GeoEngineers
1101 South Fawcett Avenue, Suite 200
Tacoma, Washington 98402
253.383.4940

July 29, 2024

Washington State Department of Ecology
Toxics Cleanup Program
3190 160th Avenue SE
Bellevue, Washington 98008-5452

Attention: Donna Kirkman

Subject: Request for No Further Action at Initial Investigation at the following Property:
Federal Way Link Extension Parcel FL232
Former Used Car Sales Lot
23646 Pacific Highway South
Kent, Washington
King County Parcel: 2500600520
GeoEngineers File No. 4082-072-00

This letter presents a request for no further action at initial investigation for the Sound Transit property located at 23646 Pacific Highway South, King County Tax Parcel 2500600520, Kent, Washington, identified by Sound Transit as Federal Way Link Extension (FWLE) project parcel FL232. Sound Transit owns the property. The Sound Transit contact is as follows:

- Name: Ross Stainsby, Sr. Environmental Planner, Sound Transit
- Mailing address: 401 South Jackson Street, Seattle, Washington 98104-2826
- Email address: ross.stainsby@soundtransit.org
- Phone number: 206.553.3607

During Phases I and II ESA activities performed at the parcel before FWLE construction, potential environmental concerns were identified from past auto-related businesses that operated on the property. Six soil borings were advanced in areas of potential contaminant sources. Carcinogenic polycyclic aromatic hydrocarbons (cPAHs) were detected in one of nine soil samples analyzed from boring FL232-B5 at 3.5 to 4.5 feet below ground surface (bgs) at a concentration greater than the Model Toxic Control Act (MTCA) Method A cleanup level. Lube oil-range hydrocarbons were also detected in this sample at a concentration less than the MTCA Method A cleanup level.

Two of the six Phase II ESA soil borings showed evidence of perched, shallow groundwater from 6 to 13.5 feet bgs. Soil samples from the borings with evidence of perched shallow groundwater were tested for petroleum, metals, volatile organic compounds (VOCs) and polycyclic aromatic hydrocarbons (PAHs). No compounds were detected at concentrations greater than MTCA cleanup levels. The cPAH contaminated

soil at 3.5 to 4.5 feet bgs was removed by excavation in April 2020. Confirmation of contaminant removal was supported by soil sample analytical testing.

Additional soil sampling was conducted in June 2024 directly beneath the 2020 excavation. Soil samples analyzed from depths of approximately 10, 20 and 30 feet bgs were either non detect or were less than MTCA Method A cleanup levels for diesel- and oil-range petroleum hydrocarbons and PAHs.

No evidence of wet soil conditions or perched shallow groundwater was observed during drilling of the June 2024 exploration to a depth of 40 feet bgs. Therefore, the minimum separation between the previous contamination at 4.5 feet bgs and possible groundwater is 35 feet or greater. Also, the contaminants of concern at the site are not considered highly mobile, and therefore, are unlikely to have migrated substantially beyond the release area.

Based on the contaminant type, soil sample results and the lack of perched groundwater beneath the area of excavation, it is unlikely that groundwater in the site vicinity is impacted by the release at FWLE parcel FL232. In our opinion, no further investigation or remediation is warranted at the FL232 parcel. On behalf of Sound Transit, we request a no further action determination for the parcel.

Sincerely,
GeoEngineers, Inc.

Marsi M. Beeson
Senior Environmental Scientist

Dana L. Carlisle PE
Principal

MMB:DLC:mce

cc: Ross Stainsby, Sr. Environmental Planner, Sound Transit

Attachment(s):
Post-Remediation Compliance Monitoring, Federal Way Link Extension Parcel FL232, King County Tax Parcel 2500600520, 23646 Pacific Highway South, Kent, Washington, dated July 29, 2024

Post-Remediation Compliance Monitoring

Federal Way Link Extension Parcel FL232
King County Tax Parcel 2500600520
23646 Pacific Highway South
Kent, Washington

for
Sount Transit

July 29, 2024

1101 South Fawcett Avenue, Suite 200
Tacoma, Washington
253.383.4940

GeoEngineers

Post-Remediation Compliance Monitoring

Federal Way Link Extension Parcel FL232
King County Tax Parcel 2500600520
23646 Pacific Highway South
Kent, Washington

File No. 4082-072-00
July 29, 2024

Prepared for:

Sound Transit
401 South Jackson Street
Seattle, Washington 98104-2826

Attention: Ross Stainsby, Senior Environmental Planner

Prepared by:

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Acronyms and Abbreviations

ASTM	ASTM International
bgs	below ground surface
cPAH	carcinogenic polycyclic aromatic hydrocarbons
CUL	cleanup level
Ecology	Washington State Department of Ecology
EPA	U.S. Environmental Protection Agency
ESA	Environmental Site Assessment
FWLE	Federal Way Link Extension
mg/kg	milligrams per kilogram
MTCA	Model Toxics Control Act
NAVD 88	North American Vertical Datum of 1988
NFA	No Further Action
PAH	polycyclic aromatic hydrocarbons
PID	photoionization detector
ppm	parts per million
PVC	polyvinyl chloride
ROW	right-of-way
VOC	volatile organic compound
WAC	Washington Administrative Code

1.0 Introduction

This report presents post-remediation compliance monitoring results for the property at 23646 Pacific Highway South in Kent, Washington, King County Tax Parcel 2500600520 (subject property), identified by Sound Transit as Federal Way Link Extension (FWLE) parcel FL232 (Vicinity Map, Figure 1). The property is owned by Sound Transit. The address 23646 Pacific Highway South is associated with a previous building on the property that was demolished in 2020. The property is currently being used by Sound Transit contractors for construction staging and storage for the FWLE Project (Site Plan, Figure 2).

GeoEngineers completed Phase I and II environmental site assessments (ESAs) at the subject property in 2017 (GeoEngineers 2017a and 2017b). Remedial excavation at the property was performed in 2020 (OSG 2020). After the 2020 remedial excavation was performed, the Washington State Department of Ecology (Ecology) requested post-remediation investigation to collect a groundwater sample in the area of the 2020 remedial excavation due to the observance of perched groundwater encountered in two of the 2017 Phase II ESA borings. This report summarizes the results of the post-remediation investigation and sampling.

1.1 PURPOSE AND SCOPE OF SERVICES

The purpose of the post-remediation compliance monitoring was to evaluate the area beneath the remedial excavation to assess whether groundwater contamination exists. The scope of services is described below:

- Locate all public and private utilities in advance of drilling in accordance with state law and adjust well locations as needed to avoid conflicts with existing and known future utilities.
- Retain a licensed drilling company to install a monitoring well in accordance with state law.
- Drill one monitoring well boring to a depth of 40 feet below ground surface (bgs) within the backfilled remedial excavation to observe for the presence of groundwater.
- Collect soil samples from the exploration at 10-foot depth intervals during drilling from about 10 feet bgs to the bottom of the boring.
- Visually classify the soil samples in general accordance with ASTM International (ASTM) D 2488 and maintain a detailed log of each exploration.
- Utilize field screening to evaluate soil samples for possible laboratory analysis. Field screening methods included visual, sheen testing, and photoionization detector (PID) headspace vapor measurements to assess the possible presence of petroleum hydrocarbon and petroleum-related volatile organic compounds (VOCs).
- Submit select soil samples for analysis of diesel- and oil-range hydrocarbons by NWTPH-Dx and polycyclic aromatic hydrocarbons (PAHs) by 8270E/SIM.
- Decommission the monitoring well in accordance with Washington Administrative Code (WAC) 173-160-460.
- Containerize solids and water generated during well installation in 55-gallon steel drums labeled in accordance with applicable Sound Transit guidance and coordinate the disposal of these materials.

1.2 SUMMARY OF PRIOR INVESTIGATIONS

In March 2017 GeoEngineers completed a Phase I ESA for the subject property for Sound Transit. As of 2017, the northern portion of the property was occupied by a restaurant and the southern portion of the property was occupied by a used car sales business. Prior uses of the southern portion of the subject property included an auto towing business, limousine business and various auto sales businesses dating back to the late 1980s. The Phase I ESA identified an oil/water separator as well as evidence of former auto maintenance activities. Historical records indicated the presence of a septic system and associated drainfield in the southern portion of the property in use until about the 1970s. The historical site layout is shown in Figure 2 of the 2017 Phase II ESA included in Appendix A.

In May 2017, GeoEngineers completed a Phase II ESA for Sound Transit including six direct push explorations situated in the vicinity of the auto-related operations in the southern portion of the parcel. One of nine soil samples submitted for chemical analysis from the explorations had contaminants detected at a concentration greater than the Model Toxics Control Act (MTCA) Method A cleanup level: cPAHs were detected in the soil sample from FL232-B5 at 3.5 to 4.5 feet bgs at a concentration (0.14 milligrams per kilogram [mg/kg]) greater than the MTCA Method A cleanup level of 0.1 mg/kg. Lube oil-range hydrocarbons were also detected in this sample at a concentration of 1,400 mg/kg, which is less than the MTCA Method A cleanup level of 2,000 mg/kg. Evidence of isolated, perched shallow groundwater was encountered in two of the six direct push borings at depths between 6 and 13.5 feet bgs (FL232-B1 and FL232-B3 – see Figure 2); however, the quantity of groundwater was insufficient for sampling.

In April 2020, the FL232-B5 contaminated soil was excavated (see Figure 2); the remedial excavation extended to a depth of 5 feet bgs. Approximately 62 tons of cPAH-contaminated soil was removed and disposed of at Republic Services landfill. cPAHs were not detected in the 2020 confirmation soil samples collected from the four walls and the base of the remedial excavation. The remedial excavation was subsequently backfilled. No evidence of groundwater was encountered in the 2020 remedial excavation. The remediation was performed by Sound Transit as an independent cleanup in accordance with MTCA.

In 2020, Sound Transit's contractors removed the building and all former facilities and utilities on the parcel. The Phase II ESA and remediation reports were submitted to Ecology with a request for no further action (NFA) at initial investigation. Ecology responded with a request to collect a groundwater sample in the area of the 2020 remedial excavation due to the observance of perched groundwater encountered between 6 and 13.5 feet bgs during the 2017 Phase II ESA activities. The post-remediation investigation activities summarized in this report were performed in response to Ecology's request for a groundwater investigation.

2.0 Physical Setting

2.1 TOPOGRAPHY

The ground surface elevation is approximately 412 feet above mean sea level (North American Vertical Datum of 1988 [NAVD 88], sea level). Surface topography is generally flat. Sound Transit contractors imported approximately 2 feet of gravel fill that was graded across the surface of the property to prepare the property for construction staging and storage uses.

2.2 SOIL CONDITIONS

Soil conditions on the property consist of fine to coarse sand with fine to coarse gravel and trace silt to a depth of approximately 10 feet bgs. The sand is underlain by silt with fine gravel to 20 feet bgs. Soils from 20 to 40 feet bgs consist of very dense, fine to coarse sand with varying amounts of silt and gravel.

2.3 GROUNDWATER CONDITIONS

In June 2024, one exploration was advanced within the backfilled remedial excavation to a depth of 40 feet bgs and a monitoring well was constructed in the boring. No evidence of perched groundwater was observed in the boring during drilling activities. The monitoring well was in place from June 11, 2024 to June 24, 2024. No groundwater was present in the well.

3.0 Contaminants of Concern and MTCA Cleanup Levels

Based on site historical uses and the results of the Phase II ESA, contaminants of concern were diesel-range petroleum hydrocarbons and cPAHs. The chemical analytical data for samples obtained during the 2024 sampling were compared to Model Toxics Control Act (MTCA) Method A cleanup levels. MTCA Method B cleanup levels were used for analytes where MTCA Method A cleanup levels are not established.

4.0 2024 Investigation Findings

4.1 SUBSURFACE EXPLORATION PROGRAM

One soil exploration was completed within the 2017 remedial excavation on the subject property on June 10 and 11, 2024. The approximate exploration location is shown on Figure 2. Holt Services, Inc. performed the hollow-stem auger (HSA) drilling as a subcontractor to GeoEngineers. The subsurface exploration was monitored by a representative of GeoEngineers who visually classified and field screened soil samples collected from the exploration for evidence of petroleum and volatiles. The soil boring was completed to a depth of 40 feet bgs. The boring log and the field exploration program are presented in Appendix B. Subsurface conditions and field screening results are shown in the exploration log presented in Appendix B.

Soil and groundwater samples were submitted to OnSite Environmental, Inc. in Redmond, Washington for chemical analysis. The soil chemical analytical results are summarized in Table 1. The laboratory report is presented in Appendix C.

4.2 SUBSURFACE OBSERVATIONS AND FIELD SCREENING

Soil conditions observed during drilling are described in Section 2.2. Field screening evidence of suspect contamination (elevated headspace vapors) was observed in a soil sample collected from FL232-MW1 at a depth of 10-10.5. An elevated headspace vapor reading of 3,906 parts per million (ppm) was measured for the 10-10.5-foot sample. This reading appears to be anomalous, given that the analytical results for the sample did not confirm the presence of contamination. No field screening evidence of suspect contamination was observed in the soil samples collected at 30-31 and 40-40.5 feet bgs.

4.3 SOIL ANALYTICAL TESTING RESULTS

Soil samples from depths of 10-10.5 feet, 20-21 feet bgs and 30-31 feet bgs were analyzed for diesel- and oil-range petroleum hydrocarbons and PAHs. Low concentrations of lube oil-range petroleum hydrocarbons were detected in soil samples FL232-MW1-10-10.5 (170 mg/kg) and FL232-MW1-30-31 (220 mg/kg). Diesel-range petroleum was not detected in soil sample FL232-MW1-20-21. PAHs were not detected in the soil samples tested.

4.4 GROUNDWATER MONITORING WELL INSTALLATION

No evidence of perched shallow groundwater was observed during drilling. To further assess the potential for groundwater, a 2-inch-diameter temporary monitoring well was placed in the exploration (Well Tag ID BPL279); the well screen was positioned at the base of the boring from 30 to 40 feet bgs. The well was checked between June 11 and June 24, 2024. No groundwater was present in the well. The monitoring well was subsequently decommissioned on June 24, 2024 in accordance with WAC 173-160-460.

5.0 Conclusions

The June 2024 post-remediation compliance sampling confirmed the area of relatively shallow PAH-contaminated soil identified by the 2017 Phase II ESA was successfully removed. The sampling also confirmed that groundwater is not likely to be impacted given the contaminant type, absence of perched groundwater in June 2024 and apparent substantial depth to groundwater. These conclusions are supported by the findings and data interpretation as summarized below:

- The May 2017 Phase II ESA soil contamination was encountered at a depth of 3.5 to 4.5 feet bgs. The contaminated soil was removed by excavation in April 2020 and confirmed by soil sample analytical testing (OSG 2020). Petroleum hydrocarbons and PAHs in soil samples collected in June 2024 from depths of approximately 10, 20 and 30 feet bgs beneath the 2020 remedial excavation were either non detect or the detected concentrations were less than MTCA cleanup levels.
- No evidence of wet soil conditions or perched shallow groundwater was observed during drilling of the June 2024 exploration to a depth of 40 feet bgs. Based on the June 2024 field observations at FL232-MW-1, there is at least 35 feet of vertical separation between the depth where contaminated soil had been identified (and removed) and the possible depth of groundwater.
- Site contaminants of concern (now removed) are not considered highly mobile, and therefore are unlikely to have migrated substantially beyond the release area.

6.0 Limitations and Guidelines for Use

These Limitations provide information to help you manage your risks with respect to the use of this report. Some clients, design professionals and contractors may not recognize that the geoscience practices (geotechnical engineering, geology and environmental science) are far less exact than other engineering and natural science disciplines. This lack of understanding can create unrealistic expectations that could lead to disappointments, claims and disputes. GeoEngineers includes these explanatory "limitations" provisions in our reports to help reduce such risks. Please confer with GeoEngineers if you are unclear how these "Limitations and Guidelines for Use" apply to your project or site.

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Within the limitations of scope, schedule and budget, our services have been executed in accordance with generally accepted environmental science practices in this area at the time this report was prepared. The conclusions and opinions presented in this report are based on our professional knowledge, judgment and experience. No warranty, express or implied, applies to this report.

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Please refer to the appendix titled "Report Limitations and Guidelines for Use" for additional information pertaining to use of this report.

7.0 References

GeoEngineers, Inc. 2017a. Federal Way Link Extension, AE 0044-12 WP 3.S, Phase I Environmental Site Assessment FL-232, Tax Parcel 2500600520. March 2017.

GeoEngineers, Inc. 2017b. Federal Way Link Extension, AE 0044-12 WP 3.7.N, Phase II Environmental Site Assessment FL232, Tax Parcel 2500600520. September 2017.

O'Neill Service Group (OSG) 2020. Soil Characterization and Remediation Report, Parcel FL-232. July 15, 2020.

Washington State Department of Ecology, 2007. Model Toxics Control Act Cleanup Regulation, Chapter 173-340 WAC Washington State Department of Ecology Toxics Cleanup Program. Publication No. 94-06. April 1990, Revised October 12, 2007.

Washington State Department of Ecology, 2016. "Guidance for Remediation of Petroleum Contaminated Sites" Toxics Cleanup Program Publication No. 10-09-057. Revised June 2016.

Tables

Table 1

Summary of Soil Chemical Analytical Results[1]

Post-Remediation Compliance Monitoring, FL232

Kent, Washington

Boring Identification	FL232-MW1			MTCA Method A/B Cleanup Level[5]
Sample Identification[2]	FL232-MW1-10-10.5	FL232-MW1-20-21	FL232-MW1-30-31	
Sample Date	6/10/2024	6/10/2024	6/10/2024	
Sample Start Depth (feet bgs)	10	20	30	
Sample End Depth (feet bgs)	10.5	21	31	
Field Screening - Headspace Vapor (ppm)	3906	4.1	<1	
Field Screening - Water Sheen Testing	NS	NS	NS	
NWTPH-Dx[3] (mg/kg)				
Diesel-range hydrocarbons	27 U	27 U	27 U	2,000
Lube Oil-range hydrocarbons	**170**	54 U	**220**	2,000
PAHs[4] (mg/kg)				
1-Methylnaphthalene	0.0071 U	0.0072 U	0.0071 U	5
2-Methylnaphthalene	0.0071 U	0.0072 U	0.0071 U	
Naphthalene	0.0071 U	0.0072 U	0.0071 U	
Acenaphthene	0.0071 U	0.0072 U	0.0071 U	4,800
Acenaphthylene	0.0071 U	0.0072 U	0.0071 U	NE
Anthracene	0.0071 U	0.0072 U	0.0071 U	24,000
Benzo(a)anthracene (TEF 0.1)	0.0071 U	0.0072 U	0.0071 U	See cPAHs
Benzo(a)pyrene (TEF 1)	0.0071 U	0.0072 U	0.0071 U	See cPAHs
Benzo(b)fluoranthene (TEF 0.1)	0.0071 U	0.0072 U	0.0071 U	See cPAHs
Benzo(g,h,i)perylene	0.0071 U	0.0072 U	0.0071 U	NE
Benzo(j,k)fluoranthene (TEF 0.1)	0.0071 U	0.0072 U	0.0071 U	See cPAHs
Chrysene (TEF 0.01)	0.0071 U	0.0072 U	0.0071 U	See cPAHs
Dibenzo(a,h)anthracene (TEF 0.1)	0.0071 U	0.0072 U	0.0071 U	See cPAHs
Fluoranthene	0.0071 U	0.0072 U	0.0071 U	3,200
Fluorene	0.0071 U	0.0072 U	0.0071 U	3,200
Indeno(1,2,3-c,d)pyrene (TEF 0.1)	0.0071 U	0.0072 U	0.0071 U	See cPAHs
Phenanthrene	0.0071 U	0.0072 U	0.0071 U	NE
Pyrene	0.0071 U	0.0072 U	0.0071 U	2,400
cPAHs (benzo(a)pyrene toxicity equivalent concentration)[6]	0.0053605	0.005436	0.0053605	0.1

Notes:

[1] Chemical analysis performed by OnSite Environmental, Inc., of Redmond, Washington.

[2] Sample ID = Parcel ID - exploration number - depth of sample [feet bgs]. FL232-MW1-10-10.5 = Parcel FL232, monitoring well 1, soil sample collected from a depth of 10 to 10.5 feet bgs

[3] Diesel- and lube oil-range petroleum hydrocarbons by Northwest Method NWTPH-Dx.

[4] Polycyclic aromatic hydrocarbons (PAHs) and carcinogenic PAHs (cPAHs) analyzed by EPA Method 8270D/SIM.

[5] MTCA Method B cleanup level used when Method A cleanup level has not been established.

[6] Results for cPAHs are shown as the sum of the benzo[a]pyrene toxicity equivalent concentrations, calculated by multiplying each individual cPAH concentration by its corresponding TEF. In this sum, nondetects are represented as ½ of the corresponding analyte reporting limit multiplied by the TEF.

U = Analyte was not detected at or greater than the listed reporting limit.

Bold font type indicates that the analyte was detected at a concentration greater than the respective laboratory reporting limit.

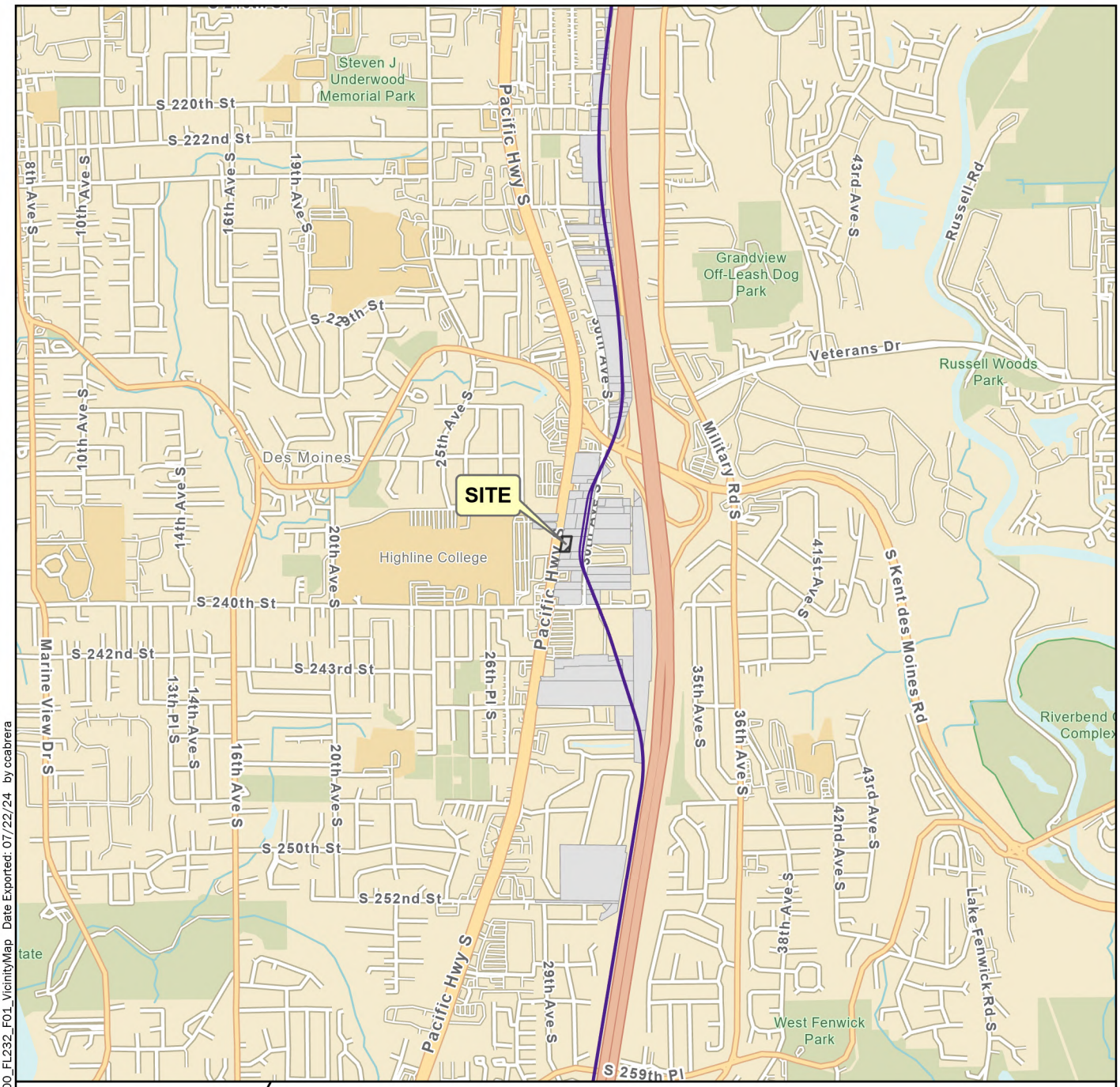
Gray shading indicates that the detected result exceeds the specified MTCA Cleanup Level.

bgs = below ground surface | MTCA = Model Toxics Control Act | NS = no sheen

NE = not established | N/A = not applicable | "–" = not tested

TEF = Toxicity Equivalency Factor as defined in WAC 173-340-900 Table 708-2. | mg/kg = milligrams per kilogram

Figures



Source(s):
- ESRI

Coordinate System: NAD 1983 UTM Zone 10N

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Vicinity Map
FL232

Post-Remediation Compliance Monitoring
Federal Way Link Extension
Kent, Washington

GeoEngineers

Figure 1

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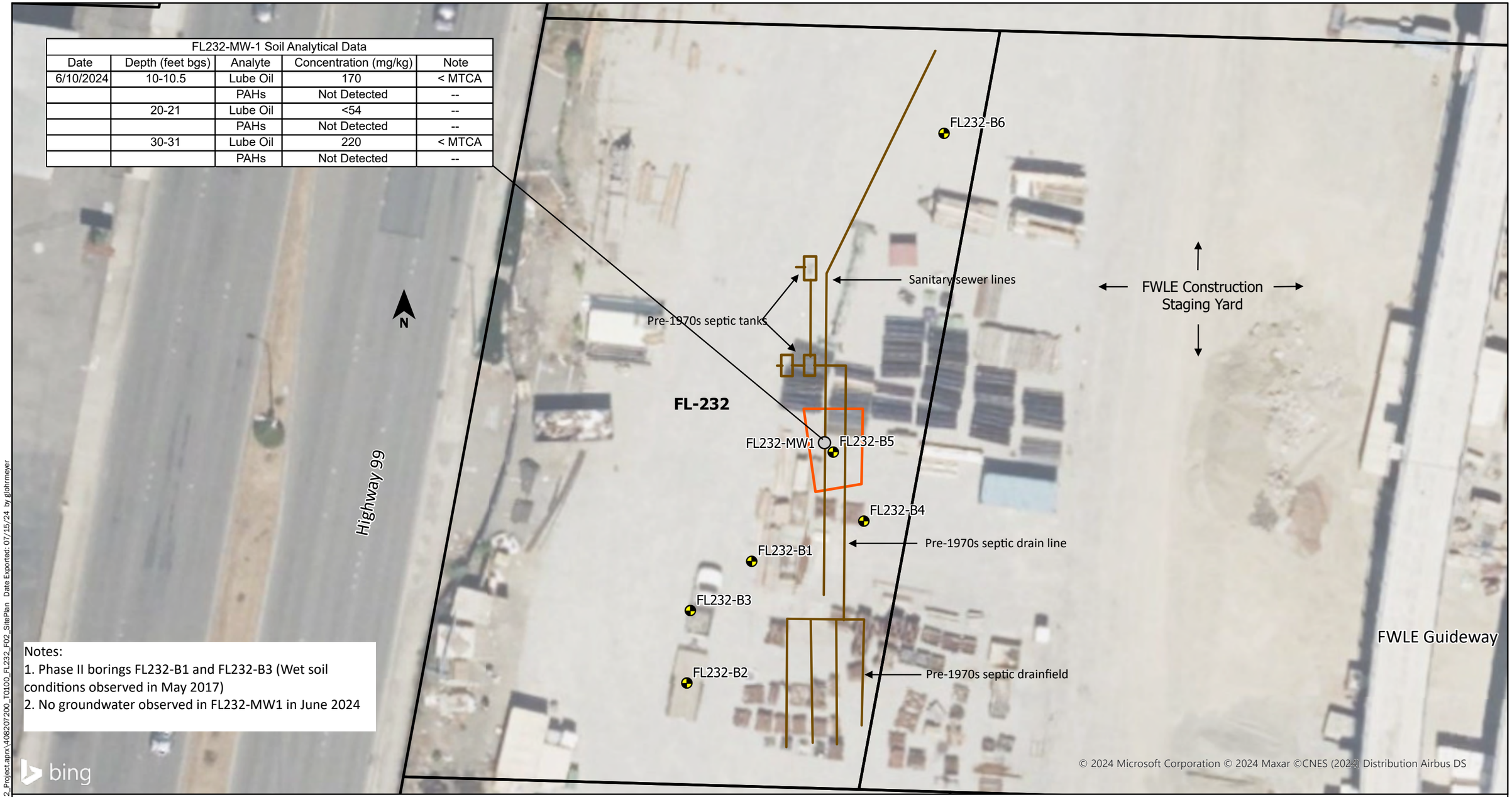
FL232-MW-1 Soil Analytical Data				
Date	Depth (feet bgs)	Analyte	Concentration (mg/kg)	Note
6/10/2024	10-10.5	Lube Oil	170	< MTCA
		PAHs	Not Detected	--
	20-21	Lube Oil	<54	--
		PAHs	Not Detected	--
	30-31	Lube Oil	220	< MTCA
		PAHs	Not Detected	--



Notes:
1. Phase II borings FL232-B1 and FL232-B3 (Wet soil conditions observed in May 2017)
2. No groundwater observed in FL232-MW1 in June 2024

Source(s):
- Aerial from bing
- OSG 2020 Soil Characterization and Remediation Report, FL-232, Figure 2

Coordinate System: NAD 1983 StatePlane Washington North FIPS 4601 Feet

Legend

- GeoEngineers 2024 Compliance Monitoring Well Location
- GeoEngineers 2017 Phase II ESA Exploration
- OSG 2020 Excavation
- Federal Way Link Extension Parcel
- Historical Site Feature

N

0 25

Feet

Site Plan
FL-232

Post-Remediation Compliance Monitoring
Federal Way Link Extension
Kent, Washington

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Figure 2

April 2024 pre-drilling exploration location of FL232-MW1. View facing southeast.

June 2024 drilling FL232-MW1. View facing northeast.

Site Photographs - FL232
June 2024

Post-Remediation Compliance Monitoring
Federal Way Link Extension
Kent, Washington

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Figure 3

Appendices

Appendix A

Tables and Figures from 2017 Phase II ESA and 2020 Soil Remediation Report

Table 1

Summary of Soil Chemical Analytical Results[1]
Sound Transit - Federal Way Link Extension FL232
Kent, Washington

Boring Identification	FL232-B1		FL232-B2	FL232-B3	FL232-B4	FL232-B5		FL232-B6		MTCA Method A/B Cleanup Level[10]	Naturally Occurring Background Metals in Puget Sound Soils[14]
Sample Identification[2]	FL232-B1-3.5-4.5	FL232-B1-7.5-8.5	FL232-B2-3.5-4.5	FL232-B3-6.5-7.5	FL232-B4-3.5-4.5	FL232-B5-3.5-4.5	FL232-B5-7-8	FL232-B6-3.5-4.5	FL232-B6-11.5-12.5		
Sample Date	5/24/2017	5/24/2017	5/24/2017	5/24/2017	5/24/2017	5/24/2017	5/24/2017	5/24/2017	5/24/2017		
Sample Start Depth (feet bgs)	3.5	7.5	3.5	6.5	3.5	3.5	7.0	3.5	11.5		
Sample End Depth (feet bgs)	4.5	8.5	4.5	7.5	4.5	4.5	8.0	4.5	12.5		
NWTPH-HCID[3] (mg/kg)											
Gasoline-range hydrocarbons	--	22 U	--	22 U	22 U	22 U	--	--	22 U	30/100[11]	N/A
Diesel-range hydrocarbons	--	55 U	--	56 U	54 U	130 U	--	--	54 U	2,000	
Lube Oil-range hydrocarbons	--	110 U	--	110 U	**Detected**	**Detected**	--	--	110 U	2,000	
NWTPH-Dx[4] (mg/kg)											
Diesel-range hydrocarbons	--	--	--	--	--	140 U	28 U	--	--	2,000	N/A
Lube Oil-range hydrocarbons	--	--	--	--	**390 Est**	**1,400**	**190**	--	--	2,000	
Metals[5] (mg/kg)											
Arsenic	11 U	--	11 U	11 U	--	11 U	--	11 U	--	20	7
Barium	--	--	--	**59**	--	**66**	--	--	--	16,000	NE
Cadmium	--	--	--	0.56 U	--	0.55 U	--	--	--	2	1
Chromium	--	--	--	**25**	--	**33**	--	--	--	2,000[12]	48
Chromium, Hexavalent	--	--	--	1.1 U	--	--	--	--	--	19	NE
Lead	**38**	--	5.7 U	5.6 U	--	**36**	--	**66**	--	250	24
Mercury	--	--	--	0.28 U	--	0.28 U	--	--	--	2	0.07
Selenium	--	--	--	11 U	--	11 U	--	--	--	400	NE
Silver	--	--	--	1.1 U	--	1.1 U	--	--	--	400	NE
VOCs[6] (mg/kg)											
1,1,1,2-Tetrachloroethane	--	--	--	0.00090 U	--	0.00094 U	--	--	--	38.5	N/A
1,1,1-Trichloroethane	--	--	--	0.00090 U	--	0.00094 U	--	--	--	2	
1,1,2,2-Tetrachloroethane	--	--	--	0.00090 U	--	0.00094 U	--	--	--	5	
1,1,2-Trichloroethane	--	--	--	0.00090 U	--	0.00094 U	--	--	--	17.5	
1,1-Dichloroethane	--	--	--	0.00090 U	--	0.00094 U	--	--	--	175	
1,1-Dichloroethene	--	--	--	0.00090 U	--	0.00094 U	--	--	--	4,000	
1,1-Dichloropropene	--	--	--	0.00090 U	--	0.00094 U	--	--	--	NE	
1,2,3-Trichlorobenzene	--	--	--	0.0012 U	--	0.00094 U	--	--	--	NE	
1,2,3-Trichloropropane	--	--	--	0.00090 U	--	0.00094 U	--	--	--	0.0333	
1,2,4-Trichlorobenzene	--	--	--	0.0012 U	--	0.00094 U	--	--	--	34.5	
1,2,4-Trimethylbenzene	--	--	--	0.0012 U	--	0.00094 U	--	--	--	NE	
1,2-Dibromo-3-Chloropropane	--	--	--	0.0045 U	--	0.0047 U	--	--	--	1.25	
1,2-Dibromoethane	--	--	--	0.00090 U	--	0.00094 U	--	--	--	0.005	
1,2-Dichlorobenzene (o-Dichlorobenzene)	--	--	--	0.0012 U	--	0.00094 U	--	--	--	7,200	
1,2-Dichloroethane	--	--	--	0.00090 U	--	0.00094 U	--	--	--	11	
1,2-Dichloropropane	--	--	--	0.00090 U	--	0.00094 U	--	--	--	27.8	
1,3,5-Trimethylbenzene	--	--	--	0.0012 U	--	0.00094 U	--	--	--	800	
1,3-Dichlorobenzene (m-Dichlorobenzene)	--	--	--	0.0012 U	--	0.00094 U	--	--	--	NE	
1,3-Dichloropropane	--	--	--	0.00090 U	--	0.00094 U	--	--	--	NE	
1,4-Dichlorobenzene (p-Dichlorobenzene)	--	--	--	0.0012 U	--	0.00094 U	--	--	--	185	
2,2-Dichloropropane	--	--	--	0.00090 U	--	0.00094 U	--	--	--	NE	
2-Butanone (MEK)	--	--	--	0.0045 U	--	0.0047 U	--	--	--	48,000	

Boring Identification	FL232-B1		FL232-B2	FL232-B3	FL232-B4	FL232-B5		FL232-B6		MTCA Method A/B Cleanup Level[10]	Naturally Occurring Background Metals in Puget Sound Soils[14]
Sample Identification[2]	FL232-B1-3.5-4.5	FL232-B1-7.5-8.5	FL232-B2-3.5-4.5	FL232-B3-6.5-7.5	FL232-B4-3.5-4.5	FL232-B5-3.5-4.5	FL232-B5-7-8	FL232-B6-3.5-4.5	FL232-B6-11.5-12.5		
Sample Date	5/24/2017	5/24/2017	5/24/2017	5/24/2017	5/24/2017	5/24/2017	5/24/2017	5/24/2017	5/24/2017		
Sample Start Depth (feet bgs)	3.5	7.5	3.5	6.5	3.5	3.5	7.0	3.5	11.5		
Sample End Depth (feet bgs)	4.5	8.5	4.5	7.5	4.5	4.5	8.0	4.5	12.5		
2-Chloroethyl vinyl ether	--	--	--	0.0045 U	--	0.0073 U	--	--	--	NE	
2-Chlorotoluene	--	--	--	0.0012 U	--	0.00094 U	--	--	--	1,600	
2-Hexanone	--	--	--	0.0045 U	--	0.0047 U	--	--	--	NE	
4-Chlorotoluene	--	--	--	0.0012 U	--	0.00094 U	--	--	--	NE	
4-Methyl-2-Pentanone (Methyl isobutyl ketone)	--	--	--	0.0045 U	--	0.0047 U	--	--	--	6,400	
Acetone	--	--	--	0.0045 U	--	0.0094 U	--	--	--	72,000	
Benzene	--	--	--	0.00090 U	--	0.00094 U	--	--	--	0.03	
Bromobenzene	--	--	--	0.00090 U	--	0.00094 U	--	--	--	NE	
Bromochloromethane	--	--	--	0.00090 U	--	0.00094 U	--	--	--	NE	
Bromodichloromethane	--	--	--	0.00090 U	--	0.00094 U	--	--	--	16.1	
Bromoform (Tribromomethane)	--	--	--	0.0045 U	--	0.0047 U	--	--	--	127	
Bromomethane	--	--	--	0.00090 U	--	0.00094 U	--	--	--	112	
Carbon Disulfide	--	--	--	0.0013 U	--	0.00094 U	--	--	--	8,000	
Carbon Tetrachloride	--	--	--	0.00090 U	--	0.00094 U	--	--	--	14.3	
Chlorobenzene	--	--	--	0.00090 U	--	0.00094 U	--	--	--	1,600	
Chloroethane	--	--	--	0.0045 U	--	0.0047 U	--	--	--	NE	
Chloroform	--	--	--	0.00090 U	--	0.00094 U	--	--	--	32.3	
Chloromethane	--	--	--	0.0045 U	--	0.0047 U	--	--	--	NE	
cis-1,2-Dichloroethene	--	--	--	0.00090 U	--	0.00094 U	--	--	--	160	
cis-1,3-Dichloropropene	--	--	--	0.00090 U	--	0.00094 U	--	--	--	NE	
Dibromochloromethane	--	--	--	0.00090 U	--	0.00094 U	--	--	--	11.9	
Dibromomethane	--	--	--	0.00090 U	--	0.00094 U	--	--	--	800	
Dichlorodifluoromethane (CFC-12)	--	--	--	0.00090 U	--	0.00094 U	--	--	--	16,000	
Ethylbenzene	--	--	--	0.00090 U	--	0.00094 U	--	--	--	6	N/A
Hexachlorobutadiene	--	--	--	0.0045 U	--	0.0047 U	--	--	--	12.8	
Isopropylbenzene (Cumene)	--	--	--	0.00090 U	--	0.00094 U	--	--	--	8,000	
Methyl Iodide (Iodomethane)	--	--	--	0.0045 U	--	0.0047 U	--	--	--	NE	
Methyl t-butyl ether	--	--	--	0.00090 U	--	0.00094 U	--	--	--	0.1	
Methylene Chloride	--	--	--	0.0045 U	--	0.0094 U	--	--	--	0.02	
Naphthalene	--	--	--	0.00090 U	--	0.00094 U	--	--	--	5	
n-Butylbenzene	--	--	--	0.00090 U	--	0.00094 U	--	--	--	4,000	
n-Propylbenzene	--	--	--	0.00090 U	--	0.00094 U	--	--	--	8,000	
p-Isopropyltoluene	--	--	--	0.0012 U	--	0.00094 U	--	--	--	NE	
Sec-Butylbenzene	--	--	--	0.00090 U	--	0.00094 U	--	--	--	8,000	
Styrene	--	--	--	0.00090 U	--	0.00094 U	--	--	--	16,000	
Tert-Butylbenzene	--	--	--	0.0012 U	--	0.00094 U	--	--	--	8,000	
Tetrachloroethene	--	--	--	0.00090 U	--	0.00094 U	--	--	--	0.05	
Toluene	--	--	--	0.0045 U	--	0.0047 U	--	--	--	7	
Trans-1,2-Dichloroethene	--	--	--	0.00090 U	--	0.00094 U	--	--	--	1,600	
Trans-1,3-Dichloropropene	--	--	--	0.00090 U	--	0.00094 U	--	--	--	NE	
Trichloroethene	--	--	--	0.00090 U	--	0.00094 U	--	--	--	0.03	
Trichlorofluoromethane (CFC-11)	--	--	--	0.00090 U	--	0.00094 U	--	--	--	24,000	
Vinyl Acetate	--	--	--	0.0045 U	--	0.0047 U	--	--	--	80,000	
Vinyl Chloride	--	--	--	0.00090 U	--	0.00094 U	--	--	--	240	
Xylene, m-,p-	--	--	--	0.0018 U	--	0.0019 U	--	--	--	9	
Xylene, o-	--	--	--	0.00090 U	--	0.00094 U	--	--	--		
Total Xylenes[7]	--	--	--	0.0018 U	--	0.0019 U	--	--	--		

Boring Identification	FL232-B1		FL232-B2	FL232-B3	FL232-B4	FL232-B5		FL232-B6		MTCA Method A/B Cleanup Level[10]	Naturally Occurring Background Metals in Puget Sound Soils[14]
Sample Identification[2]	FL232-B1-3.5-4.5	FL232-B1-7.5-8.5	FL232-B2-3.5-4.5	FL232-B3-6.5-7.5	FL232-B4-3.5-4.5	FL232-B5-3.5-4.5	FL232-B5-7-8	FL232-B6-3.5-4.5	FL232-B6-11.5-12.5		
Sample Date	5/24/2017	5/24/2017	5/24/2017	5/24/2017	5/24/2017	5/24/2017	5/24/2017	5/24/2017	5/24/2017		
Sample Start Depth (feet bgs)	3.5	7.5	3.5	6.5	3.5	3.5	7.0	3.5	11.5		
Sample End Depth (feet bgs)	4.5	8.5	4.5	7.5	4.5	4.5	8.0	4.5	12.5		
PAHs[8] (mg/kg)											
1-Methylnaphthalene	--	--	--	0.0074 U	--	0.0073 U	--	--	--	5	N/A
2-Methylnaphthalene	--	--	--	0.0074 U	--	0.0073 U	--	--	--		
Naphthalene	--	--	--	0.0074 U	--	0.0073 U	--	--	--		
Total Naphthalenes[9]	--	--	--	0.0074 U	--	0.0073 U	--	--	--		
Acenaphthene	--	--	--	0.0074 U	--	**0.013**	--	--	--	4,800	
Acenaphthylene	--	--	--	0.0074 U	--	0.0073 U	--	--	--	NE	
Anthracene	--	--	--	0.0074 U	--	**0.027**	--	--	--	24,000	
Benzo(a)anthracene (TEF 0.1)	--	--	--	0.0074 U	--	**0.11**	--	--	--	See cPAHs	
Benzo(a)pyrene (TEF 1)	--	--	--	0.0074 U	--	**0.10**	--	--	--	See cPAHs	
Benzo(b)fluoranthene (TEF 0.1)	--	--	--	0.0074 U	--	**0.12**	--	--	--	See cPAHs	
Benzo(g,h,i)perylene	--	--	--	0.0074 U	--	**0.086**	--	--	--	NE	
Benzo(j,k)fluoranthene (TEF 0.1)	--	--	--	0.0074 U	--	**0.037**	--	--	--	See cPAHs	
Chrysene (TEF 0.01)	--	--	--	0.0074 U	--	**0.12**	--	--	--	See cPAHs	
Dibenzo(a,h)anthracene (TEF 0.1)	--	--	--	0.0074 U	--	**0.016**	--	--	--	See cPAHs	
Fluoranthene	--	--	--	0.0074 U	--	**0.19**	--	--	--	3,200	
Fluorene	--	--	--	0.0074 U	--	**0.010**	--	--	--	3,200	
Indeno(1,2,3-c,d)pyrene (TEF 0.1)	--	--	--	0.0074 U	--	**0.086**	--	--	--	See cPAHs	
Phenanthrene	--	--	--	0.0074 U	--	**0.14**	--	--	--	NE	
Pyrene	--	--	--	0.0074 U	--	**0.17**	--	--	--	2,400	
cPAHs (benzo(a)pyrene toxicity equivalent concentration)[13]	--	--	--	0.0056 U	--	**0.14**	--	--	--	0.1	

Notes:

[1] Chemical analysis performed by OnSite Environmental, Inc., of Redmond, Washington.

[2] Sample ID = Parcel ID - boring number - depth of sample [feet bgs]. FL232-B1-3.5-4.5 = Boring 1 from Parcel FL232, collected from a depth of 3.5 to 4.5 feet bgs.

[3] Petroleum Hydrocarbon Identification by Northwest Method NWTPH-HCID.

[4] Diesel- and lube oil-range petroleum hydrocarbons by Northwest Method NWTPH-Dx.

[5] Resource Conservation Recovery Act (RCRA) metals analyzed by EPA 6000/7000 series method.

[6] Volatile organic compounds (VOCs) analyzed by United States Environmental Protection Agency (EPA) Method 8260C.

[7] Total xylenes consists of m,p- and o- xylenes. The higher detection limit is used for non-detects.

[8] Polycyclic aromatic hydrocarbons (PAHs) and carcinogenic PAHs (cPAHs) analyzed by EPA Method 8270D/SIM.

[9] Total naphthalenes consists of 1-methylnaphthalene, 2-methylnaphthalene and naphthalene.

[10] MTCA Method B cleanup level used when Method A cleanup level has not been established.

[11] Model Toxics Control Act (MTCA) Method A cleanup level for gasoline is 30 mg/kg if benzene is detected or if the sum of toluene, ethylbenzene and xylenes are greater than or equal to 1% of the total gasoline detection.

[12] MTCA Method A cleanup level for Trivalent Chromium.

[13] Results for cPAHs are shown as the sum of the benzo[a]pyrene toxicity equivalent concentrations, calculated by multiplying each individual cPAH concentration by its corresponding TEF. In this sum, nondetects are represented as ½ of the corresponding analyte reporting limit multiplied by the TEF.

[14] 90th Percentile for natural background soil metals concentrations in Puget Sound region, Department of Ecology, publication #94-115, dated October 1994.

"--" = not tested

bgs = below ground surface

MTCA = Model Toxics Control Act

mg/kg = milligrams per kilogram

NE = not established

N/A = not applicable

U = Analyte was not detected at or greater than the listed reporting limit.

TEF = Toxicity Equivalency Factor as defined in WAC 173-340-900 Table 708-2.

Est = Estimated from NWTPH-HCID chromatogram

Bold font type indicates that the analyte was detected at a concentration greater than the respective laboratory reporting limit.

Gray shading indicates that the detected result exceeds the specified MTCA Cleanup Level.

Legend

GeoEngineers Exploration
Site Feature
Current Sewer Line
Historic Sewer Line
Subject Property
Fee Take
Temporary Construction Easement

Notes:

1. Based on current design information for the FWLE project (HDR, provided in June 2017)
2. The locations of all features shown are approximate. 3. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Data Source: Aerial and road names from King County 2015.

Parcel #: 2500600520
Address: 23646 PACIFIC HWY S
City: Kent
Owner: GADINI, LOUIS A.
Current Use: Restaurant/Lounge

N W E S

30 0 30

Feet

Site Plan - FL-232

Federal Way Link Extension
Washington

GeoEngineers

Figure 2

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Legend

- GeoEngineers Exploration
- Site Feature
- Current Sewer Line
- Historic Sewer Line
- Subject Property
- Parcel

Planned Construction Features

- Column
- Road/Parking/Sidewalk
- Station (line)
- Utilities
- Striping (Pavement Markings)
- Structure

Notes:

1. Based on current design information for the FWLE project (HDR, provided in June 2017)
2. The locations of all features shown are approximate. 3. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Data Source: Aerial and road names from King County 2015.

Parcel #: 2500600520
Address: 23646 PACIFIC HWY S
City: Kent
Owner: GADINI, LOUIS A.
Current Use: Restaurant/Lounge

N W E S

30 0 30

Feet

Proposed Construction Plan - FL232

Phase II ESA
Federal Way Link Extension
Washington

GeoEngineers

Figure 3

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Table 1 - Soil Sample Analytical Results

Soil Sample Analytical Results
Supplemental Characterization and Remediation
F200 Parcel FL232
23646 Pacific Highway South
Kent, Washington

Lab Report ID	Date	Sample ID	Sample Depth (ft bgs)	PID	Confirmation Sample?	NWTPH-HCID	NWTPH-Dx		PAHs (mg/kg)										
							Diesel	Heavy Oil	Phenanthrene	Fluoranthene	Pyrene	Benz(a)anthracene	Chrysene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Benzo(a)pyrene	Indeno(1,2,3-cd)pyrene	Dibenz(a,h)anthracene	Total cPAH (TEF)[1]
2003007	3/2/20	**PH232-1-1**	1	0	N	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2003007	3/2/20	**PH232-1-3**	3	0	N	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2003007	3/2/20	**PH232-2-3**	3	0	N	NA	NA	NA	< 0.0399	< 0.0399	< 0.0399	< 0.0399	< 0.0399	< 0.0399	< 0.0399	< 0.0399	< 0.0399	< 0.0399	< 0.0399
2003007	3/2/20	**PH232-2-5**	5	0	N	NA	NA	NA	< 0.0449	<0.0449	<0.0449	<0.0449	<0.0449	<0.0449	<0.0449	<0.0449	<0.0449	<0.0449	<0.0449
2003007	3/2/20	**PH232-3-3**	3	0	Y-S	NA	NA	NA	**0.0485**	**0.075**	**0.712**	**0.0408**	< 0.0374	< 0.0374	< 0.0374	**0.0415**	< 0.0374	< 0.0374	**0.04558**
2003007	3/2/20	**PH232-3-5**	5	0	Y-B	NA	NA	NA	< 0.0420	< 0.0420	< 0.0420	< 0.0420	< 0.0420	< 0.0420	< 0.0420	< 0.0420	< 0.0420	< 0.0420	< 0.0420
2003007	3/2/20	**PH232-4-3**	3	0	Y-S	NA	NA	NA	< 0.0445	< 0.0447	< 0.0448	< 0.0449	< 0.0450	< 0.0451	< 0.0452	< 0.0453	< 0.0454	< 0.0455	< 0.0455
2003007	3/2/20	**PH232-4-5**	5	0	Y-B	NA	NA	NA	< 0.0400	< 0.0400	< 0.0400	< 0.0400	< 0.0400	< 0.0400	< 0.0400	< 0.0400	< 0.0400	< 0.0400	< 0.0400
2003007	3/2/20	**PH232-5-3**	3	0	Y-S	NA	NA	NA	< 0.0429	< 0.0429	< 0.0429	< 0.0429	< 0.0429	< 0.0429	< 0.0429	< 0.0429	< 0.0429	< 0.0429	< 0.0429
2003007	3/2/20	**PH232-5-5**	5	0	Y-B	NA	NA	NA	< 0.0434	< 0.0434	< 0.0434	< 0.0434	< 0.0434	< 0.0434	< 0.0434	< 0.0434	< 0.0434	< 0.0434	< 0.0434
2004260	4/22/20	**PH232-6-3**	3	0	N	NA	< 21.3	< 53.3	NA	NA	NA	< 0.0428	< 0.0428	< 0.0428	< 0.0428	< 0.0428	< 0.0428	< 0.0428	< 0.0428
2004260	4/22/20	**PH232-6-5**	5	0	N	NA	< 18.8	< 47.1	NA	NA	NA	< 0.0388	< 0.0388	< 0.0388	< 0.0388	< 0.0388	< 0.0388	< 0.0388	< 0.0388
2004260	4/22/20	**PH232-7-3**	3	0	N	NA	< 20.8	**75.4**	NA	NA	NA	< 0.0385	< 0.0385	< 0.0385	< 0.0385	< 0.0385	< 0.0385	< 0.0385	< 0.0385
2004260	4/22/20	**PH232-7-5**	5	0	N	NA	< 22.4	< 56.0	NA	NA	NA	< 0.0452	< 0.0452	< 0.0452	< 0.0452	< 0.0452	< 0.0452	< 0.0452	< 0.0452
2004260	4/22/20	**PH232-8-3**	3	0	N	NA	< 20.7	< 51.8	NA	NA	NA	< 0.0387	< 0.0387	< 0.0387	< 0.0387	< 0.0387	< 0.0387	< 0.0387	< 0.0387
2004260	4/22/20	**PH232-8-5**	5	0	N	NA	< 20.4	< 50.9	NA	NA	NA	< 0.0399	< 0.0399	< 0.0399	< 0.0399	< 0.0399	< 0.0399	< 0.0399	< 0.0399
2004260	4/22/20	**232PEX-1-3**	3	0	Y-S	NA	< 22.3	< 55.8	NA	NA	NA	< 0.0447	< 0.0374	< 0.0374	< 0.0374	< 0.0374	< 0.0374	< 0.0374	< 0.0374
2004260	4/22/20	**232-PEX-2-5**	5	0	Y-B	NA	< 21.1	**62.2**	NA	NA	NA	< 0.0435	< 0.0435	< 0.0435	< 0.0435	< 0.0435	< 0.0435	< 0.0435	< 0.0435
MTCA Method A or B Soil Cleanup Level for Unrestricted Land Use (Ecology, 2013)						various	2000	2000	NE	3200 (B)	2400 (B)	0.1 (TEF)	0.1 (TEF)	0.1 (TEF)	0.1 (TEF)	0.1 (TEF)	0.1 (TEF)	0.136 (B)	0.1 (TEF)

Notes:
ft bgs - Feet Below Ground Surface
mg/kg - milligrams per kilogram
PH - Supplemental investigation sample; PEX - Post-excavation confirmation sample
Confirmation samples document that soil remaining in place meets MTCA cleanup levels: N - Not Used; Y-S - Excavation Sidewall; Y-B - Base of Excavation
< - Not detected at listed laboratory reporting limit
Bold - Analyte detected
Bold/Highlighted - Analyte exceeds MTCA Method A or B Cleanup Level
NA - Not analyzed
NE - Cleanup level Not Established
Detected analytes reported. See laboratory report for complete list of analytes.
1 - Total Carcinogenic PAHs calculated based on Toxic Equivalency Factors (MTCA Table 708-2)

Figure 1 - Vicinity Map

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N

Not to Scale

Reference: Base file Vicinity Map by GeoEngineers, dated 7-18-17.

O'Neill Service Group

FEDERAL WAY LINK EXTENSION
SEATAC AND FEDERAL WAY
KING COUNTY, WASHINGTON

VICINITY MAP

Drawn By:	J. Stewart
Reviewed By:	V. Atkins
Approved By:	V. Atkins
Date:	June 2020
Project No.:	2021

FIGURE

1

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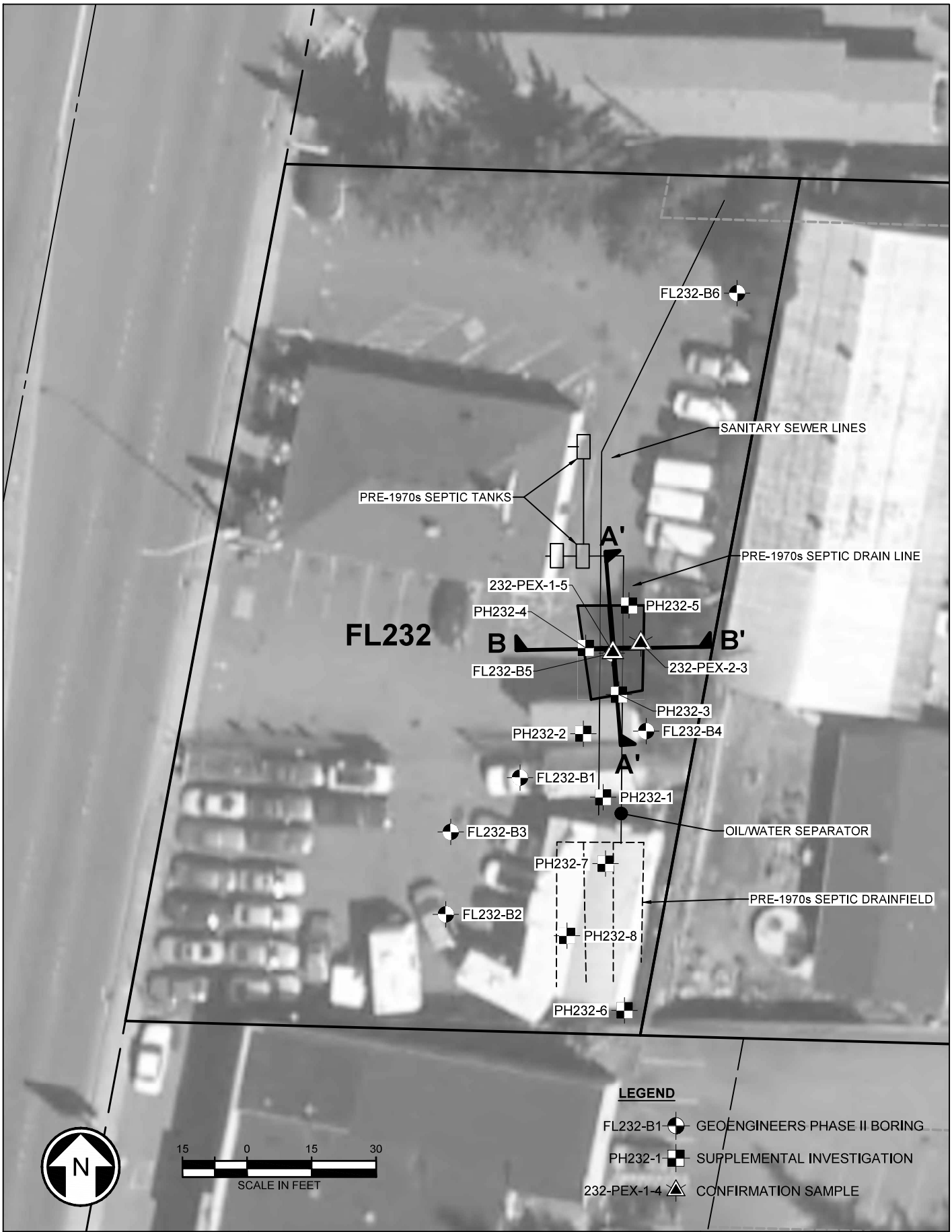
Figure 2 - Soil Remediation Map



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O'Neill Service Group

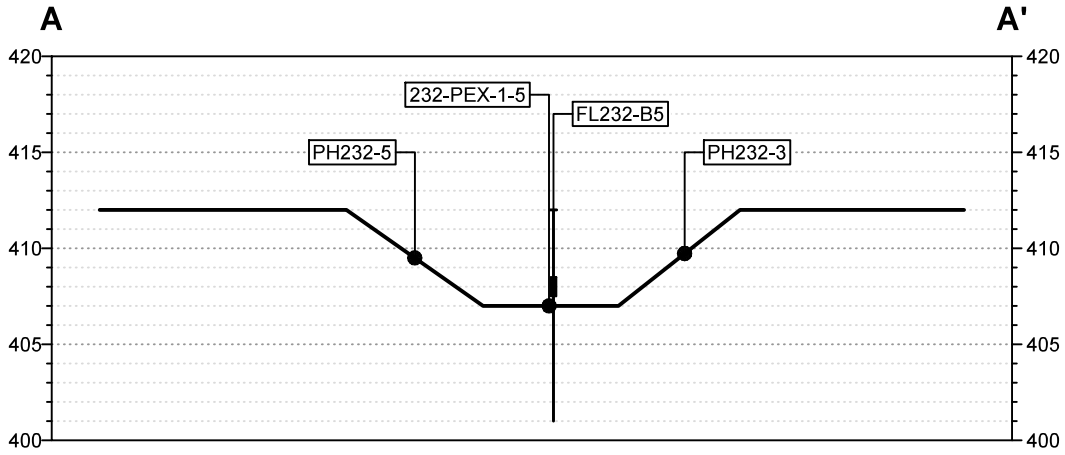
FEDERAL WAY LINK EXTENSION
SEATAC AND FEDERAL WAY
KING COUNTY, WASHINGTON

FL232 SOIL REMEDIATION

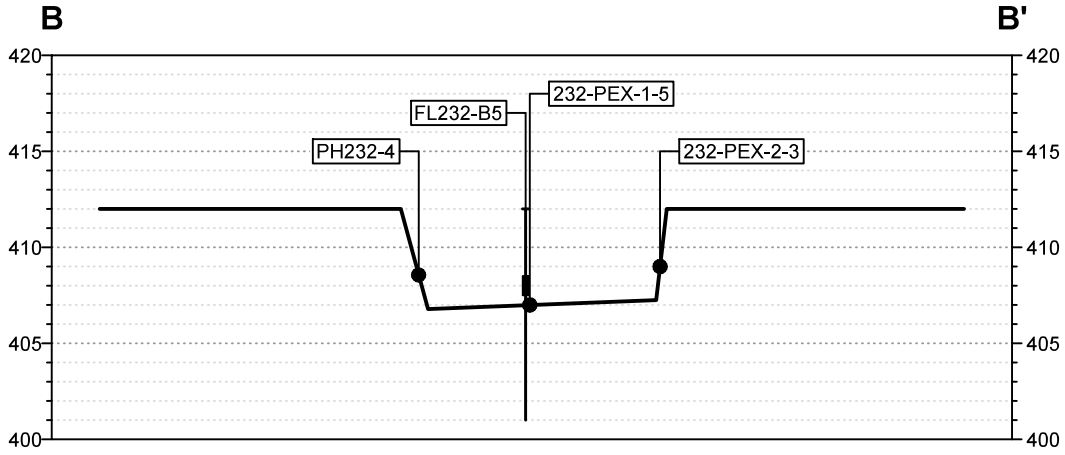
Drawn By:	J. Stewart
Reviewed By:	V. Atkins
Approved By:	S. Darst
Date:	June 2020
Project No.:	2021

FIGURE 2

Figure 3 - Excavation Cross Sections



FL232 CROSS SECTION A-A'



FL232 CROSS SECTION B-B'

LEGEND

PH232-5 — SOIL BORING LOCATION AND ID WITH SAMPLE DEPTH EXCEEDING MTCA CLEANUP LEVELS (REMEDIATED)

PH232-5 — POST-EXCAVATION SOIL SAMPLE LOCATION AND ID WITH DEPTH/ELEVATION

O'Neill Service Group	FEDERAL WAY LINK EXTENSION SEATAC AND FEDERAL WAY KING COUNTY, WASHINGTON	Drawn By: J. Stewart Reviewed By: V. Atkins Approved By: S. Darst Date: June 2020 Project No.: 2021	FIGURE 3
	FL232 CROSS SECTIONS		

Appendix B
Field Procedures

Appendix B
Field Procedures

GENERAL

Subsurface soil and groundwater conditions were evaluated by completing one boring (FL232-MW1) on June 10 and 11, 2024. The boring was completed using continuous-flight, hollow-stem auger (HSA) drilling equipment owned by Holt Services, subcontracted to GeoEngineers. The boring was completed to a depth of 40 feet. The approximate boring location is shown on the Site Plan, Figure 2. The boring was continuously monitored by representatives from our firm who reviewed and classified the soils encountered, obtained representative soil samples, observed groundwater conditions and prepared a detailed log of each exploration.

The soil encountered in the boring was sampled at 10-foot vertical intervals with a 2-inch outside-diameter split-barrel standard penetration test (SPT) sampler. The disturbed samples were obtained by driving the sampler 18 inches into the soil with a 140-pound automatic hammer free-falling 30 inches. The number of blows required for each 6 inches of penetration was recorded. The blow count ("N-value") of the soil was calculated as the number of blows required for the final 12 inches of penetration. This resistance, or N-value, provides a measure of the relative density of granular soils and the relative consistency of cohesive soils. Where very dense soil conditions precluded driving the full 18 inches, the penetration resistance for the partial penetration was entered on the logs. The blow counts are shown on the boring logs at the respective sample depths.

Soils encountered in the borings were visually classified in general accordance with the classification system described in Figure B-1. A key to the boring log symbols is also presented in Figure B-1. The boring log is presented in Figure B-2. The boring log is based on our interpretation of the field and laboratory data and indicate the various types of soils and groundwater conditions encountered. The log also indicates the depths at which these soils or their characteristics change, although the change may actually be gradual. If the change occurred between samples, it was interpreted. The densities noted on the boring logs are based on the blow count data obtained in the borings and judgment based on the conditions encountered.

Observations of groundwater conditions were made during drilling. No evidence of groundwater was encountered during drilling.

UNDERGROUND UTILITY LOCATE

An underground utility locate was conducted within the area of the proposed boring locations to identify any subsurface utilities and/or potential underground physical hazards prior to beginning drilling activities. An underground utility check consisting of contacting a local utility alert service and a private utility locating service was also performed.

SOIL SAMPLING

Non-dedicated sampling equipment was decontaminated before each sampling attempt with an Alconox® solution wash and a distilled water rinse. Soil samples were obtained for field screening and possible chemical analysis. Soil samples obtained during the exploration activities were collected from the sampler

with a stainless-steel knife and/or spoon, or new nitrile gloves. A portion of selected soil samples was placed in laboratory-prepared sample jars for chemical analysis.

Samples submitted for chemical analysis are shown on the boring logs. Soil samples were placed in a cooler with ice for transport to Onsite Environmental Inc., Redmond, Washington following standard chain-of-custody procedures.

FIELD SCREENING OF SOIL SAMPLES

Soil samples obtained from the borings were screened in the field for evidence of contamination using: (1) visual examination; (2) sheen screening; and (3) a photoionization detector (PID). The results of headspace and sheen screening are included on the boring logs and in Summary of Soil Chemical Analytical Results, Table 1, for soil samples tested by chemical analysis.

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. Natural organic matter in the soil may produce a slight sheen.
- Moderate Sheen (MS) — Light to heavy sheen; may have some color/iridescence; spread is irregular to flowing, may be rapid; 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.

Headspace vapor screening involves placing a portion of the soil sample in a plastic sample bag or clean 4-ounce jar covered with aluminum foil. Air is captured in the bag or jar and the bag or jar is shaken to expose the soil to the trapped air. The probe of a PID is inserted in the bag or used to puncture the aluminum foil covering the jar and the instrument measures the concentration of combustible vapor in the air removed from the sample headspace. The PID measures concentrations in parts per million (ppm) and is calibrated to isobutylene. The PID is designed to quantify combustible gas and organic vapor concentrations up to 2,500 ppm. Field screening results are site-specific and vary with soil type, soil moisture content, temperature, and type of contaminant.

Monitoring Well Construction

Drilling and construction of one groundwater monitoring well was performed by a Washington State licensed driller in accordance with the Minimum Standards for Construction and Maintenance of Wells (Chapter 173-160 Washington Administrative Code [WAC]). Monitoring well installation was observed by a

GeoEngineers representative who maintained a detailed log of soil conditions, construction materials and well depths.

The monitoring well was constructed with 2-inch-diameter, threaded Schedule 40 polyvinyl chloride (PVC) slotted screen and blank casing. The well screen was 0.010-inch slot (10-slot) and 10-feet in length. A commercial filter pack consisting of medium (10/20) silica sand was placed around and approximately 1 to 2 feet above the top of well screen. Above the sand, an annular seal consisting of bentonite chips was placed. A concrete surface seal was placed from the ground surface to a depth of 1.5 to 2 feet below ground surface (bgs). The well was protected with a tamper-resistant, steel flush-mount surface monument. The top of the PVC riser pipe was fitted with a watertight locking cap. Monitoring well construction details are shown in Figure B-2.

Sample Nomenclature

Soil samples collected from the borings were identified using the following identification system:

FL#-MW#-depth

where FL# is the Sound Transit parcel number, MW# is the boring number and depth is the depth within the boring at which the specific sample was collected (e.g., FL232-MW1-10-10.5 was collected from parcel FL232, boring location MW1 at 10 to 10.5 feet bgs).

Investigative-Derived Waste

Soil and water investigative-derived waste were transferred to labelled 55-gallon steel drums and stored temporarily at the property pending characterization and coordination for approved disposal.

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS GRAPH	SYMBOLS LETTER	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES
				GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES
	MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
MORE THAN 50% RETAINED ON NO. 200 SIEVE	SAND AND SANDY SOILS	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS
				SP	POORLY-GRADED SANDS, GRAVELLY SAND
	MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS, ROCK FLOUR, CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
MORE THAN 50% PASSING NO. 200 SIEVE	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS AND SILTS OF MEDIUM TO HIGH PLASTICITY
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: Multiple symbols are used to indicate borderline or dual soil classifications

Sampler Symbol Descriptions

- Modified California Sampler (6-inch sleeve) or Dames & Moore
- Standard Penetration Test (SPT)
- Shelby tube
- Piston
- Direct-Push
- Bulk or grab
- Continuous Coring

Blowcount is recorded for driven samplers as the number of blows required to advance sampler 12 inches (or distance noted). See exploration log for hammer weight and drop.

"P" indicates sampler pushed using the weight of the drill rig.

"WOH" indicates sampler pushed using the weight of the hammer.

ADDITIONAL MATERIAL SYMBOLS

SYMBOLS GRAPH	SYMBOLS LETTER	TYPICAL DESCRIPTIONS
	AC	Asphalt Concrete
	CC	Cement Concrete
	CR	Crushed Rock/ Quarry Spalls
	SOD	Sod/Forest Duff
	TS	Topsoil

Groundwater Contact

- Measured groundwater level in exploration, well, or piezometer
- Measured free product in well or piezometer

Graphic Log Contact

- Distinct contact between soil strata
- Approximate contact between soil strata

Material Description Contact

- Contact between geologic units
- Contact between soil of the same geologic unit

Laboratory / Field Tests

%F	Percent fines
%G	Percent gravel
AL	Atterberg limits
CA	Chemical analysis
CP	Laboratory compaction test
CS	Consolidation test
DD	Dry density
DS	Direct shear
HA	Hydrometer analysis
MC	Moisture content
MD	Moisture content and dry density
Mohs	Mohs hardness scale
OC	Organic content
PM	Permeability or hydraulic conductivity
PI	Plasticity index
PL	Point load test
PP	Pocket penetrometer
SA	Sieve analysis
TX	Triaxial compression
UC	Unconfined compression
UU	Unconsolidated undrained triaxial compression
VS	Vane shear

Sheen Classification

NS	No Visible Sheen
SS	Slight Sheen
MS	Moderate Sheen
HS	Heavy Sheen

NOTE: The reader must refer to the discussion in the report text and the logs of explorations for a proper understanding of subsurface conditions. Descriptions on the logs apply only at the specific exploration locations and at the time the explorations were made; they are not warranted to be representative of subsurface conditions at other locations or times.

Key to Exploration Logs

GeoEngineers

Figure B-1

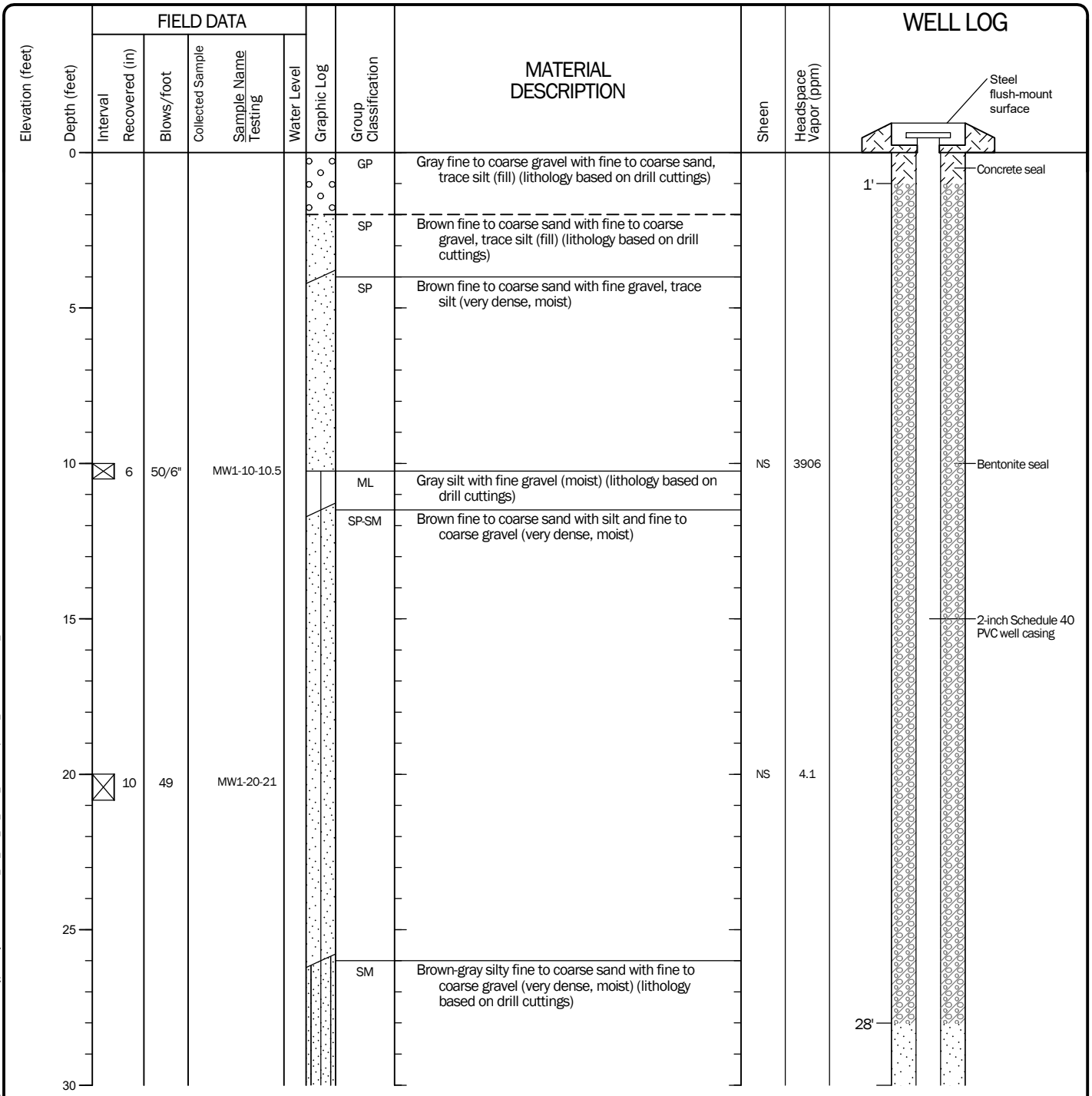
Rev. 03/2024

Drilled Start 6/10/2024 End 6/11/2024	Total Depth (ft) 40.5	Logged By JCD Checked By MMB	Driller Holt Services, Inc.	Drilling Method Hollow-stem Auger	
Hammer Data: Autohammer 300 (lbs) / 30 (in) Drop		Drilling Equipment: Mobile B-58			
Surface Elevation (ft) Vertical Datum: Undetermined		Top of Casing Elevation (ft)			
Latitude: 47° 23' 19.5" Longitude: -122° 17' 43.08"		Horizontal Datum: Decimal Degrees WGS84 (feet)			

DOE Well I.D.: BPL-279
A 2-in well was installed on 6/11/2024 to a depth of 40 ft.

Groundwater Date Measured	Depth to Water (ft)	Elevation (ft)
6/24/24	Dry	

Notes:



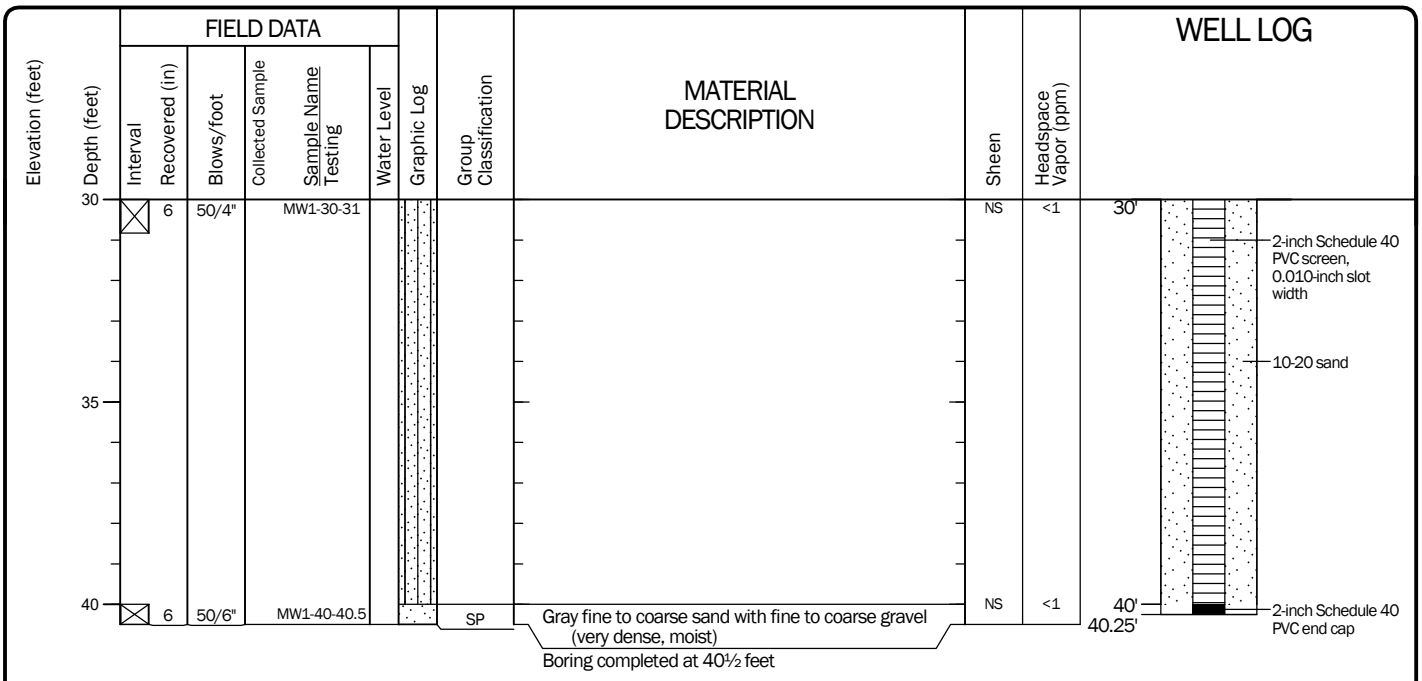
Note: See Figure A-1 for explanation of symbols.
Coordinates Data Source: Horizontal approximated based on hand-held GPS accurate to approximately 3 to 5 feet. Vertical approximated based on NA.

Log of Monitoring Well FL232-MW1

GeoEngineers

Project: Post-Remediation Compliance Monitoring
Project Location: King County Parcel 2500600520, Kent, Washington
Project Number: 4082-072-00

Figure B-2
Sheet 1 of 2



Log of Monitoring Well FL232-MW1 (continued)

GeoEngineers

Project: Post-Remediation Compliance Monitoring
Project Location: King County Parcel 2500600520, Kent, Washington
Project Number: 4082-072-00

Figure B-2
Sheet 2 of 2

Appendix C
Chemical Analytical Data

Appendix C
Chemical Analytical Data

ANALYTICAL METHODS

Chain-of-custody procedures were followed during the transport of the groundwater samples to the analytical laboratory. The samples were held in cold storage pending extraction and/or analysis. The analytical results, analytical methods reference and laboratory quality control (QC) records are included in this appendix. The analytical results are also summarized in the text and tables of this report.

ANALYTICAL DATA REVIEW

The laboratory maintains an internal quality assurance program as documented in its laboratory quality assurance manual. The laboratory uses a combination of blanks, surrogate recoveries, duplicates, matrix spike recoveries, matrix spike duplicate recoveries, blank spike recoveries and blank spike duplicate recoveries to evaluate the validity of the analytical results. The laboratory also uses data quality goals for individual chemicals or groups of chemicals based on the long-term performance of the test methods. The data quality goals were included in the laboratory reports. The laboratory compared each group of samples with the existing data quality goals and noted any exceptions in the laboratory report. Data quality exceptions documented by the accredited laboratory were reviewed by GeoEngineers and are addressed in the data quality exception section of this appendix.

ANALYTICAL DATA REVIEW SUMMARY

There were no data quality exceptions noted in the laboratory report. Based on our data quality review, it is our opinion that the sample results are considered of acceptable quality for their intended use in this report.

OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

June 20, 2024

John Deeds
GeoEngineers, Inc.
1101 Fawcett Avenue South, Suite 200
Tacoma, WA 98402

Re: Analytical Data for Project 4082-072-00 T400
Laboratory Reference No. 2406-142

Dear John:

Enclosed are the analytical results and associated quality control data for samples submitted on June 12, 2024.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: June 20, 2024
Samples Submitted: June 12, 2024
Laboratory Reference: 2406-142
Project: 4082-072-00 T400

Case Narrative

Samples were collected on June 10, 2024 and received by the laboratory on June 12, 2024. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below. However the soil results for the QA/QC samples are reported on a wet-weight basis.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Date of Report: June 20, 2024
Samples Submitted: June 12, 2024
Laboratory Reference: 2406-142
Project: 4082-072-00 T400

ANALYTICAL REPORT FOR SAMPLES

Client ID	Laboratory ID	Matrix	Date Sampled	Date Received	Notes
FR232-MW1-10-10.5	06-142-01	Soil	6-10-24	6-12-24	
FR232-MW1-20-21	06-142-02	Soil	6-10-24	6-12-24	
FR232-MW1-30-31	06-142-03	Soil	6-10-24	6-12-24	

Date of Report: June 20, 2024
Samples Submitted: June 12, 2024
Laboratory Reference: 2406-142
Project: 4082-072-00 T400

DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FR232-MW1-10-10.5**					
Laboratory ID:	06-142-01					
Diesel Range Organics	**ND**	27	NWTPH-Dx	6-14-24	6-14-24	
Lube Oil	**170**	53	NWTPH-Dx	6-14-24	6-14-24	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*79*	*50-150*				
Client ID:	**FR232-MW1-20-21**					
Laboratory ID:	06-142-02					
Diesel Range Organics	**ND**	27	NWTPH-Dx	6-14-24	6-14-24	
Lube Oil Range Organics	**ND**	54	NWTPH-Dx	6-14-24	6-14-24	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*82*	*50-150*				
Client ID:	**FR232-MW1-30-31**					
Laboratory ID:	06-142-03					
Diesel Range Organics	**ND**	27	NWTPH-Dx	6-14-24	6-14-24	
Lube Oil	**220**	53	NWTPH-Dx	6-14-24	6-14-24	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*75*	*50-150*				

Date of Report: June 20, 2024
Samples Submitted: June 12, 2024
Laboratory Reference: 2406-142
Project: 4082-072-00 T400

PAHs EPA 8270E/SIM

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FR232-MW1-10-10.5**					
Laboratory ID:	06-142-01					
Naphthalene	**ND**	0.0071	EPA 8270E/SIM	6-14-24	6-17-24	
2-Methylnaphthalene	**ND**	0.0071	EPA 8270E/SIM	6-14-24	6-17-24	
1-Methylnaphthalene	**ND**	0.0071	EPA 8270E/SIM	6-14-24	6-17-24	
Acenaphthylene	**ND**	0.0071	EPA 8270E/SIM	6-14-24	6-17-24	
Acenaphthene	**ND**	0.0071	EPA 8270E/SIM	6-14-24	6-17-24	
Fluorene	**ND**	0.0071	EPA 8270E/SIM	6-14-24	6-17-24	
Phenanthrene	**ND**	0.0071	EPA 8270E/SIM	6-14-24	6-17-24	
Anthracene	**ND**	0.0071	EPA 8270E/SIM	6-14-24	6-17-24	
Fluoranthene	**ND**	0.0071	EPA 8270E/SIM	6-14-24	6-17-24	
Pyrene	**ND**	0.0071	EPA 8270E/SIM	6-14-24	6-17-24	
Benzo[a]anthracene	**ND**	0.0071	EPA 8270E/SIM	6-14-24	6-17-24	
Chrysene	**ND**	0.0071	EPA 8270E/SIM	6-14-24	6-17-24	
Benzo[b]fluoranthene	**ND**	0.0071	EPA 8270E/SIM	6-14-24	6-17-24	
Benzo(j,k)fluoranthene	**ND**	0.0071	EPA 8270E/SIM	6-14-24	6-17-24	
Benzo[a]pyrene	**ND**	0.0071	EPA 8270E/SIM	6-14-24	6-17-24	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0071	EPA 8270E/SIM	6-14-24	6-17-24	
Dibenz[a,h]anthracene	**ND**	0.0071	EPA 8270E/SIM	6-14-24	6-17-24	
Benzo[g,h,i]perylene	**ND**	0.0071	EPA 8270E/SIM	6-14-24	6-17-24	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*86*	*47-112*				
Pyrene-d10	*93*	*48-129*				
Terphenyl-d14	*91*	*51-114*				

Date of Report: June 20, 2024
Samples Submitted: June 12, 2024
Laboratory Reference: 2406-142
Project: 4082-072-00 T400

PAHs EPA 8270E/SIM

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FR232-MW1-20-21**					
Laboratory ID:	06-142-02					
Naphthalene	**ND**	0.0072	EPA 8270E/SIM	6-14-24	6-17-24	
2-Methylnaphthalene	**ND**	0.0072	EPA 8270E/SIM	6-14-24	6-17-24	
1-Methylnaphthalene	**ND**	0.0072	EPA 8270E/SIM	6-14-24	6-17-24	
Acenaphthylene	**ND**	0.0072	EPA 8270E/SIM	6-14-24	6-17-24	
Acenaphthene	**ND**	0.0072	EPA 8270E/SIM	6-14-24	6-17-24	
Fluorene	**ND**	0.0072	EPA 8270E/SIM	6-14-24	6-17-24	
Phenanthrene	**ND**	0.0072	EPA 8270E/SIM	6-14-24	6-17-24	
Anthracene	**ND**	0.0072	EPA 8270E/SIM	6-14-24	6-17-24	
Fluoranthene	**ND**	0.0072	EPA 8270E/SIM	6-14-24	6-17-24	
Pyrene	**ND**	0.0072	EPA 8270E/SIM	6-14-24	6-17-24	
Benzo[a]anthracene	**ND**	0.0072	EPA 8270E/SIM	6-14-24	6-17-24	
Chrysene	**ND**	0.0072	EPA 8270E/SIM	6-14-24	6-17-24	
Benzo[b]fluoranthene	**ND**	0.0072	EPA 8270E/SIM	6-14-24	6-17-24	
Benzo(j,k)fluoranthene	**ND**	0.0072	EPA 8270E/SIM	6-14-24	6-17-24	
Benzo[a]pyrene	**ND**	0.0072	EPA 8270E/SIM	6-14-24	6-17-24	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0072	EPA 8270E/SIM	6-14-24	6-17-24	
Dibenz[a,h]anthracene	**ND**	0.0072	EPA 8270E/SIM	6-14-24	6-17-24	
Benzo[g,h,i]perylene	**ND**	0.0072	EPA 8270E/SIM	6-14-24	6-17-24	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*84*	*47-112*				
Pyrene-d10	*90*	*48-129*				
Terphenyl-d14	*91*	*51-114*				

Date of Report: June 20, 2024
Samples Submitted: June 12, 2024
Laboratory Reference: 2406-142
Project: 4082-072-00 T400

PAHs EPA 8270E/SIM

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FR232-MW1-30-31**					
Laboratory ID:	06-142-03					
Naphthalene	**ND**	0.0071	EPA 8270E/SIM	6-14-24	6-17-24	
2-Methylnaphthalene	**ND**	0.0071	EPA 8270E/SIM	6-14-24	6-17-24	
1-Methylnaphthalene	**ND**	0.0071	EPA 8270E/SIM	6-14-24	6-17-24	
Acenaphthylene	**ND**	0.0071	EPA 8270E/SIM	6-14-24	6-17-24	
Acenaphthene	**ND**	0.0071	EPA 8270E/SIM	6-14-24	6-17-24	
Fluorene	**ND**	0.0071	EPA 8270E/SIM	6-14-24	6-17-24	
Phenanthrene	**ND**	0.0071	EPA 8270E/SIM	6-14-24	6-17-24	
Anthracene	**ND**	0.0071	EPA 8270E/SIM	6-14-24	6-17-24	
Fluoranthene	**ND**	0.0071	EPA 8270E/SIM	6-14-24	6-17-24	
Pyrene	**ND**	0.0071	EPA 8270E/SIM	6-14-24	6-17-24	
Benzo[a]anthracene	**ND**	0.0071	EPA 8270E/SIM	6-14-24	6-17-24	
Chrysene	**ND**	0.0071	EPA 8270E/SIM	6-14-24	6-17-24	
Benzo[b]fluoranthene	**ND**	0.0071	EPA 8270E/SIM	6-14-24	6-17-24	
Benzo(j,k)fluoranthene	**ND**	0.0071	EPA 8270E/SIM	6-14-24	6-17-24	
Benzo[a]pyrene	**ND**	0.0071	EPA 8270E/SIM	6-14-24	6-17-24	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0071	EPA 8270E/SIM	6-14-24	6-17-24	
Dibenz[a,h]anthracene	**ND**	0.0071	EPA 8270E/SIM	6-14-24	6-17-24	
Benzo[g,h,i]perylene	**ND**	0.0071	EPA 8270E/SIM	6-14-24	6-17-24	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*79*	*47-112*				
Pyrene-d10	*89*	*48-129*				
Terphenyl-d14	*90*	*51-114*				

Date of Report: June 20, 2024
Samples Submitted: June 12, 2024
Laboratory Reference: 2406-142
Project: 4082-072-00 T400

DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0614S1					
Diesel Range Organics	**ND**	25	NWTPH-Dx	6-14-24	6-14-24	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	6-14-24	6-14-24	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*81*	*50-150*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	06-153-01										
	ORIG	DUP									
Diesel Range	**ND**	**ND**	NA	NA		NA		NA	NA	40	
Lube Oil Range	**ND**	**ND**	NA	NA		NA		NA	NA	40	
Surrogate:											
o-Terphenyl						*88*	*83*	*50-150*			

Date of Report: June 20, 2024
Samples Submitted: June 12, 2024
Laboratory Reference: 2406-142
Project: 4082-072-00 T400

PAHs EPA 8270E/SIM
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0614S2					
Naphthalene	**ND**	0.0067	EPA 8270E/SIM	6-14-24	6-17-24	
2-Methylnaphthalene	**ND**	0.0067	EPA 8270E/SIM	6-14-24	6-17-24	
1-Methylnaphthalene	**ND**	0.0067	EPA 8270E/SIM	6-14-24	6-17-24	
Acenaphthylene	**ND**	0.0067	EPA 8270E/SIM	6-14-24	6-17-24	
Acenaphthene	**ND**	0.0067	EPA 8270E/SIM	6-14-24	6-17-24	
Fluorene	**ND**	0.0067	EPA 8270E/SIM	6-14-24	6-17-24	
Phenanthrene	**ND**	0.0067	EPA 8270E/SIM	6-14-24	6-17-24	
Anthracene	**ND**	0.0067	EPA 8270E/SIM	6-14-24	6-17-24	
Fluoranthene	**ND**	0.0067	EPA 8270E/SIM	6-14-24	6-17-24	
Pyrene	**ND**	0.0067	EPA 8270E/SIM	6-14-24	6-17-24	
Benzo[a]anthracene	**ND**	0.0067	EPA 8270E/SIM	6-14-24	6-17-24	
Chrysene	**ND**	0.0067	EPA 8270E/SIM	6-14-24	6-17-24	
Benzo[b]fluoranthene	**ND**	0.0067	EPA 8270E/SIM	6-14-24	6-17-24	
Benzo(j,k)fluoranthene	**ND**	0.0067	EPA 8270E/SIM	6-14-24	6-17-24	
Benzo[a]pyrene	**ND**	0.0067	EPA 8270E/SIM	6-14-24	6-17-24	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0067	EPA 8270E/SIM	6-14-24	6-17-24	
Dibenz[a,h]anthracene	**ND**	0.0067	EPA 8270E/SIM	6-14-24	6-17-24	
Benzo[g,h,i]perylene	**ND**	0.0067	EPA 8270E/SIM	6-14-24	6-17-24	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*83*	*47-112*				
Pyrene-d10	*88*	*48-129*				
Terphenyl-d14	*91*	*51-114*				

Date of Report: June 20, 2024
Samples Submitted: June 12, 2024
Laboratory Reference: 2406-142
Project: 4082-072-00 T400

PAHs EPA 8270E/SIM
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
MATRIX SPIKES											
Laboratory ID:	06-167-01										
	MS	MSD	MS	MSD		MS	MSD				
Naphthalene	**0.0798**	**0.0728**	0.0833	0.0833	ND	96	87	58-121	9	22	
Acenaphthylene	**0.0865**	**0.0785**	0.0833	0.0833	ND	104	94	62-124	10	20	
Acenaphthene	**0.0821**	**0.0719**	0.0833	0.0833	ND	99	86	59-125	13	25	
Fluorene	**0.0839**	**0.0740**	0.0833	0.0833	ND	101	89	57-138	13	36	
Phenanthrene	**0.0837**	**0.0745**	0.0833	0.0833	ND	100	89	57-131	12	47	
Anthracene	**0.0850**	**0.0754**	0.0833	0.0833	ND	102	91	61-127	12	27	
Fluoranthene	**0.0884**	**0.0780**	0.0833	0.0833	ND	106	94	56-133	13	28	
Pyrene	**0.0846**	**0.0758**	0.0833	0.0833	ND	102	91	49-135	11	39	
Benzo[a]anthracene	**0.0916**	**0.0812**	0.0833	0.0833	ND	110	97	48-137	12	33	
Chrysene	**0.0860**	**0.0765**	0.0833	0.0833	ND	103	92	62-128	12	26	
Benzo[b]fluoranthene	**0.0829**	**0.0756**	0.0833	0.0833	ND	100	91	49-142	9	38	
Benzo(j,k)fluoranthene	**0.0912**	**0.0818**	0.0833	0.0833	ND	109	98	58-136	11	34	
Benzo[a]pyrene	**0.0870**	**0.0782**	0.0833	0.0833	ND	104	94	60-130	11	31	
Indeno(1,2,3-c,d)pyrene	**0.0841**	**0.0756**	0.0833	0.0833	ND	101	91	49-137	11	34	
Dibenz[a,h]anthracene	**0.0862**	**0.0776**	0.0833	0.0833	ND	103	93	64-124	11	23	
Benzo[g,h,i]perylene	**0.0848**	**0.0770**	0.0833	0.0833	ND	102	92	59-129	10	34	
Surrogate:											
2-Fluorobiphenyl						*90*	*84*	*47-112*			
Pyrene-d10						*97*	*89*	*48-129*			
Terphenyl-d14						*97*	*91*	*51-114*			

Date of Report: June 20, 2024
Samples Submitted: June 12, 2024
Laboratory Reference: 2406-142
Project: 4082-072-00 T400

% MOISTURE

Client ID	Lab ID	% Moisture	Date Analyzed
FR232-MW1-10-10.5	06-142-01	**6**	6-14-24
FR232-MW1-20-21	06-142-02	**7**	6-14-24
FR232-MW1-30-31	06-142-03	**6**	6-14-24

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-naphthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1 - Sample extract treated with a sulfuric acid/silica gel cleanup procedure.

X2 - Sample extract treated with a silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in methods 8260 & 8270, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Y1 - Negative effects of the matrix from this sample on the instrument caused values for this analyte in the bracketing continuing calibration verification standard (CCVs) to be outside of 20% acceptance criteria. Because of this, quantitation limits and sample concentrations should be considered estimates.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

Chain of Custody

OnSite Environmental Inc.
Analytical Laboratory Testing Services
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Company: GeoEngineers
Project Number: 4082-072-00 T400
Project Name: Sound Transit FR-232
Project Manager: John Deeds
Sampled by: Paul Robinette

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☑ Standard (7 Days)
☐ _____ (other)

Laboratory Number: 06-142

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx (☐ Acid / SG Clean-up)	Volatiles 8260C	Halogenated Volatiles 8260C	EDB EPA 8011 (Waters Only)	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664A	HOLD				% Moisture
1	FR232-MW1-10-10.5	6/10/24	1345	S	1				X					X													X
2	FR232-MW1-20-21	6/10/24	1435	S	1				X					X													X
3	FR232-MW1-30-31	6/10/24	1510	S	1				X					X													X
4	FR232-MW1-40-40.5	6/11/24	0830	S	1																						

	Signature	Company	Date	Time
Relinquished		GEL	6/12/24	10:00
Received		GEL	6/12/24	10:00
Relinquished		GEL	6/12/24	12:30
Received		OSE	6/14/24	1230
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions
PW will assign testing and turnaround time.

Data Package: Standard ☐ Level III ☐ Level IV ☐
Chromatograms with final report ☐ Electronic Data Deliverables (EDDs) ☐

Appendix D
Report Limitations and Guidelines for Use

Appendix D
Report Limitations and Guidelines for Use[1]

This appendix provides information to help you manage your risks with respect to the use of this report. Please confer with GeoEngineers if you need to know more about how these "Report Limitations and Guidelines for Use" apply to your project or property.

READ THESE PROVISIONS CLOSELY

It is important to recognize that environmental engineering and geoscience practices (geotechnical engineering, geology and environmental science) are less exact than other engineering and natural science disciplines. GeoEngineers includes these explanatory "limitations" provisions in our reports to help reduce the risk of misunderstandings or unrealistic expectations that lead to disappointments, claims and disputes.

ENVIRONMENTAL SERVICES ARE PERFORMED FOR SPECIFIC PURPOSES, PERSONS AND PROJECTS

GeoEngineers has performed this study of the property at 23646 Pacific Highway South, Kent, Washington, King County Tax Parcel 2500600520, identified by Sound Transit as Federal Way Link Extension (FWLE) project parcel FL232, in general accordance with the scope and limitations of our On-Call for Environmental Due Diligence Studies, Contract No. RTA/01 0287-19 authorized under Task Order 012-00. This report has been prepared for the exclusive use of Sound Transit and their authorized agents. This report is not intended for use by others, and the information contained herein is not applicable to other properties.

GeoEngineers structures its services to meet the specific needs of its clients. For example, an ESA study conducted for a property owner may not fulfill the needs of a prospective purchaser of the same property. Because each environmental study is unique, each environmental report is unique, prepared solely for the specific client and property. Use of this report is not recommended for any purpose or project other than as expressly stated in this report.

THIS ENVIRONMENTAL REPORT IS BASED ON A UNIQUE SET OF PROJECT-SPECIFIC FACTORS

This report has been prepared for the property at 23646 Pacific Highway South, Kent, Washington, King County Tax Parcel 2500600520, identified by Sound Transit as FWLE project parcel FL232. GeoEngineers considered a number of unique, project-specific factors when establishing the scope of services for this Project. Unless GeoEngineers specifically indicates otherwise, it is important not to rely on this report if it was:

- not prepared for you,
- not prepared for your Project,

1 Developed based on material provided by ASFE, Professional Firms Practicing in the Geosciences; www.asfe.org.

- not prepared for the specific site explored, or
- completed before Project changes were made.

If changes to the Project or property occur after the date of this report, GeoEngineers cannot be responsible for any consequences of such changes in relation to this report unless we have been given the opportunity to review our interpretations and recommendations in the context of such changes. Based on that review, we can provide written modifications or confirmation, as appropriate.

RELIANCE CONDITIONS FOR THIRD PARTIES

This report was prepared for the exclusive use of Sound Transit and their authorized agents. No other party may rely on the product of our services unless we agree to such reliance in advance and in writing. Within the limitations of the agreed Project scope, schedule and budget, our services have been executed in accordance with our Agreement with the Client and generally accepted environmental practices in this area at the time this report was prepared.

UNDERSTAND THAT GEOTECHNICAL ISSUES HAVE NOT BEEN ADDRESSED

Unless geotechnical engineering was specifically included in our scope of service, this report does not provide any geotechnical findings, conclusions, or recommendations, including but not limited to, the suitability of subsurface materials for construction purposes.

DO NOT SEPARATE DOCUMENTATION FROM THE REPORT

Environmental reports often include supplemental documentation, such as maps, figures and tables. Do not separate such documentation from the report. Further, do not, and do not permit any other party, to redraw or modify any of the supplemental documentation for incorporation into other professionals' instruments of service.

ENVIRONMENTAL REGULATIONS CHANGE AND EVOLVE

Some substances may be present in the vicinity of the subject property in quantities or under conditions that may have led, or may lead, to contamination of the subject property, 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 for appropriate inquiry, or regulatory definitions of hazardous substances, change or if more stringent environmental standards are developed in the future.

UNCERTAINTY MAY REMAIN EVEN AFTER THIS STUDY IS COMPLETED

Performance of an environmental site assessment is intended to reduce uncertainty regarding the potential for contamination in connection with a property, but no ESA can wholly eliminate that uncertainty. Our interpretation of subsurface conditions in this study is based on field observations and chemical analytical data from widely spaced sampling locations. It is always possible that contamination exists in areas that were not explored, sampled or analyzed.

INFORMATION PROVIDED BY OTHERS

GeoEngineers has relied upon certain data or information provided or compiled by others in the performance of our services. Although we use sources that we reasonably believe to be trustworthy,

GeoEngineers cannot warrant or guarantee the accuracy or completeness of information provided or compiled by others.

SUBSURFACE CONDITIONS CAN CHANGE

This environmental report is based on conditions that existed at the time the study was performed. The findings and conclusions of this report may be affected by the passage of time, by man-made events such as construction on or adjacent to the subject property, by new releases of hazardous substances, new information or technology that become available subsequent to the report date, or by natural events such as floods, earthquakes, slope instability or groundwater fluctuations. Please contact GeoEngineers before applying this report for its intended purpose so that GeoEngineers may evaluate whether changed conditions affect the continued applicability of the report.

SOIL AND GROUNDWATER END USE

The cleanup levels referenced in this report are site- and situation-specific. The cleanup levels may not be applicable for other properties or for other on-site uses of the affected soil and/or groundwater. Note that hazardous substances may be present in some of the on-site soil and/or groundwater at detectable concentrations that are less than the referenced cleanup levels. GeoEngineers should be contacted prior to the export of soil or groundwater from the subject property or reuse of the affected soil or groundwater on-site to evaluate the potential for associated environmental liabilities. GeoEngineers will not assume responsibility for potential environmental liability arising out of the transfer of soil and/or groundwater from the subject property to another location, or the reuse of such soil and/or groundwater on-site in any instances that we did not recommend, know of, or control.

MOST ENVIRONMENTAL FINDINGS ARE PROFESSIONAL OPINIONS

Our interpretations of subsurface conditions are based on field observations and chemical analytical data from widely spaced sampling locations at the subject property. Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted and/or samples are taken. GeoEngineers reviewed field and laboratory data and then applied our professional judgment to render an informed opinion about subsurface conditions throughout the property. Actual subsurface conditions may differ significantly from those indicated in this report. Our report, conclusions and interpretations should not be construed as a warranty of the subsurface conditions.

DO NOT REDRAW THE EXPLORATION LOGS

Environmental scientists prepare final exploration logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions by others, the logs included in an environmental report should never be redrawn for inclusion in other design documents. Only photographic or electronic reproduction that preserves the entire original exploration log is acceptable, but separating logs from the report can increase the risk of potential misinterpretation.

BIOLOGICAL POLLUTANTS

GeoEngineers' Scope of Work specifically excludes the investigation, detection, prevention or assessment of the presence of Biological Pollutants. Accordingly, this report does not include any interpretations, recommendations, findings or conclusions regarding the detecting, assessing, preventing or abating of Biological Pollutants, and no conclusions or inferences should be drawn regarding Biological Pollutants

as they may relate to this Project. The term “Biological Pollutants” includes, but is not limited to, molds, fungi, spores, bacteria and viruses, and/or any of their byproducts.

A Client that desires these specialized services is advised to obtain them from a consultant who offers services in this specialized field.