Site Characterization and Interim Action Report

AST System Fuel Release

Washington State Fire Training Academy
50810 SE Grouse Ridge Road
North Bend, Washington

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1 INTRODUCTION

PBS Engineering and Environmental Inc. (PBS) provided environmental consulting services to Washington State Patrol (WSP) and Washington State Department of Enterprise Services (DES) regarding site characterization work conducted at the Fire Training Academy (FTA) facility, located at 50810 SE Grouse Ridge Road in North Bend, WA (Property or Site). Site characterization was conducted to investigate potential petroleum fuel impact to soil and groundwater resulting from failure of a fuel aboveground storage tank (AST).

1.1 General Site Information

The FTA facility is located on Grouse Ridge Road, near the southwest side of Mailbox Peak; Township 23, Range 9, Section 28. The facility was first developed in the 1980s and comprises approximately 50 acres of developed area. Access to the subject property is via Grouse Ridge Road, which begins at the terminus of SE Homestead Valley Road, near the trailhead for Dirty Harry's Balcony trail.

1.2 Site Use

The FTA facility includes numerous training props for various firefighting scenarios, such as a container ship, apartment buildings, and aircraft. Many firefighting props are located on a flat, paved area called the "burn pad", located to the south of the AST System.

The facility also includes offices, classrooms, mechanical/maintenance garages, and vehicle storage.

1.3 AST System

The props are supplied with fuel from an AST system comprising three 20,000-gallon ASTs, a containment basin and associated piping. The containment basin comprises a vertical concrete stem wall supporting the filling area (where trucks can load/unload fuel), and three sloped earthen walls sealed with asphalt and a hydrocarbon resistant surface coating/liner. The AST containment basin drains to an oil/water separation and treatment system that processes the oily runoff resulting from training exercises. The system comprises a 250,000-gallon capacity oil/water separator pool and three sequential treatment ponds.

1.4 Regional Geology and Hydrogeology

The site lies on Grouse Ridge, a glacial moraine near the base of Mailbox Peak in the Snoqualmie Pass. The site is reportedly underlain by recessional glacial outwash, consisting of loose, stratified fluvial silt, sand, and gravel; well-rounded and moderately to well sorted[1].

2 ADOPTED REGULATORY CRITERIA

Contaminated site assessment and cleanup is conducted in accordance with the substantive requirements of the Model Toxics Control Act (MTCA), Chapter 70.105D of the Revised Code of Washington (RCW) and its implementation regulations, Chapter 173-340 of the Washington Administrative Code (WAC).

Site assessment and cleanup activities have been performed under MTCA. This section summarizes the cleanup standards established for this site.

In accordance with MTCA, development of preliminary cleanup levels includes identifying potential exposure pathways for human and ecological impacts based on the planned land use. MTCA provides for three methods (Method A, B, or C) for establishing cleanup standards. Method A (unrestricted land use) is typically used as the default criterion. Methods B and C are used when developing site-specific cleanup levels.

[1] *Geologic Map of the Snoqualmie Pass 30x60 Minute Quadrangle Washington*, R. W. Tabor et al, 2000

Considering the current land use as a training/educational facility, the MTCA Method A Cleanup Levels (CULs) for soil (Table 740-1), and groundwater (Table 720-1) are the adopted cleanup criteria for site characterization.

The contaminants of potential concern (COPC) are gasoline-, diesel-, and heavy oil-range total petroleum hydrocarbons (TPH), along with benzene, toluene, ethylbenzene, and xylenes (BTEX).

Cleanup levels for COPC at this site are as follows:

Contaminant of Potential Concern	MTCA Method A Soil Cleanup Level (mg/kg)	MTCA Method A Groundwater Cleanup Level (µg/L)
TPH – Gasoline	100 (30 if benzene is present)	1,000 (800 if benzene is present)
TPH – Diesel	2,000	500
TPH – Heavy Oil	2,000	500
Benzene	0.03	5
Toluene	7	1,000
Ethylbenzene	6	700
Xylenes	9	1,000

3 SITE CHARACTERIZATION AND INTERIM ACTION

3.1 Release and Initial Response

On August 6, 2021, the site maintenance supervisor discovered a leak in one AST (Fuel Tank #1) of the AST system. The AST reportedly contained aviation gas, which released from the bottom of the AST and flowed from the containment area through a drain line and connected to the "burn pad" training facility drainage system, which in turn flowed into the site's oil/water separation and treatment pond system.

Vacuum trucks were utilized to drain the leaking tank of as much fuel as possible and pump floating fuel from the oil/water separator to a temporary storage tank on site.

PBS visited the site on August 11, 2021 to conduct a visual inspection of the release area and the water treatment ponds. Evidence of fuel impacts was not observed in the three sequential treatment ponds, indicating the release did not significantly impact the system "downstream" of the oil/water separator pool.

PBS observed that the containment basin liner was perforated in several locations, exposing underlying asphalt and soil. Vegetation had grown through the liner in several locations.

3.2 AST System Inspection

On October 6, 2021, PBS oversaw a closed-circuit television video (CCTV) study of the containment basin drainage system. The CCTV study of the drainage system leading out of the AST containment basin revealed no evidence of damage in the drain line running down the hill to the east-southeast and connecting to the "burn pad" training area drainage system that then leads to the oil/water separator.

3.3 Sampling and Analysis Plan

A Sampling and Analysis Plan (SAP) *Sampling and Analysis Plan - AST System Fuel Release* (PBS, November 11, 2021) was developed and describes the scope of work, anticipated sample collection methods, and analytical procedures to be implemented. The SAP detailed the drilling scope, which includes three temporary soil borings and installation of three groundwater monitoring wells, as well as subsequent surveying and groundwater sampling of those wells.

3.4 Subsurface Investigation – January 2022

PBS completed a subsurface investigation at the site January 19 through January 21, 2022, with drilling services provided by Holt Services of Edgewood, Washington. The purpose of the subsurface investigation was to assess the potential for contamination in soil and groundwater in the vicinity of the AST system. The work was conducted in accordance with the SAP.

Prior to drilling, PBS supervised a private utility line location company, Applied Professional Services (APS) of North Bend, WA, while they conducted borehole clearance for subsurface obstructions at all planned drilling locations.

The drilling and sampling program included the advancement of three soil borings (SB-1 to SB-3) for the collection of soil samples, and three borings (MW-1 to MW-3) for the collection of soil samples and the installation of groundwater monitoring wells. A sonic drilling rig was utilized for drilling at the six locations.

Soils were logged continuously during drilling, noting grain size, density, color, odor, and moisture. During the advancement of boreholes, soil was screened for volatiles using a photoionization detector (PID). Cursory PID readings were taken along the runs of soil as they were brought to the surface and bagged. PID readings were also taken from select soil intervals by partially filling a sealable plastic bag and taking headspace readings within the bag.

Groundwater was encountered at depths of approximately 8 to 12 feet below ground surface (bgs) at the boring locations at the base of the hill below the AST containment area, and at a depth of approximately 22 feet bgs in borings at the top of the hill, adjacent to the AST containment area.

Two to three soil samples were collected from each of the borings. In the absence of field indications of contamination, the samples were collected from representative intervals and/or at changes in lithology.

The samples were collected in laboratory-supplied containers, placed on ice in a cooler, and transported to Friedman and Bruya Laboratory, within specified holding times and under chain-of-custody documentation. Analyses were conducted under standard turnaround time and included the following:

- Diesel and Heavy Oil range Total Petroleum Hydrocarbons (TPH) by Method NWTPH-Dx
- Gasoline range TPH by Method NWTPH-Gx
- Benzene, toluene, ethylbenzene, and xylenes (BTEX) by EPA Method 8260B

Soil boring and monitoring well locations are presented on Figure 2: Site Plan. Graphic soil boring logs and well construction details are presented in Appendix A.

3.5 Groundwater Sampling – February 2022

A groundwater monitoring event (GME) was conducted on February 2, 2022, and included the gauging and sampling of three monitoring wells (MW-1 – MW-3). Prior to sampling, the wells were gauged using an interface probe. Static water levels (SWLs) ranged from 4.59 feet below top of casing (fbTOC) in MW-3 to 20.39 fbTOC in MW-1.

Groundwater purging and sampling was conducted using a peristaltic pump, employing low flow sampling methodology with pumping rates not exceeding 0.6 liters/minute and creating minimal drawdown in the well. The sample intake was placed approximately 2.5-feet below the water table and within the screened interval, except for at MW-3, where the top of the screened interval was 0.4 feet below the static water table.

Groundwater field parameters (conductivity, pH, temperature, dissolved oxygen, and oxidation-reduction potential) were recorded during purging using a YSI Model 556MSP water-quality analyzer equipped with a flow-through cell. Once groundwater parameters stabilized, which indicates groundwater is representative of the aquifer formation and is not well column water, a sample was collected. PBS personnel wore new disposable nitrile gloves when collecting samples.

All samples were collected in laboratory-supplied containers, placed on ice in a cooler and transported to Friedman and Bruya laboratory in Seattle, Washington, within specified holding times and under chain-of-custody documentation. Analyses were conducted under a 5-day turnaround time and included the following:

- Gasoline range Total Petroleum Hydrocarbons (TPH) by Method NWTPH-Gx
- Diesel range Total Petroleum Hydrocarbons (TPH) by Method NWTPH-Dx
- Benzene, toluene, ethylbenzene, and xylenes by EPA Method 8021

3.6 Supplemental Subsurface Investigation

On March 28, 2022, PBS oversaw the advancement of seven soil borings using a direct-push drilling rig, for the collection of soil and "grab" groundwater samples. The purpose of the investigation was to better define the degree and extent of the release.

Soil boring locations are presented on Figure 2: Site Plan. Graphic soil boring logs are presented in Appendix A.

3.7 Groundwater Sampling – July 2022

A second GME was conducted on July 28, 2022, and included the gauging and sampling of three monitoring wells (MW-1 – MW-3). Prior to sampling, the wells were gauged using an interface probe. SWLs ranged from 7.15 fbTOC in MW-3 to 23.76 fbTOC in MW-1.

Groundwater monitoring well locations are presented on Figure 2: Site Plan.

Groundwater sampling information is presented in Appendix C: Groundwater Sampling Datasheets.

3.8 Well Installation – August 2022

On August 16, 2022, PBS oversaw the advancement of four borings to be completed as monitoring wells (MW-4 to MW-7). Select well locations were collocated with soil borings described in Section 3.6. Drilling services were provided by Holocene Drilling of Puyallup, Washington. A hollow-stem auger drilling rig was utilized for drilling at the four locations.

Soil boring and monitoring well locations are presented on Figure 2: Site Plan. Graphic soil boring logs and well construction details are presented in Appendix A.

3.9 Groundwater Sampling – September 2022 and January 2023

A round of groundwater sampling was conducted on September 14, 2022, and included the gauging and sampling of seven monitoring wells (MW-1 – MW-7). Prior to sampling, the wells were gauged using an interface probe. SWLs ranged from 7.15 fbTOC in MW-3 to 23.76 fbTOC in MW-1. There was insufficient groundwater for sampling in MW-5 and MW-7.

A limited sampling round was conducted on January 13, 2023, and included the gauging and sampling of five monitoring wells (MW-1 and MW-4 – MW-7). Prior to sampling, the wells were gauged using an interface probe. SWLs ranged from 7.55 fbTOC in MW-4 to 21.59 fbTOC in MW-1. There was insufficient groundwater for sampling in MW-5. Groundwater collected from MW-7 was only analyzed for gasoline range TPH and BTEX due to insufficient water for diesel and heavy oil range TPH analysis.

3.10 Survey

Accurately measuring the top of casing (TOC) elevation of monitoring wells allows for the determination of groundwater elevation, by measuring the depth to water from the TOC. On February 2, 2022, surveying of TOC, latitude, and longitude of monitoring wells MW-1 through MW-3 was completed by a Registered Professional Land Surveyor licensed in the State of Washington. On January 17, 2023, surveying of TOC, latitude, and longitude of monitoring wells MW-4 through MW-7 was completed by a Registered Professional Land Surveyor licensed in the State of Washington.

The survey reports are included as Appendix C.

4 FINDINGS

4.1 Field Observations

Native material was generally encountered throughout the borings. The subsurface soil profile encountered is presented in the table below:

Subsurface Profile

Classification	Description	Approximate Depth Range (feet bgs)
Native Soil	Loose well-graded gravel with sand (GW-GM) and mixed organic material.	0.0 to 1.0
Native Soil	Loose well-sorted gravel with sand (GW)	1.0 to 24.0
Native Soil	Medium-dense tan lean clay (CL)	24.0 to 26.0
Native Soil	Loose well-sorted coarse to medium sand (SW)	26.0 to 30.0

Hydrocarbon odors and PID readings were observed at depths of approximately 15 feet bgs in MW-2, 10 feet bgs in MW-3, and 5 feet bgs in SB-3.

4.2 Soil Analytical Results

Soil sampling results are presented as follows:

- 26 samples were analyzed for TPH as gasoline, diesel, and heavy oil; and BTEX.

- Concentrations of benzene exceeded the CUL in three samples (SB3-16, MW2-13 and MW3-10), each location is in close proximity to the release.
- Concentrations of analyzed contaminants did not exceed the CULs in the remaining sample locations.

Soil analytical results are presented in Table 1.

Copies of laboratory reports and chain-of-custody documentation are presented in Appendix D.

4.3 Groundwater Analytical Results

Groundwater sampling results are presented as follows:

- Concentrations of TPH and BTEX exceeded the CULs in samples collected from BH2-W and BH4-W.
- Concentrations of TPH and BTEX exceeded the CULs in samples collected from monitoring wells MW-2, MW-3, MW-4, and MW-6.
- Analyzed contaminants of concern were not detected in samples from MW-1, MW-4, and MW-7. Water was insufficient for sampling at MW-5.

The results of the investigation included "clean" groundwater (analyzed contaminants of concern were not detected above CULs) in the upgradient well (MW-1), both cross-gradient locations (northeast: BH1 and MW-4, southwest: BH6), and one downgradient location (MW-7). The "clean" downgradient location MW-7 is relatively far from the release (640-feet), but is an important data point, as it is directly hydraulically downgradient and is between the release and surface water features.

Groundwater analytical results are presented in Table 2.

Copies of laboratory reports and chain-of-custody documentation are presented in Appendix D.

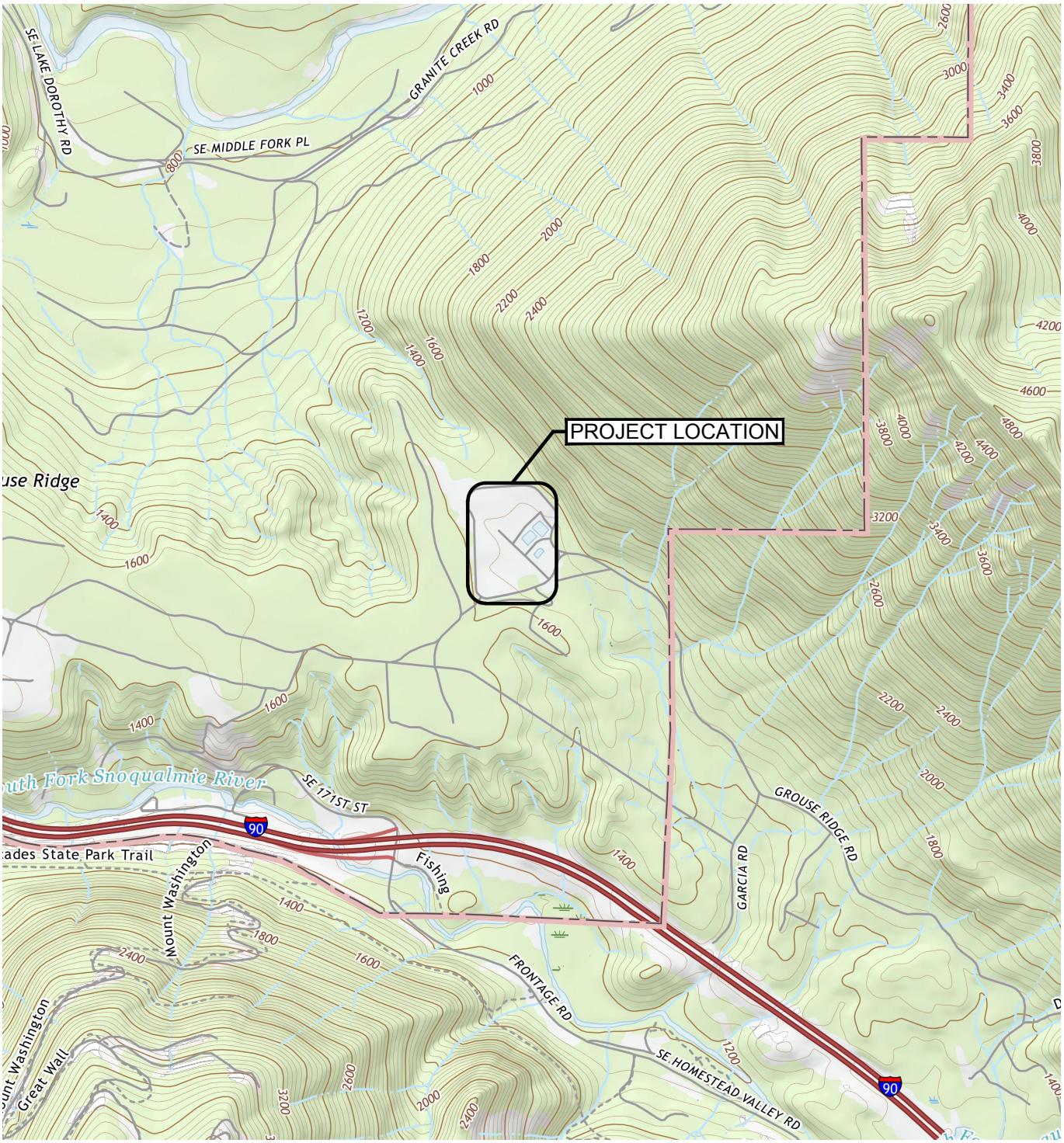
5 INTERIM REMEDIAL ACTION

PBS completed a groundwater removal remedial action at the site August 17 through August 18, 2022. This interim remedial action reduces source zone contamination though contaminated groundwater removal. Groundwater removal included pumping groundwater from monitoring wells MW-2 and MW-3 and discharging to the existing on-site water treatment system.

5.1 Groundwater Withdrawal

1. PBS conducted a 26-hour pumping event.
2. Water withdrawal was completed using a downhole electric pump with controller for variable pumping speed.
3. Discharge water was pumped to the existing water treatment system using rigid tubing. The existing water treatment system was designed and permitted to remove petroleum compounds from the fire-fighting runoff water entering the system.
4. A valve on the discharge line was used to collect water quality measurements and samples.
5. Pump rate was approximately 2-gallons per minute and was measured periodically using a graduated 5-gallon container.
6. Discharge rates and total volume were recorded.

Figures



SOURCE: USGS CHESTER MORSE LAKE, WA QUADRANGLE 2020.

WASHINGTON

Scale 1" = 2000'

0' 1000' 2000' 4000'

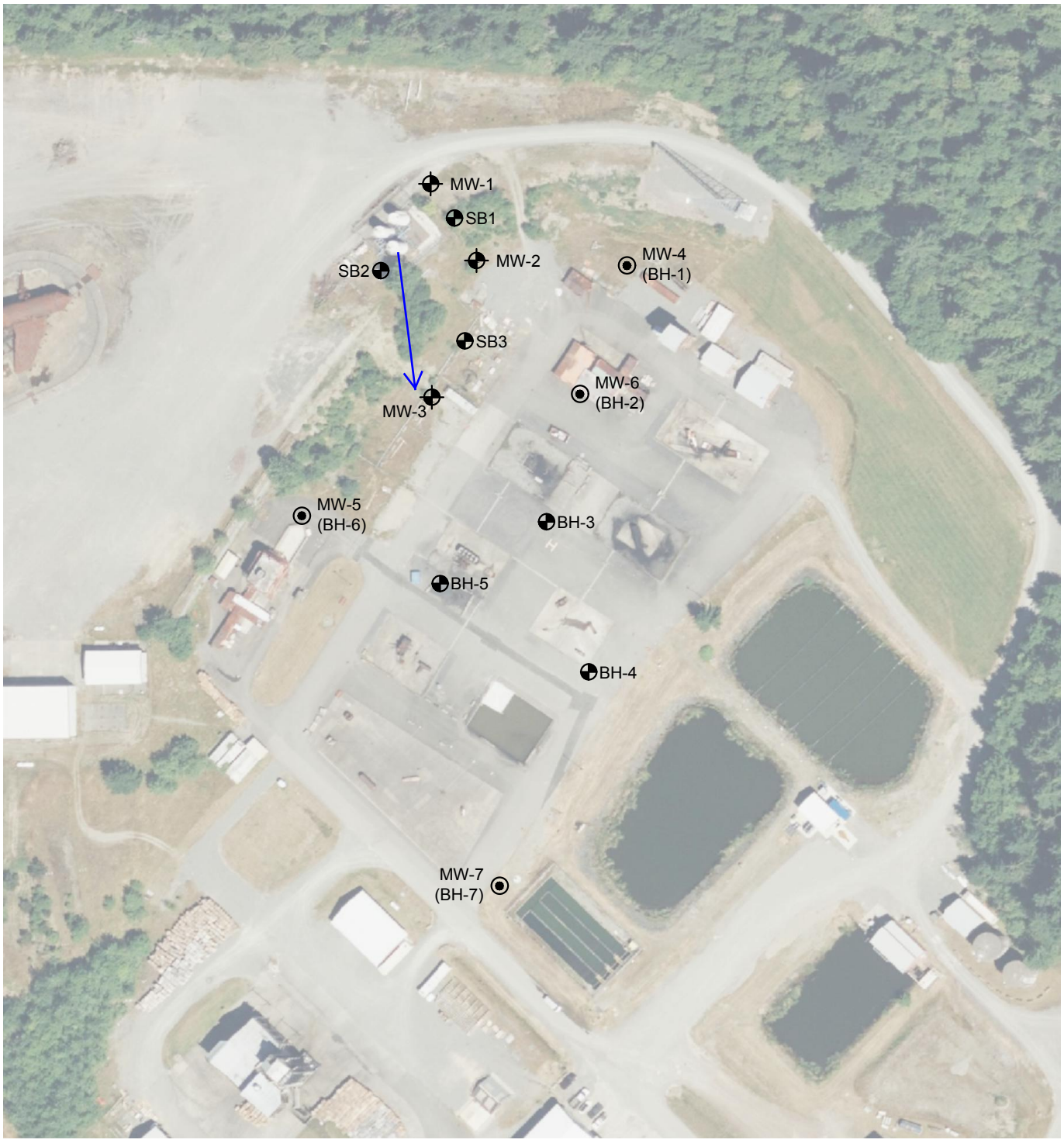
PREPARED FOR: STATE OF WASHINGTON DES

VICINITY MAP

50810 GROUSE RIDGE ROAD
NORTH BEND, WASHINGTON

MAR 2023
40535.498

FIGURE
1



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LEGEND

BH-1	BORING NUMBER AND LOCATION
MW-1	MONITORING WELL NUMBER AND LOCATION
MW-1 (BH-1)	MONITORING WELL & BORING NUMBER AND LOCATION
	GROUNDWATER FLOW DIRECTION

Scale 1" = 200'

0' 100' 200' 400'

PREPARED FOR: STATE OF WASHINGTON DES

PBS

SITE PLAN

50810 GROUSE RIDGE ROAD
NORTH BEND, WASHINGTON

MAR 2023
40535.498

FIGURE
2

Tables

TABLE 1
SOIL ANALYTICAL RESULTS
FIRE TRAINING ACADEMY
50810 GROUSE RIDGE ROAD NORTH BEND, WASHINGTON 98045
PBS PROJECT NO. 40535.498

Location-Depth	Results mg/Kg										
	TPHs			VOCs							PAHs
	Gx	Dx	Oil	Benzene	Toluene	Ethylbenzene	Xylene	MTBE	EDB	EDC	
Adopted Criteria: MTCA Method A Cleanup Levels For Soil[a]	100	2000	2000	0.03	7	6	9	0.1	0.005	NE	0.1
Subsurface Investigation Conducted on January 21, 2022											
SB1-15	<5	<50	<250	<0.02	<0.02	<0.02	<0.06	--	--	--	--
SB1-25	<5	<50	<250	<0.02	<0.02	<0.02	<0.06	--	--	--	--
SB2-10	<5	<50	<250	<0.02	<0.02	<0.02	<0.06	--	--	--	--
SB2-16	<5	<50	<250	<0.02	<0.02	<0.02	<0.06	--	--	--	--
SB3-5	<5	180	800	<0.02	<0.02	<0.02	<0.06	--	--	--	--
SB3-16	<5	<50	<250	**0.092**	0.36	<0.02	0.18	<0.05	<0.005	<0.05	<0.1
MW1-12	<5	<50	<250	<0.02	<0.02	<0.02	<0.06	--	--	--	--
MW1-15	<5	<50	<250	<0.02	<0.02	<0.02	<0.06	--	--	--	--
MW2-9	<5	<50	<250	<0.02	<0.02	<0.02	<0.06	--	--	--	--
MW2-13	<5	<50	<250	**0.031**	0.24	<0.02	0.57	--	--	--	--
MW2-25	<5	<50	<250	<0.02	<0.02	<0.02	<0.06	--	--	--	--
MW3-10	<5	<50	<250	**0.080**	0.55	<0.02	<0.06	--	--	--	--
MW3-18	<5	<50	<250	<0.02	<0.02	<0.02	<0.06	--	--	--	--
Subsurface Investigation Conducted on March 28, 2022											
BH1-4	<5	<50	<250	<0.02	<0.02	<0.02	<0.06	--	--	--	--
BH2-3	<5	<50	<250	<0.02	<0.02	<0.02	<0.06	--	--	--	--
BH3-4	<5	<50	<250	<0.02	<0.02	<0.02	<0.06	--	--	--	--
BH4-4	<5	<50	<250	<0.02	<0.02	<0.02	<0.06	--	--	--	--
BH5-4	<5	<50	<250	<0.02	<0.02	<0.02	<0.06	--	--	--	--
BH5-12	<5	<50	<250	<0.02	0.056	<0.02	<0.06	--	--	--	--
BH6-4	<5	<50	<250	<0.02	<0.02	<0.02	<0.06	--	--	--	--
BH7-4	<5	<50	<250	<0.02	<0.02	<0.02	<0.06	--	--	--	--
Subsurface Investigation Conducted on August 16, 2022											
MW5-5	<5	<50	<250	<0.02	<0.02	<0.02	<0.06	--	--	--	--
MW5-15	<5	<50	<250	<0.02	<0.02	<0.02	<0.06	--	--	--	--
MW6-15	<5	<50	<250	<0.02	<0.02	<0.02	<0.06	--	--	--	--
MW7-5	<5	<50	<250	<0.02	<0.02	<0.02	<0.06	--	--	--	--
MW7-15	12	<100	<500	<0.02	<0.04	0.048	<0.12	--	--	--	--

[a] Washington State Department of Ecology Model Toxics Control Act Method A Cleanup Level for Unrestricted Land Use as established in WAC 173-340-900

BOLD indicates above MTCA Method A Cleanup Levels for Soil

mg/kg - milligrams per kilogram

TPH - total petroleum hydrocarbons

Gx - gasoline range hydrocarbons analyzed by Method NWTPH-Gx

Dx - diesel range hydrocarbons analyzed by Method NWTPH-Dx, method also included reporting of TPH in the heavy oil range

MTBE - methyl tertiary-butyl ether

EDB - 1,2-dibromoethane

EDC - 1,2-dichloroethane

PAHs - polycyclic aromatic hydrocarbons analyzed by US EPA Method 8270 SIM

VOCS - volatile organic compounds analyzed by US EPA Method 8260B

NE - Not established

<50 - less than the laboratory reporting limit

- not analyzed

TABLE 2
GROUNDWATER ANALYTICAL RESULTS
FIRE TRAINING ACADEMY
50810 GROUSE RIDGE ROAD NORTH BEND, WASHINGTON 98045
PBS PROJECT NO. 40535.498

Sample Identification	Date	Results µg/L									
		TPHs			VOCs						
		Gx	Dx	Heavy Oil	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	EDB	EDC
Adopted Criteria: MTCA Method A Cleanup Levels For Groundwater[a]		800	500	500	5	1,000	700	1,000	0.1	0.005	NE
Grab groundwater samples collected March 28, 2022											
BH1-W	3/28/2022	<100	100	<250	<1	<1	<1	<3	--	--	--
BH2-W	3/28/2022	**11,000**	250	**600**	**640**	**1,900**	100	720	--	--	--
BH3-W	3/28/2022	210	**690**	<250	<1	3	<1	<3	--	--	--
BH4-W	3/28/2022	**48,000**	**6,400**	**660**	**86**	**1,500**	**1,700**	**3,300**	--	--	--
BH6-W	3/28/2022	<100	210	<300	<1	<1	<1	<3	--	--	--
BH7-W	3/28/2022	<100	59	<250	<1	<1	<1	<3	--	--	--
Interim Action groundwater samples (MW2) collected August 17, 2022											
DS1	8/18/2022	**29,000**	--	--	**39**	**5,200**	380	**2,000**	--	--	--
DS2	8/18/2022	**30,000**	--	--	**40**	**5,700**	400	**2,200**	--	--	--
DS3	8/18/2022	**33,000**	--	--	**43**	**6,500**	460	**2,500**	--	--	--
DS4	8/18/2022	**33,000**	--	--	**36**	**5,900**	490	**2,900**	--	--	--
Monitoring Well Sampling											
MW1	2/2/2022	<100	<50	<250	<1	<1	<1	<3	--	--	--
	7/28/2022	<100	<50	<250	<1	1	<1	<3	--	--	--
	9/14/2022	<100	<50	<250	<1	2.7	<1	<3	--	--	--
	1/13/2023	<100	<50	<250	<1	<1	<1	<3			
MW2	2/2/2022	**30,000**	**1,300**	<250	**680**	**4,800**	410	**2,600**	--	--	--
	7/28/2022	**76,000**	**1,600**	<250	**97**	**11,000**	**840**	**5,200**	--	--	--
	9/14/2022	**49,000**	**870**	<250	**64**	**9,200**	670	**49,000**	--	--	--
MW3	2/2/2022	**56,000**	**1,400**	<250	**990**	**10,000**	610	**4,000**	<100	<100	<20
	7/28/2022	**29,000**	**1,100**	<250	**210**	**3,600**	570	**2,300**	--	--	--
	9/14/2022	**11,000**	**550**	<250	**300**	620	410	**11,000**	--	--	--
MW4	9/14/2022	<100	<50	<250	<1	<1	<1	<3	--	--	--
	1/13/2023	<100	59	<250	<1	<1	<1	<3			
MW5	9/14/2022	Insufficient water for sampling									
	1/13/2023	Insufficient water for sampling									
MW6	9/14/2022	620	53	<250	**75**	9.9	1.2	<3	--	--	--
	1/13/2023	600	310	<250	**40**	9.6	1.1	<3			
MW7	9/14/2022	Insufficient water for sampling									
	1/13/2023	<100	--	--	<1	<1	<1	<3			

[a] Washington State Department of Ecology Model Toxics Control Act Method A Cleanup Level for Unrestricted Land Use as established in WAC 173-340-900

µg/L - micrograms per litre

BOLD indicates above MTCA Method A Cleanup Levels for Groundwater

<50 - less than the laboratory reporting limit

MTCA - Washington State Department of Ecology Model Toxic Control Act

TPH - total petroleum hydrocarbons

Gx - gasoline range hydrocarbons analyzed by Method NWTPH-Gx

Dx - diesel range hydrocarbons analyzed by Method NWTPH-Dx, method includes reporting TPH in the heavy oil range

MTBE - methyl tertiary-butyl ether

EDB - 1,2-dibromoethane

EDC - 1,2-dichloroethane

VOCs - volatile organic compounds analyzed by US EPA Method 8260B

ND - not detected above laboratory method detection limit

ug/L - micrograms per liter

BGS - below ground surface

TABLE 3
GROUNDWATER ELEVATION DATA
FIRE TRAINING ACADEMY
50810 GROUSE RIDGE ROAD NORTH BEND, WASHINGTON 98045
PBS PROJECT NO. 40535.498

Well ID	Date	Well Screen Interval (ft bgs)	Depth to Water (ft btoc)	TOC Elevation (ft amsl)	Groundwater Elevation (ft amsl)
MW1	2/2/2022	12 - 32	20.39	1574.72	1554.33
	7/28/2022	12 - 32	23.76		1550.97
	9/14/2022	12 - 31.3	25.49		1549.23
	1/13/2023	12 - 31.3	21.59		1553.13
MW2	2/2/2022	5 - 25	5.75	1558.06	1552.31
	7/28/2022	12 - 32	8.67		1549.39
	9/14/2022	12 - 24.9	10.28		1547.78
MW3	2/2/2022	5 - 15	4.59	1556.05	1551.46
	7/28/2022	12 - 32	7.15		1548.90
	9/14/2022	12 - 32	8.63		1547.42
MW4	9/14/2022	5 - 20	11.00	1558.41	1547.41
	1/13/2023	5 - 20	7.55		1550.86
MW5	9/14/2022	7 - 22	21.99	1556.69	1534.70
	1/13/2023	7 - 22	21.59		1535.11
MW6	9/14/2022	5 - 15	13.53	1556.04	1542.51
	1/13/2023	5 - 15	8.85		1547.19
MW7	9/14/2022	7 - 22	21.82	1554.43	1532.61
	1/13/2023	7 - 22	20.83		1533.60

Abbreviations & Acronyms:
ft = feet
bgs = below ground surface
toc = top of casing
btoc = below top of casing
amsl = above mean sea level - NAVD 88 via Washington State Reference Network (WSRN)

TABLE 4
GROUNDWATER PUMPING
FIRE TRAINING ACADEMY
50810 GROUSE RIDGE ROAD NORTH BEND, WASHINGTON 98045
PBS PROJECT NO. 40535.498

Activity	Date	Time	Pumping Rate (gallons/minute)	Volume purged (gallons)	Sample ID	Temp (°C)	Specific conductivity (µS/cm)	Dissolved oxygen (mg/L)	pH	ORP (mV)
Begin pumping	8/17/2022	10:04	2	0	--	--	--	--	--	--
Sample discharge	8/17/2022	10:55	2	102	DS1	--	--	--	--	--
Sample discharge	8/17/2022	13:00	2	352	DS2	10.83	20	12.86	5.45	179
Sample discharge	8/17/2022	15:30	2	652	DS3	10.79	20	12.71	5.80	140
Sample discharge	8/18/2022	12:00	2	3112	DS4	9.9	21	14.30	5.67	163
Cease pumping	8/18/2022	12:15	2	3142	--	--	--	--	--	--

Abbreviations & Acronyms:
µS/cm = microsiemens per centimeter
mg/L = milligrams per liter
ORP = oxidation-reduction potential
mV =millivolts

Appendix A

Soil Boring and Well Construction Logs

PBS	WSP FTA AST FUEL RELEASE NORTH BEND, WASHINGTON	**BORING SB-1**
	PBS PROJECT NUMBER: 40535.498	BORING SB-1 LOCATION: (See Site Plan)

DEPTH FEET	GRAPHIC LOG	MATERIAL DESCRIPTION	GROUND-WATER	PID (PPM)	SAMPLE NUMBER	SAMPLE/ TEMPORARY WELL(S)	RECOVERY (%)	COMMENTS/ WELL INSTALLATION
0.0		TOPSOIL GRAVEL FILL with sand						
		Loose, dark gray, well-graded GRAVEL (GW) with sand and cobbles; medium to coarse sand; fine to coarse, subrounded gravel; moist		0.0				
5.0								
				0.0				
10.0								
				0.0	SB1-15			
15.0								
20.0								
				0.0	SB1-25			
25.0		Loose, gray, poorly graded SAND (SP) with gravel and cobbles; coarse sand; fine to coarse, subrounded gravel; moist						
30.0		Final depth 30.0 feet bgs; boring backfilled with bentonite. Groundwater not encountered at time of exploration.						
35.0								

BORING METHOD: Sonic Drilling
DRILLED BY: Holt Services
BORING BIT DIAMETER: 4-inch

LOGGED BY: M. Bagley
COMPLETED: 1/19/22

BORING LOG-ENV CORE 40535.468 MW1-3, SB1-3 20220225.GPJ DATATMPL.GDT PRINT DATE: 2/25/22:RPG

PBS	WSP FTA AST FUEL RELEASE NORTH BEND, WASHINGTON	**BORING SB-2**
	PBS PROJECT NUMBER: 40535.498	BORING SB-2 LOCATION: (See Site Plan)

DEPTH FEET	GRAPHIC LOG	MATERIAL DESCRIPTION	GROUND-WATER	PID (PPM)	SAMPLE NUMBER	SAMPLE/ TEMPORARY WELL(S)	RECOVERY (%)	COMMENTS/ WELL INSTALLATION
0.0		TOPSOIL						
		Loose, dark gray, well-graded GRAVEL (GW) with sand and cobbles; medium to coarse sand; fine to coarse, subrounded gravel; moist		0.0				
5.0								
10.0				0.0	SB2-10			
15.0		Loose, gray, poorly graded SAND (SP) with gravel; medium to coarse sand; fine, subrounded gravel; moist			SB2-16			
20.0		becomes wet becomes dark gray; fine sand		0.0				
25.0		Final depth 25.0 feet bgs; boring backfilled with bentonite.						
30.0								
35.0								

BORING METHOD: Sonic Drilling
DRILLED BY: Holt Services
BORING BIT DIAMETER: 4-inch

LOGGED BY: M. Bagley
COMPLETED: 1/19/22

BORING LOG-ENV CORE 40535.468 MW1-3, SB1-3 20220225.GPJ DATATMPL.GDT PRINT DATE: 2/25/22:RPG

PBS

WSP FTA AST FUEL RELEASE
NORTH BEND, WASHINGTON

PBS PROJECT NUMBER:
40535.498

BORING SB-3

BORING SB-3 LOCATION:
(See Site Plan)

DEPTH FEET	GRAPHIC LOG	MATERIAL DESCRIPTION	GROUND-WATER	PID (PPM)	SAMPLE NUMBER	SAMPLE/ TEMPORARY WELL(S)	RECOVERY (%)	COMMENTS/ WELL INSTALLATION
0.0		Loose, brown to tan; well-graded GRAVEL (GW) with sand; medium to coarse sand; fine to coarse, subrounded gravel; moist						
5.0				0.5	SB3-5			
10.0		Loose, gray, silty SAND (SM) with gravel; medium plasticity; fine sand; fine, subrounded gravel; wet						
15.0		Dark gray, poorly graded SAND (SP) with gravel; coarse sand; fine, subrounded gravel; wet			SB3-16			
20.0		Final depth 20.0 feet bgs; boring backfilled with bentonite.		10				
25.0								
30.0								
35.0								

BORING METHOD: Sonic Drilling
DRILLED BY: Holt Services
BORING BIT DIAMETER: 4-inch

LOGGED BY: M. Bagley
COMPLETED: 1/20/22

BORING LOG-ENV CORE 40535.468 MW1-3, SB1-3 20220225.GPJ DATATMPL.GDT PRINT DATE: 2/25/22:RPG

WSP FTA AST FUEL RELEASE
NORTH BEND, WASHINGTON

PBS PROJECT NUMBER:
40535.498

BORING BH1

BORING BH1 LOCATION:
(See Site Plan)

DEPTH FEET	GRAPHIC LOG	MATERIAL DESCRIPTION	GROUND-WATER	PID (PPM)	SAMPLE NUMBER	SAMPLE/ TEMPORARY WELL(S)	RECOVERY (%)	COMMENTS/ WELL INSTALLATION
0.0		TOPSOIL						
		Medium dense, brown, silty SAND (SM) with gravel; non-plastic; medium sand; fine, subrounded gravel; damp					100	
5.0				0.0	BH1-4			
		Medium dense, brown, poorly graded SAND (SP); medium sand; moist			BH1-W			
		becomes wet						
10.0		Final depth 10.0 feet bgs.						
15.0								
20.0								
25.0								
30.0								
35.0								

BORING METHOD: Direct Push
DRILLED BY: Holt Services
BORING BIT DIAMETER: 4-inch

LOGGED BY: K. Nogeire
COMPLETED: 3/22/22

BORING LOG-ENV CORE 40535.468 MW1-3 SB1-3 20220225.GPJ DATATMPL.GDT PRINT DATE: 10/6/22:RPG

PBS

WSP FTA AST FUEL RELEASE
NORTH BEND, WASHINGTON

PBS PROJECT NUMBER:
40535.498

BORING BH2

BORING BH2 LOCATION:
(See Site Plan)

DEPTH FEET	GRAPHIC LOG	MATERIAL DESCRIPTION	GROUND-WATER	PID (PPM)	SAMPLE NUMBER	SAMPLE/ TEMPORARY WELL(S)	RECOVERY (%)	COMMENTS/ WELL INSTALLATION
0.0		ASPHALT						
		Medium dense, brown, silty SAND (SM) with gravel; non-plastic; medium sand; fine, subrounded gravel; damp			BH2-3			
5.0								
		Medium dense, brown, silty SAND (SM); low plasticity; fine to medium sand; damp						
10.0		becomes wet			BH2-W			
15.0		Final depth 15.0 feet bgs.						
20.0								
25.0								
30.0								
35.0								

BORING METHOD: Direct Push
DRILLED BY: Holt Services
BORING BIT DIAMETER: 4-inch

LOGGED BY: K. Nogeire
COMPLETED: 3/22/22

BORING LOG-ENV CORE 40535.468 MW1-3 SB1-3 20220225.GPJ DATATMPL.GDT PRINT DATE: 10/6/22:RPG

WSP FTA AST FUEL RELEASE
NORTH BEND, WASHINGTON

BORING BH3

PBS PROJECT NUMBER:
40535.498

BORING BH3 LOCATION:
(See Site Plan)

DEPTH FEET	GRAPHIC LOG	MATERIAL DESCRIPTION	GROUND-WATER	PID (PPM)	SAMPLE NUMBER	SAMPLE/ TEMPORARY WELL(S)	RECOVERY (%)	COMMENTS/ WELL INSTALLATION
0.0		ASPHALT						
		Medium dense, brown, silty SAND (SM) with gravel; non-plastic; medium sand; fine, subrounded gravel; damp		0.0	BH3-4			
5.0		Very dense, gray, poorly graded GRAVEL (GP) with sand; medium sand; fine to coarse, subangular gravel; damp						
10.0		Medium dense, brown, poorly graded SAND (SP); medium sand; moist becomes wet			BH3-W		5	
15.0		Final depth 15.0 feet bgs.						
20.0								
25.0								
30.0								
35.0								

BORING METHOD: Direct Push
DRILLED BY: Holt Services
BORING BIT DIAMETER: 4-inch

LOGGED BY: K. Nogeire
COMPLETED: 3/22/22

BORING LOG-ENV CORE 40535.468 MW1-3 SB1-3 20220225.GPJ DATATMPL.GDT PRINT DATE: 10/6/22:RPG

WSP FTA AST FUEL RELEASE
NORTH BEND, WASHINGTON

BORING BH4

PBS PROJECT NUMBER:
40535.498

BORING BH4 LOCATION:
(See Site Plan)

DEPTH FEET	GRAPHIC LOG	MATERIAL DESCRIPTION	GROUND-WATER	PID (PPM)	SAMPLE NUMBER	SAMPLE/ TEMPORARY WELL(S)	RECOVERY (%)	COMMENTS/ WELL INSTALLATION
0.0		ASPHALT						
		Medium dense, brown, silty SAND (SM) with gravel; non-plastic; medium sand; fine, subrounded gravel; damp			BH4-4			
5.0								
		Medium dense, greenish gray, poorly graded SAND (SP); medium sand; moist						
10.0		becomes wet			BH4-W			
15.0		Final depth 15.0 feet bgs						
20.0								
25.0								
30.0								
35.0								

BORING METHOD: Direct Push
DRILLED BY: Holt Services
BORING BIT DIAMETER: 4-inch

LOGGED BY: K. Nogeire
COMPLETED: 3/22/22

BORING LOG-ENV CORE 40535.468 MW1-3 SB1-3 20220225.GPJ DATATMPL.GDT PRINT DATE: 10/6/22:RPG

PBS

WSP FTA AST FUEL RELEASE
NORTH BEND, WASHINGTON

PBS PROJECT NUMBER:
40535.498

BORING BH5

BORING BH5 LOCATION:
(See Site Plan)

DEPTH FEET	GRAPHIC LOG	MATERIAL DESCRIPTION	GROUND-WATER	PID (PPM)	SAMPLE NUMBER	SAMPLE/ TEMPORARY WELL(S)	RECOVERY (%)	COMMENTS/ WELL INSTALLATION
0.0		ASPHALT						
		Medium dense, brown, silty SAND (SM) with gravel; non-plastic; medium sand; fine, subrounded gravel; damp						
		Medium dense, brown, poorly graded SAND (SP); medium sand; moist		2.0	BH5-4			
5.0								
10.0		Medium dense, gray, silty SAND (SM); low plasticity; medium sand; moist						
		becomes wet		10.0	BH5-12			Insufficient groundwater to sample
		Medium dense, brown, poorly graded SAND (SP); medium sand; moist						
15.0		Final depth 15.0 feet bgs						
20.0								
25.0								
30.0								
35.0								

BORING METHOD: Direct Push
DRILLED BY: Holt Services
BORING BIT DIAMETER: 4-inch

LOGGED BY: K. Nogeire
COMPLETED: 3/22/22

BORING LOG-ENV CORE 40535.468 MW1-3 SB1-3 20220225.GPJ DATATMPL.GDT PRINT DATE: 10/6/22:RPG

WSP FTA AST FUEL RELEASE
NORTH BEND, WASHINGTON

BORING BH6

PBS PROJECT NUMBER:
40535.498

BORING BH6 LOCATION:
(See Site Plan)

DEPTH FEET	GRAPHIC LOG	MATERIAL DESCRIPTION	GROUND-WATER	PID (PPM)	SAMPLE NUMBER	SAMPLE/ TEMPORARY WELL(S)	RECOVERY (%)	COMMENTS/ WELL INSTALLATION
0.0		ASPHALT						
		Medium dense, brown, silty SAND (SM) with gravel; non-plastic; medium sand; fine, subrounded gravel; damp						
		Medium dense, brown, poorly graded SAND (SP); medium sand; damp		0.0	BH6-4			
5.0								
		Medium dense, brown, silty SAND (SM); low plasticity; fine to medium sand; moist						
		Medium dense, brown, poorly graded SAND (SP); medium sand; wet			BH5-W			
10.0								
		Medium dense, brown, silty SAND (SM); low plasticity; fine to medium sand; wet						
15.0		Final depth 15.0 feet bgs						
20.0								
25.0								
30.0								
35.0								

BORING METHOD: Direct Push
DRILLED BY: Holt Services
BORING BIT DIAMETER: 4-inch

LOGGED BY: K. Nogeire
COMPLETED: 3/22/22

BORING LOG-ENV CORE 40535.468 MW1-3 SB1-3 20220225.GPJ DATATMPL.GDT PRINT DATE: 10/6/22:RPG

WSP FTA AST FUEL RELEASE
NORTH BEND, WASHINGTON

PBS PROJECT NUMBER:
40535.498

BORING BH7

BORING BH7 LOCATION:
(See Site Plan)

DEPTH FEET	GRAPHIC LOG	MATERIAL DESCRIPTION	GROUND-WATER	PID (PPM)	SAMPLE NUMBER	SAMPLE/ TEMPORARY WELL(S)	RECOVERY (%)	COMMENTS/ WELL INSTALLATION
0.0		TOPSOIL						
		Medium dense, brown, silty SAND (SM) with gravel; non-plastic; medium sand; fine, subrounded gravel; damp			BH7-4			
5.0								
		Medium dense, greenish gray, poorly graded SAND (SP); medium sand; moist						
10.0		becomes brown; medium to coarse sand; wet			BH7-W			
15.0		Final depth 15.0 feet bgs						
20.0								
25.0								
30.0								
35.0								

BORING METHOD: Direct Push
DRILLED BY: Holt Services
BORING BIT DIAMETER: 4-inch

LOGGED BY: K. Nogeire
COMPLETED: 3/22/22

PBS

WSP FTA AST FUEL RELEASE
NORTH BEND, WASHINGTON

PBS PROJECT NUMBER:
40535.498

BORING MW-1

BORING MW-1 LOCATION:
(See Site Plan)

DEPTH FEET	GRAPHIC LOG	MATERIAL DESCRIPTION	GROUND-WATER	PID (PPM)	SAMPLE NUMBER	SAMPLE/ TEMPORARY WELL(S)	RECOVERY (%)	COMMENTS/ WELL INSTALLATION
0.0		Loose, dark gray-brown, well-graded GRAVEL (GW) with cobbles; fine to coarse, subrounded gravel; moist						Tag ID# BNN183 Flush-Mount Monument
5.0				0.0				Bentonite Chips
10.0				0.0				PVC Pipe
15.0		Loose, dark gray-brown, well-graded GRAVEL (GW-GM) with silt, sand, and occasional cobbles; non-plastic; fine to medium sand; fine to coarse, subrounded gravel; moist		0.0	MW1-15			Sand
20.0			ATD ▼	0.0	MW1-22			Slotted Screen
25.0				0.0	MW1-020222 GW			Temporary screen set to collect groundwater
30.0		Loose, dark tan, poorly graded SAND (SP) with gravel and occasional cobbles; medium to coarse sand; fine, subrounded gravel; wet		0.0				
		Final depth 32.0 feet bgs. Monitoring well installed to 32.0 feet bgs.						
35.0								

BORING METHOD: Sonic Drilling
DRILLED BY: Holt Services
BORING BIT DIAMETER: 4-inch

LOGGED BY: M. Bagley
COMPLETED: 1/19/22

BORING LOG-ENV CORE 40535.468 MW1-3, SB1-3 20220225.GPJ DATATMPL.GDT PRINT DATE: 2/25/22:RPG

PBS

WSP FTA AST FUEL RELEASE
NORTH BEND, WASHINGTON

PBS PROJECT NUMBER:
40535.498

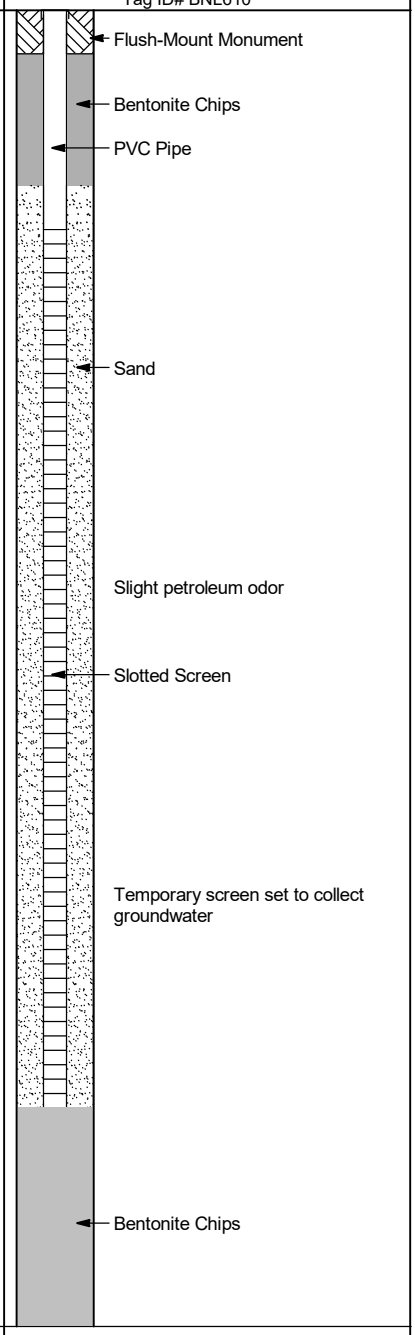
BORING MW-2

BORING MW-2 LOCATION:
(See Site Plan)

DEPTH FEET	GRAPHIC LOG	MATERIAL DESCRIPTION	GROUND-WATER	PID (PPM)	SAMPLE NUMBER	SAMPLE/ TEMPORARY WELL(S)	RECOVERY (%)
0.0		Loose, gray and tan, poorly graded SAND (SP) with gravel; medium to coarse sand; fine to coarse, subrounded gravel; moist					
5.0				0.0			
			ATD ▼				
10.0				0.0	MW2-9		
		becomes wet			MW2-13		
15.0				15			
					MW2-020222 GW		
20.0				0.0			
25.0		Stiff, tan, lean CLAY (CL) with sand; medium plasticity; fine to medium sand; wet		0.0			
		Gray, poorly graded SAND (SP) with gravel; medium to coarse sand; fine, subrounded gravel; wet					
30.0		Gray, silty SAND (SM); medium plasticity; fine to medium sand; wet		0.0			
		Final depth 30.0 feet bgs. Monitoring well installed to 25.0 feet bgs.					
35.0							

COMMENTS/ WELL INSTALLATION

Tag ID# BNL610



BORING METHOD: Sonic Drilling
DRILLED BY: Holt Services
BORING BIT DIAMETER: 4-inch

LOGGED BY: M. Bagley
COMPLETED: 1/20/22

BORING LOG-ENV CORE 40535.468 MW1-3, SB1-3 20220225.GPJ DATATMPL.GDT PRINT DATE: 2/25/22:RPG

PBS

WSP FTA AST FUEL RELEASE
NORTH BEND, WASHINGTON

PBS PROJECT NUMBER:
40535.498

BORING MW-3

BORING MW-3 LOCATION:
(See Site Plan)

DEPTH FEET	MATERIAL DESCRIPTION	GROUND-WATER	PID (PPM)	SAMPLE NUMBER	SAMPLE/ TEMPORARY WELL(S)	RECOVERY (%)	COMMENTS/ WELL INSTALLATION
0.0	Loose, tan, well-graded GRAVEL (GW) with sand; medium to coarse sand; fine to coarse, subrounded gravel; moist		0.0				Tag ID# BNL611
	Loose, tan, poorly graded SAND (SP) with gravel; fine to coarse sand; fine, subrounded gravel; moist						Flush-Mount Monument
5.0							Bentonite Chips
							PVC Pipe
		ATD					Sand
	becomes tan and gray		11.2	MW3-10			Slight petroleum odor
10.0							Slotted Screen
	Soft, light tan, lean CLAY (CL) with sand; medium plasticity; fine sand; wet						
15.0	Loose, gray and tan, well-graded SAND (SW); wet		0.0	MW3-020222 GW			Temporary screen set to collect groundwater
				MW3-18			Bentonite Chips
20.0	Final depth 20.0 feet bgs. Monitoring well installed to 15.0 feet bgs.						
25.0							
30.0							
35.0							

BORING METHOD: Sonic Drilling
DRILLED BY: Holt Services
BORING BIT DIAMETER: 4-inch

LOGGED BY: M. Bagley
COMPLETED: 1/20/22

BORING LOG-ENV CORE 40535.468 MW1-3, SB1-3 20220225.GPJ DATATMPL.GDT PRINT DATE: 2/25/22:RPG

PBS

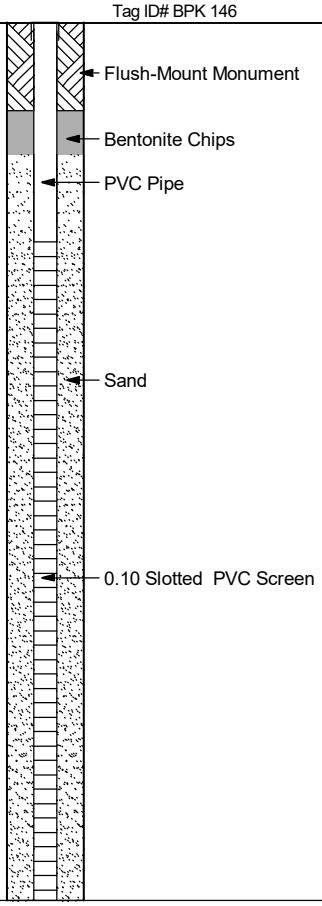
WSP FTA AST FUEL RELEASE
NORTH BEND, WASHINGTON

PBS PROJECT NUMBER:
40535.498

BORING MW-4

BORING MW-4 LOCATION:
(See Site Plan: co-located with BH1)

DEPTH FEET	GRAPHIC LOG	MATERIAL DESCRIPTION	GROUND-WATER	PID (PPM)	SAMPLE NUMBER	SAMPLE/ TEMPORARY WELL(S)	RECOVERY (%)	COMMENTS/ WELL INSTALLATION
0.0								Tag ID# BPK 146
20.0		Monitoring well installed to 20.0 feet bgs.						



BORING METHOD: Hollow-Stem Auger
DRILLED BY: Holocene Drilling
BORING BIT DIAMETER: 8-inch

LOGGED BY: S. Newport
COMPLETED: 8/16/22

BORING LOG-ENV CORE 40535.468 MW1-3 SB1-3 20220225.GPJ DATATMPL.GDT PRINT DATE: 10/6/22:RPG

WSP FTA AST FUEL RELEASE
NORTH BEND, WASHINGTON

PBS PROJECT NUMBER:
40535.498

BORING MW-5

BORING MW-5 LOCATION:
(See Site Plan: co-located with BH6)

DEPTH FEET	GRAPHIC LOG	MATERIAL DESCRIPTION	GROUND-WATER	PID (PPM)	SAMPLE NUMBER	SAMPLE/ TEMPORARY WELL(S)	RECOVERY (%)	COMMENTS/ WELL INSTALLATION
0.0		Medium dense, brown, silty SAND (SM); non-plastic; medium sand; damp						Tag ID# BPK 148
5.0				0.0	MW5-5		30	Flush-Mount Monument; PVC Pipe; Bentonite Chips
10.0							30	Sand
15.0				0.0	MW5-15			0.10 Slotted PVC Screen
20.0								
		Final depth 22.0 feet bgs. Monitoring well installed to 22.0 feet bgs.						
25.0								
30.0								
35.0								

BORING METHOD: Hollow-Stem Auger
DRILLED BY: Holocene Drilling
BORING BIT DIAMETER: 8-inch

LOGGED BY: S. Newport
COMPLETED: 8/16/22

BORING LOG-ENV CORE 40535.468 MW1-3 SB1-3 20220225.GPJ DATATMPL.GDT PRINT DATE: 10/6/22:RPG

WSP FTA AST FUEL RELEASE
NORTH BEND, WASHINGTON

PBS PROJECT NUMBER:
40535.498

BORING MW-6

BORING MW-6 LOCATION:
(See Site Plan: co-located with BH2)

DEPTH FEET	GRAPHIC LOG	MATERIAL DESCRIPTION	GROUND-WATER	PID (PPM)	SAMPLE NUMBER	SAMPLE/ TEMPORARY WELL(S)	RECOVERY (%)	COMMENTS/ WELL INSTALLATION
0.0		Dense, dark brown, silty SAND (SM); non-plastic; coarse sand; damp						Flush-Mount Monument
							<5	Bentonite Chips
								PVC Pipe Poor recovery
5.0								
								Sand
10.0							40	
								0.10 Slotted PVC Screen
15.0				0.0	MW6-15			
20.0		Final depth 20.0 feet bgs.						
25.0								
30.0								
35.0								

BORING METHOD: Hollow-Stem Auger
DRILLED BY: Holocene Drilling
BORING BIT DIAMETER: 8-inch

LOGGED BY: S. Newport
COMPLETED: 8/16/22

PBS

WSP FTA AST FUEL RELEASE
NORTH BEND, WASHINGTON

PBS PROJECT NUMBER:
40535.498

BORING MW-7

BORING MW-7 LOCATION:
(See Site Plan: co-located with BH7)

DEPTH FEET	GRAPHIC LOG	MATERIAL DESCRIPTION	GROUND-WATER	PID (PPM)	SAMPLE NUMBER	SAMPLE/ TEMPORARY WELL(S)	RECOVERY (%)	COMMENTS/ WELL INSTALLATION
0.0		Dense, dark brown, silty SAND (SM); non-plastic; medium sand; damp						Tag ID# BPK 149
							85	Flush-Mount Monument
								PVC Pipe
5.0				0.0	MW7-5			Bentonite Chips
								Sand
10.0							<5	
15.0				0.0	MW7-15			0.10 Slotted PVC Screen
20.0		Final depth 22.0 feet bgs. Monitoring well installed to 22.0 feet bgs.						
25.0								
30.0								
35.0								

BORING METHOD: Hollow-Stem Auger
DRILLED BY: Holocene Drilling
BORING BIT DIAMETER: 8-inch

LOGGED BY: S. Newport
COMPLETED: 8/16/22

BORING LOG-ENV CORE 40535.468 MW1-3 SB1-3 20220225.GPJ DATATMPL.GDT PRINT DATE: 10/6/22:RPG

Appendix B
Groundwater Sampling Datasheets

PBS	PBS Engineering and Environmental Inc. **GROUNDWATER SAMPLING FORM (YSI Pro)**	**Project No:** 40535.498 **Project Name/ Location:** FTA AST Release **Date:** 2/2/2022	
		Monitoring Well ID	**MW-1 (BNN-183)**
Initial DTW (feet bgs)	20.39	**Sample ID (if not well ID)**	
Screen Interval (feet bgs)	12-31.3	**Sample Time**	**10:30**
Well depth (feet bgs)	31.3	**QC Sample type:** _____	☐ Not collected ID_____ Time_____
Depth of pump/tubing inlet (feet bgs)			
Sampling method (describe pump or sampler)	Peristaltic Pump / Low Flow	**Field Personnel**	**MB**
Purge Rate (L/min)		**Weather Conditions**	Overcast, snow

WELL PURGING INFORMATION

Time ☐ elapsed ☒ actual	DTW (feet)	Temp. (F)	Dissolved oxygen (mg/L)	Specific conductivity ☒ mS/cm ☐ µS/cm	pH	ORP (mV)	Turbidity (NTU)	Observations	Volume purged ☒ ltr ☐ gal
10:19	20.39	42.2	11.56	0.026	7.36	63.4	-120		0
10:22	20.41	42.4	11.44	0.021	6.57	90.1	-63		1
10:26	20.41	4202	12.11	0.021	6.43	99	80		3
10:29	20.41	41.5	12.14	0.022	6.41	101.6	86		3.6
								Total Volume Purged	**3.6**

FIELD OBSERVATIONS / NOTES (such as well head condition, groundwater color, sediment load, recovery, sheen, odor, equipment)

Clear, no odor

Signature of Field Personnel:

PBS	PBS Engineering and Environmental Inc. **GROUNDWATER SAMPLING FORM (YSI Pro)**	**Project No:** 40535.498 **Project Name/ Location:** FTA AST Release **Date:** 2/2/2022	
		Monitoring Well ID	**MW-2 (BNL-610)**
Initial DTW (feet bgs)	5.75	**Sample ID** (if not well ID)	
Screen Interval (feet bgs)	12-24.9	**Sample Time**	11:30
Well depth (feet bgs)	24.9	**QC Sample type:** _____	☐ Not collected ID_____ Time_____
Depth of pump/tubing inlet (feet bgs)			
Sampling method (describe pump or sampler)	Peristaltic Pump / Low Flow	**Field Personnel**	MB
Purge Rate (L/min)		**Weather Conditions**	Overcast, snow

WELL PURGING INFORMATION

Time ☐ elapsed ☒ actual	DTW (feet)	Temp. (F)	Dissolved oxygen (mg/L)	Specific conductivity ☒ mS/cm ☐ µS/cm	pH	ORP (mV)	Turbidity (NTU)	Observations	Volume purged ☒ ltr ☐ gal
11:22	5.80	42.4	3.58	0.034	5.54	121.6	124		0
11:26	5.51	42.2	3.38	0.033	5.49	120.9	106		1.5
11:30	5.53	42.1	3.52	0.033	5.45	122.4	74		3
11:34	5.81	42.1	3.53	0.033	5.43	123.4	62		4
								Total Volume Purged	4

FIELD OBSERVATIONS / NOTES (such as well head condition, groundwater color, sediment load, recovery, sheen, odor, equipment)

Signature of Field Personnel:

PBS	PBS Engineering and Environmental Inc. **GROUNDWATER SAMPLING FORM (YSI Pro)**	**Project No:** 40535.498 **Project Name/ Location:** FTA AST Release **Date:** 2/2/2022	
		Monitoring Well ID	**MW-3 (BNL-611)**
Initial DTW (feet bgs)	4.59	**Sample ID** (if not well ID)	
Screen Interval (feet bgs)	12-32	**Sample Time**	12:30
Well depth (feet bgs)	32	**QC Sample type:** _____	☐ Not collected ID_____ Time_____
Depth of pump/tubing inlet (feet bgs)			
Sampling method (describe pump or sampler)	Peristaltic Pump / Low Flow	**Field Personnel**	MB
Purge Rate (L/min)		**Weather Conditions**	Overcast, snow

WELL PURGING INFORMATION

Time ☐ elapsed ☒ actual	DTW (feet)	Temp. (F)	Dissolved oxygen (mg/L)	Specific conductivity ☒ mS/cm ☐ µS/cm	pH	ORP (mV)	Turbidity (NTU)	Observations	Volume purged ☒ ltr ☐ gal
12:06	4.60	43.6	2.10	0.050	5.70	144.4	5.38		0
12:10	4.60	44.1	1.37	0.050	5.65	133.1	7.01		1
12:14	4.61	43.8	1.24	0.050	5.65	125.4	3.5		1.8
12:18	4.62	43.8	1.15	0.051	5.62	122.1	0.40		2.8
								Total Volume Purged	

FIELD OBSERVATIONS / NOTES (such as well head condition, groundwater color, sediment load, recovery, sheen, odor, equipment)

Signature of Field Personnel:

PBS	PBS Engineering and Environmental Inc. **GROUNDWATER SAMPLING FORM (YSI Pro)**	**Project No:** 40535.498 **Project Name/ Location:** FTA AST Release **Date:** 7/28/22	
		Monitoring Well ID	**MW-1 (BNN-183)**
Initial DTW (feet bgs)	23.755	**Sample ID (if not well ID)**	
Screen Interval (feet bgs)	12-32	**Sample Time**	11:20
Well depth (feet bgs)	31.3	**QC Sample type:** _____	☐ Not collected ID_____ Time_____
Depth of pump/tubing inlet (feet bgs)	23		
Sampling method (describe pump or sampler)	Peristaltic Pump / Low Flow	**Field Personnel**	S. Newport and K. Nogeire
Purge Rate (L/min)	0.23	**Weather Conditions**	Sunny 85°F

WELL PURGING INFORMATION

Time ☐ elapsed ☒ actual	DTW (feet)	Temp. (C)	Dissolved oxygen (mg/L)	Specific conductivity ☐ mS/cm ☒ µS/cm	pH	ORP (mV)	Turbidity (NTU)	Observations	Volume purged ☒ ltr ☐ gal
10:55	**23.97**	**27.7**	**13.1**	**12**	**4.7**	**130**			**2.3**
11:02	**24.00**	**9.62**	**16.82**	**37**	**6.13**	**99.7**			**3.5**
11:12	**24.01**	**8.44**	**7.52**	**33**	**6.06**	**106**			**4.6**
11:17	**24.01**	**8.33**	**7.18**	**32**	**6.25**	**100.0**			**6.9**
								Total Volume Purged	**~7**

FIELD OBSERVATIONS / NOTES (such as well head condition, groundwater color, sediment load, recovery, sheen, odor, equipment)

No odor, no sheen, clear. Well head in good condition, full of water.

Signature of Field Personnel:

PBS	PBS Engineering and Environmental Inc. **GROUNDWATER SAMPLING FORM (YSI Pro)**	**Project No:**	**40535.498**
		Project Name/ Location:	**FTA AST Release**
		Date:	7/28/22
		Monitoring Well ID	**MW-2 (BNL-610)**
Initial DTW (feet bgs)	8.670	**Sample ID (if not well ID)**	
Screen Interval (feet bgs)	12-32	**Sample Time**	12:40
Well depth (feet bgs)	24.9	**QC Sample type:** _____	☐ Not collected ID_____ Time_____
Depth of pump/tubing inlet (feet bgs)	23		
Sampling method (describe pump or sampler)	Peristaltic Pump / Low Flow	**Field Personnel**	S. Newport
Purge Rate (L/min)	0.612	**Weather Conditions**	Hot 90°F

WELL PURGING INFORMATION

Time ☐ elapsed ☒ actual	DTW (feet)	Temp. (C)	Dissolved oxygen (mg/L)	Specific conductivity ☐ mS/cm ☒ µS/cm	pH	ORP (mV)	Turbidity (NTU)	Observations	Volume purged ☒ ltr ☐ gal
12:15	**8.71**								
12:20	**8.72**	**9.68**	**5.17**	**23**	**5.69**	**131**			**1.5**
12:25	**8.72**	**9.60**	**13.1**	**23**	**5.73**	**119**			**3**
12:30		**9.13**	**10.5**	**23**	**5.62**	**116.8**			**4.5**
12;35		**9.28**	**9.2**	**22**	**5.68**	**114.6**			**6**
								Total Volume Purged	**6**

FIELD OBSERVATIONS / NOTES (such as well head condition, groundwater color, sediment load, recovery, sheen, odor, equipment)

Clear water, no odor, no sheen. Well head in good condition.

Signature of Field Personnel:

PBS	PBS Engineering and Environmental Inc. **GROUNDWATER SAMPLING FORM (YSI Pro)**	**Project No:**	**40535.498**
		Project Name/ Location:	**FTA AST Release**
		Date:	7/28/22
		Monitoring Well ID	**MW-3 (BNL-611)**
Initial DTW (feet bgs)	7.152	**Sample ID (if not well ID)**	
Screen Interval (feet bgs)	12-32	**Sample Time**	13:50
Well depth (feet bgs)		**QC Sample type:** _____	☐ Not collected ID_____ Time_____
Depth of pump/tubing inlet (feet bgs)	23		
Sampling method (describe pump or sampler)	Peristaltic Pump / Low Flow	**Field Personnel**	S. Newport
Purge Rate (L/min)	0.25	**Weather Conditions**	Hot 90°F

WELL PURGING INFORMATION

Time ☐ elapsed ☒ actual	DTW (feet)	Temp. (C)	Dissolved oxygen (mg/L)	Specific conductivity ☐ mS/cm ☒ µS/cm	pH	ORP (mV)	Turbidity (NTU)	Observations	Volume purged ☒ ltr ☐ gal
13:25		**11.93**	**23.9**	**46**	**6.02**	**137.2**			**4**
13:30	**7.28**	**12.20**	**9.1**	**47**	**6.03**	**111.5**			**1.5**
13:35	**7.28**	**15.46**	**129.2**	**23**	**6.23**	**117.2**			**2.5**
13:40		**12.32**	**9.9**	**61**	**6.13**	**117.4**			**4**
13:45		**12.10**	**5.9**	**60**	**6.11**	**112.2**			**5.5**
13:50		**12.09**	**5.1**	**61**	**6.10**	**111.7**			**7**
								Total Volume Purged	**7**

FIELD OBSERVATIONS / NOTES (such as well head condition, groundwater color, sediment load, recovery, sheen, odor, equipment)

No odor, no sheen, no color. Well head in good condition, filled with water.

Signature of Field Personnel:

PBS	PBS Engineering and Environmental Inc. **GROUNDWATER SAMPLING FORM (YSI Pro)**	**Project No:** 40535.498 **Project Name/ Location:** FTA AST Release **Date:** 9/14/22	
		Monitoring Well ID	**MW-1 (BNN-183)**
Initial DTW (feet bgs)	9/13-25.46 9/14-25.49	**Sample ID (if not well ID)**	
Screen Interval (feet bgs)	12-31.3	**Sample Time**	11:40
Well depth (feet bgs)	31.3	**QC Sample type:** _____	☐ Not collected ID_____ Time_____
Depth of pump/tubing inlet (feet bgs)	~27 ft		
Sampling method (describe pump or sampler)	Peristaltic Pump / Low Flow	**Field Personnel**	S. Newport
Purge Rate (L/min)	0.125	**Weather Conditions**	Overcast 65°F

WELL PURGING INFORMATION

Time ☐ elapsed ☒ actual	DTW (feet)	Temp. (C)	Dissolved oxygen (mg/L)	Specific conductivity ☐ mS/cm ☒ µS/cm	pH	ORP (mV)	Turbidity (NTU)	Observations	Volume purged ☒ ltr ☐ gal
11:37	**25.60**	**12.9**	**8.98**	**38.8**	**8.19**	**153.1**			**0.125**
11:40	**25.65**	**11.7**	**7.48**	**32.3**	**7.05**	**214.6**			**1.2**
11:43	**25.70**	**11.5**	**7.09**	**32.3**	**6.56**	**230.9**			**1.6**
11:48	**25.72**	**11.3**	**7.52**	**31.0**	**6.13**	**233.5**			**2.25**
11:51	**25.73**	**11.2**	**7.30**	**29.9**	**6.07**	**231.1**			**2.6**
								Total Volume Purged	

FIELD OBSERVATIONS / NOTES (such as well head condition, groundwater color, sediment load, recovery, sheen, odor, equipment)

Well head in good condition. GW clear, low sediment load. No sheen, no odor. Good recovery.

Signature of Field Personnel:

PBS	PBS Engineering and Environmental Inc. **GROUNDWATER SAMPLING FORM (YSI Pro)**	**Project No:** 40535.498 **Project Name/ Location:** FTA AST Release **Date:** 9/14/22	
		Monitoring Well ID	**MW-2 (BNL-610)**
Initial DTW (feet bgs)	9/13-10.25 9/14-10.28	**Sample ID (if not well ID)**	
Screen Interval (feet bgs)	12-24.9	**Sample Time**	13:30
Well depth (feet bgs)	24.9	**QC Sample type:** _____	☐ Not collected ID_____ Time_____
Depth of pump/tubing inlet (feet bgs)	~13 ft		
Sampling method (describe pump or sampler)	Peristaltic Pump / Low Flow	**Field Personnel**	S. Newport
Purge Rate (L/min)	0.15	**Weather Conditions**	Overcast 65°F

WELL PURGING INFORMATION

Time ☐ elapsed ☒ actual	DTW (feet)	Temp. (C)	Dissolved oxygen (mg/L)	Specific conductivity ☐ mS/cm ☒ µS/cm	pH	ORP (mV)	Turbidity (NTU)	Observations	Volume purged ☒ ltr ☐ gal
13:22	**10.28**	**11.7**	**4.41**	**25.1**	**6.36**	**176.1**			**0.15**
13:25	**10.29**	**10.9**	**1.83**	**24.8**	**5.90**	**186.3**			**0.6**
13:28	**10.29**	**10.7**	**1.40**	**25.1**	**5.53**	**192.2**			**1.05**
13:31	**10.29**	**10.6**	**1.28**	**24.9**	**5.40**	**191.0**			**1.5**
13:34	**10.29**	**10.6**	**1.23**	**24.8**	**5.35**	**187.6**			**1.95**
								Total Volume Purged	**~2**

FIELD OBSERVATIONS / NOTES (such as well head condition, groundwater color, sediment load, recovery, sheen, odor, equipment)

Well head in good condition. GW clear, low sediment load. Good recovery. Moderate gasoline odor, no sheen.

Signature of Field Personnel:

PBS	PBS Engineering and Environmental Inc. **GROUNDWATER SAMPLING FORM (YSI Pro)**	**Project No:**	**40535.498**
		Project Name/ Location:	**FTA AST Release**
		Date:	9/14/22
		Monitoring Well ID	**MW-3 (BNL-611)**
Initial DTW (feet bgs)	9/13-8.61 9/14-8.63	**Sample ID (if not well ID)**	
Screen Interval (feet bgs)	12-32	**Sample Time**	12:40
Well depth (feet bgs)	32	**QC Sample type:** _____	☐ Not collected ID_____ Time_____
Depth of pump/tubing inlet (feet bgs)	~12 ft		
Sampling method (describe pump or sampler)	Peristaltic Pump / Low Flow	**Field Personnel**	S. Newport
Purge Rate (L/min)	0.12	**Weather Conditions**	Overcast 65°F

WELL PURGING INFORMATION

Time ☐ elapsed ☒ actual	DTW (feet)	Temp. (C)	Dissolved oxygen (mg/L)	Specific conductivity ☐ mS/cm ☒ µS/cm	pH	ORP (mV)	Turbidity (NTU)	Observations	Volume purged ☒ ltr ☐ gal
12:36	**8.80**	**14.5**	**8.35**	**47.9**	**6.74**	**177.6**			**0.12**
12:39	**8.82**	**13.5**	**5.97**	**48.7**	**6.16**	**194.2**			**0.48**
12:42	**8.82**	**13.6**	**5.55**	**48.5**	**5.87**	**198.3**			**0.84**
12:45	**8.83**	**13.5**	**5.25**	**46.9**	**5.72**	**196.3**			**1.2**
12:48	**8.84**	**13.3**	**5.33**	**46.7**	**5.67**	**194.1**			**1.6**
								Total Volume Purged	**~1.75**

FIELD OBSERVATIONS / NOTES (such as well head condition, groundwater color, sediment load, recovery, sheen, odor, equipment)

Well head in good condition. GW clear, low sediment load. Moderate gasoline odor, no sheen. Good recovery.

Signature of Field Personnel:

Revised 2/23/2015

PBS	PBS Engineering and Environmental Inc. **GROUNDWATER SAMPLING FORM (YSI Pro)**	**Project No:**	**40535.498**
		Project Name/ Location:	**FTA AST Release**
		Date:	9/14/22
		Monitoring Well ID	**MW-4 (BPK-146)**
Initial DTW (feet bgs)	11.00	**Sample ID (if not well ID)**	MW4-0922
Screen Interval (feet bgs)	5-20	**Sample Time**	11:20 - PFAS
Well depth (feet bgs)	20	**QC Sample type:** _____	☐ Not collected ID_____ Time_____
Depth of pump/tubing inlet (feet bgs)	~15 ft		
Sampling method (describe pump or sampler)	Peristaltic Pump / Low Flow	**Field Personnel**	M. Bagley and S. Newport
Purge Rate (L/min)	0.2	**Weather Conditions**	Overcast

WELL PURGING INFORMATION

Time ☐ elapsed ☒ actual	DTW (feet)	Temp. (C)	Dissolved oxygen (mg/L)	Specific conductivity ☐ mS/cm ☒ µS/cm	pH	ORP (mV)	Turbidity (NTU)	Observations	Volume purged ☒ ltr ☐ gal
11:09	**11.00**	**10.6**	**12.23**	**43.6**	**8.21**	**160.8**			**0.2**
11:12	**11.00**	**10.4**	**10.07**	**35.7**	**7.89**	**170.7**			**0.8**
11:16	**11.04**	**10.4**	**9.23**	**33.4**	**7.56**	**177.4**			**1.6**
11:19	**11.04**	**10.5**	**9.26**	**32.7**	**7.46**	**176.0**			**2.1**
								Total Volume Purged	**~2.5**

FIELD OBSERVATIONS / NOTES (such as well head condition, groundwater color, sediment load, recovery, sheen, odor, equipment)

Well head in good condition. GW clear, low sediment load. Good recovery.

Signature of Field Personnel:

PBS	PBS Engineering and Environmental Inc. **GROUNDWATER SAMPLING FORM (YSI Pro)**	**Project No:** 40535.498 **Project Name/ Location:** FTA AST Release **Date:** 9/13/2022	
		Monitoring Well ID	MW-5 (BPK-148)
Initial DTW (feet bgs)	21.99	**Sample ID** (if not well ID)	
Screen Interval (feet bgs)	7-22	**Sample Time**	
Well depth (feet bgs)	22	**QC Sample type:** _____	☐ Not collected ID_____ Time_____
Depth of pump/tubing inlet (feet bgs)			
Sampling method (describe pump or sampler)	Peristaltic Pump / Low Flow	**Field Personnel**	S. Newport and M. Bagley
Purge Rate (L/min)		**Weather Conditions**	Overcast 67°F

WELL PURGING INFORMATION

Time ☐ elapsed ☐ actual	DTW (feet)	Temp. (C)	Dissolved oxygen (mg/L)	Specific conductivity ☐ mS/cm ☐ µS/cm	pH	ORP (mV)	Turbidity (NTU)	Observations	Volume purged ☐ ltr ☐ gal
								Total Volume Purged	

FIELD OBSERVATIONS / NOTES (such as well head condition, groundwater color, sediment load, recovery, sheen, odor, equipment)

Dry well, no retrieval. Well head in good condition.

Signature of Field Personnel:

PBS	PBS Engineering and Environmental Inc. **GROUNDWATER SAMPLING FORM (YSI Pro)**	**Project No:**	**40535.498**
		Project Name/ Location:	**FTA AST Release**
		Date:	9/13/22
		Monitoring Well ID	**MW-6 (BPK-147)**
Initial DTW (feet bgs)	13.53	**Sample ID (if not well ID)**	MW6-0922
Screen Interval (feet bgs)	5-15	**Sample Time**	12:15 - PFAS
Well depth (feet bgs)	20	**QC Sample type:** _____	☐ Not collected ID_____ Time_____
Depth of pump/tubing inlet (feet bgs)	~15		
Sampling method (describe pump or sampler)	Peristaltic Pump / Low Flow	**Field Personnel**	S. Newport
Purge Rate (L/min)	0.125	**Weather Conditions**	Overcast 68°F

WELL PURGING INFORMATION

Time ☐ elapsed ☒ actual	DTW (feet)	Temp. (C)	Dissolved oxygen (mg/L)	Specific conductivity ☐ mS/cm ☒ µS/cm	pH	ORP (mV)	Turbidity (NTU)	Observations	Volume purged ☒ ltr ☐ gal
12:02	**13.65**	**16.0**	**2.20**	**76.8**	**7.47**	**165.1**			**0.13**
12:06	**13.65**	**15.0**	**1.51**	**67.7**	**6.99**	**166.6**			**0.65**
12:09	**13.65**	**14.8**	**1.89**	**65.6**	**6.71**	**168.0**			**1.04**
12:13	**13.65**	**14.9**	**1.94**	**66.4**	**6.51**	**169.2**			**1.56**
								Total Volume Purged	**~1.75**

FIELD OBSERVATIONS / NOTES (such as well head condition, groundwater color, sediment load, recovery, sheen, odor, equipment)

Well head in good condition. GW clear, low sediment load. No sheen, no odor. Good recovery.

Signature of Field Personnel:

PBS	PBS Engineering and Environmental Inc. **GROUNDWATER SAMPLING FORM (YSI Pro)**	**Project No:** 40535.498 **Project Name/ Location:** FTA AST Release **Date:** 9/13/2022	
		Monitoring Well ID	MW-7 (BPK-149)
Initial DTW (feet bgs)	21.82	**Sample ID** (if not well ID)	
Screen Interval (feet bgs)	7-22	**Sample Time**	
Well depth (feet bgs)	22	**QC Sample type:** _____	☐ Not collected ID_____ Time_____
Depth of pump/tubing inlet (feet bgs)			
Sampling method (describe pump or sampler)	Peristaltic Pump / Low Flow	**Field Personnel**	S. Newport and M. Bagley
Purge Rate (L/min)		**Weather Conditions**	Overcast 68°F

WELL PURGING INFORMATION

Time ☐ elapsed ☐ actual	DTW (feet)	Temp. (C)	Dissolved oxygen (mg/L)	Specific conductivity ☐ mS/cm ☐ µS/cm	pH	ORP (mV)	Turbidity (NTU)	Observations	Volume purged ☐ ltr ☐ gal
								Total Volume Purged	

FIELD OBSERVATIONS / NOTES (such as well head condition, groundwater color, sediment load, recovery, sheen, odor, equipment)

Dry well, no retrieval. Well head in good condition.

Signature of Field Personnel:

PBS	PBS Engineering and Environmental Inc. **GROUNDWATER SAMPLING FORM (YSI Pro)**	**Project No:**	**40535.498**
		Project Name/ Location:	**FTA AST Release**
		Date:	**1/13/2022**
		Monitoring Well ID	**MW-1 (BNN-183)**
Initial DTW (feet bgs)	21.590	**Sample ID (if not well ID)**	
Screen Interval (feet bgs)	12-31.3	**Sample Time**	**14:45**
Well depth (feet bgs)	31.3	**QC Sample type:** _____	☒ Not collected ID_____ Time_____
Depth of pump/tubing inlet (feet bgs)	~23		
Sampling method (describe pump or sampler)	Peristaltic Pump / Low Flow	**Field Personnel**	**SN**
Purge Rate (L/min)	0.15	**Weather Conditions**	45°F light rain

WELL PURGING INFORMATION

Time ☐ elapsed ☒ actual	DTW (feet)	Temp. (C)	Dissolved oxygen (mg/L)	Specific conductivity ☐ mS/cm ☒ µS/cm	pH	ORP (mV)	Turbidity (NTU)	Observations	Volume purged ☒ ltr ☐ gal
14:51	21.64	6.6	11.28	14.8	6.91	169.9			0
14:56	21.65	7.0	11.07	14.3	6.60	182.8			0.75
15:00	21.65	6.8	10.68	14.6	6.47	185.9			1.35
								Total Volume Purged	**1.4**

FIELD OBSERVATIONS / NOTES (such as well head condition, groundwater color, sediment load, recovery, sheen, odor, equipment)

Water accumulated in monument. GW clear, low sediment low, good recovery. No sheen, no odor.
Peristaltic pump

Signature of Field Personnel:

PBS	PBS Engineering and Environmental Inc. **GROUNDWATER SAMPLING FORM (YSI Pro)**	**Project No:** 40535.498 **Project Name/ Location:** FTA AST Release **Date:** 1/13/2022	
		Monitoring Well ID	MW-2 (BNL-610)
Initial DTW (feet bgs)		**Sample ID** (if not well ID)	
Screen Interval (feet bgs)	12-24.9	**Sample Time**	
Well depth (feet bgs)	24.9	**QC Sample type:** _____	☐ Not collected ID_____ Time_____
Depth of pump/tubing inlet (feet bgs)			
Sampling method (describe pump or sampler)	Peristaltic Pump / Low Flow	**Field Personnel**	
Purge Rate (L/min)		**Weather Conditions**	

WELL PURGING INFORMATION

Time ☐ elapsed ☐ actual	DTW (feet)	Temp. (C)	Dissolved oxygen (mg/L)	Specific conductivity ☐ mS/cm ☐ µS/cm	pH	ORP (mV)	Turbidity (NTU)	Observations	Volume purged ☐ ltr ☐ gal
								Total Volume Purged	

FIELD OBSERVATIONS / NOTES (such as well head condition, groundwater color, sediment load, recovery, sheen, odor, equipment)

Not sampled

Signature of Field Personnel:

PBS	PBS Engineering and Environmental Inc. **GROUNDWATER SAMPLING FORM (YSI Pro)**	**Project No:** 40535.498 **Project Name/ Location:** FTA AST Release **Date:** 1/13/2022	
		Monitoring Well ID	MW-3 (BNL-611)
Initial DTW (feet bgs)		**Sample ID** (if not well ID)	
Screen Interval (feet bgs)	12-32	**Sample Time**	
Well depth (feet bgs)	32	**QC Sample type:** _____	☐ Not collected ID_____ Time_____
Depth of pump/tubing inlet (feet bgs)			
Sampling method (describe pump or sampler)	Peristaltic Pump / Low Flow	**Field Personnel**	
Purge Rate (L/min)		**Weather Conditions**	

WELL PURGING INFORMATION

Time ☐ elapsed ☐ actual	DTW (feet)	Temp. (C)	Dissolved oxygen (mg/L)	Specific conductivity ☐ mS/cm ☐ µS/cm	pH	ORP (mV)	Turbidity (NTU)	Observations	Volume purged ☐ ltr ☐ gal
								Total Volume Purged	

FIELD OBSERVATIONS / NOTES (such as well head condition, groundwater color, sediment load, recovery, sheen, odor, equipment)

Not sampled

Signature of Field Personnel:

PBS	PBS Engineering and Environmental Inc. **GROUNDWATER SAMPLING FORM (YSI Pro)**	**Project No:**	**40535.498**
		Project Name/ Location:	**FTA AST Release**
		Date:	**1/13/2022**
		Monitoring Well ID	**MW-4 (BPK-146)**
Initial DTW (feet bgs)	7.55	**Sample ID (if not well ID)**	
Screen Interval (feet bgs)	5-20	**Sample Time**	16:00
Well depth (feet bgs)	20	**QC Sample type:** _____	☒ Not collected ID_____ Time_____
Depth of pump/tubing inlet (feet bgs)	~10		
Sampling method (describe pump or sampler)	Peristaltic Pump / Low Flow	**Field Personnel**	SN
Purge Rate (L/min)	0.15	**Weather Conditions**	45°F light rain

WELL PURGING INFORMATION

Time ☐ elapsed ☒ actual	DTW (feet)	Temp. (C)	Dissolved oxygen (mg/L)	Specific conductivity ☐ mS/cm ☒ µS/cm	pH	ORP (mV)	Turbidity (NTU)	Observations	Volume purged ☒ ltr ☐ gal
15:48	7.56	5.5	11.17	38.4	6.09	200.0			0
15:52	7.58	5.5	8.97	38.2	5.96	202.3			0.6
15:59	7.60	5.5	8.59	38.1	5.97	199.3			1.65
								Total Volume Purged	**1.7**

FIELD OBSERVATIONS / NOTES (such as well head condition, groundwater color, sediment load, recovery, sheen, odor, equipment)

Well head in good condition. GW clear, low sediment load, good recovery. No sheen, no odor.
Peristaltic pump

Signature of Field Personnel:

PBS	PBS Engineering and Environmental Inc. **GROUNDWATER SAMPLING FORM (YSI Pro)**	**Project No:**	**40535.498**
		Project Name/ Location:	**FTA AST Release**
		Date:	**1/13/2022**
		Monitoring Well ID	**MW-5 (BPK-148)**
Initial DTW (feet bgs)	21.585	**Sample ID (if not well ID)**	
Screen Interval (feet bgs)	7-22	**Sample Time**	**Not collected**
Well depth (feet bgs)	22	**QC Sample type:** _____	☐ Not collected ID_____ Time_____
Depth of pump/tubing inlet (feet bgs)	23		
Sampling method (describe pump or sampler)	Peristaltic Pump / Low Flow	**Field Personnel**	**SN**
Purge Rate (L/min)		**Weather Conditions**	45°F light rain

WELL PURGING INFORMATION

Time ☐ elapsed ☒ actual	DTW (feet)	Temp. (C)	Dissolved oxygen (mg/L)	Specific conductivity ☐ mS/cm ☒ µS/cm	pH	ORP (mV)	Turbidity (NTU)	Observations	Volume purged ☒ ltr ☐ gal
11:43	21.6	6.5	5.29	71.0	5.36	188.3			<0.25
								Total Volume Purged	**<.025**

FIELD OBSERVATIONS / NOTES (such as well head condition, groundwater color, sediment load, recovery, sheen, odor, equipment)

Initially able to pump out some water but dried up. Left and came back later. No recharge, not sampled.

Signature of Field Personnel:

PBS	PBS Engineering and Environmental Inc. **GROUNDWATER SAMPLING FORM (YSI Pro)**	**Project No:** 40535.498 **Project Name/ Location:** FTA AST Release **Date:** 1/13/2023	
		Monitoring Well ID	**MW-6 (BPK-147)**
Initial DTW (feet bgs)	8.850	**Sample ID (if not well ID)**	
Screen Interval (feet bgs)	5-15	**Sample Time**	**12:45**
Well depth (feet bgs)	20	**QC Sample type:** _____	☒ Not collected ID_____ Time_____
Depth of pump/tubing inlet (feet bgs)	12		
Sampling method (describe pump or sampler)	Peristaltic Pump / Low Flow	**Field Personnel**	**SN**
Purge Rate (L/min)	0.19	**Weather Conditions**	45°F light rain

WELL PURGING INFORMATION

Time ☐ elapsed ☒ actual	DTW (feet)	Temp. (C)	Dissolved oxygen (mg/L)	Specific conductivity ☐ mS/cm ☒ µS/cm	pH	ORP (mV)	Turbidity (NTU)	Observations	Volume purged ☒ ltr ☐ gal
12:38	8.95	8.5	0.78	54.1	6.00	167.9			0
12:42	8.94	9.0	0.29	54.7	5.91	164.8			.8
12:47	8.94	9.1	0.22	54.9	5.81	166.4			1.75
								Total Volume Purged	**1.75**

FIELD OBSERVATIONS / NOTES (such as well head condition, groundwater color, sediment load, recovery, sheen, odor, equipment)

Well head in good condition. GW clear, low sediment load, good recovery. No sheen, no odor.
Peristaltic pump

Signature of Field Personnel:

PBS	PBS Engineering and Environmental Inc. **GROUNDWATER SAMPLING FORM (YSI Pro)**	**Project No:** 40535.498 **Project Name/ Location:** FTA AST Release **Date:** 1/13/2022	
		Monitoring Well ID	**MW-7 (BPK-149)**
Initial DTW (feet bgs)	20.83	**Sample ID (if not well ID)**	
Screen Interval (feet bgs)	7-22	**Sample Time**	**13:45**
Well depth (feet bgs)	22	**QC Sample type:** _____	☒ Not collected ID_____ Time_____
Depth of pump/tubing inlet (feet bgs)	~24		
Sampling method (describe pump or sampler)	Peristaltic Pump / Low Flow	**Field Personnel**	**SN**
Purge Rate (L/min)		**Weather Conditions**	45°F light rain

WELL PURGING INFORMATION

Time ☐ elapsed ☒ actual	DTW (feet)	Temp. (C)	Dissolved oxygen (mg/L)	Specific conductivity ☐ mS/cm ☒ µS/cm	pH	ORP (mV)	Turbidity (NTU)	Observations	Volume purged ☒ ltr ☐ gal
10:12	20.83	7.0	7.01	36.8	9.02	69.3			<.25
								Total Volume Purged	**<.25**

FIELD OBSERVATIONS / NOTES (such as well head condition, groundwater color, sediment load, recovery, sheen, odor, equipment)

large amount of red-orange bacteria bloom in GW. Well mostly dry. Collected 3 vials using bailer, not enough collected to fill amber bottle.

Signature of Field Personnel:

Appendix C
Survey Reports

Site Visit: February 2, 2022
Well Monitoring at WSP Fire Training Academy
50810 SE Grouse Ridge Road
North Bend, Washington 98045
PBS project #40535.498

WELL ID	LATITUDE	LONGITUDE	TOP PIPE ELEV.	GROUND ELEV.
MW-1	47-27-22.1900	121-39-43.2446	1574.72′	1574.91′
MW-2	47-27-21.2966	121-39-42.1180	1558.06′	1558.44′
MW-3	47-27-20.3664	121-39-42.4861	1556.05′	1556.29′

Benchmark: 47-26-16.4986 121-38-59.9745 1328.363′′
Description: WSDOT Benchmark ID #5798 ("GP17090-291") is a brass disc set in the top of a round concrete monument and under a WSDOT case and cover, set level with the ground.

TBM #1 47-27-21.5903 121-39-42.5796 1575.46′
PBS CP #1- 60D Spike/Nail

TBM #2 47-27-22.6779 121-39-41.6599 1574.21′
PBS CP #2- 60D Spike/Nail

Horizontal Datum: Latitude/Longitude derived from NAD 83/2011 (2010.00 Epoch) Washington North Zone via Washington State Reference Network (WSRN).

Vertical Datum: NAVD 88 via Washington State Reference Network (WSRN).

A Trimble SX-10 one second robotic total station/scanner and Topcon DL-502 digital level was used for on-site horizontal and vertical values.

A Trimble R12i was used for WSRN observations on site control and benchmark verifications.

Accuracy for TBM and monitoring well elevations is +/- 0.01′.

Regan Schaller, WA PLS #54471
PBS Engineering + Environmental
415 W 6th Street, Suite 601
Vancouver, WA 98660
P: 360.567.2111
Regan.schaller@pbsusa.com

Site Visit: January 17, 2022
Well Monitoring at WSP Fire Training Academy Update
50810 SE Grouse Ridge Road
North Bend, Washington 98045
PBS project #40535.498

WELL ID	LATITUDE	LONGITUDE	TOP PIPE ELEV.	GROUND ELEV.
MW-4	47-27-21.4119	121-39-40.9046	1558.41'	1558.50'
MW-5	47-27-18.9787	121-39-44.8728	1556.69'	1557.07'
MW-6	47-27-20.0460	121-39-40.7738	1556.04'	1556.14'
MW-7	47-27-15.0796	121-39-42.0615	1554.43'	1554.81'

Benchmark: 47-26-16.4986 121-38-59.9745 1328.363''
Description: WSDOT Benchmark ID #5798 ("GP17090-291") is a brass disc set in the top of a round concrete monument and under a WSDOT case and cover, set level with the ground.

TBM #1 47-27-21.5903 121-39-42.5796 1575.46'
PBS CP #1- 1/2" iron rod with red plastic cap inscribed "PBS CONTROL"

TBM #2 47-27-22.6779 121-39-41.6599 1574.21'
PBS CP #2- 60D Spike/Nail

Horizontal Datum: Latitude/Longitude derived from NAD 83/2011 (2010.00 Epoch) Washington North Zone via Washington State Reference Network (WSRN).

Vertical Datum: NAVD 88 via Washington State Reference Network (WSRN).

A Trimble S-5 one second robotic total station/scanner and Topcon DL-502 digital level was used for on-site horizontal and vertical values.

A Trimble R12i was used for WSRN observations on site control and benchmark verifications.

Accuracy for TBM and monitoring well elevations is +/- 0.01'.

Regan Schaller, WA PLS #54471
PBS Engineering + Environmental
1325 SE Tech Center Drive, Suite 140
Vancouver, WA 98683
P: 360.567.2111
Regan.schaller@pbsusa.com

Appendix D

Laboratory Reports and Chain-of-Custody Documentation

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Vineta Mills, M.S.
Eric Young, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

January 27, 2022

Mike Bagley, Project Manager
PBS Engineering and Environmental, Inc.
214 E. Galer St, Suite 300
Seattle, WA 98102

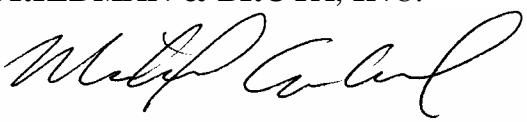
Dear Mr Bagley:

Included are the results from the testing of material submitted on January 21, 2022 from the FTA-ASTs 40535.498, F&BI 201304 project. There are 8 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl
Project Manager

Enclosures
PBS0127R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on January 21, 2022 by Friedman & Bruya, Inc. from the PBS Engineering and Environmental FTA-ASTs 40535.498, F&BI 201304 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	PBS Engineering and Environmental
201304 -01	MW1-15
201304 -02	MW1-12
201304 -03	SB1-15
201304 -04	SB1-25
201304 -05	SB2-10
201304 -06	SB2-16
201304 -07	MW2-9
201304 -08	MW2-13
201304 -09	SB3-5
201304 -10	SB3-16
201304 -11	SB2-25
201304 -12	SB3-10
201304 -13	SB3-18

All quality control requirements were acceptable.

Date of Report: 01/27/22
Date Received: 01/21/22
Project: FTA-ASTs 40535.498, F&BI 201304
Date Extracted: 01/24/22
Date Analyzed: 01/24/22 and 01/25/22

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING METHODS 8021B AND NWTPH-Gx

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 50-150)
MW1-15 201304-01	<0.02	<0.02	<0.02	<0.06	<5	81
MW1-12 201304-02	<0.02	<0.02	<0.02	<0.06	<5	86
SB1-15 201304-03	<0.02	<0.02	<0.02	<0.06	<5	89
SB1-25 201304-04	<0.02	<0.02	<0.02	<0.06	<5	89
SB2-10 201304-05	<0.02	<0.02	<0.02	<0.06	<5	87
SB2-16 201304-06	<0.02	<0.02	<0.02	<0.06	<5	76
MW2-9 201304-07	<0.02	<0.02	<0.02	<0.06	<5	90
MW2-13 201304-08	0.031	0.24	<0.02	0.57	<5	84
SB3-5 201304-09	<0.02	<0.02	<0.02	<0.06	<5	89
SB3-16 201304-10	0.092	0.36	<0.02	0.18	<5	88

Date of Report: 01/27/22
Date Received: 01/21/22
Project: FTA-ASTs 40535.498, F&BI 201304
Date Extracted: 01/24/22
Date Analyzed: 01/24/22 and 01/25/22

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING METHODS 8021B AND NWTPH-Gx

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 50-150)
SB2-25 201304-11	<0.02	<0.02	<0.02	<0.06	<5	73
SB3-10 201304-12	0.080	0.55	<0.02	0.24	<5	86
SB3-18 201304-13	<0.02	<0.02	<0.02	<0.06	<5	88
Method Blank 02-155 MB	<0.02	<0.02	<0.02	<0.06	<5	90

Date of Report: 01/27/22
Date Received: 01/21/22
Project: FTA-ASTs 40535.498, F&BI 201304
Date Extracted: 01/24/22
Date Analyzed: 01/24/22

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Diesel Range (C_{10}-C_{25})	Motor Oil Range (C_{25}-C_{36})	Surrogate (% Recovery) (Limit 53-144)
MW1-15 201304-01	<50	<250	91
MW1-12 201304-02	<50	<250	91
SB1-15 201304-03	<50	<250	92
SB1-25 201304-04	<50	<250	94
SB2-10 201304-05	<50	<250	92
SB2-16 201304-06	<50	<250	91
MW2-9 201304-07	<50	<250	91
MW2-13 201304-08	<50	<250	92
SB3-5 201304-09	180 x	800	90
SB3-16 201304-10	<50	<250	91

Date of Report: 01/27/22
Date Received: 01/21/22
Project: FTA-ASTs 40535.498, F&BI 201304
Date Extracted: 01/24/22
Date Analyzed: 01/24/22

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Diesel Range (C_{10}-C_{25})	Motor Oil Range (C_{25}-C_{36})	Surrogate (% Recovery) (Limit 53-144)
SB2-25 201304-11	<50	<250	92
SB3-10 201304-12	<50	<250	91
SB3-18 201304-13	<50	<250	91
Method Blank 02-237 MB	<50	<250	94

Date of Report: 01/27/22
Date Received: 01/21/22
Project: FTA-ASTs 40535.498, F&BI 201304

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING METHOD 8021B AND NWTPH-Gx

Laboratory Code: 201304-01 (Duplicate)

Analyte	Reporting Units	Sample Result (Wet Wt)	Duplicate Result (Wet Wt)	RPD (Limit 20)
Benzene	mg/kg (ppm)	<0.02	<0.02	nm
Toluene	mg/kg (ppm)	<0.02	<0.02	nm
Ethylbenzene	mg/kg (ppm)	<0.02	<0.02	nm
Xylenes	mg/kg (ppm)	<0.06	<0.06	nm
Gasoline	mg/kg (ppm)	<5	<5	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	mg/kg (ppm)	0.5	104	69-120
Toluene	mg/kg (ppm)	0.5	95	70-117
Ethylbenzene	mg/kg (ppm)	0.5	94	65-123
Xylenes	mg/kg (ppm)	1.5	94	66-120
Gasoline	mg/kg (ppm)	20	120	71-131

Date of Report: 01/27/22
Date Received: 01/21/22
Project: FTA-ASTs 40535.498, F&BI 201304

QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 201307-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet Wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	<50	96	94	64-133	2

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Diesel Extended	mg/kg (ppm)	5,000	94	58-147

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The analyte is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits due to sample matrix effects.

j - The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

201304

SAMPLE CHAIN OF CUSTODY

01-21-22 VS2/B03

Page # 1 of 2

Report To Mike Bagley

Company PBS Eng. + Env.

Address 214 E. Galer St. Suite 300

City, State, ZIP Seattle, WA 98102

Phone 3608303359 Email mike.bagley@pbsusa.com

SAMPLERS (signature)

PROJECT NAME: FTA-AST's

PO #: 40535.498

REMARKS

Project specific RLs? - Yes / No

INVOICE TO

TURNAROUND TIME
- ☒ Standard turnaround
- ☐ RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- ☐ Archive samples
- ☐ Other
- Default: Dispose after 30 days

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	NWTPH-Dx	NWTPH-Gx	BTEX EPA 8021	NWTPH-HCID	VOCs EPA 8260	PAHs EPA 8270	PCBs EPA 8082					Notes
						ANALYSES REQUESTED											
MW1-15	01 A-B	1/19	10:45	Soil	5	x	x	x									
MW1-22	02	1/19	10:55	Soil	5	x	x	x									
SB1-15	03	1/19	13:40	Soil	5	x	x	x									
SB1-25	04	1/19	13:55	Soil	5	x	x	x									
SB2-10	05	1/19	15:10	Soil	5	x	x	x									
SB2-16	06	1/19	15:15	Soil	5	x	x	x									
MW2-9	07	1/20	9:40	Soil	5	x	x	x									
MW2-13	08	1/20	9:05	Soil	5	x	x	x									
SB3-5	09	1/20	11:30	Soil	5	x	x	x									
SB3-16	10	1/20	11:45	Soil	5	x	x	x									

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Mike Bagley	PBS	1/21/22	2:30
Received by:	VIA FED EX	FBA	1/21/22	2:30
Relinquished by:				
Received by:				

Samples received at 4 °

Friedman & Bruya, Inc.
Ph. (206) 285-8282

201304

SAMPLE CHAIN OF CUSTODY

01-21-22 VSZ/BOB

Page # 2 of 2

Report To Mike Bagley

Company PBS Eng. + Env.

Address 214 E. Galer St. Suite 300

City, State, ZIP Seattle, WA 98102

Phone _____ Email _____

SAMPLERS (*signature*)

PROJECT NAME: FTA - ASTs

PO #: 40535,498

REMARKS

Project specific RLs? - Yes / No

INVOICE TO

TURNAROUND TIME
- [x] Standard turnaround
- [ ] RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- [ ] Archive samples
- [ ] Other
- Default: Dispose after 30 days

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	ANALYSES REQUESTED: NWTPH-Dx	NWTPH-Gx	BTEX EPA 8021	NWTPH-HCID	VOCs EPA 8260	PAHs EPA 8270	PCBs EPA 8082					Notes
MW2-25	11 A-E	1/20	12:45	Soil	5	x	x	x									
MW3-10	12	1/20	13:00	Soil	5	x	x	x									
MW3-18	13	1/20	13:40	Soil	5	x	x	x									

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Mike Bagley	PBS	1/21/22	2:30 PM
Received by:	VINH	FBI	1/21/22	2:30 PM
Relinquished by:				
Received by:		Samples received at 4 °C		

Friedman & Bruya, Inc.
Ph. (206) 285-8282

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Vineta Mills, M.S.
Eric Young, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

February 9, 2022

Mike Bagley, Project Manager
PBS Engineering and Environmental, Inc.
214 E. Galer St, Suite 300
Seattle, WA 98102

Dear Mr Bagley:

Included are the additional results from the testing of material submitted on January 21, 2022 from the FTA-ASTs 40535.498, F&BI 201304 project. There are 8 pages included in this report.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
PBS0209R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on January 21, 2022 by Friedman & Bruya, Inc. from the PBS Engineering and Environmental FTA-ASTs 40535.498, F&BI 201304 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	PBS Engineering and Environmental
201304 -01	MW1-15
201304 -02	MW1-12
201304 -03	SB1-15
201304 -04	SB1-25
201304 -05	SB2-10
201304 -06	SB2-16
201304 -07	MW2-9
201304 -08	MW2-13
201304 -09	SB3-5
201304 -10	SB3-16
201304 -11	SB2-25
201304 -12	SB3-10
201304 -13	SB3-18

All quality control requirements were acceptable.

Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

Client Sample ID:	SB3-16	Client:	PBS Engineering and Environmental
Date Received:	01/21/22	Project:	40535.498, F&BI 201304
Date Extracted:	02/03/22	Lab ID:	201304-10 1/0.25
Date Analyzed:	02/03/22	Data File:	020320.D
Matrix:	Soil	Instrument:	GCMS11
Units:	mg/kg (ppm) Dry Weight	Operator:	RF

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	104	79	128
Toluene-d8	97	84	121
4-Bromofluorobenzene	98	84	116

Compounds:	Concentration mg/kg (ppm)
Methyl t-butyl ether (MTBE)	<0.05
1,2-Dibromoethane (EDB)	<0.005
1,2-Dichloroethane (EDC)	<0.05

Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

Client Sample ID:	Method Blank	Client:	PBS Engineering and Environmental
Date Received:	Not Applicable	Project:	40535.498, F&BI 201304
Date Extracted:	02/03/22	Lab ID:	02-286 mb2 1/0.25
Date Analyzed:	02/03/22	Data File:	020308.D
Matrix:	Soil	Instrument:	GCMS11
Units:	mg/kg (ppm) Dry Weight	Operator:	RF

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	105	79	128
Toluene-d8	95	84	121
4-Bromofluorobenzene	95	84	116

Compounds:	Concentration mg/kg (ppm)
Methyl t-butyl ether (MTBE)	<0.05
1,2-Dibromoethane (EDB)	<0.005
1,2-Dichloroethane (EDC)	<0.05

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	SB3-16	Client:	PBS Engineering and Environmental
Date Received:	01/21/22	Project:	40535.498, F&BI 201304
Date Extracted:	02/02/22	Lab ID:	201304-10 1/5
Date Analyzed:	02/02/22	Data File:	020215.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	52	24	111
Phenol-d6	73	37	116
Nitrobenzene-d5	74	38	117
2-Fluorobiphenyl	77	45	117
2,4,6-Tribromophenol	79	11	158
Terphenyl-d14	106	50	124

Compounds:	Concentration mg/kg (ppm)
Naphthalene	<0.01
2-Methylnaphthalene	<0.01
1-Methylnaphthalene	<0.01
Acenaphthylene	<0.01
Acenaphthene	<0.01
Fluorene	<0.01
Phenanthrene	<0.01
Anthracene	<0.01
Fluoranthene	<0.01
Pyrene	<0.01
Benz(a)anthracene	<0.01
Chrysene	<0.01
Benzo(a)pyrene	<0.01
Benzo(b)fluoranthene	<0.01
Benzo(k)fluoranthene	<0.01
Indeno(1,2,3-cd)pyrene	<0.01
Dibenz(a,h)anthracene	<0.01
Benzo(g,h,i)perylene	<0.01

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	Method Blank	Client:	PBS Engineering and Environmental
Date Received:	Not Applicable	Project:	40535.498, F&BI 201304
Date Extracted:	02/02/22	Lab ID:	02-276 mb2 1/5
Date Analyzed:	02/02/22	Data File:	020209.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	69	24	111
Phenol-d6	98	37	116
Nitrobenzene-d5	101	38	117
2-Fluorobiphenyl	104	45	117
2,4,6-Tribromophenol	81	11	158
Terphenyl-d14	113	50	124

Compounds:	Concentration mg/kg (ppm)
Naphthalene	<0.01
2-Methylnaphthalene	<0.01
1-Methylnaphthalene	<0.01
Acenaphthylene	<0.01
Acenaphthene	<0.01
Fluorene	<0.01
Phenanthrene	<0.01
Anthracene	<0.01
Fluoranthene	<0.01
Pyrene	<0.01
Benz(a)anthracene	<0.01
Chrysene	<0.01
Benzo(a)pyrene	<0.01
Benzo(b)fluoranthene	<0.01
Benzo(k)fluoranthene	<0.01
Indeno(1,2,3-cd)pyrene	<0.01
Dibenz(a,h)anthracene	<0.01
Benzo(g,h,i)perylene	<0.01

Date of Report: 02/09/22
Date Received: 01/21/22
Project: FTA-ASTs 40535.498, F&BI 201304

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR VOLATILES BY EPA METHOD 8260D

Laboratory Code: 201425-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Methyl t-butyl ether (MTBE)	mg/kg (ppm)	1	<0.05	91	97	21-145	6
1,2-Dichloroethane (EDC)	mg/kg (ppm)	1	<0.05	91	96	12-160	5
1,2-Dibromoethane (EDB)	mg/kg (ppm)	1	<0.05	83	94	28-142	12

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Methyl t-butyl ether (MTBE)	mg/kg (ppm)	1	108	60-123
1,2-Dichloroethane (EDC)	mg/kg (ppm)	1	110	56-135
1,2-Dibromoethane (EDB)	mg/kg (ppm)	1	104	74-132

Date of Report: 02/09/22
Date Received: 01/21/22
Project: FTA-ASTs 40535.498, F&BI 201304

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR SEMIVOLATILES BY EPA METHOD 8270E

Laboratory Code: 201434-01 1/5 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Naphthalene	mg/kg (ppm)	0.83	<0.01	86	85	50-150	1
2-Methylnaphthalene	mg/kg (ppm)	0.83	<0.01	81	83	50-150	2
1-Methylnaphthalene	mg/kg (ppm)	0.83	<0.01	84	85	50-150	1
Acenaphthylene	mg/kg (ppm)	0.83	<0.01	88	91	50-150	3
Acenaphthene	mg/kg (ppm)	0.83	<0.01	91	93	50-150	2
Fluorene	mg/kg (ppm)	0.83	<0.01	87	91	50-150	4
Phenanthrene	mg/kg (ppm)	0.83	<0.01	95	94	50-150	1
Anthracene	mg/kg (ppm)	0.83	<0.01	91	90	50-150	1
Fluoranthene	mg/kg (ppm)	0.83	<0.01	91	90	50-150	1
Pyrene	mg/kg (ppm)	0.83	<0.01	92	96	50-150	4
Benz(a)anthracene	mg/kg (ppm)	0.83	<0.01	96	96	50-150	0
Chrysene	mg/kg (ppm)	0.83	<0.01	97	95	50-150	2
Benzo(a)pyrene	mg/kg (ppm)	0.83	<0.01	91	92	50-150	1
Benzo(b)fluoranthene	mg/kg (ppm)	0.83	<0.01	99	101	50-150	2
Benzo(k)fluoranthene	mg/kg (ppm)	0.83	<0.01	97	98	50-150	1
Indeno(1,2,3-cd)pyrene	mg/kg (ppm)	0.83	<0.01	116	111	50-150	4
Dibenz(a,h)anthracene	mg/kg (ppm)	0.83	<0.01	124	117	50-150	6
Benzo(g,h,i)perylene	mg/kg (ppm)	0.83	<0.01	124	116	50-150	7

Laboratory Code: Laboratory Control Sample 1/5

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Naphthalene	mg/kg (ppm)	0.83	94	61-102
2-Methylnaphthalene	mg/kg (ppm)	0.83	89	62-108
1-Methylnaphthalene	mg/kg (ppm)	0.83	92	62-108
Acenaphthylene	mg/kg (ppm)	0.83	95	61-111
Acenaphthene	mg/kg (ppm)	0.83	98	61-110
Fluorene	mg/kg (ppm)	0.83	93	62-114
Phenanthrene	mg/kg (ppm)	0.83	101	64-112
Anthracene	mg/kg (ppm)	0.83	99	63-111
Fluoranthene	mg/kg (ppm)	0.83	97	66-115
Pyrene	mg/kg (ppm)	0.83	97	65-112
Benz(a)anthracene	mg/kg (ppm)	0.83	101	64-116
Chrysene	mg/kg (ppm)	0.83	101	66-119
Benzo(a)pyrene	mg/kg (ppm)	0.83	91	62-116
Benzo(b)fluoranthene	mg/kg (ppm)	0.83	98	61-118
Benzo(k)fluoranthene	mg/kg (ppm)	0.83	99	65-119
Indeno(1,2,3-cd)pyrene	mg/kg (ppm)	0.83	117	64-130
Dibenz(a,h)anthracene	mg/kg (ppm)	0.83	124	67-131
Benzo(g,h,i)perylene	mg/kg (ppm)	0.83	126	67-126

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The analyte is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits due to sample matrix effects.

j - The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

201304

SAMPLE CHAIN OF CUSTODY

01-21-22 VS2/B03

Page # 1 of 2

Report To Mike Bagley

Company PBS Eng. + Env.

Address 214 E. Galer St. Suite 300

City, State, ZIP Seattle, WA 98102

Phone 3609303359 Email mike.bagley@pbsusa.com

SAMPLERS (signature)

PROJECT NAME: FTA-AST's

PO #: 40535.498

REMARKS

Project specific RLs? - Yes / No

INVOICE TO

TURNAROUND TIME
- ☒ Standard turnaround
- ☐ RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- ☐ Archive samples
- ☐ Other
- Default: Dispose after 30 days

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	ANALYSES REQUESTED: NWTPH-Dx	NWTPH-Gx	BTEX EPA 8021	NWTPH-HCID	VOCs EPA 8260	PAHs EPA 8270	PCBs EPA 8082	MTBE, EDB, EDC				Notes
MW1-15	01 A-B	1/19	10:45	Soil	5	x	x	x									
MW1-22	02	1/19	10:55	Soil	5	x	x	x									(Y) per MB 2/1/22 ME
SB1-15	03	1/19	13:40	Soil	5	x	x	x									
SB1-25	04	1/19	13:55	Soil	5	x	x	x									
SB2-10	05	1/19	15:10	Soil	5	x	x	x									
SB2-16	06	1/19	15:15	Soil	5	x	x	x									
MW2-9	07	1/20	9:40	Soil	5	x	x	x									
MW2-13	08	1/20	9:05	Soil	5	x	x	x									
SB3-5	09	1/20	11:30	Soil	5	x	x	x									
SB3-16	10	1/20	11:45	Soil	5	x	x	x			(X)		(Y)				

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Mike Bagley	PBS	1/21/22	2:30
Received by:		FBA	1/21/22	2:30
Relinquished by:				
Received by:				

Samples received at 4 °

Friedman & Bruya, Inc.
Ph. (206) 285-8282

201304

SAMPLE CHAIN OF CUSTODY

01-21-22 VS2/BOB

Page # 2 of 2

Report To Mike Bagley

Company PBS Eng. + Env.

Address 214 E. Galer St. Suite 300

City, State, ZIP Seattle, WA 98102

Phone _____ Email _____

SAMPLERS (*signature*)

PROJECT NAME: FTA - AST's

PO #: 405535,448

REMARKS: Project specific RLs? - Yes / No

INVOICE TO

TURNAROUND TIME
- [x] Standard turnaround
- [ ] RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
- [ ] Archive samples
- [ ] Other
Default: Dispose after 30 days

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	ANALYSES REQUESTED: NWTPH-Dx	NWTPH-Gx	BTEX EPA 8021	NWTPH-HCID	VOCs EPA 8260	PAHs EPA 8270	PCBs EPA 8082					Notes
MW2-25	11 A-E	1/20	12:45	Soil	5	x	x	x									
MW3-10	12	1/20	13:00	Soil	5	x	x	x									
MW3-18	13	1/20	13:40	Soil	5	x	x	x									

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Mike Bagley	PBS	1/21/22	2:30 P
Received by:	VINH	FBI	1/21/22	2:30 A
Relinquished by:				
Received by:				

Samples received at 4 °C

Friedman & Bruya, Inc.
Ph. (206) 285-8282

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Vineta Mills, M.S.
Eric Young, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

February 9, 2022

Mike Bagley, Project Manager
PBS Engineering and Environmental, Inc.
214 E. Galer St, Suite 300
Seattle, WA 98102

Dear Mr Bagley:

Included are the results from the testing of material submitted on February 2, 2022 from the FTA AST's 40535.498, F&BI 202039 project. There are 6 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
PBS0209R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on February 2, 2022 by Friedman & Bruya, Inc. from the PBS Engineering and Environmental FTA AST's 40535.498, F&BI 202039 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	PBS Engineering and Environmental
202039 -01	MW1-020222
202039 -02	MW2-020222
202039 -03	MW3-020222
202039 -04	DUP-020222

All quality control requirements were acceptable.

Date of Report: 02/09/22
Date Received: 02/02/22
Project: FTA AST's 40535.498, F&BI 202039
Date Extracted: 02/04/22
Date Analyzed: 02/06/22

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING METHODS 8021B AND NWTPH-Gx

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 52-124)
MW1-020222 202039-01	<1	<1	<1	<3	<100	82
MW2-020222 202039-02 1/80	680	4,800	410	2,600	30,000	83
MW3-020222 202039-03 1/200	910	10,000	620	4,000	56,000	83
DUP-020222 202039-04 1/200	990	10,000	610	4,000	55,000	82
Method Blank 02-310 MB	<1	<1	<1	<3	<100	80

Date of Report: 02/09/22
Date Received: 02/02/22
Project: FTA AST's 40535.498, F&BI 202039
Date Extracted: 02/03/22
Date Analyzed: 02/03/22

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Diesel Range (C_{10}-C_{25})	Motor Oil Range (C_{25}-C_{36})	Surrogate (% Recovery) (Limit 41-152)
MW1-020222 202039-01	<50	<250	118
MW2-020222 202039-02	1,300 x	<250	130
MW3-020222 202039-03	1,400 x	<250	133
Method Blank 02-371 MB	<50	<250	133

Date of Report: 02/09/22
Date Received: 02/02/22
Project: FTA AST's 40535.498, F&BI 202039

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 202015-01 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 20)
Benzene	ug/L (ppb)	<1	<1	nm
Toluene	ug/L (ppb)	<1	<1	nm
Ethylbenzene	ug/L (ppb)	<1	<1	nm
Xylenes	ug/L (ppb)	<3	<3	nm
Gasoline	ug/L (ppb)	<100	<100	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	ug/L (ppb)	50	108	65-118
Toluene	ug/L (ppb)	50	104	72-122
Ethylbenzene	ug/L (ppb)	50	109	73-126
Xylenes	ug/L (ppb)	150	104	74-118
Gasoline	ug/L (ppb)	1,000	104	69-134

Date of Report: 02/09/22
Date Received: 02/02/22
Project: FTA AST's 40535.498, F&BI 202039

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	ug/L (ppb)	2,500	124	124	63-142	0

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The analyte is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits due to sample matrix effects.

j - The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

202039

SAMPLE CHAIN OF CUSTODY

02/02/22 VW1 / AI3 / D04

Page # 1 of 1

Report To Mike Bagley

Company PBS Eng. + Env.

Address 214 E. Galer St., Suite 300

City, State, ZIP Seattle, WA 98102

Phone 360.830.8359 Email mike.bagley@pbsusa.com

SAMPLERS (*signature*): MB

PROJECT NAME: FTA AST's

PO #: 40535.498

REMARKS

Project Specific RLs - Yes / No

INVOICE TO

TURNAROUND TIME

✓ Standard Turnaround

RUSH

Rush charges authorized by:

SAMPLE DISPOSAL

Dispose after 30 days

Archive Samples

Other

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	ANALYSES REQUESTED: NWTPH-Dx	NWTPH-Gx	BTEX EPA 8021	VOCs EPA 8260	PAHs EPA 8270	PCBs EPA 8082						Notes
MW1-020222	01A-C	2/2/22	10:30	GW	5	✓	✓	✓									
MW2-020222	02	2/2/22	11:30	GW	5	✓	✓	✓									
MW3-020222	03	2/2/22	12:30	GW	5	✓	✓	✓									
DUP-020222	04A-C	2/2/22	12:00	GW	3		✓	✓									
												Samples received at					4°C

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: Lauren DeMeurs	Kameron DeMeurin	PBS	2/2/22	16:00
Received by:	VINH	FBI	2/2/22	16:00
Relinquished by:				
Received by:				

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Vineta Mills, M.S.
Eric Young, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

February 21, 2022

Mike Bagley, Project Manager
PBS Engineering and Environmental, Inc.
214 E. Galer St, Suite 300
Seattle, WA 98102

Dear Mr Bagley:

Included are the additional results from the testing of material submitted on February 2, 2022 from the FTA AST's 40535.498, F&BI 202039 project. There are 6 pages included in this report.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Ken Nogeire

PBS0221R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on February 2, 2022 by Friedman & Bruya, Inc. from the PBS Engineering and Environmental FTA AST's 40535.498, F&BI 202039 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	PBS Engineering and Environmental
202039 -01	MW1-020222
202039 -02	MW2-020222
202039 -03	MW3-020222
202039 -04	DUP-020222

All quality control requirements were acceptable.

Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

Client Sample ID:	MW3-020222	Client:	PBS Engineering and Environmental
Date Received:	02/02/22	Project:	FTA AST's 40535.498, F&BI 202039
Date Extracted:	02/15/22	Lab ID:	202039-03 1/100
Date Analyzed:	02/16/22	Data File:	021616.D
Matrix:	Water	Instrument:	GCMS11
Units:	ug/L (ppb)	Operator:	RF

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	105	78	126
Toluene-d8	97	87	115
4-Bromofluorobenzene	94	92	112

Compounds:	Concentration ug/L (ppb)
Methyl t-butyl ether (MTBE)	<100
1,2-Dibromoethane (EDB)	<100
1,2-Dichloroethane (EDC)	<20

Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

Client Sample ID:	Method Blank	Client:	PBS Engineering and Environmental
Date Received:	Not Applicable	Project:	FTA AST's 40535.498, F&BI 202039
Date Extracted:	02/15/22	Lab ID:	02-404 mb
Date Analyzed:	02/15/22	Data File:	021507.D
Matrix:	Water	Instrument:	GCMS11
Units:	ug/L (ppb)	Operator:	RF

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	102	78	126
Toluene-d8	96	87	115
4-Bromofluorobenzene	96	92	112

Compounds:	Concentration ug/L (ppb)
Methyl t-butyl ether (MTBE)	<1
1,2-Dibromoethane (EDB)	<1
1,2-Dichloroethane (EDC)	<0.2

Date of Report: 02/21/22
Date Received: 02/02/22
Project: FTA AST's 40535.498, F&BI 202039

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR VOLATILES BY EPA METHOD 8260D

Laboratory Code: 202272-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Acceptance Criteria
Methyl t-butyl ether (MTBE)	ug/L (ppb)	10	<1	101	50-150
1,2-Dichloroethane (EDC)	ug/L (ppb)	10	<0.2	102	50-150
1,2-Dibromoethane (EDB)	ug/L (ppb)	10	<1	96	50-150

Date of Report: 02/21/22
Date Received: 02/02/22
Project: FTA AST's 40535.498, F&BI 202039

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR VOLATILES BY EPA METHOD 8260D

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Methyl t-butyl ether (MTBE)	ug/L (ppb)	10	92	96	70-130	4
1,2-Dichloroethane (EDC)	ug/L (ppb)	10	100	104	70-130	4
1,2-Dibromoethane (EDB)	ug/L (ppb)	10	96	100	70-130	4

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The analyte is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits due to sample matrix effects.

j - The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

202039

SAMPLE CHAIN OF CUSTODY

02/02/22 VW1 / AI3 / D04

Page # 1 of 1

Report To Mike Bagley

Company PBS Eng. + Env.

Address 214 E. Galer St., Suite 300

City, State, ZIP Seattle, WA 98102

Phone 360.830.8359 Email mike.bagley@pbsusa.com

SAMPLERS (*signature*): MB

PROJECT NAME: FTA AST's

PO #: 40535.498

REMARKS: Project Specific RLs - Yes / No

INVOICE TO

TURNAROUND TIME
- ✓ Standard Turnaround
- RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- Dispose after 30 days
- Archive Samples
- Other

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	ANALYSES REQUESTED: NWTPH-Dx	NWTPH-Gx	BTEX EPA 8021	VOCs EPA 8260	PAHs EPA 8270	PCBs EPA 8082	MTBE EDB 8260					Notes
MW1-020222	01A-E	2/2/22	10:30	GW	5	✓	✓	✓									(Y) per KN
MW2-020222	02	2/2/22	11:30	GW	5	✓	✓	✓									2/14/22 ME
MW3-020222	03	2/2/22	12:30	GW	5	✓	✓	✓				(Y)					
DUP-020222	04A-C	2/2/22	12:00	GW	3		✓	✓									
												Samples received at 4°C					

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: Kameron DeMonnin	Kameron DeMonnin	PBS	2/2/22	16:00
Received by:	VINH	FBI	2/2/22	16:00
Relinquished by:				
Received by:				

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
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www.friedmanandbruya.com

April 6, 2022

Ken Nogeire, Project Manager
PBS Engineering and Environmental, Inc.
214 E. Galer St, Suite 300
Seattle, WA 98102

Dear Mr Nogeire:

Included are the results from the testing of material submitted on March 28, 2022 from the FTA 40535.498, F&BI 203500 project. There are 10 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
PBS0406R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on March 28, 2022 by Friedman & Bruya, Inc. from the PBS Engineering and Environmental FTA 40535.498, F&BI 203500 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	PBS Engineering and Environmental
203500 -01	BH1-4
203500 -02	BH2-3
203500 -03	BH3-4
203500 -04	BH4-4
203500 -05	BH5-4
203500 -06	BH5-12
203500 -07	BH6-4
203500 -08	BH7-4
203500 -09	BH1-W
203500 -10	BH2-W
203500 -11	BH3-W
203500 -12	BH4-W
203500 -13	BH6-W
203500 -14	BH7-W

All quality control requirements were acceptable.

Date of Report: 04/06/22
Date Received: 03/28/22
Project: FTA 40535.498, F&BI 203500
Date Extracted: 03/30/22
Date Analyzed: 03/30/22

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING METHODS 8021B AND NWTPH-Gx

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 50-132)
BH1-4 203500-01	<0.02	<0.02	<0.02	<0.06	<5	84
BH2-3 203500-02	<0.02	<0.02	<0.02	<0.06	<5	87
BH3-4 203500-03	<0.02	<0.02	<0.02	<0.06	<5	85
BH4-4 203500-04	<0.02	<0.02	<0.02	<0.06	<5	85
BH5-4 203500-05	<0.02	<0.02	<0.02	<0.06	<5	81
BH5-12 203500-06	<0.02	0.056	<0.02	<0.06	<5	85
BH6-4 203500-07	<0.02	<0.02	<0.02	<0.06	<5	89
BH7-4 203500-08	<0.02	<0.02	<0.02	<0.06	<5	91
Method Blank 02-623 MB2	<0.02	<0.02	<0.02	<0.06	<5	87

Date of Report: 04/06/22
Date Received: 03/28/22
Project: FTA 40535.498, F&BI 203500
Date Extracted: 03/31/22
Date Analyzed: 04/01/22 and 04/05/22

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING METHODS 8021B AND NWTPH-Gx

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 52-124)
BH1-W 203500-09	<1	<1	<1	<3	<100	84
BH2-W 203500-10 1/20	640	1,900	100	720	11,000	93
BH3-W 203500-11	<1	3.1	<1	<3	210	96
BH4-W 203500-12 1/10	86	1,500	1,700	3,300	48,000	131
BH6-W 203500-13	<1	<1	<1	<3	<100	97
BH7-W 203500-14	<1	<1	<1	<3	<100	89
Method Blank 02-626 MB	<1	<1	<1	<3	<100	79

Date of Report: 04/06/22
Date Received: 03/28/22
Project: FTA 40535.498, F&BI 203500
Date Extracted: 03/30/22
Date Analyzed: 03/30/22

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Diesel Range (C_{10}-C_{25})	Motor Oil Range (C_{25}-C_{36})	Surrogate (% Recovery) (Limit 48-168)
BH1-4 203500-01	<50	<250	97
BH2-3 203500-02	<50	<250	99
BH3-4 203500-03	<50	<250	98
BH4-4 203500-04	<50	<250	98
BH5-4 203500-05	<50	<250	98
BH5-12 203500-06	<50	<250	98
BH6-4 203500-07	<50	<250	99
BH7-4 203500-08	<50	<250	100
Method Blank 02-763 MB	<50	<250	105

Date of Report: 04/06/22
Date Received: 03/28/22
Project: FTA 40535.498, F&BI 203500
Date Extracted: 03/30/22
Date Analyzed: 03/30/22

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Diesel Range (C_{10}-C_{25})	Motor Oil Range (C_{25}-C_{36})	Surrogate (% Recovery) (Limit 41-152)
BH1-W 203500-09	100 x	<250	136
BH2-W 203500-10	250 x	600 x	134
BH3-W 203500-11	690 x	<250	134
BH4-W 203500-12	6,400 x	660 x	140
BH6-W 203500-13 1/1.2	210 x	<300	150
BH7-W 203500-14	59 x	<250	85
Method Blank 02-761 MB2	<50	<250	148

Date of Report: 04/06/22
Date Received: 03/28/22
Project: FTA 40535.498, F&BI 203500

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 203482-03 (Duplicate)

Analyte	Reporting Units	Sample Result (Wet Wt)	Duplicate Result (Wet Wt)	RPD (Limit 20)
Benzene	mg/kg (ppm)	<0.02	<0.02	nm
Toluene	mg/kg (ppm)	<0.02	<0.02	nm
Ethylbenzene	mg/kg (ppm)	<0.02	<0.02	nm
Xylenes	mg/kg (ppm)	<0.06	<0.06	nm
Gasoline	mg/kg (ppm)	<5	<5	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	mg/kg (ppm)	0.5	84	66-121
Toluene	mg/kg (ppm)	0.5	84	72-128
Ethylbenzene	mg/kg (ppm)	0.5	94	69-132
Xylenes	mg/kg (ppm)	1.5	93	69-131
Gasoline	mg/kg (ppm)	20	94	61-153

Date of Report: 04/06/22
Date Received: 03/28/22
Project: FTA 40535.498, F&BI 203500

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING METHOD 8021B AND NWTPH-Gx

Laboratory Code: 203477-01 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 20)
Benzene	ug/L (ppb)	<1	<1	nm
Toluene	ug/L (ppb)	<1	<1	nm
Ethylbenzene	ug/L (ppb)	<1	<1	nm
Xylenes	ug/L (ppb)	<3	<3	nm
Gasoline	ug/L (ppb)	<100	<100	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	ug/L (ppb)	50	93	65-118
Toluene	ug/L (ppb)	50	92	72-122
Ethylbenzene	ug/L (ppb)	50	101	73-126
Xylenes	ug/L (ppb)	150	101	74-118
Gasoline	ug/L (ppb)	1,000	94	69-134

Date of Report: 04/06/22
Date Received: 03/28/22
Project: FTA 40535.498, F&BI 203500

QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 203517-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet Wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	1,200	97	108	73-135	8

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Diesel Extended	mg/kg (ppm)	5,000	98	74-139

Date of Report: 04/06/22
Date Received: 03/28/22
Project: FTA 40535.498, F&BI 203500

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	ug/L (ppb)	2,500	104	104	63-142	0

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The analyte is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits due to sample matrix effects.

j - The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

SAMPLE CHAIN OF CUSTODY 03·28·22

203500

VsA1/VW2/E04/A03 Page # ___ of 2

Report To: Ken Nogeire
Company: PBS Engineering
Address: 214 E Galer
City, State, ZIP: Seattle, WA 98103
Phone: 509.572.8163 Email: ken.nogeire@pbsusa.com

SAMPLERS (signature)	
PROJECT NAME: FTA	PO #: 40535.498
REMARKS	INVOICE TO
Project specific RLs? - Yes / No	

TURNAROUND TIME
☑ Standard turnaround
☐ RUSH___
Rush charges authorized by:

SAMPLE DISPOSAL
☐ Archive samples
☐ Other___
(Default) Dispose after 30 days

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	NWTPH-Dx	NWTPH-Gx	BTEX EPA 8021	NWTPH-HCID	VOCs EPA 8260	PAHs EPA 8270	PCBs EPA 8082					Notes
BH1-4	01 A-C	3/28/2022	955	Soil	3	X	X	X									
BH2-3	02	↓	1015	↓	↓	X	X	X									
BH3-4	03	↓	1045	↓	↓	X	X	X									
BH4-4	04	↓	1130	↓	↓	X	X	X									
BH5-4	05	↓	1200	↓	↓	X	X	X									
BH5-12	06	↓	1215	↓	↓	X	X	X									
BH6-4	07	↓	1230	↓	↓	X	X	X									
BH7-4	08	↓	1320	↓	↓	X	X	X									

Friedman & Bruya, Inc.
Ph. (206) 285-8282

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: [signature]	Ken Nogeire	PBS	3/28/22	1600
Received by: Tolcala C.	Tolcala Christensen	F+B	3/28/22	16:00
Relinquished by:				
Received by:		Samples received at 4 °C		

203500

SAMPLE CHAIN OF CUSTODY

03-28-22 VA1/VW2/504/AU3

Page # 2 of 2

Report To Ken Nogerre

Company PBS

Address 214 East Galer

City, State, ZIP Seattle, WA

Phone _____ Email _____

SAMPLERS (*signature*)

PROJECT NAME: FTA

PO #: 40535.498

REMARKS

Project specific RLs? - Yes / No

INVOICE TO

TURNAROUND TIME
- ☑ Standard turnaround
- ☐ RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- ☐ Archive samples
- ☐ Other
- Default: Dispose after 30 days

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	NWTPH-Dx	NWTPH-Gx	BTEX EPA 8021	NWTPH-HCID	VOCs EPA 8260	PAHs EPA 8270	PCBs EPA 8082					Notes
						ANALYSES REQUESTED											
BH1-W	09A-F	3/28/22	1000	water	5	X	X	X									(Y) per KN
BH2-W	10		1030			X	X	X									3/29/22 ME
BH3-W	11		1105			X	X	X									
BH4-W	12		1145			X	X	X									
BH6-W	13A-D		1240			X	X	X									only 1 sh & 3 VOA recd
BH7-W	14A-E		1330			X	X	X									TB 3/25

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Ken Nogerre	PBS Engineering	3/28/22	1600
Received by:	Tokale Christensen	FTB	3/28/22	16:00
Relinquished by:				
Received by:		Samples received at 4 °C		

Friedman & Bruya, Inc.
Ph. (206) 285-8282

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Vineta Mills, M.S.
Eric Young, B.S.

3012 16th Avenue West
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fbi@isomedia.com
www.friedmanandbruya.com

August 8, 2022

Ken Nogeire, Project Manager
PBS Engineering and Environmental, Inc.
214 E. Galer St, Suite 300
Seattle, WA 98102

Dear Mr Nogeire:

Included are the results from the testing of material submitted on July 29, 2022 from the FTA ASTS 40535.498, F&BI 207494 project. There are 6 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Sarah Newport
PBS0808R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on July 29, 2022 by Friedman & Bruya, Inc. from the PBS Engineering and Environmental FTA ASTS 40535.498, F&BI 207494 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	PBS Engineering and Environmental
207494 -01	MW-1
207494 -02	MW-2
207494 -03	MW-3

All quality control requirements were acceptable.

Date of Report: 08/08/22
Date Received: 07/29/22
Project: FTA ASTS 40535.498, F&BI 207494
Date Extracted: 08/04/22
Date Analyzed: 08/05/22

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING METHODS 8021B AND NWTPH-Gx

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 52-124)
MW-1 207494-01	<1	1.0	<1	<3	<100	102
MW-2 207494-02 1/200	97	11,000	840	5,200	76,000	103
MW-3 207494-03 1/100	210	3,600	570	2,300	29,000	103
Method Blank 02-1721 MB	<1	<1	<1	<3	<100	98

Date of Report: 08/08/22
Date Received: 07/29/22
Project: FTA ASTS 40535.498, F&BI 207494
Date Extracted: 08/01/22
Date Analyzed: 08/01/22

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Diesel Range (C_{10}-C_{25})	Motor Oil Range (C_{25}-C_{36})	Surrogate (% Recovery) (Limit 41-152)
MW-1 207494-01	<50	<250	98
MW-2 207494-02	1,600 x	<250	106
MW-3 207494-03	1,100 x	<250	100
Method Blank 02-1867 MB	<50	<250	97

Date of Report: 08/08/22
Date Received: 07/29/22
Project: FTA ASTS 40535.498, F&BI 207494

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 208011-01 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 20)
Benzene	ug/L (ppb)	<1	<1	nm
Toluene	ug/L (ppb)	<1	<1	nm
Ethylbenzene	ug/L (ppb)	<1	<1	nm
Xylenes	ug/L (ppb)	<3	<3	nm
Gasoline	ug/L (ppb)	<100	<100	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	ug/L (ppb)	50	99	65-118
Toluene	ug/L (ppb)	50	101	72-122
Ethylbenzene	ug/L (ppb)	50	102	73-126
Xylenes	ug/L (ppb)	150	100	74-118
Gasoline	ug/L (ppb)	1,000	114	69-134

Date of Report: 08/08/22
Date Received: 07/29/22
Project: FTA ASTS 40535.498, F&BI 207494

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	ug/L (ppb)	2,500	116	112	63-142	4

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The analyte is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits due to sample matrix effects.

j - The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

207494

SAMPLE CHAIN OF CUSTODY

7/29/22

VW2/E04

Page # 1 of 1

Ken Nogeire

Report To Sarah Newport

Company PBS

Address 214 E Baker St Suite 300

City, State, ZIP Seattle WA

Phone 206 233 9639 Email sarah.newport@pbsusa.com ken.nogeire@rbsusa.com

SAMPLERS (*signature*)

PROJECT NAME: FTA ASTs

PO #: 40535.498

REMARKS

Project specific RLs? - Yes / No

INVOICE TO

TURNAROUND TIME

☒ Standard turnaround

☐ RUSH

Rush charges authorized by:

SAMPLE DISPOSAL

☐ Archive samples

☐ Other

Default: Dispose after 30 days

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	ANALYSES REQUESTED: NWTPH-Dx	NWTPH-Gx	BTEX EPA 8021	NWTPH-HCID	VOCs EPA 8260	PAHs EPA 8270	PCBs EPA 8082					Notes
MW-1	01 A-D	7/28/22	1120	GW	4	X	X	X									
MW-2	02	7/28/22	1240	GW	4	X	X	X									
MW-3	03	7/28/22	1350	GW	4	X	X	X									

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Ken Nogeire	PBS Engineering	7/29/22	840
Received by:	HOA NGUYEN	FBT	7/29/22	8:40
Relinquished by:				
Received by:				

Samples received at 7 °C

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Seattle, WA 98119-2029
Ph. (206) 285-8282

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Vineta Mills, M.S.
Eric Young, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

August 25, 2022

Ken Nogeire, Project Manager
PBS Engineering and Environmental, Inc.
214 E. Galer St, Suite 300
Seattle, WA 98102

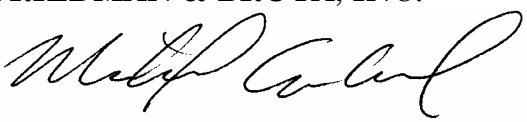
Dear Mr Nogeire:

Included are the results from the testing of material submitted on August 18, 2022 from the FTA AST 40535.498, F&BI 208287 project. There are 6 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl
Project Manager

Enclosures
c: Sarah Newport
PBS0825R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on August 18, 2022 by Friedman & Bruya, Inc. from the PBS Engineering and Environmental FTA AST 40535.498, F&BI 208287 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	PBS Engineering and Environmental
208287 -01	MW5-5
208287 -02	MW5-15
208287 -03	MW6-15
208287 -04	MW7-5
208287 -05	MW7-15

All quality control requirements were acceptable.

Date of Report: 08/25/22
Date Received: 08/18/22
Project: FTA AST 40535.498, F&BI 208287
Date Extracted: 08/22/22
Date Analyzed: 08/23/22

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING METHODS 8021B AND NWTPH-Gx

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 50-150)
MW5-5 208287-01	<0.02	<0.02	<0.02	<0.06	<5	97
MW5-15 208287-02	<0.02	<0.02	<0.02	<0.06	<5	96
MW6-15 208287-03	<0.02	<0.02	<0.02	<0.06	<5	99
MW7-5 208287-04	<0.02	<0.02	<0.02	<0.06	<5	99
MW7-15 pc 208287-05 1/2	<0.02 j	<0.04	0.048	<0.12	12	99
Method Blank 02-1740 MB	<0.02	<0.02	<0.02	<0.06	<5	98

Date of Report: 08/25/22
Date Received: 08/18/22
Project: FTA AST 40535.498, F&BI 208287
Date Extracted: 08/19/22
Date Analyzed: 08/19/22

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Diesel Range (C_{10}-C_{25})	Motor Oil Range (C_{25}-C_{36})	Surrogate (% Recovery) (Limit 48-168)
MW5-5 208287-01	<50	<250	99
MW5-15 208287-02	<50	<250	100
MW6-15 208287-03	<50	<250	98
MW7-5 208287-04	<50	<250	102
MW7-15 208287-05 1/2	<100	<500	106
Method Blank 02-2008 MB2	<50	<250	98

Date of Report: 08/25/22
Date Received: 08/18/22
Project: FTA AST 40535.498, F&BI 208287

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 208258-36 (Duplicate)

Analyte	Reporting Units	Sample Result (Wet Wt)	Duplicate Result (Wet Wt)	RPD (Limit 20)
Benzene	mg/kg (ppm)	<0.02	<0.02	nm
Toluene	mg/kg (ppm)	<0.02	<0.02	nm
Ethylbenzene	mg/kg (ppm)	<0.02	<0.02	nm
Xylenes	mg/kg (ppm)	<0.06	<0.06	nm
Gasoline	mg/kg (ppm)	<5	<5	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	mg/kg (ppm)	0.5	90	69-120
Toluene	mg/kg (ppm)	0.5	90	70-117
Ethylbenzene	mg/kg (ppm)	0.5	90	65-123
Xylenes	mg/kg (ppm)	1.5	93	66-120
Gasoline	mg/kg (ppm)	20	85	71-131

Date of Report: 08/25/22
Date Received: 08/18/22
Project: FTA AST 40535.498, F&BI 208287

QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 208181-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet Wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	<50	118	104	63-146	13

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Diesel Extended	mg/kg (ppm)	5,000	106	79-144

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The analyte is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits due to sample matrix effects.

j - The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

208287

SAMPLE CHAIN OF CUSTODY

08-18-22

~~WC3~~ / EO4 / VS-A1

Page # 1 of 1

Report To Ken Nogeire, Sarah Newport

Company PBS

Address 214 E Galer St Suite 300

City, State, ZIP Seattle WA 98102

Phone 206 233 9639 Email Ken.nogeire@pbsusa.com
Sarah.newport@pbsusa.com

SAMPLERS (*signature*) [redacted]

PROJECT NAME	PO #
FTA AST ~~Release~~	40535.498
REMARKS Project specific RLs? - Yes / No	INVOICE TO

TURNAROUND TIME
- ☑ Standard turnaround
- ☐ RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- ☐ Archive samples
- ☐ Other
- Default: Dispose after 30 days

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	ANALYSES REQUESTED: NWTPH-Dx	NWTPH-Gx	BTEX EPA 8021	NWTPH-HCID	VOCs EPA 8260	PAHs EPA 8270	PCBs EPA 8082					Notes
MW5-5	01A-D	8/16/22	1045	S	4	X	X	X									
MW5-15	02	8/16/22	1055	S	4	X	X	X									
MW6-15	03	8/16/22	1005	S	4	X	X	X									
MW7-5	04	8/16/22	1215	S	4	X	X	X									
MW7-15	05	8/16/22	1225	S	1	X	X	X									

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Ken Nogeire	PBS Engineering	8/18/22	1620
Received by:	Eric Sauer	F-B	8/18/22	1640
Relinquished by:				
Received by:		Samples received at 4 °C		

Friedman & Bruya, Inc.
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Seattle, WA 98119-2029
Ph. (206) 285-8282

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Vineta Mills, M.S.
Eric Young, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

August 25, 2022

Ken Nogeire, Project Manager
PBS Engineering and Environmental, Inc.
214 E. Galer St, Suite 300
Seattle, WA 98102

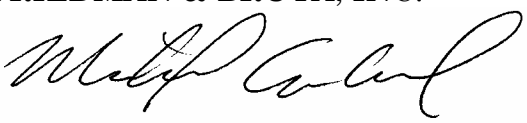
Dear Mr Nogeire:

Included are the results from the testing of material submitted on August 18, 2022 from the FTA AST 40535.498, F&BI 208288 project. There are 4 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl
Project Manager

Enclosures
c: Sarah Newport
PBS0825R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on August 18, 2022 by Friedman & Bruya, Inc. from the PBS Engineering and Environmental FTA AST 40535.498, F&BI 208288 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	PBS Engineering and Environmental
208288 -01	DS1
208288 -02	DS2
208288 -03	DS3
208288 -04	DS4

All quality control requirements were acceptable.

Date of Report: 08/25/22
Date Received: 08/18/22
Project: FTA AST 40535.498, F&BI 208288
Date Extracted: 08/23/22
Date Analyzed: 08/23/22

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING METHODS 8021B AND NWTPH-Gx

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 52-124)
DS1 208288-01	39	5,200	380	2,000	29,000	ip
DS2 208288-02	40	5,700	400	2,200	30,000	ip
DS3 208288-03	43	6,500	460	2,500	33,000	ip
DS4 208288-04	36	5,900	490	2,900	33,000	ip
Method Blank 02-1743 MB	<1	<1	<1	<3	<100	96

Date of Report: 08/25/22
Date Received: 08/18/22
Project: FTA AST 40535.498, F&BI 208288

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 208261-01 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 20)
Benzene	ug/L (ppb)	<1	<1	nm
Toluene	ug/L (ppb)	<1	<1	nm
Ethylbenzene	ug/L (ppb)	<1	<1	nm
Xylenes	ug/L (ppb)	<3	<3	nm
Gasoline	ug/L (ppb)	<100	110	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	ug/L (ppb)	50	110	65-118
Toluene	ug/L (ppb)	50	112	72-122
Ethylbenzene	ug/L (ppb)	50	113	73-126
Xylenes	ug/L (ppb)	150	110	74-118
Gasoline	ug/L (ppb)	1,000	104	69-134

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The analyte is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits due to sample matrix effects.

j - The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

208288

SAMPLE CHAIN OF CUSTODY 08-18-22 VW3/E04

Page # _____ of _____

Report To Ken Nogeire + Sarah Newport

Company PBS Engineering

Address 214 East Euler

City, State, ZIP Seattle, WA

Phone 509.572.8163 Email Ken.nogeire@pbsusa.com sarah.newport

SAMPLERS (*signature*)

PROJECT NAME: FTA AST

PO #: 40535.498

REMARKS

Project specific RLs? - Yes / No

INVOICE TO

TURNAROUND TIME
- ☑ Standard turnaround
- ☐ RUSH _____
- Rush charges authorized by: _____

SAMPLE DISPOSAL
- ☐ Archive samples
- ☐ Other _____
- Default: Dispose after 30 days

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	ANALYSES REQUESTED: NWTPH-Dx	NWTPH-Gx	BTEX EPA 8021	NWTPH-HCID	VOCs EPA 8260	PAHs EPA 8270	PCBs EPA 8082					Notes
DS1	01A-D	8/17/22	1055	water	4		X	X									
DS2	02	8/17/22	1300	↓	↓		X	X									
DS3	03	8/17/22	1530				X	X									
DS4	04	8/18/22	1200	↓	↓		X	1									

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Ken Nogeire	PBS Engineering	8/18/22	1620
Received by:	Eric Bruya	FEB	8/18/22	1620
Relinquished by:				
Received by:				

Samples ~~received at~~ 4 °C

Friedman & Bruya, Inc.
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Seattle, WA 98119-2029
Ph. (206) 285-8282

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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Michael Erdahl, B.S.
Vineta Mills, M.S.
Eric Young, B.S.

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www.friedmanandbruya.com

September 23, 2022

Ken Nogeire, Project Manager
PBS Engineering and Environmental, Inc.
214 E. Galer St, Suite 300
Seattle, WA 98102

Dear Mr Nogeire:

Included are the results from the testing of material submitted on September 14, 2022 from the FTA AST Release 40535.498, F&BI 209199 project. There are 6 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Mike Bagley
PBS0923R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on September 14, 2022 by Friedman & Bruya, Inc. from the PBS Engineering and Environmental FTA AST Release 40535.498, F&BI 209199 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	PBS Engineering and Environmental
209199 -01	MW4
209199 -02	MW6
209199 -03	MW1
209199 -04	MW3
209199 -05	MW2
209199 -06	PH-1

All quality control requirements were acceptable.

Date of Report: 09/23/22
Date Received: 09/14/22
Project: FTA AST Release 40535.498, F&BI 209199
Date Extracted: 09/21/22
Date Analyzed: 09/21/22

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING METHODS 8021B AND NWTPH-Gx

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 52-124)
MW4 209199-01	<1	<1	<1	<3	<100	85
MW6 209199-02	75	9.9	1.2	<3	620	88
MW1 209199-03	<1	2.7	<1	<3	<100	89
MW3 209199-04 1/20	300	620	410	1,300	11,000	88
MW2 209199-05 1/100	64	9,200	670	3,800	49,000	86
Method Blank 02-2092 MB	<1	<1	<1	<3	<100	88

Date of Report: 09/23/22
Date Received: 09/14/22
Project: FTA AST Release 40535.498, F&BI 209199
Date Extracted: 09/19/22
Date Analyzed: 09/19/22

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Diesel Range (C_{10}-C_{25})	Motor Oil Range (C_{25}-C_{36})	Surrogate (% Recovery) (Limit 41-152)
MW4 209199-01	<50	<250	112
MW6 209199-02	53 x	<250	112
MW1 209199-03	<50	<250	115
MW3 209199-04	550 x	<250	98
MW2 209199-05	870 x	<250	98
Method Blank 02-2230 MB	<50	<250	113

Date of Report: 09/23/22
Date Received: 09/14/22
Project: FTA AST Release 40535.498, F&BI 209199

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 209279-01 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 20)
Benzene	ug/L (ppb)	<1	<1	nm
Toluene	ug/L (ppb)	<1	<1	nm
Ethylbenzene	ug/L (ppb)	<1	<1	nm
Xylenes	ug/L (ppb)	<3	<3	nm
Gasoline	ug/L (ppb)	<100	<100	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	ug/L (ppb)	50	109	65-118
Toluene	ug/L (ppb)	50	108	72-122
Ethylbenzene	ug/L (ppb)	50	110	73-126
Xylenes	ug/L (ppb)	150	107	74-118
Gasoline	ug/L (ppb)	1,000	107	69-134

Date of Report: 09/23/22
Date Received: 09/14/22
Project: FTA AST Release 40535.498, F&BI 209199

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	ug/L (ppb)	2,500	76	68	63-142	11

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The analyte is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits due to sample matrix effects.

j - The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

SAMPLE CHAIN OF CUSTODY 09-14-22

E03/UW3

Page # 1 of 1

Ken Nogeire 209199

Report To Mike Bagley

Company PBS

Address 214 E Galer St Suite 300

City, State, ZIP Seattle WA 98102

Phone ______ Email Ken.Nogeire@pbsusa.com mike.Bagley@pbsusa.com

SAMPLERS (*signature*)

PROJECT NAME	PO #
FTA AST release	40535.498
REMARKS	INVOICE TO
Project specific RLs? - Yes / No	

TURNAROUND TIME
- ☑ Standard turnaround
- ☐ RUSH ______
- Rush charges authorized by:

SAMPLE DISPOSAL
- ☐ Archive samples
- ☐ Other ______
- Default: Dispose after 30 days

ANALYSES REQUESTED

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	NWTPH-Dx	NWTPH-Gx	BTEX EPA 8021	NWTPH-HCID	VOCs EPA 8260	PAHs EPA 8270	PCBs EPA 8082	Notes
MW4	01 A-D	9/13/22	11:20	GW	4	X	X	X					
MW6	02	9/13/22	12:15	GW	4	X	X	X					
MW1	03	9/14/22	11:40	GW	4	X	X	X					
MW3	04	9/14/22	12:40	GW	4	X	X	X					
MW2	05	9/14/22	13:30	GW	4	X	X	X					
PH-1 TB	06 A-D	9/13/22	955										

Friedman & Bruya, Inc.
Ph. (206) 285-8282

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: [signature]	Sarah Newport	PBS	9/14/22	1555
Received by: [signature]	ANH PHAN	F&B	09/14/22	15:55
Relinquished by:				
Received by:		Samples received at 4 °C		

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Vineta Mills, M.S.
Eric Young, B.S.

5500 4th Avenue South
Seattle, WA 98108
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

January 20, 2023

Ken Nogeire, Project Manager
PBS Engineering and Environmental, Inc.
214 E. Galer St, Suite 300
Seattle, WA 98102

Dear Mr Nogeire:

Included are the results from the testing of material submitted on January 16, 2023 from the FTA AST Release 40535 498, F&BI 301216 project. There are 6 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Sarah Newport
PBS0120R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on January 16, 2023 by Friedman & Bruya, Inc. from the PBS Engineering and Environmental FTA AST Release 40535 498, F&BI 301216 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	PBS Engineering and Environmental
301216 -01	MW1
301216 -02	MW4
301216 -03	MW6
301216 -04	MW7

All quality control requirements were acceptable.

Date of Report: 01/20/23
Date Received: 01/16/23
Project: FTA AST Release 40535 498, F&BI 301216
Date Extracted: 01/16/23
Date Analyzed: 01/18/23

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING METHODS 8021B AND NWTPH-Gx

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 52-124)
MW1 301216-01	<1	<1	<1	<3	<100	86
MW4 301216-02	<1	<1	<1	<3	<100	86
MW6 301216-03	40	9.6	1.1	<3	600	88
MW7 301216-04	<1	<1	<1	<3	<100	85
Method Blank 03-024 MB	<1	<1	<1	<3	<100	123

Date of Report: 01/20/23
Date Received: 01/16/23
Project: FTA AST Release 40535 498, F&BI 301216
Date Extracted: 01/17/23
Date Analyzed: 01/17/23

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL10 AND MOTOR OIL USING METHOD NWTPH-Dx

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Diesel Range (C_{10}-C_{25})	Motor Oil Range (C_{25}-C_{36})	Surrogate (% Recovery) (Limit 50-150)
MW1 301216-01	<50	<250	126
MW4 301216-02	59 x	<250	127
MW6 301216-03	310 x	<250	130
Method Blank 03-165 MB	<50	<250	125

Date of Report: 01/20/23
Date Received: 01/16/23
Project: FTA AST Release 40535 498, F&BI 301216

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 301174-02 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 20)
Benzene	ug/L (ppb)	<1	<1	nm
Toluene	ug/L (ppb)	<1	<1	nm
Ethylbenzene	ug/L (ppb)	<1	<1	nm
Xylenes	ug/L (ppb)	<3	<3	nm
Gasoline	ug/L (ppb)	<100	<100	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	ug/L (ppb)	50	110	70-130
Toluene	ug/L (ppb)	50	106	70-130
Ethylbenzene	ug/L (ppb)	50	102	70-130
Xylenes	ug/L (ppb)	150	107	70-130
Gasoline	ug/L (ppb)	1,000	99	70-130

Date of Report: 01/20/23
Date Received: 01/16/23
Project: FTA AST Release 40535 498, F&BI 301216

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	ug/L (ppb)	2,500	124	136	70-130	9

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The analyte is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits due to sample matrix effects.

j - The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

301216

SAMPLE CHAIN OF CUSTODY

01-16-23 VW3/C2

Page # 1 of 1

Report To Ken Nogeire

Company PBS

Address 214 E Galer St Suite 300

City, State, ZIP Seattle WA 98102

Phone _____ Email Ken.nogeire@pbsusa.com
Sarah.newport@pbsusa.com

SAMPLERS (*signature*)

PROJECT NAME: PTA AST Release

PO #: 40535.498

REMARKS

Project specific RLs? - Yes / No

INVOICE TO

TURNAROUND TIME
- ☒ Standard turnaround
- ☐ RUSH _____
- Rush charges authorized by: _____

SAMPLE DISPOSAL
- ☐ Archive samples
- ☐ Other _____
- Default: Dispose after 30 days

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	NWTPH-Dx	NWTPH-Gx	BTEX EPA 8021	NWTPH-HCID	VOCs EPA 8260	PAHs EPA 8270	PCBs EPA 8082					Notes
						ANALYSES REQUESTED											
MW1	01 A-D	1/13/2023	14:45	GW	4	X	X	X									
MW4	02	1/13/2023	16:00	GW	4	X	X	X									
MW6	03	1/13/2023	12:45	GW	4	X	X	X									
MW7	04 A-C	1/13/2023	13:45	GW	3		X	X									

Samples received at 4

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Sarah Newport	PBS	1/16/23	9:56
Received by:	Liz Webber-Burge	FB	1/16/23	856
Relinquished by:				
Received by:				

Friedman & Bruya, Inc.
Ph. (206) 285-8282

Over the course of 26 hours, approximately 3,100 gallons of contaminated water (30,000 µg/L gasoline) was removed from the source area (MW-2) and disposed of to the on-site water treatment system.

Remedial groundwater pumping information is presented in Table 4.

5.2 Interim Remedial Action Groundwater Monitoring

Monitoring was undertaken at the discharge point for the purpose of evaluating the effectiveness of the interim action using the following procedures:

- Depth to water measurements at MW-2 and MW-3 were collected every 2-hours during groundwater removal using a down-hole water level meter.
- Groundwater field parameters (conductivity, pH, temperature, dissolved oxygen, and oxidation-reduction potential) were measured at the discharge point every four hours during groundwater removal events using a YSI Model 556MSP water-quality analyzer.
- Groundwater samples were collected from the discharge point at the start of pumping, at select times during pumping, and prior to ceasing the pumping event.

Samples were collected directly into HCl preserved 40-milliliter vials and sent to the project laboratory for the following analyses:

- Gasoline range TPH by Method NWTPH-Gx
- Benzene, toluene, ethylbenzene, and xylenes by EPA Method 8021

Groundwater analytical results are presented in Table 2.

Copies of the laboratory report and chain-of-custody documentation are presented in Appendix D.

6 SUMMARY AND CONCLUSIONS

Regarding environmental site characterization and interim action conducted at the Fire Training Academy AST System release, the following summary and conclusions are presented:

- On August 6, 2021, a release from one AST (Fuel Tank #1) of the AST system was discovered. The AST contained aviation gas, which released from the bottom of the AST and flowed from the containment area through a drain line and connected to the "burn pad" training facility drainage system, which in turn flowed into the site's oil/water separation and treatment pond system.
- Site characterization was undertaken in accordance with a Sampling and Analysis Plan (SAP): *Sampling and Analysis Plan - AST System Fuel Release* (PBS, November 11, 2021), which was developed for the site.
- Site Characterization activities include drilling soil borings to allow for soil and groundwater sampling. Groundwater monitoring wells were installed in seven of those locations.
- 26 soil samples were collected from the borings. Concentrations of benzene exceeded the State Cleanup Level (CUL) in three samples located in close proximity to the release. Concentrations of analyzed contaminants did not exceed the CULs in the remaining sample locations.

- Several groundwater sampling events have been conducted. TPH and BTEX concentrations exceeded the CULs in samples collected from sample points BH2-W and BH4-W, and from monitoring wells MW-2, MW-3, MW-4, and MW-6. Analyzed contaminants of concern were not detected above cleanup levels in the remaining wells. Contaminated groundwater is predominantly located in the area south of the ASTs and extending south under the "burn pad".
- Groundwater investigation results include "clean" groundwater (analyzed contaminants of concern were not detected above CULs) in the upgradient well, both cross-gradient locations, and the downgradient location. The "clean" downgradient location MW-7 is relatively far from the release (640-feet), but is an important data point, as it is directly hydraulically downgradient and is between the release and surface water features.
- The magnitude and extent of soil and groundwater contamination is considered to be substantially defined at this time.
- Interim remedial action - groundwater removal was undertaken at the most heavily contaminated groundwater source area. Over the course of 26 hours, approximately 3,100 gallons of contaminated water (30,000 µg/L gasoline) was removed from the source area and disposed of to the on-site water treatment system.

7 LIMITATIONS

PBS has prepared this report for use by the Washington State Patrol and Dept. of Enterprise Services and is not intended for use by others without the written consent of PBS. The findings and conclusions of this report are based on professional judgment concerning the significance of the data gathered during this investigation.

Sincerely,
PBS Engineering and Environmental Inc.

Digitally signed by Ken Nogeire
Date: 2023.03.23 10:40:26 -07'00'

Ken Nogeire, LHG
Senior Hydrogeologist

Reviewed by: Sarah Newport