GeoEngineers

Memorandum

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To:	Sandra Treccani and Katie Larimer; Washington State Department of Ecology
From:	Bruce Williams and JR Sugalski, PE
Date:	May 3, 2018
File:	0110-148-06
Subject:	Riverfront Park Revitalization – Pavilion Construction and Soil Reuse

INTRODUCTION AND OBJECTIVE

Riverfront Park (Park) is currently undergoing revitalization as part of a municipal bond approved in 2014. This memorandum summarizes anticipated construction activities, particularly with respect to using soil as fill material and managing stormwater for the renovation of the Pavilion at Riverfront Park (park). Riverfront Park and the Pavilion are shown on the Vicinity Map, Figure 1.

The objective of this memorandum is to describe the Pavilion construction project in sufficient detail for you to render an opinion about the proposed approach, which was verbally described to you in general terms during a site walk on September 22, 2017. Construction plans include the reuse of soil from other areas of the park where chemical analysis from representative soil samples indicated concentrations of arsenic, cadmium, lead and/or polycyclic aromatic hydrocarbons (PAHs) were greater than Model Toxics Control Act (MTCA) Method A cleanup levels for unrestricted land use (CULs). The soil proposed for reuse was excavated from the Ice Ribbon and Looff Carousel projects and currently is temporarily stockpiled at the North Bank portion of the park. In addition, soil excavated from the Central Green and Howard Street Promenade projects, which will be constructed simultaneously with the Pavilion project, will be reused at the Pavilion Project. These project areas are shown on Site Plan, Figure 2.

Proposed reuse of the soil and the planned construction techniques are designed to manage the soil in a manner that protects human health and the environment, complies with applicable regulations and provides a cost-effective solution. We request Washington State Department of Ecology's (Ecology) opinion of the proposed approach described in this memorandum through the Voluntary Cleanup Program (VCP), Site CSID 13026, VCP project number EA0318.

PAVILION SITE CHARACTERIZATION

Before Riverfront Park was established as part of the World's Fair of 1974 (Expo 74), it was occupied by many industrial facilities and as a result, contaminants of concern (COCs) associated with historical industrial use have been identified in shallow soil parkwide. Soil sampling conducted in the park (GeoEngineers 2016b and c) has identified the following COCs greater than the CULs:

- PAHs;
- Lead;
- Cadmium;
- Arsenic; and

- Diesel- and oil-range petroleum hydrocarbons.

The current site of the Pavilion was previously occupied by a mattress manufacturing facility, Travel Lodge Motel, the Spokane Flower Growers' Association and Havermale Avenue which connected Howard Street and Washington Street along Havermale Island. An automobile service station, previously located at the intersection of Howard Street and Havermale Avenue, was also present. A map of the area before the Pavilion was constructed is provided on 1970 Map of the Pavilion Area, Figure 3. These structures housing the businesses mentioned above and Havermale Avenue were abandoned or demolished and a significant amount of fill of unknown origin was placed over the area to construct the Pavilion in 1973 in preparation for Expo 74.

The Pavilion is a conical-shaped structure approximately 380 feet in diameter at the bottom and tapering to a 50-foot diameter top to form a tent shape. A concrete ring wall separated into east and west sections supports a steel wire net. A center column supports an upper retaining ring and netting to create the tent shape. A former science center building and skate rental building are located along the east ring wall within the interior of the Pavilion. An ice skating rink and bleacher type seating are located near the center of the Pavilion. The ice rink includes a glycol system and mechanical equipment for cooling purposes. The west ring wall of the Pavilion includes a former arcade, administration offices and a connection to the former IMAX theater building.

In 2015, 17 painted concrete locations at the IMAX-Administration Buildings and 8 locations at the Science Building were tested using an X-ray fluorescence (XRF) machine (Fulcrum 2015a and 2015b). Results of each test were negative for the presence of lead, indicating lead-based paint is not present in these structures. Assuming the 25 locations tested are representative of painted concrete surfaces at the site, elevated lead concentrations in the concrete are not anticipated.

Geotechnical drilling at the Pavilion was conducted on January 22 and 23, 2018 and included advancing five hollow stem auger borings (USP-1 through USP-5) and rock coring at four locations. Soil samples were collected during drilling/coring and one sample from each location was submitted for chemical analysis to characterize the existing soil in and around the Pavilion. Locations of the explorations are shown on Exploration Locations and Analytical Results: US Pavilion Event Center, Figure 4. Samples collected from about 3½ to 5 feet below ground surface (bgs) (except for location USP-3, which was collected from about 1 to 2½ feet bgs) were submitted for chemical analysis in accordance with the Soil Management Plan (SMP) (GeoEngineers 2016a). The soil sample from 3½ to 5 feet bgs at location USP-4 was selected as the sample for chemical analysis as a result of a slightly elevated vapor headspace reading of 7 parts per million (ppm). Field screening of the samples generally did not indicate the presence of contamination beyond the slightly elevated photoionization detector (PID) reading.

Soil samples were submitted for analysis of PAHs, petroleum hydrocarbons (gasoline-, diesel-, and oil-range), and metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium and silver). The sample from boring USP-4 was also analyzed for volatile organic compounds (VOCs) and Toxicity Characteristic Leaching Procedures (TCLP) lead. Chemical analysis indicated detectable PAHs were present in each boring, and at two locations (USP-1 and USP-4), the PAH concentrations were greater than the MTCA Method A cleanup level. Petroleum hydrocarbons, and VOCs were less than detection limits. Metal concentrations were less than MTCA Method A cleanup levels for each analyzed sample and leachable lead in the sample from USP-4 was less than dangerous waste criteria. Chemical analysis results are summarized in attached Soil Chemical Analytical Results – US Pavilion, Table 1. Laboratory chemical analysis reports are attached.

Geotechnical drilling at the site indicated that the Pavilion was constructed on loose to medium dense sand, gravel and debris fill. Debris observed in the explorations include pieces of brick, concrete, glass and plastic. Bedrock was encountered at depths of about 12½ to 14 feet bgs near the lowest part of the Pavilion starting from the surface of the former ice skating rink. Measurable groundwater was not encountered in the borings.

SOIL CHARACTERIZATION

To reduce project costs and beneficially reuse suitable soil (from a geotechnical standpoint), a Soil Management Plan (GeoEngineers 2016a) was developed in consultation with Ecology through the VCP to provide guidelines on testing, handling and reusing clean, impacted and contaminated soil at the site. In general accordance with the SMP, Spokane Parks proposes to utilize impacted and contaminated soil from the Ice Ribbon, Looff Carousel, Howard Street Promenade and Central Green Projects in a large embankment fill inside the Pavilion. Locations of each project are provided on Figure 2.

Soil excavated during construction of the Ice Ribbon and Looff Carrousel was temporarily stockpiled on the North Bank of the park (Figure 2), until design details for the Pavilion and North Bank were developed (GeoEngineers 2016d). Additional soil sampling of the stockpiled material has not been conducted because that soil was adequately characterized during the geotechnical investigation for the Ice Ribbon and Looff Carrousel.

Soil from the Howard Street Promenade is characterized by borings DP-9, DP-11 through DP-13, and DP-19 through DP-25 as identified in the Phase II Site assessment report (GeoEngineers 2016e). Soil from the Central Green is characterized by borings DP-26, DP-27, DP-29, DP-30 and DP-34 through DP-40. Sample locations on the Howard Street Promenade and Central Green are shown on Exploration Locations and Analytical Results: Howard Street Promenade, Figure 5.

As part of the Howard Street Promenade revitalization project and utility corridor construction, soil from the Howard Street Promenade and Central Green will be excavated and placed into the Pavilion in addition to soil from the Ice Ribbon and Looff Carousel projects. Table 2 summarizes chemical analytical results greater than MTCA Method A Cleanup Levels for samples collected from each of the four project areas.

TABLE 2: SUMMARY OF CHEMICAL ANALYTICAL RESULTS GREATER THAN MTCA METHOD A

Parameter	MTCA Method A Cleanup Level	Ice Ribbon	Looff Carousel	Howard Street Promenade	Central Green
Arsenic (mg/kg)	20	47	None	None	None
Cadmium (mg/kg)	2	6.8	None	2.4	15
Lead (mg/kg)	250	340 – 3,600	730	540 - 1,300	300 – 1,800
Calculated cPAHs TEQ (µg/kg)	100	109 – 1,296	111 – 28,210	106-950	135 – 4,609
Lube Oil Range Hydrocarbons (mg/kg)	2,000	2,800	5,600	2,200 - 10,000	2,500 – 3,000
Diesel Range Hydrocarbons (mg/kg)	2,000	None	None	2,800 - 6,700	None

Notes:
mg/kg = milligrams per kilogram, µg/kg = micrograms per kilogram, TEQ = toxic equivalence quotient, cPAHS = carcinogenic polycyclic aromatic hydrocarbons

The soil encountered near the Ice Ribbon project (GeoEngineers 2016b), the Looff Carousel project (GeoEngineers 2016c) and Howard Street Promenade and Central Green (GeoEngineers 2016e) generally consisted of granular material (fine to medium sand and loose to medium dense sand and gravel with variable silt and cobble content).

SUMMARY OF PROPOSED ACTION

The proposed action includes demolition of select features near the Pavilion including the IMAX, skate rental and science center buildings. The ice rink will remain in place and it will be fractured to prevent water from ponding on the surface. The bleacher seating area, canopy covering the ice rink and other features will be demolished. The west ring wall and administration areas will generally remain intact and the interior and exteriors will be remodeled.

The Pavilion design includes a theater space with a terraced embankment approximately 35 feet high along the east ring wall with an overall slope of about 5 feet horizontal to 1 foot vertical (5:1). A level performing area in front of the west ring wall will be finished with asphalt and concrete surface. An elevated platform supported by four columns and cable supports will be constructed over the terraced area. A conceptual drawing of the feature is provided on Conceptual Design: US Pavilion Event Center, Figure 6.

Concrete from the former structures will be crushed within the Pavilion and stockpiled. As previously mentioned, paint in various locations throughout the demolished buildings was tested for lead using an XRF and the results did not indicate the presence of lead paint (Fulcrum 2015a and 2015b).

Earthwork

To create the terraced embankment, approximately 25,000 cubic yards (CY) of soil and crushed concrete will be placed onto the existing ground surface, compacted and graded. Crushed concrete from the demolished building will be used as the first source of fill for the terraced area. When the crushed concrete source is exhausted, contaminated and impacted soil stockpiled on the North Bank will be used. The soil stockpiled on the North Bank was sourced from the Ice Ribbon and Looff Carousel projects. Additional soil for the terraced area will be sourced from the Central Green and the Howard Street Promenade. Clean imported fill will then be used for the remaining fill volume and encapsulate the contaminated and impacted soil in accordance with the SMP.

Soil stockpiled on the North Bank did not visually indicate the presence of petroleum contamination during excavation and stockpiling. The Phase II site assessment conducted for the project, indicated the presence of petroleum contamination in the Howard Street Promenade and Central Green area (GeoEngineers 2016e). Soil excavated from the Howard Street Promenade and Central Green will be visually screened for petroleum contamination and if petroleum contamination is identified, the soil will be segregated and excluded from use in the fill for the terraced area.

The crushed concrete (3,000 to 4,000 CY), North Bank stockpile (6,000 to 8,000 CY after screening) and Central Green (3,000 to 4,000 CY) on-site fill sources are expected to provide approximately 12,000 to 16,000 CY of fill and therefore an additional 9,000 to 13,000 CY of fill will need to be imported from an off-site source to create the terraced embankment. Imported fill will meet the SMP criteria for clean or impacted soil. Contaminated soil will not be imported from off-site.

Crushed concrete and soil from onsite sources will be placed first. The contaminated soil will be placed at least 8 feet horizontally from the finished grade of the embankment. After contaminated soil placement, orange safety fence will be placed over the contaminated soil. The orange safety fence will provide a visual indicator to identify the transition between clean and contaminated soil. After placing the orange fencing, imported fill will be used to construct the remaining portion of the embankment. The remaining 9,000 to 13,000 CY of imported soil will ensure at least 1 foot of clean cover soil is placed over the contaminated soil, but it is likely that in most areas the contaminated soil will be covered by several feet of clean soil.

The terraced embankment will be finished with grass turf, paths of concrete, concrete pavers and retaining walls. An underground irrigation system will be installed to maintain the turf. Because the contaminated soil will be placed at least 8 feet horizontally from the finished surface, construction of the proposed retaining walls and pathways are not expected to intercept the contaminated soil. A conceptual profile of the embankment provided on Conceptual Site Section, Figure 7.

Stormwater Management

The slope of the embankment fill will generally promote runoff to the west, although some of the leveled areas could allow for disbursed infiltration, especially during periods of snow accumulation. Heavy precipitation or snow melt with saturated ground conditions are expected to direct stormwater to the impervious Pavilion floor. Stormwater that reaches the Pavilion floor will be directed to a stormwater treatment system before discharge to the Spokane River. The stormwater treatment system will be designed to remove metals and phosphorous in accordance with the city of Spokane and eastern regional stormwater management manual. Parks staff will be trained in maintaining the stormwater treatment system in accordance with the manufacturer's recommendations. After treatment by the stormwater treatment system, treated stormwater will be directed to an existing 12-inch diameter pipe that discharges directly to the Spokane River. The Pavilion design minimizes stormwater infiltration through the contaminated soil at the site and promotes routing of stormwater runoff to a stormwater treatment system before it is discharged to the Spokane River.

SUMMARY

As part of the redevelopment of Riverfront Park, soil from other projects at the park with COCs greater than MTCA Method A cleanup levels for unrestricted land use will be used as embankment fill for the Pavilion improvement project. This is a cost-effective and beneficial use of the soil. The embankment fill for the Pavilion will be constructed to minimize the chance of contaminant migration and to protect human and ecological receptors. The proposed embankment construction is expected to prevent dermal contact or ingestion of contaminated soil which are the primary exposure pathways for site COCs. Stormwater infiltration through the embankment will be minimized, and contaminant mobilization from the soil because of infiltrating stormwater is not anticipated.

The primary COCs include PAHs and metals. PAHs generally have an octanol-water partition coefficient ($LogK_{ow}$) greater than 5 (NTP 2016) which indicates they are hydrophobic have higher soil adsorption properties. This indicates that PAHs tend to adsorpt to soil particles and they are not readily mobilized into water. Toxicity Characteristic Leaching Procedure (TCLP) testing further indicated that PAHs are not readily leached from the soil since PAH concentrations were less than laboratory reporting limits for each sample analyzed performed on three samples from the Ice Ribbon project (GeoEngineers 2016b).

Multiple TCLP tests for arsenic, cadmium and lead (GeoEngineers 2016b, c and e) have indicated that the soil doesn't designate as a Washington state dangerous waste in accordance with Washington Administrative Code (WAC) 173-303. This TCLP testing also indicates that there is a lower probability of these heavy metals mobilizing from the soil and into groundwater.

Embankment construction will occur above the groundwater table and therefore migration of contaminant from the soil and into groundwater is not anticipated. Utilities including potable water sources will not be located within the extents of the impacted or contaminated soil.

Site grading and use of impermeable surfaces are expected to minimize precipitation infiltration into the soil. A stormwater treatment system capable of reducing metal concentrations from the water will be installed before stormwater is discharged to the Spokane River.

REFERENCES

Fulcrum, 2015a. "Hazardous Building Materials Inspection Report, Admin-IMAX Building, Riverfront Park, Spoane Washington". Fulcrum Project No. 151529.00, December 18, 2015

Fulcrum, 2015b. "Hazardous Building Materials Inspection Report, Science Building, Riverfront Park, Spoane Washington". Fulcrum Project No. 151529.00, December 18, 2015

GeoEngineers, Inc. 2016a. "Soil Management Plan, Riverfront Park Redevelopment, Spokane, Washington." GEI File No. 0110-148-04.

GeoEngineers, Inc. 2016b. "Geotechnical Engineering Evaluation and Environmental Site Assessment, Riverfront Park Ice Ribbon and Skyride Facility, Spokane, Washington." GEI File No. 0110-148-04.

GeoEngineers, Inc. 2016c. "Geotechnical Engineering Evaluation and Environmental Site Assessment, Riverfront Park Looff Carousel, Spokane, Washington." GEI File No. 0110-148-04.

GeoEngineers, Inc. 2016d. "Soil Stockpile Management Plan " GEI File No. 0110-148-06.

GeoEngineers, Inc. 2016e. "Phase II Assessment Report, Riverfront Park, Spokane, Washington." GEI File No. 0110-148-06.

NTP (National Toxicology Program). 2016. Report on Carcinogens, Fourteenth Edition.; Research Triangle Park, NC: U.S. Department of Health and Human Services, Public Health Service. https://ntp.niehs.nih.gov/go/roc14/.

Washington State Department of Ecology. 2007. Model Toxics Control Act Cleanup Regulations, Washington Administrative Code, Chapter 173-340.

Attachments:

Table 1. Soil Chemical Analytical Results – US Pavilion

Figure 1. Vicinity Map

Figure 2. Site Plan

Figure 3. 1970 Map of the Pavilion Area

Figure 4. Exploration Locations and Analytical Results: US Pavilion Event Center

Figure 5. Exploration Locations and Analytical Results: Howard Street Promenade

Figure 6. Conceptual Design: US Pavilion Event Center

Figure 7. Conceptual Site Section

Pavillion Area Chemical Analysis Laboratory Reports

Cc: Berry Ellison
City of Spokane, Parks and Recreation

Table 1

Soil Chemical Analytical Results[1]

Riverfront Park - Pavilion Geotechnical and Environmental Investigation

Spokane, Washington

Analyte and Parameter	MTCA Method A Cleanup level[2]	Spokane Basin Background Metal Concentration[3]	Units	Sample ID, Depth and Date				
				USP-1 USP-1 (3.5-5') 1/22/2018	USP-2 USP-2 (3.5-5') 1/23/2018	USP-3 USP-3 (1-2.5') 1/23/2018	USP-4 USP-4 (3.5-5')[11] 1/23/2018	USP-5 USP-5 (3.5-5') 1/23/2018
Total Petroleum Hydrocarbons[4]								
Diesel-range hydrocarbons	2,000	NE	mg/Kg	110 U	110 U	96 U	100 U	100 U
Lube Oil-range hydrocarbons	2,000	NE	mg/Kg	110 U	110 U	96 U	100 U	100 U
Gasoline-range hydrocarbons	100	NE	mg/Kg	44 U	42 U	39 U	41 U	41 U
Metals[5]								
Arsenic	20	9.34	mg/Kg	**8.2**	**14**	**15**	**13**	**9.8**
Barium	NE	NE	mg/Kg	**87**	**48**	**51**	**94**	**34**
Cadmium	2	0.7	mg/Kg	1.9 U	2.2 U	2.1 U	2.3 U	1.9 U
Chromium[6]	2,000	17.8	mg/Kg	**9.8**	**9.7**	**8.8**	**11**	**8.1**
Lead	250	14.9	mg/Kg	**84**	**9.6**	**9.5**	**150**	**8.1**
TCLP Lead[7]	5 [7]	NE	mg/L	--	--	--	**0.44**	--
Mercury	2,000	20	µg/kg	**180**	26 U	24 U	**310**	23 U
Selenium	NE	NE	mg/Kg	7.7 U	9.0 U	8.5 U	9.2 U	7.7 U
Silver	NE	NE	mg/Kg	1.9 U	2.2 U	2.1 U	2.3 U	1.9 U
PAHs[8]								
1-Methylnaphthalene	NE	NE	µg/kg	11 U	10 U	10 U	**49**	10 U
2-Methylnaphthalene	NE	NE	µg/kg	11 U	10 U	10 U	**47**	10 U
Naphthalene	5,000	NE	µg/kg	11 U	10 U	10 U	**43**	10 U
Acenaphthene	NE	NE	µg/kg	**16**	10 U	10 U	**120**	10 U
Acenaphthylene	NE	NE	µg/kg	11 U	10 U	10 U	**47**	10 U
Anthracene	NE	NE	µg/kg	**46**	10 U	**11**	**300**	10 U
Benzo(a)anthracene	NE	NE	µg/kg	**110**	10 U	**23**	**500**	10 U
Benzo(a)pyrene	100	NE	µg/kg	**130**	10 U	**26**	**540**	**12**
Benzo(b)fluoranthene	NE	NE	µg/kg	**130**	10 U	**30**	**540**	**16**
Benzo(g,h,i)perylene	NE	NE	µg/kg	**100**	**10**	**20**	**370**	**22**

Analyte and Parameter	MTCA Method A Cleanup level[2]	Spokane Basin Background Metal Concentration[3]	Units	Sample ID, Depth and Date				
				USP-1 USP-1 (3.5-5') 1/22/2018	USP-2 USP-2 (3.5-5') 1/23/2018	USP-3 USP-3 (1-2.5') 1/23/2018	USP-4 USP-4 (3.5-5')[11] 1/23/2018	USP-5 USP-5 (3.5-5') 1/23/2018
Benzo(k)fluoranthene	NE	NE	µg/kg	**59**	10 U	**12**	**240**	10 U
Chrysene	NE	NE	µg/kg	**130**	10 U	**27**	**560**	10 U
Dibenzo(a,h)anthracene	NE	NE	µg/kg	**22**	10 U	10 U	**81**	10 U
Fluoranthene	NE	NE	µg/kg	**240**	10 U	**58**	**1100**	**11**
Fluorene	NE	NE	µg/kg	**14**	10 U	10 U	**100**	10 U
Indeno(1,2,3-c,d)pyrene	NE	NE	µg/kg	**75**	10 U	**16**	**290**	**13**
Phenanthrene	NE	NE	µg/kg	**190**	10 U	**46**	**1100**	10 U
Pyrene	NE	NE	µg/kg	**250**	10 U	**59**	**1300**	**13**
Total cPAH TEQ[9](ND=0.5RL)[10]	100	NE	µg/kg	**170.9**	7.55 U	**34.87**	**710.7**	**16.45**

Notes

[1]Samples analyzed by TestAmerica Laboratories, Inc. located in Spokane Valley, Washington.

[2]Model Toxics Control Act (MTCA) Method A unrestricted land use cleanup levels (CUL).

[3]Background soil concentration based on the Washington State Department of Ecology (Ecology) natural background 90th percentile value for the Spokane basin (Ecology 1994)

[4]Total petroleum hydrocarbon analyzed by EPA Method TPH-HCID

[5]Metals analyzed using EPA Method 6010C. Mercury by EPA Method 7471B.

[6]Chromium III cleanup level. MTCA Method A cleanup level for Chromium VI is 19 mg/kg.

[7]Washington dangerous waste regulations (WAC 173-303) toxicity characteristic leaching procedure (TCLP) limit for lead is 5.0 mg/L.

[8]Polycyclic aromatic hydrocarbons analyzed using EPA Method 8270DSIM.

[9]Carcinogenic PAH (cPAH) toxic equivalency (TEQ) calculated using toxicity equivalency factors (TEF) from MTCA Table 708-2, based on methodology described in MTCA Cleanup Regulation Washington Administrative Code (WAC) 173-340-708.

[10]The TEQ reported was calculated using half the laboratory reporting limits for cPAHs less than reporting limits.

[11]Sample USP-4(3.5-5') was analyzed for volatile organic compounds (VOCs) by Environmental Protection Agency (EPA) Method 8260; the sample did not have detections of VOCs greater than laboratory reporting limits.

mg/kg = milligrams per kilogram; mg/L = milligrams per liter; NE = not established; µg/kg = micrograms per kilogram;

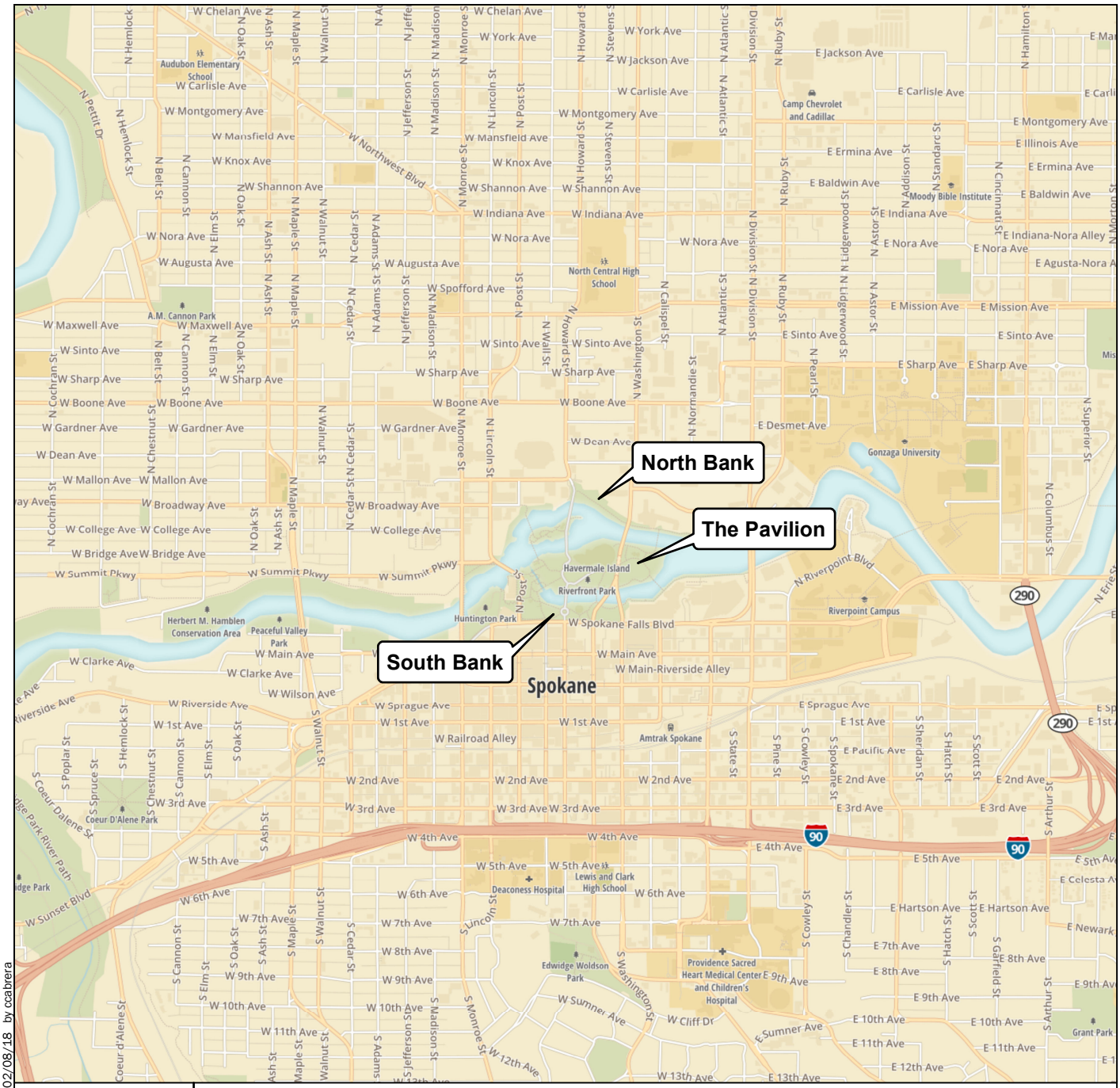
U = analyte was not detected above the laboratory reporting limit.

Bold indicates that the analyte was detected above the reporting limit.

Bold and shaded indicates that the analyte was detected above the MTCA Method A CUL.

Gold shading indicates the reporting limit was greater than or equal to the MTCA Method A CUL.

Blue shading indicates the reported concentration was greater than twice the Spokane basin background concentration (Ecology 1994).



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Vicinity Map

Riverfront Park
Spokane, Washington

GeoEngineers

Figure 1

Notes:

1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Data Source: Mapbox Open Street Map, 2016

Projection: NAD 1983 UTM Zone 11N

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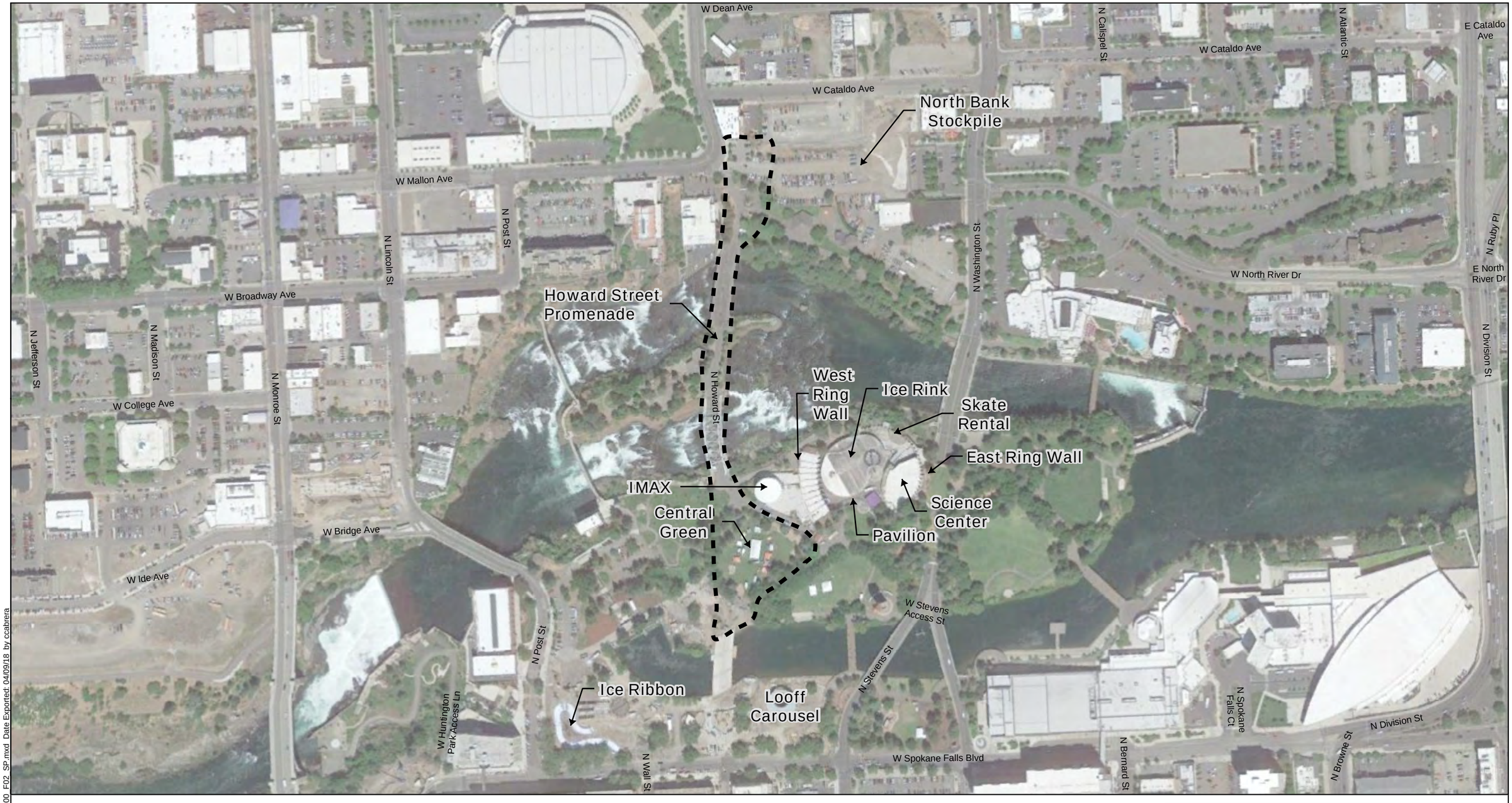

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Data Source: June 2017 image from Google Earth Pro.

Projection: NAD 1983 StatePlane Washington North FIPS 4601 Feet

Legend

General Area to be Excavated Concurrent with Pavilion Construction

N
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300 0 300
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Site Plan

Riverfront Park
Spokane, Washington

GeoEngineers

Figure 2

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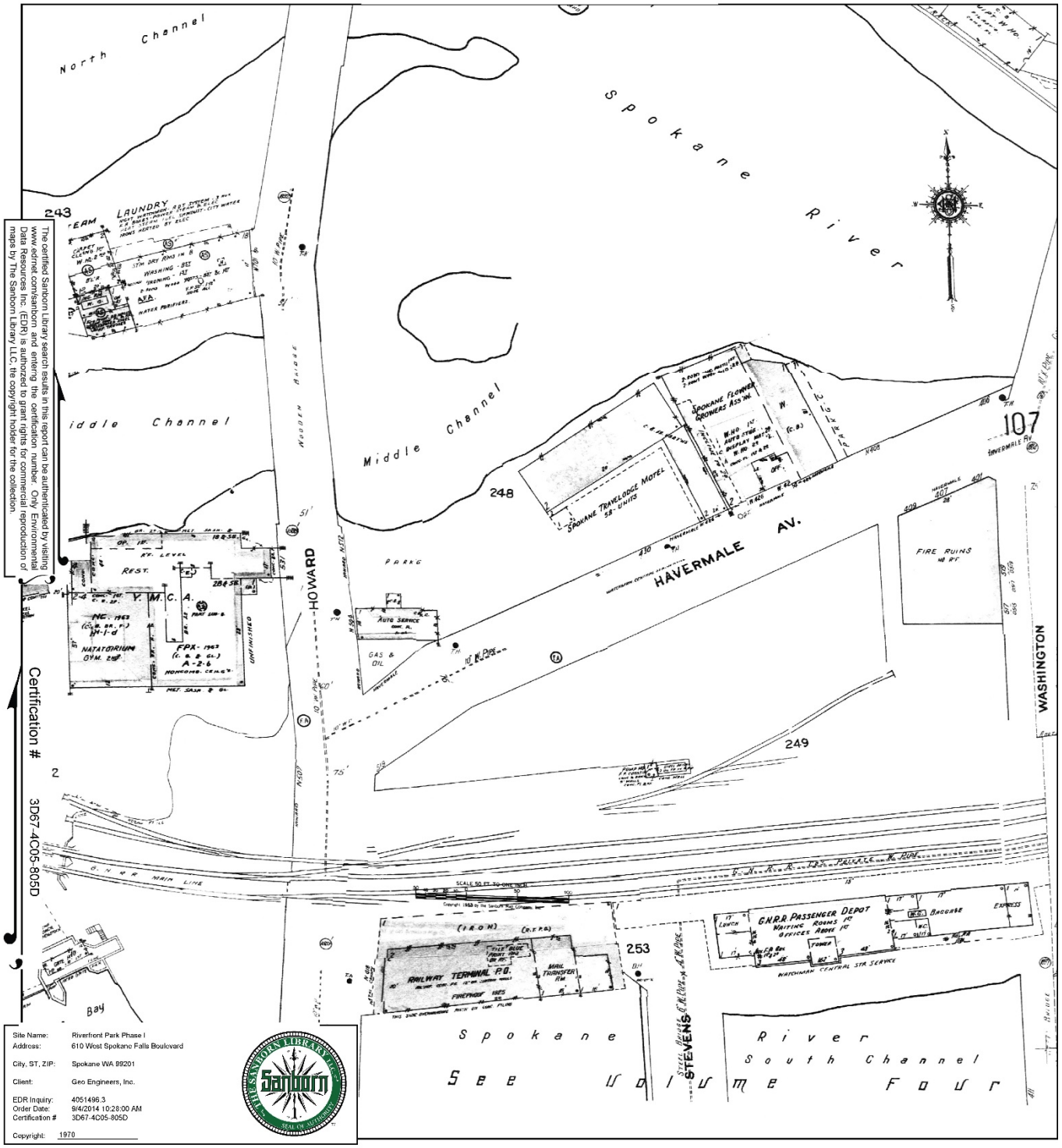
1970 Certified Sanborn Map



This Certified Sanborn Map combines the following sheets.
Outlined areas indicate map sheets within the collection.

0 Feet 165 330 660

1970 Map of the Pavilion Area

Riverfront Park
Spokane, WA

GeoEngineers

Figure 3

Notes:

1. The locations of all features shown are approximate.
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Data Source: The Sanborn Library , LLC

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Notes:
1. The locations of all features shown are approximate.
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3. Locations identified as TP-1 through TP-14 completed by CH2M Hill in 2000.

Data Source: Current Imagery flown by Spokane Regional Orthophoto Consortium .

Projection: NAD 1983 StatePlane Washington North FIPS 4601 Feet

Legend

- Contaminated – Concentration greater than MTCA Method A Cleanup Level for one or more COC analyzed
- Impacted – Concentration less than MTCA Method A Cleanup Levels and greater than laboratory reporting limits or twice the available background metals concentration for each COC analyzed
- Clean – Concentration less than laboratory reporting limits or near available background metals concentrations for each COC analyzed

- TPH
- Metals
- PAH

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Feet

Exploration Locations and Analytical Results: US Pavilion Event Center

Riverfront Park
Spokane, Washington

GeoEngineers

Figure 4

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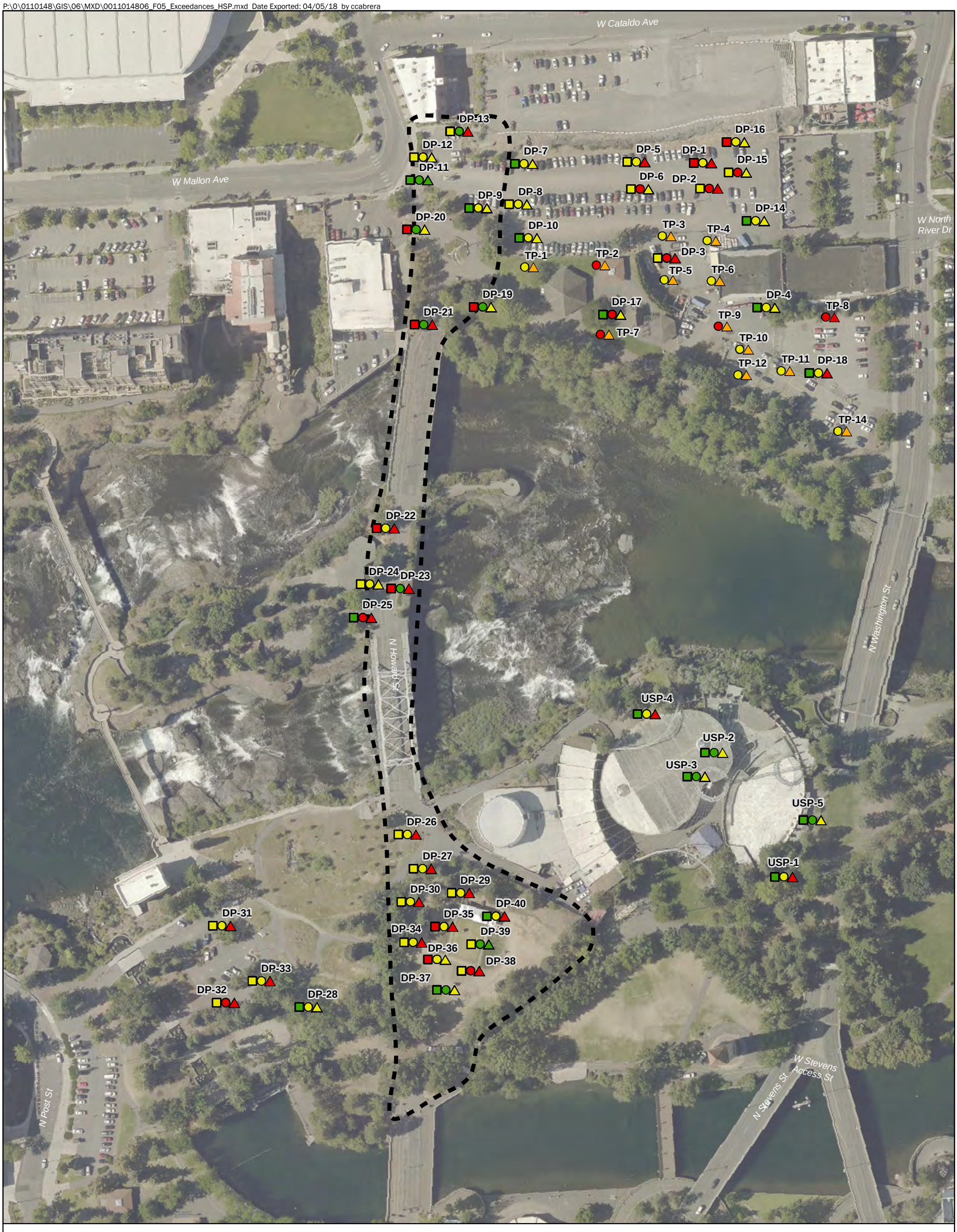


Legend

- Contaminated – Concentration greater than MTCA Method A Cleanup Level for one or more COC analyzed
- Contaminated – COCs were not detected, however laboratory reporting limits were greater than the MTCA Method A Cleanup levels
- Impacted – Concentration less than MTCA Method A Cleanup Levels and greater than laboratory reporting limits or twice the available background metals concentration for each COC analyzed
- Clean – Concentration less than laboratory reporting limits or near available background metals concentrations for each COC analyzed
- TPH
- Metals
- PAH
- East Bank Promenade

Notes:

1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
3. Locations identified as TP-1 through TP-14 completed by CH2M Hill in 2000.

Data Source: Current Imagery flown by Spokane Regional Orthophoto Consortium .

Projection: NAD 1983 StatePlane Washington North FIPS 4601 Feet

N W E S

150 0 150

Feet

Exploration Locations and Analytical Results: Howard Street Promenade

Riverfront Park, US Pavilion Event Center
Spokane, Washington

GeoEngineers

Figure 5

Not to Scale

Conceptual Design: US Pavilion Event Center

Riverfront Park
Spokane, Washington

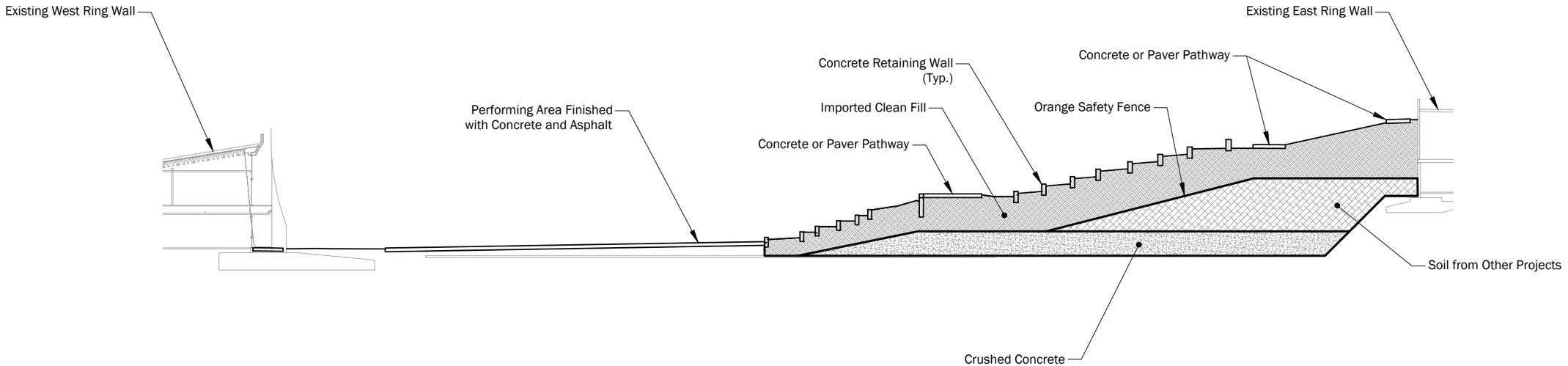
GeoEngineers

Figure 6

Notes:

1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Data Source:



Notes:

1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Data Source: Sheet L5.03 "Overall Site Sections" of the Riverfront Park US Pavillion by Berger dated 12/19/17.

30 0 30
Feet

Conceptual Site Section

Riverfront Park, US Pavilion Event Center
Spokane, Washington

GeoEngineers

Figure 7

P:\0\0110148\CAD\06\Pavilion Memo to Ecology\011014806_F07_Cross-Section.dwg TAB:11x17 Landscape Date Exported: 04/02/18 - 9:45 by tmichaud

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Spokane
11922 East 1st Ave
Spokane, WA 99206
Tel: (509)924-9200

TestAmerica Job ID: 590-7906-1
Client Project/Site: Riverfront Park (0110-148-06)

For:
GeoEngineers Inc
523 East Second Ave
Spokane, Washington 99202

Attn: JR Sugalski

Authorized for release by:
1/29/2018 3:41:12 PM

Randee Arrington, Project Manager II
(509)924-9200
randee.arrington@testamericainc.com

Table of Contents

Case Narrative

Client: GeoEngineers Inc
Project/Site: Riverfront Park (0110-148-06)

TestAmerica Job ID: 590-7906-1

Job ID: 590-7906-1

Laboratory: TestAmerica Spokane

Narrative

Receipt
The samples were received on 1/23/2018 4:45 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.6º C.

Receipt Exceptions
Analysis for NWTPH-HCID, 8270D SIM PAHs and Metals for the following sample was put on hold by the client on 01/24/2018: USP-1 (13.5-15') (590-7906-4). This analysis was originally requested on the chain-of-custody (COC).

The following sample was activated by the client on 01/24/2018: USP-1 (3.5-5') (590-7906-2).

GC/MS VOA
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

GC/MS Semi VOA
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

GC Semi VOA
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Metals
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Organic Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Sample Summary

Client: GeoEngineers Inc
Project/Site: Riverfront Park (0110-148-06)

TestAmerica Job ID: 590-7906-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
590-7906-2	USP-1 (3.5-5')	Solid	01/22/18 09:50	01/23/18 16:45
590-7906-6	USP-2 (3.5-5')	Solid	01/23/18 09:00	01/23/18 16:45
590-7906-8	USP-3 (1-2.5')	Solid	01/23/18 12:30	01/23/18 16:45
590-7906-10	USP-4 (3.5-5')	Solid	01/23/18 11:10	01/23/18 16:45
590-7906-14	USP-5 (3.5-5')	Solid	01/23/18 14:25	01/23/18 16:45

Definitions/Glossary

Client: GeoEngineers Inc
Project/Site: Riverfront Park (0110-148-06)

TestAmerica Job ID: 590-7906-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Client Sample ID: USP-1 (3.5-5')

Date Collected: 01/22/18 09:50
Date Received: 01/23/18 16:45

Lab Sample ID: 590-7906-2

Matrix: Solid
Percent Solids: 88.1

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	ND		11		ug/Kg	☼	01/24/18 09:57	01/24/18 11:11	1
2-Methylnaphthalene	ND		11		ug/Kg	☼	01/24/18 09:57	01/24/18 11:11	1
1-Methylnaphthalene	ND		11		ug/Kg	☼	01/24/18 09:57	01/24/18 11:11	1
Acenaphthylene	ND		11		ug/Kg	☼	01/24/18 09:57	01/24/18 11:11	1
Acenaphthene	**16**		11		ug/Kg	☼	01/24/18 09:57	01/24/18 11:11	1
Fluorene	**14**		11		ug/Kg	☼	01/24/18 09:57	01/24/18 11:11	1
Phenanthrene	**190**		11		ug/Kg	☼	01/24/18 09:57	01/24/18 11:11	1
Anthracene	**46**		11		ug/Kg	☼	01/24/18 09:57	01/24/18 11:11	1
Fluoranthene	**240**		11		ug/Kg	☼	01/24/18 09:57	01/24/18 11:11	1
Pyrene	**250**		11		ug/Kg	☼	01/24/18 09:57	01/24/18 11:11	1
Benzo[a]anthracene	**110**		11		ug/Kg	☼	01/24/18 09:57	01/24/18 11:11	1
Chrysene	**130**		11		ug/Kg	☼	01/24/18 09:57	01/24/18 11:11	1
Benzo[b]fluoranthene	**130**		11		ug/Kg	☼	01/24/18 09:57	01/24/18 11:11	1
Benzo[k]fluoranthene	**59**		11		ug/Kg	☼	01/24/18 09:57	01/24/18 11:11	1
Benzo[a]pyrene	**130**		11		ug/Kg	☼	01/24/18 09:57	01/24/18 11:11	1
Indeno[1,2,3-cd]pyrene	**75**		11		ug/Kg	☼	01/24/18 09:57	01/24/18 11:11	1
Dibenz(a,h)anthracene	**22**		11		ug/Kg	☼	01/24/18 09:57	01/24/18 11:11	1
Benzo[g,h,i]perylene	**100**		11		ug/Kg	☼	01/24/18 09:57	01/24/18 11:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*88*		*23 - 120*	*01/24/18 09:57*	*01/24/18 11:11*	*1*
2-Fluorobiphenyl (Surr)	*78*		*38 - 123*	*01/24/18 09:57*	*01/24/18 11:11*	*1*
p-Terphenyl-d14	*105*		*68 - 136*	*01/24/18 09:57*	*01/24/18 11:11*	*1*

Method: NWTPH-HCID - Northwest - Hydrocarbon Identification (GC)

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		44		mg/Kg	☼	01/24/18 09:31	01/24/18 12:11	1
Diesel Range Organics (DRO) (C10-C25)	ND		110		mg/Kg	☼	01/24/18 09:31	01/24/18 12:11	1
Residual Range Organics (RRO) (C25-C36)	ND		110		mg/Kg	☼	01/24/18 09:31	01/24/18 12:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*90*		*50 - 150*	*01/24/18 09:31*	*01/24/18 12:11*	*1*
n-Triacontane-d62	*92*		*50 - 150*	*01/24/18 09:31*	*01/24/18 12:11*	*1*

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**8.2**		1.9		mg/Kg	☼	01/24/18 09:25	01/29/18 12:47	2
Barium	**87**		1.9		mg/Kg	☼	01/24/18 09:25	01/25/18 14:45	2
Cadmium	ND		1.9		mg/Kg	☼	01/24/18 09:25	01/25/18 14:45	2
Chromium	**9.8**		1.9		mg/Kg	☼	01/24/18 09:25	01/25/18 14:45	2
Lead	**84**		4.6		mg/Kg	☼	01/24/18 09:25	01/25/18 14:45	2
Selenium	ND		7.7		mg/Kg	☼	01/24/18 09:25	01/25/18 14:45	2
Silver	ND		1.9		mg/Kg	☼	01/24/18 09:25	01/25/18 14:45	2

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	**180**		38		ug/Kg	☼	01/24/18 10:08	01/24/18 15:20	1

Client Sample ID: USP-2 (3.5-5')

Date Collected: 01/23/18 09:00
Date Received: 01/23/18 16:45

Lab Sample ID: 590-7906-6

Matrix: Solid
Percent Solids: 94.7

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	ND		10		ug/Kg	☼	01/24/18 09:57	01/24/18 11:34	1
2-Methylnaphthalene	ND		10		ug/Kg	☼	01/24/18 09:57	01/24/18 11:34	1
1-Methylnaphthalene	ND		10		ug/Kg	☼	01/24/18 09:57	01/24/18 11:34	1
Acenaphthylene	ND		10		ug/Kg	☼	01/24/18 09:57	01/24/18 11:34	1
Acenaphthene	ND		10		ug/Kg	☼	01/24/18 09:57	01/24/18 11:34	1
Fluorene	ND		10		ug/Kg	☼	01/24/18 09:57	01/24/18 11:34	1
Phenanthrene	ND		10		ug/Kg	☼	01/24/18 09:57	01/24/18 11:34	1
Anthracene	ND		10		ug/Kg	☼	01/24/18 09:57	01/24/18 11:34	1
Fluoranthene	ND		10		ug/Kg	☼	01/24/18 09:57	01/24/18 11:34	1
Pyrene	ND		10		ug/Kg	☼	01/24/18 09:57	01/24/18 11:34	1
Benzo[a]anthracene	ND		10		ug/Kg	☼	01/24/18 09:57	01/24/18 11:34	1
Chrysene	ND		10		ug/Kg	☼	01/24/18 09:57	01/24/18 11:34	1
Benzo[b]fluoranthene	ND		10		ug/Kg	☼	01/24/18 09:57	01/24/18 11:34	1
Benzo[k]fluoranthene	ND		10		ug/Kg	☼	01/24/18 09:57	01/24/18 11:34	1
Benzo[a]pyrene	ND		10		ug/Kg	☼	01/24/18 09:57	01/24/18 11:34	1
Indeno[1,2,3-cd]pyrene	ND		10		ug/Kg	☼	01/24/18 09:57	01/24/18 11:34	1
Dibenz(a,h)anthracene	ND		10		ug/Kg	☼	01/24/18 09:57	01/24/18 11:34	1
Benzo[g,h,i]perylene	**10**		10		ug/Kg	☼	01/24/18 09:57	01/24/18 11:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*81*		*23 - 120*	*01/24/18 09:57*	*01/24/18 11:34*	*1*
2-Fluorobiphenyl (Surr)	*74*		*38 - 123*	*01/24/18 09:57*	*01/24/18 11:34*	*1*
p-Terphenyl-d14	*115*		*68 - 136*	*01/24/18 09:57*	*01/24/18 11:34*	*1*

Method: NWTPH-HCID - Northwest - Hydrocarbon Identification (GC)

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		42		mg/Kg	☼	01/24/18 09:11	01/24/18 10:35	1
Diesel Range Organics (DRO) (C10-C25)	ND		110		mg/Kg	☼	01/24/18 09:11	01/24/18 10:35	1
Residual Range Organics (RRO) (C25-C36)	ND		110		mg/Kg	☼	01/24/18 09:11	01/24/18 10:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*87*		*50 - 150*	*01/24/18 09:11*	*01/24/18 10:35*	*1*
n-Triacontane-d62	*82*		*50 - 150*	*01/24/18 09:11*	*01/24/18 10:35*	*1*

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**14**		2.2		mg/Kg	☼	01/24/18 09:25	01/25/18 14:27	2
Barium	**48**		2.2		mg/Kg	☼	01/24/18 09:25	01/25/18 14:27	2
Cadmium	ND		2.2		mg/Kg	☼	01/24/18 09:25	01/25/18 14:27	2
Chromium	**9.7**		2.2		mg/Kg	☼	01/24/18 09:25	01/25/18 14:27	2
Lead	**9.6**		5.4		mg/Kg	☼	01/24/18 09:25	01/25/18 14:27	2
Selenium	ND		9.0		mg/Kg	☼	01/24/18 09:25	01/25/18 14:27	2
Silver	ND		2.2		mg/Kg	☼	01/24/18 09:25	01/25/18 14:27	2

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	ND		26		ug/Kg	☼	01/24/18 10:08	01/24/18 15:34	1

Client Sample ID: USP-3 (1-2.5')

Date Collected: 01/23/18 12:30
Date Received: 01/23/18 16:45

Lab Sample ID: 590-7906-8

Matrix: Solid
Percent Solids: 95.8

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	ND		10		ug/Kg	☼	01/24/18 09:57	01/24/18 12:51	1
2-Methylnaphthalene	ND		10		ug/Kg	☼	01/24/18 09:57	01/24/18 12:51	1
1-Methylnaphthalene	ND		10		ug/Kg	☼	01/24/18 09:57	01/24/18 12:51	1
Acenaphthylene	ND		10		ug/Kg	☼	01/24/18 09:57	01/24/18 12:51	1
Acenaphthene	ND		10		ug/Kg	☼	01/24/18 09:57	01/24/18 12:51	1
Fluorene	ND		10		ug/Kg	☼	01/24/18 09:57	01/24/18 12:51	1
Phenanthrene	**46**		10		ug/Kg	☼	01/24/18 09:57	01/24/18 12:51	1
Anthracene	**11**		10		ug/Kg	☼	01/24/18 09:57	01/24/18 12:51	1
Fluoranthene	**58**		10		ug/Kg	☼	01/24/18 09:57	01/24/18 12:51	1
Pyrene	**59**		10		ug/Kg	☼	01/24/18 09:57	01/24/18 12:51	1
Benzo[a]anthracene	**23**		10		ug/Kg	☼	01/24/18 09:57	01/24/18 12:51	1
Chrysene	**27**		10		ug/Kg	☼	01/24/18 09:57	01/24/18 12:51	1
Benzo[b]fluoranthene	**30**		10		ug/Kg	☼	01/24/18 09:57	01/24/18 12:51	1
Benzo[k]fluoranthene	**12**		10		ug/Kg	☼	01/24/18 09:57	01/24/18 12:51	1
Benzo[a]pyrene	**26**		10		ug/Kg	☼	01/24/18 09:57	01/24/18 12:51	1
Indeno[1,2,3-cd]pyrene	**16**		10		ug/Kg	☼	01/24/18 09:57	01/24/18 12:51	1
Dibenz(a,h)anthracene	ND		10		ug/Kg	☼	01/24/18 09:57	01/24/18 12:51	1
Benzo[g,h,i]perylene	**20**		10		ug/Kg	☼	01/24/18 09:57	01/24/18 12:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*72*		*23 - 120*	*01/24/18 09:57*	*01/24/18 12:51*	*1*
2-Fluorobiphenyl (Surr)	*69*		*38 - 123*	*01/24/18 09:57*	*01/24/18 12:51*	*1*
p-Terphenyl-d14	*106*		*68 - 136*	*01/24/18 09:57*	*01/24/18 12:51*	*1*

Method: NWTPH-HCID - Northwest - Hydrocarbon Identification (GC)

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		39		mg/Kg	☼	01/24/18 09:11	01/24/18 11:13	1
Diesel Range Organics (DRO) (C10-C25)	ND		96		mg/Kg	☼	01/24/18 09:11	01/24/18 11:13	1
Residual Range Organics (RRO) (C25-C36)	ND		96		mg/Kg	☼	01/24/18 09:11	01/24/18 11:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*88*		*50 - 150*	*01/24/18 09:11*	*01/24/18 11:13*	*1*
n-Triacontane-d62	*81*		*50 - 150*	*01/24/18 09:11*	*01/24/18 11:13*	*1*

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**15**		2.1		mg/Kg	☼	01/24/18 09:25	01/25/18 14:29	2
Barium	**51**		2.1		mg/Kg	☼	01/24/18 09:25	01/25/18 14:29	2
Cadmium	ND		2.1		mg/Kg	☼	01/24/18 09:25	01/25/18 14:29	2
Chromium	**8.8**		2.1		mg/Kg	☼	01/24/18 09:25	01/25/18 14:29	2
Lead	**9.5**		5.1		mg/Kg	☼	01/24/18 09:25	01/25/18 14:29	2
Selenium	ND		8.5		mg/Kg	☼	01/24/18 09:25	01/25/18 14:29	2
Silver	ND		2.1		mg/Kg	☼	01/24/18 09:25	01/25/18 14:29	2

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	ND		24		ug/Kg	☼	01/24/18 10:08	01/24/18 15:36	1

Client: GeoEngineers Inc
Project/Site: Riverfront Park (0110-148-06)

TestAmerica Job ID: 590-7906-1

Client Sample ID: USP-4 (3.5-5')
Date Collected: 01/23/18 11:10
Date Received: 01/23/18 16:45

Lab Sample ID: 590-7906-10
Matrix: Solid
Percent Solids: 90.3

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		0.10		mg/Kg	☼	01/23/18 17:35	01/23/18 22:54	1
1,1,1-Trichloroethane	ND		0.10		mg/Kg	☼	01/23/18 17:35	01/23/18 22:54	1
1,1,2,2-Tetrachloroethane	ND		0.10		mg/Kg	☼	01/23/18 17:35	01/23/18 22:54	1
1,1,2-Trichloroethane	ND		0.10		mg/Kg	☼	01/23/18 17:35	01/23/18 22:54	1
1,1,2-Trichlorotrifluoroethane	ND		0.10		mg/Kg	☼	01/23/18 17:35	01/23/18 22:54	1
1,1-Dichloroethane	ND		0.10		mg/Kg	☼	01/23/18 17:35	01/23/18 22:54	1
1,1-Dichloroethene	ND		0.10		mg/Kg	☼	01/23/18 17:35	01/23/18 22:54	1
1,1-Dichloropropene	ND		0.10		mg/Kg	☼	01/23/18 17:35	01/23/18 22:54	1
1,2,3-Trichlorobenzene	ND		0.10		mg/Kg	☼	01/23/18 17:35	01/23/18 22:54	1
1,2,3-Trichloropropane	ND		0.21		mg/Kg	☼	01/23/18 17:35	01/23/18 22:54	1
1,2,4-Trichlorobenzene	ND		0.10		mg/Kg	☼	01/23/18 17:35	01/23/18 22:54	1
1,2,4-Trimethylbenzene	ND		0.10		mg/Kg	☼	01/23/18 17:35	01/23/18 22:54	1
1,2-Dibromo-3-Chloropropane	ND		0.52		mg/Kg	☼	01/23/18 17:35	01/23/18 22:54	1
1,2-Dibromoethane (EDB)	ND		0.10		mg/Kg	☼	01/23/18 17:35	01/23/18 22:54	1
1,2-Dichlorobenzene	ND		0.10		mg/Kg	☼	01/23/18 17:35	01/23/18 22:54	1
1,2-Dichloroethane	ND		0.10		mg/Kg	☼	01/23/18 17:35	01/23/18 22:54	1
1,2-Dichloropropane	ND		0.13		mg/Kg	☼	01/23/18 17:35	01/23/18 22:54	1
1,3,5-Trimethylbenzene	ND		0.10		mg/Kg	☼	01/23/18 17:35	01/23/18 22:54	1
1,3-Dichlorobenzene	ND		0.10		mg/Kg	☼	01/23/18 17:35	01/23/18 22:54	1
1,3-Dichloropropane	ND		0.10		mg/Kg	☼	01/23/18 17:35	01/23/18 22:54	1
1,4-Dichlorobenzene	ND		0.10		mg/Kg	☼	01/23/18 17:35	01/23/18 22:54	1
2,2-Dichloropropane	ND		0.10		mg/Kg	☼	01/23/18 17:35	01/23/18 22:54	1
2-Butanone (MEK)	ND		1.0		mg/Kg	☼	01/23/18 17:35	01/23/18 22:54	1
2-Chlorotoluene	ND		0.10		mg/Kg	☼	01/23/18 17:35	01/23/18 22:54	1
2-Hexanone	ND		1.0		mg/Kg	☼	01/23/18 17:35	01/23/18 22:54	1
4-Chlorotoluene	ND		0.10		mg/Kg	☼	01/23/18 17:35	01/23/18 22:54	1
4-Methyl-2-pentanone (MIBK)	ND		1.0		mg/Kg	☼	01/23/18 17:35	01/23/18 22:54	1
Acetone	ND		3.1		mg/Kg	☼	01/23/18 17:35	01/23/18 22:54	1
Benzene	ND		0.021		mg/Kg	☼	01/23/18 17:35	01/23/18 22:54	1
Bromobenzene	ND		0.10		mg/Kg	☼	01/23/18 17:35	01/23/18 22:54	1
Bromochloromethane	ND		0.10		mg/Kg	☼	01/23/18 17:35	01/23/18 22:54	1
Bromodichloromethane	ND		0.10		mg/Kg	☼	01/23/18 17:35	01/23/18 22:54	1
Bromoform	ND		0.21		mg/Kg	☼	01/23/18 17:35	01/23/18 22:54	1
Bromomethane	ND		0.52		mg/Kg	☼	01/23/18 17:35	01/23/18 22:54	1
Carbon disulfide	ND		0.10		mg/Kg	☼	01/23/18 17:35	01/23/18 22:54	1
Carbon tetrachloride	ND		0.10		mg/Kg	☼	01/23/18 17:35	01/23/18 22:54	1
Chlorobenzene	ND		0.10		mg/Kg	☼	01/23/18 17:35	01/23/18 22:54	1
Chloroethane	ND		0.21		mg/Kg	☼	01/23/18 17:35	01/23/18 22:54	1
Chloroform	ND		0.10		mg/Kg	☼	01/23/18 17:35	01/23/18 22:54	1
Chloromethane	ND		0.52		mg/Kg	☼	01/23/18 17:35	01/23/18 22:54	1
cis-1,2-Dichloroethene	ND		0.10		mg/Kg	☼	01/23/18 17:35	01/23/18 22:54	1
cis-1,3-Dichloropropene	ND		0.10		mg/Kg	☼	01/23/18 17:35	01/23/18 22:54	1
Dibromochloromethane	ND		0.21		mg/Kg	☼	01/23/18 17:35	01/23/18 22:54	1
Dibromomethane	ND		0.10		mg/Kg	☼	01/23/18 17:35	01/23/18 22:54	1
Dichlorodifluoromethane	ND		0.10		mg/Kg	☼	01/23/18 17:35	01/23/18 22:54	1
Dichlorofluoromethane	ND		0.10		mg/Kg	☼	01/23/18 17:35	01/23/18 22:54	1
Ethylbenzene	ND		0.10		mg/Kg	☼	01/23/18 17:35	01/23/18 22:54	1
Hexachlorobutadiene	ND		0.10		mg/Kg	☼	01/23/18 17:35	01/23/18 22:54	1
Hexane	ND		0.10		mg/Kg	☼	01/23/18 17:35	01/23/18 22:54	1

Client Sample ID: USP-4 (3.5-5')
Date Collected: 01/23/18 11:10
Date Received: 01/23/18 16:45

Lab Sample ID: 590-7906-10
Matrix: Solid
Percent Solids: 90.3

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Isopropylbenzene	ND		0.10		mg/Kg	☼	01/23/18 17:35	01/23/18 22:54	1
m,p-Xylene	ND		0.42		mg/Kg	☼	01/23/18 17:35	01/23/18 22:54	1
Methyl tert-butyl ether	ND		0.052		mg/Kg	☼	01/23/18 17:35	01/23/18 22:54	1
Methylene Chloride	ND		0.37		mg/Kg	☼	01/23/18 17:35	01/23/18 22:54	1
Naphthalene	ND		0.21		mg/Kg	☼	01/23/18 17:35	01/23/18 22:54	1
n-Butylbenzene	ND		0.10		mg/Kg	☼	01/23/18 17:35	01/23/18 22:54	1
N-Propylbenzene	ND		0.10		mg/Kg	☼	01/23/18 17:35	01/23/18 22:54	1
o-Xylene	ND		0.21		mg/Kg	☼	01/23/18 17:35	01/23/18 22:54	1
p-Isopropyltoluene	ND		0.10		mg/Kg	☼	01/23/18 17:35	01/23/18 22:54	1
sec-Butylbenzene	ND		0.10		mg/Kg	☼	01/23/18 17:35	01/23/18 22:54	1
Styrene	ND		0.10		mg/Kg	☼	01/23/18 17:35	01/23/18 22:54	1
tert-Butylbenzene	ND		0.10		mg/Kg	☼	01/23/18 17:35	01/23/18 22:54	1
Tetrachloroethene	ND		0.042		mg/Kg	☼	01/23/18 17:35	01/23/18 22:54	1
Toluene	ND		0.10		mg/Kg	☼	01/23/18 17:35	01/23/18 22:54	1
trans-1,2-Dichloroethene	ND		0.10		mg/Kg	☼	01/23/18 17:35	01/23/18 22:54	1
trans-1,3-Dichloropropene	ND		0.10		mg/Kg	☼	01/23/18 17:35	01/23/18 22:54	1
Trichloroethene	ND		0.026		mg/Kg	☼	01/23/18 17:35	01/23/18 22:54	1
Trichlorofluoromethane	ND		0.21		mg/Kg	☼	01/23/18 17:35	01/23/18 22:54	1
Vinyl chloride	ND		0.063		mg/Kg	☼	01/23/18 17:35	01/23/18 22:54	1
Xylenes, Total	ND		0.63		mg/Kg	☼	01/23/18 17:35	01/23/18 22:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*75 - 120*	*01/23/18 17:35*	*01/23/18 22:54*	*1*
4-Bromofluorobenzene (Surr)	*99*		*76 - 122*	*01/23/18 17:35*	*01/23/18 22:54*	*1*
Dibromofluoromethane (Surr)	*110*		*80 - 120*	*01/23/18 17:35*	*01/23/18 22:54*	*1*
Toluene-d8 (Surr)	*101*		*80 - 120*	*01/23/18 17:35*	*01/23/18 22:54*	*1*

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	**43**		11		ug/Kg	☼	01/24/18 09:57	01/24/18 13:17	1
2-Methylnaphthalene	**47**		11		ug/Kg	☼	01/24/18 09:57	01/24/18 13:17	1
1-Methylnaphthalene	**49**		11		ug/Kg	☼	01/24/18 09:57	01/24/18 13:17	1
Acenaphthylene	**47**		11		ug/Kg	☼	01/24/18 09:57	01/24/18 13:17	1
Acenaphthene	**120**		11		ug/Kg	☼	01/24/18 09:57	01/24/18 13:17	1
Fluorene	**100**		11		ug/Kg	☼	01/24/18 09:57	01/24/18 13:17	1
Phenanthrene	**1100**		11		ug/Kg	☼	01/24/18 09:57	01/24/18 13:17	1
Anthracene	**300**		11		ug/Kg	☼	01/24/18 09:57	01/24/18 13:17	1
Fluoranthene	**1100**		11		ug/Kg	☼	01/24/18 09:57	01/24/18 13:17	1
Pyrene	**1300**		11		ug/Kg	☼	01/24/18 09:57	01/24/18 13:17	1
Benzo[a]anthracene	**500**		11		ug/Kg	☼	01/24/18 09:57	01/24/18 13:17	1
Chrysene	**560**		11		ug/Kg	☼	01/24/18 09:57	01/24/18 13:17	1
Benzo[b]fluoranthene	**540**		11		ug/Kg	☼	01/24/18 09:57	01/24/18 13:17	1
Benzo[k]fluoranthene	**240**		11		ug/Kg	☼	01/24/18 09:57	01/24/18 13:17	1
Benzo[a]pyrene	**540**		11		ug/Kg	☼	01/24/18 09:57	01/24/18 13:17	1
Indeno[1,2,3-cd]pyrene	**290**		11		ug/Kg	☼	01/24/18 09:57	01/24/18 13:17	1
Dibenz(a,h)anthracene	**81**		11		ug/Kg	☼	01/24/18 09:57	01/24/18 13:17	1
Benzo[g,h,i]perylene	**370**		11		ug/Kg	☼	01/24/18 09:57	01/24/18 13:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*87*		*23 - 120*	*01/24/18 09:57*	*01/24/18 13:17*	*1*

Client Sample ID: USP-4 (3.5-5')

Lab Sample ID: 590-7906-10
Date Collected: 01/23/18 11:10
Matrix: Solid
Date Received: 01/23/18 16:45
Percent Solids: 90.3

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*83*		*38 - 123*	*01/24/18 09:57*	*01/24/18 13:17*	*1*
p-Terphenyl-d14	*116*		*68 - 136*	*01/24/18 09:57*	*01/24/18 13:17*	*1*

Method: NWTPH-HCID - Northwest - Hydrocarbon Identification (GC)

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		41		mg/Kg	☼	01/24/18 09:11	01/24/18 11:33	1
Diesel Range Organics (DRO) (C10-C25)	ND		100		mg/Kg	☼	01/24/18 09:11	01/24/18 11:33	1
Residual Range Organics (RRO) (C25-C36)	ND		100		mg/Kg	☼	01/24/18 09:11	01/24/18 11:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*91*		*50 - 150*	*01/24/18 09:11*	*01/24/18 11:33*	*1*
n-Triacontane-d62	*96*		*50 - 150*	*01/24/18 09:11*	*01/24/18 11:33*	*1*

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**13**		2.3		mg/Kg	☼	01/24/18 09:25	01/25/18 14:32	2
Barium	**94**		2.3		mg/Kg	☼	01/24/18 09:25	01/25/18 14:32	2
Cadmium	ND		2.3		mg/Kg	☼	01/24/18 09:25	01/25/18 14:32	2
Chromium	**11**		2.3		mg/Kg	☼	01/24/18 09:25	01/25/18 14:32	2
Lead	**150**		5.5		mg/Kg	☼	01/24/18 09:25	01/25/18 14:32	2
Selenium	ND		9.2		mg/Kg	☼	01/24/18 09:25	01/25/18 14:32	2
Silver	ND		2.3		mg/Kg	☼	01/24/18 09:25	01/25/18 14:32	2

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	**310**		21		ug/Kg	☼	01/24/18 10:09	01/24/18 15:39	1

Client Sample ID: USP-5 (3.5-5')

Lab Sample ID: 590-7906-14
Date Collected: 01/23/18 14:25
Matrix: Solid
Date Received: 01/23/18 16:45
Percent Solids: 94.0

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	ND		10		ug/Kg	☼	01/24/18 09:57	01/24/18 13:44	1
2-Methylnaphthalene	ND		10		ug/Kg	☼	01/24/18 09:57	01/24/18 13:44	1
1-Methylnaphthalene	ND		10		ug/Kg	☼	01/24/18 09:57	01/24/18 13:44	1
Acenaphthylene	ND		10		ug/Kg	☼	01/24/18 09:57	01/24/18 13:44	1
Acenaphthene	ND		10		ug/Kg	☼	01/24/18 09:57	01/24/18 13:44	1
Fluorene	ND		10		ug/Kg	☼	01/24/18 09:57	01/24/18 13:44	1
Phenanthrene	ND		10		ug/Kg	☼	01/24/18 09:57	01/24/18 13:44	1
Anthracene	ND		10		ug/Kg	☼	01/24/18 09:57	01/24/18 13:44	1
Fluoranthene	**11**		10		ug/Kg	☼	01/24/18 09:57	01/24/18 13:44	1
Pyrene	**13**		10		ug/Kg	☼	01/24/18 09:57	01/24/18 13:44	1
Benzo[a]anthracene	ND		10		ug/Kg	☼	01/24/18 09:57	01/24/18 13:44	1
Chrysene	ND		10		ug/Kg	☼	01/24/18 09:57	01/24/18 13:44	1
Benzo[b]fluoranthene	**16**		10		ug/Kg	☼	01/24/18 09:57	01/24/18 13:44	1
Benzo[k]fluoranthene	ND		10		ug/Kg	☼	01/24/18 09:57	01/24/18 13:44	1
Benzo[a]pyrene	**12**		10		ug/Kg	☼	01/24/18 09:57	01/24/18 13:44	1
Indeno[1,2,3-cd]pyrene	**13**		10		ug/Kg	☼	01/24/18 09:57	01/24/18 13:44	1

Client Sample ID: USP-5 (3.5-5')
Date Collected: 01/23/18 14:25
Date Received: 01/23/18 16:45

Lab Sample ID: 590-7906-14
Matrix: Solid
Percent Solids: 94.0

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dibenz(a,h)anthracene	ND		10		ug/Kg	☼	01/24/18 09:57	01/24/18 13:44	1
Benzo[g,h,i]perylene	**22**		10		ug/Kg	☼	01/24/18 09:57	01/24/18 13:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*75*		*23 - 120*	*01/24/18 09:57*	*01/24/18 13:44*	*1*
2-Fluorobiphenyl (Surr)	*66*		*38 - 123*	*01/24/18 09:57*	*01/24/18 13:44*	*1*
p-Terphenyl-d14	*107*		*68 - 136*	*01/24/18 09:57*	*01/24/18 13:44*	*1*

Method: NWTPH-HCID - Northwest - Hydrocarbon Identification (GC)

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		41		mg/Kg	☼	01/24/18 09:11	01/24/18 11:52	1
Diesel Range Organics (DRO) (C10-C25)	ND		100		mg/Kg	☼	01/24/18 09:11	01/24/18 11:52	1
Residual Range Organics (RRO) (C25-C36)	ND		100		mg/Kg	☼	01/24/18 09:11	01/24/18 11:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*91*		*50 - 150*	*01/24/18 09:11*	*01/24/18 11:52*	*1*
n-Triacontane-d62	*96*		*50 - 150*	*01/24/18 09:11*	*01/24/18 11:52*	*1*

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**9.8**		1.9		mg/Kg	☼	01/24/18 09:25	01/25/18 14:34	2
Barium	**34**		1.9		mg/Kg	☼	01/24/18 09:25	01/25/18 14:34	2
Cadmium	ND		1.9		mg/Kg	☼	01/24/18 09:25	01/25/18 14:34	2
Chromium	**8.1**		1.9		mg/Kg	☼	01/24/18 09:25	01/25/18 14:34	2
Lead	**8.1**		4.6		mg/Kg	☼	01/24/18 09:25	01/25/18 14:34	2
Selenium	ND		7.7		mg/Kg	☼	01/24/18 09:25	01/25/18 14:34	2
Silver	ND		1.9		mg/Kg	☼	01/24/18 09:25	01/25/18 14:34	2

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	ND		23		ug/Kg	☼	01/24/18 10:14	01/24/18 15:49	1

Method: 8260C - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 590-15437/1-A
Matrix: Solid
Analysis Batch: 15444

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 15437

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		0.10		mg/Kg		01/23/18 14:28	01/23/18 16:36	1
1,1,1-Trichloroethane	ND		0.10		mg/Kg		01/23/18 14:28	01/23/18 16:36	1
1,1,2,2-Tetrachloroethane	ND		0.10		mg/Kg		01/23/18 14:28	01/23/18 16:36	1
1,1,2-Trichloroethane	ND		0.10		mg/Kg		01/23/18 14:28	01/23/18 16:36	1
1,1,2-Trichlorotrifluoroethane	ND		0.10		mg/Kg		01/23/18 14:28	01/23/18 16:36	1
1,1-Dichloroethane	ND		0.10		mg/Kg		01/23/18 14:28	01/23/18 16:36	1
1,1-Dichloroethene	ND		0.10		mg/Kg		01/23/18 14:28	01/23/18 16:36	1
1,1-Dichloropropene	ND		0.10		mg/Kg		01/23/18 14:28	01/23/18 16:36	1
1,2,3-Trichlorobenzene	ND		0.10		mg/Kg		01/23/18 14:28	01/23/18 16:36	1
1,2,3-Trichloropropane	ND		0.20		mg/Kg		01/23/18 14:28	01/23/18 16:36	1
1,2,4-Trichlorobenzene	ND		0.10		mg/Kg		01/23/18 14:28	01/23/18 16:36	1
1,2,4-Trimethylbenzene	ND		0.10		mg/Kg		01/23/18 14:28	01/23/18 16:36	1
1,2-Dibromo-3-Chloropropane	ND		0.50		mg/Kg		01/23/18 14:28	01/23/18 16:36	1
1,2-Dibromoethane (EDB)	ND		0.10		mg/Kg		01/23/18 14:28	01/23/18 16:36	1
1,2-Dichlorobenzene	ND		0.10		mg/Kg		01/23/18 14:28	01/23/18 16:36	1
1,2-Dichloroethane	ND		0.10		mg/Kg		01/23/18 14:28	01/23/18 16:36	1
1,2-Dichloropropane	ND		0.12		mg/Kg		01/23/18 14:28	01/23/18 16:36	1
1,3,5-Trimethylbenzene	ND		0.10		mg/Kg		01/23/18 14:28	01/23/18 16:36	1
1,3-Dichlorobenzene	ND		0.10		mg/Kg		01/23/18 14:28	01/23/18 16:36	1
1,3-Dichloropropane	ND		0.10		mg/Kg		01/23/18 14:28	01/23/18 16:36	1
1,4-Dichlorobenzene	ND		0.10		mg/Kg		01/23/18 14:28	01/23/18 16:36	1
2,2-Dichloropropane	ND		0.10		mg/Kg		01/23/18 14:28	01/23/18 16:36	1
2-Butanone (MEK)	ND		1.0		mg/Kg		01/23/18 14:28	01/23/18 16:36	1
2-Chlorotoluene	ND		0.10		mg/Kg		01/23/18 14:28	01/23/18 16:36	1
2-Hexanone	ND		1.0		mg/Kg		01/23/18 14:28	01/23/18 16:36	1
4-Chlorotoluene	ND		0.10		mg/Kg		01/23/18 14:28	01/23/18 16:36	1
4-Methyl-2-pentanone (MIBK)	ND		1.0		mg/Kg		01/23/18 14:28	01/23/18 16:36	1
Acetone	ND		3.0		mg/Kg		01/23/18 14:28	01/23/18 16:36	1
Benzene	ND		0.020		mg/Kg		01/23/18 14:28	01/23/18 16:36	1
Bromobenzene	ND		0.10		mg/Kg		01/23/18 14:28	01/23/18 16:36	1
Bromochloromethane	ND		0.10		mg/Kg		01/23/18 14:28	01/23/18 16:36	1
Bromodichloromethane	ND		0.10		mg/Kg		01/23/18 14:28	01/23/18 16:36	1
Bromoform	ND		0.20		mg/Kg		01/23/18 14:28	01/23/18 16:36	1
Bromomethane	ND		0.50		mg/Kg		01/23/18 14:28	01/23/18 16:36	1
Carbon disulfide	ND		0.10		mg/Kg		01/23/18 14:28	01/23/18 16:36	1
Carbon tetrachloride	ND		0.10		mg/Kg		01/23/18 14:28	01/23/18 16:36	1
Chlorobenzene	ND		0.10		mg/Kg		01/23/18 14:28	01/23/18 16:36	1
Chloroethane	ND		0.20		mg/Kg		01/23/18 14:28	01/23/18 16:36	1
Chloroform	ND		0.10		mg/Kg		01/23/18 14:28	01/23/18 16:36	1
Chloromethane	ND		0.50		mg/Kg		01/23/18 14:28	01/23/18 16:36	1
cis-1,2-Dichloroethene	ND		0.10		mg/Kg		01/23/18 14:28	01/23/18 16:36	1
cis-1,3-Dichloropropene	ND		0.10		mg/Kg		01/23/18 14:28	01/23/18 16:36	1
Dibromochloromethane	ND		0.20		mg/Kg		01/23/18 14:28	01/23/18 16:36	1
Dibromomethane	ND		0.10		mg/Kg		01/23/18 14:28	01/23/18 16:36	1
Dichlorodifluoromethane	ND		0.10		mg/Kg		01/23/18 14:28	01/23/18 16:36	1
Dichlorofluoromethane	ND		0.10		mg/Kg		01/23/18 14:28	01/23/18 16:36	1
Ethylbenzene	ND		0.10		mg/Kg		01/23/18 14:28	01/23/18 16:36	1
Hexachlorobutadiene	ND		0.10		mg/Kg		01/23/18 14:28	01/23/18 16:36	1

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 590-15437/1-A
Matrix: Solid
Analysis Batch: 15444

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 15437

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hexane	ND		0.10		mg/Kg		01/23/18 14:28	01/23/18 16:36	1
Isopropylbenzene	ND		0.10		mg/Kg		01/23/18 14:28	01/23/18 16:36	1
m,p-Xylene	ND		0.40		mg/Kg		01/23/18 14:28	01/23/18 16:36	1
Methyl tert-butyl ether	ND		0.050		mg/Kg		01/23/18 14:28	01/23/18 16:36	1
Methylene Chloride	ND		0.35		mg/Kg		01/23/18 14:28	01/23/18 16:36	1
Naphthalene	ND		0.20		mg/Kg		01/23/18 14:28	01/23/18 16:36	1
n-Butylbenzene	ND		0.10		mg/Kg		01/23/18 14:28	01/23/18 16:36	1
N-Propylbenzene	ND		0.10		mg/Kg		01/23/18 14:28	01/23/18 16:36	1
o-Xylene	ND		0.20		mg/Kg		01/23/18 14:28	01/23/18 16:36	1
p-Isopropyltoluene	ND		0.10		mg/Kg		01/23/18 14:28	01/23/18 16:36	1
sec-Butylbenzene	ND		0.10		mg/Kg		01/23/18 14:28	01/23/18 16:36	1
Styrene	ND		0.10		mg/Kg		01/23/18 14:28	01/23/18 16:36	1
tert-Butylbenzene	ND		0.10		mg/Kg		01/23/18 14:28	01/23/18 16:36	1
Tetrachloroethene	ND		0.040		mg/Kg		01/23/18 14:28	01/23/18 16:36	1
Toluene	ND		0.10		mg/Kg		01/23/18 14:28	01/23/18 16:36	1
trans-1,2-Dichloroethene	ND		0.10		mg/Kg		01/23/18 14:28	01/23/18 16:36	1
trans-1,3-Dichloropropene	ND		0.10		mg/Kg		01/23/18 14:28	01/23/18 16:36	1
Trichloroethene	ND		0.025		mg/Kg		01/23/18 14:28	01/23/18 16:36	1
Trichlorofluoromethane	ND		0.20		mg/Kg		01/23/18 14:28	01/23/18 16:36	1
Vinyl chloride	ND		0.060		mg/Kg		01/23/18 14:28	01/23/18 16:36	1
Xylenes, Total	ND		0.60		mg/Kg		01/23/18 14:28	01/23/18 16:36	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*75 - 120*	*01/23/18 14:28*	*01/23/18 16:36*	*1*
4-Bromofluorobenzene (Surr)	*99*		*76 - 122*	*01/23/18 14:28*	*01/23/18 16:36*	*1*
Dibromofluoromethane (Surr)	*106*		*80 - 120*	*01/23/18 14:28*	*01/23/18 16:36*	*1*
Toluene-d8 (Surr)	*99*		*80 - 120*	*01/23/18 14:28*	*01/23/18 16:36*	*1*

Lab Sample ID: LCS 590-15437/2-A
Matrix: Solid
Analysis Batch: 15444

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 15437

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1,2-Tetrachloroethane	0.500	0.494		mg/Kg		99	80 - 120
1,1,1-Trichloroethane	0.500	0.480		mg/Kg		96	74 - 138
1,1,2,2-Tetrachloroethane	0.500	0.490		mg/Kg		98	60 - 137
1,1,2-Trichloroethane	0.500	0.467		mg/Kg		93	66 - 125
1,1,2-Trichlorotrifluoroethane	0.500	0.478		mg/Kg		96	60 - 140
1,1-Dichloroethane	0.500	0.479		mg/Kg		96	80 - 131
1,1-Dichloroethene	0.500	0.500		mg/Kg		100	73 - 135
1,1-Dichloropropene	0.500	0.517		mg/Kg		103	78 - 132
1,2,3-Trichlorobenzene	0.500	0.434		mg/Kg		87	62 - 127
1,2,3-Trichloropropane	0.500	0.526		mg/Kg		105	60 - 131
1,2,4-Trichlorobenzene	0.500	0.455		mg/Kg		91	67 - 126
1,2,4-Trimethylbenzene	0.500	0.494		mg/Kg		99	68 - 132
1,2-Dibromo-3-Chloropropane	0.500	0.441	J	mg/Kg		88	49 - 132
1,2-Dichlorobenzene	0.500	0.487		mg/Kg		97	73 - 124
1,2-Dichloroethane	0.500	0.479		mg/Kg		96	61 - 142

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 590-15437/2-A
Matrix: Solid
Analysis Batch: 15444

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 15437

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2-Dichloropropane	0.500	0.473		mg/Kg		95	58 - 129
1,3,5-Trimethylbenzene	0.500	0.497		mg/Kg		99	68 - 133
1,3-Dichlorobenzene	0.500	0.479		mg/Kg		96	80 - 122
1,3-Dichloropropane	0.500	0.447		mg/Kg		89	69 - 125
1,4-Dichlorobenzene	0.500	0.477		mg/Kg		95	72 - 125
2,2-Dichloropropane	0.500	0.503		mg/Kg		101	60 - 150
2-Butanone (MEK)	2.50	2.27		mg/Kg		91	36 - 150
2-Chlorotoluene	0.500	0.515		mg/Kg		103	69 - 129
2-Hexanone	2.50	2.59		mg/Kg		104	59 - 127
4-Chlorotoluene	0.500	0.502		mg/Kg		100	66 - 133
4-Methyl-2-pentanone (MIBK)	2.50	2.46		mg/Kg		98	54 - 131
Acetone	2.50	2.59	J	mg/Kg		104	20 - 150
Benzene	0.500	0.508		mg/Kg		102	76 - 123
Bromobenzene	0.500	0.489		mg/Kg		98	67 - 129
Bromochloromethane	0.500	0.489		mg/Kg		98	69 - 139
Bromodichloromethane	0.500	0.495		mg/Kg		99	72 - 128
Bromoform	0.500	0.461		mg/Kg		92	58 - 126
Bromomethane	0.500	0.517		mg/Kg		103	32 - 150
Carbon disulfide	0.500	0.498		mg/Kg		100	67 - 135
Carbon tetrachloride	0.500	0.493		mg/Kg		99	74 - 135
Chlorobenzene	0.500	0.476		mg/Kg		95	80 - 120
Chloroethane	0.500	0.452		mg/Kg		90	30 - 150
Chloroform	0.500	0.490		mg/Kg		98	73 - 130
Chloromethane	0.500	0.449	J	mg/Kg		90	46 - 146
cis-1,2-Dichloroethene	0.500	0.477		mg/Kg		95	80 - 126
cis-1,3-Dichloropropene	0.500	0.484		mg/Kg		97	70 - 126
Dibromochloromethane	0.500	0.433		mg/Kg		87	67 - 127
Dibromomethane	0.500	0.450		mg/Kg		90	67 - 129
Dichlorodifluoromethane	0.500	0.492		mg/Kg		98	28 - 150
Dichlorofluoromethane	0.500	0.364		mg/Kg		73	54 - 150
Ethylbenzene	0.500	0.473		mg/Kg		95	77 - 121
Hexachlorobutadiene	0.500	0.458		mg/Kg		92	72 - 130
Hexane	0.500	0.524		mg/Kg		105	65 - 139
Isopropylbenzene	0.500	0.472		mg/Kg		94	78 - 131
m,p-Xylene	0.500	0.480		mg/Kg		96	78 - 124
Methyl tert-butyl ether	0.500	0.475		mg/Kg		95	67 - 130
Methylene Chloride	0.500	0.463		mg/Kg		93	20 - 150
Naphthalene	0.500	0.432		mg/Kg		86	55 - 128
n-Butylbenzene	0.500	0.504		mg/Kg		101	67 - 131
N-Propylbenzene	0.500	0.488		mg/Kg		98	67 - 131
o-Xylene	0.500	0.487		mg/Kg		97	77 - 129
p-Isopropyltoluene	0.500	0.484		mg/Kg		97	67 - 130
sec-Butylbenzene	0.500	0.492		mg/Kg		98	70 - 130
Styrene	0.500	0.468		mg/Kg		94	70 - 128
tert-Butylbenzene	0.500	0.512		mg/Kg		102	69 - 130
Tetrachloroethene	0.500	0.493		mg/Kg		99	70 - 134
Toluene	0.500	0.487		mg/Kg		97	77 - 125
trans-1,2-Dichloroethene	0.500	0.506		mg/Kg		101	73 - 133

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 590-15437/2-A
Matrix: Solid
Analysis Batch: 15444

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 15437

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
trans-1,3-Dichloropropene	0.500	0.474		mg/Kg		95	68 - 124
Trichloroethene	0.500	0.488		mg/Kg		98	79 - 127
Trichlorofluoromethane	0.500	0.435		mg/Kg		87	53 - 150
Vinyl chloride	0.500	0.461		mg/Kg		92	38 - 150

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*107*		*75 - 120*
4-Bromofluorobenzene (Surr)	*103*		*76 - 122*
Dibromofluoromethane (Surr)	*103*		*80 - 120*
Toluene-d8 (Surr)	*99*		*80 - 120*

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Lab Sample ID: MB 590-15457/1-A
Matrix: Solid
Analysis Batch: 15449

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 15457

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	ND		10		ug/Kg		01/24/18 09:57	01/24/18 10:23	1
2-Methylnaphthalene	ND		10		ug/Kg		01/24/18 09:57	01/24/18 10:23	1
1-Methylnaphthalene	ND		10		ug/Kg		01/24/18 09:57	01/24/18 10:23	1
Acenaphthylene	ND		10		ug/Kg		01/24/18 09:57	01/24/18 10:23	1
Acenaphthene	ND		10		ug/Kg		01/24/18 09:57	01/24/18 10:23	1
Fluorene	ND		10		ug/Kg		01/24/18 09:57	01/24/18 10:23	1
Phenanthrene	ND		10		ug/Kg		01/24/18 09:57	01/24/18 10:23	1
Anthracene	ND		10		ug/Kg		01/24/18 09:57	01/24/18 10:23	1
Fluoranthene	ND		10		ug/Kg		01/24/18 09:57	01/24/18 10:23	1
Pyrene	ND		10		ug/Kg		01/24/18 09:57	01/24/18 10:23	1
Benzo[a]anthracene	ND		10		ug/Kg		01/24/18 09:57	01/24/18 10:23	1
Chrysene	ND		10		ug/Kg		01/24/18 09:57	01/24/18 10:23	1
Benzo[b]fluoranthene	ND		10		ug/Kg		01/24/18 09:57	01/24/18 10:23	1
Benzo[k]fluoranthene	ND		10		ug/Kg		01/24/18 09:57	01/24/18 10:23	1
Benzo[a]pyrene	ND		10		ug/Kg		01/24/18 09:57	01/24/18 10:23	1
Indeno[1,2,3-cd]pyrene	ND		10		ug/Kg		01/24/18 09:57	01/24/18 10:23	1
Dibenz(a,h)anthracene	ND		10		ug/Kg		01/24/18 09:57	01/24/18 10:23	1
Benzo[g,h,i]perylene	ND		10		ug/Kg		01/24/18 09:57	01/24/18 10:23	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*108*		*23 - 120*	*01/24/18 09:57*	*01/24/18 10:23*	*1*
2-Fluorobiphenyl (Surr)	*85*		*38 - 123*	*01/24/18 09:57*	*01/24/18 10:23*	*1*
p-Terphenyl-d14	*115*		*68 - 136*	*01/24/18 09:57*	*01/24/18 10:23*	*1*

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Lab Sample ID: LCS 590-15457/2-A
Matrix: Solid
Analysis Batch: 15449

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 15457

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Naphthalene	267	196		ug/Kg		74	41 - 121
2-Methylnaphthalene	267	188		ug/Kg		70	39 - 132
1-Methylnaphthalene	267	205		ug/Kg		77	46 - 131
Acenaphthylene	267	196		ug/Kg		73	56 - 123
Acenaphthene	267	182		ug/Kg		68	43 - 140
Fluorene	267	219		ug/Kg		82	54 - 131
Phenanthrene	267	239		ug/Kg		90	55 - 141
Anthracene	267	246		ug/Kg		92	60 - 129
Fluoranthene	267	260		ug/Kg		97	63 - 141
Pyrene	267	236		ug/Kg		89	62 - 139
Benzo[a]anthracene	267	227		ug/Kg		85	61 - 136
Chrysene	267	234		ug/Kg		88	57 - 144
Benzo[b]fluoranthene	267	238		ug/Kg		89	66 - 141
Benzo[k]fluoranthene	267	249		ug/Kg		93	63 - 150
Benzo[a]pyrene	267	227		ug/Kg		85	60 - 133
Indeno[1,2,3-cd]pyrene	267	241		ug/Kg		90	55 - 142
Dibenz(a,h)anthracene	267	242		ug/Kg		91	60 - 150
Benzo[g,h,i]perylene	267	243		ug/Kg		91	58 - 147

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Nitrobenzene-d5	*85*		*23 - 120*
2-Fluorobiphenyl (Surr)	*80*		*38 - 123*
p-Terphenyl-d14	*104*		*68 - 136*

Lab Sample ID: 590-7906-8 MS
Matrix: Solid
Analysis Batch: 15449

Client Sample ID: USP-3 (1-2.5')
Prep Type: Total/NA
Prep Batch: 15457

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Naphthalene	ND		271	174		ug/Kg	☼	64	41 - 121
2-Methylnaphthalene	ND		271	178		ug/Kg	☼	66	39 - 132
1-Methylnaphthalene	ND		271	187		ug/Kg	☼	69	46 - 131
Acenaphthylene	ND		271	197		ug/Kg	☼	73	56 - 123
Acenaphthene	ND		271	193		ug/Kg	☼	69	43 - 140
Fluorene	ND		271	230		ug/Kg	☼	83	54 - 131
Phenanthrene	46		271	320		ug/Kg	☼	101	55 - 141
Anthracene	11		271	267		ug/Kg	☼	94	60 - 129
Fluoranthene	58		271	329		ug/Kg	☼	100	63 - 141
Pyrene	59		271	332		ug/Kg	☼	101	62 - 139
Benzo[a]anthracene	23		271	266		ug/Kg	☼	90	61 - 136
Chrysene	27		271	283		ug/Kg	☼	94	57 - 144
Benzo[b]fluoranthene	30		271	273		ug/Kg	☼	90	66 - 141
Benzo[k]fluoranthene	12		271	254		ug/Kg	☼	89	63 - 150
Benzo[a]pyrene	26		271	263		ug/Kg	☼	87	60 - 133
Indeno[1,2,3-cd]pyrene	16		271	254		ug/Kg	☼	88	55 - 142
Dibenz(a,h)anthracene	ND		271	237		ug/Kg	☼	85	60 - 150
Benzo[g,h,i]perylene	20		271	277		ug/Kg	☼	95	58 - 147

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Lab Sample ID: 590-7906-8 MS
Matrix: Solid
Analysis Batch: 15449

Client Sample ID: USP-3 (1-2.5')
Prep Type: Total/NA
Prep Batch: 15457

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Nitrobenzene-d5	*75*		*23 - 120*
2-Fluorobiphenyl (Surr)	*73*		*38 - 123*
p-Terphenyl-d14	*108*		*68 - 136*

Lab Sample ID: 590-7906-8 MSD
Matrix: Solid
Analysis Batch: 15449

Client Sample ID: USP-3 (1-2.5')
Prep Type: Total/NA
Prep Batch: 15457

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Naphthalene	ND		267	166		ug/Kg	☼	62	41 - 121	4	35
2-Methylnaphthalene	ND		267	158		ug/Kg	☼	59	39 - 132	12	35
1-Methylnaphthalene	ND		267	175		ug/Kg	☼	66	46 - 131	6	35
Acenaphthylene	ND		267	179		ug/Kg	☼	67	56 - 123	9	35
Acenaphthene	ND		267	188		ug/Kg	☼	69	43 - 140	3	35
Fluorene	ND		267	219		ug/Kg	☼	80	54 - 131	5	35
Phenanthrene	46		267	407		ug/Kg	☼	135	55 - 141	24	35
Anthracene	11		267	287		ug/Kg	☼	104	60 - 129	7	35
Fluoranthene	58		267	434		ug/Kg	☼	141	63 - 141	27	35
Pyrene	59		267	404		ug/Kg	☼	129	62 - 139	19	35
Benzo[a]anthracene	23		267	293		ug/Kg	☼	101	61 - 136	10	35
Chrysene	27		267	308		ug/Kg	☼	105	57 - 144	8	35
Benzo[b]fluoranthene	30		267	294		ug/Kg	☼	99	66 - 141	7	35
Benzo[k]fluoranthene	12		267	261		ug/Kg	☼	94	63 - 150	3	35
Benzo[a]pyrene	26		267	290		ug/Kg	☼	99	60 - 133	10	35
Indeno[1,2,3-cd]pyrene	16		267	267		ug/Kg	☼	94	55 - 142	5	35
Dibenz(a,h)anthracene	ND		267	226		ug/Kg	☼	83	60 - 150	5	35
Benzo[g,h,i]perylene	20		267	295		ug/Kg	☼	103	58 - 147	6	35

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Nitrobenzene-d5	*70*		*23 - 120*
2-Fluorobiphenyl (Surr)	*72*		*38 - 123*
p-Terphenyl-d14	*102*		*68 - 136*

Method: NWTPH-HCID - Northwest - Hydrocarbon Identification (GC)

Lab Sample ID: MB 590-15454/1-A
Matrix: Solid
Analysis Batch: 15450

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 15454

Analyte	MB Result	MB Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		40		mg/Kg		01/24/18 09:11	01/24/18 09:57	1
Diesel Range Organics (DRO) (C10-C25)	ND		100		mg/Kg		01/24/18 09:11	01/24/18 09:57	1
Residual Range Organics (RRO) (C25-C36)	ND		100		mg/Kg		01/24/18 09:11	01/24/18 09:57	1

Method: NWTPH-HCID - Northwest - Hydrocarbon Identification (GC) (Continued)

Lab Sample ID: MB 590-15454/1-A
Matrix: Solid
Analysis Batch: 15450

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 15454

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	85		50 - 150	01/24/18 09:11	01/24/18 09:57	1
n-Triacontane-d62	66		50 - 150	01/24/18 09:11	01/24/18 09:57	1

Lab Sample ID: 590-7906-8 DU
Matrix: Solid
Analysis Batch: 15450

Client Sample ID: USP-3 (1-2.5')
Prep Type: Total/NA
Prep Batch: 15454

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Gasoline Range Organics [C6 - C10]	ND		ND		mg/Kg	☼	NC	25
Diesel Range Organics (DRO) (C10-C25)	ND		ND		mg/Kg	☼	NC	25
Residual Range Organics (RRO) (C25-C36)	ND		ND		mg/Kg	☼	NC	25

Surrogate	DU %Recovery	DU Qualifier	Limits
o-Terphenyl	91		50 - 150
n-Triacontane-d62	84		50 - 150

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 590-15456/2-A
Matrix: Solid
Analysis Batch: 15491

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 15456

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		1.3		mg/Kg		01/24/18 09:25	01/25/18 14:08	1
Barium	ND		1.3		mg/Kg		01/24/18 09:25	01/25/18 14:08	1
Cadmium	ND		1.3		mg/Kg		01/24/18 09:25	01/25/18 14:08	1
Chromium	ND		1.3		mg/Kg		01/24/18 09:25	01/25/18 14:08	1
Lead	ND		3.0		mg/Kg		01/24/18 09:25	01/25/18 14:08	1
Selenium	ND		5.0		mg/Kg		01/24/18 09:25	01/25/18 14:08	1
Silver	ND		1.3		mg/Kg		01/24/18 09:25	01/25/18 14:08	1

Lab Sample ID: MB 590-15456/2-A
Matrix: Solid
Analysis Batch: 15506

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 15456

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		1.3		mg/Kg		01/24/18 09:25	01/29/18 12:32	1

Lab Sample ID: LCS 590-15456/1-A
Matrix: Solid
Analysis Batch: 15491

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 15456

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	50.0	51.1		mg/Kg		102	80 - 120
Barium	50.0	50.1		mg/Kg		100	80 - 120
Cadmium	50.0	50.2		mg/Kg		100	80 - 120

Method: 6010C - Metals (ICP) (Continued)

Lab Sample ID: LCS 590-15456/1-A
Matrix: Solid
Analysis Batch: 15491

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 15456

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chromium	50.0	50.6		mg/Kg		101	80 - 120
Lead	50.0	51.3		mg/Kg		103	80 - 120
Selenium	500	507		mg/Kg		101	80 - 120
Silver	50.0	49.9		mg/Kg		100	80 - 120

Lab Sample ID: LCS 590-15456/1-A
Matrix: Solid
Analysis Batch: 15506

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 15456

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	50.0	50.3		mg/Kg		101	80 - 120

Method: 7471B - Mercury (CVAA)

Lab Sample ID: MB 590-15458/9-A
Matrix: Solid
Analysis Batch: 15467

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 15458

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	ND		50		ug/Kg		01/24/18 10:08	01/24/18 15:04	1

Lab Sample ID: LCS 590-15458/8-A
Matrix: Solid
Analysis Batch: 15467

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 15458

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Hg	200	200		ug/Kg		100	80 - 120

Lab Chronicle

Client: GeoEngineers Inc
Project/Site: Riverfront Park (0110-148-06)

TestAmerica Job ID: 590-7906-1

Client Sample ID: USP-1 (3.5-5')
Date Collected: 01/22/18 09:50
Date Received: 01/23/18 16:45

Lab Sample ID: 590-7906-2
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			15453	01/24/18 09:33	NMI	TAL SPK

Client Sample ID: USP-1 (3.5-5')
Date Collected: 01/22/18 09:50
Date Received: 01/23/18 16:45

Lab Sample ID: 590-7906-2
Matrix: Solid
Percent Solids: 88.1

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3550C			15.43 g	2 mL	15457	01/24/18 09:57	NMI	TAL SPK
Total/NA	Analysis	8270D SIM		1			15449	01/24/18 11:11	NMI	TAL SPK
Total/NA	Prep	NWTPH-HCID			10.31 g	20 mL	15454	01/24/18 09:31	NMI	TAL SPK
Total/NA	Analysis	NWTPH-HCID		1			15450	01/24/18 12:11	NMI	TAL SPK
Total/NA	Prep	3050B			1.48 g	50 mL	15456	01/24/18 09:25	JSP	TAL SPK
Total/NA	Analysis	6010C		2			15491	01/25/18 14:45	JSP	TAL SPK
Total/NA	Prep	3050B			1.48 g	50 mL	15456	01/24/18 09:25	JSP	TAL SPK
Total/NA	Analysis	6010C		2			15506	01/29/18 12:47	JSP	TAL SPK
Total/NA	Prep	7471B			0.75 g	50 mL	15458	01/24/18 10:08	JSP	TAL SPK
Total/NA	Analysis	7471B		1			15467	01/24/18 15:20	JSP	TAL SPK

Client Sample ID: USP-2 (3.5-5')
Date Collected: 01/23/18 09:00
Date Received: 01/23/18 16:45

Lab Sample ID: 590-7906-6
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			15453	01/24/18 09:03	NMI	TAL SPK

Client Sample ID: USP-2 (3.5-5')
Date Collected: 01/23/18 09:00
Date Received: 01/23/18 16:45

Lab Sample ID: 590-7906-6
Matrix: Solid
Percent Solids: 94.7

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3550C			15.39 g	2 mL	15457	01/24/18 09:57	NMI	TAL SPK
Total/NA	Analysis	8270D SIM		1			15449	01/24/18 11:34	NMI	TAL SPK
Total/NA	Prep	NWTPH-HCID			10.05 g	20 mL	15454	01/24/18 09:11	NMI	TAL SPK
Total/NA	Analysis	NWTPH-HCID		1			15450	01/24/18 10:35	NMI	TAL SPK
Total/NA	Prep	3050B			1.18 g	50 mL	15456	01/24/18 09:25	JSP	TAL SPK
Total/NA	Analysis	6010C		2			15491	01/25/18 14:27	JSP	TAL SPK
Total/NA	Prep	7471B			1.03 g	50 mL	15458	01/24/18 10:08	JSP	TAL SPK
Total/NA	Analysis	7471B		1			15467	01/24/18 15:34	JSP	TAL SPK

Lab Chronicle

Client: GeoEngineers Inc
Project/Site: Riverfront Park (0110-148-06)

TestAmerica Job ID: 590-7906-1

Client Sample ID: USP-3 (1-2.5')

Lab Sample ID: 590-7906-8
Date Collected: 01/23/18 12:30
Matrix: Solid
Date Received: 01/23/18 16:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			15453	01/24/18 09:03	NMI	TAL SPK

Client Sample ID: USP-3 (1-2.5')

Lab Sample ID: 590-7906-8
Date Collected: 01/23/18 12:30
Matrix: Solid
Date Received: 01/23/18 16:45
Percent Solids: 95.8

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3550C			15.54 g	2 mL	15457	01/24/18 09:57	NMI	TAL SPK
Total/NA	Analysis	8270D SIM		1			15449	01/24/18 12:51	NMI	TAL SPK
Total/NA	Prep	NWTPH-HCID			10.84 g	20 mL	15454	01/24/18 09:11	NMI	TAL SPK
Total/NA	Analysis	NWTPH-HCID		1			15450	01/24/18 11:13	NMI	TAL SPK
Total/NA	Prep	3050B			1.23 g	50 mL	15456	01/24/18 09:25	JSP	TAL SPK
Total/NA	Analysis	6010C		2			15491	01/25/18 14:29	JSP	TAL SPK
Total/NA	Prep	7471B			1.09 g	50 mL	15458	01/24/18 10:08	JSP	TAL SPK
Total/NA	Analysis	7471B		1			15467	01/24/18 15:36	JSP	TAL SPK

Client Sample ID: USP-4 (3.5-5')

Lab Sample ID: 590-7906-10
Date Collected: 01/23/18 11:10
Matrix: Solid
Date Received: 01/23/18 16:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			15453	01/24/18 09:03	NMI	TAL SPK

Client Sample ID: USP-4 (3.5-5')

Lab Sample ID: 590-7906-10
Date Collected: 01/23/18 11:10
Matrix: Solid
Date Received: 01/23/18 16:45
Percent Solids: 90.3

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.903 g	5 mL	15437	01/23/18 17:35	MRS	TAL SPK
Total/NA	Analysis	8260C		1	0.86 mL	43 mL	15444	01/23/18 22:54	MRS	TAL SPK
Total/NA	Prep	3550C			15.67 g	2 mL	15457	01/24/18 09:57	NMI	TAL SPK
Total/NA	Analysis	8270D SIM		1			15449	01/24/18 13:17	NMI	TAL SPK
Total/NA	Prep	NWTPH-HCID			10.76 g	20 mL	15454	01/24/18 09:11	NMI	TAL SPK
Total/NA	Analysis	NWTPH-HCID		1			15450	01/24/18 11:33	NMI	TAL SPK
Total/NA	Prep	3050B			1.21 g	50 mL	15456	01/24/18 09:25	JSP	TAL SPK
Total/NA	Analysis	6010C		2			15491	01/25/18 14:32	JSP	TAL SPK
Total/NA	Prep	7471B			1.29 g	50 mL	15458	01/24/18 10:09	JSP	TAL SPK
Total/NA	Analysis	7471B		1			15467	01/24/18 15:39	JSP	TAL SPK

Lab Chronicle

Client: GeoEngineers Inc
Project/Site: Riverfront Park (0110-148-06)

TestAmerica Job ID: 590-7906-1

Client Sample ID: USP-5 (3.5-5')

Date Collected: 01/23/18 14:25
Date Received: 01/23/18 16:45

Lab Sample ID: 590-7906-14
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			15453	01/24/18 09:03	NMI	TAL SPK

Client Sample ID: USP-5 (3.5-5')

Date Collected: 01/23/18 14:25
Date Received: 01/23/18 16:45

Lab Sample ID: 590-7906-14
Matrix: Solid
Percent Solids: 94.0

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3550C			15.42 g	2 mL	15457	01/24/18 09:57	NMI	TAL SPK
Total/NA	Analysis	8270D SIM		1			15449	01/24/18 13:44	NMI	TAL SPK
Total/NA	Prep	NWTPH-HCID			10.45 g	20 mL	15454	01/24/18 09:11	NMI	TAL SPK
Total/NA	Analysis	NWTPH-HCID		1			15450	01/24/18 11:52	NMI	TAL SPK
Total/NA	Prep	3050B			1.38 g	50 mL	15456	01/24/18 09:25	JSP	TAL SPK
Total/NA	Analysis	6010C		2			15491	01/25/18 14:34	JSP	TAL SPK
Total/NA	Prep	7471B			1.15 g	50 mL	15458	01/24/18 10:14	JSP	TAL SPK
Total/NA	Analysis	7471B		1			15467	01/24/18 15:49	JSP	TAL SPK

Laboratory References:

TAL SPK = TestAmerica Spokane, 11922 East 1st Ave, Spokane, WA 99206, TEL (509)924-9200

Accreditation/Certification Summary

Client: GeoEngineers Inc
Project/Site: Riverfront Park (0110-148-06)

TestAmerica Job ID: 590-7906-1

Laboratory: TestAmerica Spokane

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	EPA Region	Identification Number	Expiration Date
Washington	State Program	10	C569	01-06-19

The following analytes are included in this report, but accreditation/certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
Moisture		Solid	Percent Moisture
Moisture		Solid	Percent Solids
NWTPH-HCID	NWTPH-HCID	Solid	Diesel Range Organics (DRO) (C10-C25)
NWTPH-HCID	NWTPH-HCID	Solid	Gasoline Range Organics [C6 - C10]
NWTPH-HCID	NWTPH-HCID	Solid	Residual Range Organics (RRO) (C25-C36)

Method Summary

Client: GeoEngineers Inc
Project/Site: Riverfront Park (0110-148-06)

TestAmerica Job ID: 590-7906-1

Method	Method Description	Protocol	Laboratory
8260C	Volatile Organic Compounds by GC/MS	SW846	TAL SPK
8270D SIM	Semivolatile Organic Compounds (GC/MS SIM)	SW846	TAL SPK
NWTPH-HCID	Northwest - Hydrocarbon Identification (GC)	NWTPH	TAL SPK
6010C	Metals (ICP)	SW846	TAL SPK
7471B	Mercury (CVAA)	SW846	TAL SPK
Moisture	Percent Moisture	EPA	TAL SPK

Protocol References:

EPA = US Environmental Protection Agency

NWTPH = Northwest Total Petroleum Hydrocarbon

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL SPK = TestAmerica Spokane, 11922 East 1st Ave, Spokane, WA 99206, TEL (509)924-9200

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

11922 E. First Ave., Spokane WA 99206-5302 509-924-9200 FAX 924-9290 [X]
9405 SW Nimbus Ave., Beaverton, OR 97008-7145 503-906-9200 FAX 906-9210 [ ]
2000 W International Airport Rd Ste A10, Anchorage, AK 99502-1119 907-563-9200 FAX 563-9210 [ ]

CHAIN OF CUSTODY REPORT

Work Order #:

CLIENT: GeoEngineers

REPORT TO: JR Sugalski @ geoengineers.com

ADDRESS: 523 E 2nd Ave Spokane, WA 99202

PHONE: 509-363-3125 FAX:

INVOICE TO: GEI

P.O. NUMBER:

PROJECT NAME:

PROJECT NUMBER:

SAMPLED BY:

TURNAROUND REQUEST in Business Days *

Organic & Inorganic Analyses: [X] 10 STD. | 7 | 5 | 4 | 3 | 2 | 1 | <1

Petroleum Hydrocarbon Analyses: [X] 5 STD. | 4 | 3 | 2 | 1 | <1

OTHER Specify:

* Turnaround Requests less than standard may incur Rush Charges.

	CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	PRESERVATIVE	REQUESTED ANALYSES: NWTPH-HCID	PAHs 8270SIM	RCRA8 Metals	8260C VOCs	MATRIX (W, S, O)	# OF CONT.	LOCATION/ COMMENTS	TA WO ID
1	USP-1 (1-2')	1/22/18 0940						S	2		
2	USP-1 (3.5-5')	1/22/18 0950						S	2		
3	USP-1 (8.5-10')	1/22/18 1000						S	2		
4	USP-1 (13.5-15')	1/22/18 1010		X	X	X		S	2		
5	USP-2 (1-2.5)	1/23/18 0850						S	2		
6	USP-2 (3.5-5)	1/23/18 0900		X	X	X		S	2		
7	USP-2 (8.5-9)	1/23/18 0910						S	2		
8	USP-3 (1-2.5)	1/22/18 1230		X	X	X		S	2		
9	USP-4 (1-2)	1/23/18 1100						S	2		
10	USP-4 (3.5-5)	1/23/18 1110		X	X	X	X	S	4		

RELEASED BY: Josh Lee — DATE: 1/23/18 — TIME: 1645

PRINT NAME: Josh Lee — FIRM: GEI

RECEIVED BY: Sheila Kratz — DATE: 1/23/18 — TIME: 1645

PRINT NAME: Sheila Kratz — FIRM: TA Spok

RELEASED BY: — DATE: — TIME:

PRINT NAME: — FIRM:

RECEIVED BY: — DATE: — TIME:

PRINT NAME: — FIRM:

ADDITIONAL REMARKS:

TEMP: 3.6°C

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IR0004

590-7906 Chain of Custody

AL-1000 (0714)

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

11922 E. First Ave., Spokane WA 99206-5302 509-924-9200 FAX 924-9290
9405 SW Nimbus Ave., Beaverton, OR 97008-7145 503-906-9200 FAX 906-9210
2000 W International Airport Rd Ste A10, Anchorage, AK 99502-1119 907-563-9200 FAX 563-9210

1/29/2018

CHAIN OF CUSTODY REPORT

Work Order #:

CLIENT: GeoEngineers
REPORT TO: JRSuglski@geoengineers.com
ADDRESS: 523 E 2nd Ave Spokane, WA 99202
PHONE: 509-363-3125 FAX:

INVOICE TO: GEI
P.O. NUMBER:

PROJECT NAME:
PROJECT NUMBER:
SAMPLED BY:

TURNAROUND REQUEST
in Business Days *
Organic & Inorganic Analyses: [X] STD. [7] [5] [4] [3] [2] [1] [<1]
Petroleum Hydrocarbon Analyses: [X] STD. [4] [3] [2] [1] [<1]
[OTHER] Specify:
* Turnaround Requests less than standard may incur Rush Charges.

CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	PRESERVATIVE	NWTPH-HCID	PAHs 8270 SIM	RCRA Metals	MATRIX (W, S, O)	# OF CONT.	LOCATION/ COMMENTS	TA WO ID
1 USP-4(6-7.5)	1/23/18 1115					S	2		
2 USP-4(8.5-10)	1/23/18 1120					S	2		
3 USP-5(1-2.5)	1/23/18 1420					S	2		
4 USP-5(3.5-5)	1/23/18 1425		X	X	X	S	2		
5 USP-5(6-7.5)	1/23/18 1430					S	2		
6 USP-5(13.5-15)	1/23/18 1440					S	2		
7									
8									
9									
10									

RELEASED BY: [signature] DATE: 1/23/18
PRINT NAME: Josh Lee FIRM: GET TIME: 1645
RECEIVED BY: Sheila Kratz DATE: 1/23/18
PRINT NAME: Sheila Kratz FIRM: TA Spok TIME: 1645

RELEASED BY: DATE:
PRINT NAME: FIRM: TIME:
RECEIVED BY: DATE:
PRINT NAME: FIRM: TIME:

ADDITIONAL REMARKS:

TEMP: 3.6°C PAGE 2 OF 2
IR0004

Login Sample Receipt Checklist

Client: GeoEngineers Inc

Job Number: 590-7906-1

Login Number: 7906
List Number: 1
Creator: Kratz, Sheila J

List Source: TestAmerica Spokane

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	Lab does not accept radioactive samples.
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	No analysis requiring residual chlorine check assigned.

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Spokane
11922 East 1st Ave
Spokane, WA 99206
Tel: (509)924-9200

TestAmerica Job ID: 590-7906-3
Client Project/Site: Riverfront Park (0110-148-06)

For:
GeoEngineers Inc
523 East Second Ave
Spokane, Washington 99202

Attn: JR Sugalski

Authorized for release by:
2/2/2018 4:34:42 PM

Randee Arrington, Project Manager II
(509)924-9200
randee.arrington@testamericainc.com

Table of Contents

Case Narrative

Client: GeoEngineers Inc
Project/Site: Riverfront Park (0110-148-06)

TestAmerica Job ID: 590-7906-3

Job ID: 590-7906-3

Laboratory: TestAmerica Spokane

Narrative

Receipt
The samples were received on 1/23/2018 4:45 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.6º C.

Receipt Exceptions
The following sample was activated for TCLP Lead analysis by the client on 01/29/18: USP-4 (3.5-5') (590-7906-10). This analysis was not originally requested on the chain-of-custody (COC).

Metals
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Sample Summary

Client: GeoEngineers Inc
Project/Site: Riverfront Park (0110-148-06)

TestAmerica Job ID: 590-7906-3

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
590-7906-10	USP-4 (3.5-5')	Solid	01/23/18 11:10	01/23/18 16:45

Client: GeoEngineers Inc
Project/Site: Riverfront Park (0110-148-06)

TestAmerica Job ID: 590-7906-3

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Client Sample Results

Client: GeoEngineers Inc
Project/Site: Riverfront Park (0110-148-06)

TestAmerica Job ID: 590-7906-3

Client Sample ID: USP-4 (3.5-5')
Date Collected: 01/23/18 11:10
Date Received: 01/23/18 16:45

Lab Sample ID: 590-7906-10
Matrix: Solid

Method: 6010C - Metals (ICP) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	0.44		0.060		mg/L		02/02/18 10:14	02/02/18 14:00	1

Method: 6010C - Metals (ICP)

Lab Sample ID: LCS 590-15566/1-A
Matrix: Solid
Analysis Batch: 15573

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 15566

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Lead	1.00	1.01		mg/L		101	80 - 120

Lab Sample ID: LB 590-15551/1-B
Matrix: Solid
Analysis Batch: 15573

Client Sample ID: Method Blank
Prep Type: TCLP
Prep Batch: 15566

Analyte	LB Result	LB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		0.060		mg/L		02/02/18 10:14	02/02/18 13:57	1

Lab Chronicle

Client: GeoEngineers Inc
Project/Site: Riverfront Park (0110-148-06)

TestAmerica Job ID: 590-7906-3

Client Sample ID: USP-4 (3.5-5')
Date Collected: 01/23/18 11:10
Date Received: 01/23/18 16:45

Lab Sample ID: 590-7906-10
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
TCLP	Leach	1311			100.53 g	2000.05 mL	15551	02/01/18 12:47	JSP	TAL SPK
TCLP	Prep	3010A			50 mL	50 mL	15566	02/02/18 10:14	JSP	TAL SPK
TCLP	Analysis	6010C		1			15573	02/02/18 14:00	JSP	TAL SPK

Laboratory References:

TAL SPK = TestAmerica Spokane, 11922 East 1st Ave, Spokane, WA 99206, TEL (509)924-9200

Accreditation/Certification Summary

Client: GeoEngineers Inc
Project/Site: Riverfront Park (0110-148-06)

TestAmerica Job ID: 590-7906-3

Laboratory: TestAmerica Spokane

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	EPA Region	Identification Number	Expiration Date
Washington	State Program	10	C569	01-06-19

Analysis Method	Prep Method	Matrix	Analyte

Method Summary

Client: GeoEngineers Inc
Project/Site: Riverfront Park (0110-148-06)

TestAmerica Job ID: 590-7906-3

Method	Method Description	Protocol	Laboratory
6010C	Metals (ICP)	SW846	TAL SPK

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL SPK = TestAmerica Spokane, 11922 East 1st Ave, Spokane, WA 99206, TEL (509)924-9200

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

11922 E. First Ave., Spokane WA 99206-5302 509-924-9200 FAX 924-9290 [X]
9405 SW Nimbus Ave., Beaverton, OR 97008-7145 503-906-9200 FAX 906-9210 [ ]
2000 W International Airport Rd Ste A10, Anchorage, AK 99502-1119 907-563-9200 FAX 563-9210 [ ]

CHAIN OF CUSTODY REPORT

Work Order #:

CLIENT: GeoEngineers

REPORT TO: JR Sugalski @ geoengineers.com

ADDRESS: 523 E 2nd Ave Spokane, WA 99202

PHONE: 509-363-3125 FAX:

INVOICE TO: GEI

P.O. NUMBER:

PROJECT NAME:

PROJECT NUMBER:

SAMPLED BY:

TURNAROUND REQUEST in Business Days *

Organic & Inorganic Analyses: [X] 10 STD. | 7 | 5 | 4 | 3 | 2 | 1 | <1

Petroleum Hydrocarbon Analyses: [X] 5 STD. | 4 | 3 | 2 | 1 | <1

OTHER Specify:

* Turnaround Requests less than standard may incur Rush Charges.

	CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	PRESERVATIVE	REQUESTED ANALYSES: NWTPH-HCID	PAHs 8270SIM	RCRA8 Metals	8260C VOCs	MATRIX (W, S, O)	# OF CONT.	LOCATION/ COMMENTS	TA WO ID
1	USP-1(1-2')	1/22/18 0940						S	2		
2	USP-1(3.5-5')	1/22/18 0950						S	2		
3	USP-1(8.5-10')	1/22/18 1000						S	2		
4	USP-1(13.5-15')	1/22/18 1010		X	X	X		S	2		
5	USP-2(1-2.5)	1/23/18 0850						S	2		
6	USP-2(3.5-5)	1/23/18 0900		X	X	X		S	2		
7	USP-2(8.5-9)	1/23/18 0910						S	2		
8	USP-3(1-2.5)	1/22/18 1230		X	X	X		S	2		
9	USP-4(1-2)	1/23/18 1100						S	2		
10	USP-4(3.5-5)	1/23/18 1110		X	X	X	X	S	4		

RELEASED BY: PRINT NAME: Josh Lee FIRM: GEI DATE: 1/23/18 TIME: 1645

RECEIVED BY: Sheila Kratz PRINT NAME: Sheila Kratz FIRM: TA Spok DATE: 1/23/18 TIME: 1645

RELEASED BY: PRINT NAME: FIRM: DATE: TIME:

RECEIVED BY: PRINT NAME: FIRM: DATE: TIME:

ADDITIONAL REMARKS:

TEMP: 3.6°C

PAGE 1 OF 2

IR0004

590-7906 Chain of Custody

AL-1000 (0714)

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

11922 E. First Ave., Spokane WA 99206-5302 509-924-9200 FAX 924-9290
9405 SW Nimbus Ave., Beaverton, OR 97008-7145 503-906-9200 FAX 906-9210
2000 W International Airport Rd Ste A10, Anchorage, AK 99502-1119 907-563-9200 FAX 563-9210

CHAIN OF CUSTODY REPORT

Work Order #:

CLIENT: GeoEngineers
REPORT TO: JRSugalski@geoengineers.com
ADDRESS: 523 E 2nd Ave Spokane, WA 99202
PHONE: 509-363-3125 FAX:
PROJECT NAME:
PROJECT NUMBER:
SAMPLED BY:

INVOICE TO: GEI

P.O. NUMBER:

TURNAROUND REQUEST in Business Days *
Organic & Inorganic Analyses: [X] 10 STD. 7 5 4 3 2 1 <1
Petroleum Hydrocarbon Analyses: [X] 5 STD. 4 3 2 1 <1
OTHER Specify:
* Turnaround Requests less than standard may incur Rush Charges.

PRESERVATIVE / REQUESTED ANALYSES

CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	NWTPH-HCID	PAHs 8270 SIM	RCRA Metals										MATRIX (W, S, O)	# OF CONT.	LOCATION/ COMMENTS	TA WO ID
1 USP-4 (6-7.5)	1/23/18 1115													S	2		
2 USP-4 (8.5-10)	1/23/18 1120													S	2		
3 USP-5 (1-2.5)	1/23/18 1420													S	2		
4 USP-5 (3.5-5)	1/23/18 1425	X	X	X										S	2		
5 USP-5 (6-7.5)	1/23/18 1430													S	2		
6 USP-5 (13.5-15)	1/23/18 1440													S	2		
7																	
8																	
9																	
10																	

RELEASED BY: [signature] PRINT NAME: Josh Lee FIRM: GEI	DATE: 1/23/18 TIME: 1645	RECEIVED BY: Sheila Kratz [signature] PRINT NAME: Sheila Kratz FIRM: TA Spok	DATE: 1/23/18 TIME: 1645
RELEASED BY: PRINT NAME: FIRM:	DATE: TIME:	RECEIVED BY: PRINT NAME: FIRM:	DATE: TIME:

ADDITIONAL REMARKS:

TEMP: 3.6°C PAGE 2 OF 2

IR004 TAL-1000 (0714)

Login Sample Receipt Checklist

Client: GeoEngineers Inc

Job Number: 590-7906-3

Login Number: 7906
List Number: 1
Creator: Kratz, Sheila J

List Source: TestAmerica Spokane

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	Lab does not accept radioactive samples.
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	No analysis requiring residual chlorine check assigned.