115.0	<0.05	--	--	--	--	--	--
B-2a-5.0	5.0	--	SS	<10.0	47.7	<0.05	--	--	--	--	--	--
B-3a-5.0	5.0	--	NS	<10.0	<25.0	<0.05	--	--	--	--	--	--
MTCA Cleanup Level[9]				3,432[10]		1.0	20	2.0	100	250	1.0	NA

Notes:
[1] Chemical analyses were performed by North Creek Analytical laboratory of Bothell, Washington.
[2] Exploration locations are shown in Figures 5 and 6.
[3] Field screening procedures are described in Appendix B.
[4] Diesel- and lube oil-range hydrocarbons analyzed using Ecology Method NWTPH-D extended.
[5] Polychlorinated biphenyls (PCBs) analyzed using EPA Method 8082.
[6] Total metals analyzed using EPA 6000- and 7000-Series Methodology. AS = arsenic; Cd = cadmium; Cr = chromium; Pb = lead; Hg = mercury.
[7] pH analyzed using EPA Method 150.1.
[8] PCBs in this sample consisted entirely of Aroclor 1260.
[9] MTCA Method A cleanup level unless otherwise noted.
[10] This is the most conservative (lowest) site-specific cleanup level for petroleum hydrocarbons derived using Ecology's Interim TPH Policy. The sum of all hydrocarbon ranges should be compared with this cleanup level.

"--" = not tested
NA = not applicable
mg/kg = milligrams per kilogram
MTCA = Model Toxics Control Act
NS = no sheen
SS = slight sheen
MS = moderate sheen
HS = heavy sheen
ppm = parts per million

TABLE 5
SUMMARY OF SOIL CHEMICAL (DIOXIN) ANALYTICAL DATA [1]
EXPLORATORY BORINGS
Puget Sound Energy Grady Way Site
Renton, Washington

Sample Number[2]	Sample Depth (feet)	Date Sampled	Analyte Detected[3]	Detected Concentration (pg/g)	Detected Concentration [4] (mg/g)	2,3,7,8-TCDD TEF[5]	2,3,7,8-TCDD TEQ[6] (mg/kg)
SP6-3-8.0	8.0	10/05/98	ND	NA	NA	NA	NA
SP9-3-8.0	8.0	10/06/98	HpCDDs (total)	7.7	7.7E-06	0	0
			1,2,3,4,6,7,8,-HpCDD	4.6	4.6E-06	0.01	4.6E-08
			OCDD	33	3.3E-05	0.001	3.3E-08
						Total	7.9E-08
MTCA Method B cleanup level for 2,3,7,8-TCDD							6.67E-06

Notes

[1]Chemical analyses were performed by Quanterra Inc. of Sacramento, California. Dioxins and furans were analyzed using EPA Method 8290. The potential health risk posed by dioxins/furans was evaluated using the toxicity equivalency factor (TEF) approach, as described in Appendix D.

[2]Sample locations are shown in Figure 6.

[3]See the laboratory reports in Appendix C (Volume II) of this report for a complete list of analytes and detection limits.

[4]Detected concentrations in units of mg/kg. To convert from pg/g to mg/kg, the reported concentration of each analyte (in pg/g) is multiplied by 1E-06.

[5]EPA/600/BP-92/001C, August 1994. External Review Draft. Health Assessment Document for 2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD) and Related Compounds, Volume III of III. U.S. Environmental Protection Agency. (1989) Interim procedures for estimating risks associated with exposures to mixtures of chlorinated dibenzo-p-dioxins and dibenzofurans (CDDs and CDFs) and 1989 update. Risk Assessment Forum, EPA/625/3-89/016. National Technical Information Service, Springfield, VA; PB90-145756.

[6]The 2,3,7,8-TCDD TEQ concentration is calculated by multiplying the measured concentration by the TEF.

TCDD=Tetrachlorodibenzo-p-dioxin

TEF=Toxicity Equivalency Factor, defined as the ratio of the toxicity of a given dioxin/furan to that of 2,3,7,8-TCDD in the same biological assay.

TEQ=Toxic Equivalent

ND=not detected

NA = not applicable

pg/g=picograms per gram

mg/kg=milligrams per kilogram

TABLE 6 (Page 1 of 4)
SUMMARY OF SOIL / SEDIMENT CHEMICAL ANALYTICAL DATA [1]
WETLAND AREA
Puget Sound Energy Grady Way Site
Renton, Washington

Sample Number[2]	Date Sampled	Sample Depth (feet)	Petroleum Hydrocarbons[3] (mg/kg)		Semivolatile Organic Compounds[4] (mg/kg)				Polychlorinated Biphenyls[5] (mg/kg)
						Other SVOCs			
			Diesel-Range	Lube Oil-Range	cPAHs	Compound	Result	MTCA Method B Cleanup Level	
SED-1[6]	06/05/98	0.5	14.1	60.0	4.13	Anthracene	0.201	24,000	<0.450
						Benzo(ghi)perylene	0.314	NA	
						Diethyl phthalate	0.133	64,000	
						Fluoranthene	1.77	3,200	
						Phenanthrene	1.10	NA	
						Pyrene	1.50	2,400	
SED-2[6]	06/05/98	0.5	<10.0	<25.0	0.597	Fluoranthene	0.278	3,200	<0.450
						Phenanthrene	0.156	NA	
						Pyrene	0.246	2,400	
SED-3[6]	06/05/98	0.5	<10.0	<25.0	0.274	Fluoranthene	0.239	3,200	<0.450
						Phenanthrene	0.100	NA	
						Pyrene	0.214	2,400	
SED-4[6]	07/15/98	0.5	<10.0	<25.0	ND	ND	NA	NA	<0.450
SED-5[6]	07/15/98	0.5	18.1	48.3	0.534	Fluoranthene	0.96	3,200	<0.450
						Pyrene	0.833	2,400	
SOIL-1[6]	07/15/98	0.5	16.1	71	1.15	Fluoranthene	0.861	3,200	<0.450
						Pyrene	0.894	2,400	
SOIL-2[6]	07/15/98	0.5	27.4	98.4	3.73	Benzo(ghi)perylene	0.668	NA	<0.450
						Fluoranthene	1.40	3,200	
						Phenanthrene	0.561	NA	
						Pyrene	1.39	2,400	
MTCA Cleanup Level[7]			3,432[8]		1.0	NA	NA	NA	1.0

Notes appear on page 4 of 4

TABLE 6 (Page 2 of 4)

Sample Number[2]	Date Sampled	Sample Depth (feet)	Petroleum Hydrocarbons[3] (mg/kg)		Semivolatile Organic Compounds[4] (mg/kg)				Polychlorinated Biphenyls[5] (mg/kg)
						Other SVOCs			
			Diesel-Range	Lube Oil-Range	cPAHs	Compound	Result	MTCA Method B Cleanup Level	
Soil-3-0.5	08/31/98	0.5	--	--	2.60	Benzo(ghi)perylene	0.442	NA	--
						Fluoranthene	0.821	3,200	
						Phenanthrene	0.253	NA	
						Pyrene	0.568	2,400	
Soil-4-0.5	08/31/98	0.5	--	--	3.74	Benzo(ghi)perylene	0.587	NA	--
						Fluoranthene	1.24	3,200	
						Phenanthrene	0.446	NA	
						Pyrene	0.871	2,400	
Soil-5-0.5	08/31/98	0.5	--	--	4.29	Benzo(ghi)perylene	0.642	NA	--
						Fluoranthene	1.58	3,200	
						Phenanthrene	0.623	NA	
						Pyrene	1.08	2,400	
Soil-6-0.5	08/31/98	0.5	--	--	3.90	Benzo(ghi)perylene	0.558	NA	--
						Fluoranthene	1.44	3,200	
						Phenanthrene	0.440	NA	
						Pyrene	0.939	2,400	
Soil-6-1.5	08/31/98	1.5	--	--	ND	ND	NA	NA	--
Soil-7-0.5	08/31/98	0.5	--	--	4.81	Benzo(ghi)perylene	0.781	NA	--
						Fluoranthene	1.48	3,200	
						Phenanthrene	0.452	NA	
						Pyrene	1.07	2,400	
Soil-7-1.5	08/31/98	1.5	--	--	ND	ND	NA	NA	--
MTCA Cleanup Level[7]			3,432[8]		1.0	NA	NA	NA	1.0

Notes appear on page 4 of 4

TABLE 6 (Page 3 of 4)

Sample Number[2]	Date Sampled	Sample Depth (feet)	(mg/kg)		cPAHs	Other SVOCs			Polychlorinated Biphenyls[5] (mg/kg)
			Diesel-Range	Lube Oil-Range		Compound	Result	MTCA Method B Cleanup Level	
Soil-8-0.5	08/31/98	0.5	–	–	3.58	Benzo(ghi)perylene	0.560	NA	–
						Fluoranthene	1.18	3,200	
						Phenanthrene	0.336	NA	
						Pyrene	0.784	2,400	
Soil-9-0.5	08/31/98	0.5	–	–	10.6	Benzo(ghi)perylene	1.66	NA	–
						Fluoranthene	3.49	3,200	
						Phenanthrene	1.18	NA	
						Pyrene	2.37	2,400	
Soil-10-0.5	08/31/98	0.5	–	–	7.12	Benzo(ghi)perylene	1.27	NA	–
						Fluoranthene	2.15	3,200	
						Phenanthrene	0.585	NA	
						Pyrene	1.46	2,400	
Soil-11-0.5	08/31/98	0.5	–	–	3.46	Benzo(ghi)perylene	0.481	NA	–
						Fluoranthene	1.380	3,200	
						Phenanthrene	0.577	NA	
						Pyrene	0.994	2,400	
MTCA Cleanup Level[7]			3,432[8]		1.0	NA	NA	NA	1.0

Notes appear on page 4 of 4

TABLE 6 (Page 4 of 4)

Notes:

[1]Chemical analyses were performed by North Creek Analytical (NCA) laboratory of Bothell, Washington.

[2]Approximate sample locations are shown in Figure 7.

[3]Diesel- and lube oil-range hydrocarbons analyzed using Ecology Method NWTPH-D extended.

[4]cPAHs and other SVOCs analyzed using EPA Method 8270.

[5]Polychlorinated biphenyls analyzed using EPA Method 8082.

[6]These are revised analytical results presented by NCA. The revisions were necessary because errors were made by NCA during dry weight conversions. The error by NCA produced original analytical results that were biased high.

[7]MTCA Method A soil cleanup level unless otherwise noted.

[8]This is the most conservative (lowest) site-specific cleanup level (MTCA Method B) for petroleum hydrocarbons derived using Ecology's Interim TPH Policy.

cPAHs = the sum of all carcinogenic polycyclic aromatic hydrocarbons, including benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene and indeno(1,2,3-cd)pyrene.

SVOCs = Semivolatile Organic Compounds

ND = not detected

NA = not applicable or not available

MTCA = Model Toxics Control Act

mg/kg = milligrams per kilogram

Shaded values indicate concentrations exceed cleanup level.

TABLE 7
CHEMICAL ANALYTICAL RESULTS FOR GROUND WATER
REMOVED FROM EXCAVATIONS [1]
Puget Sound Energy Grady Way Site
Renton, Washington

Sample Number	Date Sampled	Dissolved Metals [2] (µg/l)			PCBs [3] (µg/l)	pH [4] (pH Units)	Cyanide [5] (µg/l)	FOG [6] (mg/l)
		As	Cr	Cu				
Baker Tank	10/23/98	1.32	1.27	1.93	ND	6.22	<100	<1.00
MTCA Method A Cleanup levels [7]		5.0	50.0	592 [8]	0.1	NA	320 [8]	NA

Notes:
[1]Water was pumped from the storm drain excavation and temperarily stored on-site in a 21,000 gallon tank. Chemical analyses were performed by North Creek Analytical laboratory of Bothell, Washington.
[2]Dissolved metals (arsenic, cadmium, chromium, copper, lead, nickel, silver, zinc and mercury) analyzed using EPA 6000- and 7000-series Methodology. Arsenic, chromium and copper were the only metals detected.
[3]Polychlorinated biphenyls (PCBs) analyzed using EPA Method 8082.
[4]pH analyzed using EPA Method 150.1.
[5]Cyanide analyzed using EPA Method 335.2.
[6]Fats, oil and grease (FOG) analyzed using EPA Methods 418.1/413.2.
[7]MTCA ground water cleanup levels are presented only for reference. MTCA Method A cleanup levels are presented unless otherwise noted. Water stored in the tank was discharged to the on-site sanitary sewer system with approval from King County Metro.
[8]MTCA Method B cleanup level.
As = arsenic, Cr=chromium, Cu = copper
µg/l = micrograms per liter
mg/l = milligrams per liter
ND = not detected
NA = not applicable
MTCA = Model Toxics Controls Act

TABLE 8

SOIL CHEMICAL ANALYTICAL DATA [1]

UNDERGROUND STORAGE TANK EXCAVATIONS

Puget Sound Energy Grady Way Site

Renton, Washington

Sample Number [2]	Date Sampled	Field Screening Results [3] Sheen	Sample Location [4]	Volatile Organic Compounds [5] (mg/kg) B	E	T	X	Petroleum Hydrocarbons [6] (mg/kg) Gasoline-Range	Diesel-Range	Lube Oil-Range
10,000-gallon unleaded gasoline and 10,000-gallon diesel UST excavation										
EX2-1-15.0	09/29/98	NS	Base	<0.0500	<0.0500	<0.0500	<0.100	<5.00	<10.0	<25.0
EX2-2-15.0	09/29/98	NS	Base	<0.0500	<0.0500	<0.0500	<0.100	<5.00	41.7	138
EX2-3-6.0	09/29/98	NS	Sidewall	<0.0500	<0.0500	<0.0500	<0.100	<5.00	239	813
EX2-4-6.0	09/29/98	NS	Sidewall	<0.0500	<0.0500	<0.0500	<0.100	<5.00	31.6	84.3
EX2-5-6.0	09/29/98	NS	Sidewall	<0.0500	<0.0500	<0.0500	<0.100	<5.00	277	814
2,000-gallon heating oil UST excavation										
EX1-1-12.0 [7]	10/01/98	HS	Base	<0.100	<0.100	0.107	<0.300	--	413	<25.0
EX1-2-9.0	10/01/98	MS	Sidewall	--	--	--	--	--	<10.0	<25.0
EX1-3-10.0	10/01/98	SS	Sidewall	--	--	--	--	--	44.8	86.7
EX1-4-10.0	10/01/98	SS	Sidewall	--	--	--	--	--	84.9	134
EX1-5-10.0	10/01/98	SS	Sidewall	--	--	--	--	--	173	611
MTCA Method A Cleanup Level				0.5	20	40	20	3,432 [8]		

Notes:

[1]Samples analyzed by North Creek Analytical laboratory of Bothell, Washington.

[2]The last number of the sample name indicates the depth (in feet) from which the sample was obtained.

[3]Field screening methods are described in Appendix B.

[4]Sample locations are shown in Figures 11 and 12.

[5]Volatile organic compounds analyzed using EPA Method 8021B. B=benzene, E=ethylbenzene, T=toluene, X=total xylenes.

[6]Gasoline-, diesel-, and lube oil-range hydrocarbons analyzed using Ecology Methods NWTPH-G and NWTPH-D extended.

[7]This sample also was submitted for analysis of petroleum hydrocarbons using Ecology's Interim Total Petroleum Hydrocarbon (TPH) Policy procedures. See Appendix G for Interim TPH Policy analytical results.

[8]This is the most conservative (lowest) site-specific MTCA Method B cleanup level for petroleum hydrocarbons derived using Ecology's Interim TPH Policy. The sum of all hydrocarbon ranges should be compared with this cleanup level.

"--" = not tested

NS = no sheen

SS = slight sheen

MS = moderate sheen

HS = heavy sheen

MTCA = Model Toxics Control Act.

TABLE 9
EXCAVATED SOIL VOLUMES
Puget Sound Energy Grady Way Site
Renton, Washington

Excavation Location	Excavation Dates	Total Soil Excavated (cubic yards)	Contaminated Soil Transported Off-site for Treatment/Disposal [1] (cubic yards)	Uncompactable Soil Transported Off-site [2] (cubic yards)	Excavated Soil Used for Backfill [3] (cubic yards)	Clean Imported Soil Used as Backfill (cubic yards)
10,000-gallon USTs	09/29/98	300 [4]	0	125 [5]	175	125
2,000-gallon UST	10/01/98	45	25	0	20	25
Storm Drain	09/02/98 through 11/04/97	1,105	530	160	415	690
E-3	9/30/98	35	35	0	0	35
E-4	9/30/98	45	45	0	0	45
E-5	9/30/98	45	45	0	0	45
E-6	09/03/98 through 09/17/98	210	210	0	0	210
E-7	09/03/98 through 09/10/98	55	55	0	0	55
E-8	09/04/98	90	90	0	0	90
E-9	10/01/98	100	0	100	0	100
"TTP" Test Pits[6]	11/23/98 through 12/03/98	230	110	120	0	230
Total		2,260	1,145	505	610	1,650

Note:
[1] Soil transported off-site for permitted treatment at TPS Technologies, Inc. in Tacoma, Washington or disposal at Olympic View Sanitary Landfill in Bremerton, Washington.
[2] This soil was transported off-site for treatment or disposal because it was not suitable for use as structural backfill. Contaminant concentrations in this soil were known or anticipated to be less than applicable cleanup levels.
[3] Contaminant concentrations in this soil were less than applicable cleanup levels based on chemical analyses and/or field screening results.
[4] Volume includes approximately 125 cubic yards of concrete debris (UST anchors).
[5] Concrete debris removed from the UST excavation because it was considered unsuitable for use as structural fill.
[6] Test pits TTP-1 through TTP-4 were completed to evaluate the potential presence of buried transformers at suspect locations identified by a geophysical survey. Limited remedial excavation was required in one of the test pits (TTP-3) to remove petroleum contaminated soil.
UST = underground storage tank
The volumes presented are estimates based on field measurements.

TABLE 10
SOIL CHEMICAL ANALYTICAL DATA [1]
SOIL STOCKPILES
Puget Sound Energy Grady Way Site
Renton, Washington

Sample Number	Date Sampled	Field Screening Results [2] Sheen	Source of Soil [3]	Petroleum Hydrocarbons [4] (mg/kg) Diesel-Range	Petroleum Hydrocarbons [4] (mg/kg) Lube Oil-Range	PCBs [5] (mg/kg)
EX1-SP1	10/01/98	HS	2,000-Gallon Heating Oil UST Excavation	2,800	<275	--
EX1-SP2	10/01/98	SS		12.9	51.7	--
EX1-SP3	10/01/98	SS		52.1	55.6	--
EX9-SP1	10/01/98	SS	Hot Spot Excavation E-9	122	338	--
EX9-SP2	10/01/98	SS		62.0	163	--
EX9-SP3	10/01/98	SS		165	451	--
SP-1	09/10/98	HS	Storm Drain Remedial Excavation	315	885	ND
SP-2	09/10/98	HS		1,040	2,820	0.316
SP-3	09/10/98	HS		283	653	0.117
SP-4	09/14/98	HS		391	709	--
SP-5	09/14/98	HS		1,100	2,110	--
SP-6	09/14/98	HS		3,510	5,050	--
E11-BF-1	10/20/98	SS		26.1	50.8	--
E11-BF-2	10/20/98	NS		20.0	<25.0	--
E11-BF-3	10/20/98	SS		96.0	72.7	--
MTCA Method A Cleanup Level				3,432 [6]		1.0

Notes:
[1]Soil samples analyzed by North Creek Analytical laboratory of Bothell, Washington.
[2]Field screening methods are described in Appendix B.
[3]Excavation locations are shown in Figures 4.
[4]Diesel- and lube oil-range hydrocarbons analyzed using Ecology Method NWTPH-D extended.
[5]Polychlorinated biphenyls (PCBs) analyzed using EPA Method 8082. See Appendix C (Volume II) of this report for a list of specific aroclors detected.
[6]This is the most conservative (lowest) site-specific cleanup level (MTCA Method B) for petroleum hydrocarbons derived using Ecology's Interim TPH Policy. This MTCA Method B cleanup level was calculated during a previous study (see GeoEngineers' April 1998 ESA report).
MTCA = Model Toxics Control Act.
Shaded values exceed applicable cleanup levels.
"--" = not tested
ND = not detected
mg/kg = milligrams per kilogram
NS = no sheen
SS = slight sheen
HS = heavy sheen

TABLE 11 (PAGE 1 of 5)
SOIL CHEMICAL ANALYTICAL DATA [1]
FACILITIES REMOVAL AND REMEDIAL EXCAVATIONS[2]

Puget Sound Energy Grady Way Site
Renton, Washington

Sample Number	Date Sampled	Field Screening Results: Sheen	Sample Location [3]	Petroleum Hydrocarbons [4] (mg/kg): Diesel-Range	Petroleum Hydrocarbons [4] (mg/kg): Lube Oil-Range	PCBs [5] (mg/kg)	Semivolatile Organic Compounds [6] (mg/kg): cPAHs	Semivolatile Organic Compounds [6] (mg/kg): Other SVOCs [7]	Semivolatile Organic Compounds [6] (mg/kg): Result
VTP-1-4.5	10/19/98	SS	Transformer Repair Shop Vault (see Figure 6)	34.4	37.0	0.0726	–	–	NA
VTP-2-2.5	10/19/98	SS		80.8	232	ND	–	–	NA
EX3-1-3.0	09/30/98	NS	Hot Spot Excavation E-3 (see Figure 13)	–	–	ND	–	–	NA
EX3-2-0.5	09/30/98	NS		–	–	ND	–	–	NA
EX3-3-0.5	09/30/98	NS		–	–	0.270	–	–	NA
EX3-4-0.5	09/30/98	NS		–	–	0.175	–	–	NA
EX3-5-0.5	09/30/98	NS		–	–	ND	–	–	NA
EX4-1-3.0	09/30/98	SS	Hot Spot Excavation E-4 (see Figure 14)	–	–	–	0.0524	Fluoranthene	0.0830
								Phenanthrene	0.0568
								Pyrene	0.105
EX4-2-0.5	09/30/98	SS		–	–	–	0.123	Fluoranthene	0.130
								Pyrene	0.215
EX4-3-0.5	09/30/98	NS		–	–	–	ND	Fluoranthene	0.110
								Pyrene	0.136
EX4-4-0.5	09/30/98	NS		–	–	–	ND	ND	NA
EX4-5-0.5	09/30/98	SS		–	–	–	ND	ND	NA
EX5-1-3.0	09/30/98	SS	Hot Spot Excavation E-5 (see Figure 15)	–	–	–	ND	ND	NA
EX5-2-0.5	09/30/98	NS		–	–	–	ND	ND	NA
EX5-3-0.5	09/30/98	NS		–	–	–	ND	ND	NA
EX5-4-0.5	09/30/98	NS		–	–	–	ND	ND	NA
EX5-5-0.5	09/30/98	NS		–	–	–	ND	ND	NA
E6-2-7.0	09/04/98	NS	Hot Spot Excavation E-6[9] (see Figure 16)	–	–	0.0645	–	–	NA
E6-4-1.5	09/04/98	NS		–	–	ND	–	–	NA
E6-5-3.0 [8]	09/04/98	SS		–	–	1.68	–	–	NA
E6-7-0.5	09/10/98	SS		–	–	0.0609	–	–	NA
E6-8-0.5 [8]	09/10/98	SS		–	–	1.99	–	–	NA
MTCA Cleanup Level [10]				3,432 [11]		1.0	1.0	NA	NA

Notes appear on page 5 of 5

TABLE 11 (Page 2 of 5)

Sample Number	Date Sampled	Field Screening Results: Sheen	Sample Location [3]	Petroleum Hydrocarbons [4] (mg/kg): Diesel-Range	Petroleum Hydrocarbons [4] (mg/kg): Lube Oil-Range	PCBs [5] (mg/kg)	Semivolatile Organic Compounds [6] (mg/kg): cPAHs	Semivolatile Organic Compounds [6] (mg/kg): Other SVOCs [7]	Semivolatile Organic Compounds [6] (mg/kg): Result
E6-9-0.5	09/10/98	SS	Hot Spot Excavation E-6 [9] (see Figure 16)	--	--	0.160	--	--	NA
E6-10-4.5	09/14/98	SS		--	--	ND	--	--	NA
E6-11-4.5	09/14/98	NS		--	--	ND	--	--	NA
E6-12-0.5 [8]	09/14/98	NS		--	--	1.30	--	--	NA
E6-13-0.5	09/14/98	NS		--	--	0.128	--	--	NA
E6-14-3.0	09/14/98	SS		--	--	ND	--	--	NA
E6-15-3.0	09/14/98	NS		--	--	ND	--	--	NA
E6-16-0.5	09/17/98	SS		--	--	0.399	--	--	NA
E6-17-0.5	09/17/98	NS		--	--	ND	--	--	NA
E6-18-4.5	09/17/98	SS		--	--	ND	--	--	NA
E7-1-3.0	09/03/98	NS	Hot Spot Excavation E-7 (see Figure 17)	--	--	--	ND	ND	NA
E7-2-0.5	09/03/98	NS		--	--	--	ND	Fluoranthene Phenanthrene Pyrene	0.347 0.250 0.462
E7-3-0.5	09/03/98	NS		--	--	--	ND	ND	NA
E7-4-0.5	09/03/98	NS		--	--	--	ND	ND	NA
E7-5-0.5 [8]	09/03/98	NS		--	--	--	3.41	Benzo (ghi) perylene Fluoranthene Phenanthrene Pyrene	0.419 1.28 0.783 1.69
E7-6-3.0	09/10/98	NS		--	--	--	ND	Fluoranthene Phenanthrene	0.0813 0.0542
E7-7-0.5	09/10/98	SS		--	--	--	0.0977	Fluoranthene Phenanthrene Pyrene	0.0787 0.052 0.0527
E7-8-0.5	09/10/98	NS		--	--	--	ND	ND	NA
E7-9-0.5	09/10/98	NS		--	--	--	ND	Phenanthrene	0.0999
MTCA Cleanup Level [10]				3,432 [11]		1.0	1.0	NA	NA

Notes appear on page 5 of 5

TABLE 11 (Page 3 of 5)

Sample Number	Date Sampled	Field Screening Results Sheen	Sample Location [3]	Petroleum Hydrocarbons [4] (mg/kg) Diesel-Range	Petroleum Hydrocarbons [4] (mg/kg) Lube Oil-Range	PCBs [5] (mg/kg)	Semivolatile Organic Compounds [6] (mg/kg) cPAHs	Semivolatile Organic Compounds [6] (mg/kg) Other SVOCs [7]	Semivolatile Organic Compounds [6] (mg/kg) Result
E8-1-6.0	09/04/98	NS	Hot Spot Excavation E-8 (see Figure 18)	--	--	ND	--	--	NA
E8-2-4.0	09/04/98	NS		--	--	0.163	--	--	NA
E8-3-4.0	09/04/98	NS		--	--	ND	--	--	NA
E8-4-4.0	09/04/98	NS		--	--	ND	--	--	NA
E8-5-4.0	09/04/98	NS		--	--	ND	--	--	NA
EX9-1-8.0	10/01/98	SS	Hot Spot Excavation E-9 (see Figure 19)	<10.0	<25.0	--	--	--	NA
EX9-2-6.0	10/01/98	SS		108	314	--	--	--	NA
EX9-3-6.0	10/01/98	SS		119	357	--	--	--	NA
EX9-4-6.0	10/01/98	SS		63.7	204	--	--	--	NA
EX9-5-6.0	10/01/98	SS		75.3	209	--	--	--	NA
E10-2-3.0	09/02/98	MS	Storm Drain Removal Excavation [12] (see Figure 20)	--	--	ND	ND	ND	NA
E10-3-3.0	09/02/98	SS		--	--	ND	0.207	Pyrene	0.311
E10-4-3.5	09/02/98	SS		--	--	0.720	ND	ND	NA
E10-5-6.0	09/04/98	HS		66.2	168	0.230	ND	ND	NA
E10-6-5.5	09/04/98	HS		166	619	0.140	ND	ND	NA
E10-7-4.0	09/04/98	HS		922	72.4	ND	ND	ND	NA
E10-8-4.0	09/04/98	HS		706	350	ND	ND	ND	NA
E10-9-2.5	10/06/98	NS		--	--	ND	ND	ND	NA
E10-10-2.5	10/06/98	HS		2,250	182	0.129	ND	ND	NA
E10-11-2.5	10/06/98	NS		--	--	ND	ND	ND	NA
E10-12-2.5	10/06/98	HS		358	182	--	--	--	NA
E10-13-2.5	10/07/98	NS		--	--	0.0687	ND	ND	NA
RTP8-2-3.0	10/12/98	NS		--	--	ND	--	--	NA
E13-1-6.0	10/12/98	HS		150	119	ND	ND	ND	NA
E13-2-6.0	10/12/98	HS		191	349	ND	ND	ND	NA
E13-3-6.0	10/12/98	MS		46.1	68.1	ND	ND	Pyrene	0.122
RTP8-2-3.0	10/12/98	NS		--	--	ND	ND	Fluoranthene	0.0186
								Pyrene	0.0202
MTCA Cleanup Level [10]				3,432 [11]		1.0	1.0	NA	NA

Notes appear on page 5 of 5

TABLE 11 (Page 4 of 5)

Sample Number	Date Sampled	Field Screening Results: Sheen	Sample Location [3]	Petroleum Hydrocarbons [4] (mg/kg): Diesel-Range	Petroleum Hydrocarbons [4] (mg/kg): Lube Oil-Range	PCBs [5] (mg/kg)	Semivolatile Organic Compounds [6] (mg/kg): cPAHs	Semivolatile Organic Compounds [6] (mg/kg): Other SVOCs [7]	Semivolatile Organic Compounds [6] (mg/kg): Result
E6-1-6.0 [8]	09/03/98	HS	Deep Storm Drain Remedial Excavation [13] (see Figures 16 and 20)	995	2,500	0.0868	--	--	NA
E6-3-6.0 [8]	09/04/98	HS		1,790	4,080	0.221	--	--	NA
E11-1-7.0	09/04/98	HS		512	1,340	0.0690	ND	Naphthalene	0.904
E11-2-7.0	09/09/98	NS		191	811	--	--	--	NA
E11-4-6.0	09/09/98	MS		193	157	--	--	--	NA
E11-5-9.0	09/09/98	MS		78.7	225	--	--	--	NA
E11-6-6.0	09/10/98	MS		35.7	73.9	--	--	--	NA
E11-8-6.0 [8]	09/14/98	HS		2,090	5,250	0.354	--	--	NA
E11-9-6.0	09/14/98	HS		437	1,160	ND	--	--	NA
E11-10-6.0 [8]	09/14/98	HS		7,290	14,900	0.157	--	--	NA
E11-11-6.0	09/15/98	HS		967	1,940	ND	--	--	NA
E11-12-7.0	09/17/98	NS		14.3	<25.0	--	--	--	NA
E11-13-11.0	10/20/98	NS		160	530	--	--	--	NA
E11-16-10.5	10/20/98	MS		189	470	--	--	--	NA
E11-17-8.5	10/20/98	MS		201	522	--	--	--	NA
E11-18-7.5	10/20/98	NS		346	1250	--	--	--	NA
E11-19-7.5	10/20/98	NS		217	571	--	--	--	NA
E11-20-6.0	11/04/98	SS		94.1	271	--	--	--	NA
E11-21-6.0	11/04/98	SS		13.7	<25.0	--	--	--	NA
E11-22-7.0	11/04/98	SS		59.2	153	--	--	--	NA
E10-1-2.0 [8]	09/02/98	HS	Shallow Storm Drain Remedial Excavation (see Figure 20)	12,800	<1,030	ND	ND	Phenanthrene	1.29
E12-1-2.0	09/08/98	SS		22.0	52.8	--	--	--	NA
E12-2-2.0	09/08/98	NS		<10.0	<25.0	--	--	--	NA
E12-3-4.0	09/09/98	MS		103	228	--	--	--	NA
E12-4-2.0	09/08/98	SS		21.5	41.4	--	--	--	NA
E12-5-5.0	09/09/98	NS		18.1	30.9	--	--	--	NA
E11-7-3.5 [8]	09/14/98	HS	City of Renton Sanitary Sewer Excavation [14] (see Figure 16)	2,420	5,370	0.0711	--	--	NA
B4a-3.5	11/03/98	HS		--	--	0.164	--	--	NA
E14-1-4.0	11/04/98	SS		<10.0	<25.0	--	--	--	NA
E14-4-4.5	11/04/98	SS		114	224	--	--	--	NA
E14-5-4.0	11/04/98	SS		22.6	<25.0	--	--	--	NA
E14-6-4.5	11/04/98	SS		29.4	29.9	--	--	--	NA
MTCA Cleanup Level [10]				3,432 [11]		1.0	1.0	NA	NA

Notes appear on page 5 of 5

TABLE 11 (Page 5 of 5)

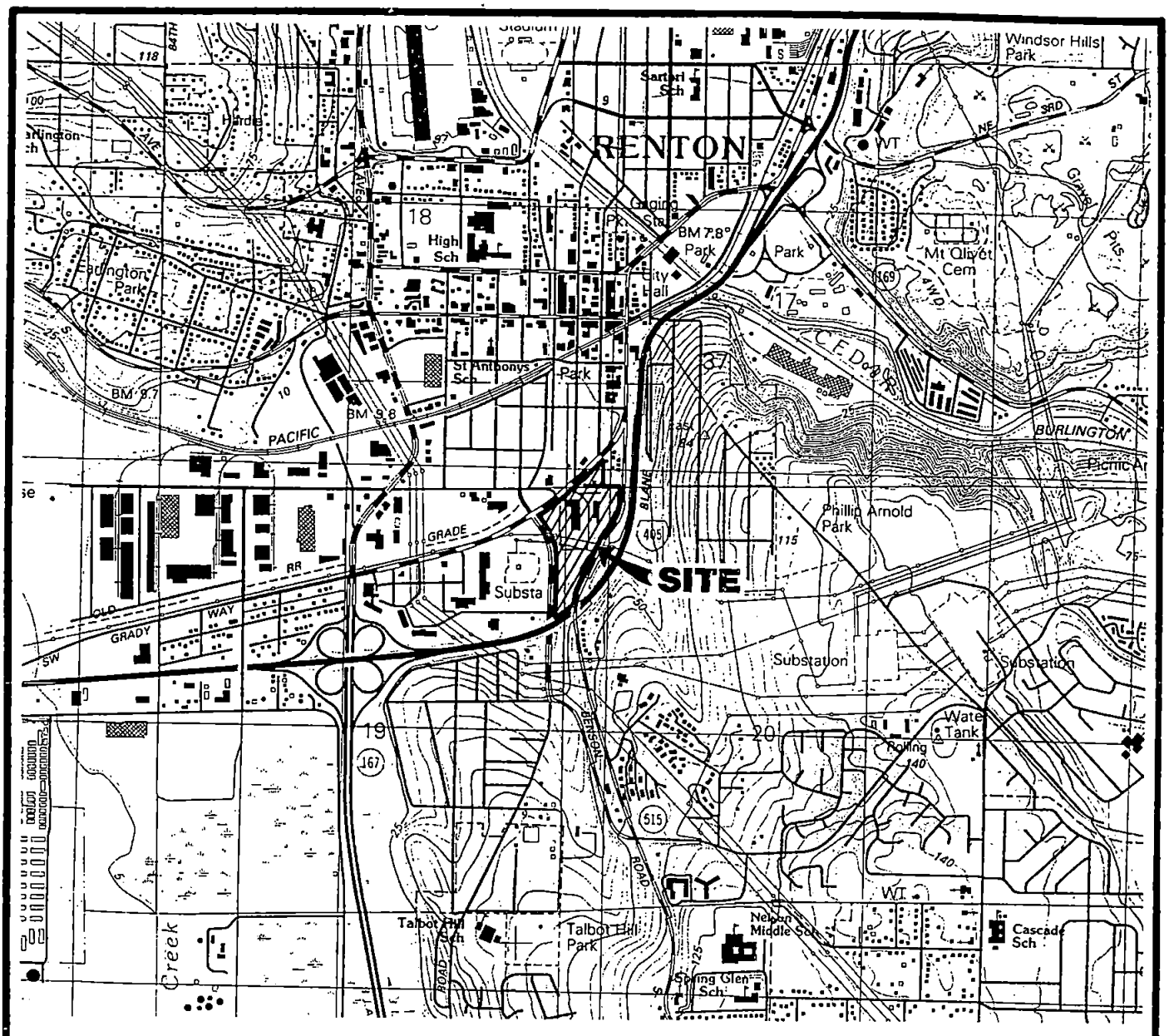
Sample Number	Date Sampled	Field Screening Results: Sheen	Sample Location [3]	Petroleum Hydrocarbons [4] (mg/kg): Diesel-Range	Petroleum Hydrocarbons [4] (mg/kg): Lube Oil-Range	PCBs [5] (mg/kg)	Semivolatile Organic Compounds [6] (mg/kg): cPAHs	Semivolatile Organic Compounds [6] (mg/kg): Other SVOCs [7]	Semivolatile Organic Compounds [6] (mg/kg): Result
TTP3-1-3.0 [8]	11/23/98	HS	Test Pit Exploration for Potential Buried Transformer (see Figure 21)	11,600	1,280	0.112	ND	Acenaphthylene	0.262
								Phenanthrene	0.201
TTP3-2-3.0	11/23/98	SS		<10.0	<25.0	--	--	--	NA
TTP3-3-8.0	11/23/98	MS		58.3	128.0	--	--	--	NA
TTP3-4-3.0	11/23/98	HS		15.0	77.2	--	ND	ND	NA
TTP3-5-3.0 [8]	11/23/98	MS		9,840	1,210	--	--	--	NA
TTP3-6-3.0	11/23/98	SS		40.8	87.5	--	--	--	NA
TTP3-7-3.0	12/03/98	SS		<20	<40	--	--	--	NA
TTP3-8-3.0	12/03/98	SS		<20	<40	--	--	--	NA
TTP3-9-3.0	12/03/98	SS		<20	<40	--	--	--	NA
TTP3-10-8.0	12/03/98	NS		<20	<40	--	--	--	NA
MTCA Cleanup Level [10]				3,432 [11]		1.0	1.0	NA	NA

[1] Soil samples analyzed by North Creek Analytical laboratory of Bothell, Washington.
[2] This table presents analytical results for soil samples obtained from the storm drain excavation, transformer repair shop excavation and hot spot remedial excavations.
[3] Sample locations are shown in the figures indicated on the table.
[4] Diesel- and lube oil-range hydrocarbons analyzed using Ecology Method NWTPH-D extended.
[5] Polychlorinated biphenyls (PCBs) analyzed using EPA Method 8082. See Appendix C (Volume II) of this report for the specific aroclors detected.
[6] Carcinogenic polycyclic aromatic hydrocarbons (cPAHs) and other semivolatile organic compounds (SVOCs) analyzed using EPA Method 8270. cPAH results are the sum of all cPAHs, which include benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene and indeno(1,2,3-cd)pyrene.
[7] MTCA Method B cleanup levels for the detected SVOCs are as follows: acenaphthylene = 4,800 mg/kg, fluoranthene = 3,200 mg/kg, pyrene = 2,400 mg/kg, napthalene = 320 mg/kg. A MTCA Method B cleanup level does not exist for other SVOCs detected in the soil samples.
[8] Soil represented by this sample was removed during subsequent remedial excavation.
[9] These samples were obtained solely to evaluate PCB-related contamination in hot spot excavation E-6. Other soil samples were obtained within the outline of E-6 (see Figure 16) to primarily evaluate petroleum-related contamination adjacent to the deep storm drain. Analytical results for these samples are presented later in this table (see "Deep Storm Drain Remedial Excavation").
[10] MTCA Method A cleanup level unless otherwise noted.
[11] This is the most conservative (lowest) site-specific cleanup level (MTCA Method B) for petroleum hydrocarbons derived using Ecology's Interim TPH Policy.
[12] These soil samples were obtained from the portions of the storm drain excavation in which contaminants were not identified at concentrations exceeding applicable cleanup levels (unshaded portions of the excavation in Figure 20). Remedial excavation was not required in these areas.
[13] Several of these samples were obtained within the outlines of hot spot excavation E-6; however, they were obtained to primarily evaluate petroleum-related contamination adjacent to the deep storm drain.
[14] These samples, although located within the outline of hot spot excavation E-6, were obtained to evaluate petroleum-related contamination adjacent to the City of Renton sanitary sewer.
MTCA = Model Toxics Control Act.
Shaded values exceed applicable cleanup levels.
"--" = not tested
ND = not detected
NA = not applicable
mg/kg = milligrams per kilogram
NS = no sheen
SS = slight sheen
MS = moderate sheen
HS = heavy sheen

TABLE 12
SOIL CHEMICAL ANALYTICAL DATA [1]
TEST PIT EXPLORATIONS
Puget Sound Energy Grady Way Site
Renton, Washington

Sample Number[2]	Date Sampled	Field Screening Results[3]	Sample Location[4]	Petroleum Hydrocarbons[5] (mg/kg)	
		Sheen		Diesel-Range	Lube Oil-Range
RTP2-1-2.5	09/21/98	SS	North of Storage Dock	<10.0	<25.0
RTP3-1-6.0 [6]	09/29/98	HS	South of Storage Dock	**6,760**	**13,700**
RTP6-1-3.5	10/01/98	SS	Sanitary Sewer	22.5	<25.0
RTP7-1-3.0	10/01/98	NS		<10.0	<25.0
MTCA Cleanup Level				3,432[7]	

Notes:
[1]Samples analyzed by North Creek Analytical laboratory of Bothell, Washington.
[2]Soil samples were not obtained from other test pits completed at the site because of field screening results or the existence of soil analytical data from adjacent explorations.
[3]Field screening procedures are described in Appendix B.
[4]Soil samples were obtained from test pits located as shown in Figures 5 and 20.
[5]Diesel- and lube oil-range hydrocarbons analyzed using Ecology Method NWTPH-D extended.
[6] Soil represented by this sample was removed during subsequent remedial excavation.
[7] This is the most conservative (lowest) site-specific cleanup level (MTCA Method B) for petroleum hydrocarbons derived using Ecology's Interim TPH Policy.
Shaded values exceed applicable cleanup levels.
"--" = not tested
mg/kg = milligrams per kilogram
MTCA = Model Toxics Control Act.



Reference: USGS 7.5' X 15' topographic–bathymetric quadrangle map "Renton, Wash.," dated 1983.

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VICINITY MAP

FIGURE 1

TNOHLA 0186-407-85 10/29/97

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PARKING STRUCTURE

N

0 100 200

SCALE IN FEET

EXPLANATION:

- STORM DRAIN EXCAVATION
- E-4 REMEDIAL EXCAVATION
- UST REMOVAL EXCAVATION
- SS SANITARY SEWER
- SD STORM DRAIN
- CATCH BASIN

BENSON ROAD S.

SERVICE CENTER
(OFFICE, STORAGE)
28,000 sq.ft.

UST Excavation
(One 10,000-gallon Gasoline UST
and One 10,000-gallon Diesel UST)

UST Excavation
(2,000-gallon Heating Oil UST)

Concrete Vault
Excavation

Vault Excavation

E-9 E-3 E-4 E-5 E-6 E-7 E-8

STORES BUILDING
(OFFICE)
47,000 sq.ft.

Transformer
Repair Shop

TTP-3

TALBOT ROAD

GRADY WAY SOUTH

EXCAVATION	PURPOSE OF EXCAVATION	CONTAMINANT OF CONCERN
10,000-gallon USTs	UST Removal	Gasoline & Diesel
2,000-gallon UST	Heating Oil UST Removal	Heating Oil
Storm Drain	Storm Drain Removal and Replacement	Petroleum Hydrocarbons
E-3	Hot Spot Excavation	PCBs
E-4	Hot Spot Excavation	cPAHs
E-5	Hot Spot Excavation	cPAHs
E-6	Hot Spot Excavation	PCBs
E-7	Hot Spot Excavation	cPAHs
E-8	Hot Spot Excavation	PCBs
E-9	Hot Spot Excavation	Petroleum Hydrocarbons
TTP-3	Test Pit Exploration	Petroleum Hydrocarbons

PCBs = Polychlorinated Biphenyls
cPAHs = Carcinogenic Polycyclic Aromatic Hydrocarbons

Notes: 1. The locations of all features shown are approximate.
2. Site generally slopes down toward the south.
3. Storm drain excavation width not to scale. Width of storm drain excavation ranged from approximately 3.0 to 5.0 feet.

Reference: Drawings provided by Puget Sound Energy.

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EXCAVATION LOCATIONS

FIGURE 4

12/17/98

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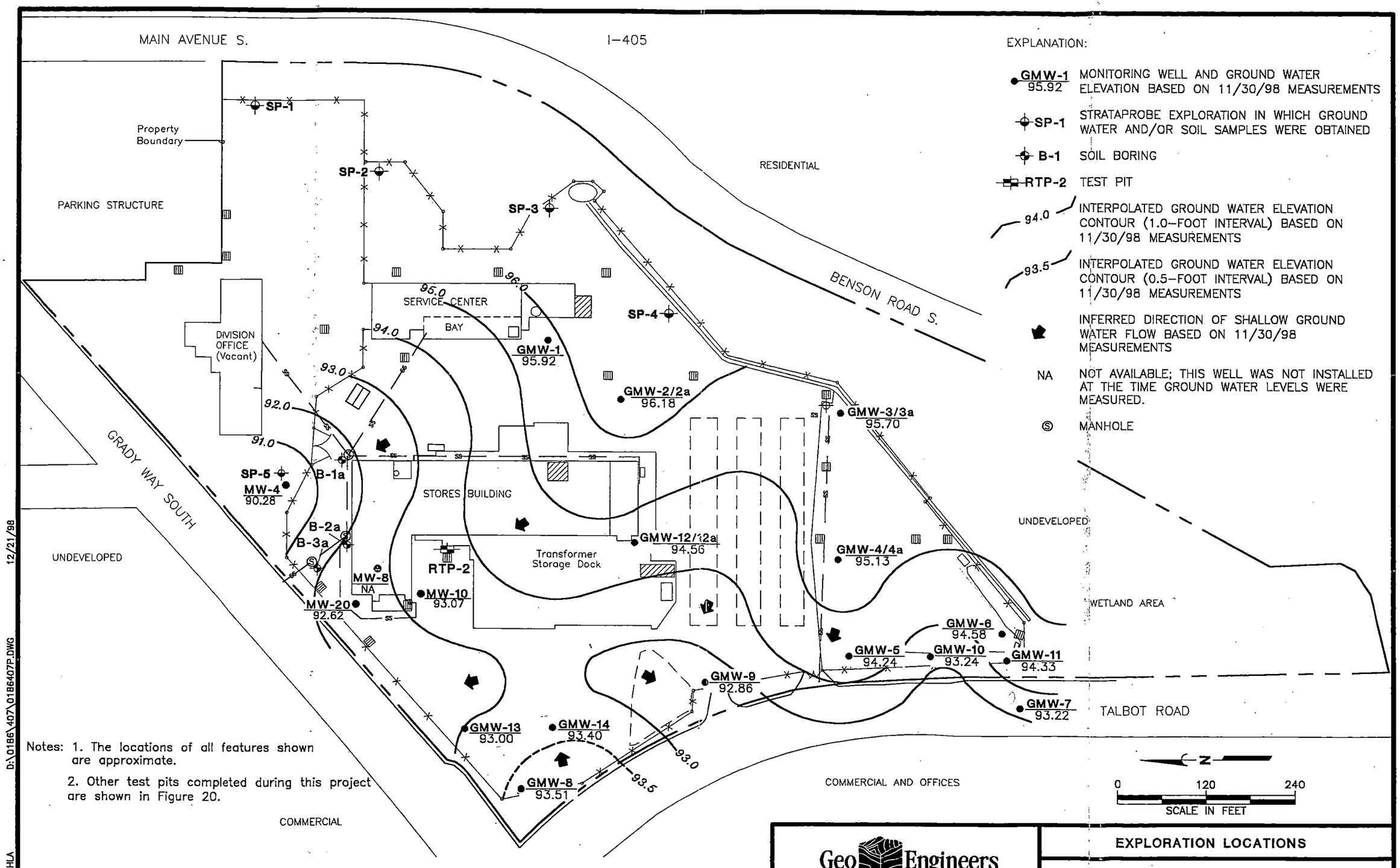

EXPLANATION:

- GMW-1 / 95.92 — MONITORING WELL AND GROUND WATER ELEVATION BASED ON 11/30/98 MEASUREMENTS
- SP-1 — STRATAPROBE EXPLORATION IN WHICH GROUND WATER AND/OR SOIL SAMPLES WERE OBTAINED
- B-1 — SOIL BORING
- RTP-2 — TEST PIT
- 94.0 — INTERPOLATED GROUND WATER ELEVATION CONTOUR (1.0-FOOT INTERVAL) BASED ON 11/30/98 MEASUREMENTS
- 93.5 — INTERPOLATED GROUND WATER ELEVATION CONTOUR (0.5-FOOT INTERVAL) BASED ON 11/30/98 MEASUREMENTS
- INFERRED DIRECTION OF SHALLOW GROUND WATER FLOW BASED ON 11/30/98 MEASUREMENTS
- NA — NOT AVAILABLE; THIS WELL WAS NOT INSTALLED AT THE TIME GROUND WATER LEVELS WERE MEASURED.
- Ⓢ — MANHOLE

Notes: 1. The locations of all features shown are approximate.

2. Other test pits completed during this project are shown in Figure 20.

Reference: Drawings provided by Puget Sound Energy.

12/21/98 D:\0186\407\0186407P.DWG TNO:HLA

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EXPLORATION LOCATIONS

FIGURE 5

STORES BUILDING

TRANSFORMER REPAIR SHOP

Active Sump System

SP-10

SP-9

GMW-12/12a

Garage Door

SP-7

Abandoned Sump

SP-6

SP-8

Former Transformer
Wash Rack Drain
(Sealed Drain)

Garage Doors

Connects to City
Sanitary Sewer

Vault Excavation
(Approximately 4.5 feet deep)

VTP-1-4.5
VTP-2-2.5

?

?

SP-12

SP-11

Estimated Location of
Discharge Line From Sump

Storage Dock

Ramp

EXPLANATION:

SP-7 ⊕ STRATAPROBE EXPLORATION IN WHICH SOIL SAMPLES WERE OBTAINED

GMW-12/12a ● MONITORING WELL

VTP-1-4.5 ⊘ SOIL SAMPLE

Note: The locations of all features shown are approximate.

Reference: Drawings provided by Puget Sound Energy.

W N E

0 20 40

SCALE IN FEET

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TRANSFORMER REPAIR SHOP EXPLORATIONS

FIGURE 6

11/24/98

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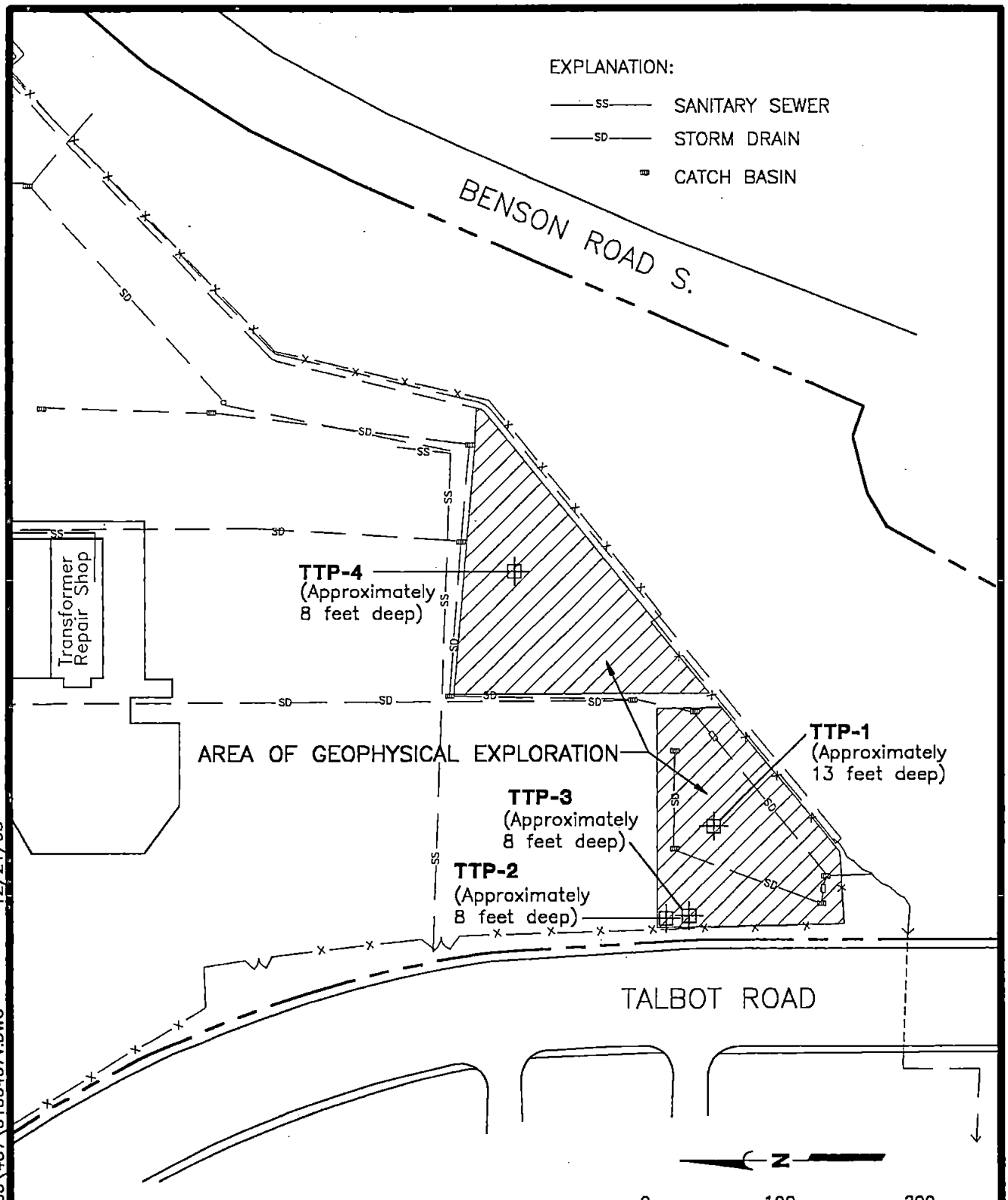

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GEOPHYSICAL EXPLORATION AREA

FIGURE 8

SD

130' 8" PVC (NEW)

45' 8" PVC

15' 8" PVC

68' 8" PVC

SD

143' 10" PVC

SD

115' 10" PVC

SD

STORM DRAIN SYSTEM

EQUIPMENT STORAGE YARD

130 LF DIKE

110 LF DIKE

Concrete-lined Drainage Channel

Unlined Portion of Drainage Channel

N

0 30 60

SCALE IN FEET

EXPLANATION:

SED-1 ⊘ SEDIMENT SAMPLE

SOIL-1 ⊗ SOIL SAMPLE

CATCH BASIN

Note: The locations of all features shown are approximate.

Reference: Drawings provided by Puget Sound Energy.

⊗SOIL-6

⊗SOIL-7

⊗SOIL-8

⊘SED-2

⊘SED-4

⊗SOIL-5

⊗SOIL-2

⊘SED-1

⊗SOIL-1

⊗SOIL-10

⊘SED-5

⊘SED-3

⊗SOIL-4

⊗SOIL-9

DISCHARGE PIPE
30 LF 12" PVC

⊗SOIL-3

⊗SOIL-11

Sidewalk

TALBOT ROAD

Culvert (Buried)

Sidewalk

12/03/98

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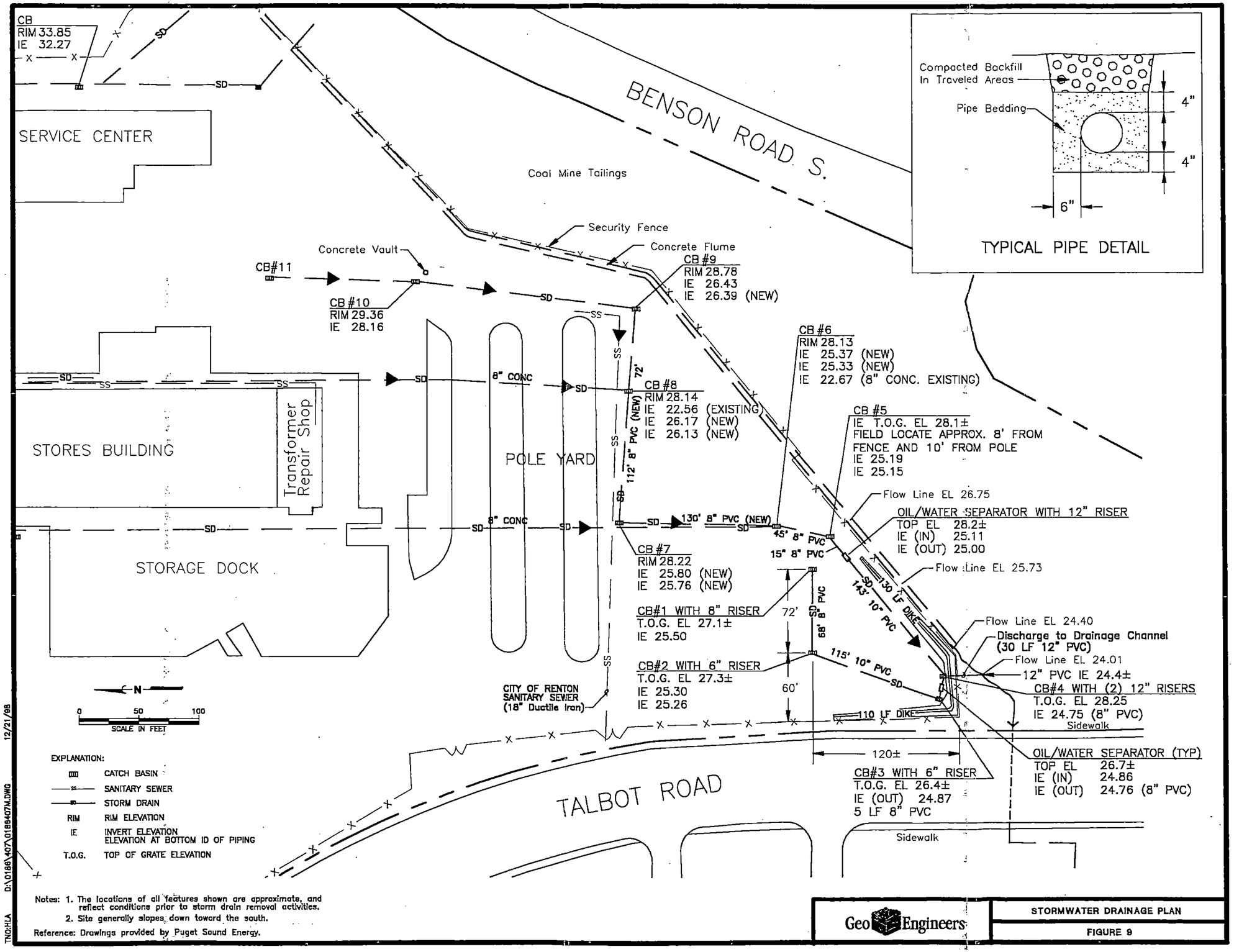
WETLAND SAMPLE LOCATIONS

FIGURE 7



Notes: 1. The locations of all features shown are approximate, and reflect conditions prior to storm drain removal activities.
2. Site generally slopes down toward the south.

Reference: Drawings provided by Puget Sound Energy.

12/21/98
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STORMWATER DRAINAGE PLAN

FIGURE 9

EXPLANATION:
- SD — SHALLOW STORM DRAIN
- SD — DEEP STORM DRAIN
- SD — STORM DRAIN
- CATCH BASIN

BENSON ROAD S.

SERVICE CENTER
(OFFICE, STORAGE)
28,000 sq.ft.

Coal Mine Tailings

Service Island
Gasoline & Diesel USTs
(10,000 Gallons Each)

CB#11
CB#10
CB#9

Portion of Deep Storm Drain
Replaced by Shallow Storm Drain

Security Fence

Heating Oil UST

UNDEVELOPED

STORES BUILDING
(OFFICE)
47,000 sq.ft.

Transformer
Repair Shop

CB#8

New Catch Basin Installed

Concrete Flume

Roof Drain (Typ.)

CB#7
CB#6

Oil/Water Separator

CB#5

Deep Storm Drain
Abandoned or Removed
North of this Catch Basin

Portion of Deep
Storm Drain Replaced
by Shallow Storm Drain

This Section of
Deep Storm Drain
Removed

CB#1

WETLAND AREA

Soil Berm

CB#2

CB#4

Oil/Water Separator

CB#3

Sidewalk

GRADY WAY SOUTH

Roof Runoff Rerouted to
Parking Lot Catch Basin

TALBOT ROAD

Notes: 1. The shallow storm drain was reinstalled to match its configuration prior to removal. Modifications were made to the deep storm drains as shown.
2. The locations of all features shown are approximate.
3. Site generally slopes down toward the south.

Reference: Drawings provided by Puget Sound Energy.

N

0 80 160

SCALE IN FEET

12/17/98
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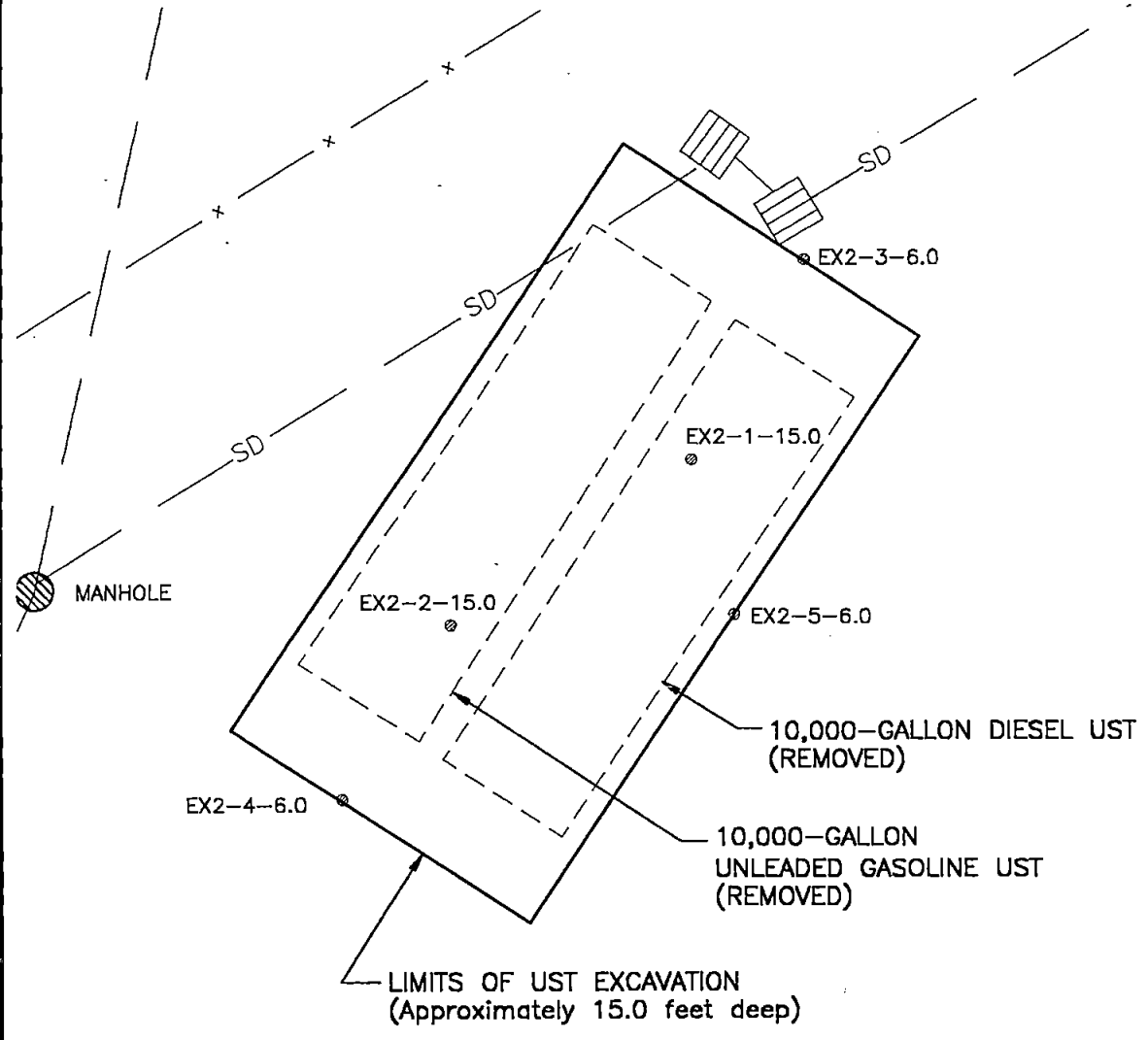
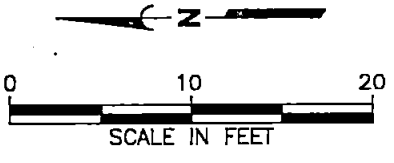
STORM DRAIN SYSTEM MODIFICATIONS

FIGURE 10





EXPLANATION:

⊘	SOIL SAMPLE
—SD—	STORM DRAIN
▣	CATCH BASIN
UST	UNDERGROUND STORAGE TANK

Note: The locations of all features shown are approximate.

Reference: Drawings provided by Puget Sound Energy.

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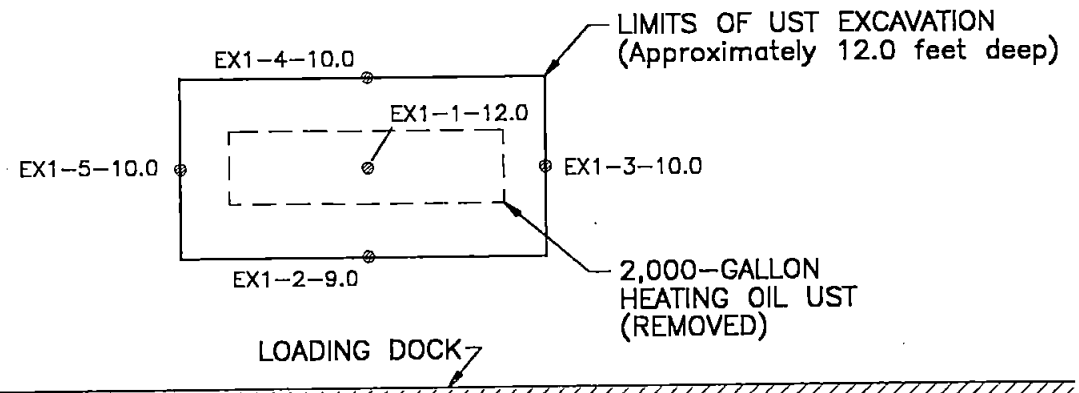
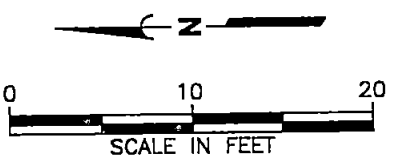
UNDERGROUND STORAGE TANK REMOVAL EXCAVATION

FIGURE 11





EXPLANATION:

⊘ SOIL SAMPLE

UST UNDERGROUND STORAGE TANK

Note: The locations of all features shown are approximate.

Reference: Drawings provided by Puget Sound Energy.

12/17/98

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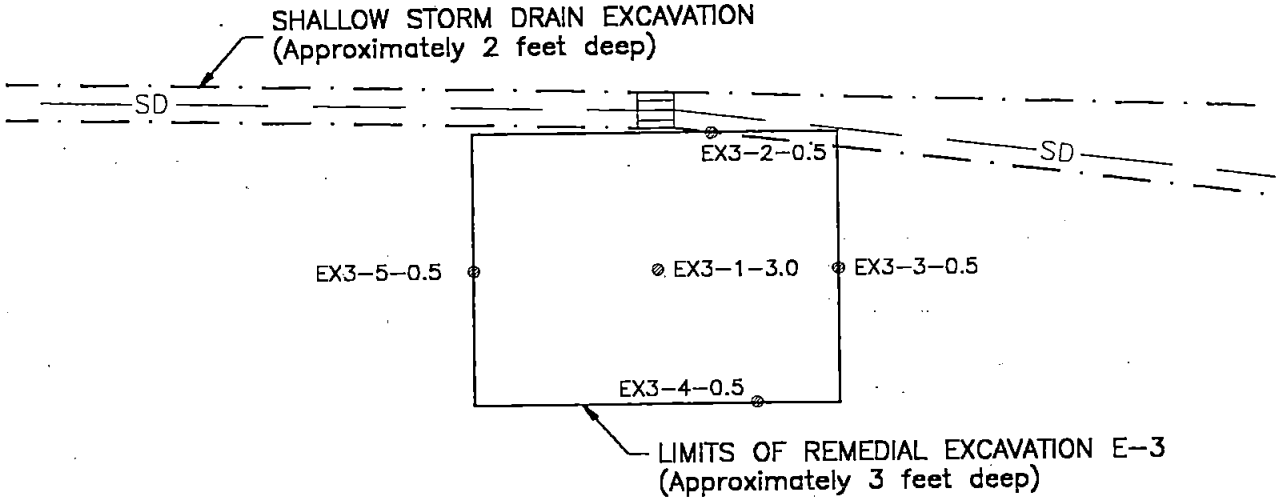
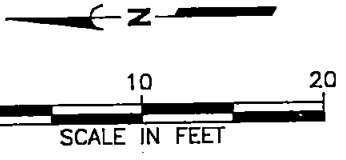
UNDERGROUND STORAGE TANK REMOVAL EXCAVATION

FIGURE 12





EXPLANATION:

- STORM DRAIN EXCAVATION
- REMEDIAL EXCAVATION
- SOIL SAMPLE
- STORM DRAIN
- CATCH BASIN

Note: The locations of all features shown are approximate.

Reference: Drawings provided by Puget Sound Energy.

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TNO:HLA

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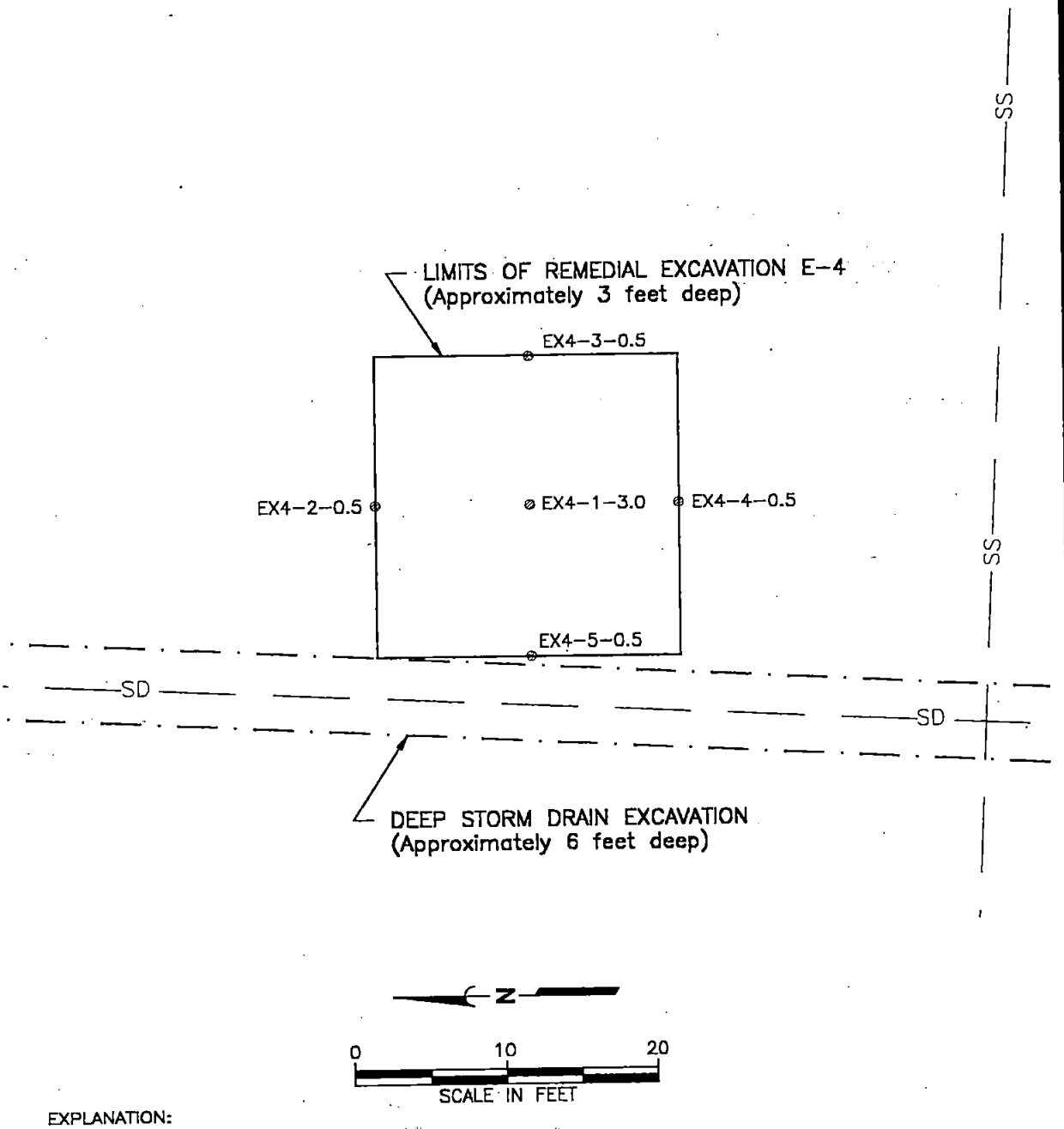
REMEDIAL EXCAVATION E-3

FIGURE 13



EXPLANATION:

- STORM DRAIN EXCAVATION
- REMEDIAL EXCAVATION
- SOIL SAMPLE
- SANITARY SEWER
- STORM DRAIN

Note: The locations of all features shown are approximate.

Reference: Drawings provided by Puget Sound Energy.

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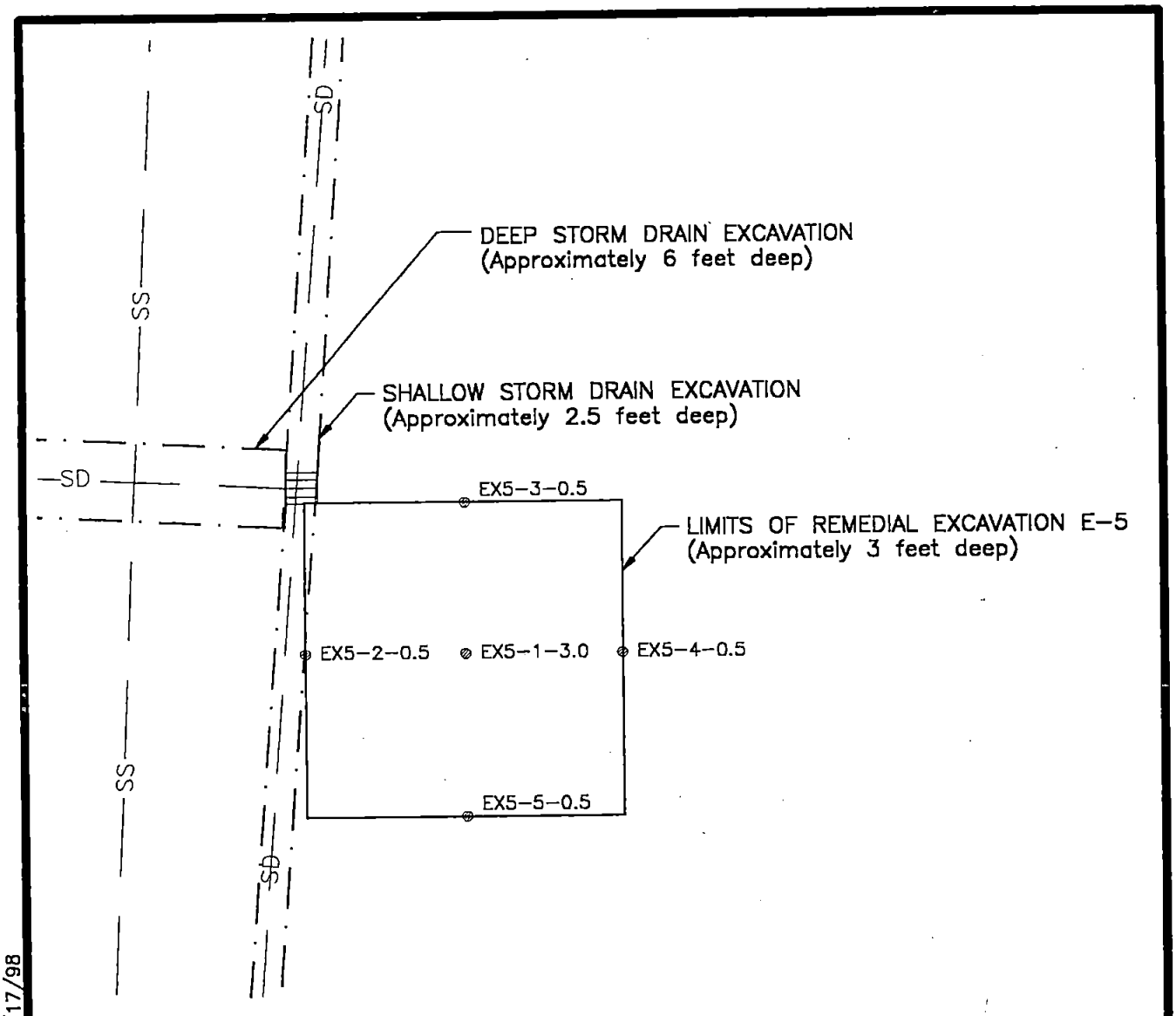
GeoEngineers

REMEDIAL EXCAVATION E-4

FIGURE 14



Note: The locations of all features shown are approximate.

Reference: Drawings provided by Puget Sound Energy.

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TNO:HLA

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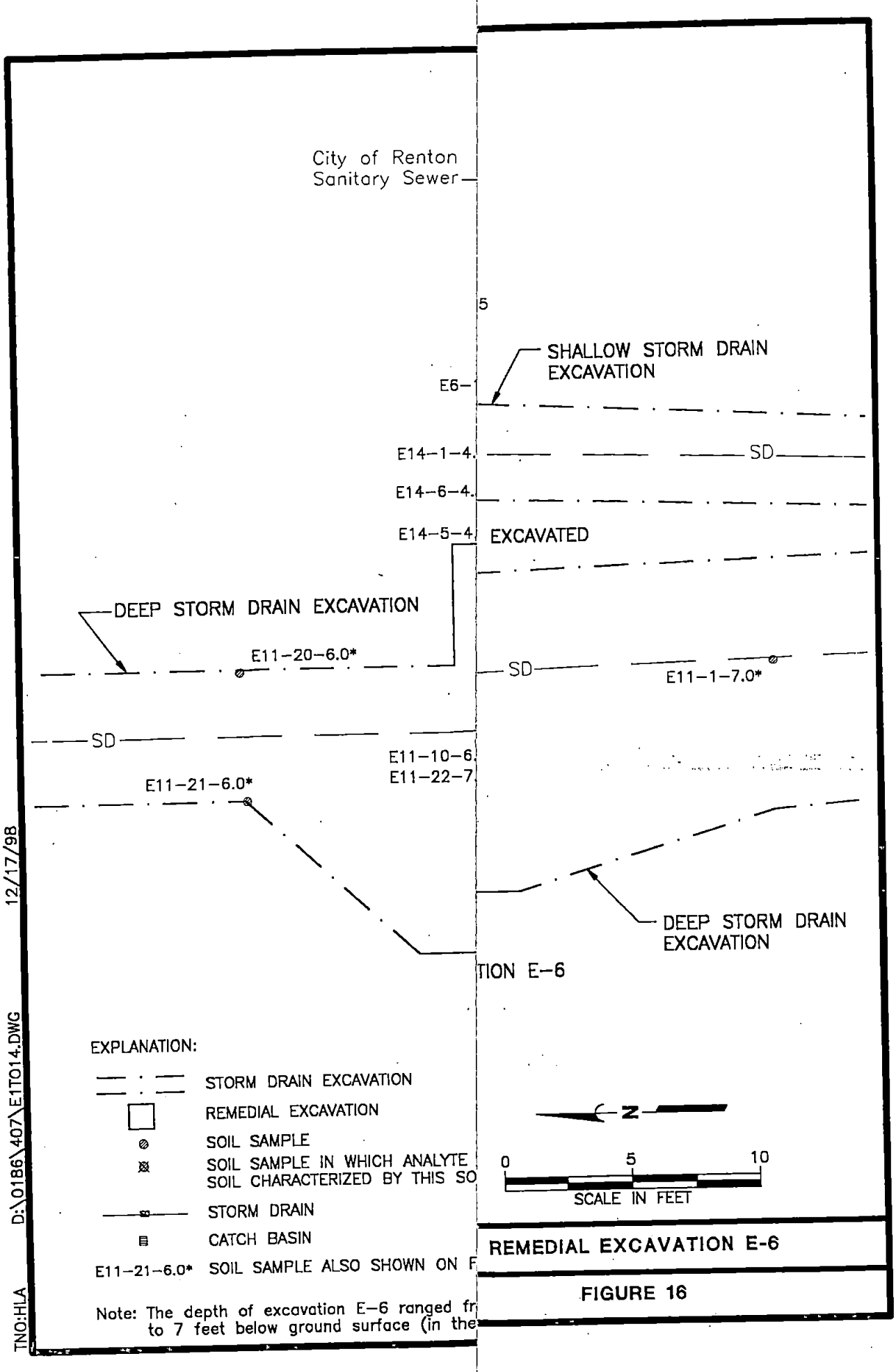
REMEDIAL EXCAVATION E-5

FIGURE 15


City of Renton
Sanitary Sewer
5
SHALLOW STORM DRAIN
EXCAVATION
E6-
E14-1-4.
SD
E14-6-4.
E14-5-4
EXCAVATED
DEEP STORM DRAIN EXCAVATION
E11-20-6.0*
SD
E11-1-7.0*
SD
E11-10-6.
E11-22-7.
E11-21-6.0*
DEEP STORM DRAIN
EXCAVATION
TION E-6
EXPLANATION:
STORM DRAIN EXCAVATION
REMEDIAL EXCAVATION
SOIL SAMPLE
SOIL SAMPLE IN WHICH ANALYTE
SOIL CHARACTERIZED BY THIS SO
STORM DRAIN
CATCH BASIN
E11-21-6.0* SOIL SAMPLE ALSO SHOWN ON F
Note: The depth of excavation E-6 ranged fr
to 7 feet below ground surface (in the
N
0
5
10
SCALE IN FEET
REMEDIAL EXCAVATION E-6
FIGURE 16
12/17/98
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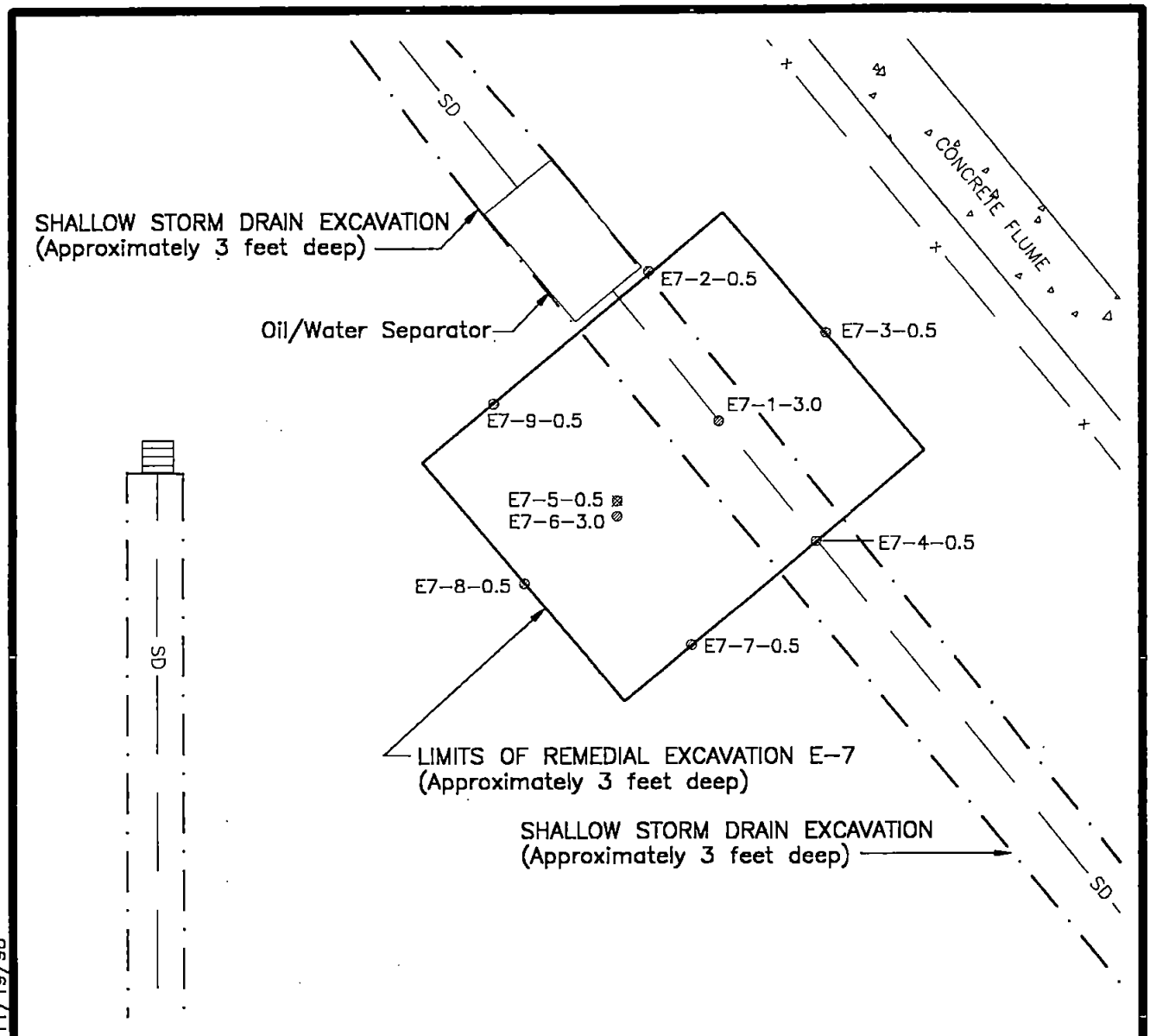

N

0 10 20

SCALE IN FEET

EXPLANATION:

- STORM DRAIN EXCAVATION
- REMEDIAL EXCAVATION
- SOIL SAMPLE
- SOIL SAMPLE IN WHICH cPAH CONCENTRATIONS EXCEEDED THE MTCA METHOD A CLEANUP LEVEL. THIS AREA WAS OVEREXCAVATED AND RESAMPLED.
- STORM DRAIN
- CATCH BASIN

Note: The locations of all features shown are approximate.

Reference: Drawings provided by Puget Sound Energy.

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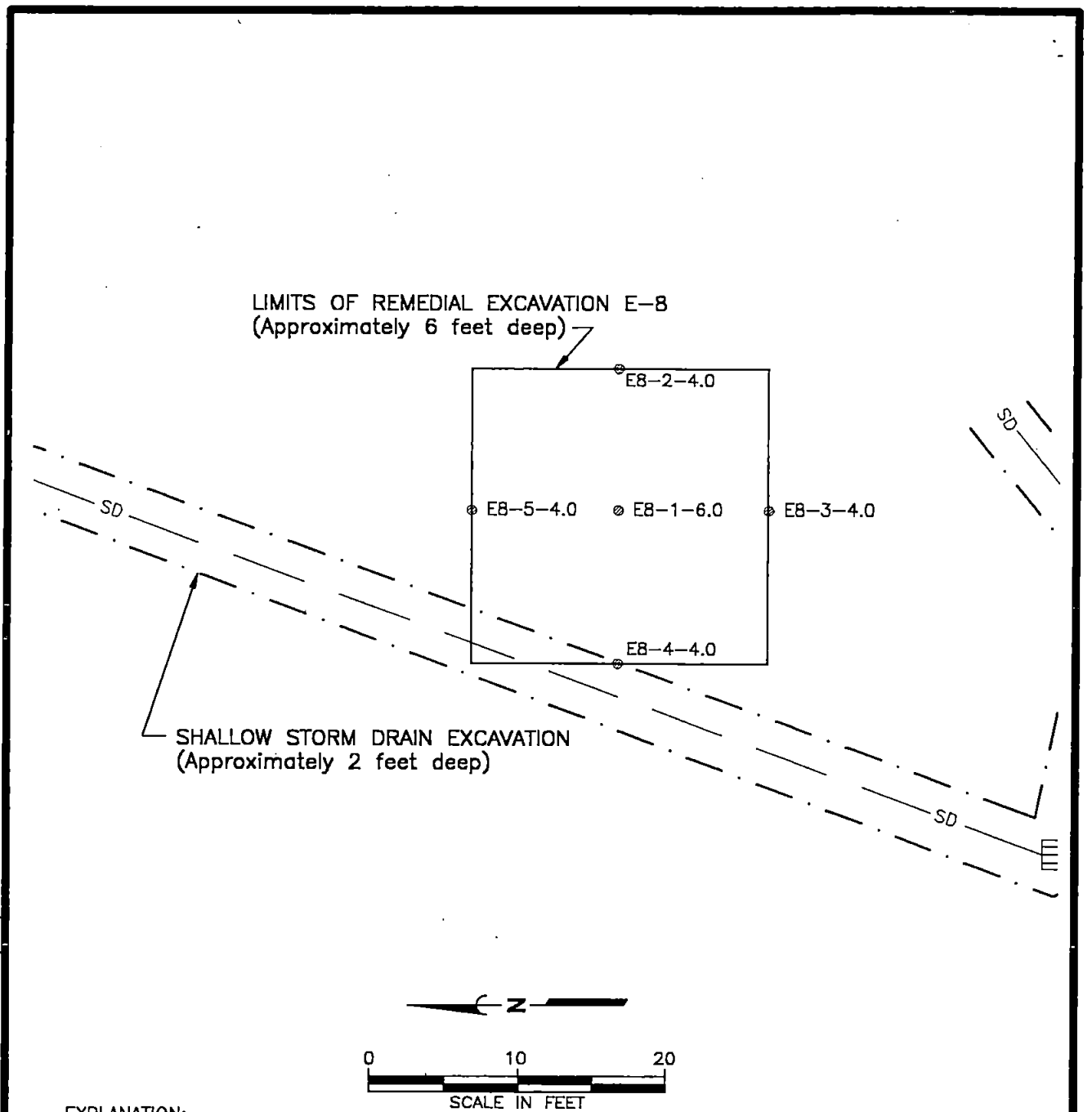
TNO:HLA

Geo Engineers

REMEDIAL EXCAVATION E-7

FIGURE 17



Note: The locations of all features shown are approximate.
Reference: Drawings provided by Puget Sound Energy.

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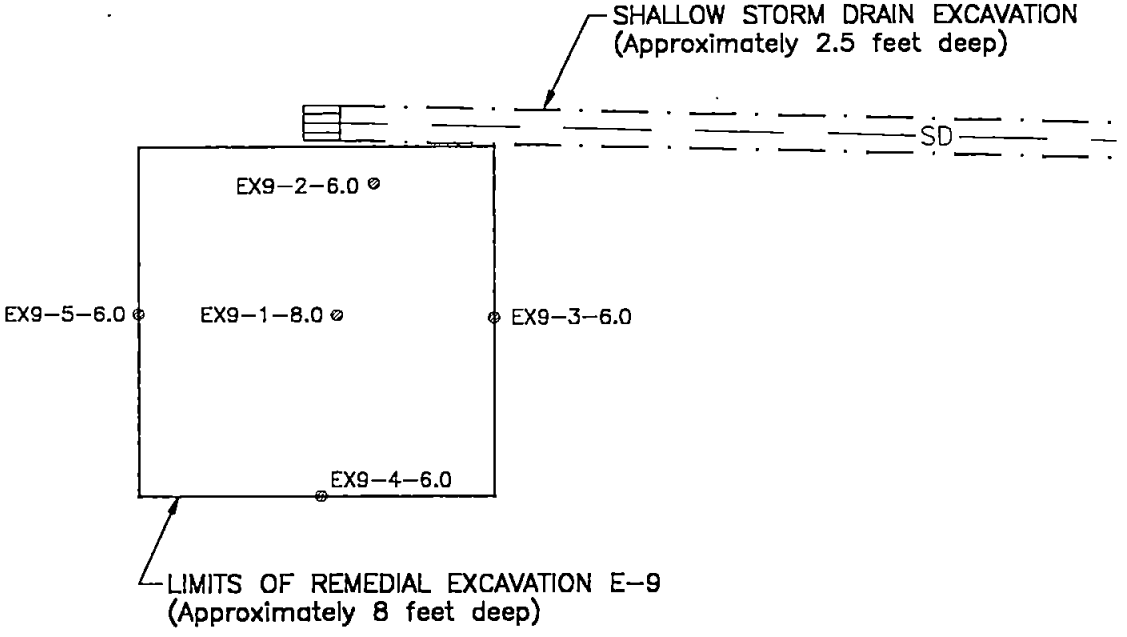
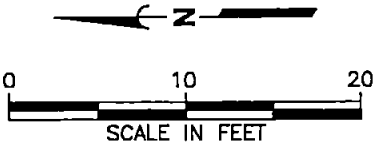
REMEDIAL EXCAVATION E-8

FIGURE 18





EXPLANATION:

- STORM DRAIN EXCAVATION
- REMEDIAL EXCAVATION
- SOIL SAMPLE
- STORM DRAIN
- CATCH BASIN

Note: The locations of all features shown are approximate.

Reference: Drawings provided by Puget Sound Energy.

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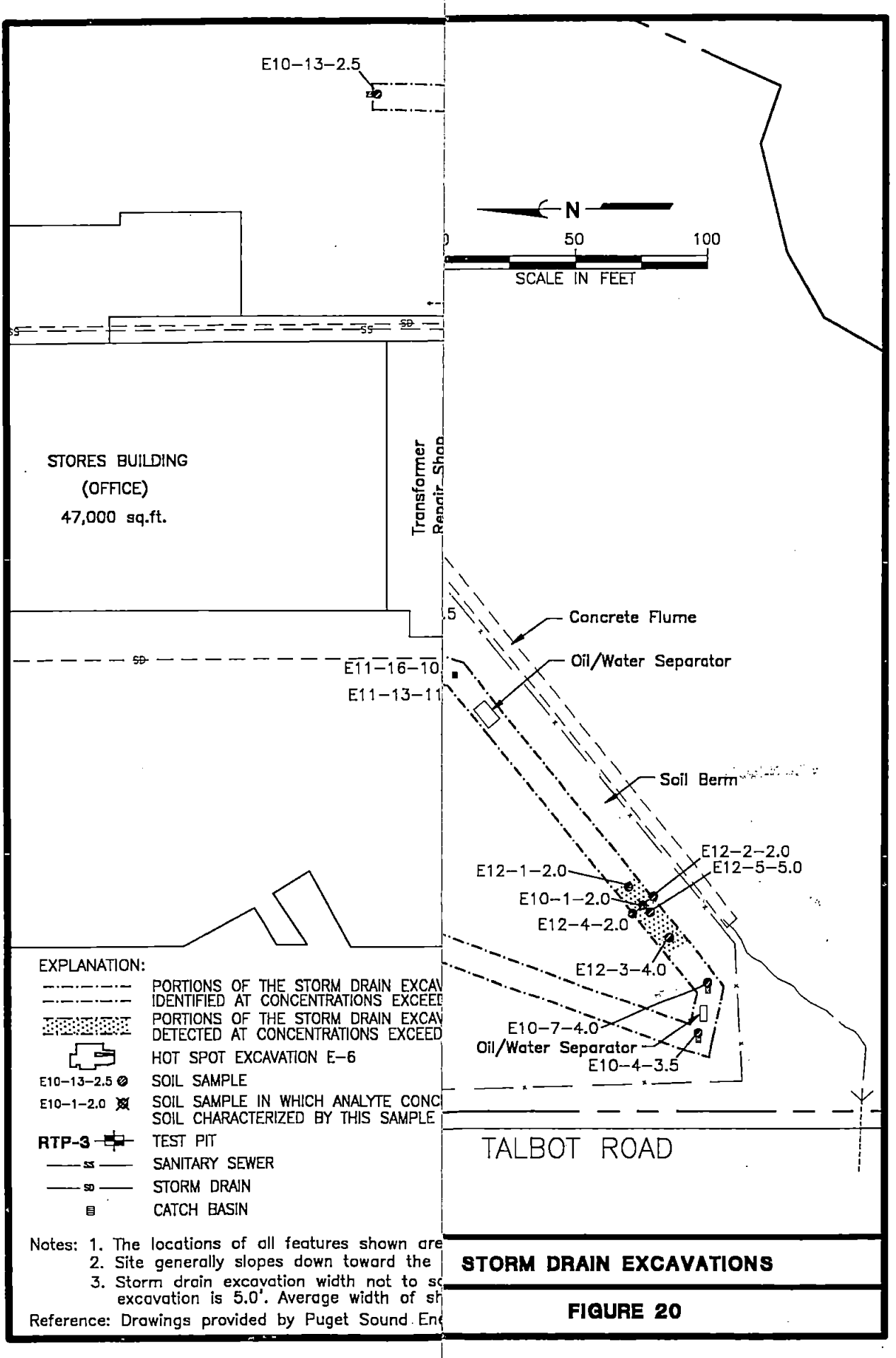
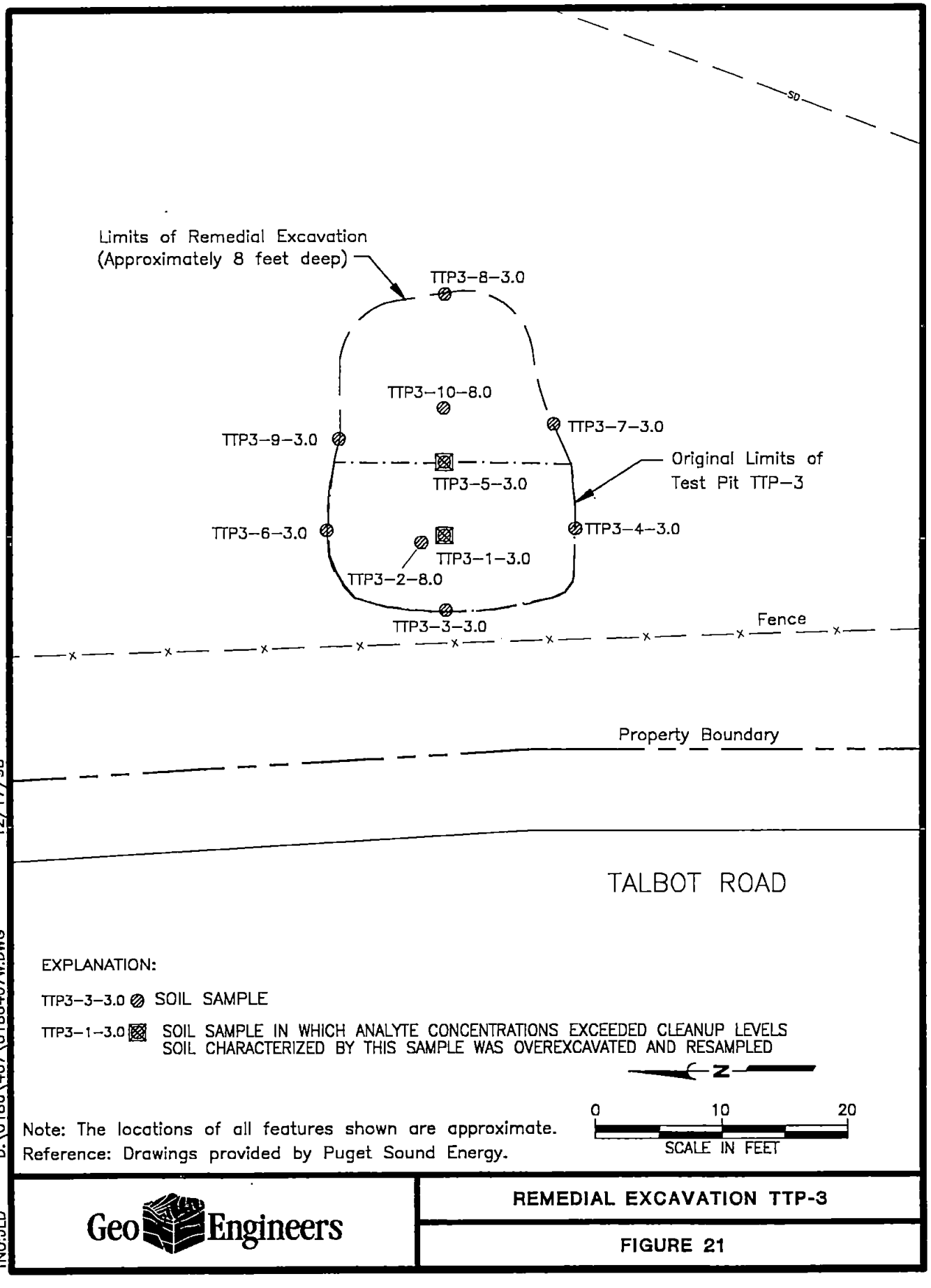
REMEDIAL EXCAVATION E-9

FIGURE 19



STORM DRAIN EXCAVATIONS

FIGURE 20



Note: The locations of all features shown are approximate.
Reference: Drawings provided by Puget Sound Energy.

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REMEDIAL EXCAVATION TTP-3

FIGURE 21

APPENDIX A

SCOPE OF SERVICES

APPENDIX A

SCOPE OF SERVICES

Three primary tasks were completed during this project as follows: (1) supplemental site characterization, (2) removal and replacement of some underground facilities, and (3) remedial soil excavation. These tasks were completed between June and November 1998. The scope of services completed in these three areas are as follow:

SITE CHARACTERIZATION

1. Monitor the completion of 22 subsurface explorations using power drilling (hollow-stem auger or direct-push) equipment. The explorations were completed to depths of approximately 3 to 20 feet beneath ground surface.
2. Monitor the construction of seven new 2-inch-diameter monitoring wells (GMW-8 through GMW-14) at the site.
3. Survey the elevations of the monitoring well casing rims relative to an assumed site datum and measure ground water levels in the monitoring wells.
4. Obtain ground water samples from 17 new and existing monitoring wells and four of the direct push borings.
5. Obtain soil samples from the subsurface explorations at approximately 2.5-foot-depth intervals.
6. Obtain five sediment samples and 11 soil samples from the wetland area located south of the storage yard.
7. Field screen soil/sediment samples obtained from the site to evaluate the possible presence of petroleum-related contamination.
8. Submit selected soil, sediment and ground water samples for one or more of the following analyses:
   - Gasoline-, diesel, and lube oil-range hydrocarbons using Ecology Methods NWTPH-G and NWTPH-D extended.
   - Total or dissolved metals (arsenic, cadmium, chromium, lead, and mercury) using EPA 6000-7000 Series Methodology,
   - PCBs using EPA Method 8082.
   - Benzene, ethylbenzene, toluene and xylenes (BETX) using EPA Method 8021B.
   - Halogenated volatile organic compounds (HVOCs) using EPA Method 8021B.
   - PAHs and SVOCs using EPA Method 8270.
   - pH using EPA Method 150.1.
   - Dioxins and furans using EPA Method 8290.
9. Arrange for the completion of a geophysical survey using electromagnetic (EM) and ground penetrating radar (GPR) equipment to evaluate the potential presence of buried transformers in portions of the equipment storage yard. Monitor the excavation of four exploratory test pits at suspect locations identified by the geophysical survey.

FACILITIES REMOVAL MONITORING

1. Monitor the removal of a portion of the site's stormwater drainage system.
2. Obtain soil samples from portions of the excavation where contamination is most likely to exist. These areas are as follows: (1) bends or joints in piping, (2) beneath catch basins, and (3) locations at which field screening results indicate the potential presence of petroleum-related contamination at concentrations exceeding applicable cleanup levels.
3. Monitor the removal of one 10,000-gallon unleaded gasoline UST, one 10,000-gallon diesel UST, and one 2,000-gallon heating oil UST.
4. Observe and document the condition of the USTs upon removal.
5. Obtain discrete soil samples from the final limits of the excavations for field screening and chemical analysis in accordance with Ecology's guidance for UST site assessments.
6. Monitor the removal of a vault near the transformer repair shop and obtain soil samples from vault excavation.
7. Submit selected soil samples obtained from the facilities removal excavations for appropriate chemical analysis using the analytical procedures summarized above.
8. Monitor the installation of the new storm water drainage system to insure that the system is functional.
9. Monitor the placement of backfill in all of the excavations and perform compaction testing.
10. Obtain a sample of ground water pumped from the storm drain excavation and submit the sample for chemical analysis in accordance with the requirements of King County Metro.

REMEDIAL EXCAVATION MONITORING

1. Monitor the excavation of soil in seven "hot spot" areas known to contain PCB-, cPAH- or petroleum-related contamination at concentrations exceeding applicable cleanup levels.
2. Monitor the excavation of petroleum-contaminated soil at two locations adjacent to the storm drain and in one of the test pits completed to evaluate the potential presence of buried transformers.
3. Conduct field screening to assist the contractor in segregating clean versus contaminated soil.
4. Obtain soil samples from the limits of the excavations to confirm that all soil with contamination at concentrations exceeding applicable cleanup levels has been removed from the site.
5. Obtain samples from soil stockpiles, as appropriate.
6. Monitor the placement and compaction of backfill in the remedial excavations.
7. Evaluate the chemical analytical results of all soil and ground water sampling activities relative to the cleanup objectives for this project.

DOCUMENTATION AND REPORT PREPARATION

1. Obtain photographs of the remedial and facilities removal activities and maintain daily field reports that summarize site activities and our observations of site environmental conditions.
2. Evaluate all chemical analytical data relative to the site cleanup objectives and MTCA cleanup levels.
3. Prepare a written report summarizing all site activities and analytical results.

APPENDIX B

FIELD PROCEDURES

APPENDIX B

FIELD PROCEDURES

GENERAL

Subsurface conditions at the site were explored by completing eight borings using hollow-stem auger drilling equipment, twelve borings using direct-push drilling equipment, six test pits using a rubber-tired backhoe, and sixteen shallow explorations using hand-held digging equipment. Details of the sampling procedures and techniques are described below.

SUBSURFACE EXPLORATION SOIL SAMPLING

Subsurface conditions on the site were explored during this phase of study by completing 10 hollow-stem auger borings (GMW-8 through GMW-14 and B-1a through B-3a), six test pits (RTP-2 through RTP-7), twelve direct-push borings (SP-1 through SP-12) and sixteen shallow explorations (Soil-1 through Soil-5 and SED-1 through SED-11) from June through November 1998. Borings/monitoring wells GMW-1 through GMW-7 were completed at the site during a previous study. Test pit RTP-1 was completed during this study in the south portion of the site, but was not sampled because it was adjacent to boring/monitoring well GMW-11. Soil conditions appeared similar in RTP-1 and GMW-11 based on field screening results. A soil sample obtained from GMW-11 was submitted for analysis of diesel- and lube oil-range hydrocarbons and PCBs; these analytes were detected at concentrations less than applicable cleanup levels.

A representative from our staff determined the exploration locations, examined and classified the soils encountered, and prepared a detailed log of each exploration. Soil in the explorations was visually classified in general accordance with ASTM D-2488-94, which is described in Figure B-1. An explanation of the boring log symbols is presented in Figure B-2. The boring and test pit logs are presented in Figures B-3 through B-33. Additionally, ground water monitoring wells were constructed in seven of the borings. Four of these monitoring wells (GMW-2, GMW-3, GMW-4 and GMW-12) were abandoned during remedial activities and subsequently replaced (GMW-2a, GMW-3a, GMW-4a and GMW-12a).

The hollow stem auger borings were drilled to depths ranging from approximately 12 to 19 feet using truck-mounted, hollow-stem auger equipment owned and operated by Holt Testing Incorporated of Puyallup, Washington. Hollow-stem auger soil samples from the borings were obtained from approximately 2.5-foot intervals using a Dames & Moore split-barrel sampler. The sampler was driven a maximum of 18 inches by a 300-pound weight falling a vertical distance of approximately 30 inches. The number of blows needed to advance the sampler the final 12 inches or other specified distance is indicated to the left of the corresponding sample notation on the boring log. Samples submitted for chemical analysis are denoted with a "CA" on the boring logs.

The test pits were completed to depths ranging from 4.5 to 10.0 feet using a rubber-tired backhoe operated by Olympus Environmental of Kent, Washington. Test pit soil samples were collected from locations most likely to be contaminated based on field screening evidence.

The direct-push borings were drilled to depths ranging from 10 to 16 feet bgs using StrataProbe™ equipment owned and operated by TEG Northwest Incorporated of Lacey, Washington. The direct-push borings were sampled at 3.0-foot intervals using a 1.5-inch-diameter split-barrel push sampler driven with a pneumatic hammer.

The sixteen shallow explorations were completed using a stainless steel hand-auger operated by representative of GeoEngineers.

The hollow-stem auger drilling equipment was cleaned with a hot-water pressure washer before each boring was drilled. The StrataProbe™ sampling equipment was decontaminated before each sampling attempt with a Liquinox solution wash, and two distilled water rinses. In addition, the StrataProbe™ sampling equipment was decontaminated using an acetone rinse in borings where samples were collected for analysis of dioxins and furans. Soil samples were selected for chemical analysis based on field screening results and the depth of the sample relative to the water table. The soil samples were kept cool before and during transport to the laboratory. Chain-of-custody procedures were followed while transporting the soil samples to the laboratory.

REMEDIAL EXCAVATION AND UST EXCAVATION SOIL SAMPLING PROGRAM

The soil remedial excavations were performed at Puget Sound Energy's Grady Way Complex located at 915 South Grady Way in Renton, Washington from August through November 1998. A track-mounted backhoe was used to excavate the soil. An engineer from our staff was on site during excavation activities to evaluate the extent of contamination, conduct field screening and assist the contractor in segregating clean versus contaminated soil. Soil samples were obtained from the walls and base of the excavations and from stockpiled soil. UST excavation soil samples were collected from the fill soil that was present at the site prior to installation of the USTs. These samples were collected from depths immediately above the ground water table unless field screening evidence suggested that contamination was present at other locations.

Soil samples obtained from depths of about 3 feet or less were collected directly from the excavation. Samples obtained from greater depths were collected from the center of the backhoe bucket. Samples obtained for field screening or chemical analysis were collected using the same procedures. Stockpile soil samples were obtained using a decontaminated shovel. Stockpile soil samples were obtained from depths of about 1-foot below the soil surface.

Samples submitted for chemical analysis were placed in sample containers provided by the analytical laboratory. Sample containers were filled to minimize headspace. The samples were placed in a cooler with blue ice pending transport to the analytical laboratory. Chain-of-custody procedures were followed while transporting the samples to the laboratory.

FIELD SCREENING OF SOIL SAMPLES

Soil samples obtained from the borings and test pits were screened in the field for evidence of petroleum-related contamination using (1) visual examination and (2) sheen screening. The results of headspace and sheen screening are included in the tables of this report.

Visual screening consists of inspecting the soil for stains indicative of petroleum-related contamination. Visual screening is generally more effective when contamination is related to heavy petroleum hydrocarbons, such as motor oil or hydraulic oil, or when hydrocarbon concentrations are high. Sheen screening and headspace vapor screening are more sensitive methods that have been effective in detecting contamination at concentrations less than regulatory cleanup guidelines.

Sheen screening involves placing soil in a pan of water and observing the water surface for signs of sheen. Sheen classifications are as follows:

No Sheen (NS)	No visible sheen on water surface.
Slight Sheen (SS)	Light, colorless, dull sheen; spread is irregular, not rapid; sheen dissipates rapidly.
Moderate Sheen (MS)	Light to heavy sheen, may have some color/iridescence; spread is irregular to flowing; few remaining areas of no sheen on water surface.
Heavy Sheen (HS)	Heavy sheen with color/iridescence; spread is rapid; entire water surface may be covered with sheen.

Field screening results are site-specific and vary with soil type, soil moisture content, temperature and type of contaminant.

MONITORING WELL CONSTRUCTION

Ground water monitoring wells were constructed in borings GMW-8 through GMW-12 at the completion of drilling. Two-inch-diameter, Schedule 40 PVC (polyvinyl chloride) pipe was installed in the borings. The lower portion of the PVC pipe is machine-slotted (0.02-inch slot width) to allow entry of water, free product and vapors into the well casing. Medium sand was placed in the borehole annulus surrounding the slotted portion of the well. The well casing is protected within a surface monument with a lockable compression cap. The monitoring wells were developed by GeoEngineers at the conclusion of each monitoring well installation. Well development was accomplished by removing at least five well volumes of water, and a sufficient amount of water to remove turbidity. The wells were developed using a decontaminated stainless steel bailer or new disposable bailer. Development water was placed in 55-gallon drums located on site.

GROUND WATER MEASUREMENTS

Depths to ground water were measured in the monitoring wells during each sampling event.

The ground water measurements were obtained using an electronic water level indicator. The water level indicator was cleaned with a Liquinox wash and distilled water rinse prior to use in each well.

GROUND WATER SAMPLING PROGRAM

Ground water samples were obtained from the monitoring wells no sooner than 24 hours after well installation. A minimum of three well volumes of water was purged from each well prior to obtaining samples. After purging, ground water samples were obtained from each well using disposable polyethylene bailers and transferred to laboratory-prepared bottles in the field and kept cool during transport to the testing laboratory. Chain-of-custody procedures were observed during transport of the samples to the laboratory.

Ground water samples also were collected from four of the direct-push soil borings (SP-1 through SP-4) by placing clean tubing inside the probe rod and retrieving a ground water sample using a peristaltic pump. Samples obtained for the analysis of dissolved metals were field filtered using a 0.45 micron filter before being transferred to laboratory-prepared bottles containing preservative (nitric acid). Some of the samples that were obtained for the analysis of dissolved metals were not field filtered. These samples were placed in laboratory-prepared bottles that did not contain preservative. Laboratory personnel filtered these samples upon receipt and placed the samples in bottles with preservative. The samples were kept cool during transport to the testing laboratory. Chain-of-custody procedures were observed during transport of the samples to the laboratory.

PURGE WATER AND DRILL CUTTINGS DISPOSAL

Purge water was collected from the well development and sampling activities and placed in labeled 55-gallon drums located on site. The purge water was discharged to the on-site sanitary sewer in accordance with the site's Metro permit. Soil cuttings from drilling activities also were placed in 55-gallon drums and subsequently transported off-site for disposal at a permitted facility.

GEOPHYSICAL EXPLORATION PROGRAM

Apollo Geophysics Corporation (AGC) of Seattle, Washington completed a geophysical exploration survey on November 20, 1998. The geophysical study was completed using electromagnetic (EM) and ground penetrating radar (GPR) equipment. AGC's report of these activities is presented at the end of this appendix.

SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS			GROUP SYMBOL	GROUP NAME
COARSE GRAINED SOILS More Than 50% Retained on No. 200 Sieve	GRAVEL More Than 50% of Coarse Fraction Retained on No. 4 Sieve	CLEAN GRAVEL	GW	WELL-GRADED GRAVEL, FINE TO COARSE GRAVEL
			GP	POORLY-GRADED GRAVEL
		GRAVEL WITH FINES	GM	SILTY GRAVEL
			GC	CLAYEY GRAVEL
	SAND More Than 50% of Coarse Fraction Passes No. 4 Sieve	CLEAN SAND	SW	WELL-GRADED SAND, FINE TO COARSE SAND
			SP	POORLY-GRADED SAND
		SAND WITH FINES	SM	SILTY SAND
			SC	CLAYEY SAND
FINE GRAINED SOILS More Than 50% Passes No. 200 Sieve	SILT AND CLAY Liquid Limit Less Than 50	INORGANIC	ML	SILT
			CL	CLAY
		ORGANIC	OL	ORGANIC SILT, ORGANIC CLAY
	SILT AND CLAY Liquid Limit 50 or More	INORGANIC	MH	SILT OF HIGH PLASTICITY, ELASTIC SILT
			CH	CLAY OF HIGH PLASTICITY, FAT CLAY
		ORGANIC	OH	ORGANIC CLAY, ORGANIC SILT
HIGHLY ORGANIC SOILS			PT	PEAT
SOIL PREDOMINANTLY COMPOSED OF COAL FRAGMENTS (SEE NOTE BELOW)			CF	COAL FRAGMENTS

NOTES:

1. Field classification is based on visual examination of soil in general accordance with ASTM D2488-90.
2. Soil classification using laboratory tests is in general accordance with ASTM D2487-90.
3. Descriptions of soil density or consistency are based on interpretation of blow count data, visual appearance of soils, and/or test data.
4. Fill beneath much of the site consists of coal fragments. The coal originated from mining operations conducted on nearby properties. The texture of this material varies, but consists predominantly of silt- and sand-size coal fragments with occasional gravel-size fragments.

SOIL MOISTURE MODIFIERS:

Dry - Absence of moisture, dusty, dry to the touch

Moist - Damp, but no visible water

Wet - Visible free water or saturated, usually soil is obtained from below water table

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SOIL CLASSIFICATION SYSTEM

FIGURE B-1

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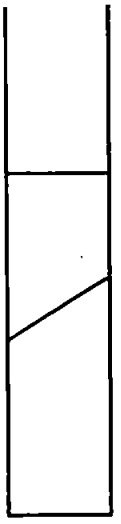
LABORATORY TESTS

AL	Atterberg Limits
CP	Compaction
CS	Consolidation
DS	Direct shear
GS	Grain size
%F	Percent fines
HA	Hydrometer Analysis
SK	Permeability
SM	Moisture Content
MD	Moisture and density
SP	Swelling pressure
TX	Triaxial compression
UC	Unconfined compression
CA	Chemical analysis

SOIL GRAPH:



SM Soil Group Symbol (See Note 2)

Distinct Contact Between Soil Strata

Gradual or Approximate Location of Change Between Soil Strata

Water Level

Bottom of Boring

BLOW COUNT/SAMPLE DATA:

Blows required to drive a 2.4-inch I.D. split-barrel sampler 12 inches or other indicated distances using a 300-pound hammer falling 30 inches.

22 Location of relatively undisturbed sample

12 Location of disturbed sample

17 Location of sampling attempt with no recovery

Blows required to drive a 1.5-inch I.D. (SPT) split-barrel sampler 12 inches or other indicated distances using a 140-pound hammer falling 30 inches.

10 Location of sample obtained in general accordance with Standard Penetration Test (ASTM D-1586) procedures

26 Location of SPT sampling attempt with no recovery

Location of grab sample

"P" indicates sampler pushed with weight of hammer or against weight of drill rig.

NOTES:
1. The reader must refer to the discussion in the report text, the Key to Boring Log Symbols and the exploration logs for a proper understanding of subsurface conditions.
2. Soil classification system is summarized in Figure A-1.

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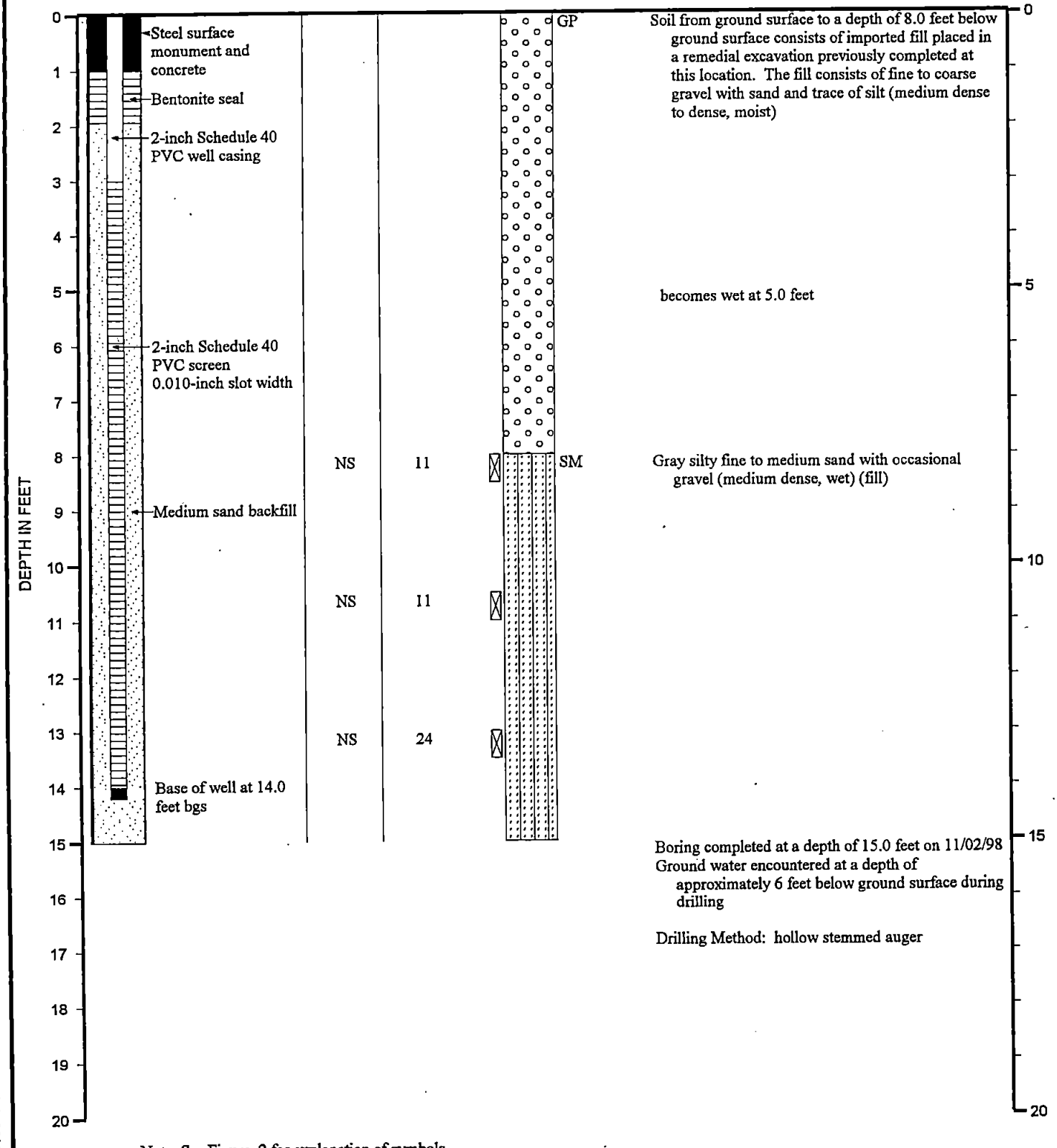
KEY TO BORING LOG SYMBOLS

FIGURE B-2

MONITORING WELL GMW-2a



Note: See Figure 2 for explanation of symbols

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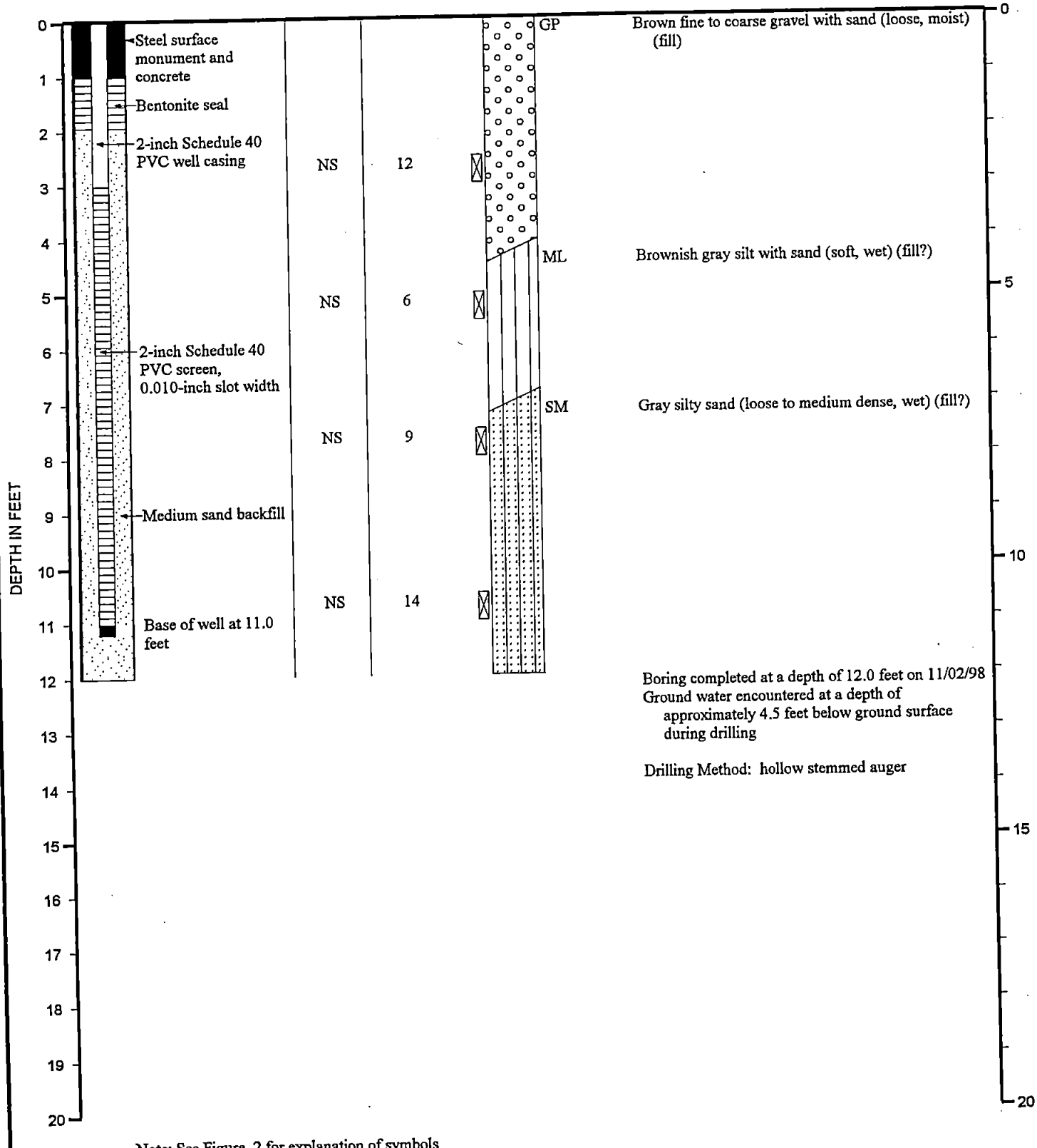
LOG OF MONITORING WELL

FIGURE B-3

MONITORING WELL GMW-3a



Note: See Figure 2 for explanation of symbols

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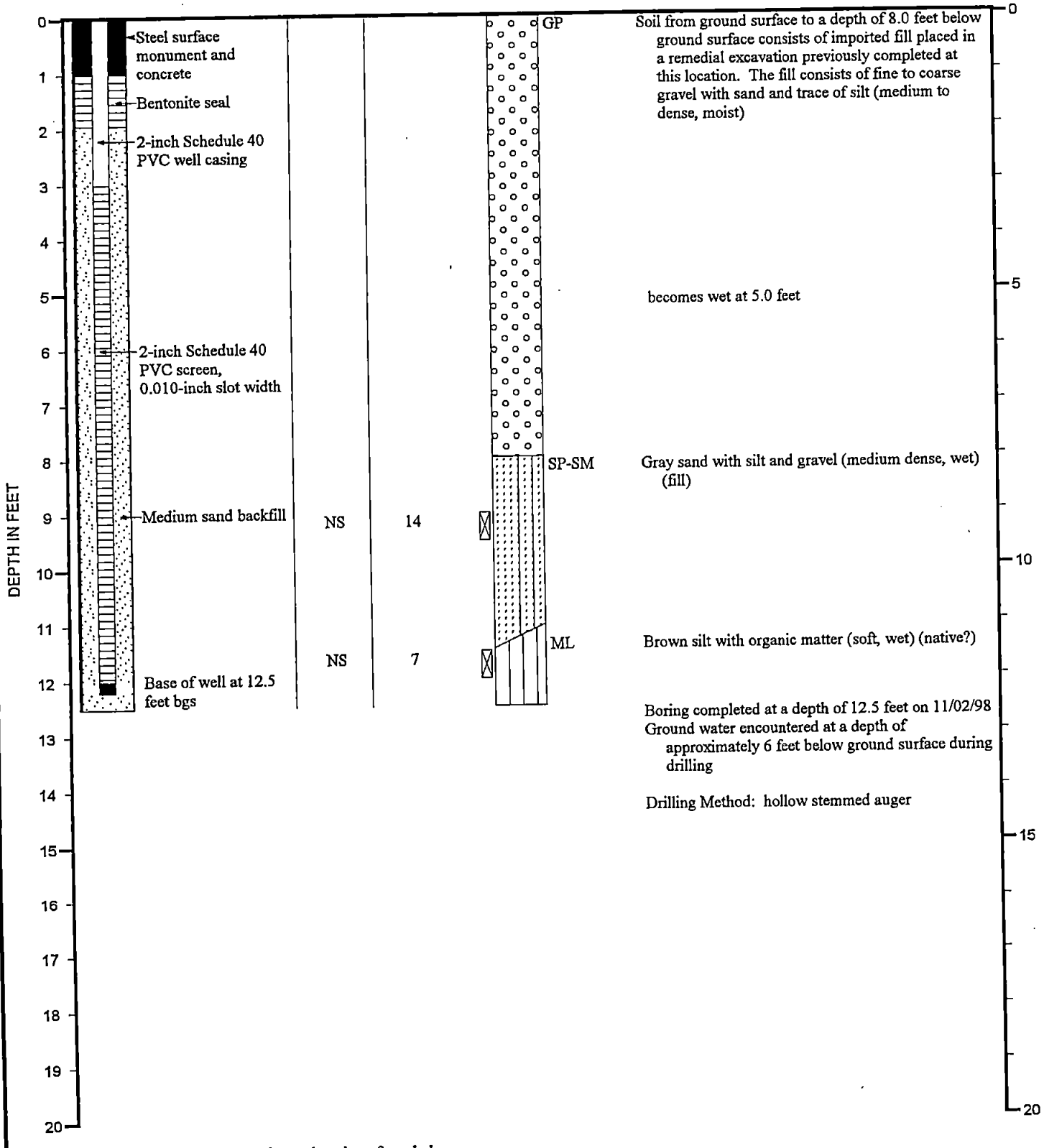
LOG OF MONITORING WELL

FIGURE B-4

MONITORING WELL GMW-4a

WELL SCHEMATIC

Casing Elevation (ft.): 96.58
Casing Stickup (ft.): -0.42



Note: See Figure 2 for explanation of symbols

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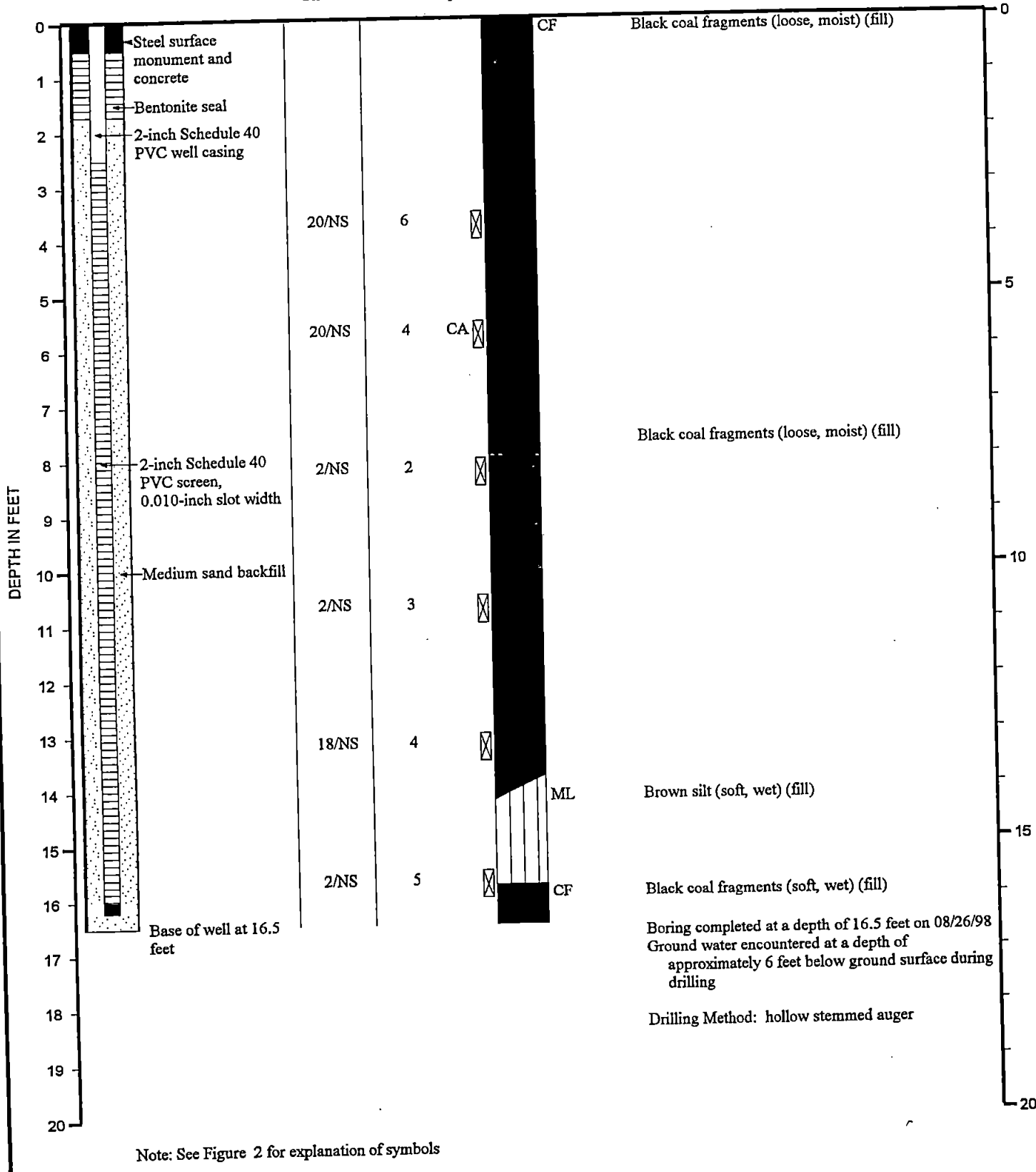
LOG OF MONITORING WELL

FIGURE B-5

MONITORING WELL GMW-8



Note: See Figure 2 for explanation of symbols

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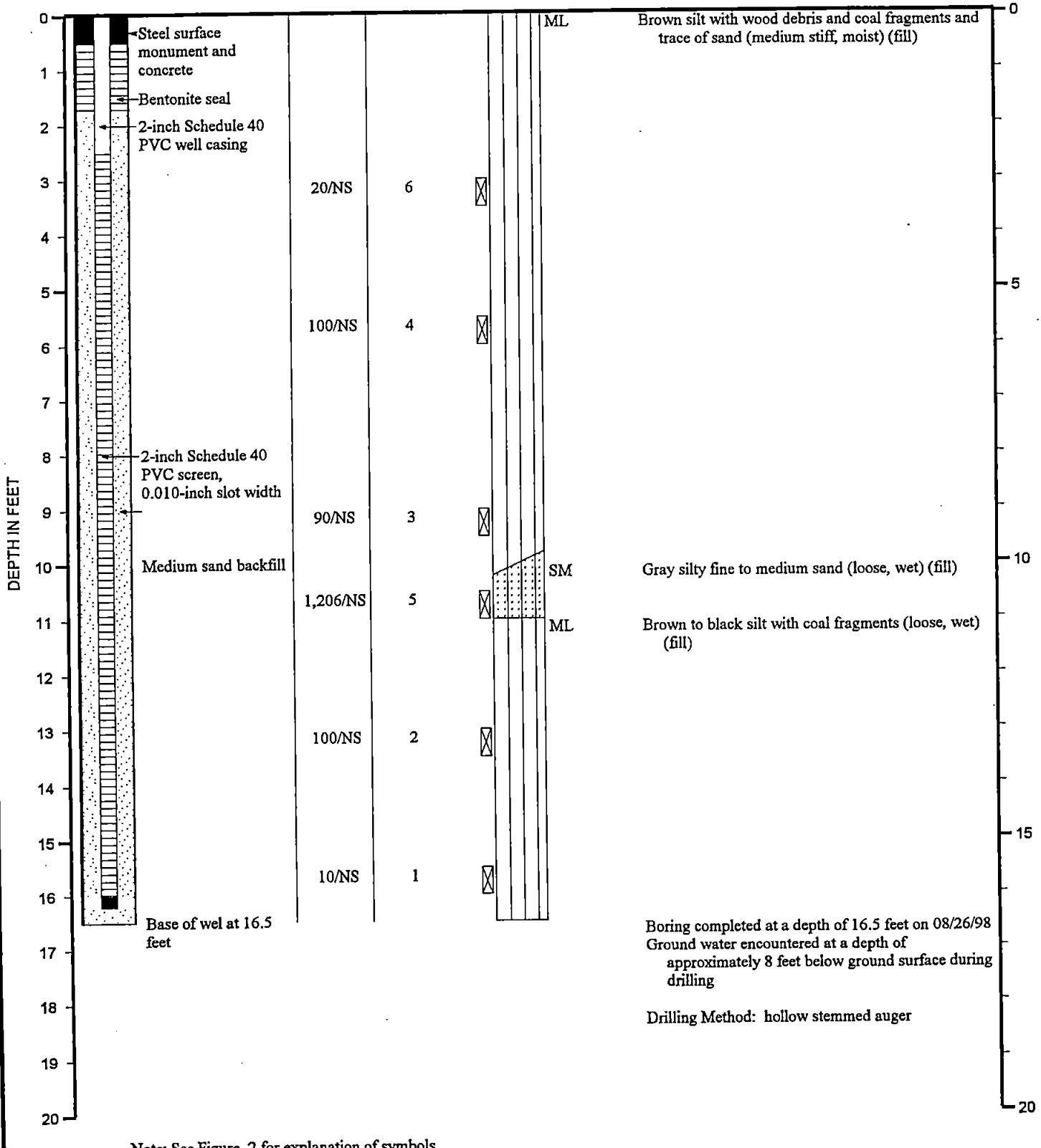
LOG OF MONITORING WELL

FIGURE B-6

MONITORING WELL GMW-9



Note: See Figure 2 for explanation of symbols

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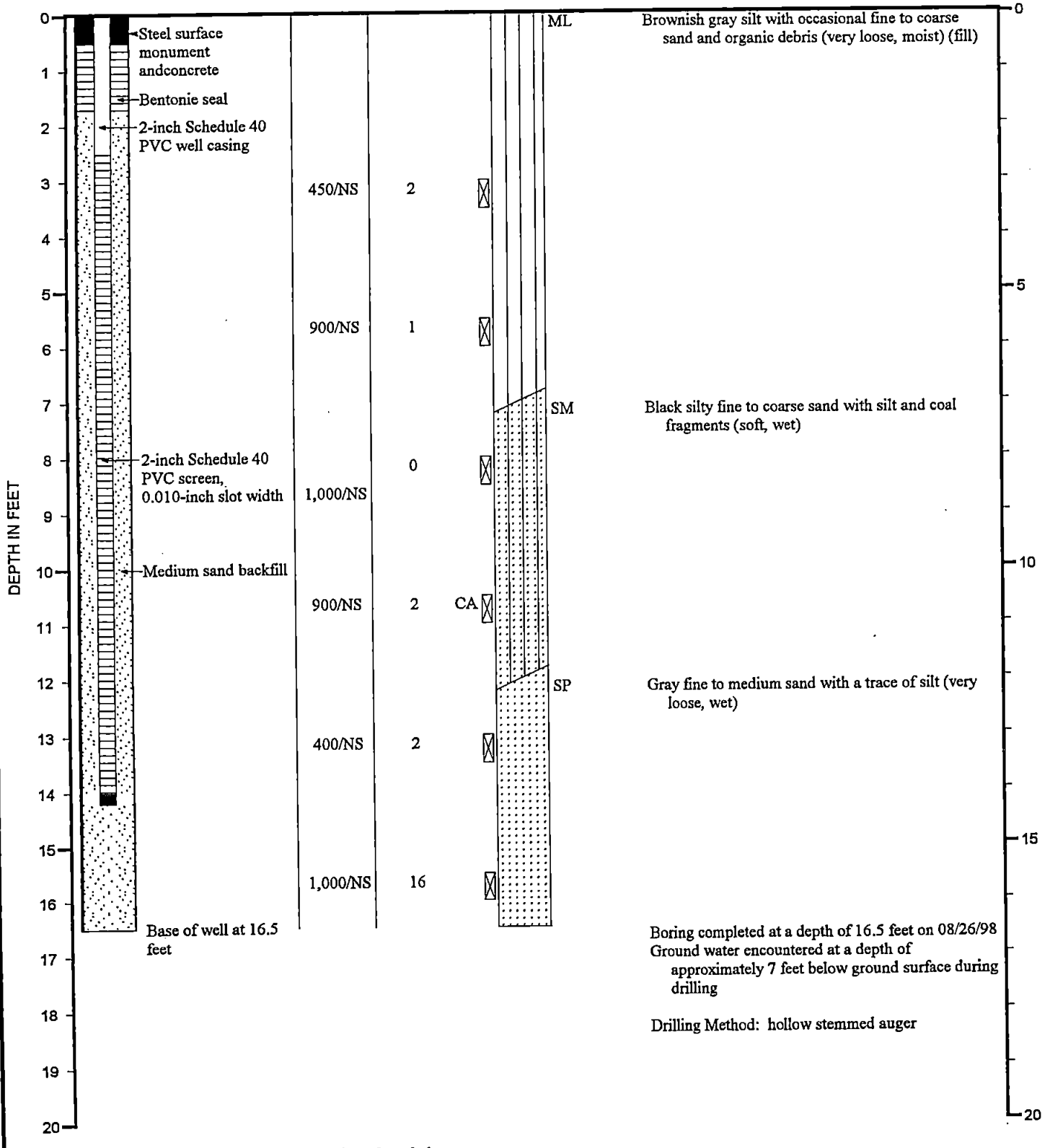
LOG OF MONITORING WELL

FIGURE B-7

MONITORING WELL GMW-10

WELL SCHEMATIC

Casing Elevation (ft.): 95.84
Casing Stickup (ft.): -0.57



Note: See Figure 2 for explanation of symbols

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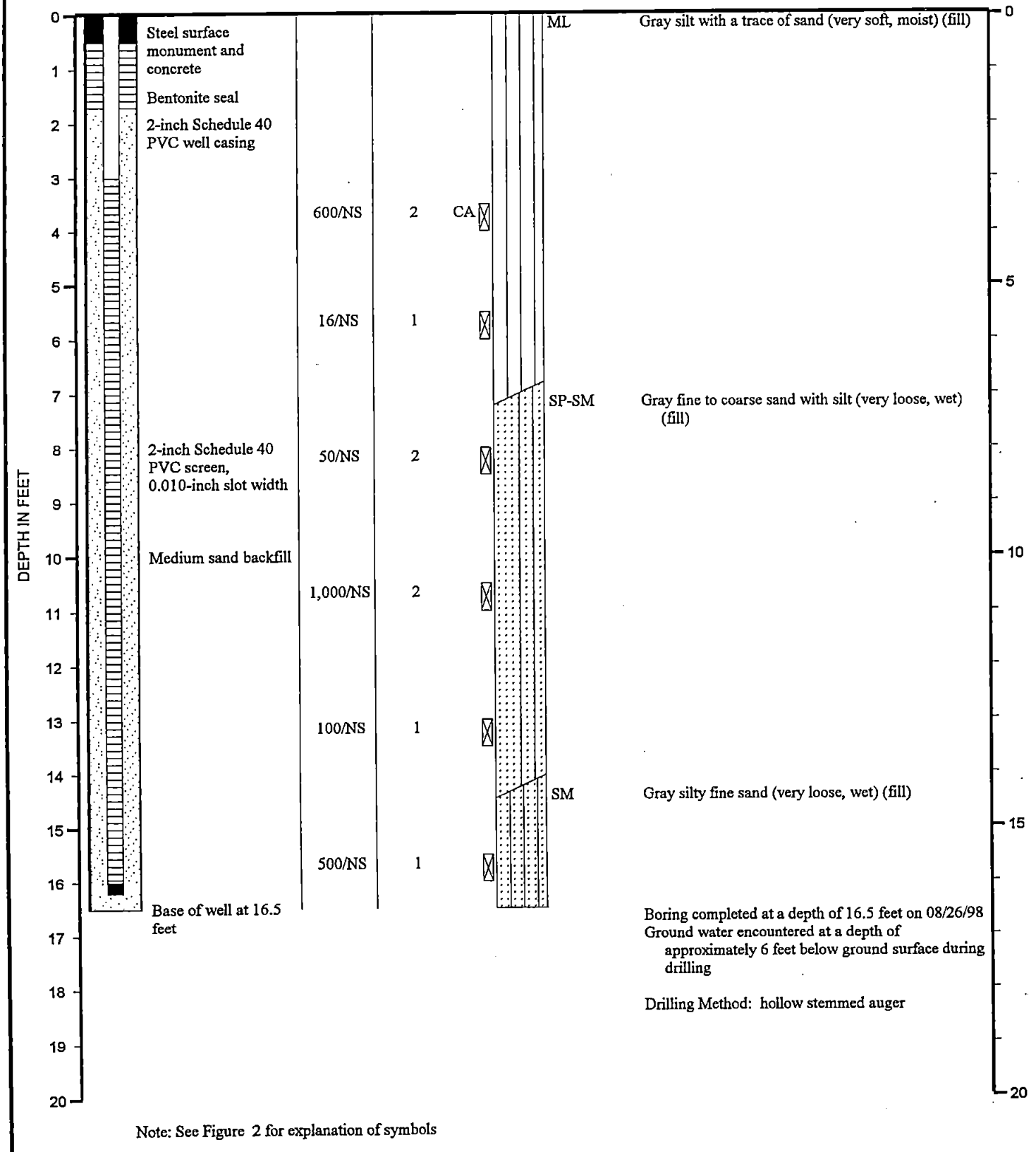
LOG OF MONITORING WELL

FIGURE B-8

MONITORING WELL GMW-11



Note: See Figure 2 for explanation of symbols

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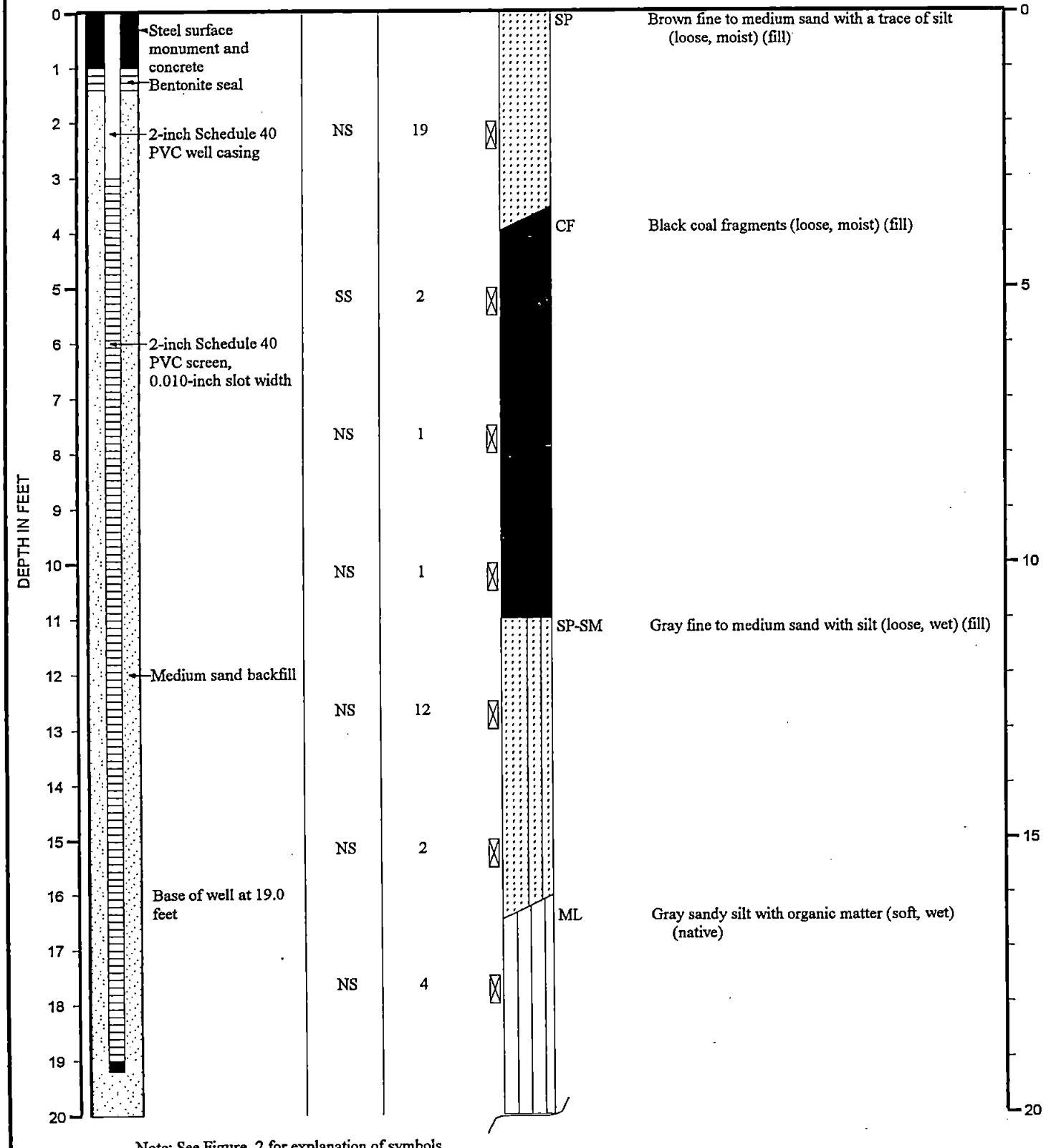
LOG OF MONITORING WELL

FIGURE B-9

MONITORING WELL GMW-12



Note: See Figure 2 for explanation of symbols

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LOG OF MONITORING WELL

FIGURE B-10

MONITORING WELL GMW-12
(Continued)

WELL SCHEMATIC

Vapor Conc.(ppm) / Sheen	Blow Count	Samples	Group Symbol	DESCRIPTION
				Boring completed at a depth of 20.0 feet on 09/03/98 Ground water encountered at a depth of approximately 9 feet below ground surface during drilling Drilling Method: hollow stemmed auger

DEPTH IN FEET

20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40

Note: See Figure 2 for explanation of symbols

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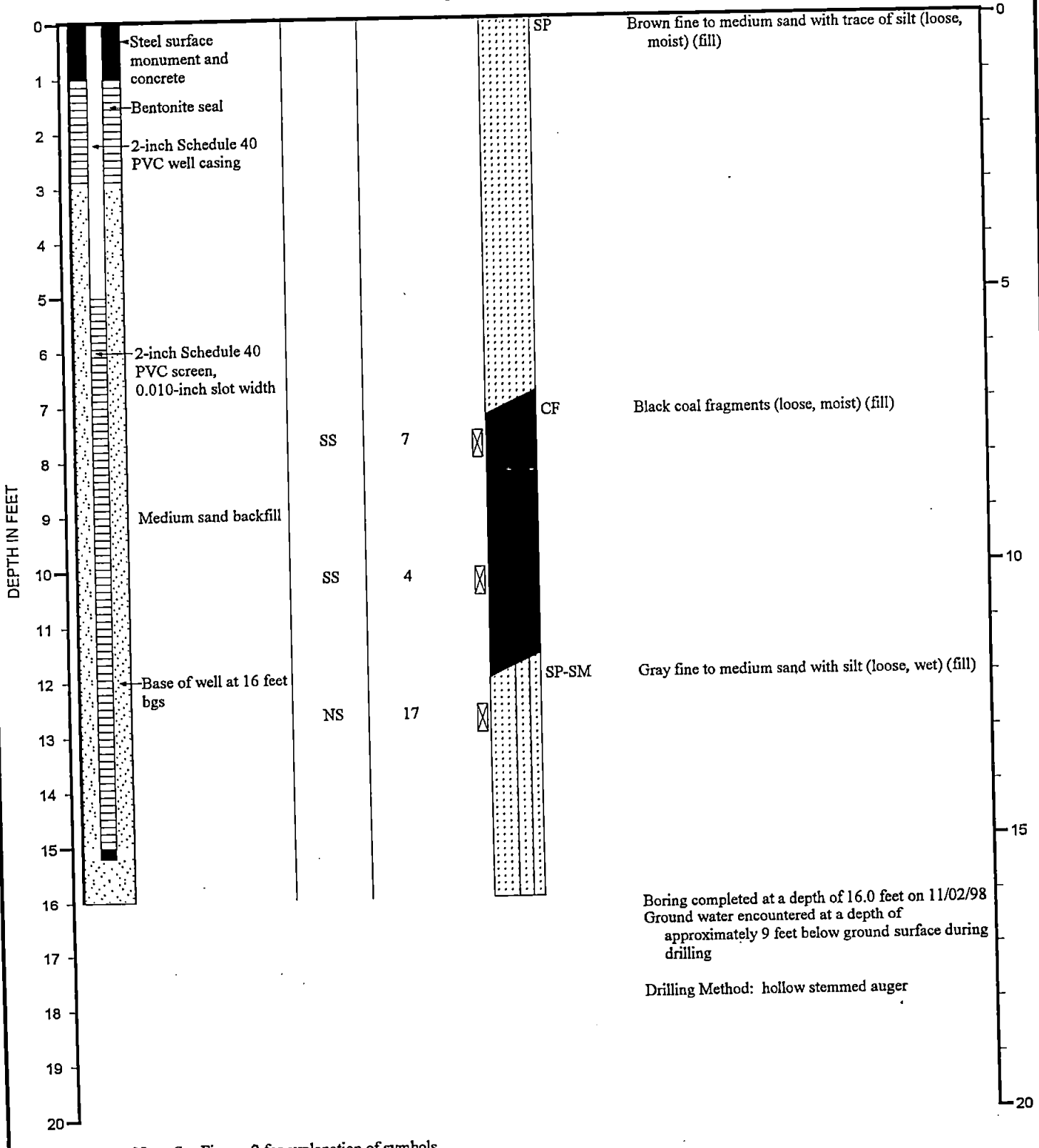
LOG OF MONITORING WELL

FIGURE B-10

MONITORING WELL GMW-12a

WELL SCHEMATIC

Casing Elevation (ft.): 102.58
Casing Stickup (ft.): -.42



Boring completed at a depth of 16.0 feet on 11/02/98
Ground water encountered at a depth of approximately 9 feet below ground surface during drilling

Drilling Method: hollow stemmed auger

Note: See Figure 2 for explanation of symbols

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LOG OF MONITORING WELL

FIGURE B-11

MONITORING WELL GMW-13

WELL SCHEMATIC

Casing Elevation (ft.): 98.86
Casing Stickup (ft.): -0.14

Vapor Conc.(ppm) / Sheen	Blow Count	Samples	Group Symbol	DESCRIPTION (Surface Elevation (ft.): 99.00)
			AC	3 inches concrete asphalt
			ML	Brown silt with trace of sand (medium stiff, wet)
NS/--	12			
				▽ becomes wet at 5.0 feet
NS/--	13			
NS/--	14			
NS/--	24			
			SP	Red fine sand with trace of silt (medium dense, wet)
NS/--	8			

Steel surface monument and concrete

Bentonite seal

2-inch, Schedule 40 PVC solid

2-inch, Schedule 40 PVC 20 inch slot width

Medium sand backfill

4 inch threaded end cap
Base of well at 14.0 feet bgs

Boring completed at 14.0 feet on 11/23/98
Ground water encountered at a depth of approximately 5.5 feet below ground surface during drilling

Drilling Method: hollow stemmed auger

DEPTH IN FEET

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

0 5 10 15 20

Note: See Figure 2 for explanation of symbols

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LOG OF MONITORING WELL

FIGURE B-12

MONITORING WELL GMW-14

WELL SCHEMATIC

Casing Elevation (ft.): 99.06
Casing Stickup (ft.): -0.27

Vapor Conc.(ppm) / Sheen	Blow Count	Samples	Group Symbol	DESCRIPTION (Surface Elevation (ft.): 99.33)
			AC	3 inch asphalt concrete
			ML	Gray silt (loose, dry)
NS	13			
			CF	Coal fragments (loose, moist)
			▽	becomes wet at 5.5 feet
NS	6			
MS	3			
MS	6			
MS	5			

Steel surface monument and concrete

Bentonite seal

2-inch, Schedule 40 PVC Solid

2-inch, Schedule 40 PVC 20 inch slot width

Medium sand backfill (10 x 20)

Base of well at 14.0 feet bgs

DEPTH IN FEET

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

0 5 10 15 20

Boring completed at a depth of 14.0 feet on 11/23/98
Ground water encountered at a depth of approximately 5.5 feet below ground surface during drilling

Drilling Method: hollow stemmed auger

Note: See Figure 2 for explanation of symbols

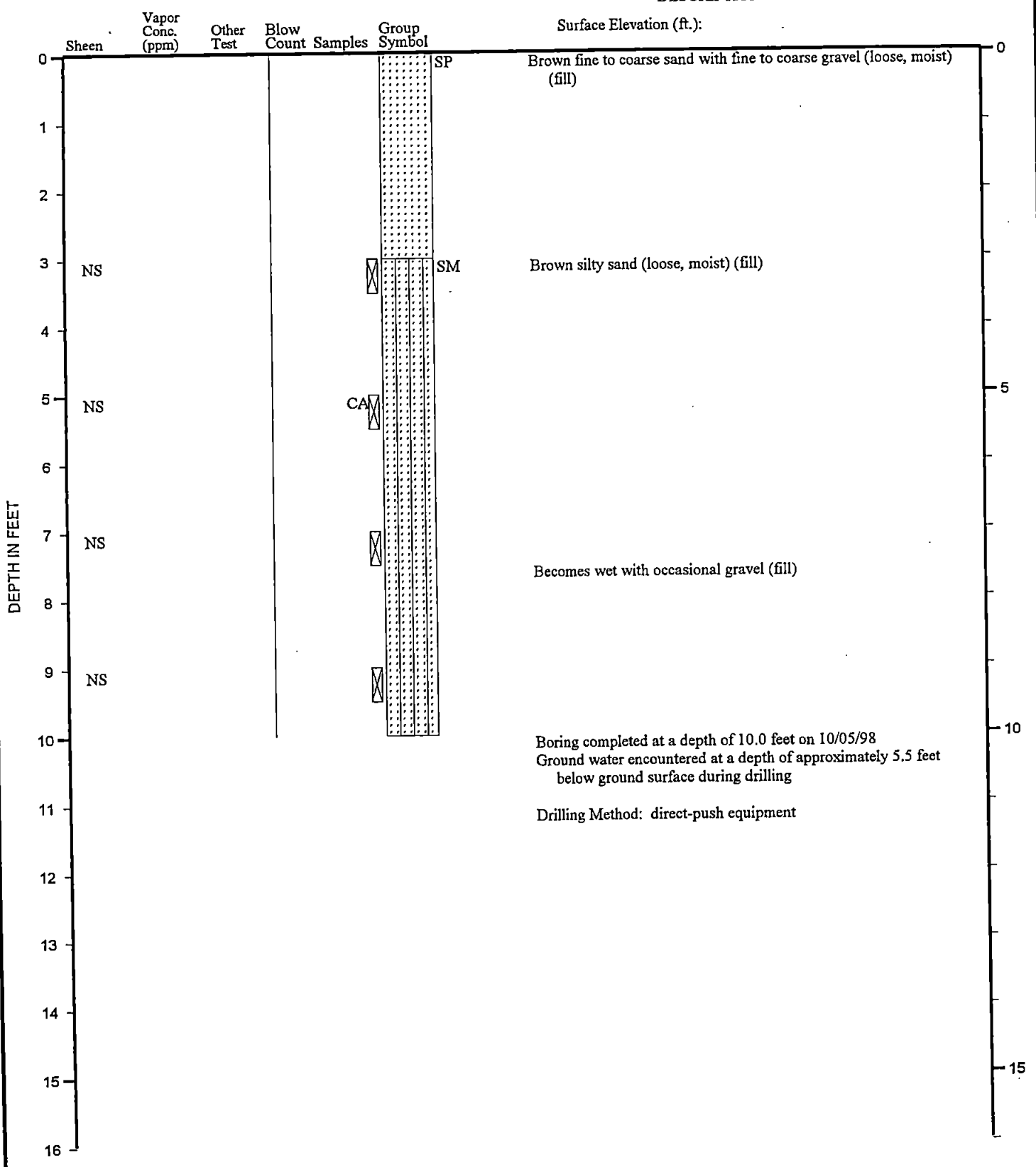
GeoEngineers

LOG OF MONITORING WELL

FIGURE B-13

TEST DATA

BORING SP-1



Note: See Figure 2 for explanation of symbols

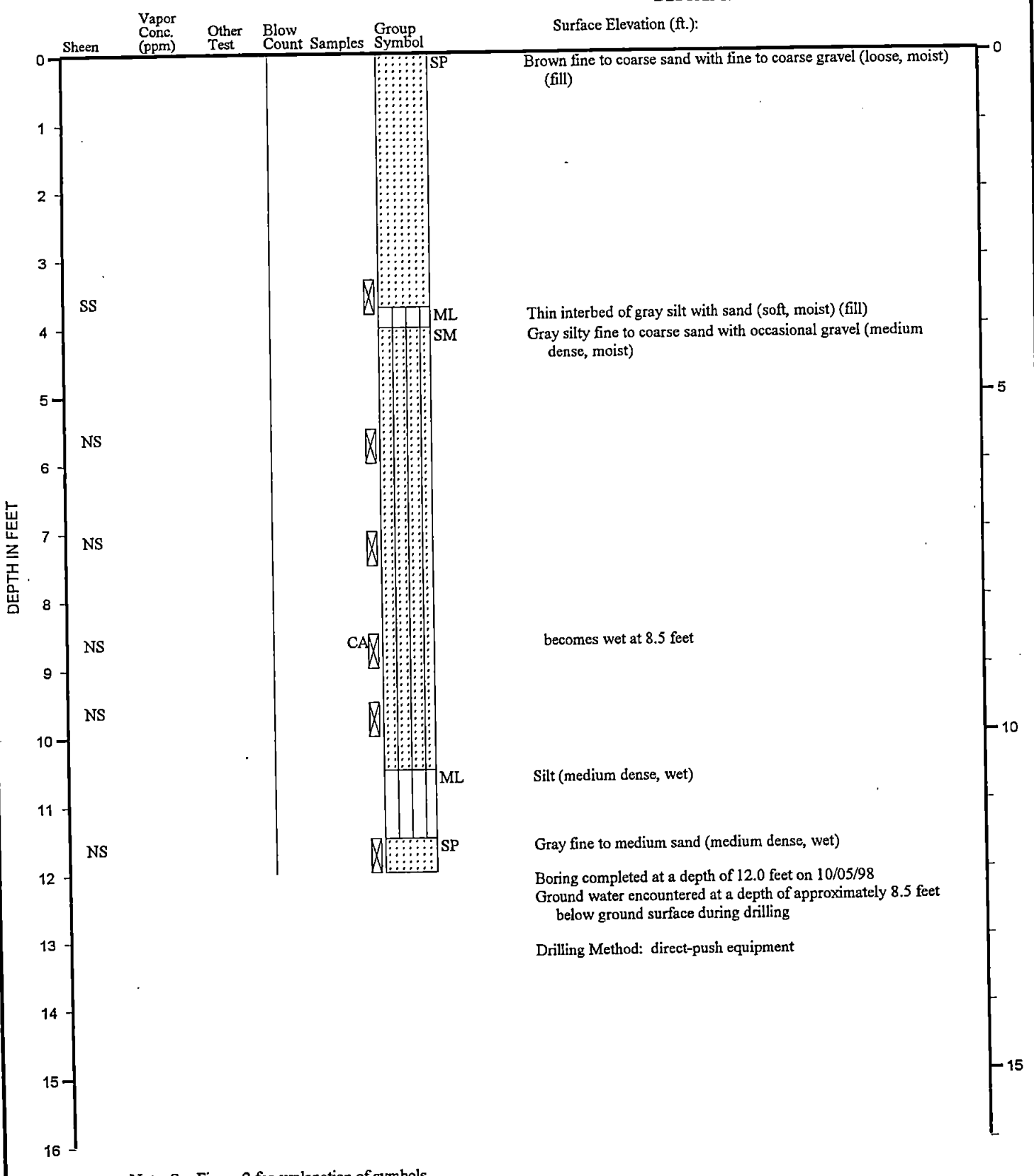
Geo Engineers

LOG OF BORING

FIGURE B-14

TEST DATA

BORING SP-2



Note: See Figure 2 for explanation of symbols

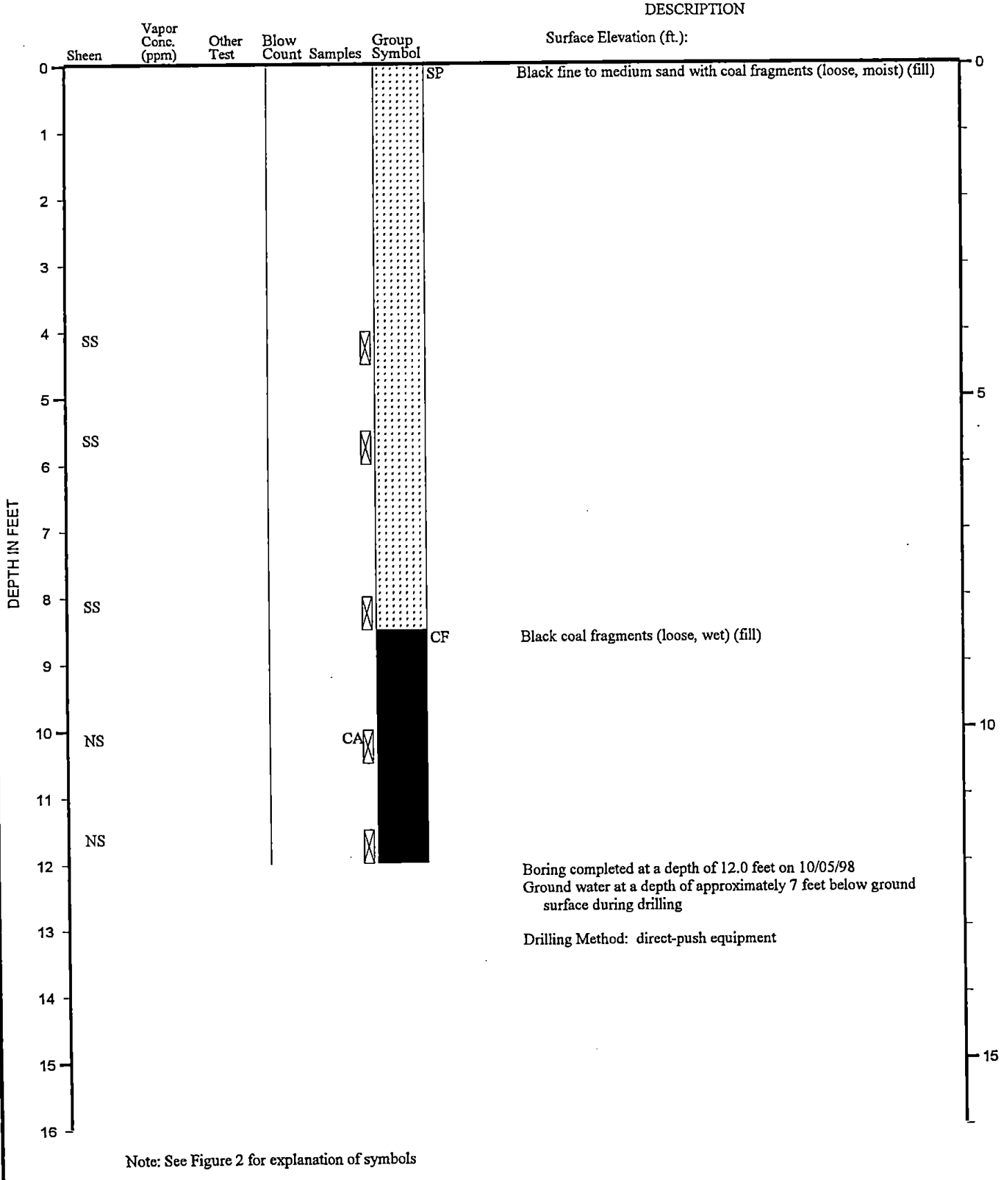
GeoEngineers

LOG OF BORING

FIGURE B-15

TEST DATA

BORING SP-3



Note: See Figure 2 for explanation of symbols

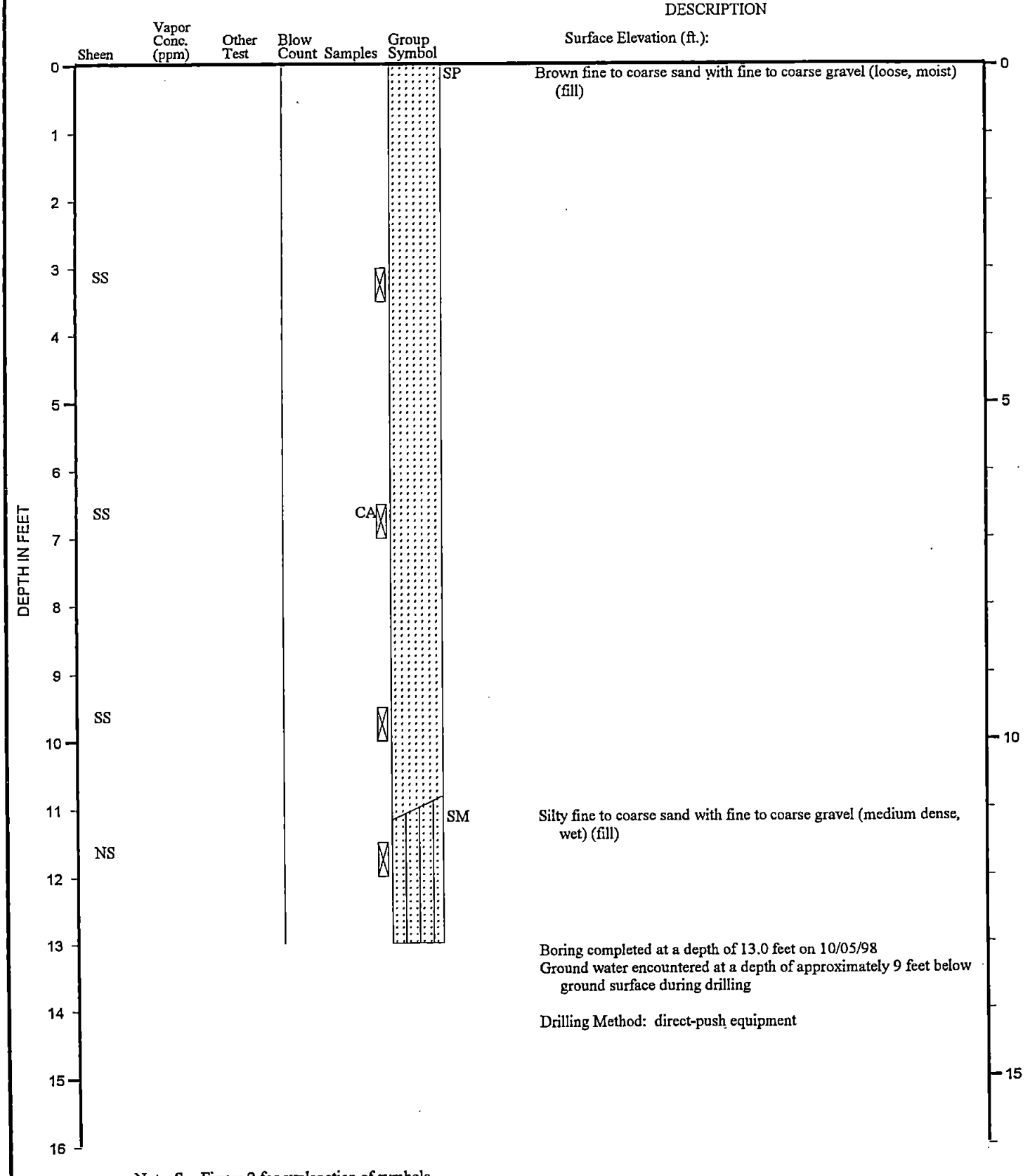
GeoEngineers

LOG OF BORING

FIGURE B-16

TEST DATA

BORING SP-4



Note: See Figure 2 for explanation of symbols

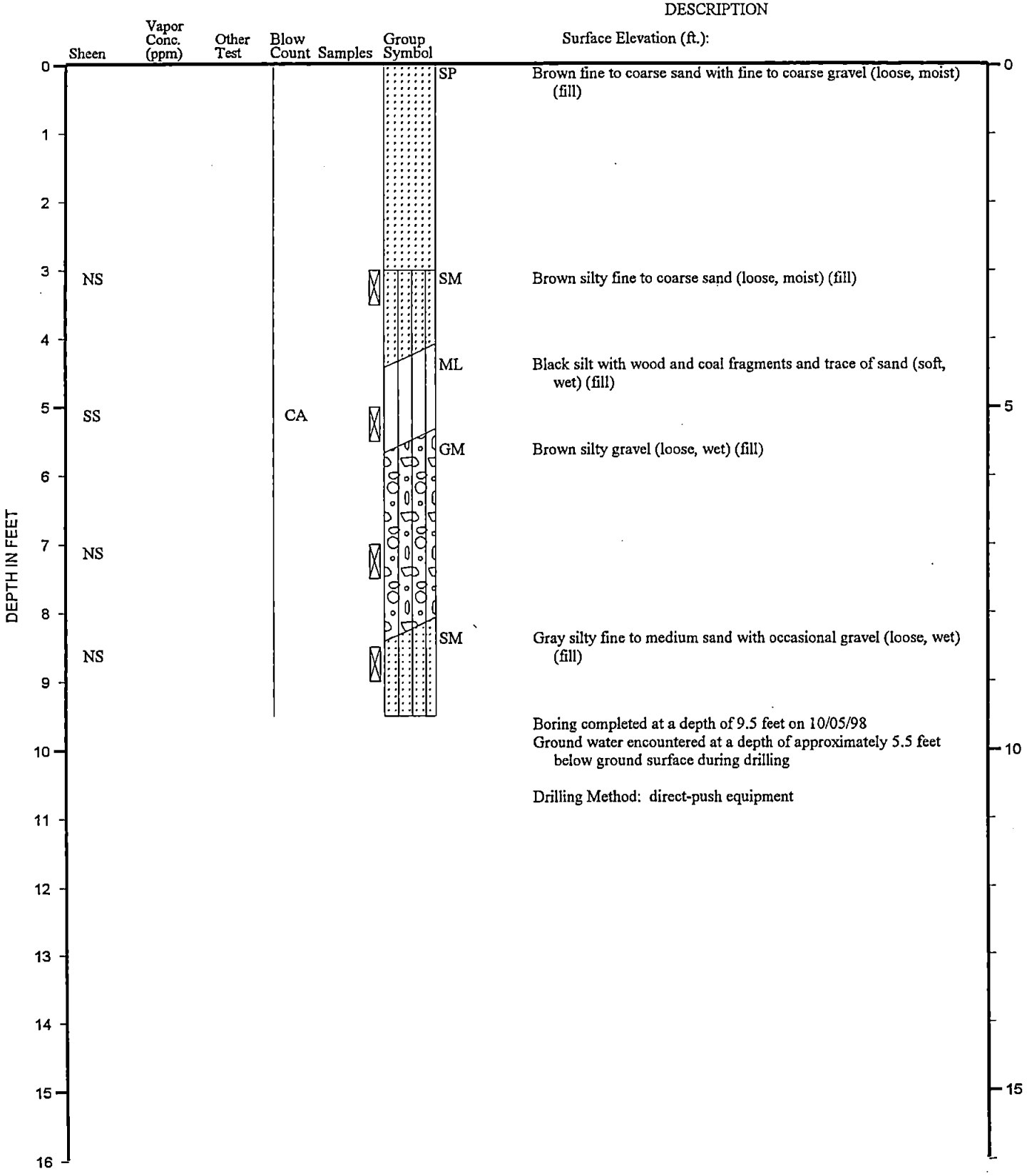
GeoEngineers

LOG OF BORING

FIGURE B-17

TEST DATA

BORING SP-5



Note: See Figure 2 for explanation of symbols

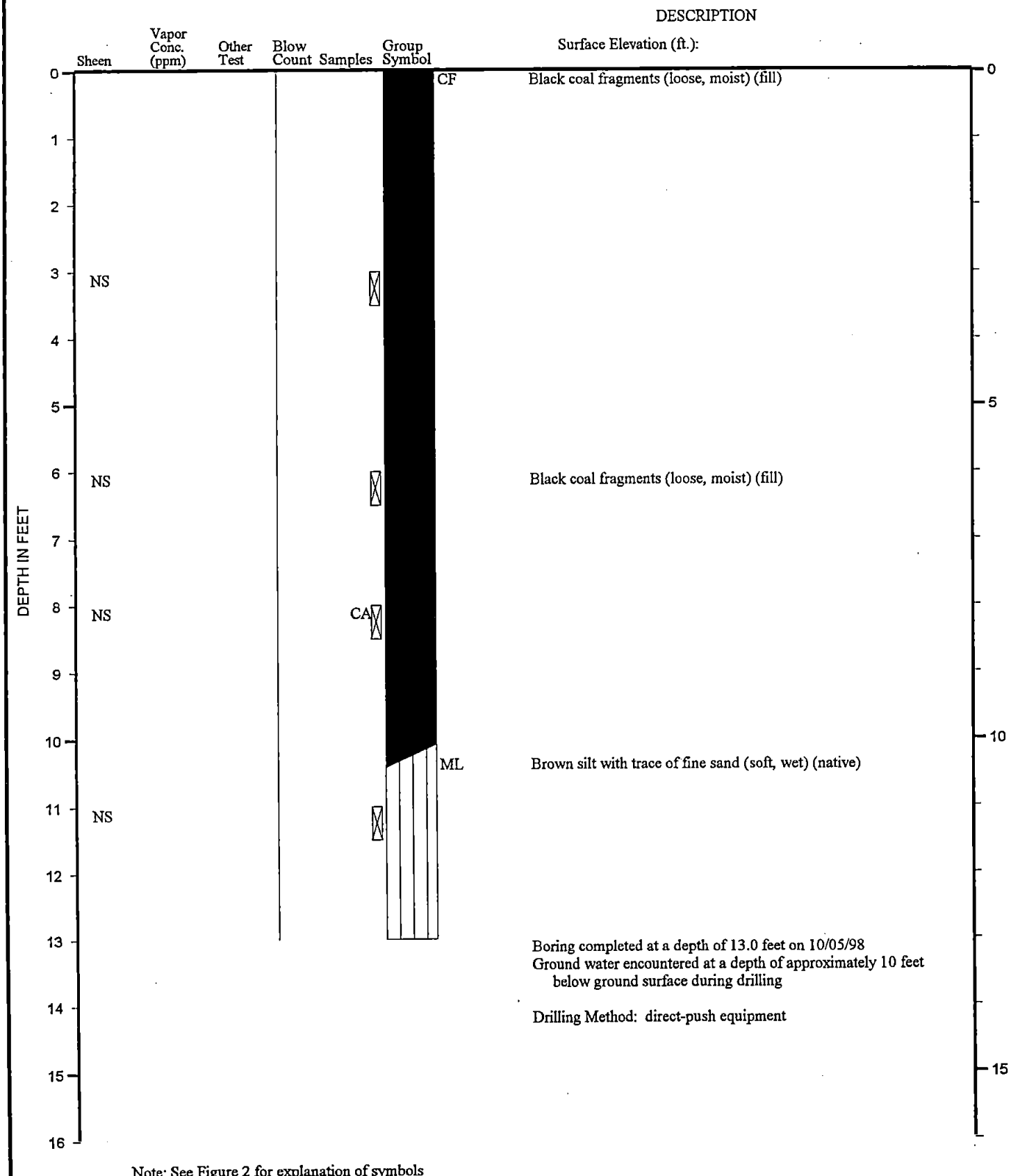
Geo Engineers

LOG OF BORING

FIGURE B-18

TEST DATA

BORING SP-6



Note: See Figure 2 for explanation of symbols

:GRS/TNO 12/8/98

0186-407-85

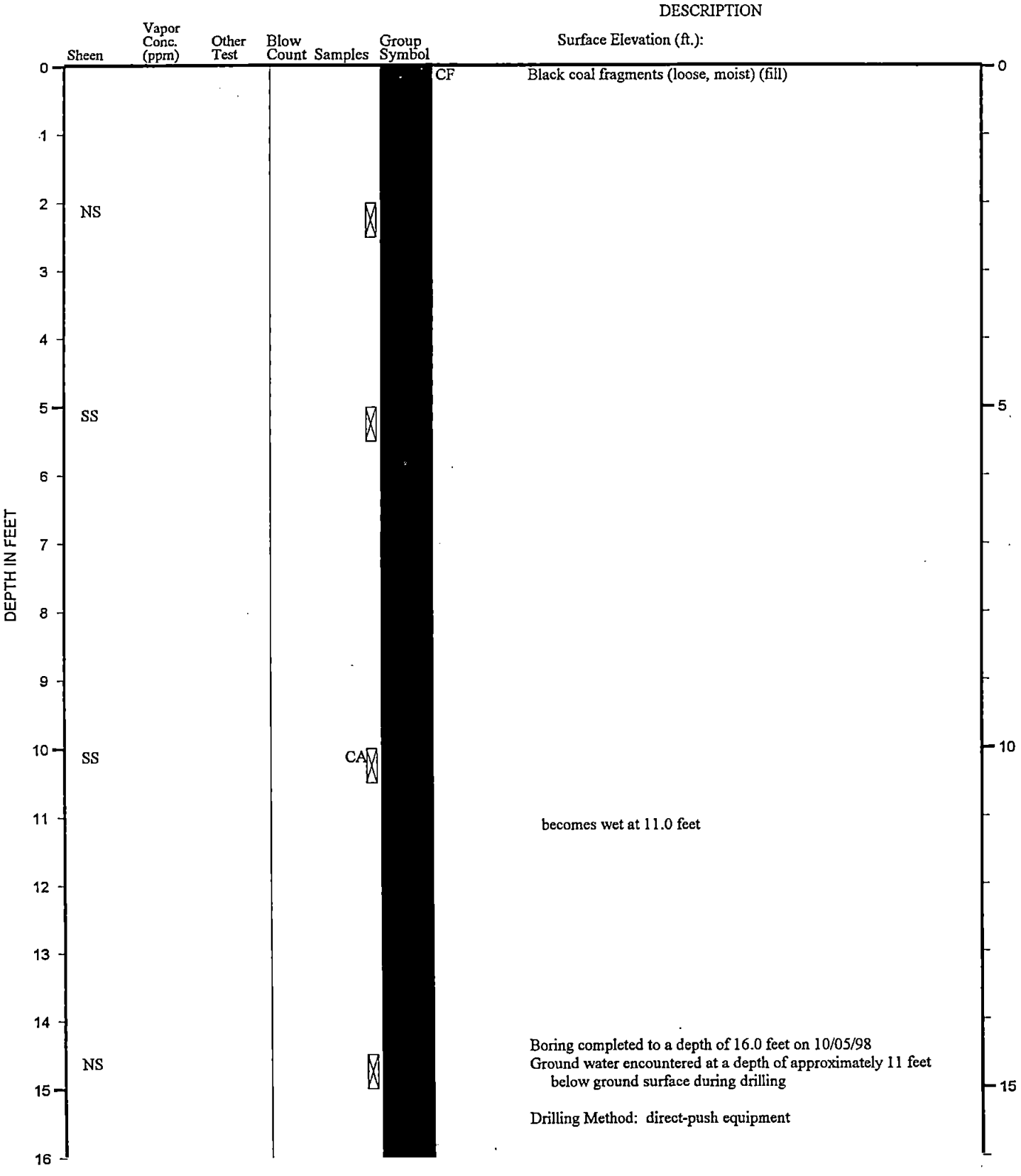
GeoEngineers

LOG OF BORING

FIGURE B-19

TEST DATA

BORING SP-7



Note: See Figure 2 for explanation of symbols

GRS/TNO 12/8/98

0186-407-85

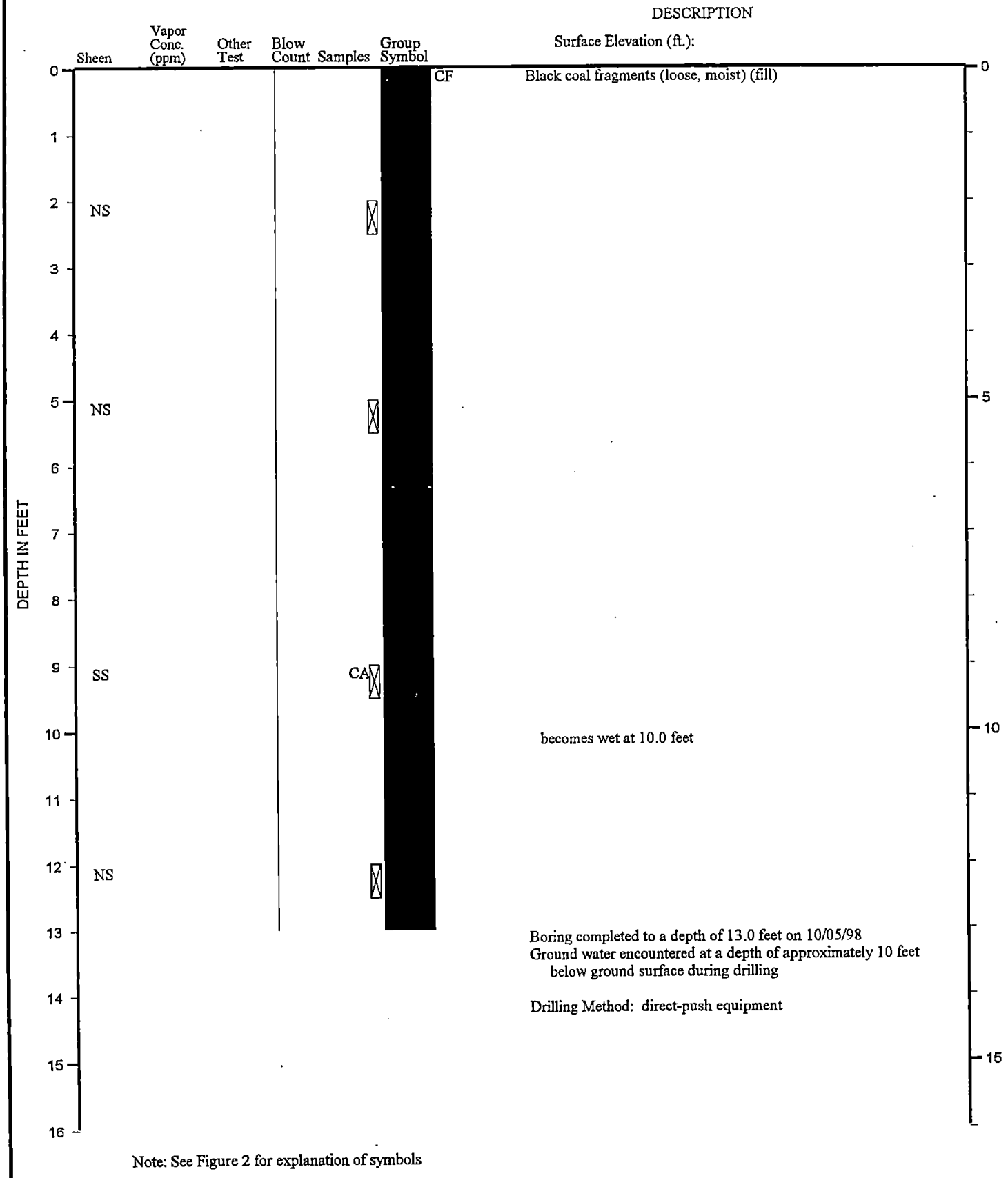
Geo Engineers

LOG OF BORING

FIGURE B-20

TEST DATA

BORING SP-8



Note: See Figure 2 for explanation of symbols

0186-407-85 GRS/TNC 12/8/98

GeoEngineers

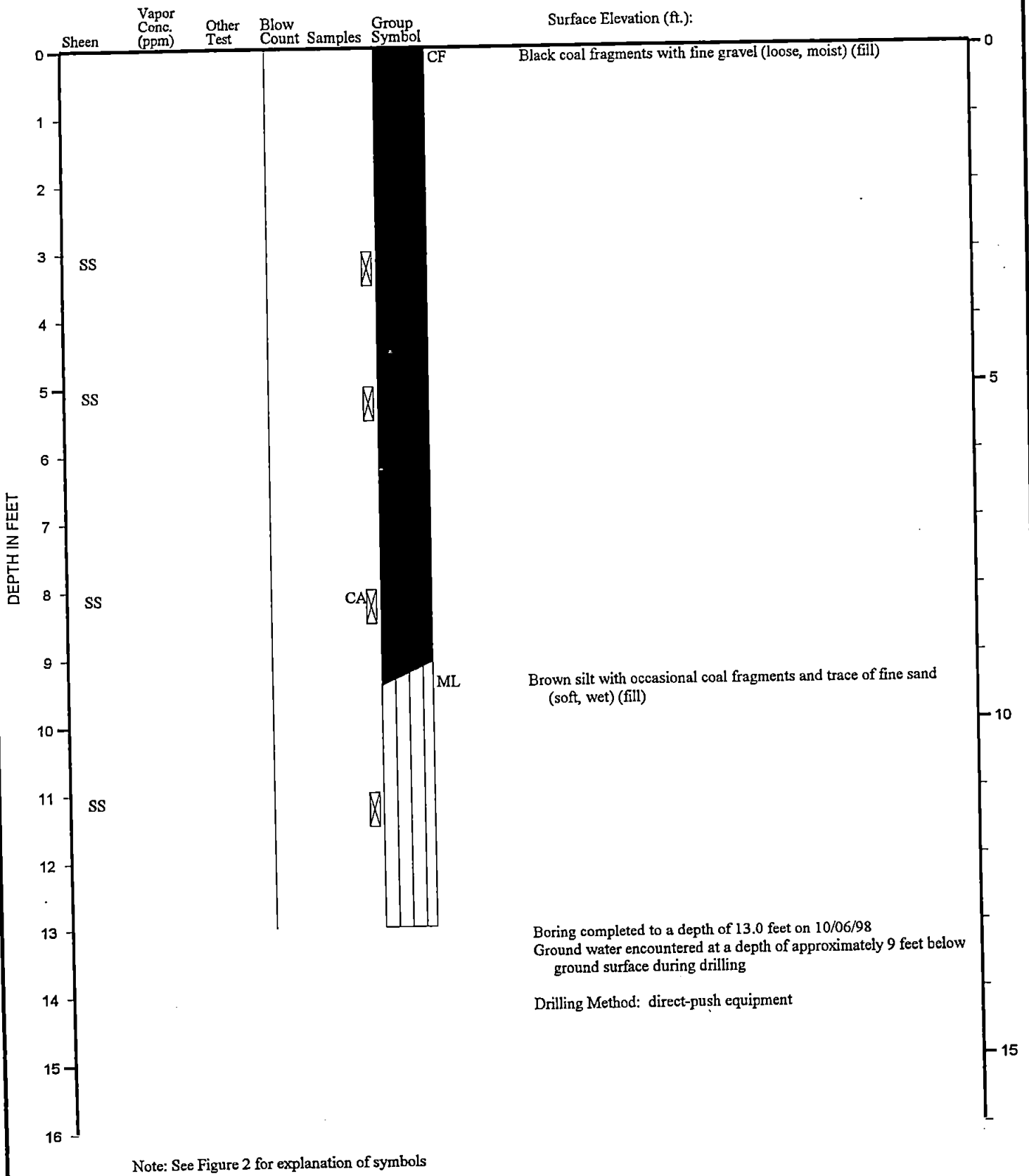
LOG OF BORING

FIGURE B-21

TEST DATA

BORING SP-9

DESCRIPTION



Note: See Figure 2 for explanation of symbols

:GRS/TNO 12/8/98

0186-407-85

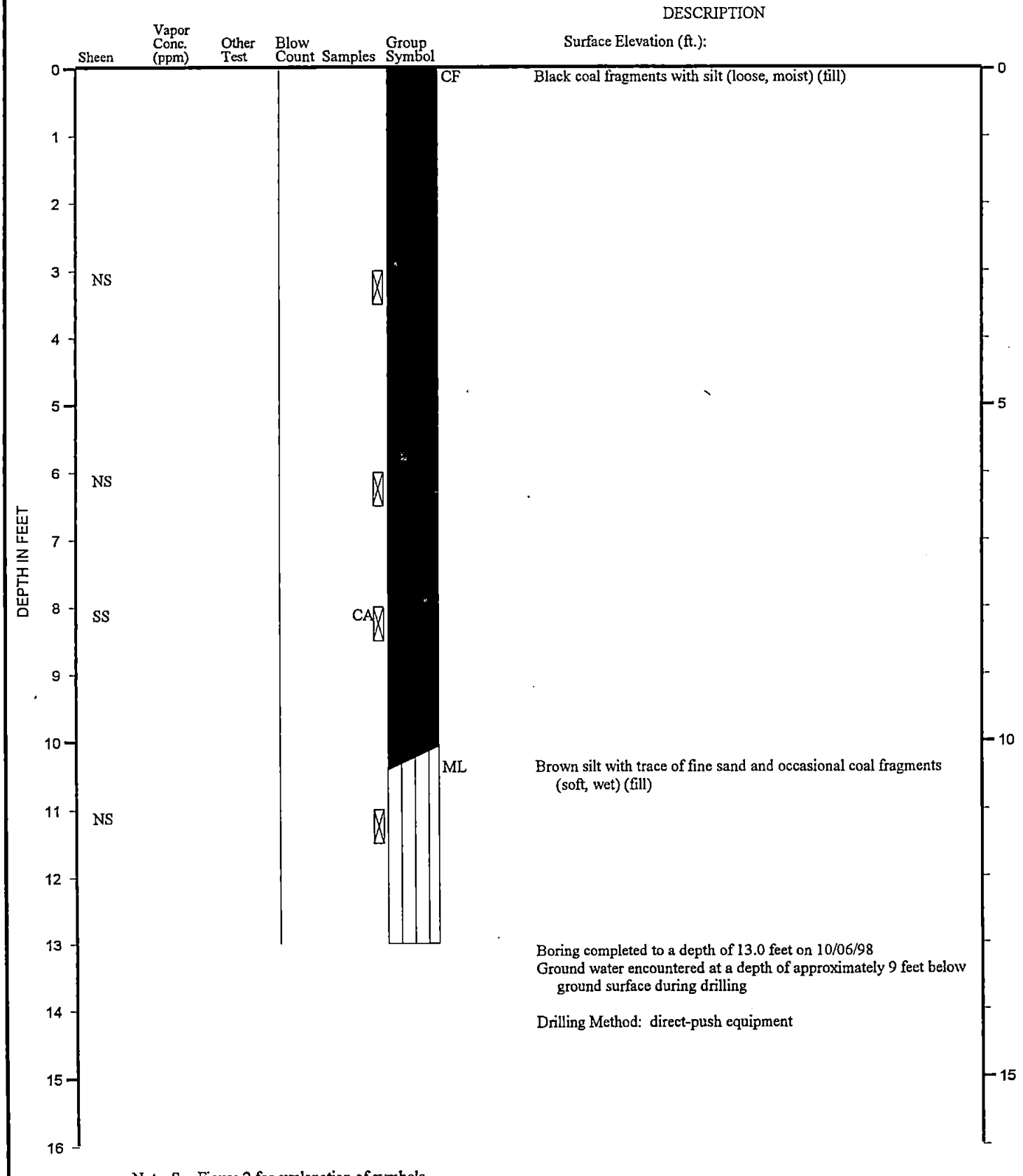
Geo Engineers

LOG OF BORING

FIGURE B-22

TEST DATA

BORING SP-10



Note: See Figure 2 for explanation of symbols

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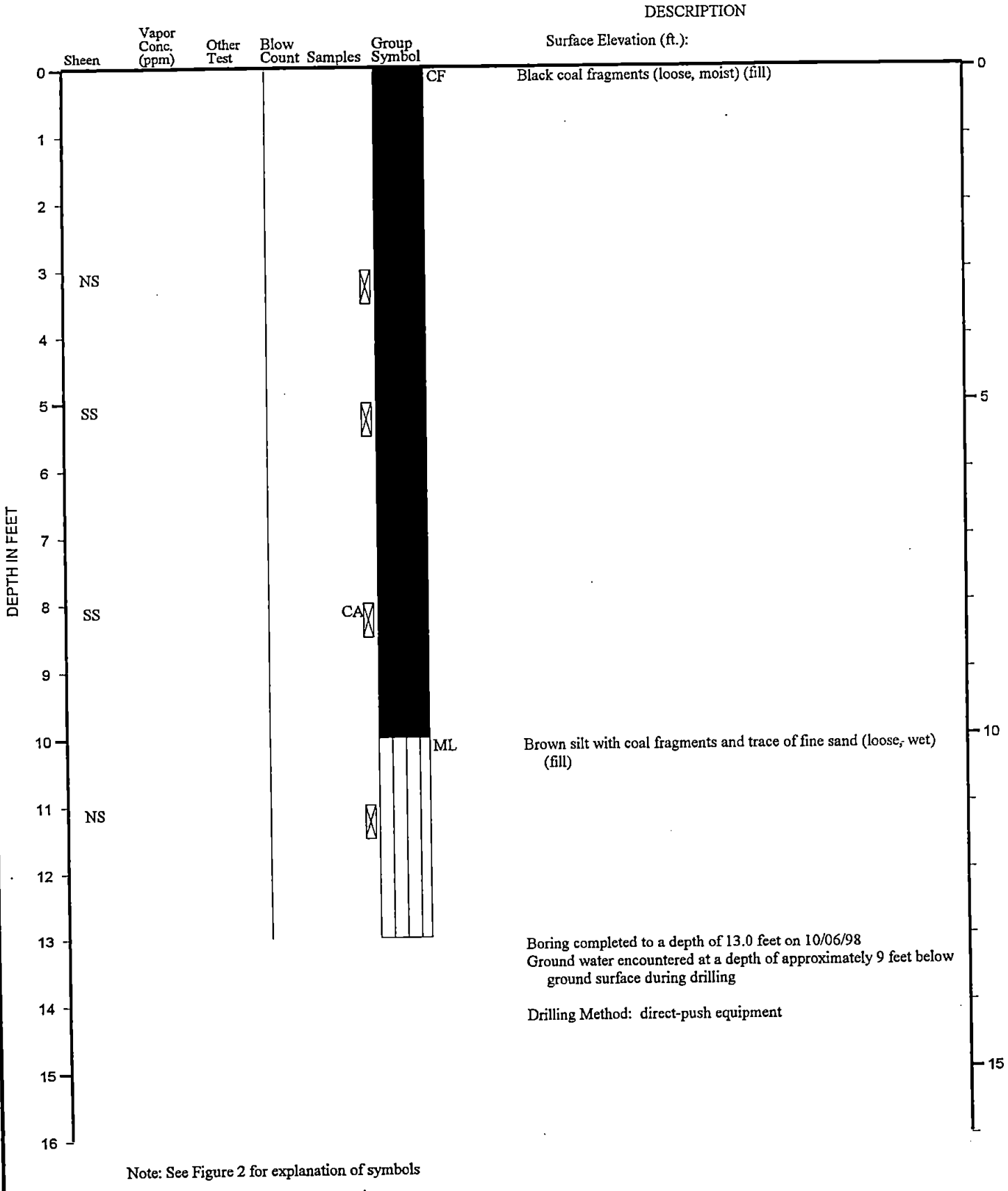
LOG OF BORING

FIGURE B-23

TEST DATA

BORING SP-11



Note: See Figure 2 for explanation of symbols

:GRS/TNO 12/8/98

0186-407-85

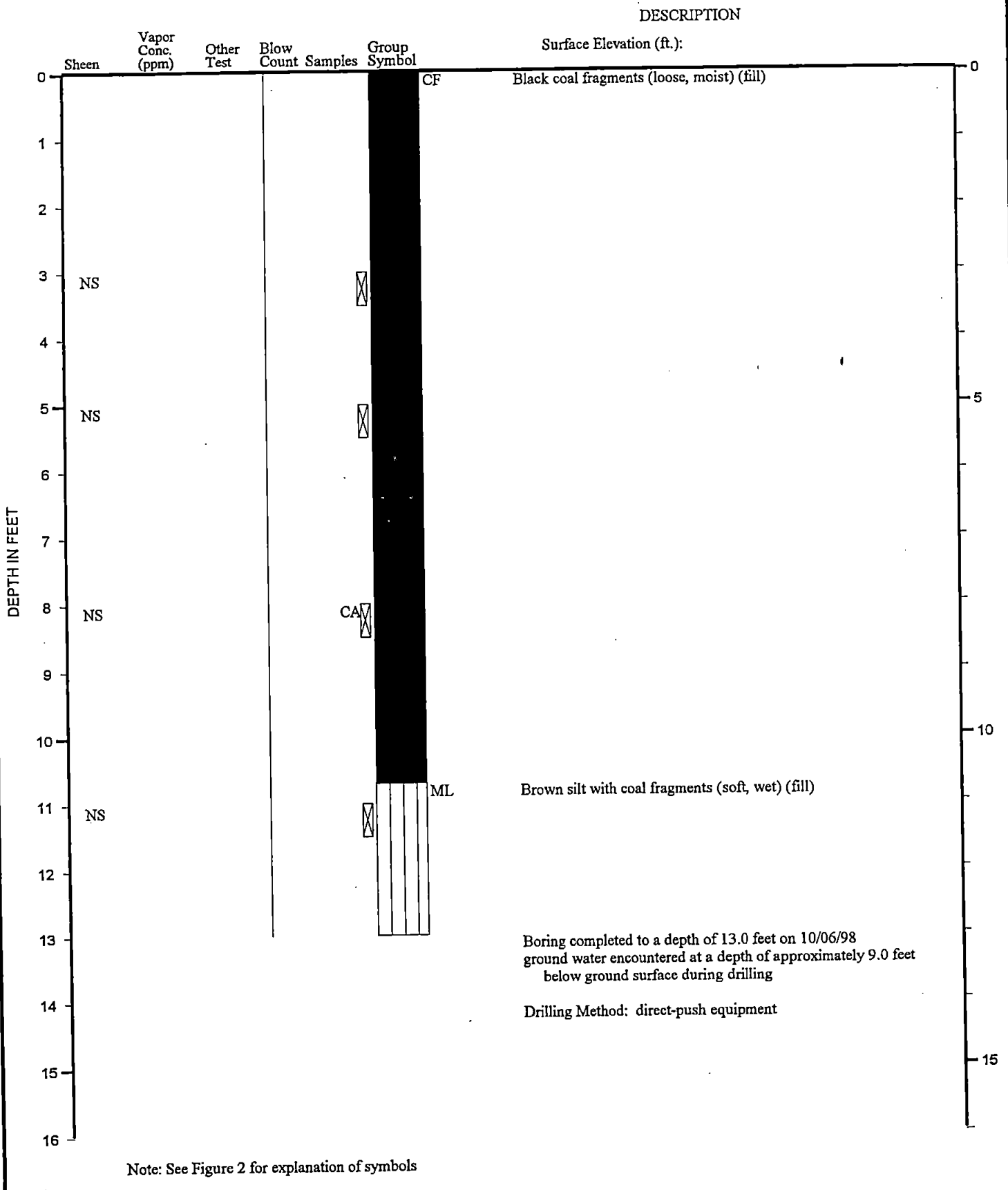
Geo Engineers

LOG OF BORING

FIGURE B-24

TEST DATA

BORING SP-12



Note: See Figure 2 for explanation of symbols

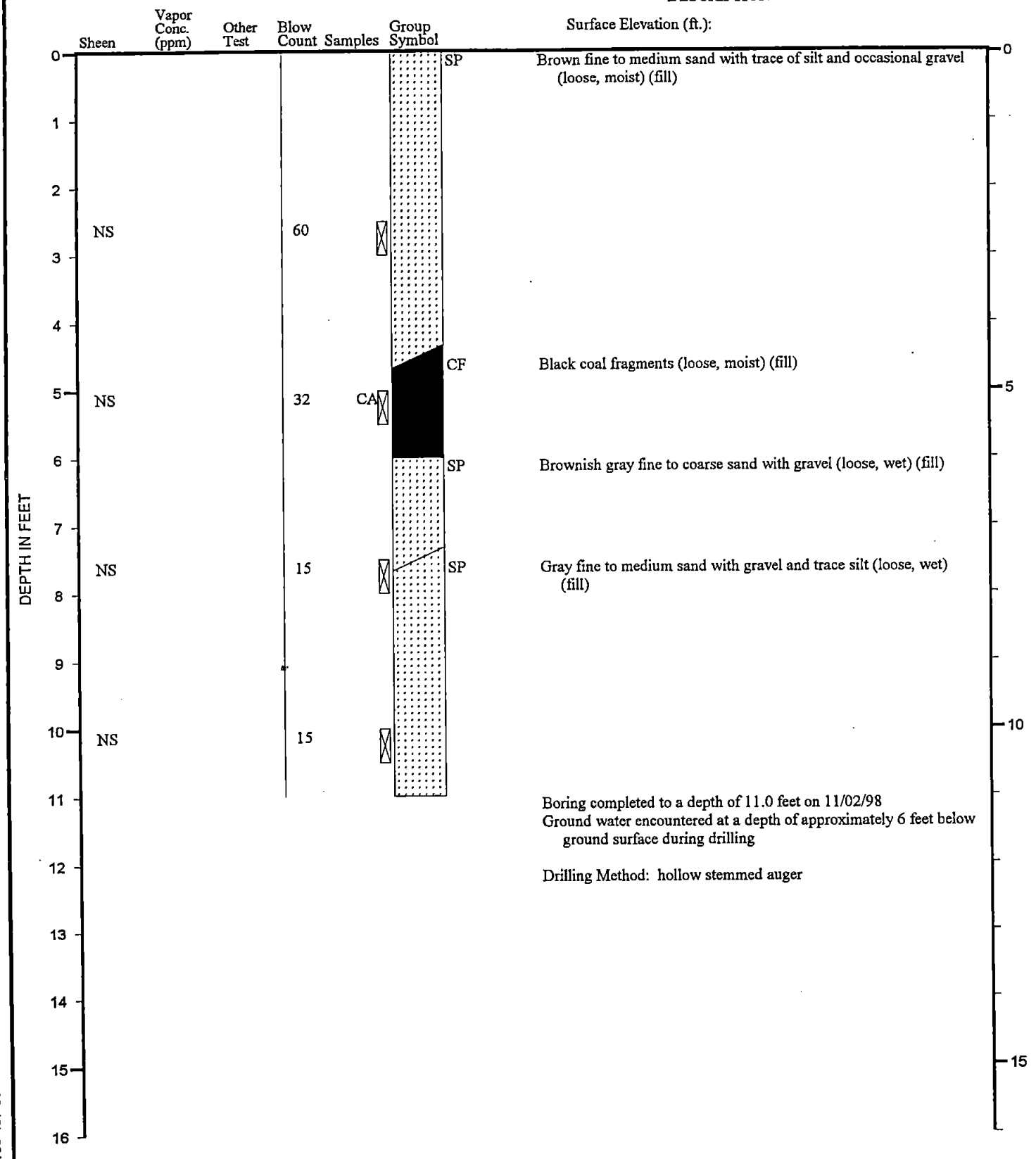
Geo Engineers

LOG OF BORING

FIGURE B-25

TEST DATA

BORING B-1a



Note: See Figure 2 for explanation of symbols

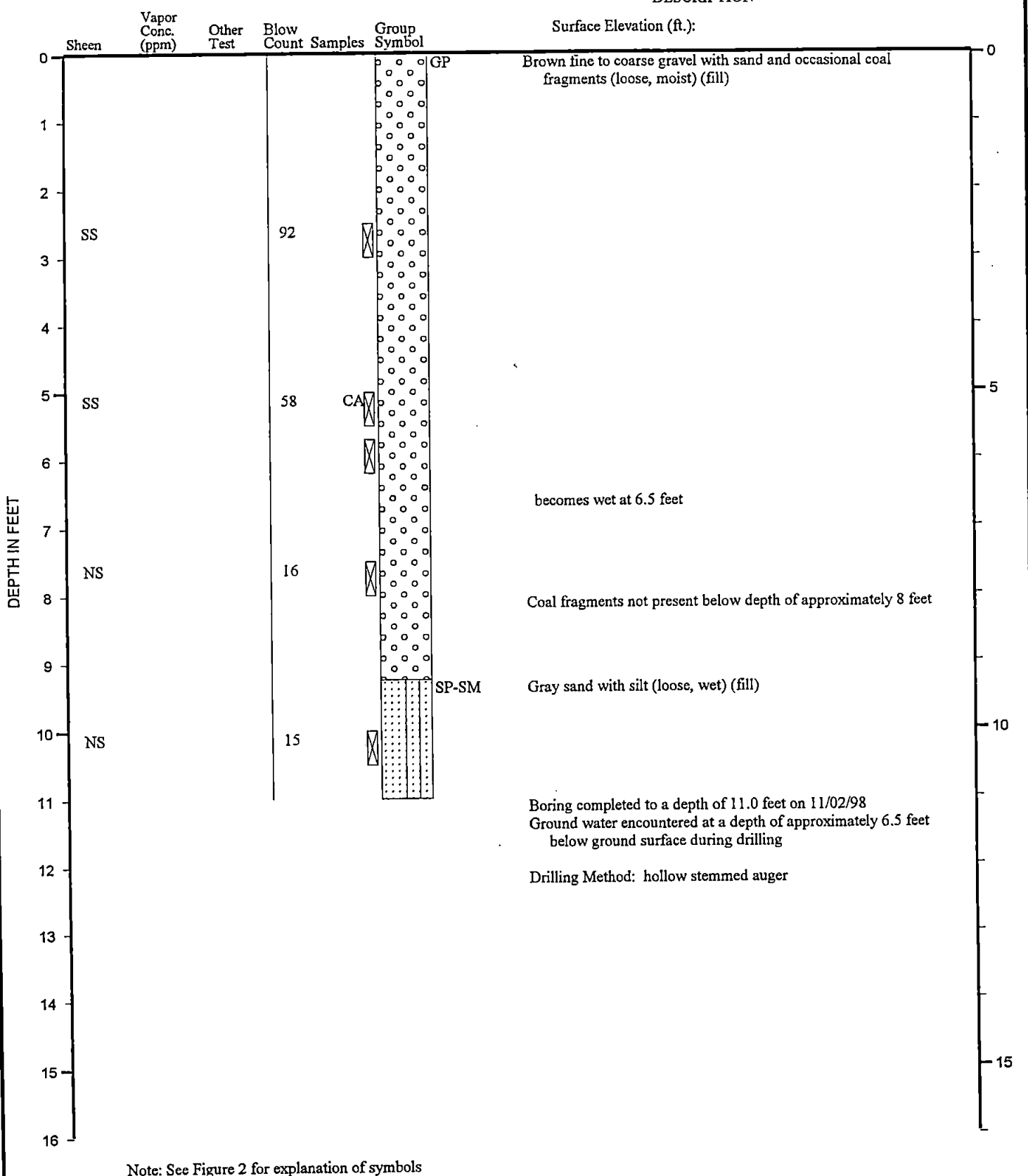
Geo Engineers

LOG OF BORING

FIGURE B-26

TEST DATA

BORING B-2a



Note: See Figure 2 for explanation of symbols

0186-407-85

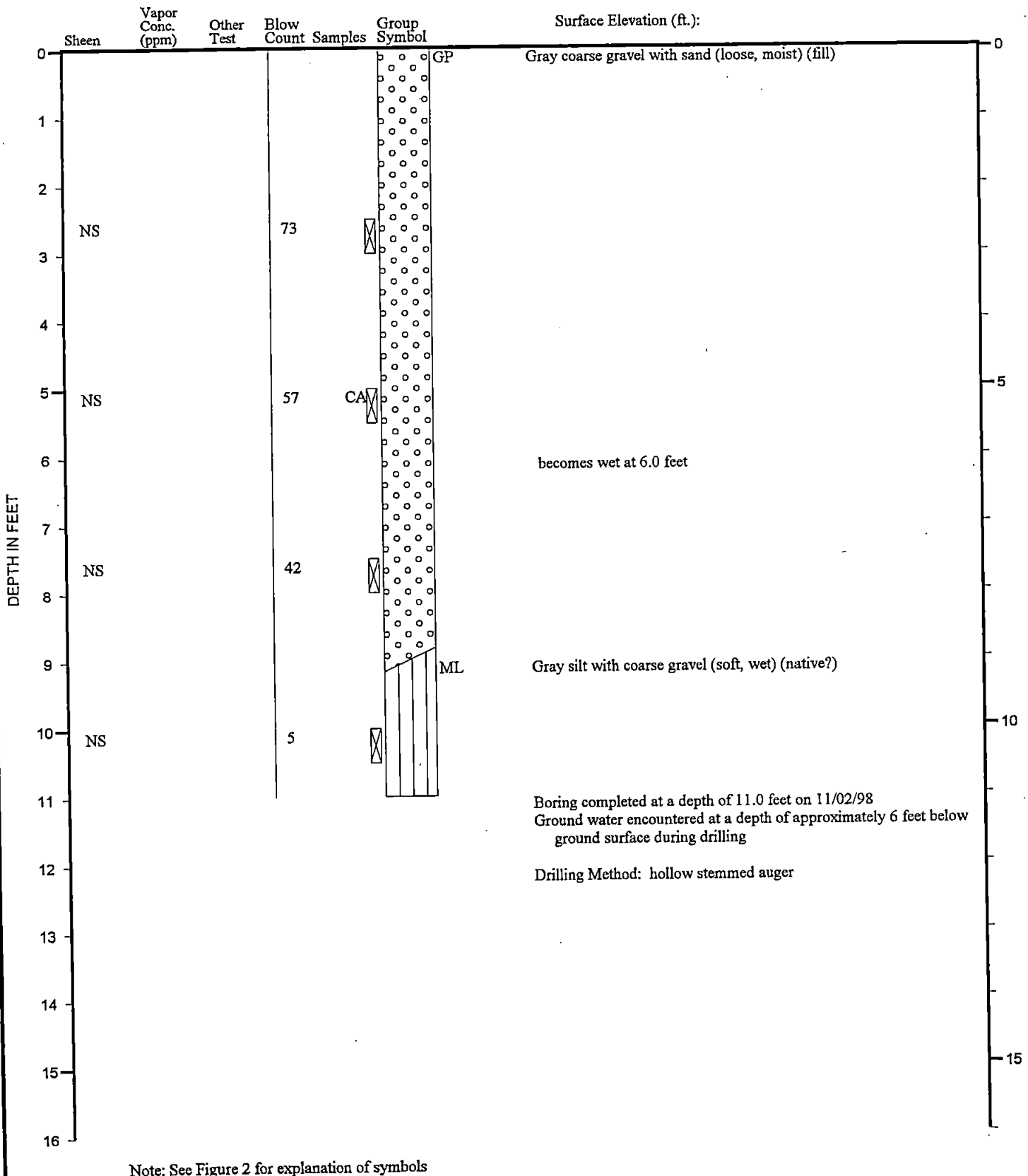
Geo Engineers

LOG OF BORING

FIGURE B-27

TEST DATA

BORING B-3a



Note: See Figure 2 for explanation of symbols

RS/T 9/98

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LOG OF BORING

FIGURE B-28

LOG OF TEST PITS

DEPTH BELOW GROUND SURFACE (feet)[1]	SOIL GROUP CLASSIFICATION SYMBOL	FIELD SCREENING (sheen)[2]	DESCRIPTION
			TEST PIT RTP-2
0.0 – 1.0	SM	NS	Brown silty fine sand with gravel (loose, moist)
1.0 – 2.0		NS	Wood debris
			8 inch concrete storm drain at a depth of 2.0 feet below ground surface
3.0 – 10.0	CF	NS	Black coal fragments (loose, moist)
			Test Pit completed at 10 feet on 09/21/98
			Ground water seepage observed at 9 feet
			No caving observed
			Disturbed soil sample obtained at 2.5 feet
			TEST PIT RTP-3
0.0 - 2.0	SM	NS	Brown silty fine sand with gravel (loose, moist)
2.0 – 3.5	GP	NS	Brown fine to coarse gravel with sand (loose, moist)
3.5 – 5.0	ML	SS	Dark brown silt with sand (soft, moist)
			8 inch concrete storm drain at a depth of 4.0 feet below ground surface
6.0 – 7.0	ML	HS	Dark brown silt with sand (soft, moist)
			Test pit completed at 7.0 feet on 09/29/98
			No ground water seepage observed
			No caving observed
			Disturbed soil sample obtained at 6.0 and 7.0 feet

1 THE DEPTHS ON THE TEST PIT LOGS, ALTHOUGH SHOWN TO 0.1 FOOT, ARE BASED ON AN AVERAGE OF MEASUREMENTS ACROSS THE TEST PIT AND SHOULD BE CONSIDERED ACCURATE TO 0.5 FOOT.

2 SHEEN TEST RESULTS: NS = NO SHEEN, SS = SLIGHT SHEEN, MS = MODERATE SHEEN, HS = HEAVY SHEEN.

LOG OF TEST PITS

FIGURE B-29

LOG OF TEST PITS

DEPTH BELOW GROUND SURFACE (feet)[1]	SOIL GROUP CLASSIFICATION SYMBOL	FIELD SCREENING (ppm/sheen)[2]	DESCRIPTION
			TEST PIT RTP-4
0.0-1.0	SM	NS	Gray silty fine sand and occasional gravel (loose, moist)
1.0 – 2.0	SM	NS	Gray silty fine sand and occasional gravel (loose, moist)
			18 inch steel sanitary sewer pipe at a depth of 3.0 feet below ground surface
4.0 – 4.5	ML	NS	Brown silt with gravel (soft, moist)
			Test pit completed at 4.5 feet on 10/01/98
			No ground water seepage observed
			No caving observed
			Disturbed soil sample obtained at 4.0 feet
			TEST PIT RTP-5
0.0 – 1.0	SM	SS	Gray silty fine sand (loose, moist)
1.0 – 4.0	SM	NS	Gray silty fine sand (loose, moist)
			18 inch steel sanitary sewer pipe at a depth of 3.0 feet below ground surface
4.0 – 4.5	ML		Brown silt with gravel (hard, moist)
			Test pit completed at 4.5 feet on 10/01/98
			No ground water seepage observed
			No caving observed
			Disturbed soil sample obtained at 4.0 feet

[1] THE DEPTHS ON THE TEST PIT LOGS, ALTHOUGH SHOWN TO 0.1 FOOT, ARE BASED ON AN AVERAGE OF MEASUREMENTS ACROSS THE TEST PIT AND SHOULD BE CONSIDERED ACCURATE TO 0.5 FOOT.

[2] SHEEN TEST RESULTS: NS = NO SHEEN, SS = SLIGHT SHEEN, MS = MODERATE SHEEN, HS = HEAVY SHEEN.

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LOG OF TEST PITS

FIGURE B-30

LOG OF TEST PITS

DEPTH BELOW GROUND SURFACE (feet)[1]	SOIL GROUP CLASSIFICATION SYMBOL	FIELD SCREENING (sheen)[2]	DESCRIPTION
			TEST PIT RTP-6
0.0-1.0	SM	SS	Gray silty fine sand (loose, moist)
1.0 – 3.0	SM	NS	Gray silty fine sand (loose, moist)
			18 inch steel sanitary sewer pipe at a depth of 3.0 feet below ground surface
3.5 – 4.5	SM	SS	Gray silty fine sand (loose, moist)
			Test pit completed at 4.5 feet on 10/01/98
			No ground water seepage observed
			No caving observed
			Disturbed soil sample obtained at 3.5 feet
			TEST PIT RTP-7
0.0 – 4.0	SM	NS	Gray silty fine sand with occasional gravel (loose, moist)
			18 inch steel sanitary sewer pipe at a depth of 2.5 feet below ground surface
			Test pit completed at 4.0 feet on 10/01/98
			No ground water seepage observed
			No caving observed
			Disturbed soil sample obtained at 3.0 feet

[1] THE DEPTHS ON THE TEST PIT LOGS, ALTHOUGH SHOWN TO 0.1 FOOT, ARE BASED ON AN AVERAGE OF MEASUREMENTS ACROSS THE TEST PIT AND SHOULD BE CONSIDERED ACCURATE TO 0.5 FOOT.

[2] SHEEN TEST RESULTS: NS = NO SHEEN, SS = SLIGHT SHEEN, MS = MODERATE SHEEN, HS = HEAVY SHEEN.

LOG OF TEST PITS

FIGURE B-31

LOG OF TEST PITS

DEPTH BELOW GROUND SURFACE (feet)[1]	SOIL GROUP CLASSIFICATION SYMBOL	FIELD SCREENING (ppm/sheen)[2]	DESCRIPTION
			TEST PIT TTP-1
0.0 – 2.0	GP	NS	Brown sandy gravel with a trace of silt (loose, moist)
2.0 – 8.0	ML	SS	Brown silt with gravel and sand (soft, moist)
8.0 – 13.0	SM	SS	Gray fine to medium sand (loose, wet)
			Test pit completed at 13.0 feet below ground surface on 11/23/98.
			Ground water seepage observed at 8 feet below ground surface.
			No caving observed.
			No soil samples were collected.
			One two-inch-diameter metal pipe was encountered at a depth of 8 feet below ground surface.
			TEST PIT TTP-2
0.0 – 2.0	GP	NS	Brown gravel with sand (loose, moist)
2.0 – 8.0	ML	SS	Brown silt with sand and occasional gravel (soft, moist to wet)
			Test pit completed at 8 feet below ground surface on 11/23/98.
			Ground water seepage observed at 5.0 feet below ground surface.
			One 6-inch-diameter PVC pipe encasing several electrical conduits was encountered at a depth of 5.0 feet below ground surface.
			One 10-inch-diameter water line was encountered at a depth of 6.0 feet below ground surface.

[1] THE DEPTHS ON THE TEST PIT LOGS, ALTHOUGH SHOWN TO 0.1 FOOT, ARE BASED ON AN AVERAGE OF MEASUREMENTS ACROSS THE TEST PIT AND SHOULD BE CONSIDERED ACCURATE TO 0.5 FOOT.

[2] PPM INDICATES PARTS PER MILLION. HEADSPACE SCREENING CONDUCTED USING A PHOTOVAC MICROTIP CALIBRATED TO ISOBUTLYENE. SHEEN TEST RESULTS: NS = NO SHEEN, SS = SLIGHT SHEEN, MS = MODERATE SHEEN, HS = HEAVY SHEEN.

CA INDICATES DISTURBED SAMPLE OBTAINED FOR CHEMICAL ANALYSIS

LOG OF TEST PITS

DEPTH BELOW GROUND SURFACE (feet)[1]	SOIL GROUP CLASSIFICATION SYMBOL	FIELD SCREENING (ppm/sheen)[2]	DESCRIPTION
			TEST PIT TTP-3
0.0 – 2.0	GP	SS	Brown gravel with sand and trace of silt (loose, moist)
2.0 – 4.0	SM	HS	Gray silty fine to medium sand with metal debris (soft, moist)
4.0 – 8.0	ML	SS	Gray silt with fine to medium sand (soft, wet)
			Test pit completed at 8 feet below ground surface on 11/23/98.
			Ground water seepage observed at 8.0 feet below ground surface.
			A total of six soil samples were obtained from the test pit at depths ranging from 3.0 to 8.0 feet below ground surface.
			TEST PIT TTP-4
0.0 – 2.0	GP	NS	Brown gravel with sand (loose, moist)
2.0 – 3.0	GP	NS	Gray gravel with sand (loose, moist)
3.0 – 8.0	ML	SS	Brown silt with sand and gravel (soft, moist to wet)
			Test pit completed at 8 feet below ground surface on 11/23/98.
			Ground water seepage observed at 8.0 feet below ground surface.
			No soil samples were collected.
			Three steel I-beams and one 18-inch-diameter steel post encountered at a depth of about 1 foot below ground surface.

[1] THE DEPTHS ON THE TEST PIT LOGS, ALTHOUGH SHOWN TO 0.1 FOOT, ARE BASED ON AN AVERAGE OF MEASUREMENTS ACROSS THE TEST PIT AND SHOULD BE CONSIDERED ACCURATE TO 0.5 FOOT.

[2] PPM INDICATES PARTS PER MILLION. HEADSPACE SCREENING CONDUCTED USING A PHOTOVAC MICROTIP CALIBRATED TO ISOBUTLYENE. SHEEN TEST RESULTS: NS = NO SHEEN, SS = SLIGHT SHEEN, MS = MODERATE SHEEN, HS = HEAVY SHEEN.

CA INDICATES DISTURBED SAMPLE OBTAINED FOR CHEMICAL ANALYSIS

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LOG OF TEST PITS

FIGURE B-33

APOLLO GEOPHYSICS CORPORATION

Engineering, Geology, Environmental, Construction & Mining

Wednesday, December 02, 1998

Steve Woodward
GeoEngineers, Inc.
600 Stewart Street, Suite 1215
Seattle, Washington 98101

AGC's File No.: **98-464**

Re: **Transformer Locate**
Puget Sound Energy
Renton, Washington

Dear Mr. Woodward,

This letter reports the results of geophysical exploration for Transformers at the above referenced site. The site is located on Talbot Road at the Puget Sound Energy Warehouse in Renton, Washington. The geophysical field program was completed on Friday, November 20, 1998 by a three person field crew from Apollo Geophysics.

We investigated the site with an Electromagnetic (EM) instrument, which locates buried metal objects. We traversed the site with the EM instrument on approximate 5 foot line spacings, which produced target anomalies for the Ground Penetrating Radar (GPR). We further investigated the anomalies using GPR, which enabled us to identify anomalies as possible Transformers, underground utilities, or demolition debris. Ground Penetrating Radar established a relative depth, size and ground projection of the object; (i.e. to determine if the object was indicative or was not indicative of a Transformer). Small objects in the near surface, 1 to 2 feet, will respond the same as a larger object (Transformer) at depth.

RESULTS OF THE GEOPHYSICAL SURVEY

When we walked the site with the EM, we didn't collect much evidence to indicate a significant amount of metallic debris. The EM unit found target areas for later GPR evaluation. These target

areas were traversed with the GPR to evaluate their potential as Transformer locations. Most of the EM Targets were small objects, and didn't produce evidence to indicate potential Transformers. The EM Targets #1, #2, & #3 were traversed with the GPR and produced GPR signals typical of potential Transformers. After the GPR traverses across EM Target #4, we believe it is not a Transformer. However, since sufficient contrast between the target and surrounding material exists, we can not reach a conclusion, that the target is or is not a Transformer. We recommend EM Targets #1 through #4 for further direct excavation. The targets were marked in the field with environmentally degradable paint and a wooden stake with the approximate depth of the anomaly written on it. All GPR Imagery records are shown in Figure 2 through 9. The approximate locations are shown on the attached Site Plan, Figure 1. Suspected pipes, demolition debris, etc. were not marked in the field.

The 'GPR Imagery' horizontal scale, white/black dashed vertical lines, are at 2 foot intervals. The vertical scale, thin black horizontal lines, are at 16 nanosecond intervals. The normal relationship between radar time and actual depth for the Northwest Region is approximately 4 to 4.5 nanoseconds per foot. It should be noted, that this relationship holds true in a general sense. Variations of water content, silt content and other factors, such as the presence of concrete flooring, may also change this relationship. It was raining during the field work, which would increase the radar time to approximately 7 to 9 nanoseconds per foot.

ELECTROMAGNETIC

The electromagnetic, or EM device, transmits and receives an electromagnetic signal. The EM signal is transmitted through the ground, which in turn radiates a signal that is dependent on the ground conductivity and which is also received at the receiver. The two signals, the transmitted and ground response EM waves, are balanced for a zero response in the instrument. When the ground conditions change, for example, when the transmitted signal encounters buried metal, the balance or null point changes, and the instrument responds with an audible signal. Depending on the size of the metal object, the penetration is up to 10 feet in depth. The EM search was limited in areas, where reinforcing steel was present in the concrete or immediately adjacent to any above ground metal objects on the site.

GROUND PENETRATING RADAR

Apollo Geophysics used a GSSI SIR System-3 with a 120 MHz antenna for the UST Search. The radar antenna transmits a time variable pulse at a frequency of 120 MHz for a selected scan rate of 16 times per second. When the signal encounters a change in electrical properties/permittivity, a portion of the signal energy is reflected back to the surface. The character of the reflection is used to define the source of the reflection. The reflected signal is received by the antenna, processed by internal electronics with signal gain control and recorded in analog format on a internal printer. The radar displays the data in real-time, which enables us to review the data in the field for on the spot suspected Transformer locations. Dependent upon the local geology, the radar antenna used on this project should be able to penetrate 15 feet below ground surface.

A typical Transformer will produce, in cross-section, a hyperbolic reflection. The hyperbolic signature is the result of "seeing" the transformer before the center of the antenna is over the tank.

WARRANTY OF SERVICES

All geophysical information presented are based upon geophysical measurements made by generally accepted methods and field procedures and Apollo Geophysics' interpretation of these data. The geophysical results are, therefore, interpretative in nature and are considered to be a reasonably accurate presentation of existing conditions within the limitations of the methods employed. Services performed by Apollo Geophysics under this agreement are conducted in a manner consistent with, but no less than, that level of care skill ordinarily exercised by members of the profession currently practicing under similar conditions. We cannot guarantee the accuracy or correctness of any interpretation, and we shall not be liable or responsible for any loss, cost, damages or expenses incurred or sustained by the Client resulting from any interpretation made by any of our officers, agents or employees. No other warranty, expressed or implied, is made. Apollo Geophysics recognizes that subsurface conditions may vary from those encountered at the location where geophysical or other explorations are made. The data interpretations and recommendations made by Apollo Geophysics are based solely on the information available to

them at the time of performance; and Apollo Geophysics shall not be responsible for the interpretation, by others, of the information developed.

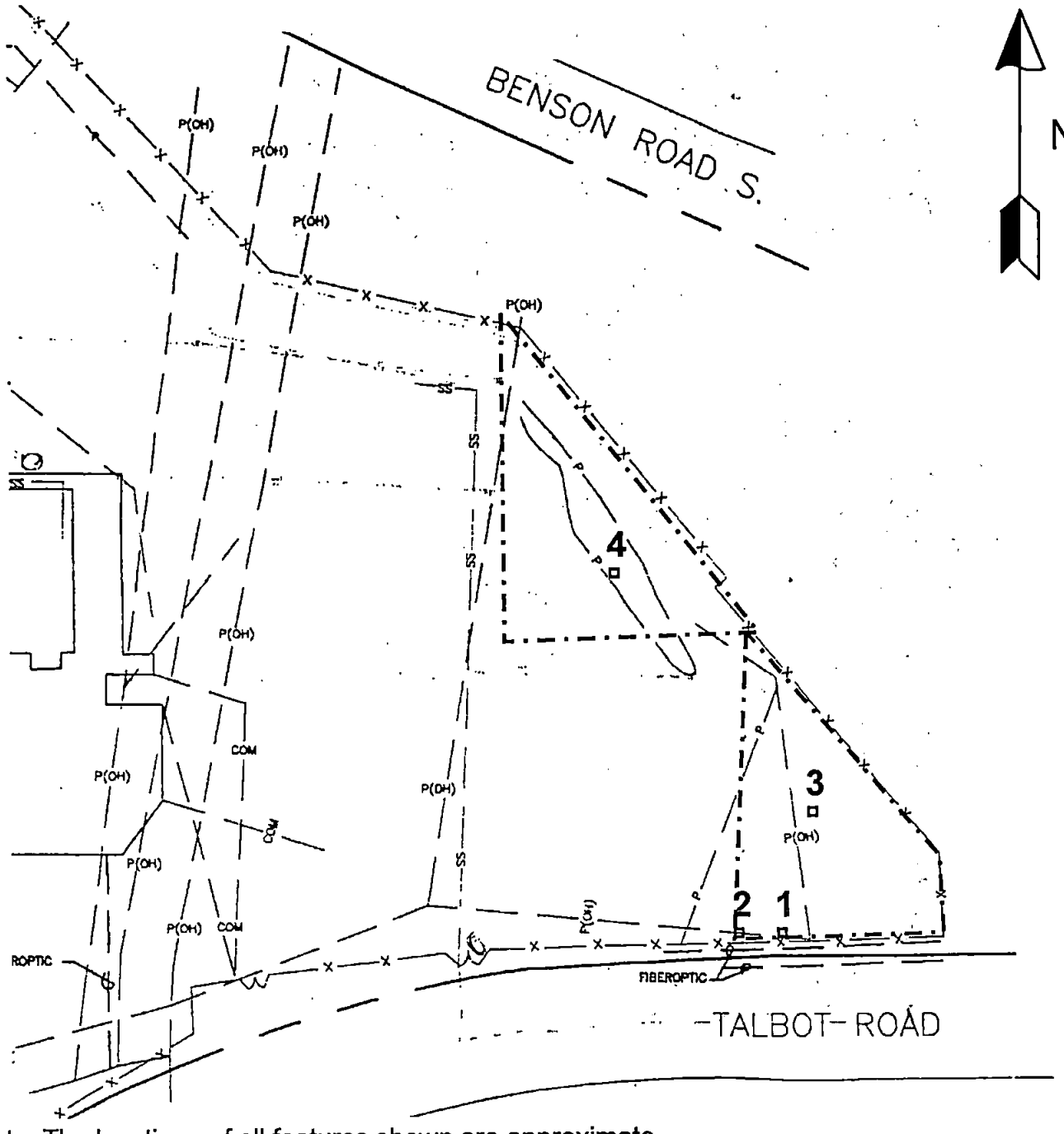
We trust this will complete your requirements for this project and look forward to working with you on future projects. If you have any further questions or need further assistance, please don't hesitate to call.

Sincerely,

APOLLO GEOPHYSICS CORPORATION

Matthew C. Ringstad
Staff Geophysicist

Site Plan



Note: The locations of all features shown are approximate.
Reference: Drawing provided by GeoEngineers, Inc.. Utility Map 3/98

LEGEND

Project Boundary

1 EM Target - No. & Location

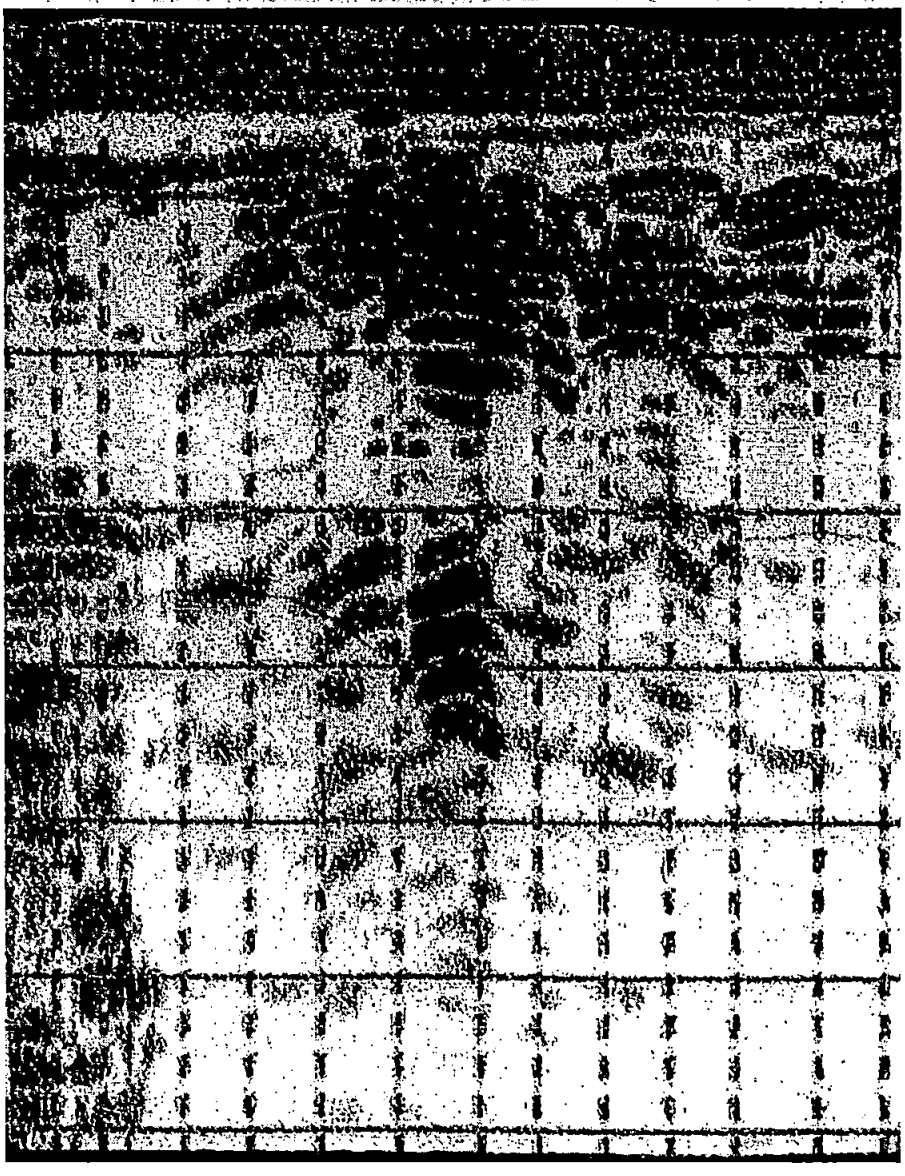
0 100 200

Approximate Scale 1" = 100'

APOLLO GEOPHYSICS CORPORATION
ENGINEERING, GEOLOGY, ENVIRONMENTAL
CONSTRUCTION & MINING

Puget Sound Energy Renton, Washington		FIGURE 1
FILE NO. 98-464	DATE December 1998	

GPR Imagery - Anomaly #1 - South to North Traverse



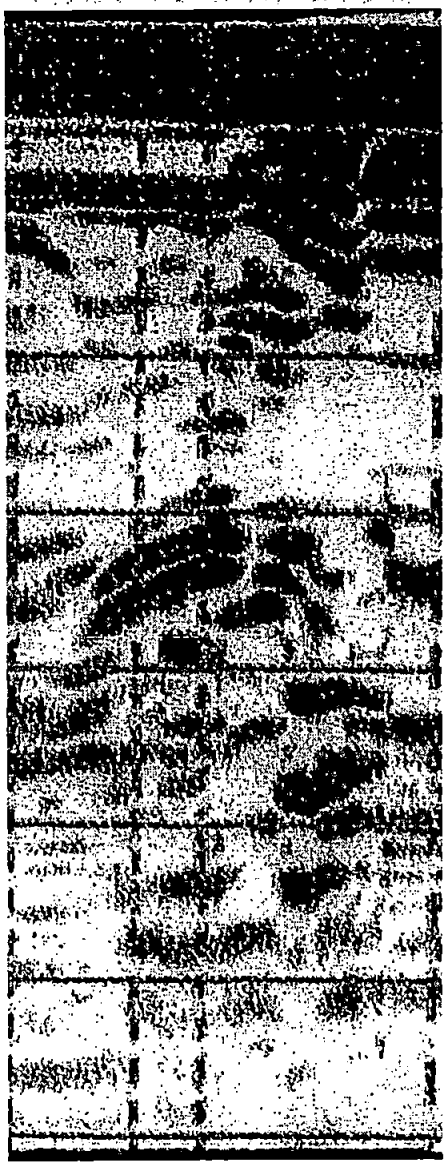
top of
EM Target

limits of
EM Target

NOTE: The horizontal scale, white/black dashed vertical lines, are generally at 2 foot intervals. The vertical scale, thin black horizontal lines, are at 16 nanosecond intervals. The normal relationship between radar time and actual depth for the Northwest Region is approximately 4 to 4.5 nanoseconds per foot. It should be noted, that this relationship holds true in a general sense. Variations of water content, silt content and other factors, such as the presence of concrete flooring, may also change this relationship.

APOLLO GEOPHYSICS CORPORATION ENGINEERING, GEOLOGY, ENVIRONMENTAL CONSTRUCTION & MINING	Puget Sound Energy Renton, Washington	FIGURE 2
	FILE NO. 98-464	DATE December 1998

GPR Imagery - Anomaly #1 - East to West Traverse



top of
EM Target

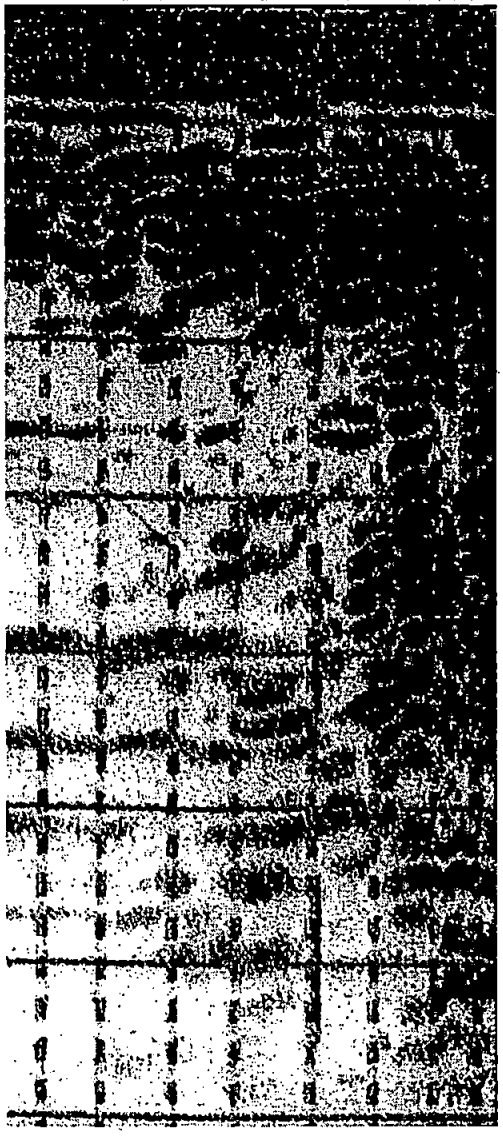
limits of
EM Target

NOTE: The horizontal scale, white/black dashed vertical lines, are generally at 2 foot intervals. The vertical scale, thin black horizontal lines, are at 16 nanosecond intervals. The normal relationship between radar time and actual depth for the Northwest Region is approximately 4 to 4.5 nanoseconds per foot. It should be noted, that this relationship holds true in a general sense. Variations of water content, silt content and other factors, such as the presence of concrete flooring, may also change this relationship.

APOLLO GEOPHYSICS CORPORATION
ENGINEERING, GEOLOGY, ENVIRONMENTAL
CONSTRUCTION & MINING

Puget Sound Energy Renton, Washington	FIGURE 3
FILE NO. 98-464	DATE December 1998

GPR Imagery - Anomaly #2 - East to West Traverse



top of
EM Target

limits of
EM Target

NOTE: The horizontal scale, white/black dashed vertical lines, are generally at 2 foot intervals. The vertical scale, thin black horizontal lines, are at 16 nanosecond intervals. The normal relationship between radar time and actual depth for the Northwest Region is approximately 4 to 4.5 nanoseconds per foot. It should be noted, that this relationship holds true in a general sense. Variations of water content, silt content and other factors, such as the presence of concrete flooring, may also change this relationship.

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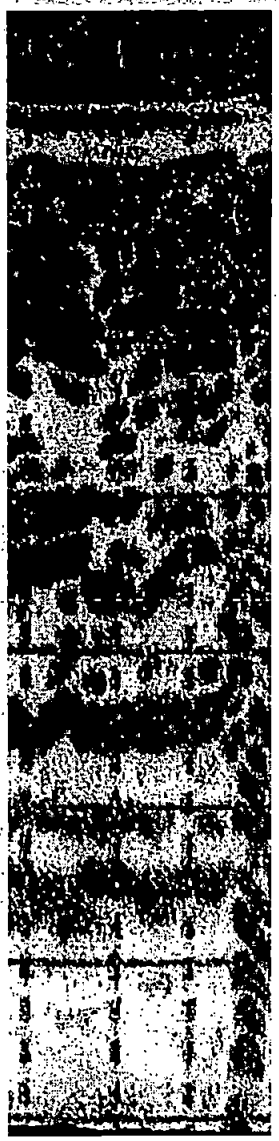
Puget Sound Energy Renton, Washington		FIGURE 4
FILE NO. 98-464	DATE December 1998	

GPR Imagery - Anomaly #2 - North to South Traverse



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EM Target

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EM Target

NOTE: The horizontal scale, white/black dashed vertical lines, are generally at 2 foot intervals. The vertical scale, thin black horizontal lines, are at 16 nanosecond intervals. The normal relationship between radar time and actual depth for the Northwest Region is approximately 4 to 4.5 nanoseconds per foot. It should be noted, that this relationship holds true in a general sense. Variations of water content, silt content and other factors, such as the presence of concrete flooring, may also change this relationship.

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Puget Sound Energy Renton, Washington	FIGURE 5
FILE NO. 98-464	DATE December 1998

GPR Imagery - Anomaly #3 - East to West Traverse

top of
EM Target

limits of
EM Target

NOTE: The horizontal scale, white/black dashed vertical lines, are generally at 2 foot intervals. The vertical scale, thin black horizontal lines, are at 16 nanosecond intervals. The normal relationship between radar time and actual depth for the Northwest Region is approximately 4 to 4.5 nanoseconds per foot. It should be noted, that this relationship holds true in a general sense. Variations of water content, silt content and other factors, such as the presence of concrete flooring, may also change this relationship.

APOLLO GEOPHYSICS CORPORATION ENGINEERING, GEOLOGY, ENVIRONMENTAL CONSTRUCTION & MINING	Puget Sound Energy Renton, Washington	FIGURE 6
	FILE NO. 98-464	DATE December 1998

GPR Imagery - Anomaly #3 - North to South Traverse

top of
EM Target

limits of
EM Target

NOTE: The horizontal scale, white/black dashed vertical lines, are generally at 2 foot intervals. The vertical scale, thin black horizontal lines, are at 16 nanosecond intervals. The normal relationship between radar time and actual depth for the Northwest Region is approximately 4 to 4.5 nanoseconds per foot. It should be noted, that this relationship holds true in a general sense. Variations of water content, silt content and other factors, such as the presence of concrete flooring, may also change this relationship.

APOLLO GEOPHYSICS CORPORATION ENGINEERING, GEOLOGY, ENVIRONMENTAL CONSTRUCTION & MINING	Puget Sound Energy Renton, Washington	FIGURE 7
	FILE NO. 98-464	DATE December 1998

GPR Imagery - Anomaly #4 - East to West Traverse

top of
EM Target

limits of
EM Target

NOTE: The horizontal scale, white/black dashed vertical lines, are generally at 2 foot intervals. The vertical scale, thin black horizontal lines, are at 16 nanosecond intervals. The normal relationship between radar time and actual depth for the Northwest Region is approximately 4 to 4.5 nanoseconds per foot. It should be noted, that this relationship holds true in a general sense. Variations of water content, silt content and other factors, such as the presence of concrete flooring, may also change this relationship.

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CONSTRUCTION & MINING

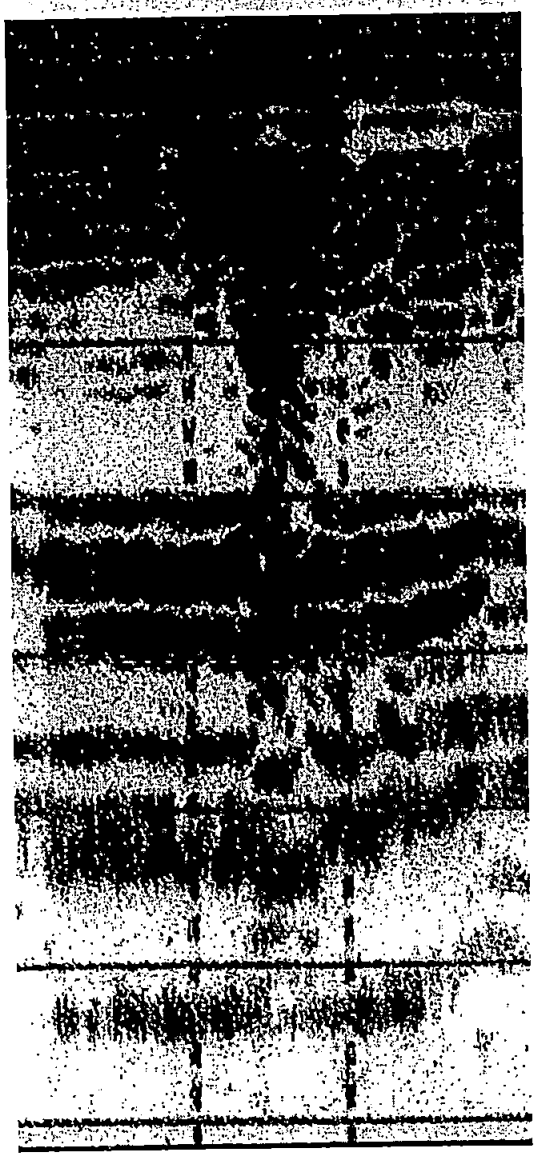
Puget Sound Energy
Renton, Washington

FIGURE
8

FILE NO.
98-464

DATE
December 1998

GPR Imagery - Anomaly #4 - South to North Traverse



top of
EM Target

limits of
EM Target

NOTE: The horizontal scale, white/black dashed vertical lines, are generally at 2 foot intervals. The vertical scale, thin black horizontal lines, are at 16 nanosecond intervals. The normal relationship between radar time and actual depth for the Northwest Region is approximately 4 to 4.5 nanoseconds per foot. It should be noted, that this relationship holds true in a general sense. Variations of water content, silt content and other factors, such as the presence of concrete flooring, may also change this relationship.

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CONSTRUCTION & MINING

Puget Sound Energy
Renton, Washington

FIGURE
9

FILE NO.
98-464

DATE
December 1998

APPENDIX D

DIOXIN AND FURAN RISK EVALUATION

APPENDIX D

DIOXIN AND FURAN RISK EVALUATION

APPROACH

The potential health risk posed by dioxins/furans was evaluated using the toxicity equivalency factor (TEF) approach. This approach assigns TEFs to dioxins/furans relative to 2,3,7,8-Tetrachlorinated dibenzo-p-dioxin (2,3,7,8-TCDD). TEFs are defined as the ratio of the toxicity of a given dioxin/furan to that of 2,3,7,8-TCDD in the same biological assay. The TEF approach assumes that the potency of the dioxins/furans relative to each other is constant. In this risk evaluation the TEF approach was applied by multiplying the constituent-specific TEF by the analytical result and then comparing the resulting TEQ soil concentration to the MTCA Method B cleanup level for 2,3,7,8-TCDD (6.67E-06).

Analytical results for dioxins/furans in soil samples obtained from the site are presented in Table 5 of this report. Table 5 also shows the TEFs used in this risk evaluation and the resulting TEQs. Note that analytes that do not have the 2,3,7,8-chlorine substitution pattern are assigned a TEF of zero [see HpCDDs (total) for sample SP9-3-8.0 in Table 5].

APPENDIX E

UST DISPOSAL DOCUMENTATION

Invoice

Coastal Tank Cleaning, Inc.
801 7th Avenue So.
Seattle, WA 98108
USA

Voice: (206) 624-9843
Fax (206) 624-9766

OCT 07 REC'D

Invoice Number:
9158.89

Invoice Date:
Oct 6, 1998

Page:
1

Sold To:
Olympus Environmental
P O Box 1064
Kent, WA 98035-1064

Ship to:
98.6243.IND
Ken Weaver
PSE
Renton

8017

Customer ID	Customer PO	Payment Terms	
OLYE01		Net 30 Days	
Sales Rep ID	Shipping Method	Ship Date	Due Date
	CTC Truck		11/5/98

Quantity	Item	Description	Unit Price	Extension
1.00	LUMPSUM REMIT	Strip, rinse & demo 1,10,000 gal fiberglass gas tank, 1-10,000 gal fiberglass diesel tank and 1,2,000 kgal steel diesel tank. Includes vac truck, driver, liquids disposal, tank transportation to yard and demo. Lump Sum Billing Remit to: CAPCO, P.O. Box 52650 , Bellevue, WA 98015-2650	5,830.40	5,830.40

Subtotal	5,830.40
Sales Tax	
Total Invoice Amount	5,830.40
Payment Received	0.00
TOTAL	5,830.40

Check No:

Vendor # KCOASTA

G/L Acct.# _____

VCHR # _____

APPENDIX F

UST SITE ASSESSMENT FORM

UNDERGROUND STORAGE TANK
Site Check/Site Assessment Checklist

WASHINGTON STATE DEPARTMENT OF ECOLOGY

For Office Use Only	
Owner #	
Site #	

INSTRUCTIONS:

When a release has **not** been confirmed and reported, this Site Check/Site Assessment Checklist must be completed and signed by a person registered with Ecology. **The results of the site check or site assessment must be included with this checklist.** This form must be submitted to Ecology at the address shown below within 30 days after completion of the site check/site assessment.

SITE INFORMATION: Include the Ecology site ID number if the tanks are registered with Ecology. This number may be found on the tank owner's invoice or tank permit.

TANK INFORMATION: Please list all tanks for which the site check or site assessment is being conducted. Use the owner's tank ID numbers if available, and indicate tank capacity and substance stored.

REASON FOR CONDUCTING SITE CHECK/SITE ASSESSMENT: Please check the appropriate item.

CHECKLIST: Please initial each item in the appropriate box.

SITE ASSESSOR INFORMATION: This form must be signed by the registered site assessor who is responsible for conducting the site check/site assessment.

Underground Storage Tank Section
Department of Ecology
P. O. Box 47655
Olympia, WA 98504-7655

SITE INFORMATION

Site ID Number (on invoice or available from Ecology if the tanks are registered): 8527

Site/Business Name: Grady Way Complex / Puget Sound Energy

Site Address: 915 South Grady Way (Street) Telephone: (206) 224-2102

Renton (City) Washington (State) (ZIP-Code)

TANK INFORMATION

Tank ID No.	Tank Capacity	Substance Stored
UST #263	10,000 gallons	Unleaded gasoline
UST #262	10,000 gallons	Diesel Fuel
Unregistered	2,000 gallons	Heating oil

REASON FOR CONDUCTING SITE CHECK/SITE ASSESSMENT

Check one:

- ____ Investigate suspected release due to on-site environmental contamination
- ____ Investigate suspected release due to off-site environmental contamination.
- ____ Extend temporary closure of UST system for more than 12 months.
- ____ UST system undergoing change-in-service.
- ____ UST system permanently closed-in-place.
- X UST system permanently closed with tank removed.
- ____ Abandoned tank containing product.
- ____ Required by Ecology or delegated agency for UST system closed before 12/22/88.
- ____ Other (describe): ____

CHECKLIST

Each item of the following checklist shall be initialed by the person registered with the Department of Ecology whose signature appears below.

		YES	NO
1.	The location of the UST site is shown on a vicinity map.	X	
2.	A brief summary of information obtained during the site inspection is provided. (see Section 3.2 in site assessment guidance)	X	
3.	A summary of UST system data is provided. (see Section 3.1)	X	
4.	The soils characteristics at the UST site are described. (see Section 5.2)	X	
5.	Is there any apparent groundwater in the tank excavation?	X	
6.	A brief description of the surrounding land use is provided. (see Section 3.1)	X	
7.	Information has been provided indicating the number and types of samples collected, methods used to collect and analyze the samples, and the name and address of the laboratory used to perform the analyses.	X	
8.	A sketch or sketches showing the following items is provided:		
	- location and ID number for all field samples collected	X	
	- groundwater samples distinguished from soil samples (if applicable)	X	
	- samples collected from stockpiled excavated soil	X	
	- tank and piping locations and limits of excavation pit	X	
	- adjacent structures and streets	X	
	- approximate locations of any on-site and nearby utilities	X	
9.	If sampling procedures different from those specified in the guidance were used, has justification for using these alternative sampling procedures been provided? (see Section 3.4)	X	
10.	A table is provided showing laboratory results for each sample collected including; sample ID number, constituents analyzed for and corresponding concentration, analytical method and detection limit for that method.	X	
11.	Any factors that may have compromised the quality of the data or validity of the results are described.	X	
12.	The results of this site check/site assessment indicate that a confirmed release of a regulated substance has **not** occurred.	X	

SITE ASSESSOR INFORMATION

Anthony N. Orme — Person registered with Ecology

GeoEngineers, Inc. — Firm Affiliated with

Business Address: 8410 154th Avenue NE (Street)

Telephone: (425) 861-6000

Redmond (City) Washington (State) 98052 (ZIP+Code)

I hereby certify that I have been in responsible charge of performing the site check/site assessment described above. Persons submitting false information are subject to penalties under Chapter 173.360 WAC.

November 9, 1998 — Date

Signature of Person Registered with Ecology

APPENDIX G

INTERIM TPH POLICY EVALUATION

APPENDIX G

INTERIM TPH POLICY EVALUATION

MTCA METHOD B CLEANUP LEVEL CALCULATIONS

This appendix presents the results of GeoEngineers' evaluation of heating oil-related soil contamination detected at PSE's Grady Way Complex property. The heating oil-related soil contamination was identified during the removal of an on-site 2,000-gallon heating oil UST (underground storage tank) located east of the Stores Building. The location of the former heating oil UST is shown in Figure 4 of this report. The evaluation presented herein was completed in accordance with the Washington State Department of Ecology's (Ecology) *Interim Interpretive and Policy Statement, Cleanup of Total Petroleum Hydrocarbons* (Interim TPH Policy).

Remediation of petroleum-related contamination historically has been completed using the Model Toxics Control Act (MTCA) Method A cleanup levels for petroleum hydrocarbons. The MTCA Method A cleanup levels for petroleum hydrocarbons in soil (200 mg/kg for diesel- and heavy oil-range hydrocarbons and 100 mg/kg for gasoline-range hydrocarbons) cannot be adjusted to account for specific properties of petroleum products such as the absence of the more toxic constituents in heating oil. The Ecology Interim TPH Policy allows for calculation of a MTCA Method B cleanup level in soil based on the actual constituents present in the petroleum. The Interim TPH Policy methodology was used to (1) evaluate the regulatory significance of the residual heating oil-related soil contamination at the site, and (2) calculate a site-specific petroleum hydrocarbon cleanup level for the heating oil-related contamination. A detailed discussion of the Interim TPH Policy methods is presented in our report entitled "Environmental Site Assessment, Grady Way Complex Property, Renton, Washington, April 29, 1998. The reader is also referred to the Interim TPH Policy (Ecology Publication ECY 97-600) for background information and assumptions that pertain to the use of the Interim TPH policy.

CHEMICAL ANALYSES

Soil sample EX1-1-12 was the only soil sample obtained from the heating oil UST excavation that appeared to contain contamination related to heating oil based on an evaluation of the sample chromatograms. The location of sample EX1-1-12 is shown in Figure 12 of the report. The petroleum hydrocarbons in EX1-1-12 were quantified by the analytical laboratory as diesel-range hydrocarbons. However, based on our review of the sample chromatogram, it is likely that the petroleum detected in EX1-1-12 is heating oil.

The soil sample was submitted to North Creek Analytical laboratory of Bothell, Washington for chemical analysis of the following: diesel- and heavy oil-range petroleum hydrocarbons by Ecology Method NWTPH-D extended, and benzene, ethylbenzene, toluene and xylenes (BETX), methylene tert-butyl ether (MTBE), naphthalene, volatile petroleum hydrocarbon (VPH) fractions and extractable petroleum hydrocarbon (EPH) fractions using Ecology Interim TPH Policy methods. The chemical analytical results used in the Interim TPH Policy calculations for this

study are presented in Table G-1. Laboratory reports are presented in Appendix C (Volume II) of this report.

Diesel-range hydrocarbons were detected in sample EX1-1-12 at a concentration of 413 mg/kg. Aliphatic EPHs and/or VPHs were detected in the following EC (equivalent carbon) ranges: EC10-12, EC12-16, EC16-21, and EC21-34. Aromatic EPHs and/or VPHs were detected in the EC12-16, EC16-21 and EC21-34 ranges. Toluene and naphthalene also were detected in the sample. Carcinogenic polycyclic aromatic hydrocarbons (cPAHs) were not detected.

MTCA METHOD B SOIL DIRECT CONTACT CALCULATIONS

Petroleum products, including heating oil and other diesel- and heavy oil-range hydrocarbons, contain multiple fractions and individual compounds that have associated noncarcinogenic health effects. MTCA stipulates that individual hazard quotients associated with these fractions are additive, and that the total hazard index (the sum of all individual hazard quotients) should not exceed 1.0 for the risk to be considered acceptable.

Our calculations indicate that the hazard index for the heating oil in soil sample EX1-1-12 is 0.07 as shown in Table G-2. A site-specific Method B soil cleanup level protective of human health direct contact (non-carcinogen) exposures was calculated for the heating oil-related soil contamination using the MTCA Method B equations and the reference dose values as shown in Table G-3. The calculated Method B cleanup level for the heating oil-related contamination in soil at this location is 3,794 mg/kg. This Method B cleanup level was used only to evaluate the significance of the heating oil-related soil contamination detected at the location of the former heating oil UST. Remedial activities were completed during this project to achieve compliance with the Method B cleanup level (3,432 mg/kg) previously calculated for residual hydraulic/lube oil that is present in soil at many locations beneath the site (see our April 1998 ESA).

POTENTIAL SOIL-TO-GROUND WATER TRANSPORT OF HYDROCARBONS

The Interim TPH Policy also requires that soil contamination be evaluated relative to its potential to migrate to ground water. In accordance with the Policy, the evaluation of this fate and transport pathway was based on a determination of whether TPH remaining in vadose zone soil could cause exceedance of the MTCA Method A ground water cleanup level for TPH of 1 mg/l. The concentration of TPH partitioning from soil to soil pore water was estimated using Raoult's Law for the hydrocarbons detected in sample EX1-1-12. Raoult's Law is used to estimate resultant chemical concentrations dissolved in water when more than one chemical compound (TPH fraction) is present in soil. Each TPH fraction has a different solubility in water. Based on the relative concentration of each fraction, Raoult's Law was used to estimate the resultant concentration of TPH in pore water. Consistent with the Interim TPH Policy, the estimated concentration of TPH in pore water using Raoult's Law was then assumed to directly enter the ground water (assumes that contaminated soil is in direct contact with ground water). Once the pore water enters the ground water, it is assumed under the Interim TPH Policy that the

concentrations of dissolved TPH will be diluted by 20 times before reaching a drinking water well. This diluted concentration of dissolved hydrocarbons is compared to the MTCA Method A ground water cleanup level for TPH of 1 mg/l.

Using the methods described above and the EPH/VPH fraction data for EX1-1-12, the predicted TPH concentration in ground water at this location is approximately 0.33 mg/l, as shown in Table G-4. This concentration is significantly less than the MTCA Method A cleanup level for TPH (1.0 mg/l). This concentration was derived using values of ½ the detection limit for compounds and petroleum fractions that were not detected in sample EX1-1-12. It also was derived using Ecology's default value of 20 for a dilution factor.

An additional soil-to-ground water calculation was completed using the more conservative dilution factor of 1.0. This calculation is presented in Table G-5. Based on this calculation, the predicted TPH concentration in ground water in the vicinity of sample EX1-1-12 would be 6.59 mg/l, which significantly exceeds the MTCA Method A cleanup level for TPH. In our opinion, this estimated impact to ground water does not accurately reflect actual site conditions based on existing ground water monitoring information (see Section 6.2.3 in the report text). Ground water samples have recently been obtained from three monitoring wells (MW-4, MW-10 and MW-20) located downgradient of the former heating oil UST. Petroleum hydrocarbons have not been detected in these ground water samples.

CONCLUSIONS

Chemical analytical results indicate that residual heating oil-related contamination in the vicinity of the former heating oil UST excavation does not represent a risk to human health based on direct contact exposure scenarios. Calculations used to evaluate potential impacts to ground water (soil-to-ground water pathway) suggest that the residual heating oil-related soil contamination will not produce ground water contamination at concentrations exceeding the MTCA Method A cleanup level for TPH if a dilution factor of 20 is used. In our opinion, this is a reasonable estimation based on chemical analytical results for ground water samples obtained from locations downgradient of the former heating oil UST.

INTERIM TPH POLICY LIMITATIONS

Regulatory policy regarding risk-based evaluations of petroleum hydrocarbon contamination continues to be formulated by Ecology. The Interim TPH Policy is a conservative and temporary measure intended to allow for the use of a risk-based approach to petroleum hydrocarbons while final policy is developed. The policy described herein is subject to future regulatory revisions.

TABLE G-1 (Page 1 of 3)
SUMMARY OF SOIL FIELD SCREENING AND CHEMICAL ANALYTICAL RESULTS
SOIL SAMPLE EX1-1-12
PUGET SOUND ENERGY GRADY WAY SITE
RENTON, WASHINGTON

Description		Sample Number [1] EX1-1-12	MTCA Method B Cleanup Level [2] (mg/kg)
Date Sampled		10/1/98	
Depth of Sample (feet bgs)		12.0	
Field Screening Results[3]			
Headspace Vapors (ppm)		--	
Sheen		HS	
BETX (EPA Method 8021B) (mg/kg)			
Benzene		--	34.5
Ethylbenzene		--	8,000
Toluene		--	16,000
Xylenes		--	160,000
TPH[4] (mg/kg)			
Gasoline-range		--	
Diesel-range		413	
Heavy Oil-range		<25.0	
VPH[5] (mg/kg)			
Aliphatics			
EC5-EC6		<10.0	
EC6-EC8		<10.0	
EC8-EC10		<10.0	
EC10-EC12		<10.0	
Aromatics			
EC8-EC10		<10.0	
EC10-EC12		13.9	
EC12-EC13		31.8	

Notes appear on Page 3 of 3.

Table G-1 (Page 2 of 3)

Description	Sample Number [1] EX1-1-12	MTCA Method B Cleanup Level [2] (mg/kg)
Other Volatile Petroleum Hydrocarbons[6] (mg/kg)		
Benzene	<0.100	34.5
Ethylbenzene	<0.100	8,000
Toluene	0.107	16,000
Xylenes	<0.300	160,000
Naphthalene	0.137	3,200
MTBE	<0.500	NE
EPH[6] (mg/kg)		
Aliphatics		
EC8-EC10	<5.00	
EC10-EC12	7.00	
EC12-EC16	67.6	
EC16-EC21	110	
EC21-EC34	23.4	
Aromatics		
EC8-EC10	–	
EC10-EC12	<5.00	
EC12-EC16	12.8	
EC16-EC21	18.2	
EC21-EC34	<5.00	

Notes appear on Page 3 of 3.

Table G-1 (Page 3 of 3)

Description	Sample Number [1] EX1-1-12	MTCA Method B Cleanup Level [2] (mg/kg)
PAHs[6] (mg/kg)		
Carcinogenic		
Benzo(a)anthracene	<0.0100	0.137
Benzo(b)fluoranthene	<0.0100	0.137
Benzo(k)fluoranthene	<0.0100	0.137
Benzo(a)pyrene	<0.0100	0.137
Chrysene	<0.0100	0.137
Dibenzo(a,h)anthracene	<0.0100	0.137
Indeno(1,2,3-cd)pyrene	<0.0100	0.137
Noncarcinogenic		
Acenaphthene	0.0109	4,800
Acenaphthylene	<0.0100	NE
Anthracene	<0.0100	24,000
Benzo(ghi)perylene	<0.0100	NE
Fluorene	0.0446	3,200
Fluoranthene	<0.0100	3,200
2-methylnaphthalene	0.0649	NE
Naphthalene	<0.0100	3,200
Phenanthrene	0.0719	NE
Pyrene	0.0195	2,400

Notes:
[1] The approximate soil sample location is shown in Figure 12.
[2] From MTCA Cleanup Levels and Risk Calculations (CLARC II) Update February 1996 Publication #94-145
[3] Field screening procedures are described in Appendix B. HS=heavy sheen
[4] TPH = total petroleum hydrocarbons. Diesel- and lube oil-range hydrocarbons analyzed by Ecology Method NWTPH-D extended.
[5] VPH = volatile petroleum hydrocarbons analyzed using Ecology Interim TPH Policy Methods and EPA Method 8260.
[6] EPH = extractable petroleum hydrocarbons and polycyclic aromatic hydrocarbons (PAHs) analyzed using Ecology Interim TPH Policy Methods and EPA Method 8270.
mg/kg = milligrams per kilogram
-- = not analyzed or measured
ppm = parts per million
NE = not established
Chemical analyses conducted by North Creek Analytical laboratory of Bothell, Washington. The laboratory reports are presented in Appendix C (Volume II) of this report.

TABLE G-2
RESIDENTIAL HAZARD INDEX AND CARCINOGENIC RISK FOR DIRECT CONTACT SOIL SAMPLE EX1-1-12

PUGET SOUND ENERGY GRADY WAY SITE
RENTON, WASHINGTON

Compound	Detected Soil Concentration[1] (mg/kg)	ORfD	Residential		
			Factor	Multiplier	HQ
Total aliphatics	211	0.06	1.25E-05	2.08E-04	4.39E-02
Total aromatics	71	0.03	See Below	See Below	See Below
Benzene	0.050	NA	NA	NA	NA
Ethylbenzene	0.050	0.1	1.25E-05	1.25E-04	6.25E-06
Toluene	0.107	0.2	1.25E-05	6.25E-05	6.69E-06
Xylenes	0.150	2	1.25E-05	6.25E-06	9.38E-07
Total aromatic+B-E-X	71.3	0.03	1.25E-05	4.17E-04	2.97E-02
Hazard Index					0.07

Notes:
[1]The highest concentration for each compound or fraction detected by VPH or EPH. Values not detected are assumed as 1/2 of the detection limit.
Total TPH (sum of aliphatic and aromatics) = 281.9
% total aliphatics 74.67%
% total aromatics 25.33%
ORfD = oral reference dose
Factor = residential factor as defined in Interim Policy
Multiplier = Factor/ORfD
HQ = hazard quotient
Hazard Index = sum of HQs
NA = not applicable

Carcinogens	Detected Soil Concentration (mg/kg)	OCPF (kg-day/mg)	Risk
Benzene	0.050	0.029	1.45E-09
CPAHs [1]	0.005	7.3	3.65E-08
Total Risk			3.80E-08

Notes:
[1]This value is 1/2 the detection limit for carcinogenic polynuclear aromatic hydrocarbons (CPAHs); cPAHs were not detected in the sample.
mg/kg = milligrams per kilogram
kd-day/mg = kilogram*day per milligram
OCPF = oral cancer potency factor
Risk = Soil Concentration * OCPF * 1x10E-06
Total Risk = sum of benzene risk and CPAH risk

TABLE G-3
MTCA METHOD B SOIL CLEANUP LEVEL CALCULATION[1]
BASED ON RESIDENTIAL DIRECT CONTACT

PUGET SOUND ENERGY GRADY WAY SITE

RENTON, WASHINGTON

Compound	Soil Conc. (mg/kg)	ORfD	Residential		
			Factor	Multiplier	HQ
Total aliphatic	2,899	0.06	1.25E-05	2.08E-04	6.04E-01
Total aromatic	925	0.03	See Below	See Below	See Below
Benzene	3.484	NA	NA	NA	NA
Ethylbenzene	0.697	0.1	1.25E-05	1.25E-04	8.71E-05
Toluene	1.491	0.2	1.25E-05	6.25E-05	9.32E-05
Xylenes	2.091	2	1.25E-05	6.25E-06	1.31E-05
Total aromatic+B-E-X	926.1	0.03	1.25E-05	4.17E-04	3.86E-01
Hazard Index					**0.99**

MTCA Method B Cleanup level for TPH	3,824				

NOTES:

1 The MTCA Method B cleanup level is the TPH concentration (sum of aliphatics and aromatics) which results in a Hazard Index of 0.99 with same proportions of aliphatics, aromatics, and BETX as the sample tested.

Total Hydrocarbon Concentration =	3,824 mg/kg
% Total aliphatic fraction =	74.67 %
% Total aromatic fraction =	25.33 %
% Total benzene fraction =	0.02 %
% Total ethylbenzene fraction =	0.02 %
% Total toluene fraction =	0.04 %
% Total xylene fraction =	0.05 %
% Total aromatic+B-E-X fraction =	25.27 %

mg/kg = milligrams per kilogram
ORfD = oral reference dose
Factor = residential factor
Mulitiplier = Factor/ORfD
HQ = hazard quotient (soil concentration [mg/kg]) (factor)/ORfD
TPH = total petroleum hydrocarbons
NA = not applicable

TABLE G-4
PROJECTED TPH CONCENTRATION IN GROUND WATER
SOIL-TO-GROUND WATER PARTITIONING USING RAOULT'S LAW
SOIL SAMPLE EX-1-12
PUGET SOUND ENERGY GRADY WAY SITE
RENTON, WASHINGTON

Fraction		Concentration[2] (mg/kg)	% of Mixture	MW (g/mol)	mMoles	X	S (mg/l)	Effective Solubility (mg/l)	DF	C_{gwtr} (mg/l)
Aliphatics	EC 5-6 (5.5)	0.00	0.00%	81	0.0000	0.00	28	0.00000	20	0.0000
	EC >6-8 (7.0)	0.00	0.00%	100	0.0000	0.00	4.2	0.00000	20	0.0000
	EC >8-10 (9.0)	2.50	0.97%	130	0.0000	0.02	0.33	0.00497	20	0.0002
	EC >10-12 (11.0)	7.00	2.71%	160	0.0000	0.03	0.026	0.00089	20	0.0000
	EC >12-16 (14.0)	67.60	26.13%	200	0.0003	0.26	0.00059	0.00016	20	0.0000
	EC >16-21 (19.0)	110.00	42.53%	270	0.0004	0.32	0.000001	0.00000	20	0.0000
TOTAL ALIPHATICS		187.10	72.34%							
Aromatics	Benzene (6.5)	0.05	0.02%	78	0.0000	0.00	1780	0.89353	20	0.0447
	Toluene (7.6)	0.11	0.04%	92	0.0000	0.00	520	0.47360	20	0.0237
	EC >8-10 (9.0)	5.00	1.93%	120	0.0000	0.03	65	2.12088	20	0.1060
	EC >10-12 (11.0)	13.90	5.37%	130	0.0001	0.08	25	2.09327	20	0.1047
	EC >12-16 (14.0)	31.80	12.29%	150	0.0002	0.17	5.8	0.96289	20	0.0481
	EC >16-21 (19.0)	18.20	7.04%	190	0.0001	0.08	0.51	0.03826	20	0.0019
	EC >21-34 (28.0)	2.50	0.97%	240	0.0000	0.01	0.0066	0.00005	20	0.0000
TOTAL AROMATICS		71.56	27.66%							
TOTAL PRODUCT		258.66	100.00%		0.0013	1.00				0.3294

Range 21-34

Notes:
[1]Chemical analyses conducted by North Creek Analytical laboratory of Bothell, Washington. The laboratory reports are presented in Appendix C (Volume II) of this report.
[2]The highest concentration for each fraction detected by either VPH or EPH. Fractions not detected are assumed assigned a concentration of 1/2 the detection limit for this calculation.
EC = equivalent carbon
MW = molecular weight
mMoles = milliMoles
X = mole fraction
S = solubility
DF = dilution factor. This calculation uses Ecology's default value of 20 for a dilution factor.
C_{gwtr} = concentration in ground water (projected)
mg/kg = milligrams per kilogram
g/mol = grams per mole
mg/l = milligrams per liter

TABLE G-5
PROJECTED TPH CONCENTRATION IN GROUND WATER
SOIL-TO-GROUND WATER PARTITIONING USING RAOULT'S LAW
SOIL SAMPLE EX-1-12

PUGET SOUND ENERGY GRADY WAY SITE
RENTON, WASHINGTON

Fraction		Concentration[2] (mg/kg)	% of Mixture	MW (g/mol)	mMoles	X	S (mg/l)	Effective Solubility (mg/l)	DF	C_{gwtr} (mg/l)
Aliphatics	EC 5-6 (5.5)	0.00	0.00%	81	0.0000	0.00	28	0.00000	1	0.0000
	EC >6-8 (7.0)	0.00	0.00%	100	0.0000	0.00	4.2	0.00000	1	0.0000
	EC >8-10 (9.0)	2.50	0.97%	130	0.0000	0.02	0.33	0.00497	1	0.0050
	EC >10-12 (11.0)	7.00	2.71%	160	0.0000	0.03	0.026	0.00089	1	0.0009
	EC >12-16 (14.0)	67.60	26.13%	200	0.0003	0.26	0.00059	0.00016	1	0.0002
	EC >16-21 (19.0)	110.00	42.53%	270	0.0004	0.32	0.000001	0.00000	1	0.0000
TOTAL ALIPHATICS		187.10	72.34%							
Aromatics	Benzene (6.5)	0.05	0.02%	78	0.0000	0.00	1780	0.89353	1	0.8935
	Toluene (7.6)	0.11	0.04%	92	0.0000	0.00	520	0.47360	1	0.4736
	EC >8-10 (9.0)	5.00	1.93%	120	0.0000	0.03	65	2.12088	1	2.1209
	EC >10-12 (11.0)	13.90	5.37%	130	0.0001	0.08	25	2.09327	1	2.0933
	EC >12-16 (14.0)	31.80	12.29%	150	0.0002	0.17	5.8	0.96289	1	0.9629
	EC >16-21 (19.0)	18.20	7.04%	190	0.0001	0.08	0.51	0.03826	1	0.0383
	EC >21-34 (28.0)	2.50	0.97%	240	0.0000	0.01	0.0066	0.00005	1	0.0001
TOTAL AROMATICS		71.56	27.66%							
TOTAL PRODUCT		258.66	100.00%		0.0013	1.00				6.5885

Notes:
[1]Chemical analyses conducted by North Creek Analytical laboratory of Bothell, Washington. The laboratory reports are presented in Appendix C (Volume II) of this report.
[2]The highest concentration for each fraction detected by either VPH or EPH. Fractions not detected are assumed assigned a concentration of 1/2 the detection limit for this calculation.
EC = equivalent carbon
MW = molecular weight
mMoles = milliMoles
X = mole fraction
S = solubility
DF = dilution factor. Ecology's default DF is 20. A DF of 1 is used in this case as a conservative measure.
C_{gwtr} = concentration in ground water (projected)
mg/kg = milligrams per kilogram
g/mol = grams per mole
mg/l = milligrams per liter

APPENDIX H

SOIL TREATMENT/DISPOSAL DOCUMENTATION

TPS
TECHNOLOGIES INC.

For Questions Call:
(407) 886-9570 x116 or 162
(800) 940-2666
Fax (407) 886-8300

REMIT TO: TPS TECHNOLOGIES, INC.
P.O. BOX 100103
PASADENA, CA 91189-0103

INVOICE NUMBER 002827

TPS JOB: 03-01963

SOLD TO: Puget Sound Energy.
Env. Services
815 Mercer Street MER-04S
Seattle WA 98109

REFERENCE: Grady Way Site
915 South Grady Way
Seattle, WA

Customer PO#

ACCOUNT NO.	SALESPERSON	FACILITY	TERMS	INVOICE DATE	
100?614	PH	103	Net 30 Days	09/15/98	

CODE	QUANTITY	DESCRIPTION	UNIT PRICE	EXTENDED PRICE
		Customer Contact: Barry Lombard		
REM	338.77	CONTAMINATED SOIL REMEDIATION	33.00	$11,179.41
	286.52	TRUCKING - 9/3	5.95	$1,704.79
	4.00	TRUCKING - 9/9	75.00	$300.00

9/29/98

1/3 - 13100048
13100049
1/3 - 13100050
1/3

BB

A Subsidiary of
Thermo Remediation

Thank You

TOTAL: $13,184.20

Woodworth & Company, Inc.

GENERAL CONTRACTORS

1200 East D Street / Tacoma, Washington 98421
Telephone (253) 383-3585

LAKEVIEW PIT TICKET

Contractors Lic. # WOODW 377NO

Ticket # 363317
Wmaster REBECCA

#1963
WILLIAM HARRIS

CAUTION: HOT ASPHALT WILL BURN YOU!

RECEIVED *

CUSTOMER: T.P.S. 81384

PURCHASE ORDER: T.P.S.

	JOB LOAD	JOB TONS
TOTAL		
DAILY	2	52.25

DATE	PLANT	SILO #	JOB	PLANT	TRUCK	SEQUENCE	REFERENCE
09/09/98			64-		0244T		
TIME 2:27							

MIXTURE	GROSS	TARE	NET WT. TONS	PRICE	TOTAL
200 CONT. SOIL	92260	38820	26.72		

SPECIAL INSTRUCTIONS

53440 Net LB 2

Net Metric Tons
24.24

TAX %
PAY THIS AMOUNT

PIT B160

CUBIC YDS

REMARKS

X

SCALE OPERATOR

VISA MasterCard

Manifest

TPS Technologies Soil Recycling
Non-Hazardous Soils

↓ Manifest # ↓

Date of Shipment:	Responsible for Payment:	Transporter Truck #:	Facility #:	Given by TPS:	Load #
	Generator		A03	01963	012

Generator and/or Consultant

Generator's Name and Billing Address: PUGET SOUND ENERGY P.O. BOX 97034, MER-04 BELLEVUE, WA 98009-9734 USA	Generator's Phone #: (206) 224-2218 Person to Contact: JOHN RORK FAX#: (206) 224-2317	Generator's US EPA ID No. Customer Account Number with TPS: 1002414
Consultant's Name and Billing Address: GEO ENGINEERS, INC PLAZA 600 BLDG. 600 STEWART STREET, SUITE 1215 SEATTLE, WA 98101 USA	Consultant's Phone #: (206) 728-2674 Person to Contact: STEVE WOODWARD FAX#: (206) 728-2732	 Customer Account Number with TPS: 3GEOEIN
Generation Site (Transport from): *(name & address)* GRADY WAY SITE 915 SOUTH GRADY WAY SEATTLE, WA 00000 USA	Site Phone #: (253) 735-6625 Person to Contact: KEN WEAVER FAX#: ( ) -	BTEX Levels TPH Levels AVG. Levels
Designated Facility (Transport to): *(name & address)* TPS Technologies Inc. 2800 - 104th Street Court South Lakewood, WA 98444-6766 USA	Facility Phone #: (253)584-8430 Person to Contact: Renee Avelino FAX#: (253)584-8309	Facility Permit Numbers
Transporter Name and Mailing Address: JLA CONSTRUCTION 17404 MERIDIAN EAST SUITE #F121 PUYALLUP, WA 98375 USA	Transporter's Phone #: (253) 846-2485 Person to Contact: SCOTT TALERICO FAX#: (253) 846-2563	Transporter's US EPA ID No.: Transporter's DOT No.: Customer Account Number with TPS: 3JLACON

Description of Soil	Moisture Content	Contaminated by:	Approx. Qty:	Description of Delivery	Gross Weight	Tare Weight	Net Weight
Sand ☐ Organic ☐ Clay ☐ Other ☐	0 - 10% ☐ 10 - 20% ☐ 20% - over ☐	Gas ☐ Diesel ☐ Other ☐			92260	38820	53440
Sand ☐ Organic ☐ Clay ☐ Other ☐	0 - 10% ☐ 10 - 20% ☐ 20% - over ☐	Gas ☐ Diesel ☐ Other ☐		NET TONS=	26.72		

List any exception to items listed above:

Generator's and/or consultant's certification: I/We certify that the soil referenced herein is taken entirely from those soils described in the Soil Data Sheet completed and certified by me/us for the Generation Site shown above and nothing has been added or done to such soil that would alter it in any way.

Print or Type Name: → Generator ☐ Consultant ☐ | Signature and date: | Month | Day | Year

Transporter

Transporter's certification: I/We acknowledge receipt of the soil described above and certify that such soil is being delivered in exactly the same condition as when received. I/We further certify that this soil is being directly transported from the Generation Site to the Designated Facility without off-loading, adding to, subtracting from or in any way delaying delivery to such site.

Print or Type Name: William S. Harris | Signature and date: William S. Harris | Month: 9 | Day: 9 | Year: 98

Recycling Facility

Discrepancies:

Recycling Facility certifies the receipt of the soil covered by this manifest except as noted above:

Print or Type Name: RENEE AVELINO - CSM | Signature and date: Renee Avelino 9/9

Please print or type.

Woodworth & Company, Inc.

GENERAL CONTRACTORS

1200 East D Street / Tacoma, Washington 98421
Telephone (253) 383-3585

LAKEVIEW PIT TICKET

Contractors Lic. # WOODW 377NO

Ticket # 363308
Wmaster REBECCA

1963

BILL GIBBONS

CAUTION: HOT ASPHALT WILL BURN YOU!

RECEIVED *

CUSTOMER: T.P.S.
81384

PURCHASE ORDER: T.P.S.

	JOB LOAD	JOB TONS
TOTAL		
DAILY	1	25.53

DATE ~~09/09/98~~
TIME 2:05

PLANT	SILO #	JOB	PLANT	TRUCK	SEQUENCE	REFERENCE
		64-		1241T		

MIXTURE 200
CONT. SOIL

GROSS	TARE	NET WT. TONS	PRICE	TOTAL
91780	40720	25.53		

SPECIAL INSTRUCTIONS

51060 Net LB 2

Net Metric Tons
23.16

TAX %
PAY THIS AMOUNT

PIT B160

CUBIC YDS

REMARKS

X BSS

SCALE OPERATOR

VISA MasterCard

Manifest

TPS Technologies Soil Recycling
Non-Hazardous Soils

↓ Manifest # ↓

Date of Shipment:	Responsible for Payment:	Transporter Truck #:	Facility #:	Given by TPS:	Load #
	Generator		A03	01963	011

Generator and/or Consultant

Generator's Name and Billing Address:	Generator's Phone #:	Generator's US EPA ID No.
PUGET SOUND ENERGY P.O. BOX 97034, MER-04 BELLEVUE, WA 98009-9734 USA	(206) 224-2218 Person to Contact: JOHN RORK FAX#: (206) 224-2317	Customer Account Number with TPS: 1002414
Consultant's Name and Billing Address:	**Consultant's Phone #:**	
GEO ENGINEERS, INC PLAZA 600 BLDG. 600 STEWART STREET, SUITE 1215 SEATTLE, WA 98101 USA	(206) 728-2674 Person to Contact: STEVE WOODWARD FAX#: (206) 728-2732	Customer Account Number with TPS: 3GEOEIN
Generation Site (Transport from): *(name & address)*	**Site Phone #:**	BTEX Levels
GRADY WAY SITE 915 SOUTH GRADY WAY SEATTLE, WA 00000 USA	(253) 735-6625 Person to Contact: KEN WEAVER FAX#: ( ) -	TPH Levels AVG. Levels
Designated Facility (Transport to): *(name & address)*	**Facility Phone #:**	Facility Permit Numbers
TPS Technologies Inc. 2800 - 104th Street Court South Lakewood, WA 98444-6766 USA	(253)584-8430 Person to Contact: Renee Avelino FAX#: (253)584-8309	
Transporter Name and Mailing Address:	**Transporter's Phone #:**	Transporter's US EPA ID No.:
JLA CONSTRUCTION 17404 MERIDIAN EAST SUITE #F121 PUYALLUP, WA 98375 USA	(253) 846-2485 Person to Contact: SCOTT TALERICO FAX#: (253) 846-2563	Transporter's DOT No.: Customer Account Number with TPS: 3JLACON

Description of Soil	Moisture Content	Contaminated by:	Approx. Qty:	Description of Delivery	Gross Weight	Tare Weight	Net Weight
Sand ☐ Organic ☐ Clay ☐ Other ☐	0 - 10% ☐ 10 - 20% ☐ 20% - over ☐	Gas ☐ Diesel ☐ Other ☐			91780	40720	51060
Sand ☐ Organic ☐ Clay ☐ Other ☐	0 - 10% ☐ 10 - 20% ☐ 20% - over ☐	Gas ☐ Diesel ☐ Other ☐		NET TONS=	25.53		

List any exception to items listed above:

Generator's and/or consultant's certification: I/We certify that the soil referenced herein is taken entirely from those soils described in the Soil Data Sheet completed and certified by me/us for the Generation Site shown above and nothing has been added or done to such soil that would alter it in any way.

Print or Type Name: Generator ☐ Consultant ☐	Signature and date:	Month	Day	Year
->				

Transporter

Transporter's certification: I/We acknowledge receipt of the soil described above and certify that such soil is being delivered in exactly the same condition as when received. I/We further certify that this soil is being directly transported from the Generation Site to the Designated Facility without off-loading, adding to, subtracting from or in any way delaying delivery to such site.

Print or Type Name:	Signature and date:	Month	Day	Year
FRED GIBBONS		9	9	98

Recycling Facility

Discrepancies:

Recycling Facility certifies the receipt of the soil covered by this manifest except as noted above:

Print or Type Name:	Signature and date:
RENEE AVELINO - CSM	9/9

Woodworth & Company, Inc.

GENERAL CONTRACTORS

1200 East D Street / Tacoma, Washington 98421
Telephone (253) 383-3585

LAKEVIEW PIT TICKET

Contractors Lic. # WOODW 377NO

Ticket # 362726
Wmaster REBECCA

CAUTION: HOT ASPHALT WILL BURN YOU!

J.R. OWINGS

RECEIVED *

CUSTOMER: T.P.S. 81384

PURCHASE ORDER: T.P.S.

	JOB LOAD	JOB TONS
TOTAL		
DAILY	9	258.34

DATE	PLANT	SILO #	JOB	PLANT	TRUCK	SEQUENCE	REFERENCE
09/03/98							
TIME 3:45			62-		0791T		

MIXTURE	GROSS	TARE	NET WT. TONS	PRICE	TOTAL
200 CONT. SOIL	91120	37280	26.92		

SPECIAL INSTRUCTIONS

53840 Net LB 2

Net Metric Tons
24.42

TAX %
PAY THIS AMOUNT

PIT B160

CUBIC YDS

REMARKS

X

SCALE OPERATOR

VISA MasterCard

Manifest

TPS Technologies Soil Recycling
Non-Hazardous Soils

↓ Manifest # ↓

Date of Shipment:	Responsible for Payment:	Transporter Truck #:	Facility #:	Given by TPS:	Load #
- -	Generator		A03	01963	010

Generator and/or Consultant

Generator's Name and Billing Address: PUGET SOUND ENERGY P.O. BOX 97034, MER-04 BELLEVUE, WA 98009-9734 USA	Generator's Phone #: (206) 224-2102 Person to Contact: BARRY LOMBARD FAX#: (206) 224-2317	Generator's US EPA ID No. Customer Account Number with TPS: 1002414
Consultant's Name and Billing Address: GEO ENGINEERS, INC PLAZA 600 BLDG. 600 STEWART STREET, SUITE 1215 SEATTLE, WA 98101 USA	Consultant's Phone #: (206) 728-2674 Person to Contact: STEVE WOODWARD FAX#: (206) 728-2732	 Customer Account Number with TPS: 3GEOEIN
Generation Site (Transport from): *(name & address)* GRADY WAY SITE 915 SOUTH GRADY WAY SEATTLE, WA 00000 USA	Site Phone #: (253) 735-6625 Person to Contact: KEN WEAVER FAX#: ( ) -	BTEX Levels TPH Levels AVG. Levels
Designated Facility (Transport to): *(name & address)* TPS Technologies Inc. 2800 - 104th Street Court South Lakewood, WA 98444-6766 USA	Facility Phone #: (253)584-8430 Person to Contact: Renee Avelino FAX#: (253)584-8309	Facility Permit Numbers
Transporter Name and Mailing Address: JLA CONSTRUCTION 17404 MERIDIAN EAST SUITE #F121 PUYALLUP, WA 98375 USA	Transporter's Phone #: (253) 531-9571 Person to Contact: SCOTT TALERICO FAX#: (253) 846-2563	Transporter's US EPA ID No.: Transporter's DOT No.: Customer Account Number with TPS: JJLACON

Description of Soil	Moisture Content	Contaminated by:	Approx. Qty:	Description of Delivery	Gross Weight	Tare Weight	Net Weight
Sand ☐ Organic ☐ Clay ☐ Other ☐	0 - 10% ☐ 10 - 20% ☐ 20% - over ☐	Gas ☐ Diesel ☐ Other ☐			91120	37280	53840
Sand ☐ Organic ☐ Clay ☐ Other ☐	0 - 10% ☐ 10 - 20% ☐ 20% - over ☐	Gas ☐ Diesel ☐ Other ☐		NET TONS=	26.92		

List any exception to items listed above:

Generator's and/or consultant's certification: I/We certify that the soil referenced herein is taken entirely from those soils described in the Soil Data Sheet completed and certified by me/us for the Generation Site shown above and nothing has been added or done to such soil that would alter it in any way.

Print or Type Name:	Generator ☐	Consultant ☐	Signature and date:	Month	Day	Year
->						

Transporter

Transporter's certification: I/We acknowledge receipt of the soil described above and certify that such soil is being delivered in exactly the same condition as when received. I/We further certify that this soil is being directly transported from the Generation Site to the Designated Facility without off-loading, adding to, subtracting from or in any way delaying delivery to such site.

Print or Type Name:	Signature and date:	Month	Day	Year
[illegible]	[signature]	9	3	98

Recycling Facility

Discrepancies:

Recycling Facility certifies the receipt of the soil covered by this manifest except as noted above:

Print or Type Name:	Signature and date:
RENEE AVELINO - CSM	[signature] 9/3/98

Woodworth & Company, Inc.

GENERAL CONTRACTORS

1200 East D Street / Tacoma, Washington 98421
Telephone (253) 383-3585

LAKEVIEW PIT TICKET

Contractors Lic. # WOODW 377NO

Ticket # 362702
Wmaster REBECCA

CAUTION: HOT ASPHALT WILL BURN YOU!

RECEIVED * J.R. OWINGS

CUSTOMER:
T.P.S.
81384

PURCHASE ORDER:
T.P.S.

	JOB LOAD	JOB TONS
TOTAL		
DAILY	8	231.42

DATE	PLANT	SILO #	JOB	PLANT	TRUCK	SEQUENCE	REFERENCE
09/03/98							
TIME 1:48	1		-62-		0791T		

MIXTURE	GROSS	TARE	NET WT. TONS	PRICE	TOTAL
200 CONT. SOIL	89300	37280	26.01		

SPECIAL INSTRUCTIONS

52020 Net LB 2

Net Metric Tons
23.60

TAX %
PAY THIS AMOUNT

PIT B160

CUBIC YDS

REMARKS

X

SCALE OPERATOR

VISA MasterCard

Manifest

TPS Technologies Soil Recycling
Non-Hazardous Soils

↓ Manifest # ↓

Date of Shipment:	Responsible for Payment:	Transporter Truck #:	Facility #:	Given by TPS:	Load #
	Generator		A03	01963	009

Generator and/or Consultant

Generator's Name and Billing Address:	Generator's Phone #:	Generator's US EPA ID No.
PUGET SOUND ENERGY P.O. BOX 97034, MER-04 BELLEVUE, WA 98009-9734 USA	(206) 224-2102	
	Person to Contact: BARRY LOMBARD	
	FAX#: (206) 224-2317	Customer Account Number with TPS: 1002414
Consultant's Name and Billing Address:	**Consultant's Phone #:**	
GEO ENGINEERS, INC PLAZA 600 BLDG. 600 STEWART STREET, SUITE 1215 SEATTLE, WA 98101 USA	(206) 728-2674	
	Person to Contact: STEVE WOODWARD	
	FAX#: (206) 728-2732	Customer Account Number with TPS: 3GEOEIN
Generation Site (Transport from): *(name & address)*	**Site Phone #:**	BTEX Levels
GRADY WAY SITE 915 SOUTH GRADY WAY SEATTLE, WA 00000 USA	(253) 735-6625	
	Person to Contact: KEN WEAVER	TPH Levels
	FAX#: ( ) -	AVG. Levels
Designated Facility (Transport to): *(name & address)*	**Facility Phone #:**	Facility Permit Numbers
TPS Technologies Inc. 2800 - 104th Street Court South Lakewood, WA 98444-6766 USA	(253)584-8430	
	Person to Contact: Renee Avelino	
	FAX#: (253)584-8309	
Transporter Name and Mailing Address:	**Transporter's Phone #:**	Transporter's US EPA ID No.:
JLA CONSTRUCTION 17404 MERIDIAN EAST SUITE #F121 PUYALLUP, WA 98375 USA	(253) 531-9571	
	Person to Contact: SCOTT TALERICO	Transporter's DOT No.:
	FAX#: (253) 846-2563	Customer Account Number with TPS: 3JLACON

Description of Soil	Moisture Content	Contaminated by:	Approx. Qty:	Description of Delivery	Gross Weight	Tare Weight	Net Weight
Sand ☐ Organic ☐ Clay ☐ Other ☐	0 - 10% ☐ 10 - 20% ☐ 20% - over ☐	Gas ☐ Diesel ☐ Other ☐			89300	37280	52020
Sand ☐ Organic ☐ Clay ☐ Other ☐	0 - 10% ☐ 10 - 20% ☐ 20% - over ☐	Gas ☐ Diesel ☐ Other ☐		NET TONS=	26.01		

List any exception to items listed above:

Generator's and/or consultant's certification: I/We certify that the soil referenced herein is taken entirely from those soils described in the Soil Data Sheet completed and certified by me/us for the Generation Site shown above and nothing has been added or done to such soil that would alter it in any way.

Print or Type Name: Generator ☐ Consultant ☐	Signature and date:	Month	Day	Year
->				

Transporter

Transporter's certification: I/We acknowledge receipt of the soil described above and certify that such soil is being delivered in exactly the same condition as when received. I/We further certify that this soil is being directly transported from the Generation Site to the Designated Facility without off-loading, adding to, subtracting from or in any way delaying delivery to such site.

Print or Type Name:	Signature and date:	Month	Day	Year
A. Owings	A. O	9	3	98

Recycling Facility

Discrepancies:

Recycling Facility certifies the receipt of the soil covered by this manifest except as noted above:

Print or Type Name:	Signature and date:
RENEE AVELINO - CSM	C. Avelino 9/3/98

Please print or type.

Woodworth & Company, Inc.

GENERAL CONTRACTORS

1200 East D Street / Tacoma, Washington 98421
Telephone (253) 383-3585

LAKEVIEW PIT TICKET

Contractors Lic. # WOODW 377NO

Ticket # 362687
Wmaster REBECCA

CAUTION: HOT ASPHALT WILL BURN YOU!

RECEIVED * JACK

CUSTOMER: T.P.S.
81384

PURCHASE ORDER: T.P.S.

	JOB LOAD	JOB TONS
TOTAL		
DAILY	7	205.41

DATE	PLANT	SILO #	JOB	PLANT	TRUCK	SEQUENCE	REFERENCE
09/03/98							
TIME 1:15			162-		0046T		

MIXTURE	GROSS	TARE	NET WT. TONS	PRICE	TOTAL
200 CONT. SOIL	80040	37880	21.08		

SPECIAL INSTRUCTIONS

42160 Net LB 2

Net Metric Tons
19.12

TAX %
PAY THIS AMOUNT

PIT B160

CUBIC YDS

REMARKS

X

SCALE OPERATOR

VISA MasterCard

Manifest

TPS Technologies Soil Recycling
Non-Hazardous Soils

↓ Manifest # ↓

Date of Shipment:	Responsible for Payment:	Transporter Truck #:	Facility #:	Given by TPS:	Load #
	Generator		A03	01963	008

Generator and/or Consultant

Generator's Name and Billing Address:	Generator's Phone #:	Generator's US EPA ID No.
PUGET SOUND ENERGY P.O. BOX 97034, MER-04 BELLEVUE, WA 98009-9734 USA	(206) 224-2102 Person to Contact: BARRY LOMBARD FAX#: (206) 224-2317	Customer Account Number with TPS: 1002414
Consultant's Name and Billing Address:	**Consultant's Phone #:**	
GEO ENGINEERS, INC PLAZA 600 BLDG. 600 STEWART STREET, SUITE 1215 SEATTLE, WA 98101 USA	(206) 728-2674 Person to Contact: STEVE WOODWARD FAX#: (206) 728-2732	Customer Account Number with TPS: 3GEOEIN
Generation Site (Transport from): *(name & address)*	**Site Phone #:**	BTEX Levels
GRADY WAY SITE 915 SOUTH GRADY WAY SEATTLE, WA 00000 USA	(253) 735-6625 Person to Contact: KEN WEAVER FAX#: ( ) -	TPH Levels AVG. Levels
Designated Facility (Transport to): *(name & address)*	**Facility Phone #:**	Facility Permit Numbers
TPS Technologies Inc. 2800 - 104th Street Court South Lakewood, WA 98444-6766 USA	(253)584-8430 Person to Contact: Renee Avelino FAX#: (253)584-8309	
Transporter Name and Mailing Address:	**Transporter's Phone #:**	Transporter's US EPA ID No.:
JLA CONSTRUCTION 17404 MERIDIAN EAST SUITE #F121 PUYALLUP, WA 98375 USA	(253) 531-9571 Person to Contact: SCOTT TALERICO FAX#: (253) 846-2563	Transporter's DOT No.: Customer Account Number with TPS: 3JLACON

Description of Soil	Moisture Content	Contaminated by:	Approx. Qty:	Description of Delivery	Gross Weight	Tare Weight	Net Weight
Sand ☐ Organic ☐ Clay ☐ Other ☐	0 - 10% ☐ 10 - 20% ☐ 20% - over ☐	Gas ☐ Diesel ☐ Other ☐			80040	37880	42160
Sand ☐ Organic ☐ Clay ☐ Other ☐	0 - 10% ☐ 10 - 20% ☐ 20% - over ☐	Gas ☐ Diesel ☐ Other ☐		NET TONS=	21.08		

List any exception to items listed above:

Generator's and/or consultant's certification: I/We certify that the soil referenced herein is taken entirely from those soils described in the Soil Data Sheet completed and certified by me/us for the Generation Site shown above and nothing has been added or done to such soil that would alter it in any way.

Print or Type Name: Generator ☐ Consultant ☐	Signature and date:	Month	Day	Year
->				

Transporter

Transporter's certification: I/We acknowledge receipt of the soil described above and certify that such soil is being delivered in exactly the same condition as when received. I/We further certify that this soil is being directly transported from the Generation Site to the Designated Facility without off-loading, adding to, subtracting from or in any way delaying delivery to such site.

Print or Type Name:	Signature and date:	Month	Day	Year
JOHN DECK		9	3	98

Recycling Facility

Discrepancies:

Recycling Facility certifies the receipt of the soil covered by this manifest except as noted above:

Print or Type Name:	Signature and date:
RENEE AVELINO - CSM	9/3/98

Please print or type

Woodworth & Company, Inc.

GENERAL CONTRACTORS

1200 East D Street / Tacoma, Washington 98421
Telephone (253) 383-3585

LAKEVIEW PIT TICKET

Contractors Lic. # WOODW 377NO

Ticket # 362680
Wmaster REBECCA

CAUTION: HOT ASPHALT WILL BURN YOU!

PHIL RICE
RECEIVED *

CUSTOMER:
T.P.S.
81384

PURCHASE ORDER:
T.P.S.

	JOB LOAD	JOB TONS
TOTAL		
DAILY	6	184.33

DATE	PLANT	SILO #	JOB	PLANT	TRUCK	SEQUENCE	REFERENCE
09/03/98			62-		1826T		
TIME 1:01							

MIXTURE	GROSS	TARE	NET WT. TONS	PRICE	TOTAL
200 CONT. SOIL	92960	38980	26.99		

SPECIAL INSTRUCTIONS

53980 Net LB 2

Net Metric Tons
24.48

TAX %
PAY THIS AMOUNT

PIT B160

CUBIC YDS

REMARKS

X

SCALE OPERATOR

VISA MasterCard

Manifest

TPS Technologies Soil Recycling

Non-Hazardous Soils

↓ Manifest # ↓

Date of Shipment:	Responsible for Payment:	Transporter Truck #:	Facility #:	Given by TPS:	Load #
	Generator		A03	01963	007

Generator's Name and Billing Address: PUGET SOUND ENERGY P.O. BOX 97034, MER-04 BELLEVUE, WA 98009-9734 USA	Generator's Phone #: (206) 224-2102 Person to Contact: BARRY LOMBARD FAX#: (206) 224-2317	Generator's US EPA ID No.: Customer Account Number with TPS: 1002414
Consultant's Name and Billing Address: GEO ENGINEERS, INC PLAZA 600 BLDG. 600 STEWART STREET, SUITE 1215 SEATTLE, WA 98101 USA	Consultant's Phone #: (206) 728-2674 Person to Contact: STEVE WOODWARD FAX#: (206) 728-2732	Customer Account Number with TPS: 3GEOEIN
Generation Site (Transport from): (name & address) GRADY WAY SITE 915 SOUTH GRADY WAY SEATTLE, WA 00000 USA	Site Phone #: (253) 735-6625 Person to Contact: KEN WEAVER FAX#: ( ) -	BTEX Levels TPH Levels AVG. Levels
Designated Facility (Transport to): (name & address) TPS Technologies Inc. 2800 - 104th Street Court South Lakewood, WA 98444-6766 USA	Facility Phone #: (253)584-8430 Person to Contact: Renee Avelino FAX#: (253)584-8309	Facility Permit Numbers
Transporter Name and Mailing Address: JLA CONSTRUCTION 17404 MERIDIAN EAST SUITE #F121 PUYALLUP, WA 98375 USA	Transporter's Phone #: (253) 531-9571 Person to Contact: SCOTT TALERICO FAX#: (253) 846-2563	Transporter's US EPA ID No.: Transporter's DOT No.: Customer Account Number with TPS: 3JLACON

Description of Soil	Moisture Content	Contaminated by:	Approx. Qty:	Description of Delivery	Gross Weight	Tare Weight	Net Weight
Sand ☐ Organic ☐ Clay ☐ Other ☐	0 - 10% ☐ 10 - 20% ☐ 20% - over ☐	Gas ☐ Diesel ☐ Other ☐			92960	38980	53980
Sand ☐ Organic ☐ Clay ☐ Other ☐	0 - 10% ☐ 10 - 20% ☐ 20% - over ☐	Gas ☐ Diesel ☐ Other ☐		NET TONS=	26.99		

List any exception to items listed above:

Generator's and/or consultant's certification: I/We certify that the soil referenced herein is taken entirely from those soils described in the Soil Data Sheet completed and certified by me/us for the Generation Site shown above and nothing has been added or done to such soil that would alter it in any way.

Print or Type Name: -> Generator ☐ Consultant ☐ Signature and date: Month Day Year

Generator and/or Consultant

Transporter's certification: I/We acknowledge receipt of the soil described above and certify that such soil is being delivered in exactly the same condition as when received. I/We further certify that this soil is being directly transported from the Generation Site to the Designated Facility without off-loading, adding to, subtracting from or in any way delaying delivery to such site.

Print or Type Name: Phil Rice Signature and date: Phil Rice Month 9 Day 3 Year 98

Transporter

Discrepancies:

Recycling Facility certifies the receipt of the soil covered by this manifest except as noted above:

Print or Type Name: RENEE AVELINO - CSM Signature and date: C. Goffe 9/3/98

Recycling Facility

Woodworth & Company, Inc.

GENERAL CONTRACTORS

1200 East D Street / Tacoma, Washington 98421
Telephone (253) 383-3585

LAKEVIEW PIT TICKET

Contractors Lic. # WOODW 377NO

Ticket # 362660
Wmaster REBECCA

CAUTION: HOT ASPHALT WILL BURN YOU!

J.R. OWINGS
RECEIVED *

CUSTOMER: T.P.S.
81384

PURCHASE ORDER: T.P.S.

	JOB LOAD	JOB TONS
TOTAL		
DAILY	5	157.34

DATE	PLANT	SILO #	JOB	PLANT	TRUCK	SEQUENCE	REFERENCE
09/03/98							
TIME 11:54			62-		0791T		

MIXTURE	GROSS	TARE	NET WT. TONS	PRICE	TOTAL
200 CONT. SOIL	94440	37280	28.58		

SPECIAL INSTRUCTIONS

57160 Net LB 2

Net Metric Tons
25.93

TAX %
PAY THIS AMOUNT

PIT B160

CUBIC YDS

REMARKS

X

SCALE OPERATOR

VISA MasterCard

Manifest

TPS Technologies Soil Recycling
Non-Hazardous Soils

Manifest #:

Date of Shipment:	Responsible for Payment:	Transporter Truck #:	Facility #:	Given by TPS:	Load #
5	Generator		A03	01963	006

Generator and/or Consultant

Generator's Name and Billing Address:	Generator's Phone #:	Generator's US EPA ID No.
PUGET SOUND ENERGY P.O. BOX 97034, MER-04 BELLEVUE, WA 98009-9734 USA	(206) 224-2102 Person to Contact: BARRY LOMBARD FAX#: (206) 224-2317	Customer Account Number with TPS: 1002414
Consultant's Name and Billing Address:	**Consultant's Phone #:**	
GEO ENGINEERS, INC PLAZA 600 BLDG. 600 STEWART STREET, SUITE 1215 SEATTLE, WA 98101 USA	(206) 728-2674 Person to Contact: STEVE WOODWARD FAX#: (206) 728-2732	Customer Account Number with TPS: 3GEOEIN
Generation Site (Transport from): *(name & address)*	**Site Phone #:**	BTEX Levels
GRADY WAY SITE 915 SOUTH GRADY WAY SEATTLE, WA 00000 USA	(253) 735-6625 Person to Contact: KEN WEAVER FAX#: ( ) -	TPH Levels AVG. Levels
Designated Facility (Transport to): *(name & address)*	**Facility Phone #:**	Facility Permit Numbers
TPS Technologies Inc. 2800 - 104th Street Court South Lakewood, WA 98444-6766 USA	(253)584-8430 Person to Contact: Renee Avelino FAX#: (253)584-8309	
Transporter Name and Mailing Address:	**Transporter's Phone #:**	Transporter's US EPA ID No.:
JLA CONSTRUCTION 17404 MERIDIAN EAST SUITE #F121 PUYALLUP, WA 98375 USA	(253) 531-9571 Person to Contact: SCOTT TALERICO FAX#: (253) 846-2563	Transporter's DOT No.: Customer Account Number with TPS: 3JLACON

Description of Soil	Moisture Content	Contaminated by:	Approx. Qty:	Description of Delivery	Gross Weight	Tare Weight	Net Weight
Sand ☐ Organic ☐ Clay ☐ Other ☐	0 - 10% ☐ 10 - 20% ☐ 20% - over ☐	Gas ☐ Diesel ☐ Other ☐			94440	37280	57160
Sand ☐ Organic ☐ Clay ☐ Other ☐	0 - 10% ☐ 10 - 20% ☐ 20% - over ☐	Gas ☐ Diesel ☐ Other ☐		NET TONS=	28.58		

List any exception to items listed above:

Generator's and/or consultant's certification: I/We certify that the soil referenced herein is taken entirely from those soils described in the Soil Data Sheet completed and certified by me/us for the Generation Site shown above and nothing has been added or done to such soil that would alter it in any way.

Print or Type Name:	Generator ☐ Consultant ☐	Signature and date:	Month	Day	Year

Transporter

Transporter's certification: I/We acknowledge receipt of the soil described above and certify that such soil is being delivered in exactly the same condition as when received. I/We further certify that this soil is being directly transported from the Generation Site to the Designated Facility without off-loading, adding to, subtracting from or in any way delaying delivery to such site.

Print or Type Name:	Signature and date:	Month	Day	Year
[illegible]		9	3	98

Discrepancies:

Recycling Facility

Recycling Facility certifies the receipt of the soil covered by this manifest except as noted above:

Print or Type Name:	Signature and date:
RENEE AVELINO - CSM	9/3/98

Please print or type.

Woodworth & Company, Inc.

GENERAL CONTRACTORS

1200 East D Street / Tacoma, Washington 98421
Telephone (253) 383-3585

LAKEVIEW PIT TICKET

Contractors Lic. # WOODW 377NO

Ticket # 362655
Wmaster REBECCA

CAUTION: HOT ASPHALT WILL BURN YOU!

RECEIVED JACK *

CUSTOMER:
T.P.S.
81384

PURCHASE ORDER:
T.P.S.

	JOB LOAD	JOB TONS
TOTAL		
DAILY	4	128.76

DATE	PLANT	SILO #	JOB	PLANT	TRUCK	SEQUENCE	REFERENCE
09/03/98							
TIME 11:30			62-		0046T		

MIXTURE	GROSS	TARE	NET WT. TONS	PRICE	TOTAL
200 CONT. SOIL	94000	37880	28.06		

SPECIAL INSTRUCTIONS

56120 Net LB 2

Net Metric Tons
25.46

TAX %
PAY THIS AMOUNT

PIT B160

REMARKS

CUBIC YDS

X

SCALE OPERATOR

VISA MasterCard

Manifest

TPS Technologies Soil Recycling
Non-Hazardous Soils

↓ Manifest # ↓

*Date of Shipment:	Responsible for Payment:	Transporter Truck #:	Facility #:	Given by TPS:	Load #
	Generator .		A03	01963	005

Generator and/or Consultant

Generator's Name and Billing Address:	Generator's Phone #:	Generator's US EPA ID No.
PUGET SOUND ENERGY P.O. BOX 97034, MER-04 BELLEVUE, WA 98009-9734 USA	(206) 224-2102 Person to Contact: BARRY LOMBARD FAX#: (206) 224-2317	Customer Account Number with TPS: 1002414
Consultant's Name and Billing Address:	**Consultant's Phone #:**	
GEO ENGINEERS, INC PLAZA 600 BLDG. 600 STEWART STREET, SUITE 1215 SEATTLE, WA 98101 USA	(206) 728-2674 Person to Contact: STEVE WOODWARD FAX#: (206) 728-2732	Customer Account Number with TPS: 3GEOEIN
Generation Site (Transport from): *(name & address)*	**Site Phone #:**	BTEX Levels
GRADY WAY SITE 915 SOUTH GRADY WAY SEATTLE, WA 00000 USA	(253) 735-6625 Person to Contact: KEN WEAVER FAX#: ( ) -	TPH Levels AVG. Levels
Designated Facility (Transport to): *(name & address)*	**Facility Phone #:**	Facility Permit Numbers
TPS Technologies Inc. 2800 - 104th Street Court South Lakewood, WA 98444-6766 USA	(253)584-8430 Person to Contact: Renee Avelino FAX#: (253)584-8309	
Transporter Name and Mailing Address:	**Transporter's Phone #:**	Transporter's US EPA ID No.:
JLA CONSTRUCTION 17404 MERIDIAN EAST SUITE #F121 PUYALLUP, WA 98375 USA	(253) 531-9571 Person to Contact: SCOTT TALERICO FAX#: (253) 846-2563	Transporter's DOT No.: Customer Account Number with TPS: 3JLACON

Description of Soil	Moisture Content	Contaminated by:	Approx. Qty:	Description of Delivery	Gross Weight	Tare Weight	Net Weight
Sand ☐ Organic ☐ Clay ☐ Other ☐	0 - 10% ☐ 10 - 20% ☐ 20% - over ☐	Gas ☐ Diesel ☐ Other ☐			94000	37880	56120
Sand ☐ Organic ☐ Clay ☐ Other ☐	0 - 10% ☐ 10 - 20% ☐ 20% - over ☐	Gas ☐ Diesel ☐ Other ☐		NET TONS=	28.06		

List any exception to items listed above:

Generator's and/or consultant's certification: I/We certify that the soil referenced herein is taken entirely from those soils described in the Soil Data Sheet completed and certified by me/us for the Generation Site shown above and nothing has been added or done to such soil that would alter it in any way.

Print or Type Name: Generator ☐ Consultant ☐	Signature and date:	Month	Day	Year
->				

Transporter

Transporter's certification: I/We acknowledge receipt of the soil described above and certify that such soil is being delivered in exactly the same condition as when received. I/We further certify that this soil is being directly transported from the Generation Site to the Designated Facility without off-loading, adding to, subtracting from or in any way delaying delivery to such site.

Print or Type Name:	Signature and date:	Month	Day	Year
TIM York		9	3	98

Discrepancies:

Recycling Facility

Recycling Facility certifies the receipt of the soil covered by this manifest except as noted above:

Print or Type Name:	Signature and date:
RENEE AVELINO - CSM	9/3/98

Please print or type

Woodworth & Company, Inc.

GENERAL CONTRACTORS

1200 East D Street / Tacoma, Washington 98421
Telephone (253) 383-3585

LAKEVIEW PIT TICKET

Contractors Lic. # WOODW 377NO

Ticket # 362645
Wmaster REBECCA

CAUTION: HOT ASPHALT WILL BURN YOU!

RECEIVED PHIL RICE *

CUSTOMER: T.P.S. 81384

PURCHASE ORDER: T.P.S.

	JOB LOAD	JOB TONS
TOTAL		
DAILY	3	100.70

DATE	PLANT	SILO #	JOB	PLANT	TRUCK	SEQUENCE	REFERENCE
09/03/98							
TIME 11:13			62-		1826T		

MIXTURE	GROSS	TARE	NET WT. TONS	PRICE	TOTAL
200 CONT. SOIL	96800	38980	28.91		

SPECIAL INSTRUCTIONS

57820 Net LB 2

Net Metric Tons
26.23

TAX %
PAY THIS AMOUNT

PIT B160

CUBIC YDS

REMARKS

X

SCALE OPERATOR

VISA MasterCard

Manifest

TPS Technologies Soil Recycling
Non-Hazardous Soils

↓ Manifest # ↓

Date of Shipment:	Responsible for Payment:	Transporter Truck #:	Facility #:	Given by TPS:	Load #
	Generator		A03	01963	004

Generator and/or Consultant

Generator's Name and Billing Address:	Generator's Phone #:	Generator's US EPA ID No.
PUGET SOUND ENERGY P.O. BOX 97034, MER-04 BELLEVUE, WA 98009-9734 USA	(206) 224-2102 Person to Contact: BARRY LOMBARD FAX#: (206) 224-2317	Customer Account Number with TPS: 1002414
Consultant's Name and Billing Address:	**Consultant's Phone #:**	
GEO ENGINEERS, INC PLAZA 600 BLDG. 600 STEWART STREET, SUITE 1215 SEATTLE, WA 98101 USA	(206) 728-2674 Person to Contact: STEVE WOODWARD FAX#: (206) 728-2732	Customer Account Number with TPS: 3GEOEIN
Generation Site (Transport from): *(name & address)*	**Site Phone #:**	**BTEX Levels**
GRADY WAY SITE 915 SOUTH GRADY WAY SEATTLE, WA 00000 USA	(253) 735-6625 Person to Contact: KEN WEAVER FAX#: ( ) -	TPH Levels AVG. Levels
Designated Facility (Transport to): *(name & address)*	**Facility Phone #:**	**Facility Permit Numbers**
TPS Technologies Inc. 2800 - 104th Street Court South Lakewood, WA 98444-6766 USA	(253)584-8430 Person to Contact: Renee Avelino FAX#: (253)584-8309	
Transporter Name and Mailing Address:	**Transporter's Phone #:**	**Transporter's US EPA ID No.:**
JLA CONSTRUCTION 17404 MERIDIAN EAST SUITE #F121 PUYALLUP, WA 98375 USA	(253) 531-9571 Person to Contact: SCOTT TALERICO FAX#: (253) 846-2563	Transporter's DOT No.: Customer Account Number with TPS: 3JLACON

Description of Soil	Moisture Content	Contaminated by:	Approx. Qty:	Description of Delivery	Gross Weight	Tare Weight	Net Weight
Sand ☐ Organic ☐ Clay ☐ Other ☐	0 - 10% ☐ 10 - 20% ☐ 20% - over ☐	Gas ☐ Diesel ☐ Other ☐			96800	38980	57820
Sand ☐ Organic ☐ Clay ☐ Other ☐	0 - 10% ☐ 10 - 20% ☐ 20% - over ☐	Gas ☐ Diesel ☐ Other ☐		NET TONS=	~~28.91~~		

List any exception to items listed above: 28.91

Generator's and/or consultant's certification: I/We certify that the soil referenced herein is taken entirely from those soils described in the Soil Data Sheet completed and certified by me/us for the Generation Site shown above and nothing has been added or done to such soil that would alter it in any way.

Print or Type Name:	Generator ☐ Consultant ☐	Signature and date:	Month	Day	Year
→ Phil Rice		Phil Rice	9	3	98

Transporter

Transporter's certification: I/We acknowledge receipt of the soil described above and certify that such soil is being delivered in exactly the same condition as when received. I/We further certify that this soil is being directly transported from the Generation Site to the Designated Facility without off-loading, adding to, subtracting from or in any way delaying delivery to such site.

Print or Type Name:	Signature and date:	Month	Day	Year

Recycling Facility

Discrepancies:

Recycling Facility certifies the receipt of the soil covered by this manifest except as noted above:

Print or Type Name:	Signature and date:
RENEE AVELINO - CSM	Renee Avelino 9/3/98

Please print or type

Woodworth & Company, Inc.

GENERAL CONTRACTORS

1200 East D Street / Tacoma, Washington 98421
Telephone (253) 383-3585

LAKEVIEW PIT TICKET

Contractors Lic. # WOODW 377NO

Ticket # 362607
Wmaster -REBECCA

CAUTION: HOT ASPHALT WILL BURN YOU!

RECEIVED * J.R. OWINGS

CUSTOMER:
T.P.S.
81384

PURCHASE ORDER:
T.P.S.

	JOB LOAD	JOB TONS
TOTAL		
DAILY	2	71.79

DATE	PLANT	SILO #	JOB	PLANT	TRUCK	SEQUENCE	REFERENCE
09/03/98							
TIME 9:58			62-	1	0791T		

MIXTURE	GROSS	TARE	NET WT. TONS	PRICE	TOTAL
200 CONT. SOIL	116720	37280	39.72		

SPECIAL INSTRUCTIONS

79440 Net LB 2

Net Metric Tons
36.03

TAX %
PAY THIS AMOUNT

PIT B160

CUBIC YDS

REMARKS

X

SCALE OPERATOR

VISA MasterCard

Manifest

TPS Technologies Soil Recycling
Non-Hazardous Soils

↓ Manifest # ↓

Date of Shipment:	Responsible for Payment:	Transporter Truck #:	Facility #:	Given by TPS:	Load #
	Generator		A03	01963	003

Generator and/or Consultant

Generator's Name and Billing Address:	Generator's Phone #:	Generator's US EPA ID No.
PUGET SOUND ENERGY P.O. BOX 97034, MER-04 BELLEVUE, WA 98009-9734 USA	(206) 224-2102 Person to Contact: BARRY LOMBARD FAX#: (206) 224-2317	Customer Account Number with TPS: 1002414
Consultant's Name and Billing Address:	**Consultant's Phone #:**	
GEO ENGINEERS, INC PLAZA 600 BLDG. 600 STEWART STREET, SUITE 1215 SEATTLE, WA 98101 USA	(206) 728-2674 Person to Contact: STEVE WOODWARD FAX#: (206) 728-2732	Customer Account Number with TPS: 3GEOEIN
Generation Site (Transport from): *(name & address)*	**Site Phone #:**	BTEX Levels
GRADY WAY SITE 915 SOUTH GRADY WAY SEATTLE, WA 00000 USA	(253) 735-6625 Person to Contact: KEN WEAVER FAX#: ( ) -	TPH Levels AVG. Levels
Designated Facility (Transport to): *(name & address)*	**Facility Phone #:**	Facility Permit Numbers
TPS Technologies Inc. 2800 - 104th Street Court South Lakewood, WA 98444-6766 USA	(253)584-8430 Person to Contact: Renee Avelino FAX#: (253)584-8309	
Transporter Name and Mailing Address:	**Transporter's Phone #:**	Transporter's US EPA ID No.:
JLA CONSTRUCTION 17404 MERIDIAN EAST SUITE #F121 PUYALLUP, WA 98375 USA	(253) 531-9571 Person to Contact: SCOTT TALERICO FAX#: (253) 846-2563	Transporter's DOT No.: Customer Account Number with TPS: 3JLACON

Description of Soil	Moisture Content	Contaminated by:	Approx. Qty:	Description of Delivery	Gross Weight	Tare Weight	Net Weight
Sand ☐ Organic ☐ Clay ☐ Other ☐	0 - 10% ☐ 10 - 20% ☐ 20% - over ☐	Gas ☐ Diesel ☐ Other ☐			116720	37280	79440
Sand ☐ Organic ☐ Clay ☐ Other ☐	0 - 10% ☐ 10 - 20% ☐ 20% - over ☐	Gas ☐ Diesel ☐ Other ☐		NET TONS=	3972		

List any exception to items listed above:

Generator's and/or consultant's certification: I/We certify that the soil referenced herein is taken entirely from those soils described in the Soil Data Sheet completed and certified by me/us for the Generation Site shown above and nothing has been added or done to such soil that would alter it in any way.

Print or Type Name: Generator ☐ Consultant ☐ —>

Signature and date: Month | Day | Year

Transporter

Transporter's certification: I/We acknowledge receipt of the soil described above and certify that such soil is being delivered in exactly the same condition as when received. I/We further certify that this soil is being directly transported from the Generation Site to the Designated Facility without off-loading, adding to, subtracting from or in any way delaying delivery to such site.

Print or Type Name: D. Owings

Signature and date: Month 9 | Day 3 | Year 98

Recycling Facility

Discrepancies:

Recycling Facility certifies the receipt of the soil covered by this manifest except as noted above:

Print or Type Name: RENEE AVELINO - CSM

Signature and date: Tiffany Cornell 9/3/98

Please print or type.

Woodworth & Company, Inc.

GENERAL CONTRACTORS

1200 East D Street / Tacoma, Washington 98421
Telephone (253) 383-3585

LAKEVIEW PIT TICKET

Contractors Lic. # WOODW 377NO

Ticket # 362597
Wmaster REBECCA

CAUTION: HOT ASPHALT WILL BURN YOU!

RECEIVED * JACK

CUSTOMER: LAKERIDGE PAVING
44300

PURCHASE ORDER:

	JOB LOAD	JOB TONS
TOTAL		
DAILY	2	49.64

DATE	PLANT	SILO #	JOB	PLANT	TRUCK	SEQUENCE	REFERENCE
09/03/98							
TIME 9:39			44300-		0046T		

MIXTURE	GROSS	TARE	NET WT. TONS	PRICE	TOTAL
176 3/4"-0" MOD. ASP./CONC. MIX	94240	37880	28.18		

SPECIAL INSTRUCTIONS

56360 Net LB 2

Net Metric Tons
25.56

TAX %
PAY THIS AMOUNT

PIT B160

CUBIC YDS

REMARKS

X

SCALE OPERATOR

Manifest

TPS Technologies Soil Recycling
Non-Hazardous Soils

↓ Manifest # ↓

Date of Shipment:	Responsible for Payment:	Transporter Truck #:	Facility #:	Given by TPS:	Load #
	Generator		A03	01963	002

Generator and/or Consultant

Generator's Name and Billing Address:
PUGET SOUND ENERGY
P.O. BOX 97034, MER-04
BELLEVUE, WA 98009-9734 USA

Generator's Phone #: (206) 224-2102
Person to Contact: BARRY LOMBARD
FAX#: (206) 224-2317
Generator's US EPA ID No.:
Customer Account Number with TPS: 1002414

Consultant's Name and Billing Address:
GEO ENGINEERS, INC
PLAZA 600 BLDG.
600 STEWART STREET, SUITE 1215
SEATTLE, WA 98101 USA

Consultant's Phone #: (206) 728-2674
Person to Contact: STEVE WOODWARD
FAX#: (206) 728-2732
Customer Account Number with TPS: 3GEOEIN

Generation Site (Transport from): *(name & address)*
GRADY WAY SITE
915 SOUTH GRADY WAY
SEATTLE, WA 00000 USA

Site Phone #: (253) 735-6625
Person to Contact: KEN WEAVER
FAX#: ( ) -
BTEX Levels
TPH Levels
AVG. Levels

Designated Facility (Transport to): *(name & address)*
TPS Technologies Inc.
2800 - 104th Street Court South
Lakewood, WA 98444-6766 USA

Facility Phone #: (253)584-8430
Person to Contact: Renee Avelino
FAX#: (253)584-8309
Facility Permit Numbers:

Transporter Name and Mailing Address:
JLA CONSTRUCTION
17404 MERIDIAN EAST
SUITE #F121
PUYALLUP, WA 98375 USA

Transporter's Phone #: (253) 531-9571
Person to Contact: SCOTT TALERICO
FAX#: (253) 846-2563
Transporter's US EPA ID No.:
Transporter's DOT No.:
Customer Account Number with TPS: 3JLACON

Description of Soil	Moisture Content	Contaminated by:	Approx. Qty:	Description of Delivery	Gross Weight	Tare Weight	Net Weight
Sand ☐ Organic ☐ Clay ☐ Other ☐	0 - 10% ☐ 10 - 20% ☐ 20% - over ☐	Gas ☐ Diesel ☐ Other ☐			94240	37880	56360
Sand ☐ Organic ☐ Clay ☐ Other ☐	0 - 10% ☐ 10 - 20% ☐ 20% - over ☐	Gas ☐ Diesel ☐ Other ☐		NET TONS=	28.18		

List any exception to items listed above:

Generator's and/or consultant's certification: I/We certify that the soil referenced herein is taken entirely from those soils described in the Soil Data Sheet completed and certified by me/us for the Generation Site shown above and nothing has been added or done to such soil that would alter it in any way.

Print or Type Name: -> Generator ☐ Consultant ☐
Signature and date: Month Day Year

Transporter

Transporter's certification: I/We acknowledge receipt of the soil described above and certify that such soil is being delivered in exactly the same condition as when received. I/We further certify that this soil is being directly transported from the Generation Site to the Designated Facility without off-loading, adding to, subtracting from or in any way delaying delivery to such site.

Print or Type Name: JEFF E BECK
Signature and date: Month 9 Day 3 Year 98

Recycling Facility

Discrepancies:

Recycling Facility certifies the receipt of the soil covered by this manifest except as noted above:

Print or Type Name: RENEE AVELINO - CSM
Signature and date: 9/3/98

Please print or type

Woodworth & Company, Inc.

GENERAL CONTRACTORS

1200 East D Street / Tacoma, Washington 98421
Telephone (253) 383-3585

LAKEVIEW PIT TICKET

Contractors Lic. # WOODW 377NO

Ticket # 362591
Wmaster REBECCA

CAUTION: HOT ASPHALT WILL BURN YOU!

PHIL RICE

RECEIVED *

CUSTOMER: T.P.S. 81384

PURCHASE ORDER: T.P.S.

	JOB LOAD	JOB TONS
TOTAL		
DAILY	1	32.07

DATE	PLANT	SILO #	JOB	PLANT	TRUCK	SEQUENCE	REFERENCE
09/03/98							
TIME 9:29			62-		1826T		

MIXTURE	GROSS	TARE	NET WT. TONS	PRICE	TOTAL
200 CONT. SOIL	103120	38980	32.07		

SPECIAL INSTRUCTIONS

64140 Net LB 2

Net Metric Tons
29.09

TAX %
PAY THIS AMOUNT

PIT B160

CUBIC YDS

REMARKS

X

SCALE OPERATOR

VISA MasterCard

Manifest

TPS Technologies Soil Recycling
Non-Hazardous Soils

↓ Manifest # ↓

Date of Shipment:	Responsible for Payment:	Transporter Truck #:	Facility #:	Given by TPS:	Load #
	Generator		A03	01963	001

Generator and/or Consultant

Generator's Name and Billing Address:	Generator's Phone #:	Generator's US EPA ID No.
PUGET SOUND ENERGY P.O. BOX 97034, MER-04 BELLEVUE, WA 98009-9734 USA	(206) 224-2102 Person to Contact: BARRY LOMBARD FAX#: (206) 224-2317	Customer Account Number with TPS: 1002414
Consultant's Name and Billing Address:	**Consultant's Phone #:**	
GEO ENGINEERS, INC PLAZA 600 BLDG. 600 STEWART STREET, SUITE 1215 SEATTLE, WA 98101 USA	(206) 728-2674 Person to Contact: STEVE WOODWARD FAX#: (206) 728-2732	Customer Account Number with TPS: 3GEOEIN
Generation Site (Transport from): *(name & address)*	**Site Phone #:**	BTEX Levels
GRADY WAY SITE 915 SOUTH GRADY WAY SEATTLE, WA 00000 USA	(253) 735-6625 Person to Contact: KEN WEAVER FAX#: ( ) -	TPH Levels AVG. Levels
Designated Facility (Transport to): *(name & address)*	**Facility Phone #:**	Facility Permit Numbers
TPS Technologies Inc. 2800 - 104th Street Court South Lakewood, WA 98444-6766 USA	(253)584-8430 Person to Contact: Renee Avelino FAX#: (253)584-8309	
Transporter Name and Mailing Address:	**Transporter's Phone #:**	Transporter's US EPA ID No.:
JLA CONSTRUCTION 17404 MERIDIAN EAST SUITE #F121 PUYALLUP, WA 98375 USA	(253) 531-9571 Person to Contact: SCOTT TALERICO FAX#: (253) 846-2563	Transporter's DOT No.: Customer Account Number with TPS: 3JLACON

Description of Soil	Moisture Content	Contaminated by:	Approx. Qty:	Description of Delivery	Gross Weight	Tare Weight	Net Weight
Sand ☐ Organic ☐ Clay ☐ Other ☐	0 - 10% ☐ 10 - 20% ☐ 20% - over ☐	Gas ☐ Diesel ☐ Other ☐			103120	38980	64140
Sand ☐ Organic ☐ Clay ☐ Other ☐	0 - 10% ☐ 10 - 20% ☐ 20% - over ☐	Gas ☐ Diesel ☐ Other ☐		NET TONS=	32.07		

List any exception to items listed above:

Generator's and/or consultant's certification: I/We certify that the soil referenced herein is taken entirely from those soils described in the Soil Data Sheet completed and certified by me/us for the Generation Site shown above and nothing has been added or done to such soil that would alter it in any way.

Print or Type Name: Generator ☐ Consultant ☐	Signature and date:	Month	Day	Year
->				

Transporter

Transporter's certification: I/We acknowledge receipt of the soil described above and certify that such soil is being delivered in exactly the same condition as when received. I/We further certify that this soil is being directly transported from the Generation Site to the Designated Facility without off-loading, adding to, subtracting from or in any way delaying delivery to such site.

Print or Type Name:	Signature and date:	Month	Day	Year
Phil Rice	Phil Rice	9	3	98

Recycling Facility

Discrepancies:

Recycling Facility certifies the receipt of the soil covered by this manifest except as noted above:

Print or Type Name:	Signature and date:
RENEE AVELINO - CSM	Renee Gonella 9/3/98

Please print or type.

Customer Job Report

Gross & Tare Weight Codes: M=Manual; S=Scale; T=Trk File

Job Number Name	SiteAddress	SiteCity	State	ZipCode
A03 – 01963 GRADY WAY SITE	915 SOUTH GRADY WAY	SEATTLE	WA	00000

Load #	Date & Time Out	Transporter #	Truck & Trailer Number	Gross (lb)	Tare (lb)	Net (lb)	Net Wt (tons)
1	09/03/98 00:00	3JLACON	PHIL	103,120M	38,980M	64,140	32.07
2	09/03/98 00:00	3JLACON	DEAN	94,240M	37,880M	56,360	28.18
3	09/03/98 00:00	3JLACON	JR	116,720M	37,280M	79,440	39.72
4	09/03/98 00:00	3JLACON	PHIL	96,800M	38,980M	57,820	28.91
5	09/03/98 00:00	3JLACON	DEAN	94,000M	37,880M	56,120	28.06
6	09/03/98 00:00	3JLACON	JR	94,440M	37,280M	57,160	28.58
7	09/03/98 00:00	3JLACON	PHIL	92,960M	38,980M	53,980	26.99
8	09/03/98 00:00	3JLACON	DEAN	80,040M	37,880M	42,160	21.08
9	09/03/98 00:00	3JLACON	JR	89,300M	37,280M	52,020	26.01
10	09/03/98 00:00	3JLACON	JR	91,120M	37,280M	53,840	26.92
11	09/09/98 00:00	3JLACON	BILL	91,780M	40,720M	51,060	25.53
12	09/09/98 00:00	3JLACON	WILLIAM	92,260M	38,820M	53,440	26.72
0	09/11/98 10:04	3JLACON		0	0	0	0.00

Completed Loads	Manifests Received	Completed Weight	Estimated Weight	TOTAL Net Wt:
24.00%	12	22.60%	1,500.00 (tons)	338.77 (tons)

TPS
TECHNOLOGIES INC.

For Questions Call:
(407) 886-9570 x116 or 162
(800) 940-2666
Fax (407) 886-8300

REMIT TO: TPS TECHNOLOGIES, INC.
P.O. BOX 100103
PASADENA, CA 91189-0103

INVOICE NUMBER 002827

TPS JOB: 03-01963

SOLD TO: Puget Sound Energy.
Envl Services
815 Mercer Street MER-04S
Seattle WA 98109

REFERENCE: Grady Way Site
915 South Grady Way
Seattle, WA

Customer PO#

ACCOUNT NO.	SALESPERSON	FACILITY	TERMS	INVOICE DATE
1002414	PH	103	Net 30 Days	09/15/98

CODE	QUANTITY	DESCRIPTION	UNIT PRICE	EXTENDED PRICE
		Customer Contact: Barry Lombard		
REM	338.77	CONTAMINATED SOIL REMEDIATION	33.00	$11,179.41
TR	286.52	TRUCKING - 9/3	5.95	$1,704.79
A	4.00	TRUCKING - 9/9	75.00	$300.00

9/24/98
1/3 - 13100048
1/3 - 13100049
1/3 - 13100050

A Subsidiary of Thermo Remediation

Thank You

TOTAL: $13,184.20

OLYMPIC VIEW SANITARY Tik# 63951

A SUBSIDIARY OF WASTE MANAGEMENT
10015 SW BARNEY WHITE ROAD
PORT ORCHARD, WA 98367
PHONE# (360)674-2331
PREPARED BY: LH

PUGET SOUND ENERGY
CUSTOMER ACCT# 3301645
VEHICLE ID# FORLER 15
TIME: 15:49 DATE: 10/26/1998
MANUAL TICKET# N/A

COMMODITY: CONT/SOIL
SOURCE ID: WA - KIT -
GEN: 98094 NAME: PUGET SOUND ENERGY 98095 PROJ#:
GEN SOURCE/ADDRESS: PUGET SOUND ENERY 98094
TONS(LBS): GROSS: 32.09(64180) TARE: 2.09(4180) NET: 30.00(60000)
CUBIC YARDS: 1.0
RATE: 18.630 / TON QNTY: 30.00 PRETAX CHARGE: 558.90
XTRA CHG: PUGET SOUND @ $9.01 / TON X 30.00 = $270.30

PAYMENT METHOD: CHARGE: ACCOUNT RECE PAYMENT TOTAL: 859.05

SIGNATURE:

COMMODITIES:	$556.90
EXTRA CHARGES:	$270.30
TAXES AND FEES:	$29.85

OLYMPIC VIEW SANITARY Tik# 63910

A SUBSIDIARY OF WASTE MANAGEMENT
10015 SW BARNEY WHITE ROAD
PORT ORCHARD, WA 98367
PHONE# (360)674-2331
PREPARED BY: LH

PUGET SOUND ENERGY
CUSTOMER ACCT# 3301645
VEHICLE ID# FORLER11
TIME: 14:25 DATE: 10/26/1998
MANUAL TICKET# N/A

COMMODITY: CONT/SOIL
SOURCE ID: WA - KIT -
GEN: 98094 NAME: PUGET SOUND ENERGY 98095 PROJ#:
GEN SOURCE/ADDRESS: PUGET SOUND ENERY*98094
TONS(LBS): GROSS: 52.08(104160) TARE: 19.89(39780) NET: 32.19(64380)
CUBIC YARDS: 1.0
RATE: 18.630 / TON QNTY: 32.19 PRETAX CHARGE: 599.70
XTRA CHG: PUGET SOUND @ $9.01 / TON X 32.19 = $290.03

PAYMENT METHOD: CHARGE: ACCOUNT RECE PAYMENT TOTAL: 921.76

SIGNATURE: _____

COMMODITIES:	$599.70
EXTRA CHARGES:	$290.03
TAXES AND FEES:	$32.03
ALL CHARGES:	$921.76

OLYMPIC VIEW SANITARY Tik# 53891

A SUBSIDIARY OF WASTE MANAGEMENT
10015 SW BARNEY WHITE ROAD
PORT ORCHARD, WA 98367
PHONE# (360)674-2331
PREPARED BY: LH

PUGET SOUND ENERGY
CUSTOMER ACCT# 3301645
VEHICLE ID# FORLER13
TIME: 13:42 DATE: 10/26/1998
MANUAL TICKET# N/A

COMMODITY: CONT/SOIL
SOURCE ID: WA - KIT
GEN: 98094 NAME: PUGET SOUND ENERGY 98095 PROJ#:
GEN SOURCE/ADDRESS: PUGET SOUND ENERY 98094
TONS(LBS): GROSS: 53.19(106380) TARE: 18.75(37500) NET: 34.44(68880)
CUBIC YARDS: 1.0
RATE: 18.630 / TON QNTY: 34.44 PRETAX CHARGE: 641.62
XTRA CHG: PUGET SOUND @ $9.01 / TON X 34.44 = $310.30

PAYMENT METHOD: CHARGE: ACCOUNT RECE PAYMENT TOTAL: 986.19

SIGNATURE:

COMMODITIES:	$641.62
EXTRA CHARGES:	$310.30
TAXES AND FEES:	$34.27
ALL CHARGES:	$986.19

OLYMPIC VIEW SANITARY Tik# 438641

A SUBSIDIARY OF WASTE MANAGEMENT
10015 SW BARNEY WHITE ROAD
PORT ORCHARD, WA 98367
PHONE# (360)674-2331
PREPARED BY: LH

PUGET SOUND ENERGY
CUSTOMER ACCT# 3301645
VEHICLE ID# FORLER 15
TIME: 12:35 DATE: 10/26/1998
MANUAL TICKET# N/A

COMMODITY: CONT/SOIL
SOURCE ID: WA - KIT
GEN: 98094 NAME: PUGET SOUND ENERGY 98095 PROJ#:
GEN SOURCE/ADDRESS: PUGET SOUND ENERY 98094
TONS(LBS): GROSS: 50.41(100820) TARE: 18.72(37440) NET: 31.69(63380)
CUBIC YARDS: 1.0
RATE: 18.630 / TON QNTY: 31.69 PRETAX CHARGE: 590.38
XTRA CHG: PUGET SOUND @ $9.01 / TON X 31.69 = $285.53

PAYMENT METHOD: CHARGE: ACCOUNT RECE PAYMENT TOTAL: 907.44

SIGNATURE: _____

COMMODITIES:	$590.38
EXTRA CHARGES:	$285.53
TAXES AND FEES:	$31.53
ALL CHARGES:	$907.44

OLYMPIC VIEW SANITARY Tik# 43788

A SUBSIDIARY OF WASTE MANAGEMENT
10015 SW BARNEY WHITE ROAD
PORT ORCHARD, WA 98367
PHONE# (360)674-2331
PREPARED BY: LH

PUGET SOUND ENERGY
CUSTOMER ACCT# 3301645
VEHICLE ID# FORLER 15
TIME: 9:47 DATE: 10/26/1998
MANUAL TICKET# N/A

COMMODITY: CONT/SOIL
SOURCE ID: WA - KIT -
GEN: 98094 NAME: PUGET SOUND ENERGY 98095 PROJ#:
GEN SOURCE/ADDRESS: PUGET SOUND ENERY 98094
TONS(LBS): GROSS: 49.70(99400) TARE: 18.72(37440) NET: 30.98(61960)
CUBIC YARDS: 1.0
RATE: 18.630 / TON QNTY: 30.98 PRETAX CHARGE: 577.16
XTRA CHG: PUGET SOUND @ $9.01 / TON X 30.98 = $279.13

PAYMENT METHOD: CHARGE: ACCOUNT RECE PAYMENT TOTAL: 887.12

SIGNATURE: _____

COMMODITIES:	$577.16
EXTRA CHARGES:	$279.13
TAXES AND FEES:	$30.83
ALL CHARGES:	$887.12

OLYMPIC VIEW SANITARY Tik# 63786

A SUBSIDIARY OF WASTE MANAGEMENT
10015 SW BARNEY WHITE ROAD
PORT ORCHARD, WA 98367
PHONE# (360)674-2331
PREPARED BY: LH

PUGET SOUND ENERGY
CUSTOMER ACCT# 3301645
VEHICLE ID# FORLER 6
TIME: 9:38 DATE: 10/26/1998
MANUAL TICKET# N/A

COMMODITY: CONT/SOIL
SOURCE ID: WA - KIT -
GEN: 98094 NAME: PUGET SOUND ENERGY 98095 PROJ#:
GEN SOURCE/ADDRESS: PUGET SOUND ENERY 98094
TONS(LBS): GROSS: 51.72(103440) TARE: 18.65(37300) NET: 33.07(66140)
CUBIC YARDS: 1.0
RATE: 18.630 / TON QNTY: 33.07 PRETAX CHARGE: 616.09
XTRA CHG: PUGET SOUND @ $9.01 / TON X 33.07 = $297.96

PAYMENT METHOD: CHARGE: ACCOUNT RECE PAYMENT TOTAL: 946.96

SIGNATURE:

COMMODITIES:	$616.09
EXTRA CHARGES:	$297.96
TAXES AND FEES:	$32.91
ALL CHARGES:	$946.96

OLYMPIC VIEW SANITARY TICK 4515

A SUBSIDIARY OF WASTE MANAGEMENT
10015 SW BARNEY WHITE ROAD
PORT ORCHARD, WA 98367
PHONE# (360)674-2331
PREPARED BY: MD

PUGET SOUND ENERGY
CUSTOMER ACCT# 3301645
VEHICLE ID# MICHELE10
TIME: 12:54 DATE: 10/23/1998
MANUAL TICKET# N/A

COMMODITY: CONT/SOIL
SOURCE ID: WA [illegible]
GEN: 98094 NAME: PUGET SOUND ENERGY 98095 PROJ#:
GEN SOURCE/ADDRESS: PUGET SOUND ENERY 98094
TONS(LBS): GROSS: 48.88(97750) TARE: 18.77(37540) NET: 30.11(60210)
CUBIC YARDS: 1.0
RATE: 18.630 / TON QNTY: 30.10 PRETAX CHARGE: 560.76
XTRA CHG: PUGET SOUND @ $9.01 / TON X 30.10 = $271.20

PAYMENT METHOD: CHARGE: ACCOUNT RECE PAYMENT TOTAL: 861.91

SIGNATURE:

COMMODITIES:	$560.76
EXTRA CHARGES:	$271.20
TAXES AND FEES:	$29.95

OLYMPIC VIEW SANITARY · Tik# 63504

A SUBSIDIARY OF WASTE MANAGEMENT
10015 SW BARNEY WHITE ROAD
PORT ORCHARD, WA 98367
PHONE# (360)674-2331
PREPARED BY: LH

PUGET SOUND ENERGY
CUSTOMER ACCT# 3301645
VEHICLE ID# NOR2306
TIME: 12:29 DATE: 10/23/1998
MANUAL TICKET# N/A

COMMODITY: CONT/SOIL
SOURCE ID: WA - KIT -
GEN: 98094 NAME: PUGET SOUND ENERGY 98095 PROJ#:
GEN SOURCE/ADDRESS: PUGET SOUND ENERY 98094
TONS(LBS): GROSS: 52.29(104580) TARE: 19.40(38800) NET: 32.89(65780)
CUBIC YARDS: 1.0
RATE: 18.630 / TON QNTY: 32.89 PRETAX CHARGE: 612.74
XTRA CHG: PUGET SOUND @ $9.01 / TON X 32.89 = $296.34

PAYMENT METHOD: CHARGE: ACCOUNT RECE PAYMENT TOTAL: 941.81

SIGNATURE: MikeR

COMMODITIES:	$612.74
EXTRA CHARGES:	$296.34
TAXES AND FEES:	$32.73
ALL CHARGES:	$941.81

OLYMPIC VIEW SANITARY Tik# 63457

A SUBSIDIARY OF WASTE MANAGEMENT
10015 SW BARNEY WHITE ROAD
FORT ORCHARD, WA 98367
PHONE# (360)674-2331
PREPARED BY: LH

PUGET SOUND ENERGY
CUSTOMER ACCT# 3301645
VEHICLE ID# MICHELE10
TIME: 10:11 DATE: 10/23/1998
MANUAL TICKET# N/A

COMMODITY: CONT/SOIL
SOURCE ID: WA - KIT
GEN: 98094 NAME: PUGET SOUND ENERGY 98095 PROJ#:
GEN SOURCE/ADDRESS: PUGET SOUND ENERY 98094
TONS(LBS): GROSS: 54.59(109180) TARE: 18.77(37540) NET: 35.82(71640)
CUBIC YARDS: 1.0
RATE: 18.630 / TON QNTY: 35.82 PRETAX CHARGE: 667.33
XTRA CHG: PUGET SOUND @ $9.01 / TON X 35.82 = $322.74

PAYMENT METHOD: CHARGE: ACCOUNT RECE PAYMENT TOTAL: 1025.71

SIGNATURE:

COMMODITIES:	$667.33
EXTRA CHARGES:	$322.74
TAXES AND FEES:	$35.64

OLYMPIC VIEW SANITARY Tik# 63450

A SUBSIDIARY OF WASTE MANAGEMENT
10015 SW BARNEY WHITE ROAD
PORT ORCHARD, WA 98367
PHONE# (360)674-2331
PREPARED BY: LH

PUGET SOUND ENERGY
CUSTOMER ACCT# 3301645
VEHICLE ID# FORLER 6
TIME: 9:57 DATE: 10/23/1998
MANUAL TICKET# N/A

COMMODITY: CONT/SOIL
SOURCE ID: WA - KIT
GEN: 98094 NAME: PUGET SOUND ENERGY 98095 PROJ#:
GEN SOURCE/ADDRESS: PUGET SOUND ENERY 98094
TONS(LBS): GROSS: 52.42(104840) TARE: 18.65(37300) NET: 33.77(67540)
CUBIC YARDS: 1.0
RATE: 18.630 / TON QNTY: 33.77 PRETAX CHARGE: 629.14
XTRA CHG: PUGET SOUND @ $9.01 / TON X 33.77 = $304.27

PAYMENT METHOD: CHARGE: ACCOUNT RECE PAYMENT TOTAL: 967.01

SIGNATURE: Jeff Fowler

COMMODITIES: $629.14
EXTRA CHARGES: $304.27
TAXES AND FEES: $33.60

OLYMPIC VIEW SANITARY Tik# 63400

A SUBSIDIARY OF WASTE MANAGEMENT
10015 SW BARNEY WHITE ROAD
PORT ORCHARD, WA 98367
PHONE# (360)674-2331
PREPARED BY: LH

PUGET SOUND ENERGY
CUSTOMER ACCT# 3301645
VEHICLE ID# MI10
TIME: 7:23 DATE: 10/23/1998
MANUAL TICKET# N/A

COMMODITY: CONT/SOIL
SOURCE ID: WA - KIT -
GEN: 98094 NAME: PUGET SOUND ENERGY 98095 PROJ#:
GEN SOURCE/ADDRESS: PUGET SOUND ENERY 98094
TONS(LBS): GROSS: 52.97(105940) TARE: 18.77(37540) NET: 34.20(68400)
CUBIC YARDS: 1.0
RATE: 18.630 / TON QNTY: 34.20 PRETAX CHARGE: 637.15
XTRA CHG: PUGET SOUND @ $9.01 / TON X 34.20 = $308.14

PAYMENT METHOD: CHARGE: ACCOUNT RECE PAYMENT TOTAL: 979.32

SIGNATURE:

COMMODITIES:	$637.15
EXTRA CHARGES:	$308.14
TAXES AND FEES:	$34.03
ALL CHARGES:	$979.32

OLYMPIC VIEW SANITARY Tik# 63399

A SUBSIDIARY OF WASTE MANAGEMENT
10015 SW BARNEY WHITE ROAD
PORT ORCHARD, WA 98367
PHONE# (360)674-2331
PREPARED BY: LH

PUGET SOUND ENERGY
CUSTOMER ACCT# 3301645
VEHICLE ID# FORLER 6
TIME: 7:12 DATE: 10/23/1998
MANUAL TICKET# N/A

COMMODITY: CONT/SOIL
SOURCE ID: WA - KIT -
GEN: 98094 NAME: PUGET SOUND ENERGY 98095 PROJ#:
GEN SOURCE/ADDRESS: PUGET SOUND ENERY 98094
TONS(LBS): GROSS: 54.19(108380) TARE: 18.65(37300) NET: 35.54(71080)
CUBIC YARDS: 1.0
RATE: 18.630 / TON QNTY: 35.54 PRETAX CHARGE: 662.11
XTRA CHG: PUGET SOUND @ $9.01 / TON X 35.54 = $320.22

PAYMENT METHOD: CHARGE: ACCOUNT RECE PAYMENT TOTAL: 1017.70

SIGNATURE: Jeff Fowler

COMMODITIES:	$662.11
EXTRA CHARGES:	$320.22
TAXES AND FEES:	$35.37

OLYMPIC VIEW SANITARY Tik# 63348

A SUBSIDIARY OF WASTE MANAGEMENT
10015 SW BARNEY WHITE ROAD
PORT ORCHARD, WA 98367
PHONE# (360)674-2331
PREPARED BY: CJS

PUGET SOUND ENERGY
CUSTOMER ACCT# 3301645
VEHICLE ID# MICHELE10
TIME: 14:57 DATE: 10/22/1998
MANUAL TICKET# N/A

COMMODITY: CONT/SOIL
SOURCE ID: WA - KIT -
GEN: 98094 NAME: PUGET SOUND ENERGY 98095 PROJ#:
GEN SOURCE/ADDRESS: PUGET SOUND ENERY 98094
TONS(LBS): GROSS: 51.85(103700) TARE: 18.77(37540) NET: 33.08(66160)
CUBIC YARDS: 1.0
RATE: 18.630 / TON QNTY: 33.08 PRETAX CHARGE: 616.28
XTRA CHG: PUGET SOUND @ $9.01 / TON X 33.08 = $298.05

PAYMENT METHOD: CHARGE: ACCOUNT RECE PAYMENT TOTAL: 947.25

SIGNATURE:

COMMODITIES:	$616.28
EXTRA CHARGES:	$298.05
TAXES AND FEES:	$32.92

OLYMPIC VIEW SANITARY Tik# 633455

A SUBSIDIARY OF WASTE MANAGEMENT
10015 SW BARNEY WHITE ROAD
PORT ORCHARD, WA 98367
PHONE# (360)674-2331
PREPARED BY: CJS

PUGET SOUND ENERGY
CUSTOMER ACCT# 3301645
VEHICLE ID# FORLER 6
TIME: 14:48 DATE: 10/22/1998
MANUAL TICKET# N/A

COMMODITY: CONT/SOIL
SOURCE ID: WA - KIT -
GEN: 98094 NAME: PUGET SOUND ENERGY 98095 PROJ#:
GEN SOURCE/ADDRESS: PUGET SOUND ENERY 98094
TONS(LBS): GROSS: 56.01(112020) TARE: 18.65(37300) NET: 37.36(74720)
CUBIC YARDS: 1.0
RATE: 18.630 / TON QNTY: 37.36 PRETAX CHARGE: 696.02
XTRA CHG: PUGET SOUND @ $9.01 / TON X 37.36 = $336.61

PAYMENT METHOD: CHARGE: ACCOUNT RECE PAYMENT TOTAL: 1069.81

SIGNATURE: Jeff Forler

COMMODITIES:	$696.02
EXTRA CHARGES:	$336.61
TAXES AND FEES:	$37.18
ALL CHARGES:	$1,069.81

OLYMPIC VIEW SANITARY Tik# 63356

A SUBSIDIARY OF WASTE MANAGEMENT
10015 SW BARNEY WHITE ROAD
PORT ORCHARD, WA 98367
PHONE# (360)674-2331
PREPARED BY: CJS

PUGET SOUND ENERGY
CUSTOMER ACCT# 3301645
VEHICLE ID# COOK 2
TIME: 14:34 DATE: 10/22/1998
MANUAL TICKET# N/A

COMMODITY: CONT/SOIL
SOURCE ID: WA - KIT -
GEN: 98094 NAME: PUGET SOUND ENERGY 98095 PROJ#:
GEN SOURCE/ADDRESS: PUGET SOUND ENERY 98094
TONS(LBS): GROSS: 53.10(106200) TARE: 18.84(37680) NET: 34.26(68520)
CUBIC YARDS: 1.0
RATE: 18.630 / TON QNTY: 34.26 PRETAX CHARGE: 638.26
XTRA CHG: PUGET SOUND @ $9.01 / TON X 34.26 = $308.68

PAYMENT METHOD: CHARGE: ACCOUNT RECE PAYMENT TOTAL: 981.03

SIGNATURE:

COMMODITIES:	$638.26
EXTRA CHARGES:	$308.68
TAXES AND FEES:	$34.09
ALL CHARGES:	$981.03

OLYMPIC VIEW SANITARY Tik# 63302

A SUBSIDIARY OF WASTE MANAGEMENT
10015 SW BARNEY WHITE ROAD
PORT ORCHARD, WA 98367
PHONE# (360)674-2331
PREPARED BY: CJS

PUGET SOUND ENERGY
CUSTOMER ACCT# 3301645
VEHICLE ID# MICHEL510
TIME: 12:21 DATE: 10/22/1998
MANUAL TICKET# N/A

COMMODITY: CONT/SOIL
SOURCE ID: WA - KIT -
GEN: 98094 NAME: PUGET SOUND ENERGY 98094 PROJ#:
GEN SOURCE/ADDRESS: PUGET SOUND ENERY 98094
TONS(LBS): GROSS: 55.29(110580) TARE: 18.77(37540) NET: 36.52(73040)
CUBIC YARDS: 1.0
RATE: 18.630 / TON QNTY: 36.52 PRETAX CHARGE: 680.37
XTRA CHG: PUGET SOUND @ $9.01 / TON X 36.52 = $329.05

PAYMENT METHOD: CHARGE: ACCOUNT RECE PAYMENT TOTAL: 1045.76

SIGNATURE: _____

COMMODITIES:	$680.37
EXTRA CHARGES:	$329.05
TAXES AND FEES:	$36.34
ALL CHARGES:	$1,045.76

OLYMPIC VIEW SANITARY Tick# 63298

A SUBSIDIARY OF WASTE MANAGEMENT
10015 SW BARNEY WHITE ROAD
PORT ORCHARD, WA 98367
PHONE# (360)674-2331
PREPARED BY: CJS

PUGET SOUND ENERGY
CUSTOMER ACCT# 3301645
VEHICLE ID# FORLER 6
TIME: 12:06 DATE: 10/22/1998
MANUAL TICKET# N/A

COMMODITY: CONT/SOIL
SOURCE ID: WA - KIT -
GEN: 98094 NAME: PUGET SOUND ENERGY 98095 PROJ#:
GEN SOURCE/ADDRESS: PUGET SOUND ENERY 98094
TONS(LBS): GROSS: 55.21(110420) TARE: 18.65(37300) NET: 36.56(73120)
CUBIC YARDS: 1.0
RATE: 18.630 / TON QNTY: 36.56 PRETAX CHARGE: 681.11
XTRA CHG: PUGET SOUND @ $9.01 / TON X 36.56 = $329.41

PAYMENT METHOD: CHARGE: ACCOUNT RECE PAYMENT TOTAL: 1046.90

SIGNATURE: Jeff Fowler

COMMODITIES:	$681.11
EXTRA CHARGES:	$329.41
TAXES AND FEES:	$36.38
ALL CHARGES:	$1,046.90

OLYMPIC VIEW SANITARY Tik# 63291

A SUBSIDIARY OF WASTE MANAGEMENT
10315 SW BARNEY WHITE ROAD
PORT ORCHARD, WA 98367
PHONE# (360)674-2331
PREPARED BY: CJS

PUGET SOUND ENERGY
CUSTOMER ACCT# 3301645
VEHICLE ID# COOK 2
TIME: 11:52 DATE: 10/22/1996
MANUAL TICKET# N/A

COMMODITY: CONT/SOIL
SOURCE ID: WA - KIT -
GEN: 98094 NAME: PUGET SOUND ENERGY 98095 PROJ#:
GEN SOURCE/ADDRESS: PUGET SOUND ENERY 98094
TONS(LBS): GROSS: 52.57(105140) TARE: 18.84(37680) NET: 33.73(67460)
CUBIC YARDS: 1.0
RATE: 18.630 / TON QNTY: 33.73 PRETAX CHARGE: 628.39
XTRA CHG: PUGET SOUND @ $9.01 / TON X 33.73 = $303.91

PAYMENT METHOD: CHARGE: ACCOUNT RECE PAYMENT TOTAL: 965.86

SIGNATURE: J W Cook

COMMODITIES:	$628.39
EXTRA CHARGES:	$303.91
TAXES AND FEES:	$33.56
ALL CHARGES:	$965.86

OLYMPIC VIEW SANITARY TICK# 63227

A SUBSIDIARY OF WASTE MANAGEMENT
10015 SW BARNEY WHITE ROAD
FORT ORCHARD, WA 98367
PHONE# (360)674-2331
PREPARED BY: LH

PUGET SOUND ENERGY
CUSTOMER ACCT# 3301645
VEHICLE ID# MI10
TIME: 9:11 DATE: 10/22/1998
MANUAL TICKET# N/A

COMMODITY: CONT/SOIL
SOURCE ID: WA - KIT -
GEN: 98094 NAME: PUGET SOUND ENERGY 98094 PROJ#:
GEN SOURCE/ADDRESS: PUGET SOUND ENERY 98094
TONS(LBS): GROSS: 53.17(106340) TARE: 18.77(37540) NET: 34.40(68800)
CUBIC YARDS: 1.0
RATE: 18.630 / TON QNTY: 34.40 PRETAX CHARGE: 640.87
XTRA CHG: PUGET SOUND @ $9.01 / TON X 34.40 = $309.94

PAYMENT METHOD: CHARGE: ACCOUNT RECE PAYMENT TOTAL: 985.04

SIGNATURE: Ken Pawley

COMMODITIES:	$640.87
EXTRA CHARGES:	$309.94
TAXES AND FEES:	$34.23
ALL CHARGES:	$985.04

OLYMPIC VIEW SANITARY Tik# 63217

A SUBSIDIARY OF WASTE MANAGEMENT
10015 SW BARNEY WHITE ROAD
PORT ORCHARD, WA 98367
PHONE# (360)674-2331
PREPARED BY: LH

PUGET SOUND ENERGY
CUSTOMER ACCT# 3301645
VEHICLE ID# FORLER 6
TIME: 8:50 DATE: 10/22/1998
MANUAL TICKET# N/A

COMMODITY: CONT/SOIL
SOURCE ID: WA - KIT
GEN: 98094 NAME: PUGET SOUND ENERGY 98095 PROJ#:
GEN SOURCE/ADDRESS: PUGET SOUND ENERY 98094
TONS(LBS): GROSS: 52.51(105020) TARE: 18.65(37300) NET: 33.86(67720)
CUBIC YARDS: 1.0
RATE: 18.630 / TON QNTY: 33.86 PRETAX CHARGE: 630.81
XTRA CHG: PUGET SOUND @ $9.01 / TON X 33.86 = $305.08

PAYMENT METHOD: CHARGE: ACCOUNT RECE PAYMENT TOTAL: 969.58

SIGNATURE: Jeff Forler

COMMODITIES:	$630.81
EXTRA CHARGES:	$305.08
TAXES AND FEES:	$33.69

ALL CHARGES [illegible]

OLYMPIC VIEW SANITARY Tik# 63213

A SUBSIDIARY OF WASTE MANAGEMENT
10015 SW BARNEY WHITE ROAD
PORT ORCHARD, WA 98367
PHONE# (360)674-2331
PREPARED BY: LH

PUGET SOUND ENERGY
CUSTOMER ACCT# 3301645
VEHICLE ID# COOK 2
TIME: 8:42 DATE: 10/22/1998
MANUAL TICKET# N/A

COMMODITY: CONT/SOIL
SOURCE ID: WA - KIT -
GEN: 98094 NAME: PUGET SOUND ENERGY 98095 PROJ#:
GEN SOURCE/ADDRESS: PUGET SOUND ENERY 98094
TONS(LBS): GROSS: 52.56(105120) TARE: 18.84(37680) NET: 33.72(67440)
CUBIC YARDS: 1.0
RATE: 18.630 / TON QNTY: 33.72 / PRETAX CHARGE: 628.20
XTRA CHG: PUGET SOUND @ $9.01 / TON X 33.72 = $303.82

PAYMENT METHOD: CHARGE: ACCOUNT RECE PAYMENT TOTAL: 965.58

SIGNATURE: J Cook

COMMODITIES:	$628.20
EXTRA CHARGES:	$303.82
TAXES AND FEES:	$33.56
ALL CHARGES:	$965.56

BS

OLYMPIC VIEW
SANITARY LANDFILL, INC.
A USA WASTE SERVICES COMPANY

(Continued from previous page)

303-854 11/01/98

PUGET SOUND ENERGY
P.O. BOX 97034

Invoice # 8953

BELLEVUE WA 97034

Date	Service Description	Ticket	Truck	Qty.	Price	Extend
0 26/98	HOST FEES/STATE REFUSE	63950	FORLER			32.0
	Ticket total					921.76
0/26/98	CONTAMINATED SOIL	63951	FORLER	30.00	18.63	558.9
0 26/98	TRUCKING FEE/SPECIAL CHARGES	63951	FORLER	1.00	270.30	270.3
0 26/98	HOST FEES/STATE REFUSE	63951	FORLER			29.85
	Ticket total					859.05

total = 706.18 tons

Total of current charges 001788715 20,278.7

Balance from previous billing 25,892.5

Total Due $46,171.29

PAYMENT IS DUE NOV 31, 1998
PLEASE CALL 24 HOURS IN
ADVANCE FOR FRIABLE AND
NON-FRIABLE ASBESTOS

BS
11/25/98

1/3 13100048
1/3 13100049
1/3 13100050
11/25/98

Current	10/01/98	9/01/98	8/01/98	7/01/98
25,022.77	21,148.52			

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(360) 674-2331 • (360) 674-2370 FAX

OLYMPIC VIEW
SANITARY LANDFILL, INC.
A USA WASTE SERVICES COMPANY

(Continued from previous page)

303-854 11/01/98

PUGET SOUND ENERGY
P.O. BOX 97034

BELLEVUE WA 97034

Invoice # 8951

Date	Service Description	Ticket	Truck	Qty.	Price	Extende
	Ticket total					1017.7
0/23/98	CONTAMINATED SOIL	63400	MI10	34.20	18.63	637.1
0/23/98	TRUCKING FEE/SPECIAL CHARGES	63400	MI10	1.00	308.14	308.14
0/23/98	HOST FEES/STATE REFUSE	63400	MI10			34.(
	Ticket total					979.:
0/23/98	CONTAMINATED SOIL	63450	FORLER	33.77	18.63	629.14
0/23/98	TRUCKING FEE/SPECIAL CHARGES	63450	FORLER	1.00	304.27	304.2
0/23/98	HOST FEES/STATE REFUSE	63450	FORLER			33.
	Ticket total					967.(
0/23/98	CONTAMINATED SOIL	63457	MICHEL	35.82	18.63	667.33
0/23/98	TRUCKING FEE/SPECIAL CHARGES	63457	MICHEL	1.00	322.74	322.
0/23/98	HOST FEES/STATE REFUSE	63457	MICHEL			35.(
	Ticket total					1025.71
0/23/98	CONTAMINATED SOIL	63504	NOR230	32.89	18.63	612.
0/23/98	TRUCKING FEE/SPECIAL CHARGES	63504	NOR230	1.00	296.34	296.
0/23/98	HOST FEES/STATE REFUSE	63504	NOR230			32.(
	Ticket total					941.81
0/23/98	CONTAMINATED SOIL	63515	MICHEL	30.10	18.63	560.
0/23/98	TRUCKING FEE/SPECIAL CHARGES	63515	MICHEL	1.00	271.20	271.
0/23/98	HOST FEES/STATE REFUSE	63515	MICHEL			29.95
	Ticket total					861.
0/26/98	CONTAMINATED SOIL	63786	FORLER	33.07	18.63	616.
0/26/98	TRUCKING FEE/SPECIAL CHARGES	63786	FORLER	1.00	297.96	297.96
0/26/98	HOST FEES/STATE REFUSE	63786	FORLER			32.
	Ticket total					946.
0/26/98	CONTAMINATED SOIL	63788	FORLER	30.98	18.63	577.(
0/26/98	TRUCKING FEE/SPECIAL CHARGES	63788	FORLER	1.00	279.13	279.13
0/26/98	HOST FEES/STATE REFUSE	63788	FORLER			30.
	Ticket total					887.
0/26/98	CONTAMINATED SOIL	63861	FORLER	31.69	18.63	590.38
0/26/98	TRUCKING FEE/SPECIAL CHARGES	63861	FORLER	1.00	285.53	285.
0/26/98	HOST FEES/STATE REFUSE	63861	FORLER			31.
	Ticket total					907.44
0/26/98	CONTAMINATED SOIL	63891	FORLER	34.44	18.63	641.4
0/26/98	TRUCKING FEE/SPECIAL CHARGES	63891	FORLER	1.00	310.30	310.
0/26/98	HOST FEES/STATE REFUSE	63891	FORLER			34.
	Ticket total					986.1
0/26/98	CONTAMINATED SOIL	63910	FORLER	32.19	18.63	599.
0/26/98	TRUCKING FEE/SPECIAL CHARGES	63910	FORLER	1.00	290.03	290.

(Continued on next page)

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OLYMPIC VIEW
SANITARY LANDFILL, INC.
A USA WASTE SERVICES COMPANY

303-854 11/01/98

PUGET SOUND ENERGY
P.O. BOX 97034

BELLEVUE WA 97034

Invoice # 8953

Date	Service Description	Ticket	Truck	Qty.	Price	Extend
22/98	CONTAMINATED SOIL	63213	COOK 2	33.72	18.63	628.2
22/98	TRUCKING FEE/SPECIAL CHARGES	63213	COOK 2	1.00	303.82	303.82
0/22/98	HOST FEES/STATE REFUSE	63213	COOK 2			33.5
	Ticket total					965.5
22/98	CONTAMINATED SOIL	63217	FORLER	33.86	18.63	630.81
22/98	TRUCKING FEE/SPECIAL CHARGES	63217	FORLER	1.00	305.08	305.08
0/22/98	HOST FEES/STATE REFUSE	63217	FORLER			33.6
	Ticket total					969.5
22/98	CONTAMINATED SOIL	63227	MI10	34.40	18.63	640.87
0/22/98	TRUCKING FEE/SPECIAL CHARGES	63227	MI10	1.00	309.94	309.9
22/98	HOST FEES/STATE REFUSE	63227	MI10			34.2
	Ticket total					985.04
0/22/98	CONTAMINATED SOIL	63291	COOK 2	33.73	18.63	628.3
0/22/98	TRUCKING FEE/SPECIAL CHARGES	63291	COOK 2	1.00	303.91	303.9
22/98	HOST FEES/STATE REFUSE	63291	COOK 2			33.56
	Ticket total					965.86
0/22/98	CONTAMINATED SOIL	63298	FORLER	36.56	18.63	681.1
2/98	TRUCKING FEE/SPECIAL CHARGES	63298	FORLER	1.00	329.41	329.4
2/98	HOST FEES/STATE REFUSE	63298	FORLER			36.38
	Ticket total					1046.9
22/98	CONTAMINATED SOIL	63302	MICHEL	36.52	18.63	680.3
2/98	TRUCKING FEE/SPECIAL CHARGES	63302	MICHEL	1.00	329.05	329.05
22/98	HOST FEES/STATE REFUSE	63302	MICHEL			36.3
	Ticket total					1045.7
2/98	CONTAMINATED SOIL	63356	COOK 2	34.26	18.63	638.2
2/98	TRUCKING FEE/SPECIAL CHARGES	63356	COOK 2	1.00	308.68	308.68
22/98	HOST FEES/STATE REFUSE	63356	COOK 2			34.0
	Ticket total					981.0
2/98	CONTAMINATED SOIL	63365	FORLER	37.36	18.63	696.02
22/98	TRUCKING FEE/SPECIAL CHARGES	63365	FORLER	1.00	336.61	336.6
22/98	HOST FEES/STATE REFUSE	63365	FORLER			37.1
	Ticket total					1069.81
2/98	CONTAMINATED SOIL	63368	MICHEL	33.08	18.63	616.28
22/98	TRUCKING FEE/SPECIAL CHARGES	63368	MICHEL	1.00	298.05	298.0
2/98	HOST FEES/STATE REFUSE	63368	MICHEL			32.9
	Ticket total					947.23
23/98	CONTAMINATED SOIL	63399	FORLER	35.54	18.63	662.1
3/98	TRUCKING FEE/SPECIAL CHARGES	63399	FORLER	1.00	320.22	320.2
3/98	HOST FEES/STATE REFUSE	63399	FORLER			35.57

(continued on next page)

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OLYMPIC VIEW SANITARY TICK# 59302

A SUBSIDIARY OF WASTE MANAGEMENT
10015 SW BARNEY WHITE ROAD
PORT ORCHARD, WA 98367
PHONE# (360)674-2331
PREPARED BY: CJS

PUGET SOUND ENERGY
CUSTOMER ACCT# 3301645
VEHICLE ID# FORLER 17
TIME: 12:24 DATE: 10/02/1998
MANUAL TICKET# N/A

COMMODITY: CONT/SOIL
SOURCE ID: WA - KIT -
GEN: 98094 NAME: PUGET SOUND ENERGY 98095 PROJ#:
GEN SOURCE/ADDRESS: PUGET SOUND ENERY 98094
TONS(LBS): GROSS: 45.35(90700) TARE: 18.80(37600) NET: 26.55(53100)
CUBIC YARDS: 1.0
RATE: 27.650 / TON QNTY: 26.55 PRETAX CHARGE: 734.11

PAYMENT METHOD: CHARGE: ACCOUNT RECE PAYMENT TOTAL: 760.54

SIGNATURE: Gary B

COMMODITIES:	$734.11
EXTRA CHARGES:	$0
TAXES AND FEES:	$26.43
ALL CHARGES:	$760.54

OLYMPIC VIEW SANITARY — Tik# 59289

A SUBSIDIARY OF WASTE MANAGEMENT
10015 SW BARNEY WHITE ROAD
FORT ORCHARD, WA 98367
PHONE# (360)674-2331
PREPARED BY: CJS

PUGET SOUND ENERGY
CUSTOMER ACCT# 3301645
VEHICLE ID# FORLER 6
TIME: 11:44 DATE: 10/02/1998
MANUAL TICKET# N/A

COMMODITY: CONT/SOIL
SOURCE ID: WA - KIT -
GEN: 98094 NAME: PUGET SOUND ENERGY 98095 PROJ#:
GEN SOURCE/ADDRESS: PUGET SOUND ENERY 98094
TONS(LBS): GROSS: 56.50(113000) TARE: 18.65(37300) NET: 37.85(75700)
CUBIC YARDS: 1.0
RATE: 27.650 / TON QNTY: 37.85 PRETAX CHARGE: 1046.55

PAYMENT METHOD: CHARGE: ACCOUNT RECE PAYMENT TOTAL: 1084.23

SIGNATURE: Jeff Hauser

COMMODITIES:	$1,046.55
EXTRA CHARGES:	$0
TAXES AND FEES:	$37.68
ALL CHARGES:	$1,084.23

OLYMPIC VIEW SANITARY Tick# 59237

A SUBSIDIARY OF WASTE MANAGEMENT
10015 SW BARNEY WHITE ROAD
PORT ORCHARD, WA 98367
PHONE# (360)674-2331
PREPARED BY: CJS

PUGET SOUND ENERGY
CUSTOMER ACCT# 3301645
VEHICLE ID# FORLER13
TIME: 9:50 DATE: 10/02/1998
MANUAL TICKET# N/A

COMMODITY: CONT/SOIL
SOURCE ID: WA - KIT
GEN: 98094 NAME: PUGET SOUND ENERGY 98095 PROJ#:
GEN SOURCE/ADDRESS: PUGET SOUND ENERY 98094
TONS(LBS): GROSS: 51.57(103140) TARE: 18.87(37740) NET: 32.70(65400)
CUBIC YARDS: 1.0
RATE: 27.650 / TON QNTY: 32.70 PRETAX CHARGE: 904.16

PAYMENT METHOD: CHARGE: ACCOUNT RECE PAYMENT TOTAL: 936.71

SIGNATURE:
Charles Meyers

COMMODITIES:	$904.16
EXTRA CHARGES:	$0
TAXES AND FEES:	$32.55

OLYMPIC VIEW SANITARY TIK# 59219

A SUBSIDIARY OF WASTE MANAGEMENT
10015 SW BARNEY WHITE ROAD
FORT ORCHARD, WA 98367
PHONE# (360)674-2331
PREPARED BY: LH

PUGET SOUND ENERGY
CUSTOMER ACCT# 3301645
VEHICLE ID# FORLER 17
TIME: 9:12 DATE: 10/02/1998
MANUAL TICKET# N/A

COMMODITY: CONT/SOIL
SOURCE ID: WA - WIT
GEN: 98094 NAME: PUGET SOUND ENERGY 98095 PROJ#:
GEN SOURCE/ADDRESS: PUGET SOUND ENERY 98094
TONS(LBS): GROSS: 52.37(104740) TARE: 18.80(37600) NET: 33.57(67140)
CUBIC YARDS: 1.0
RATE: 27.650 / TON QNTY: 33.57 PRETAX CHARGE: 928.21

PAYMENT METHOD: CHARGE: ACCOUNT RECE PAYMENT TOTAL: 961.63

SIGNATURE:

COMMODITIES:	$928.21
EXTRA CHARGES:	$0
TAXES AND FEES:	$33.42

OLYMPIC VIEW SANITARY TICKET 59210

A SUBSIDIARY OF WASTE MANAGEMENT
10015 SW BARNEY WHITE ROAD
PORT ORCHARD, WA 98367
PHONE# (360)674-2331
PREPARED BY: LH

PUGET SOUND ENERGY
CUSTOMER ACCT# 3301645
VEHICLE ID# FORLER 6
TIME: 8:48 DATE: 10/02/1998
MANUAL TICKET# N/A

COMMODITY: CONT/SOIL
SOURCE ID: WA - KIT -
GEN: 98094 NAME: PUGET SOUND ENERGY 98095 PROJ#:
GEN SOURCE/ADDRESS: PUGET SOUND ENERY 98094
TONS(LBS): GROSS: 53.59(107180) TARE: 18.65(37300) NET: 34.94(69880)
CUBIC YARDS: 1.0
RATE: 27.650 / TON QNTY: 34.94 PRETAX CHARGE: 966.09

PAYMENT METHOD: CHARGE: ACCOUNT RECE PAYMENT TOTAL: 1000.87

SIGNATURE: Jeff Fowler

COMMODITIES:	$966.09
EXTRA CHARGES:	$0
TAXES AND FEES:	$34.78
ALL CHARGES:	$1,000.87

OLYMPIC VIEW SANITARY LANDFILL, INC.

A USA WASTE SERVICES COMPANY

303-854 10/16/98

PUGET SOUND ENERGY
P.O. BOX 97034

Invoice # 8430

BELLEVUE WA 97034

Date	Service Description	Ticket	Truck	Qty.	Price	Extended
/98	CONTAMINATED SOIL	59210	FORLER	34.94	27.65	966.09
/02/98	HOST FEES/STATE REFUSE	59210	FORLER			34.78
	Ticket total					1000.87
/98	CONTAMINATED SOIL	59219	FORLER	33.57	27.65	928.21
/02/98	HOST FEES/STATE REFUSE	59219	FORLER			33.42
	Ticket total					961.63
/98	CONTAMINATED SOIL	59237	FORLER	32.70	27.65	904.16
/98	HOST FEES/STATE REFUSE	59237	FORLER			32.55
	Ticket total					936.71
/98	CONTAMINATED SOIL	59289	FORLER	37.85	27.65	1046.55
/98	HOST FEES/STATE REFUSE	59289	FORLER			37.68
	Ticket total					1084.23
/98	CONTAMINATED SOIL	59302	FORLER	26.55	27.65	734.11
/98	HOST FEES/STATE REFUSE	59302	FORLER			26.43
	Ticket total					760.54

total = 165.61 tons

	Total of current charges	001460520	4,743.98
	Balance from previous billing		21,298.32
/98	Payment - Thank you		149.80
	Total Due		$25,892.50

PAYMENT IS DUE NOV 31, 1998
PLEASE CALL 24 HOURS IN
ADVANCE FOR FRIABLE AND
NON-FRIABLE ASBESTOS

BJ
11/25/98

1/3 13100046
1/3 13100047
1/3 13100050

Current	10/01/98	9/01/98	8/01/98	7/01/98
4,743.98	21,148.52			

P.O. Box 990, Bremerton, WA 98337
(360) 674-2331 • (360) 674-2370 FAX

OLYMPIC VIEW SANITARY LANDFILL INC

P.O. BOX 990 • BREMERTON, WA 98337
674-2331

No 5244

Date 9-22-98

To: Puget Sound Energy 98094

Loose cu. yds @
Compacted cu. yds. @ PCS
Septic gals. @

G-106760
T-40600

Jensen #2

INVOICE No.

Signature Dan

OLYMPIC VIEW SANITARY   Tik# 57708

A SUBSIDIARY OF WASTE MANAGEMENT   PUGET SOUND ENERGY
10015 SW BARNEY WHITE ROAD   CUSTOMER ACCT# 3301645
PORT ORCHARD, WA 98367   VEHICLE ID# DTI
PHONE# (360)674-2331   TIME: 6:01 DATE: 09/25/1998
PREPARED BY: LH   MANUAL TICKET# N/A

COMMODITY: CONT/SOIL   PO#: JENSEN 2   5244 HT. 9/22/98
SOURCE ID: WA - KIT -
GEN: 98094   NAME: PUGET SOUND ENERGY 98095   PROJ#:
GEN SOURCE/ADDRESS: PUGET SOUND ENERY 98094
TONS(LBS): GROSS: 53.38(106760) TARE: 20.30(40600) NET: 33.08(66160)
CUBIC YARDS: 1.0
RATE: 27.650 / TON   QNTY: 33.08   PRETAX CHARGE: 914.66

PAYMENT METHOD: CHARGE: ACCOUNT RECE   PAYMENT TOTAL: 947.59

SIGNATURE:

COMMODITIES:	$914.66
EXTRA CHARGES:	$0
TAXES AND FEES:	$32.93
ALL CHARGES:	$947.59

3]

OLYMPIC VIEW SANITARY
A SUBSIDIARY OF WASTE MANAGEMENT
10015 SW BARNEY WHITE ROAD
PORT ORCHARD, WA 98367
PHONE# (360)674-2331
PREPARED BY: LH

Tik# 57713
PUGET SOUND ENERGY
CUSTOMER ACCT# 2301645
VEHICLE ID# ECTI 007
TIME: 6:18 DATE: 09/25/1998
MANUAL TICKET# N/A

COMMODITY: CONT/SOIL
SOURCE ID: WA - KIT -
GEN: 56074 PO#: 5765 9/23/98
GEN SOURCE/ADDRESS: PUGET SOUND ENERGY 98052 NAME: PUGET SOUND ENERGY 98052 PROJ#:
TONS(LBS): GROSS: 45.29(90580) TARE: 17.75(35500) NET: 30.64(61280)
CUBIC YARDS: 1.0
RATE: 27.680 / TON QNTY: 30.64 FRETAX CHARGE: 847.20
PAYMENT METHOD: CHARGE: ACCOUNT RECE PAYMENT TOTAL: 877.70
SIGNATURE:

COMMODITIES:	$847.20
EXTRA CHARGES:	$0
TAXES AND FEES:	$30.50
ALL CHARGES:	$877.70

OLYMPIC VIEW
SANITARY LANDFILL INC
P.O. BOX 990 • BREMERTON, WA 98337
674-2331

No. 5765

To: Puget Sound Energy
Date 9-23-98

Loose cu. yds. @
Compacted cu. yds. @ P.C.Y.
Septic gals. @

Signature

INVOICE No.

OLYMPIC VIEW SANITARY Tik# 57721

A SUBSIDIARY OF WASTE MANAGEMENT
10015 SW BARNEY WHITE ROAD
PORT ORCHARD, WA 98367
PHONE# (360)674-2331
PREPARED BY: LH

PUGET SOUND ENERGY
CUSTOMER ACCT# 3301645
VEHICLE ID# JENSEN 1
TIME: 7:05 DATE: 09/25/1998
MANUAL TICKET# N/A

COMMODITY: CONT/SOIL PO#: 5198 9/18/98
SOURCE ID: WA - KIT -
GEN: 98094 NAME: PUGET SOUND ENERGY 98095 PROJ#:
GEN SOURCE/ADDRESS: PUGET SOUND ENERY 98094
TONS(LBS): GROSS: 52.61(105220) TARE: 20.05(40100) NET: 32.56(65130)
CUBIC YARDS: 1.0
RATE: 27.650 / TON QNTY: 32.56 PRETAX CHARGE: 900.38

PAYMENT METHOD: CHARGE: ACCOUNT RECE PAYMENT TOTAL: 932.69

SIGNATURE:

COMMODITIES:	$900.28
EXTRA CHARGES:	$0
TAXES AND FEES:	$32.41
ALL CHARGES:	$932.69

OLYMPIC VIEW
SANITARY LANDFILL INC
P.O. BOX 990 • BREMERTON, WA 98337
674-2331

No. 5198 Date 9-18-98

To: Puget Energy POS

Loose cu. yds. @ _____
Compacted cu. yds. @ _____
Septic gals. @ _____

Signature

INVOICE No. _____

OLYMPIC VIEW SANITARY

A SUBSIDIARY OF WASTE MANAGEMENT

10015 SW BARNEY WHITE ROAD

PORT ORCHARD, WA 98367

PHONE# (360)674-2331

PREPARED BY: LH

Tik# 57722

PUGET SOUND ENERGY

CUSTOMER ACCT# 3301645

VEHICLE ID# SHELDON

TIME: 7:06 DATE: 09/25/1998

MANUAL TICKET# N/A

COMMODITY: CONT/SOIL

SOURCE ID: WA - KIT -

PO#: 5196 9/18/98

GEN: 98094 NAME: PUGET SOUND ENERGY 98095 PROJ#:

GEN SOURCE/ADDRESS: PUGET SOUND ENERY 98094

TONS(LBS): GROSS: 43.61(87220) TARE: 16.78(33560) NET: 26.83(53660)

CUBIC YARDS: 1.0

RATE: 27.650 / TON QNTY: 26.83 PRETAX CHARGE: 741.65

PAYMENT METHOD: CHARGE: ACCOUNT RECE PAYMENT TOTAL: 768.56

SIGNATURE:

COMMODITIES:	$741.65
EXTRA CHARGES:	$0
TAXES AND FEES:	$26.71
ALL CHARGES:	$768.56

OLYMPIC VIEW
SANITARY LANDFILL INC

P.O. BOX 990 • BREMERTON, WA 98337
674-2331

No. 5194

To: Renton Date 9/18/98

18094 Puget Sound Energy

Loose cu. yds @

Compacted cu. yds. @ POS

Septic gals. @

6-85860

T-33420

Invoice

Signature

OLYMPIC VIEW
SANITARY LANDFILL INC

P.O. BOX 990 • BREMERTON, WA 98337
674-2331

No. 5196

To: 98094 Date 9/18/

Sheldon Puget Sound Energy

Loose cu. yds @

Compacted cu. yds. @ POS

Septic gals. @

6-87220

T-33600

Invoice

OLYMPIC VIEW SANITARY   Tik# 57723

A SUBSIDIARY OF WASTE MANAGEMENT
10015 SW BARNEY WHITE ROAD
PORT ORCHARD, WA 98367
PHONE# (360)674-2331
PREPARED BY: LH

PUGET SOUND ENERGY
CUSTOMER ACCT# 3301645
VEHICLE ID# LONE 2
TIME: 7:07 DATE: 09/25/1998
MANUAL TICKET# N/A

COMMODITY: CONT/SOIL   PO#: 5194 9/18/98
SOURCE ID: WA - KIT -
GEN: 98094   NAME: PUGET SOUND ENERGY 98095   PROJ#:
GEN SOURCE/ADDRESS: PUGET SOUND ENERY 98094
TONS(LBS): GROSS: 42.93(85860)   TARE: 17.71(35420)   NET: 25.22(50440)
CUBIC YARDS: 1.0
RATE: 27.650 / TON   QNTY: 25.22   PRETAX CHARGE: $697.33

PAYMENT METHOD: CHARGE: ACCOUNT RECE   PAYMENT TOTAL: 722.43

SIGNATURE:

COMMODITIES: $697.33
EXTRA CHARGES: $0
TAXES AND FEES: $25.10

ALL CHARGES: $722.43

OLYMPIC VIEW SANITARY LANDFILL INC
P.O. BOX 990 • BREMERTON, WA 98337
674-2331

№ 5195   Date 9/18/98

To: 98094 (Kenton)
Puget Sound Energy
Scott
Loose cu. yds @
Compacted cu. yds. @ PCS
Septic gals. @ #1
C-84880
INVOICE No.
Signature

OLYMPIC VIEW SANITARY Tik# 57725

A SUBSIDIARY OF WASTE MANAGEMENT
10015 SW BARNEY WHITE ROAD
PORT ORCHARD, WA 98367
PHONE# (360)674-2331
PREPARED BY: LH

PUGET SOUND ENERGY
CUSTOMER ACCT# 3301645
VEHICLE ID# R 2
TIME: 7:11 DATE: 09/25/1998
MANUAL TICKET# N/A

COMMODITY: CONT/SOIL PO#: 5197 9/18/98
SOURCE ID: WA - KIT -
GEN: 98094 NAME: PUGET SOUND ENERGY 98095 PROJ#:
GEN SOURCE/ADDRESS: PUGET SOUND ENERY 98094
TONS(LBS): GROSS: 41.74(83480) TARE: 18.70(37400) NET: 23.04(46080)
CUBIC YARDS: 1.0
RATE: 27.650 / TON QNTY: 23.04 PRETAX CHARGE: 637.0[illegible]

PAYMENT METHOD: CHARGE: ACCOUNT RECE PAYMENT TOTAL: 65[illegible].99

SIGNATURE:

_____

COMMODITIES: $637.0[illegible]
EXTRA CHARGES: $0
TAXES AND FEES: $23.95

ALL CHARGES: $65[illegible].9[illegible]

OLYMPIC VIEW SANITARY Tik# 57724

A SUBSIDIARY OF WASTE MANAGEMENT
10015 SW BARNEY WHITE ROAD
PORT ORCHARD, WA 98367
PHONE# (360)674-2331
PREPARED BY: LH

PUGET SOUND ENERGY
CUSTOMER ACCT# 3301645
VEHICLE ID# JENSEN 2
TIME: 7:12 DATE: 09/25/1998
MANUAL TICKET# N/A

COMMODITY: CONT/SOIL PO#: 5228 9/21/98
SOURCE ID: WA - KIT -
GEN: 98094 NAME: PUGET SOUND ENERGY 98095 PROJ#:
GEN SOURCE/ADDRESS: PUGET SOUND ENERY 98094
TONS(LBS): GROSS: 53.27(106540) TARE: 20.30(40600) NET: 32.97(65940)
CUBIC YARDS: 1.0
RATE: 27.650 / TON QNTY: 32.97 PRETAX CHARGE: 911.62

PAYMENT METHOD: CHARGE: ACCOUNT RECE PAYMENT TOTAL: 944.44

SIGNATURE:

_____

COMMODITIES: $911.62
EXTRA CHARGES: $0
TAXES AND FEES: $32.82

ALL CHARGES: $944.44

OLYMPIC VIEW SANITARY LANDFILL INC

P.O. BOX 990 • BREMERTON, WA 98337
674-2331

No 5242 Date 9-22-98

To: 98094 PSE
Gradyway

Loose cu. yds @
TRK Compacted cu. yds. @ PCS,
Septic gals. @
Lowe 2

G-92440
T-35420

INVOICE No. ______ Signature

OLYMPIC VIEW SANITARY LANDFILL INC

P.O. BOX 990 • BREMERTON, WA 98337
674-2331

No 5228 Date 9-21-9

To: 98094 P.S.En
Gradwa

Jensen Loose cu. yds @ PCS
2 Compacted cu. yds. @
Septic gals. @

G-106540
T-40600

INVOICE No. ______ Signature

OLYMPIC VIEW SANITARY   Tik# 57729

A SUBSIDIARY OF WASTE MANAGEMENT	PUGET SOUND ENERGY
10015 SW BARNEY WHITE ROAD	CUSTOMER ACCT# 3301645
PORT ORCHARD, WA 98367	VEHICLE ID# R 2
PHONE# (360)674-2331	TIME: 7:16 DATE: 09/25/1998
PREPARED BY: LH	MANUAL TICKET# N/A

COMMODITY: CONT/SOIL   PO#: 5240 9/22/98
SOURCE ID: WA - KIT -
GEN: 98094   NAME: PUGET SOUND ENERGY 98095   PROJ#:
GEN SOURCE/ADDRESS: PUGET SOUND ENERY 98094
TONS(LBS): GROSS: 46.41(92820)   TARE: 18.70(37400)   NET: 27.71(55420)
CUBIC YARDS: 1.0
RATE: 27.650 / TON   QNTY: 27.71   PRETAX CHARGE: 766.18

PAYMENT METHOD: CHARGE: ACCOUNT RECE .   PAYMENT TOTAL: 793.76

SIGNATURE:	COMMODITIES:	$766.18
	EXTRA CHARGES:	$0
	TAXES AND FEES:	$27.58
	ALL CHARGES:	$793.76

OLYMPIC VIEW SANITARY   TIK# 57727
A SUBSIDIARY OF WASTE MANAGEMENT   PUGET SOUND ENERGY
10015 SW BARNEY WHITE ROAD   CUSTOMER ACCT# 3301645
PORT ORCHARD, WA 98367   VEHICLE ID# LONE 2
PHONE# (360)674-2331   TIME: 7:12 DATE: 09/25/1998
PREPARED BY: LH   MANUAL TICKET# N/A

COMMODITY: CONT/SOIL   PO#: 5242 9/22/98
SOURCE ID: WA - KIT -
GEN: 98094   NAME: PUGET SOUND ENERGY 98095   PROJ#:
GEN SOURCE/ADDRESS: PUGET SOUND ENERY 98094
TONS(LBS): GROSS: 48.22(96440)   TARE: 17.71(35420)   NET: 30.51(61020)
CUBIC YARDS: 1.0
RATE: 27.650 / TON   QNTY: 30.51   PRETAX CHARGE: 843.60

PAYMENT METHOD: CHARGE: ACCOUNT RECE   PAYMENT TOTAL: 873.97

SIGNATURE: ______________________

COMMODITIES:	$843.60
EXTRA CHARGES:	$0
TAXES AND FEES:	$30.37
ALL CHARGES:	$873.97

OLYMPIC VIEW SANITARY LANDFILL INC

P.O. BOX 990 • BREMERTON, WA 98337
674-2331

No. **5230**   Date 9/21/98

To: TIK 98094
Puget SND ENERGY
TK 1   Loose cu. yds @
Compacted cu. yds. @ PCS.
Septic gals. @
G-103120
T-40,100

INVOICE No.   Signature [signature]

OLYMPIC VIEW SANITARY LANDFILL INC

P.O. BOX 990 • BREMERTON, WA 98337
674-2331

No. **5240**   Date 9/22/98

To: 98094 P.S.ENE
Loose cu. yds @
Compacted cu. yds. @ PCS.
Septic gals. @
Gary Reed R-2
G-92820
T-34700

INVOICE No.   Signature [signature]

OLYMPIC VIEW SANITARY Tik# 57860

A SUBSIDIARY OF WASTE MANAGEMENT
10015 SW BARNEY WHITE ROAD
PORT ORCHARD, WA 98367
PHONE: (360)674-2331
PREPARED BY: CJS

PUGET SOUND ENERGY
CUSTOMER ACCT# 3301645
VEHICLE ID# JLA 21
TIME: 12:53 DATE: 09/25/1998
MANUAL TICKET# N/A

COMMODITY: CONT/SOIL
SOURCE ID: WA - KIT -
DEN: 98095 NAME: PUGET SOUND ENERGY 98095 PROJ#:
DEN SOURCE/ADDRESS: PUGET SOUND ENERGY 98095
TONS(LBS): GROSS: 34.88(69760) TARE: 19.67(39340) NET: 15.21(30420)
CUBIC YARDS: 1.0
RATE: 17.130 TON QNTY: 15.21 PRETAX CHARGE: 260.55

PAYMENT METHOD: CHARGE: ACCOUNT RECE PAYMENT TOTAL: 269.93

SIGNATURE: _____

COMMODITIES:	$260.55
EXTRA CHARGES:	$0
TAXES AND FEES:	$9.38
ALL CHARGES:	$269.93

MPIC VIEW SANITARY Tik# 57763

SIDIARY OF WASTE MANAGEMENT
SW BARNEY WHITE ROAD
RCHARD, WA 98367
(360)674-2331
D BY: LH

PUGET SOUND ENERGY
CUSTOMER ACCT# 3301645
VEHICLE ID# DT1
TIME: 9:16 DATE: 09/25/1998
MANUAL TICKET# N/A

JLA 21

CONT/SOIL
WA - KIT -
NAME: PUGET SOUND ENERGY 98095 PROJ#:
ADDRESS: PUGET SOUND ENERGY 98095
GROSS: 55.94(111880) TARE: 19.67(39340) NET: 36.27(72540)
1.0
17.130 / TON QNTY: 36.27 PRETAX CHARGE: 621.31

OD: CHARGE: ACCOUNT RECE PAYMENT TOTAL: 643.68

COMMODITIES:	$621.31
EXTRA CHARGES:	$0
TAXES AND FEES:	$22.37
ALL CHARGES:	$643.68

OLYMPIC VIEW SANITARY Tik# 57819

A SUBSIDIARY OF WASTE MANAGEMENT
10015 SW BARNEY WHITE ROAD
PORT ORCHARD, WA 98367
PHONE# (360)674-2331
PREPARED BY: CJS

PUGET SOUND ENERGY
CUSTOMER ACCT# 3301645
VEHICLE ID# JLA 21
TIME: 11:19 DATE: 09/25/1998
MANUAL TICKET# N/A

COMMODITY: CONT/SOIL
SOURCE ID: WA - KIT -
GEN: 98095 NAME: PUGET SOUND ENERGY 98095 PROJ#:
GEN SOURCE/ADDRESS: PUGET SOUND ENERGY 98095
TONS(LBS): GROSS: 55.77(111540) TARE: 19.67(39340) NET: 36.10(72200)
CUBIC YARDS: 1.0
RATE: 17.130 / TON QNTY: 36.10 PRETAX CHARGE: 618.39

PAYMENT METHOD: CHARGE: ACCOUNT RECE PAYMENT TOTAL: 640.65

SIGNATURE

COMMODITIES:	$618.39
EXTRA CHARGES:	$0
TAXES AND FEES:	$22.26

OLYMPIC VIEW SANITARY LANDFILL INC
P.O. BOX 990 • BREMERTON, WA 98337
674-2331

№ 6273

Date

To:

Loose cu. yds @

Compacted cu. yds. @

Septic gals. @

Signature

INVOICE No.

OLYMPIC VIEW SANITARY TIK# 58059

A SUBSIDIARY OF WASTE MANAGEMENT
10015 SW BARNEY WHITE ROAD
PORT ORCHARD, WA 98367
PHONE# (360)674-2331
PREPARED BY: CJS

PUGET SOUND ENERGY
CUSTOMER ACCT# 3301645
VEHICLE ID# DT1
TIME: 10:46 DATE: 09/26/1998
MANUAL TICKET# N/A

COMMODITY: CONT SOIL
SOURCE ID: WA - KIT - PO#: SCHERER 81 TICKET 6274
GEN: 98095 NAME: PUGET SOUND ENERGY 98095 PROJ#:
GEN SOURCE/ADDRESS: PUGET SOUND ENERGY 98095
TONS(LBS): GROSS: 46.97(93940) TARE: 17.99(35980) NET: 28.98(57960)
CUBIC YARDS: 1.0
RATE: 17.130 TON QNTY: 28.98 PRETAX CHARGE: 496.45

PAYMENT METHOD: CHARGE: ACCOUNT RECE PAYMENT TOTAL: 514.30

SIGNATURE:

COMMODITIES: $496.45
EXTRA CHARGES: $0
TAXES AND FEES: $17.87

OLYMPIC VIEW SANITARY LANDFILL INC
P.O. BOX 990 • BREMERTON, WA 98337
674-2331

№ 6274

Date 9/24/98

To: 98095 PSE PO
Scherer 81

Loose cu. yds @
Compacted cu. yds. @
Septic gals. @
6-93940
T-35980
N

INVOICE No.
Signature

OLYMPIC VIEW SANITARY　　TIK# 58054

A SUBSIDIARY OF WASTE MANAGEMENT
10015 SW BARNEY WHITE ROAD
PORT ORCHARD, WA 98367
PHONE# (360)674-2331
PREPARED BY: CJS

PUGET SOUND ENERGY
CUSTOMER ~~ACCT#~~ 3301645
VEHICLE ID# DT1
TIME: 10:48 DATE: 09/26/1998
MANUAL TICKET# N/A

COMMODITY: CONT/SOIL　　PO#: ~~STAN~~ PALMER 35
HAULER: TICKET 6273　　HAULER TICKET NUMBER:
SOURCE ID: WA - KIT -
GEN: 98095　　NAME: PUGET SOUND ENERGY 98095　　PROJ#:
GEN SOURCE/ADDRESS: PUGET SOUND ENERGY 98095
TONS(LBS): GROSS: 53.66(107320)　TARE: 20.49(40980)　NET: 33.17(66340)
CUBIC YARDS: 1.0
RATE: 17.130 / TON　　QNTY: 33.17　　PRETAX CHARGE: 568.20

PAYMENT METHOD: CHARGE: ACCOUNT RECE　　PAYMENT TOTAL: 588.62

SIGNATURE:

COMMODITIES: $568.20
EXTRA CHARGES: $0
TAXES AND FEES: $20.42

OLYMPIC VIEW SANITARY LANDFILL INC
P.O. BOX 990 • BREMERTON, WA 98337
674-2331

No 5816

Date 9/24/98

To: Ross Rose

ULA Loose cu. yds @

Compacted cu. yds. @

Septic gals. @

INVOICE No.

Signature

OLYMPIC VIEW SANITARY Tik# 58063

A SUBSIDIARY OF WASTE MANAGEMENT
10015 SW BARNEY WHITE ROAD
PORT ORCHARD, WA 98367
PHONE# (360)674-3331
PREPARED BY: CJS

PUGET SOUND ENERGY
CUSTOMER ACCT# 3301645
VEHICLE ID# JLA 41
TIME: 11:21 DATE: 09/26/1998
MANUAL TICKET# N/A

COMMODITY: CONT/SOIL PO#: TICKET 5816
SOURCE ID: WA - KIT -
GEN: 98095 NAME: PUGET SOUND ENERGY 98095 PROJ#:
GEN SOURCE/ADDRESS: PUGET SOUND ENERGY 98095
TONS(LBS): GROSS: 49.29(98580) TARE: 19.67(39340) NET: 29.62(59240)
CUBIC YARDS: 1.0
RATE: 17.130 / TON QNTY: 29.62 PRETAX CHARGE: 507.39

PAYMENT METHOD: CHARGE: ACCOUNT RECE PAYMENT TOTAL: 525.66

SIGNATURE: ______________________

COMMODITIES:	$507.39
EXTRA CHARGES:	$0
TAXES AND FEES:	$18.27
ALL CHARGES:	$525.66

OLYMPIC VIEW SANITARY LANDFILL, INC
P.O. BOX 990 • BREMERTON, WA 98337
674-2331

No 5811

To: 98095 PSE Date 9/26/98

Loose cu. yds @ ______
Compacted cu. yds @ ______
Septic gals. @ ______

INVOICE No. ______ Signature ______

OLYMPIC VIEW SANITARY Tik# 58067

A SUBSIDIARY OF WASTE MANAGEMENT
10015 SW BARNEY WHITE ROAD
PORT ORCHARD, WA 98367
PHONE# (360)674-2331
PREPARED BY: CJS

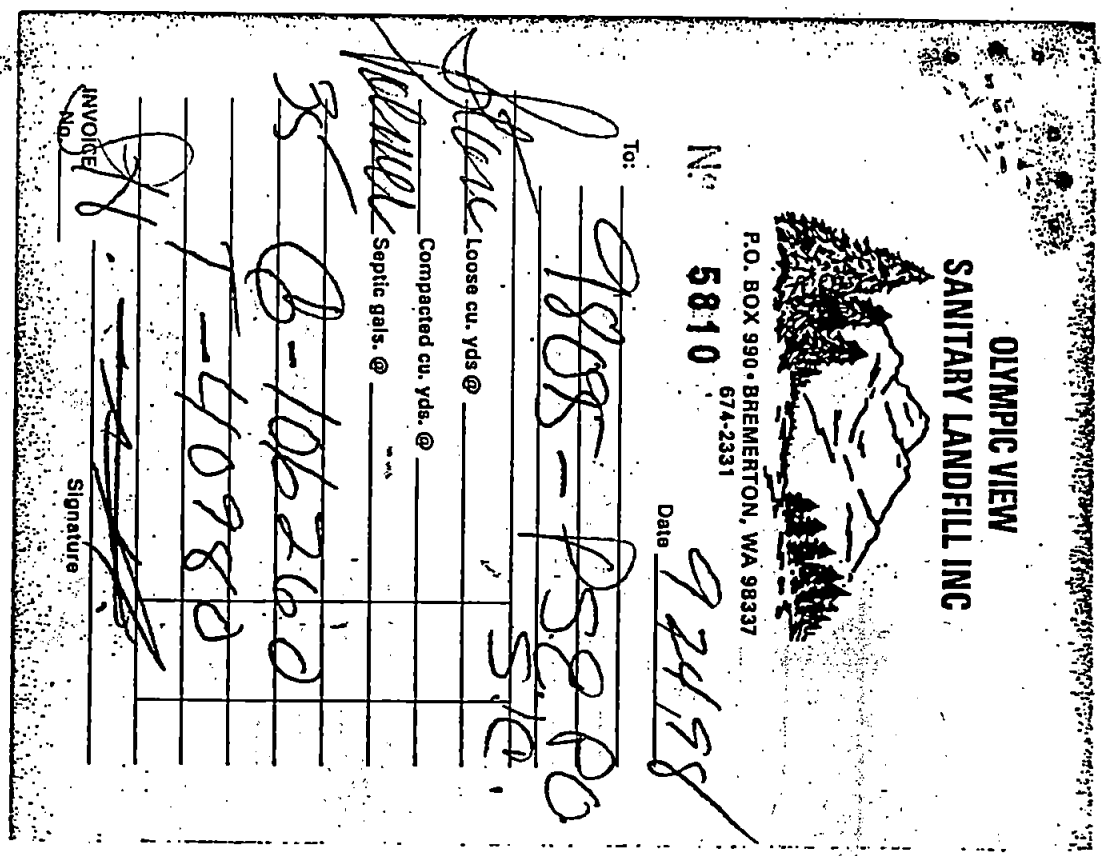
PUGET SOUND ENERGY
CUSTOMER ACCT# 3301645
VEHICLE ID# SCHERER81
TIME: 11:26 DATE: 09/26/1998
MANUAL TICKET# N/A

COMMODITY: CONT/SOIL PO#: TICKET 5811
SOURCE ID: WA - KIT -
GEN: 98095 NAME: PUGET SOUND ENERGY 98095 PROJ#:
GEN SOURCE/ADDRESS: PUGET SOUND ENERGY 98095
TONS(LBS): GROSS: 41.76(83520) TARE: 17.99(35980) NET: 23.77(47540)
CUBIC YARDS: 1.0
RATE: 17.130 / TON QNTY: 23.77 PRETAX CHARGE: 407.18

PAYMENT METHOD: CHARGE: ACCOUNT RECE PAYMENT TOTAL: 421.84

SIGNATURE:
_____

COMMODITIES:	$407.18
EXTRA CHARGES:	$0
TAXES AND FEES:	$14.66
ALL CHARGES:	$421.84



OLYMPIC VIEW SANITARY TiK# 58069

A SUBSIDIARY OF WASTE MANAGEMENT
10015 SW BARNEY WHITE ROAD
PORT ORCHARD, WA 98367
PHONE# (360)674-2331
PREPARED BY: CJS

PUGET SOUND ENERGY
CUSTOMER ACCT# 3301645
VEHICLE ID# PALMER35
TIME: 11:28 DATE: 09/26/1998
MANUAL TICKET# N/A

COMMODITY: CONT/SOIL PO#: TICKET 5810
SOURCE ID: WA - KIT -
GEN: 98095 NAME: PUGET SOUND ENERGY 98095 PROJ#:
GEN SOURCE/ADDRESS: PUGET SOUND ENERGY 98095
TONS(LBS): GROSS: 53.13(106260) TARE: 20.49(40980) NET: 32.64(65280)
CUBIC YARDS: 1.0
RATE: 17.130 / TON QNTY: 32.64 PRETAX CHARGE: 559.12

PAYMENT METHOD: CHARGE: ACCOUNT RECE PAYMENT TOTAL: 579.25

SIGNATURE:

____

COMMODITIES:	$559.12
EXTRA CHARGES:	$0
TAXES AND FEES:	$20.13
ALL CHARGES:	$579.25

OLYMPIC VIEW SANITARY LANDFILL INC
P.O. BOX 990 • BREMERTON, WA 98337
674-2331

No 5807

Date 9/26/98

To: 98095 PSE
P.O. 5810

SLA Loose cu. yds @
PCS Compacted cu. yds. @
44 Septic gals. @
0.106260
4T 40980
PT 65280

INVOICE No.

Signature

OLYMPIC VIEW SANITARY Tik# 58070

A SUBSIDIARY OF WASTE MANAGEMENT
10015 SW BARNEY WHITE ROAD
PORT ORCHARD, WA 98367
PHONE# (360)674-2331
PREPARED BY: CJS

PUGET SOUND ENERGY
CUSTOMER ACCT# 3301645
VEHICLE ID# JLA 41
TIME: 11:29 DATE: 09/26/1998
MANUAL TICKET# N/A

COMMODITY: CONT/SOIL PO#: TICKET 5807
SOURCE ID: WA - KIT -
GEN: 98095 NAME: PUGET SOUND ENERGY 98095 PROJ#:
GEN SOURCE/ADDRESS: PUGET SOUND ENERGY 98095
TONS(LBS): GROSS: 51.88(103760) TARE: 19.67(39340) NET: 32.21(64420)
CUBIC YARDS: 1.0
RATE: 17.130 / TON QNTY: 32.21 PRETAX CHARGE: 551.76

PAYMENT METHOD: CHARGE: ACCOUNT RECE PAYMENT TOTAL: 571.62

SIGNATURE:

COMMODITIES:	$551.76
EXTRA CHARGES:	$0
TAXES AND FEES:	$19.86
ALL CHARGES:	$571.62

OLYMPIC VIEW SANITARY LANDFILL INC
P.O. BOX 990 • BREMERTON, WA 98337
674-2331

№ 5803

Date

To:

Loose cu. yds @

Compacted cu. yds. @

Septic gals. @

INVOICE No.

Signature

OLYMPIC VIEW SANITARY Tik# 58071

A SUBSIDIARY OF WASTE MANAGEMENT
10015 SW BARNEY WHITE ROAD
PORT ORCHARD, WA 98367
PHONE# (360)674-2331
PREPARED BY: CJS

PUGET SOUND ENERGY
CUSTOMER ACCT# 3301645/
VEHICLE ID# SCHERERS1
TIME: 11:31 DATE: 09/26/1995
MANUAL TICKET# N/A

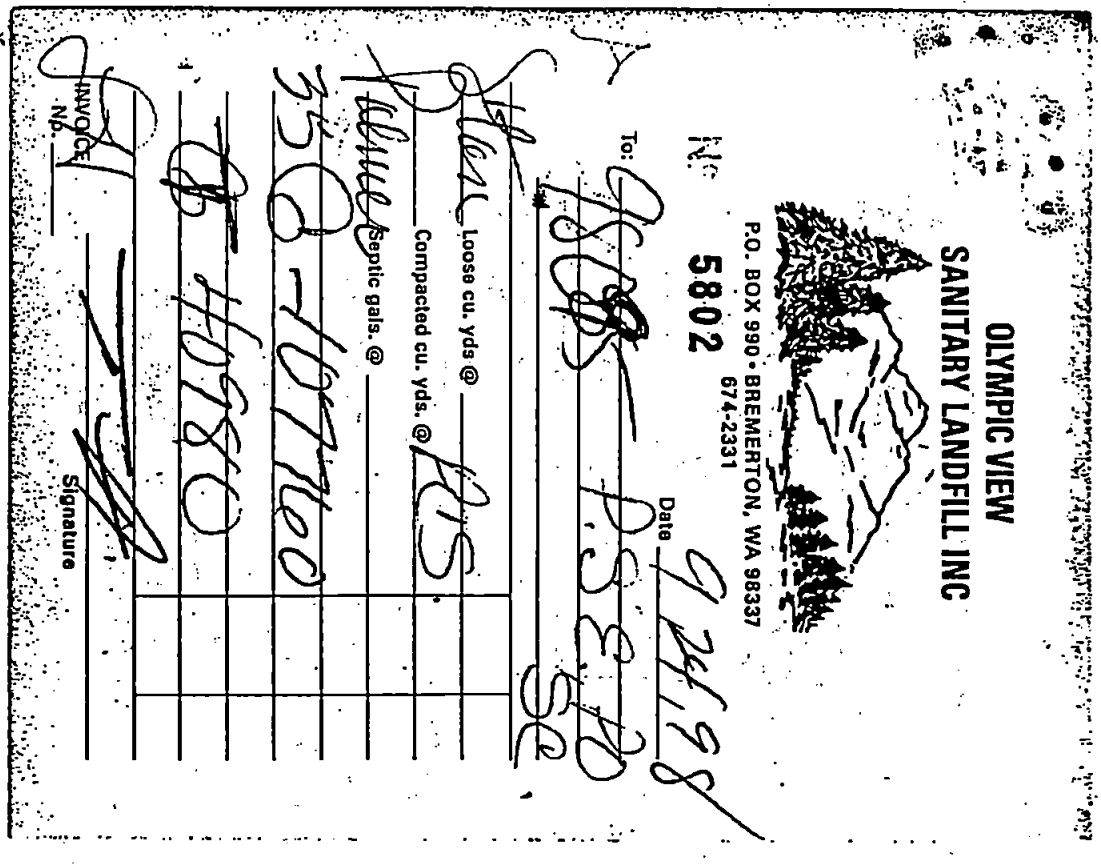
COMMODITY: CONT/SOIL PO#: TICKET 5803
SOURCE ID: WA - KIT -
GEN: 98095 NAME: PUGET SOUND ENERGY 98095 PROJ#:
GEN SOURCE/ADDRESS: PUGET SOUND ENERGY 98095
TONS(LBS): GROSS: 46.10(92200) TARE: 17.99(35980) NET: 28.11(56220)
CUBIC YARDS: 1.0
RATE: 17.130 / TON QNTY: 28.11 PRETAX CHARGE: 481.52

PAYMENT METHOD: CHARGE: ACCOUNT RECE PAYMENT TOTAL: 498.52

SIGNATURE:

_____

COMMODITIES:	$481.52
EXTRA CHARGES:	$0
TAXES AND FEES:	$17.00
ALL CHARGES:	$498.52



OLYMPIC VIEW SANITARY   Tik# 58078

A SUBSIDIARY OF WASTE MANAGEMENT
10015 SW BARNEY WHITE ROAD
PORT ORCHARD, WA 98367
PHONE# (360)674-2331
PREPARED BY: CJS

PUGET SOUND ENERGY
CUSTOMER ACCT# 3301645
VEHICLE ID# PALMER33
TIME: 11:46 DATE: 09/26/1998
MANUAL TICKET# N/A

COMMODITY: CONT/SOIL   PO#: TICKET 5802
SOURCE ID: WA - KIT -
GEN: 98095   NAME: PUGET SOUND ENERGY 98095   PROJ#:
GEN SOURCE/ADDRESS: PUGET SOUND ENERGY 98095
TONS(LBS): GROSS: 53.88(107760) TARE: 20.49(40980) NET: 33.39(66780)
CUBIC YARDS: 1.0
RATE: 17.130 / TON   QNTY: 33.39 PRETAX CHARGE: 571.97

PAYMENT METHOD: CHARGE: ACCOUNT RECE   PAYMENT TOTAL: 592.56

SIGNATURE:

COMMODITIES:	$571.97
EXTRA CHARGES:	$0
TAXES AND FEES:	$20.59
ALL CHARGES:	$592.56

OLYMPIC VIEW SANITARY LANDFILL INC
P.O. BOX 990 • BREMERTON, WA 98337
674-2331

№ 5799

Date 9/26/98

To:

Loose cu. yds @

Compacted cu. yds. @

Septic gals. @

INVOICE No.

Signature

OLYMPIC VIEW SANITARY Tik# 58079

A SUBSIDIARY OF WASTE MANAGEMENT
10015 SW BARNEY WHITE ROAD
PORT ORCHARD, WA 98367
PHONE# (360)674-2331
PREPARED BY: CJS

PUGET SOUND ENERGY
CUSTOMER ACCT# 3301645
VEHICLE ID# JLA 41
TIME: 11:47 DATE: 09/26/1998
MANUAL TICKET# N/A

COMMODITY: CONT/SOIL PO#: TICKET 5799
SOURCE ID: WA - KIT -
GEN: 98095 NAME: PUGET SOUND ENERGY 98095 PROJ#:
GEN SOURCE/ADDRESS: PUGET SOUND ENERGY 98095
TONS(LBS): GROSS: 49.60(99200) TARE: 19.67(39340) NET: 29.93(59860)
CUBIC YARDS: 1.0
RATE: 17.130 / TON QNTY: 29.93 PRETAX CHARGE: 512.70

PAYMENT METHOD: CHARGE: ACCOUNT RECE PAYMENT TOTAL: 531.16

SIGNATURE:

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COMMODITIES:	$512.70
EXTRA CHARGES:	$0
TAXES AND FEES:	$18.46
ALL CHARGES:	$531.16

OLYMPIC VIEW SANITARY LANDFILL INC
P.O. BOX 990 • BREMERTON, WA 98337
674-2331

No 5792

Date 9/26/98

To: 98095 PSE PO SC.

JLA #41

Loose cu. yds @

Compacted cu. yds. @ PCS

Septic gals. @

0-111980

1-39340

INVOICE No.

Signature

OLYMPIC VIEW SANITARY   Tik# 58080

A SUBSIDIARY OF WASTE MANAGEMENT   PUGET SOUND ENERGY
10015 SW BARNEY WHITE ROAD   CUSTOMER ACCT# 3301645
PORT ORCHARD, WA 98367   VEHICLE ID# JLA 41
PHONE# (360)674-2331   TIME: 11:48 DATE: 09/26/1998
PREPARED BY: CJS   MANUAL TICKET# N/A

COMMODITY: CONT/SOIL   PO#: TICKET 5797
SOURCE ID: WA - KIT -
GEN: 98095   NAME: PUGET SOUND ENERGY 98095   PROJ#:
GEN SOURCE/ADDRESS: PUGET SOUND ENERGY 98095
TONS(LBS): GROSS: 55.99(111980) TARE: 19.67(39340) NET: 36.32(72640)
CUBIC YARDS: 1.0
RATE: 17.130 / TON QNTY: 36.32 PRETAX CHARGE: 622.16

PAYMENT METHOD: CHARGE: ACCOUNT RECE   PAYMENT TOTAL: 644.56

SIGNATURE: ______________________

COMMODITIES:	$622.16
EXTRA CHARGES:	$0
TAXES AND FEES:	$22.40
ALL CHARGES:	$644.56

OLYMPIC VIEW SANITARY LANDFILL INC
P.O. BOX 990 • BREMERTON, WA 98337
674-2331

№ 5797

Date 9/26/98

To: 98095 PSE - P.S.E. / P.S.E.
Schotter
Loose cu. yds @ P.S.
#81 Compacted cu. yds. @
Septic gals. @
60-95400
P7-35980
34980
INVOICE No. M
Signature

OLYMPIC VIEW SANITARY   Tik# 58081

A SUBSIDIARY OF WASTE MANAGEMENT	PUGET SOUND ENERGY
10015 SW BARNEY WHITE ROAD	CUSTOMER ACCT# 3301645
PORT ORCHARD, WA 98367	VEHICLE ID# SCHERER81
PHONE# (360)674-2331	TIME: 11:48 DATE: 09/26/1998
PREPARED BY: CJS	MANUAL TICKET# N/A

COMMODITY: CONT/SOIL   PO#: TICKET 5797
SOURCE ID: WA - KIT -
GEN: 98095   NAME: PUGET SOUND ENERGY 98095   PROJ#:
GEN SOURCE/ADDRESS: PUGET SOUND ENERGY 98095
TONS(LBS): GROSS: 47.70(95400)   TARE: 17.99(35980)   NET: 29.71(59420)
CUBIC YARDS: 1.0
RATE: 17.130 / TON   QNTY: 29.71   PRETAX CHARGE: 508.93

PAYMENT METHOD: CHARGE: ACCOUNT RECE   PAYMENT TOTAL: 527.25

SIGNATURE:

COMMODITIES:	$508.93
EXTRA CHARGES:	$0
TAXES AND FEES:	$18.32
ALL CHARGES:	$527.25

OLYMPIC VIEW SANITARY LANDFILL INC
P.O. BOX 990 - BREMERTON, WA 98337
674-2331

No. 5788

Date 9/24/98

To: 98095 Puget Power
STAN PCS.
PALMER P.S. ENERGY
Loose cu. yds @
Compacted cu. yds. @ PORT ORCH.
35 Septic gals. @ Service Ctr
G-109480
T-40980
Invoice No.
Signature

OLYMPIC VIEW SANITARY   Tik# 58082

A SUBSIDIARY OF WASTE MANAGEMENT
10015 SW BARNEY WHITE ROAD
PORT ORCHARD, WA 98367
PHONE# (360)674-2331
PREPARED BY: CJS

PUGET SOUND ENERGY
CUSTOMER ACCT# 3301645
VEHICLE ID# PALMER35
TIME: 11:49 DATE: 09/26/1998
MANUAL TICKET# N/A

COMMODITY: CONT/SOIL   PO#: TICKET 5788
SOURCE ID: WA - KIT -
GEN: 98095   NAME: PUGET SOUND ENERGY 98095   PROJ#:
GEN SOURCE/ADDRESS: PUGET SOUND ENERGY 98095
TONS(LBS): GROSS: 54.74(109480) TARE: 20.49(40980) NET: 34.25(68500)
CUBIC YARDS: 1.0
RATE: 17.130 / TON QNTY: 34.25 PRETAX CHARGE: 586.70

PAYMENT METHOD: CHARGE: ACCOUNT RECE   PAYMENT TOTAL: 607.82

SIGNATURE: ______________________

COMMODITIES:	$586.70
EXTRA CHARGES:	$0
TAXES AND FEES:	$21.12
ALL CHARGES:	$607.82

OLYMPIC VIEW SANITARY LANDFILL INC
P.O. BOX 990 • BREMERTON, WA 98337
674-2331

No 5795

Date 9/24/98

To: 98095 Puget Power

Loose cu. yds @

Compacted cu. yds. @

Septic gals. @

INVOICE No.

Signature

OLYMPIC VIEW SANITARY Tik# 58083

A SUBSIDIARY OF WASTE MANAGEMENT
10015 SW BARNEY WHITE ROAD
PORT ORCHARD, WA 98367
PHONE# (360)674-2331
PREPARED BY: CJS

PUGET SOUND ENERGY
CUSTOMER ACCT# 3301645
VEHICLE ID# PALMER35
TIME: 11:49 DATE: 09/26/1998
MANUAL TICKET# N/A

COMMODITY: CONT/SOIL PO#: TICKET 5795
SOURCE ID: WA - KIT -
GEN: 98095 NAME: PUGET SOUND ENERGY 98095 PROJ#:
GEN SOURCE/ADDRESS: PUGET SOUND ENERGY 98095
TONS(LBS): GROSS: 54.23(108460) TARE: 20.49(40980) NET: 33.74(67480)
CUBIC YARDS: 1.0
RATE: 17.130 / TON QNTY: 33.74 PRETAX CHARGE: 577.97

PAYMENT METHOD: CHARGE: ACCOUNT RECE PAYMENT TOTAL: 598.78

SIGNATURE:

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COMMODITIES:	$577.97
EXTRA CHARGES:	$0
TAXES AND FEES:	$20.81
ALL CHARGES:	$598.78

OLYMPIC VIEW SANITARY Tik# 58099

A SUBSIDIARY OF WASTE MANAGEMENT
[illegible]5 SW BARNEY WHITE ROAD
PORT ORCHARD, WA 98367
PHONE# (360)674-2331
PREPARED BY: CJS.

PUGET SOUND ENERGY
CUSTOMER ACCT# 3301645
VEHICLE ID# SCHERER81
TIME: 12:23 DATE: 09/26/1998
MANUAL TICKET# N/A

COMMODITY: CONT/SOIL PO#: TICKET 5790
SOURCE ID: WA - KIT -
G[illegible]: 98095 NAME: PUGET SOUND ENERGY 98095 PROJ#:
GEN SOURCE/ADDRESS: PUGET SOUND ENERGY 98095
TONS(LBS): GROSS: 45.46(90920) TARE: 17.99(35980) NET: 27.47(54940)
CUBIC YARDS: 1.0
RATE: 17.130 / TON QNTY: 27.47 PRETAX CHARGE: 470.56
PAYMENT TOTAL: 487.50
PAYMENT METHOD: CHARGE: ACCOUNT RECE

COMMODITIES: $470.56
EXTRA CHARGES: $0
TAXES AND FEES: $16.94

SIGNATURE:

ALL CHARGES: 487.50

OLYMPIC VIEW SANITARY LANDFILL INC
P.O. BOX 990 • BREMERTON, WA 98337
674-2331

No 5790

Date 9/26/98

To: 98095 P.S. Energy

Scherer 81

Loose cu. yds @
Compacted cu. yds. @ DCS
Septic gals. @

G-90920
T-35980

INVOICE No.

Signature

OLYMPIC VIEW SANITARY LANDFILL, INC.
A USA WASTE SERVICES COMPANY

(continued from previous page)

303-854
PUGET SOUND ENERGY
P.O. BOX 97034

10/01/98

Invoice # 829

BELLEVUE WA 97034

Date	Service Description	Ticket	Truck	Qty.	Price	Extende
/26/98	CONTAMINATED SOIL	58080	JLA 41	36.32	17.13	622.
/26/98	HOST FEES/STATE REFUSE	58080	JLA 41			22.
	Ticket total					644.56
/26/98	CONTAMINATED SOIL	58081	SCHERE	29.71	17.13	508.
/26/98	HOST FEES/STATE REFUSE	58081	SCHERE			18.
	Ticket total					527.25
/26/98	CONTAMINATED SOIL	58082	PALMER	34.23	17.13	586.
/26/98	HOST FEES/STATE REFUSE	58082	PALMER			21.
	Ticket total					607.62
/26/98	CONTAMINATED SOIL	58083	PALMER	33.74	17.13	577.97
/26/98	HOST FEES/STATE REFUSE	58083	PALMER			20.
	Ticket total					598.
/26/98	CONTAMINATED SOIL	58099	SCHERE	27.47	17.13	470.56
/26/98	HOST FEES/STATE REFUSE	58099	SCHERE			16.
	Ticket total					487.

Total of current charges 001756453 21,148.52

Balance from previous billing 149.80

Total Due $21,298.

PAYMENT IS DUE OCT 30, 1998
PLEASE CALL 24 HOURS IN
ADVANCE FOR FRIABLE AND
NON-FRIABLE ASBESTOS

Grading Blueberry
131.0049
131.0050

Current	9/01/98	8/01/98	7/01/98	6/01/98
21,148.52				149.80

OLYMPIC VIEW SANITARY LANDFILL, INC.
A USA WASTE SERVICES COMPANY

ntinued from previous page)

303-854 10/01/98

PUGET SOUND ENERGY Invoice # 8293
P.O. BOX 97034

BELLEVUE WA 97034

ate	Service Description	Ticket	Truck	Qty.	Price	Extended
2 /98	CONTAMINATED SOIL	57729	R 2	27.71	27.65	766.18
2 /98	HOST FEES/STATE REFUSE	57729	R 2			27.58
	Ticket total					793.76
2 /98	CONTAMINATED SOIL	57763	DT1	36.27	17.13	621.31
2 /98	HOST FEES/STATE REFUSE	57763	DT1			22.37
	Ticket total					643.68
25/98	CONTAMINATED SOIL	57819	JLA 21	36.10	17.13	618.39
2 /98	HOST FEES/STATE REFUSE	57819	JLA 21			22.26
	Ticket total					640.65
25/98	CONTAMINATED SOIL	57860	JLA 21	15.21	17.13	260.55
2 /98	HOST FEES/STATE REFUSE	57860	JLA 21			9.38
	Ticket total					269.93
26/98	CONTAMINATED SOIL	58053	DT1	28.98	17.13	496.43
2 /98	HOST FEES/STATE REFUSE	58053	DT1			17.87
	Ticket total					514.30
26/98	CONTAMINATED SOIL	58054	DT1	33.17	17.13	568.20
26/98	HOST FEES/STATE REFUSE	58054	DT1			20.46
	Ticket total					588.66
2 /98	CONTAMINATED SOIL	58063	JLA 41	29.62	17.13	507.39
26/98	HOST FEES/STATE REFUSE	58063	JLA 41			18.27
	Ticket total					525.66
2 /98	CONTAMINATED SOIL	58067	SCHERE	23.77	17.13	407.18
26/98	HOST FEES/STATE REFUSE	58067	SCHERE			14.66
	Ticket total					421.84
2 /98	CONTAMINATED SOIL	58069	PALMER	32.64	17.13	559.12
26/98	HOST FEES/STATE REFUSE	58069	PALMER			20.13
	Ticket total					579.25
2 /98	CONTAMINATED SOIL	58070	JLA 41	32.21	17.13	551.76
2 /98	HOST FEES/STATE REFUSE	58070	JLA 41			19.86
	Ticket total					571.62
2 /98	CONTAMINATED SOIL	58071	SCHERE	28.11	17.13	481.57
2 /98	HOST FEES/STATE REFUSE	58071	SCHERE			17.33
	Ticket total					498.85
26/98	CONTAMINATED SOIL	58078	PALMER	33.39	17.13	571.97
2 /98	HOST FEES/STATE REFUSE	58078	PALMER			20.59
	Ticket total					592.56
26/98	CONTAMINATED SOIL	58079	JLA 41	29.93	17.13	512.70
2 /98	HOST FEES/STATE REFUSE	58079	JLA 41			18.46
	Ticket total					531.16

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OLYMPIC VIEW SANITARY LANDFILL, INC.
A USA WASTE SERVICES COMPANY

303-554 10/01/98

PUGET SOUND ENERGY Invoice # 829
P.O. BOX 97034

BELLEVUE WA 97034

Date	Service Description	Ticket	Truck	Qty.	Price	Extende
25/98	CONTAMINATED SOIL	57708	DT1	33.08	27.65	914.
25/98	HOST FEES/STATE REFUSE	57708	DT1			32.
	Ticket total					947.59
25/98	CONTAMINATED SOIL	57713	ECTI 0	30.64	27.65	847.
25/98	HOST FEES/STATE REFUSE	57713	ECTI 0			30.
	Ticket total					877.
25/98	CONTAMINATED SOIL	57715	JENSEN	31.81	27.65	879.55
25/98	HOST FEES/STATE REFUSE	57715	JENSEN			31.
	Ticket total					911.
25/98	CONTAMINATED SOIL	57717	R 2	31.49	27.65	870.70
25/98	HOST FEES/STATE REFUSE	57717	R 2			31.
	Ticket total					902.
25/98	CONTAMINATED SOIL	57719	LONE 2	30.79	27.65	851.
25/98	HOST FEES/STATE REFUSE	57719	LONE 2			30.65
	Ticket total					881.
25/98	CONTAMINATED SOIL	57720	JENSEN	31.22	27.65	863.
25/98	HOST FEES/STATE REFUSE	57720	JENSEN			31.08
	Ticket total					894.
25/98	CONTAMINATED SOIL	57721	JENSEN	32.56	27.65	900.
25/98	HOST FEES/STATE REFUSE	57721	JENSEN			32.41
	Ticket total					932.
25/98	CONTAMINATED SOIL	57722	SHELDO	26.83	27.65	741.
25/98	HOST FEES/STATE REFUSE	57722	SHELDO			26.71
	Ticket total					768.56
25/98	CONTAMINATED SOIL	57723	LONE 2	25.22	27.65	697.
25/98	HOST FEES/STATE REFUSE	57723	LONE 2			25.
	Ticket total					722.43
25/98	CONTAMINATED SOIL	57724	SCOTT	27.71	27.65	766.
25/98	HOST FEES/STATE REFUSE	57724	SCOTT			27.
	Ticket total					793.76
25/98	CONTAMINATED SOIL	57725	R 2	23.04	27.65	637.
25/98	HOST FEES/STATE REFUSE	57725	R 2			22.
	Ticket total					659.
25/98	CONTAMINATED SOIL	57726	JENSEN	32.97	27.65	911.62
25/98	HOST FEES/STATE REFUSE	57726	JENSEN			32.
	Ticket total					944.
25/98	CONTAMINATED SOIL	57727	LONE 2	30.51	27.65	843.60
25/98	HOST FEES/STATE REFUSE	57727	LONE 2			30.
	Ticket total					873.

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P.O. Box 990, Bremerton, WA 98337
(360) 674-2331 • (360) 674-2370 FAX