

Underground Storage Tank Closure Report

USACE Wildlife Mitigation
Operations/Maintenance Facility
Chief Joseph Dam
Bridgeport, Washington
Facility Site ID: 22348824
UST Site No.: 6690



Prepared for:
United States Corps of Engineers
Seattle District

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November 6, 2014

Sign-off Sheet

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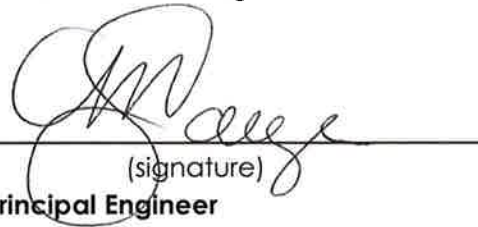
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Abbreviations

AST	Aboveground Storage Tank
bgs	Below ground surface
BTEX	Benzene, toluene, ethyl benzene, and total xylenes
CUL	Cleanup Level
Ecology	Washington State Department of Ecology
EPH	Extractable Petroleum Hydrocarbons
HASP	Health and Safety Plan
ICC	International Code Council
ID	Identification
LUST	Leaking Underground Storage Tank
MTCA	Model Toxics Control Act
PID	Photoionization Detector
Sabyr	Sabyr Contractors, Inc.
Stantec	Stantec Consulting Services Inc.
SVOCs	Semi-Volatile Compounds
TPH-Dx	Total petroleum hydrocarbons as diesel
USACE	United States Army Corps of Engineers
UST	Underground Storage Tank
VOCs	Volatile Organic Compounds

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INTRODUCTION

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1.0 INTRODUCTION

Stantec Consulting Services Inc. (Stantec) was retained by Sabyr Contractors, Inc. (Sabyr) of Tacoma, Washington to provide documentation of the underground storage tank (UST) system removal at the United States Army Corps of Engineers (USACE) Wildlife Mitigation Operations and Maintenance Facility near Bridgeport, Washington (the "Site"). The Site is located on Pearl Hill Road NE near Chief Joseph Dam on the Columbia River. The 1,000-gallon UST is being replaced with a 1,500-gallon diesel aboveground storage tank (AST) and a 1,000-gallon gasoline AST as part of the fueling system upgrade.

The UST decommissioning and assessment work was conducted on October 6 and 7, 2014. The decommissioning of the 1,000-gallon diesel fuel UST was supervised by Mr. Lee Dalton of Sabyr. Mr. Dalton is an International Code Council (ICC) certified UST Decommissioning Supervisor (#1136590-U2).

Site assessment activities were performed by Mr. Greg McCormick of Stantec who is an ICC-certified Washington State Site Assessor (#1052439-U7). UST site assessment and remedial excavation activities were conducted in accordance with the Washington State Department of Ecology (Ecology) document: "*Guidance for Site Checks and Site Assessments for Underground Storage Tanks*" [Ecology, February 1991 (revised April 2003)] as required by Washington Administrative Code 173-360-610.

1.1 PURPOSE AND SCOPE OF WORK

Stantec supervised and observed the removal of one 1,000-gallon double-wall fiberglass UST and associated product piping at the Site. Stantec collected UST closure soil samples to assess subsurface conditions adjacent and beneath the former UST at the time of closure.

Stantec's scope of work consisted of the following tasks:

- Preparation of a *Site-specific Health and Safety Plan (HASP)*;
- Preparation of the *Field Sampling and Laboratory Testing Plan for UST Site Assessment* sampling and analysis plan;
- Notification to Ecology 30 days prior to UST removal;
- Supervision and documentation of the UST and product line decommissioning activities;
- Inspection of the condition of the UST and product piping upon removal;
- Collection of the confirmation soil samples from the UST excavation;



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- Logging of subsurface conditions, field screening soil samples for organic vapors using a photoionization detector (PID), and submitting selected soil samples for laboratory analysis of total petroleum hydrocarbons as diesel fuel extended to include oil-range hydrocarbons (TPH-Dx). The soil sample collected from the base of the UST was also submitted for analysis of benzene, toluene, ethyl benzene, and total xylenes (BTEX), volatile organic compounds (VOCs); semi-volatile organic compounds (SVOCs), and extractable petroleum hydrocarbons (EPH);
- Field screening and collection of soil samples from the soil stockpile;
- Removal and disposal of petroleum-contaminated absorbent material; and,
- Preparation of this UST Closure Report documenting UST removal activities.

1.2 REGULATORY STATUS

Stantec reviewed Ecology's electronic databases regarding the regulatory status of the UST at the Site. The Site is listed in Ecology's UST Site/Tank Data Summary databases as UST Number 6690 and Facility Site Identification (ID) Number 22348824. The database references UST Tags A4310 and A5630. The 1,000 (or 950-gallon) UST is designated as "Tank No. 5" in the UST database.

Installation of the 1,000-gallon double-walled fiberglass UST was completed on May 16, 1986 and was upgraded on November 18, 1998. The permit for the former UST system was current through June 30, 2015. The database information indicates the UST was equipped with an interstitial monitoring system, double walled piping, corrosion resistant exterior, spill bucket, and automatic line leak detection. The system was tightness tested annually and was certified tight during its last test according to USACE personnel present at the Site on the day of UST closure.

The required 30-Day Notice was mailed to Ecology on August 22, 2014. The Notice referenced both tag numbers at the Chief Joseph Dam Project OFC facility located on Pearl Hill Road NE in Bridgeport, Washington. The UST Owner Operator is listed as "U.S. Army Corps of Engineers." The Owner/Operator representative listed is Mr. Marshall A. Grip, Environmental Compliance Officer with the USACE. The form indicated an intended UST closure date after September 29, 2014. Mr. Grip signed the Ecology *UST Closure and Site Assessment Notice* as the USACE representative and was present on-site during some of the closure activities.

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FACILITY DESCRIPTION
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2.0 FACILITY DESCRIPTION

2.1 SITE LOCATION

The 1,000-gallon diesel UST was located at the Wildlife Mitigation Building Operations and Maintenance Facility maintained by the USACE. The Site is located on the south bank of the Columbia River within 0.5 mile of the Chief Joseph Dam (*Figure 1*).

2.2 SITE DESCRIPTION

The UST was located along the fence line forming the eastern Site boundary. The product line extended underground at a depth of approximately two feet below ground surface (bgs) to a former fuel dispenser located on the boat dock approximately 116 feet from the UST. The fuel dispenser was removed along with the UST as part of the fueling system upgrade (*Figure 2*).

The UST area was formerly covered by a concrete slab with a steel door accessing the turbine pump on top of the UST. The surrounding area was unpaved and covered with ¾ inch leveling course. The UST was accessible to excavation equipment with no overhead obstructions.

2.3 SURROUNDING LAND USE

The Site is located in a rural area outside of the city limits of Bridgeport, Washington. The facility is located on Pearl Hill Road and is surrounded on three sides by a state recreation area with a picnic area and boat launch. The site is bound on the northwest by the Columbia River with the Chief Joseph Dam beyond. Access to the USACE Operations and Maintenance facility is restricted by a chain-link cyclone fence and vehicle access gate. There are no adjacent buildings or other permanent structures other than an asphalt-paved parking lot within 500 feet of the Site.

2.4 REGIONAL SETTING AND GEOLOGY

The Site lies on the south bank of the Columbia River approximately one mile east-southeast of the town of Bridgeport, Washington.

The Geologic Map of the Banks Lake 1:100,000 Quadrangle, Washington, indicates that shallow soils at the Site are classified as undivided glacial drift deposits or glacial till. This material includes glacial outwash deposits and ice-contact stratified materials deposited by the Okanogan lobe of the Cordilleran ice sheet during the Ice Age. The deposits form moraines, till plains, meltwater channels, and terraces. These glacial deposits are underlain by metamorphic tonalite gneiss bedrock.

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2.5 REGIONAL HYDROGEOLOGY

The Site is located at approximately 1,000-feet above mean sea level along the south bank of the Columbia River. Groundwater was not encountered during any of the excavation or soil sampling activities conducted during the UST Site Assessment. The static groundwater level lies between 40- and 80-feet bgs as stated on available well logs that were reviewed from Ecology's Well Log database for water supply wells located within a mile radius of the Site.

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FIELD ACTIVITIES
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3.0 FIELD ACTIVITIES

3.1 UST REMOVAL ACTIVITIES

Saybr was contracted by the USACE to oversee decommissioning of the 1,000-gallon diesel tank, product piping, and fuel dispenser at the Site. Prior to commencement of closure activities, a 30-day Notice of UST closure was submitted to Ecology on August 22, 2014. The USACE provided site plans of the Wildlife Mitigation Operations/Maintenance Facility showing the location of the buildings, fueling systems, and boat dock areas to coordinate closure activities. Prior to tank closure activities, the UST was emptied of residual diesel fuel by the USACE. Copies of Ecology's 30-Day Notice, UST Closure and Site Assessment Notice, and UST Site Check/Site Assessment Checklist are included in **Appendix A**.

Stantec prepared a HASP for the Site. The HASP identified potential physical and chemical hazards associated with the proposed field activities and established personal protection standards and mandatory safety practices. The HASP also included information on suspected chemical compounds to be encountered, a list of monitoring equipment, the required protective clothing and equipment, a map and directions to the nearest hospital, and a list of emergency telephone numbers. The HASP was available at all times during the field activities. Saybr and Stantec personnel working at the Site were required to review, sign, and comply with the provisions set forth in the HASP during all on-site activities.

Stantec also prepared a *Field Sampling and Laboratory Testing Plan for UST Site Assessment* (the "Plan") for UST Site Assessment activities. The Plan described field sampling methods and quality control procedures used during the UST Site Assessment. The Plan identified the laboratory and laboratory methods used during contaminant testing, field screening methods, quality assurance/quality control procedures, and waste management information. Certificates for Mr. Dalton's and Mr. McCormick's UST certifications, and analytical laboratory are included as Attachments to the Plan. A copy of the Plan is included as **Appendix B**.

On October 6, 2014, Saybr removed the concrete pad and steel access door over the UST. Saybr supervised Marine Vacuum Service (MarVac) of Seattle, Washington triple rinse and pump out the rinsate water from the interior of the UST. Approximately 300 gallons of rinsate water was removed from the UST and transported to MarVac's permitted hazardous waste treatment and disposal facility in Seattle. Waste disposal documentation is provided in **Appendix C**.

On October 7th, the UST was rendered inert with pelletized dry ice and tested with a portable multi-gas detector to confirm the organic vapor levels in the UST was adequate for removal. Following inerting and testing of the UST, the soil overburden was removed a depth of approximately 2-feet bgs. Visual inspection indicated that the turbine pump and metal flex piping attached to the turbine were in good condition.

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Following the rinsing and inerting, Saybr personnel excavated the 1,000-gallon fiberglass UST using a backhoe. Diesel-contaminated absorbent material was encountered on top of the UST under the turbine pump. The material was contained in the spill bucket in the immediate area beneath the pump. Saybr segregated the impacted material on plastic sheeting in a separate stockpile from the clean overburden material. Saybr personnel removed material from the sidewalls and ends of the UST that were inspected and screened periodically by Mr. McCormick to assess possible fuel impacts. No visual or olfactory indications of impact were identified in the soil surrounding the UST or the soil stockpile.

The UST was staged on plastic sheeting beside the excavation for inspection. The fiberglass UST measured 11 feet long by 4.5 inches in diameter. The UST appeared to be in good condition with the exception of a small puncture at the north end of the UST caused by Sabyr's backhoe bucket during removal activities. Approximately 1-2 gallons of blue/green brine solution was released from the puncture before it could be plugged with an absorbent pad. The brine solution filled the interstitial space and was used in the tank monitoring system. There was a concrete hold down pad with tank straps at a depth of approximately 7-feet bgs. The vent line extended to the vent pipe located approximately 7 feet east of the UST. Another pipe extended to the west to the tank monitoring system and brine reservoir. No groundwater was encountered in the UST excavation (**Figure 3**).

A stamp on the side of the UST indicated that it was a double-walled tank manufactured by Owens-Corning Fiberglas. After the UST was secured on plastic sheeting, a square hole was cut in the exterior fiberglass shell to insert a hose inside the interstitial space and pump out the residual brine solution prior to transport. When the brine was removed, a second hole was cut in the interior shell to allow for additional cleaning of the interior of the tank and interstitial space. The UST was loaded onto a flat-bed truck, secured, and transported to the AW Regional Disposal facility in Seattle, Washington. The certificate of UST disposal is included in **Appendix C**.

Approximately 116 feet of flex metal product piping was removed from within a secondary plastic pipe after the UST was removed. The flex piping ran straight to the fuel dispenser on the boat dock with no elbows or joints. The piping was inspected upon removal and appeared to be in good condition with no evidence of fuel leakage or exterior damage.

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FIELD ACTIVITIES
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3.2 FIELD SCREENING

Field screening consisted of visual observations of potential hydrocarbon impacts and headspace analysis for volatile organic vapors. Overburden and surrounding soil removed from the UST excavation was screened for organic vapors with a MiniRae, Inc., Organic Vapor Meter PID. PID screening is less effective for detecting diesel impacts than gasoline impacts but was employed to provide additional information on possible releases. The excavation was guided primarily by visual and olfactory indications of fuel releases.

During screening, a sample of the soil matrix was placed in a re-sealable plastic bag and allowed to equilibrate for approximately 10 minutes. The probe of the PID was used to pierce the plastic and extended into the headspace above the soil surface. The highest vapor reading obtained during the next 60 seconds was then recorded. Prior to use, the PID was calibrated to a known concentration of isobutylene, in accordance with the manufacturer's specifications.

No elevated PID readings, hydrocarbon odors, and/or staining were encountered in the UST excavation. Diesel odors were detected in the absorbent material located at the base of the spill bucket beneath the turbine pump. This material was characterized by its pelletized, non-soil appearance and dark color. A sample of this visibly impacted material was collected for disposal characterization. A copy of this profile information is provided in **Appendix D**.

3.3 SOIL SAMPLING ACTIVITIES

Following the removal of the UST, Stantec personnel collected grab samples from the four sidewalls of the excavation and base of the UST in accordance with Ecology guidelines. Maximum depth of the excavation was approximately 6.5-feet bgs. The presence of the hold down pad at 7-feet bgs prevented obtaining any deeper samples. Sampling was conducted from the north and south ends of the UST and east and west sidewalls at depth of approximately 4-feet bgs. The sample collected from the base of the UST was collected from a depth of approximately 6-feet bgs. All soil samples from the UST excavation were collected from the backhoe bucket due to safety concerns. Stantec also collected two composite samples from the excavated soil stockpile designated Stockpile #1 and Stockpile #2.

Soil samples submitted for laboratory analysis were collected in accordance with United States Environmental Protection Agency Method 5035A and submitted for analysis of diesel and oil-range petroleum hydrocarbons using Ecology Method TPH-Dx. The soil samples were collected using a syringe-type sampler to obtain approximately 5 grams of soil from the desired sample location. The samples were then placed directly into pre-weighed, unpreserved 40-milliliter vials (supplied by the analytical laboratory). Additional soil was collected by hand and placed directly into clean 4-ounce glass jars. A clean, disposable glove was used for each sample. Care was taken to obtain representative soil samples and to place the soils directly and quickly into the sample container to minimize loss of volatile constituents. Each jar was completely filled to minimize headspace and sealed with a Teflon™ lined screw cap. Each sample was then

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labeled (i.e., soil sample name with depth type of analysis, date, and time of sampling), and placed on ice in a cooler for transport.

3.4 SUBSURFACE CONDITIONS

3.4.1 Soil

During the UST removal activities, Stantec encountered approximately 2 to 3 inches of gravel material which appeared to be the base material beneath the concrete slab. The gravel was underlain by tan-colored silty sand to a depth of 7-feet bgs, the depth of the concrete hold down pad. Trace amounts of gravel were logged throughout the soil column. No groundwater was encountered.

3.4.2 Groundwater

Groundwater was not encountered during the UST closure activities.

3.5 SOIL ANALYTICAL METHODS

The soil samples collected from the UST excavation and soil stockpile were delivered under chain-of-custody to TestAmerica Labs of Tacoma, Washington. A total of 7 soil samples were selected for laboratory analysis. Diesel-range hydrocarbons were identified in the Base (6') sample and this sample was re-submitted for analysis of BTEX, VOCs, SVOCs, and EPH. The sample collected from the absorbent material beneath the turbine designated "Turbine-Top of Tank" was also submitted for TPH-Dx analysis for disposal characterization. All samples were submitted under standard turn-around-time.

3.6 SOIL ANALYTICAL RESULTS

None of the soil samples collected from the sidewalls or ends of the UST had detectable concentrations of diesel or oil-range TPH. The Base (6') sample had a diesel-range concentration of 1,500 milligrams per kilogram (mg/Kg) and an oil-range concentration of 99 mg/Kg. Both concentrations are below the Model Toxics Control Act (MTCA) Method A Cleanup Level (CUL) of 2,000 mg/Kg.

There were no detectable concentrations of BTEX compounds in the Base (6') sample. Naphthalene was detected at a concentration of 19 µg/Kg, benzo[a]anthracene was detected at a concentration of 17 µg/Kg, 1-Methylnaphthalene was detected at a concentration of 42 µg/Kg and 2-Methylnaphthalene was detected at a concentration of 56 µg/Kg. All concentrations were below the Method A Cleanup Level for Naphthalene in soil of 5 mg/kg. Analytical results from the UST closure activities are summarized in **Table 1A and 1B**. TPH-Dx results are presented on **Figure 3**.

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All other concentrations of VOCs and SVOCs were either reported below their respective MTCA Method A CULs or reported not exceeding laboratory practical quantitation limits.

Complete laboratory results and chain-of-custody documentation are included in **Appendix D**.

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SOIL DISPOSAL AND SITE RESTORATION
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4.0 SOIL DISPOSAL AND SITE RESTORATION

4.1 SOIL DISPOSAL

Materials exhibiting petroleum odor or with visible staining were stockpiled separately on plastic and sampled for disposal profiling. The only indications of petroleum impacts were in the absorbent material located beneath the turbine pump on top of the UST. This material was excavated using hand tools and placed into a 55-gallon DOT-approved drum for off-site transportation. The drum will be disposed of at licensed disposal facility pending completion of the waste disposal profile.

4.2 SITE RESTORATION

Following collection of all soil samples and confirmation that diesel and oil-range TPH concentrations were below the MTCA Method A CULs, the UST excavation was backfilled using rip rap material and sand. The material was compacted with the excavator to grade and the former UST area and surrounding area were left unpaved per the client's request.

The concrete debris and bollards removed from the UST area were transported off site for disposal as construction waste.

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SUMMARY AND CONCLUSIONS

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5.0 SUMMARY AND CONCLUSIONS

The 1,000-gallon, double-walled fiberglass UST and product piping were removed from the USACE Wildlife Mitigation Operations and Maintenance Facility on October 7, 2014. Based on field observations and analytical data, the following is concluded:

- Upon visual inspection, the fiberglass UST appeared to be in good condition with no apparent UST or product line failures observed;
- There was visual and olfactory evidence of minor diesel fuel releases inside the spill bucket beneath the turbine pump on top of the UST. The impacted material appeared to be absorbent material used to absorb de minimis releases of diesel fuel around pump and piping connections. The volume of material was less than 0.5 cubic yard. The material was excavated using hand tools, sampled for profiling, and placed into a 55-gallon, DOT-approved metal drum for off-site disposal.
- The UST was inspected upon removal and there was no indication of holes or damage. A small amount of the blue/green brine solution used to fill the interstitial space of the UST was released through a small hole punctured in the outer wall of the UST during the excavation. The hole was plugged quickly with minimal release of brine into the tank pit. The turbine pump and flex metal piping connection appeared tight and in good condition;
- Confirmation soil samples collected from the sidewalls of the former UST area had no detectable concentrations of diesel or oil-range petroleum hydrocarbons. The Base (6') sample had a diesel-range concentration of 1,500 mg/Kg and an oil-range concentration of 99 mg/Kg. Both concentrations are below the MTCA Method A Cleanup level for diesel and oil-range hydrocarbons in soil of 2,000 mg/Kg.
- Additional analysis of the Base (6') sample did not identify concentrations of BTEX, naphthalenes, VOCs, or SVOCs in excess of their applicable MTCA Method A CULs;
- Groundwater was not encountered during UST removal activities;
- Approximately 116 linear feet of flex metal product piping and a fuel dispenser was removed at the time of the UST decommissioning. The fuel dispenser was located on the boat dock over water. The product piping was located between the UST and the boat dock with no elbows or joints. The flex metal pipe was inspected upon removal. The exterior of the flex piping was dry and there were no indications of fuel releases or damage;

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- The fiberglass UST and one 55-gallon drum of diesel-impacted absorbent material from the turbine area were transported off site for disposal at a licensed solid waste disposal facility;
- The UST excavation was backfilled with clean rip rap and sand and compacted to surface grade. The area over and surrounding the former UST area was left unpaved.

Based on the results of this investigation, Stantec concludes that the UST system was in good condition at the time of closure and that there is no apparent evidence of a release associated with the UST or product piping.

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REFERENCES

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6.0 REFERENCES

Gulick, Charles W., Korosec, Michael A., Geologic Map of the Banks Lake 1:100,000 Quadrangle, Washington. Washington Division of Geology and Earth Resources, Open File Report 90-6, February 1990.

Underground Storage Tank (UST) and Leaking Underground Storage Tank (LUST) Lists, available from: <https://fortress.wa.gov/ecy/tcpwebreporting/reports.aspx> [Accessed September 26, 2014].

Washington State Department of Ecology. February 1991. (Revised April, 2003). Guidance for Site Checks and Site Assessments for Underground Storage Tanks. Department of Ecology Underground Storage Tank Program. Publication No. 90-52. February 1991 (Revised April 2003).

Washington State Department of Ecology. Model Toxics Control Act Statute and Regulation, Publication No. 94-06. Revised November 2007.

TABLES

Table 1A
Summary of Soil Analytical Results

Willows Flat Fueling Facility
Bridgeport, Washington

All concentrations are in milligrams per kilogram (mg/kg)

Sample Identification	Date	Depth (feet bgs)	Final Limit Sample	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TPH-Gas Range	TPH-Diesel Range	TPH-Oil Range	Naphthalenes
North End (4')	10/07/14	4	Yes	--	--	--	--	--	< 28	<56	--
South End (4')	10/07/14	4	Yes	--	--	--	--	--	<25	<50	--
East Sidewall (4')	10/07/14	4	Yes	--	--	--	--	--	<25	<50	--
West Sidewall (4')	10/07/14	4	Yes	--	--	--	--	--	<35	<70	--
Base (6')	10/07/14	6	Yes	<0.0016	<0.0041	<0.0041	<0.0041	--	1,500	99	<0.0041
Stockpile #1	10/07/14	--	--	--	--	--	--	--	<25	<50	--
Stockpile #2	10/07/14	--	--	--	--	--	--	--	27	<50	--
Turbine - Top of Tank	10/07/14	3	--	--	--	--	--	--	17,000	1,000	--
MTCA Method A Screening Levels for Unrestricted Land Uses				0.03	7	6	9	30^a	2,000	2,000	5

Notes:

bgs = Below ground surface

TPH-G = Total Petroleum Hydrocarbons in the Gasoline range, by Ecology Method NWTPH-G

TPH-D = Total Petroleum Hydrocarbons in the Diesel range, by Ecology Method NWTPH-Dx

TPH-O = Total Petroleum Hydrocarbons in the Oil range, by Ecology Method NWTPH-Dx

< = result is below practical quantitation limits

MTCA = Model Toxics Control Act

^a = Gasoline mixtures without benzene and where the total of ethylbenzene, toluene, and total xylenes are less than 1% of the gasoline mixture have a cleanup level of 100 mg/kg

BOLD = Detected analytes

SHADED = Concentration exceeds the MTCA Method A Cleanup Level of 2,000 mg/kg

Table 1B
Base (6') Sample - Extractable Petroleum Hydrocarbons, Naphthalenes and SVOCs.

Willows Flat Fueling Facility

Bridgeport, Washington

All concentrations in milligrams per kilogram (mg/kg)

Sample ID	Sample Depth (ft bgs)	Sample Date	Aliphatics ¹					Aromatics ¹				
			C8-C10	C10-C12	C12-C16	C16-C21	C21-C34	C8-C10	C10-C12	C12-C16	C16-C21	C21-C34
Base (6')	6	10/07/14	<5.1	<5.1	150	350	55	<5.1	<5.1	5.7	94	20

Sample ID	Sample Depth (ft bgs)	Sample Date	Naphthalenes ²			SVOC ²						
			Naphthalene	1-Methylnaphthalene	2-Methylnaphthalene	Benzo[a]anthracene	Benzo[a]pyrene	Benzo[b]fluoranthene	Benzo[k]fluoranthene	Chrysene	Dibenz(a,h)anthracene	Indeno[1,2,3-cd]pyrene
Base (6')	6	10/07/14	0.019	0.042	0.056	0.0017	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051

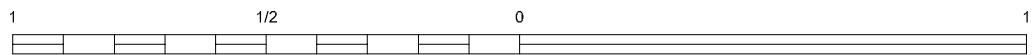
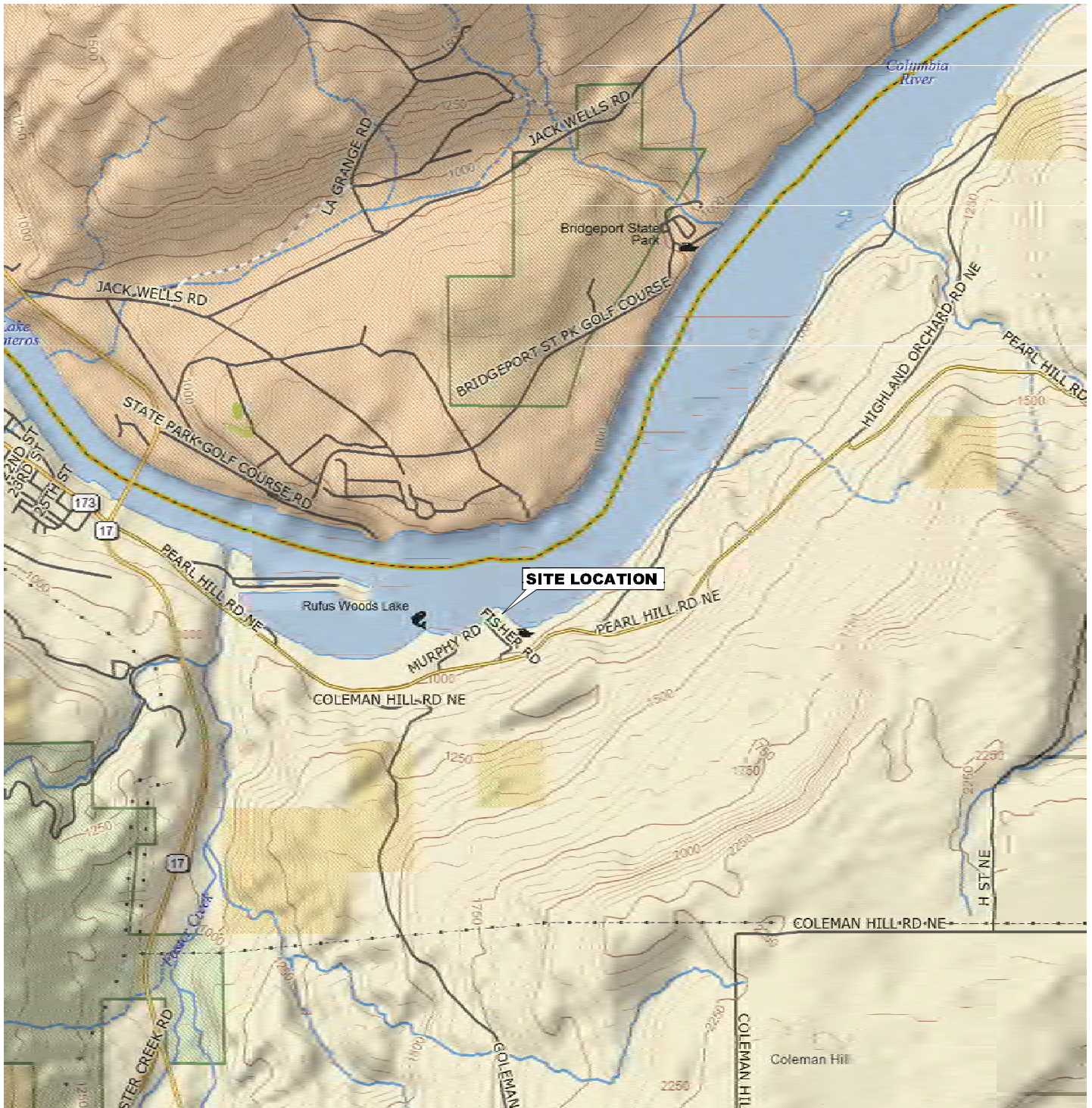
Explanation of Abbreviations:

SVOCs = Semi-Volatile Organic Compounds
ft bgs = feet below ground surface
< = result is below practical quantitation limits
NWEPH = Northwest Extractable Petroleum Hydrocarbons Method
MTCA = Model Toxics Control Act

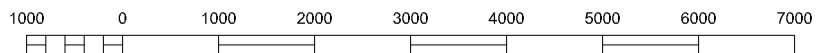
Notes:

¹ = Test America results using Method NWEPH
² = Test America results using Method 8270 SIM

FIGURES



SCALE IN MILE



SCALE IN FEET

REFERENCE: SEATTLE ACADEMY OF ARTS AND SCIENCES,
USGS SEATTLE SOUTH (WA) QUADRANGLE,
SEATTLE, WASHINGTON; 1998

No warranty is made by Stantec as to the accuracy, reliability, or completeness of these data. Original data were compiled from various sources. This information may not meet National Map Accuracy Standards. This product was developed electronically, and may be updated without notification. Any reproduction may result in a loss of scale and/or information.



Stantec

11130 NE 33rd Place, Bellevue WA 98004
phone: (425) 869-9448 www.stantec.com

FOR:

CHIEF JOSEPH DAM - WILLOWS
FLAT FUELING FACILITY
PEARL HILL ROAD
BRIDGEPORT, WA

SITE LOCATION MAP

1

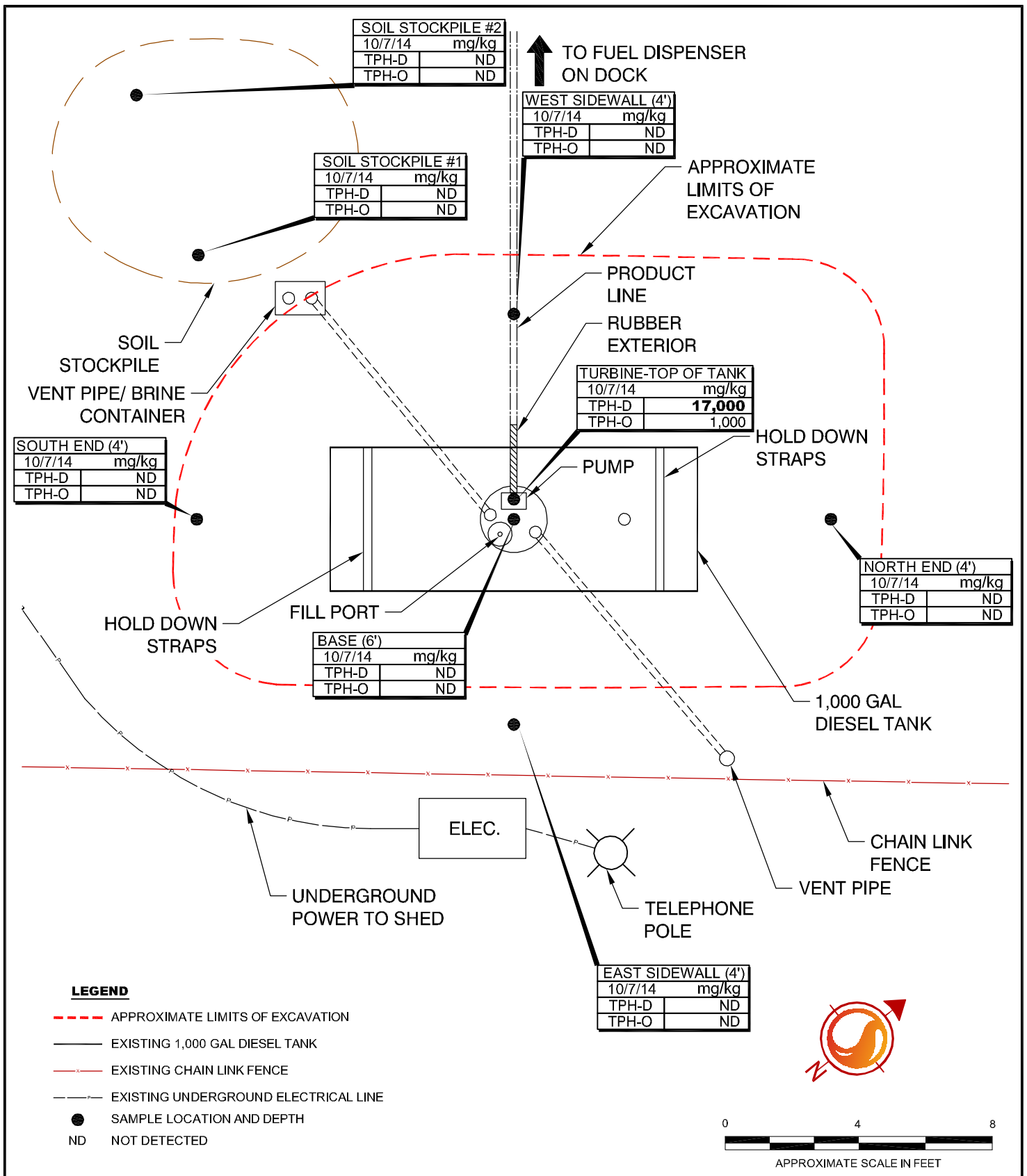
JOB NUMBER:
185750265

DRAWN BY:
BLG

CHECKED BY:
PF

APPROVED BY:
GM

DATE:
OCT 2014



No warranty is made by Stantec as to the accuracy, reliability, or completeness of these data. Original data were compiled from various sources. This information may not meet National Map Accuracy Standards. This product was developed electronically, and may be updated without notification. Any reproduction may result in a loss of scale and/or information.

<p>11130 NE 33rd Place, Bellevue WA 98004 phone: (425) 869-9448 www.stantec.com</p>	FOR: CHIEF JOSEPH DAM - WILLOWS FLAT FUELING FACILITY PEARL HILL ROAD BRIDGEPORT, WA		SOIL SAMPLE LOCATIONS AND RESULTS		FIGURE-SHEET: 3
	JOB NUMBER: 185750265	DRAWN BY: BLG	CHECKED BY: GMC	APPROVED BY: PF	DATE: OCT 2014

APPENDIX A
DEPARTMENT OF ECOLOGY UST NOTICES AND SITE
ASSESSMENT CHECKLIST



UNDERGROUND STORAGE TANK Closure and Site Assessment Notice

FOR OFFICE USE ONLY

Site ID #: _____

Facility Site ID #: _____

See back of form for instructions

Please the appropriate box(es)

Temporary Tank Closure Change-In-Service Permanent Tank Closure Site Check/Site Assessment

Site Information

Site ID Number 6690 (Tag A4310)

(Available from Ecology if the tanks are registered)

Site/Business Name Chief Joseph Dam Project
Street

Site Address Pearl Hill Rd

City/State Bridgeport, WA

Zip Code 98813-1120 Telephone (509) 686-5501

Owners Signature Marshall K. Ship for USACE, SEATTLE DISTRICT, CHIEF JOSEPH DAM

Owner Information

UST Owner/Operator US Army Corps of Engineers

Mailing Address Chief Joseph Dam
Street

17 Pearl Hill Rd
P.O. Box

City/State Bridgeport, WA

Zip Code 98816 Telephone (509) 686-5501

Tank Closure/Change-In-Service Company

Service Company Saybr Contractors, Inc.

Certified Supervisor Lee Dalton Decommissioning Certification No. 1136590

Supervisor's Signature [Signature] Date 10/15/2014

Address 3852 S 66th Street
Street

Tacoma, WA 98409
City State Zip Code Telephone (253) 531-2144

Site Check/Site Assessor

Certified Site Assessor Greg McCormick / Stantec Consulting

Address 11130 NE 33rd Place
Street

Bellevue, WA 98004
City State Zip Code Telephone (425) 922-6392

Tank Information

Tank ID UST #5	Closure Date 10/7/14	Closure Method Removal	Tank Capacity 1,000 Gal	Substance Stored Diesel Fuel

Contamination Present at the Time of Closure

Yes No Unknown
Check unknown if no obvious contamination was observed and sample results have not yet been received from analytical lab.

Yes No
If contamination is present, has the release been reported to the appropriate regional office?

To receive this document in an alternative format, contact the Toxics Cleanup Program at 360-407-7170 (voice) or 1-800-833-6388 OR 711 (TTY)

Instructions

Please Read Carefully

AFTER COMPLETING THIS FORM, RETURN TO:

TOXICS CLEANUP PROGRAM
DEPARTMENT OF ECOLOGY
P.O. BOX 47655
OLYMPIA, WA 98504-7655

This form is to be completed by the tank owner and submitted to Ecology within 30 days of tank closure. Mark the appropriate box(es) for temporary tank closure, permanent tank closure, change-in-service, or site assessment.

Permanent Closure and Change-In-Service require a site assessment be performed.

Site and Owner Information

Fill in the site and owner information. Include the Ecology site number, if known; also, be sure to provide telephone numbers so that any problems can be resolved quickly. **The tank owner MUST sign this form.**

Tank Closure/Change-In-Service Company and Site Check/Site Assessor

List the closure company and fill in the site assessor information for permanent closure or change-in-service. Ask to see the closure company supervisor's ICC Certification and make sure that the certified supervisor signs this form.

Please note: Individuals performing services MUST be certified by the International Code Council (ICC), or other nationally recognized association by which they demonstrate appropriate knowledge pertaining to USTs or have passed another qualifying exam approved by the Department.

Tank Information and Contamination Present at Time of Closure

Please fill in the tank information requested using tank ID numbers previously reported to Ecology. In the column entitled "Closure Method," indicate what manner of closure was used, such as closure in place or removal. Check the appropriate box(es) indicating if contamination is present and has been reported. Contamination found or suspected at the site must be reported to the appropriate Ecology regional office within 24 hours [see below for telephone numbers]. **If contamination is confirmed, a site characterization report must be submitted to the regional office within 90 days; if contamination is not confirmed, then this form, a site assessment checklist, and a site assessment report must be submitted to the above address within 30 days.**

Central	Eastern	Southwest	Northwest
(509) 575-2490	(509) 329-3400	(360) 407-6300	(425) 649-7000

The following tanks are exempt from notification requirements:

- ❖ Farm or residential tanks, 1,100 gallons or less, used to store motor fuel for personal or farm use only. The fuel must not be for resale or used for business purposes.
 - ❖ Tanks used for storing heating oil that is used on the premises where the tank is located.
 - ❖ Tanks with a capacity of 110 gallons or less.
 - ❖ Equipment or machinery tanks such as hydraulic lifts or electrical equipment tanks.
 - ❖ Emergency overflow tanks, catch basins, or sumps.
-

For more information, call toll free in the state of Washington 1-800-826-7716 (Message).



UNDERGROUND STORAGE TANK Site Check/Site Assessment Checklist

FOR OFFICE USE ONLY

Site #: _____

Facility Site ID #: _____

INSTRUCTIONS

When a release has not been confirmed and reported, this Site Check/Site Assessment Checklist must be completed and signed by a person certified by ICC or a Washington registered professional engineer who is competent, by means of examination, experience, or education, to perform site assessments. **The results of the site check or site assessment must be included with this checklist.** This form must be submitted to Ecology at the address shown below within 30 days after completion of the site check/site assessment.

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

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

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

CHECKLIST: Please initial each item in the appropriate box.

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

Underground Storage Tank Section
Department of Ecology
PO Box 47655
Olympia WA 98504-7655

SITE INFORMATION

Site ID Number (Available from Ecology if the tanks are registered): 6690
Site/Business Name: Chief Joseph Dam Project
Site Address: Pearl Hill Road Telephone: (509) 686-5501
Bridgeport Street washington 98813-1120
City State Zip Code

TANK INFORMATION

Tank ID No.	Tank Capacity	Substance Stored
<u>UST #5</u>	<u>1,000 gallons</u>	<u>Diesel Fuel</u>
_____	_____	_____
_____	_____	_____

REASON FOR CONDUCTING SITE CHECK/SITE ASSESSMENT

Check one:

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

CHECKLIST

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

	YES	NO
1. The location of the UST site is shown on a vicinity map.	GMC	
2. A brief summary of information obtained during the site inspection is provided. (see Section 3.2 in site assessment guidance)	GMC	
3. A summary of UST system data is provided. (see Section 3.1.)	GMC	
4. The soils characteristics at the UST site are described. (see Section 5.2)	GMC	
5. Is there any apparent groundwater in the tank excavation?		GMC
6. A brief description of the surrounding land use is provided. (see Section 3.1)	GMC	
7. Information has been provided indicating the number and types of samples collected, methods used to collect and analyze the samples, and the name and address of the laboratory used to perform the analyses.	GMC	
8. A sketch or sketches showing the following items is provided:		
- location and ID number for all field samples collected	GMC	
- groundwater samples distinguished from soil samples (if applicable)	N/A	
- samples collected from stockpiled excavated soil	GMC	
- tank and piping locations and limits of excavation pit	GMC	
- adjacent structures and streets	GMC	
- approximate locations of any on-site and nearby utilities	GMC	
9. If sampling procedures different from those specified in the guidance were used, has justification for using these alternative sampling procedures been provided? (see Section 3.4)	GMC	
10. A table is provided showing laboratory results for each sample collected including; sample ID number, constituents analyzed for and corresponding concentration, analytical method and detection limit for that method.	GMC	
11. Any factors that may have compromised the quality of the data or validity of the results are described.	GMC	
12. The results of this site check/site assessment indicate that a confirmed release of a regulated substance has occurred.		GMC

SITE ASSESSOR INFORMATION

Greg McCormick Person registered with Ecology Stanter Consulting Firm Affiliated with
 Business Address: 11130 NE 33rd Place, Suite 200 Telephone: (425) 922-6392
Bellevue City Washington State 98004 Zip Code

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

10/7/14
Date

[Signature]
Signature of Person Registered with Ecology

If you need this publication in an alternate format, please contact Toxics Cleanup Program at (360) 407-7170. For persons with a speech or hearing impairment call 711 for relay service or 800-833-6388 for TTY.

APPENDIX B

**FIELD SAMPLING AND LABORATORY TESTING PLAN FOR UST
SITE ASSESSMENT**



Stantec Consulting Services, Inc.
11130 NE 33rd Place, Suite 200
Bellevue, WA 98004
(425) 869-9448

August 6, 2014

Saybr Contractors, Inc.
Attn: Mr. Eric Martin
3852 South 66th Street
Tacoma, Washington 98409

RE: Field Sampling and Laboratory Testing Plan for UST Site Assessment

Willows Flat Fueling Facility Upgrade – Chief Joseph Dam
Bridgeport, Washington
Contract No. W912DW-13-D-1003

Dear Mr. Martin:

Stantec Consulting Services, Inc. (Stantec) is pleased to present Saybr Contractors (Saybr) with this Field Sampling and Laboratory Testing Plan describing soil sampling and analysis collected during the UST Site Assessment at the above-referenced Willows Flat Fueling Facility (the "Site").

We understand that these services are being requested as part of a fueling system upgrade at the Site and that Saybr will be acting as the general contractor and UST Decommissioner. The planned fueling upgrade includes removal of one 1,000-gallon diesel UST and two 400-gallon ASTs: one containing diesel fuel and one containing gasoline. Stantec will conduct the UST Site Assessment.

SITE DESCRIPTION

The Site is the Willows Flat Fueling Facility at the Chief Joseph Dam in Bridgeport, Washington. The 1,000-gallon UST is located at the Wildlife Mitigation Building and the two 400-gallon ASTs are located at the intake boathouse structure.

The UST area is accessible to vehicles and excavation equipment and consists of ¾" minus leveling course. There is a cyclone fence located near the tank that is not expected to impede UST removal. The UST is located approximately 16 feet from the top of the fueling dock which measures 55 feet long and six feet wide. The intake boathouse ASTs are located in a concrete enclosure directly below the intake structure road deck. These ASTs are entirely above ground. We understand that the removal of these ASTs may require removal and replacement of the handrails outside the door and the door itself.

SCOPE OF WORK

Stantec's scope of services will be consistent with the descriptions provided in the Department of the Army's STATEMENT OF WORK – Willows Flat Fueling Facilities Upgrade Chief Joseph Dam Bridgeport, Washington dated April 10, 2014 as well as Amendment 1 and Amendment 2 dated June 4, 2014.

Prior to conducting any on-site work related to the fueling facility upgrades, Stantec personnel will complete United States Army Corps of Engineers (USACE) Level I Awareness Training. Certificates of completion will be submitted to the Contracting Officer within 5 calendar days of completion of the training.

Stantec's scope of work for the fueling facility upgrade includes the following tasks:

- Pre-Field Activities;
- UST Site Assessment;
- Soil Sampling and Analysis;
- Quality Assurance/Quality Control;
- Waste Management; and,
- Reporting.

Details of each of these tasks are discussed below.

Task 1 – Pre-field Activities

Stantec will comply with all aspects of the site-specific *Health and Safety Plan* for the Site as required by the Occupational Health and Safety Administration (OSHA) Standard "Hazardous Waste Operations and Emergency Response" guidelines (29 CFR 1910.120). The document will be reviewed and signed by Stantec personnel at the beginning of each work day. All Stantec personnel assigned to the project have OSHA 40-hour training.

Task 2 – UST Site Assessment

The scope of work includes oversight of UST and AST removal and completion of a UST Site Assessment with collection of soil samples documenting soil conditions at the time of UST removal. All UST Site Assessment work will be conducted by a Washington State and ICC Certified UST Site Assessor in accordance with Washington Department of Ecology's *Guidance for Site Checks and Site Assessments for Underground Storage Tanks* (Ecology Publication #90-52). Qualifications of Stantec's UST Site Assessor are included as an Attachment.

The field inspection will include the following items detailed in the RFP:

- Oversight of UST and AST removal noting evidence of corrosion holes, pitting, weld damage, and other deterioration that could have resulted in loss of fuel product. Stantec personnel will document the condition of the surrounding soil for visual evidence of impacts and will screen the soil using a photoionization detector (PID). All observations and field screening results will be recorded in the field notes.
- Oversight of the removal and capping of product piping between the UST and fueling dock. Scrap pipes will be disposed of along with the USTs. Soil samples will be collected at accessible

points along pipe runs or the connection point of UST to document the integrity of the product pipes and connections according to UST decommissioning guidelines.

- Stantec's UST Site Assessor will complete an inspection of the UST and AST systems and note the general condition of the tanks, product lines, fueling dock, surrounding soil, and concrete containment structure. Conditions will be documented with photographs. The Site Assessor will complete the required UST Closure Notice and UST Site Assessment Checklist during removal activities for inclusion in the UST Site Assessment Report.

Task 3 – Soil Sampling and Analysis

Stantec estimates collection of a total of 10 soil samples from the UST excavation, product piping, fueling dock, and soil stockpiles. Soil samples will be field screened for hydrocarbon vapors using a PID. Soils encountered during UST removal will be logged using the Unified Soil Classification System by a Washington Licensed Geologist and UST Site Assessor.

A minimum of five soil samples will be collected from the UST excavation itself and will be submitted for laboratory analysis based on either of the following: significant changes in lithology; location and depth of impacted soil; and, where field screening indicates the possible presence of petroleum hydrocarbons. Soil samples will be submitted for diesel- and oil-range petroleum hydrocarbons using the Washington Department of Ecology NWTPH-Dx Method. Additional analyses may be requested after the initial analysis to further characterize the nature and extent of any identified fuel releases.

Soil samples will be collected in accordance with the Environmental Protection Agency (EPA) Method 5035A, then labeled and placed on ice in an insulated container for delivery to TestAmerica's Tacoma, Washington analytical laboratory. Sample collection using the 5035A protocol will allow retention of volatile fuel components in case additional analyses are required. TestAmerica's laboratory accreditation certificate for Washington State is included as an Attachment.

TestAmerica's local address is:

TestAmerica Seattle
5755 8th Street East
Tacoma, Washington 98424
(253) 922-2310

Task 4 – Quality Assurance/Quality Control

Quality assurance/quality control (QA/QC) procedures will be conducted in conformance with industry standards for UST removal projects. QA/QC procedures include data quality objectives and quality assurance goals, quality assurance procedures for sample collection, laboratory analytical protocols and calibration methods, data validation procedures, and corrective actions in the event that data quality issues arise. The quality of the data collected during this investigation will be evaluated on an on-going basis to determine if the data quality objectives are being met. The analytical data will be evaluated in terms of precision, accuracy, representativeness, completeness, and comparability using the results of the quality control sampling.

The following quality control samples may be collected during the investigation:

- Temperature blank;
- Trip blank; and,
- Field duplicate.

In addition, the laboratory will run method blanks and laboratory control samples during sample analysis.

Task 5 – Waste Management

Limited volumes of petroleum-contaminated soil (PCS) and other investigation-derived waste (IDW) generated during the UST Site Assessment will be placed in a Department-of-Transportation (DOT) approved 55-gallon drum and stored onsite pending characterization and disposal. Larger volumes of PCS will be stockpiled on plastic until off-site disposal can be coordinated. If PCS is identified during the UST removal, Saybr will provide unit costs for disposal of the PCS and coordinate disposal upon authorization from USACE personnel. Stantec's costs include sampling of this material for disposal profiling.


Task 6 – Reporting

Upon completion of the site assessment and receipt of final laboratory reports, Stantec will prepare a UST Site Assessment letter report in accordance to the guidelines in Ecology Publication #90-52. The UST Site Assessment report will include:

- Description of all UST removal activities including location and conditions of tank at the time of removal. The reports will include the condition of surrounding soil, evidence of fuel releases, and volume of any excavated petroleum-impacted soil;
- Scaled site plans showing the locations of tank and piping, limits of excavation, and locations of soil samples;
- Complete laboratory results and chain-of-custody documentation;
- UST disposal documentation;
- Disposal manifest for any PCS removed from the UST area;
- Photographs of the UST and AST removal activities; and,
- Brief description of site restoration and fueling system replacement.

Please do not hesitate to contact the undersigned if there are any questions or additional information required.

Sincerely,
Stantec Consulting Services, Inc.



Greg McCormick, LG
Senior Geologist



Marc Sauze, PE
Project Manager

Attachments.

UST Site Assessor Qualifications
Analytical Laboratory Accreditation Certificate

Home > My ICC

My CEUs & Certifications | Gregory McCormick

Certification: CEU Activities for Renewal				Report CEU Activity	
CEU Activity Option	CEU Provider	CEU Activity Name	Activity Date	Activity Quantity	CEUs Reported
Certification: Summary					Submit Renewal Application
Certification Program		Status	Expiration Date	Certification Number	
Washington State Site Assessment		Certified	10/26/2014	1052439	



INTERNATIONAL CODE COUNCIL

GREGORY A MCCORMICK

The International Code Council attests that the individual named on this certificate has satisfactorily demonstrated knowledge as required by the International Code Council by successfully completing the prescribed written examination based on codes and standards then in effect, and is hereby issued this certification as:

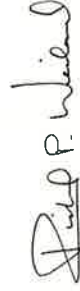
Washington State Site Assessment

Given this day of November 26, 2008



Adolf Zubia
President, Board of Directors

Certificate No. 1052439-U7



Richard P. Weiland
Chief Executive Officer



INTERNATIONAL CODE COUNCIL

GREGORY A MCCORMICK

The International Code Council attests that the individual named on this certificate has satisfactorily demonstrated knowledge as required by the International Code Council by successfully completing the prescribed written examination based on codes and standards then in effect, and is hereby issued this certification as:

WASHINGTON STATE SITE ASSESSMENT

given this day of September 12, 2006



Wally Bailey

President, ICC Board of Directors



Rick Weiland
ICC Chief Executive Officer





STATE OF WASHINGTON

DEPARTMENT OF LICENSING – BUSINESS AND PROFESSIONS DIVISION

THIS CERTIFIES THAT THE PERSON NAMED HEREON IS AUTHORIZED, AS PROVIDED BY LAW, AS A

**GEOLOGIST
HYDROGEOLOGIST**

**GREGORY ALLEN MCCORMICK
22121 NE 10TH PL
SAMMAMISH WA 98074**

Cert/Lic No.

674

Issued Date

04/12/2002

Expiration Date

02/06/2015

Pat Kohler

Pat Kohler, Director



*It is hereby certified that Gregory Allen McCormick
has satisfactorily complied with and completed the statutory requirements set
forth in title 18 revised code of Washington to engage in practice as a*

Geologist

*And is hereby authorized, empowered and granted the right to engage in that
practice within the State of Washington subject to the state laws.*

And is licensed as a qualified

Hydrogeologist

*Given under the hand and seal of the director this
twelfth day of April, 2002.*



No. 674

Fred Stephens
DIRECTOR

Geologist Licensing Board

Ally H. Randall
CHAIR



American Institute of Professional Geologists
12000 Washington St, Ste 285, Thornton, CO 80234
(303) 412-6205, Fax (303) 253-9220
www.aipg.org, aipg@aipg.org

Gregory A. McCormick, CPG-10283

Raymond W. Talkington

Valid through 12/31/2014
Join date 4/22/1998

Raymond W. Talkington
President AIPG 2014

AIPG 51th Annual Meeting – Prescott, AZ
September 13-16, 2014

 API WorkSafe	Key # 80273697	 (Optional Photo)
Safety Key	I acknowledge that I have personally completed the API WorkSafe training	
Name Gregory McCormick	Signature 	
Company Stantec Consulting Services, Inc.	Date 5/20/2014	
Completed 20-May-14		
Expires 20-May-15		

The State of
Department



Washington
of Ecology

**TestAmerica Seattle-Tacoma
Tacoma, WA**

has complied with provisions set forth in Chapter 173-50 WAC and is hereby recognized by the Department of Ecology as an ACCREDITED LABORATORY for the analytical parameters listed on the accompanying Scope of Accreditation. This certificate is effective February 18, 2014 and shall expire February 17, 2015.

Witnessed under my hand on February 12, 2014

Alan D. Rue
Lab Accreditation Unit Supervisor

Laboratory ID
C553

WASHINGTON STATE DEPARTMENT OF ECOLOGY

ENVIRONMENTAL LABORATORY ACCREDITATION PROGRAM

SCOPE OF ACCREDITATION

TestAmerica Seattle-Tacoma

Tacoma, WA

is accredited for the analytes listed below using the methods indicated. Full accreditation is granted unless stated otherwise in a note. Accreditation for U.S. Environmental Protection Agency (EPA) "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (SW-846) is for the latest version of the method. SM refers to EPA approved editions of "Standard Methods for the Examination of Water and Wastewater." ASTM is the American Society for Testing and Materials. Other references are described in notes.

Matrix/Analyte	Method	Notes
Drinking Water		
Nitrate	EPA 300.0_2.1_1993	7
Nitrite	EPA 300.0_2.1_1993	7
1,2-Dibromo-3-chloropropane (DBCP)	EPA 504.1_1.1_1995	7
1,2-Dibromoethane (EDB, Ethylene dibromide)	EPA 504.1_1.1_1995	7
Non-Potable Water		
Specific Conductance	EPA 120.1_1982	7
Solids, Total Volatile	EPA 160.4_1971	7
Hexane Extractable Material	EPA 1664A_1_1999	7
Turbidity	EPA 180.1_2_1993	7
Bromide	EPA 300.0_2.1_1993	7
Chloride	EPA 300.0_2.1_1993	7
Fluoride	EPA 300.0_2.1_1993	7
Nitrate	EPA 300.0_2.1_1993	7
Nitrate + Nitrite	EPA 300.0_2.1_1993	7
Nitrite	EPA 300.0_2.1_1993	7
Sulfate	EPA 300.0_2.1_1993	7
Cyanide, Total	EPA 335.4_1_1993	7
Ammonia	EPA 350.1_2_1993	7
Nitrate	EPA 353.2_2_1993	7
Nitrate + Nitrite	EPA 353.2_2_1993	7
Nitrite	EPA 353.2_2_1993	7

TestAmerica Seattle-Tacoma

Matrix/Analyte	Method	Notes
Orthophosphate	EPA 365.1_2_1993	7
Phosphorus, Total	EPA 365.1_2_1993	7
Turbidity	SM 2130 B-01	7
Alkalinity	SM 2320 B-97	7
Hardness	SM 2340 B-97	7
Hardness, Total (as CaCO ₃)	SM 2340 C-97	7
Salinity	SM 2520 B-93	7
Solids, Total	SM 2540 B-97	7,11
Solids, Total Dissolved	SM 2540 C-97	7
Solids, Total Suspended	SM 2540 D-97	7
Solids, Settleable	SM 2540 F-97	7
Chromium, Hexavalent	SM 3500-Cr B-09	7
Cyanides, Amenable to Chlorination	SM 4500-CN ⁻ G-99	7
pH	SM 4500-H+ B-00	7
Biochemical Oxygen Demand (BOD)	SM 5210 B-01	7
Chemical Oxygen Demand (COD)	SM 5220 C-97	7
Chemical Oxygen Demand (COD)	SM 5220 D-97	7
Total Organic Carbon	SM 5310 B-00	7
Aluminum	EPA 200.7_4.4_1994	7
Antimony	EPA 200.7_4.4_1994	7
Arsenic	EPA 200.7_4.4_1994	7
Barium	EPA 200.7_4.4_1994	7
Beryllium	EPA 200.7_4.4_1994	7
Cadmium	EPA 200.7_4.4_1994	7
Calcium	EPA 200.7_4.4_1994	7
Chromium	EPA 200.7_4.4_1994	7
Cobalt	EPA 200.7_4.4_1994	7
Copper	EPA 200.7_4.4_1994	7
Iron	EPA 200.7_4.4_1994	7
Lead	EPA 200.7_4.4_1994	7
Magnesium	EPA 200.7_4.4_1994	7
Manganese	EPA 200.7_4.4_1994	7
Molybdenum	EPA 200.7_4.4_1994	7
Nickel	EPA 200.7_4.4_1994	7
Potassium	EPA 200.7_4.4_1994	7
Selenium	EPA 200.7_4.4_1994	7

Washington State Department of Ecology

Laboratory Accreditation Unit

Effective Date: 2/12/2014

Page 2 of 16

Scope of Accreditation Report for TestAmerica Seattle-Tacoma

Scope Expires: 2/17/2015

C553-14

TestAmerica Seattle-Tacoma

Matrix/Analyte	Method	Notes
Silica as SiO2	EPA 200.7_4.4_1994	7
Silver	EPA 200.7_4.4_1994	7
Sodium	EPA 200.7_4.4_1994	7
Strontium	EPA 200.7_4.4_1994	7
Thallium	EPA 200.7_4.4_1994	7
Tin	EPA 200.7_4.4_1994	7
Vanadium	EPA 200.7_4.4_1994	7
Zinc	EPA 200.7_4.4_1994	7
Antimony	EPA 200.8_5.4_1994	7
Arsenic	EPA 200.8_5.4_1994	7
Barium	EPA 200.8_5.4_1994	7
Beryllium	EPA 200.8_5.4_1994	7
Cadmium	EPA 200.8_5.4_1994	7
Chromium	EPA 200.8_5.4_1994	7
Cobalt	EPA 200.8_5.4_1994	7
Copper	EPA 200.8_5.4_1994	7
Lead	EPA 200.8_5.4_1994	7
Manganese	EPA 200.8_5.4_1994	7
Molybdenum	EPA 200.8_5.4_1994	7
Nickel	EPA 200.8_5.4_1994	7
Selenium	EPA 200.8_5.4_1994	7
Silver	EPA 200.8_5.4_1994	7
Strontium	EPA 200.8_5.4_1994	7
Thallium	EPA 200.8_5.4_1994	7
Titanium	EPA 200.8_5.4_1994	7
Vanadium	EPA 200.8_5.4_1994	7
Zinc	EPA 200.8_5.4_1994	7
Mercury	EPA 245.1_3_1994	7
4,4'-DDD	EPA 608	7
4,4'-DDE	EPA 608	7
4,4'-DDT	EPA 608	7
Aldrin	EPA 608	7
alpha-BHC (alpha-Hexachlorocyclohexane)	EPA 608	7
Aroclor-1016 (PCB-1016)	EPA 608	6,7
Aroclor-1221 (PCB-1221)	EPA 608	6,7
Aroclor-1232 (PCB-1232)	EPA 608	6,7

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Matrix/Analyte	Method	Notes
Aroclor-1242 (PCB-1242)	EPA 608	6,7
Aroclor-1248 (PCB-1248)	EPA 608	6,7
Aroclor-1254 (PCB-1254)	EPA 608	6,7
Aroclor-1260 (PCB-1260)	EPA 608	6,7
beta-BHC (beta-Hexachlorocyclohexane)	EPA 608	7
Chlordane (tech.)	EPA 608	7
Dieldrin	EPA 608	7
Endosulfan I	EPA 608	7
Endosulfan II	EPA 608	7
Endosulfan sulfate	EPA 608	7
Endrin	EPA 608	7
Endrin aldehyde	EPA 608	7
gamma-BHC (Lindane, gamma-Hexachlorocyclohexane)	EPA 608	7
Heptachlor	EPA 608	7
Heptachlor epoxide	EPA 608	7
Toxaphene (Chlorinated camphene)	EPA 608	7
1,1,1-Trichloroethane	EPA 624	7
1,1,2,2-Tetrachloroethane	EPA 624	7
1,1,2-Trichloroethane	EPA 624	7
1,1-Dichloroethane	EPA 624	7
1,1-Dichloroethylene	EPA 624	7
1,2-Dichlorobenzene	EPA 624	7
1,2-Dichloroethane (Ethylene dichloride)	EPA 624	7
1,2-Dichloropropane	EPA 624	7
1,3-Dichlorobenzene	EPA 624	7
1,4-Dichlorobenzene	EPA 624	7
2-Chloroethyl vinyl ether	EPA 624	7
Acrolein (Propenal)	EPA 624	7
Acrylonitrile	EPA 624	7
Benzene	EPA 624	7
Bromodichloromethane	EPA 624	7
Bromoform	EPA 624	7
Carbon tetrachloride	EPA 624	7
Chlorobenzene	EPA 624	7
Chlorodibromomethane	EPA 624	7
Chloroform	EPA 624	7

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Matrix/Analyte	Method	Notes
cis-1,3-Dichloropropene	EPA 624	7
Ethylbenzene	EPA 624	7
Methyl bromide (Bromomethane)	EPA 624	7
Methyl chloride (Chloromethane)	EPA 624	7
Methylene chloride (Dichloromethane)	EPA 624	7
Tetrachloroethylene (Perchloroethylene)	EPA 624	7
Toluene	EPA 624	7
trans-1,2-Dichloroethylene	EPA 624	7
trans-1,3-Dichloropropylene	EPA 624	7
Trichloroethene (Trichloroethylene)	EPA 624	7
Trichlorofluoromethane (Freon 11)	EPA 624	7
Vinyl chloride	EPA 624	7
Xylene (total)	EPA 624	7
1,2,4-Trichlorobenzene	EPA 625	7
1,2-Dichlorobenzene	EPA 625	7
1,3-Dichlorobenzene	EPA 625	7
1,4-Dichlorobenzene	EPA 625	7
2,2-oxybis (1-chloropropane)	EPA 625	7
2,4,6-Trichlorophenol	EPA 625	7
2,4-Dichlorophenol	EPA 625	7
2,4-Dimethylphenol	EPA 625	7
2,4-Dinitrotoluene (2,4-DNT)	EPA 625	7
2,6-Dinitrotoluene (2,6-DNT)	EPA 625	7
2-Chloronaphthalene	EPA 625	7
2-Chlorophenol	EPA 625	7
2-Nitrophenol	EPA 625	7
3,3'-Dichlorobenzidine	EPA 625	7
4-Bromophenyl phenyl ether (BDE-3)	EPA 625	7
4-Chloro-3-methylphenol	EPA 625	7
4-Chlorophenyl phenylether	EPA 625	7
4-Nitrophenol	EPA 625	7
Acenaphthene	EPA 625	7
Acenaphthylene	EPA 625	7
Anthracene	EPA 625	7
Benzidine	EPA 625	7
Benzo(a)anthracene	EPA 625	7

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Benzo(a)pyrene	EPA 625	7
Benzo(g,h,i)perylene	EPA 625	7
Benzo(k)fluoranthene	EPA 625	7
Benzo[b]fluoranthene	EPA 625	7
bis(2-Chloroethoxy)methane	EPA 625	7
bis(2-Chloroethyl) ether	EPA 625	7
bis(2-Ethylhexyl) phthalate (DEHP)	EPA 625	7
Butyl benzyl phthalate	EPA 625	7
Chrysene	EPA 625	7
Dibenz(a,h) anthracene	EPA 625	7
Diethyl phthalate	EPA 625	7
Dimethyl phthalate	EPA 625	7
Di-n-butyl phthalate	EPA 625	7
Di-n-octyl phthalate	EPA 625	7
Fluoranthene	EPA 625	7
Fluorene	EPA 625	7
Hexachlorobenzene	EPA 625	7
Hexachlorobutadiene	EPA 625	7
Hexachlorocyclopentadiene	EPA 625	7
Hexachloroethane	EPA 625	7
Indeno(1,2,3-cd) pyrene	EPA 625	7
Isophorone	EPA 625	7
Naphthalene	EPA 625	7
Nitrobenzene	EPA 625	7
n-Nitrosodimethylamine	EPA 625	7
N-Nitroso-di-n-propylamine	EPA 625	7
n-Nitrosodiphenylamine	EPA 625	7
Pentachlorophenol	EPA 625	7
Phenanthrene	EPA 625	7
Phenol	EPA 625	7
Pyrene	EPA 625	7
Dibutyltin	Krone 1988	3
Monobutyltin	Krone 1988	3
Tetrabutyltin	Krone 1988	3
Tributyltin	Krone 1988	3

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Matrix/Analyte	Method	Notes
Solid and Chemical Materials		
Bromide	EPA 300.0_2.1_1993	7
Chloride	EPA 300.0_2.1_1993	7
Fluoride	EPA 300.0_2.1_1993	7
Nitrate	EPA 300.0_2.1_1993	7
Nitrite	EPA 300.0_2.1_1993	7
Sulfate	EPA 300.0_2.1_1993	7
Cyanide, Total	EPA 9012 B-04	7
Cyanides, Amenable to Chlorination	EPA 9012 B-04	7
Bromide	EPA 9056A_(11/00)	7
Chloride	EPA 9056A_(11/00)	7
Fluoride	EPA 9056A_(11/00)	7
Nitrate	EPA 9056A_(11/00)	7
Nitrite	EPA 9056A_(11/00)	7
Sulfate	EPA 9056A_(11/00)	7
Total Organic Carbon	EPA 9060A_1_2004	7
Aluminum	EPA 6010C_(2/07)	7
Antimony	EPA 6010C_(2/07)	7
Arsenic	EPA 6010C_(2/07)	7
Barium	EPA 6010C_(2/07)	7
Beryllium	EPA 6010C_(2/07)	7
Cadmium	EPA 6010C_(2/07)	7
Calcium	EPA 6010C_(2/07)	7
Chromium	EPA 6010C_(2/07)	7
Chromium, Hexavalent	EPA 6010C_(2/07)	
Cobalt	EPA 6010C_(2/07)	7
Copper	EPA 6010C_(2/07)	7
Iron	EPA 6010C_(2/07)	7
Lead	EPA 6010C_(2/07)	7
Magnesium	EPA 6010C_(2/07)	7
Manganese	EPA 6010C_(2/07)	7
Molybdenum	EPA 6010C_(2/07)	7
Nickel	EPA 6010C_(2/07)	7
Potassium	EPA 6010C_(2/07)	7
Selenium	EPA 6010C_(2/07)	7

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Matrix/Analyte	Method	Notes
Silica	EPA 6010C_(2/07)	7
Silver	EPA 6010C_(2/07)	7
Sodium	EPA 6010C_(2/07)	7
Strontium	EPA 6010C_(2/07)	7
Thallium	EPA 6010C_(2/07)	7
Tin	EPA 6010C_(2/07)	7
Titanium	EPA 6010C_(2/07)	7
Vanadium	EPA 6010C_(2/07)	7
Zinc	EPA 6010C_(2/07)	7
Antimony	EPA 6020A_(2/07)	7
Arsenic	EPA 6020A_(2/07)	7
Barium	EPA 6020A_(2/07)	7
Beryllium	EPA 6020A_(2/07)	7
Cadmium	EPA 6020A_(2/07)	7
Chromium	EPA 6020A_(2/07)	7
Cobalt	EPA 6020A_(2/07)	7
Copper	EPA 6020A_(2/07)	7
Lead	EPA 6020A_(2/07)	7
Manganese	EPA 6020A_(2/07)	7
Molybdenum	EPA 6020A_(2/07)	7
Nickel	EPA 6020A_(2/07)	7
Selenium	EPA 6020A_(2/07)	7
Silver	EPA 6020A_(2/07)	7
Thallium	EPA 6020A_(2/07)	7
Vanadium	EPA 6020A_(2/07)	7
Zinc	EPA 6020A_(2/07)	7
Mercury, Liquid Waste	EPA 7470A_1_1994	7
Mercury, Solid Waste	EPA 7471A_1_1994	7
1,2-Dibromo-3-chloropropane (DBCP)	EPA 8011-94	1,7
1,2-Dibromoethane (EDB, Ethylene dibromide)	EPA 8011-94	1,7
Diesel range organics (DRO)	EPA 8015 D_4_(6/03)	7
Gasoline range organics (GRO)	EPA 8015 D_4_(6/03)	7
Motor Oil	EPA 8015 D_4_(6/03)	7
Benzene	EPA 8021B_2_(12/96)	7
Ethylbenzene	EPA 8021B_2_(12/96)	7
Methyl tert-butyl ether (MTBE)	EPA 8021B_2_(12/96)	7

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Matrix/Analyte	Method	Notes
Toluene	EPA 8021B_2_(12/96)	7
Xylene (total)	EPA 8021B_2_(12/96)	7
4,4'-DDD	EPA 8081B_(2/07)	7
4,4'-DDE	EPA 8081B_(2/07)	7
4,4'-DDT	EPA 8081B_(2/07)	7
Aldrin	EPA 8081B_(2/07)	7
alpha-BHC (alpha-Hexachlorocyclohexane)	EPA 8081B_(2/07)	7
alpha-Chlordane	EPA 8081B_(2/07)	7
beta-BHC (beta-Hexachlorocyclohexane)	EPA 8081B_(2/07)	7
delta-BHC	EPA 8081B_(2/07)	7
Dieldrin	EPA 8081B_(2/07)	7
Endosulfan I	EPA 8081B_(2/07)	7
Endosulfan II	EPA 8081B_(2/07)	7
Endosulfan sulfate	EPA 8081B_(2/07)	7
Endrin	EPA 8081B_(2/07)	7
Endrin aldehyde	EPA 8081B_(2/07)	7
Endrin ketone	EPA 8081B_(2/07)	7
gamma-BHC (Lindane, gamma-Hexachlorocyclohexane)	EPA 8081B_(2/07)	7
gamma-Chlordane	EPA 8081B_(2/07)	7
Heptachlor	EPA 8081B_(2/07)	7
Heptachlor epoxide	EPA 8081B_(2/07)	7
Methoxychlor	EPA 8081B_(2/07)	7
Toxaphene (Chlorinated camphene)	EPA 8081B_(2/07)	7
Aroclor-1016 (PCB-1016)	EPA 8082A_(2/07)	4,6,7,11
Aroclor-1221 (PCB-1221)	EPA 8082A_(2/07)	4,6,7,11
Aroclor-1232 (PCB-1232)	EPA 8082A_(2/07)	4,6,7,11
Aroclor-1242 (PCB-1242)	EPA 8082A_(2/07)	4,6,7,11
Aroclor-1248 (PCB-1248)	EPA 8082A_(2/07)	4,6,7,11
Aroclor-1254 (PCB-1254)	EPA 8082A_(2/07)	4,6,7,11
Aroclor-1260 (PCB-1260)	EPA 8082A_(2/07)	4,6,7,11
2,4,5-T	EPA 8151A_(1/98)	7
2,4-D	EPA 8151A_(1/98)	7
2,4-DB	EPA 8151A_(1/98)	7
4-Nitrophenol	EPA 8151A_(1/98)	7
Dalapon	EPA 8151A_(1/98)	7
Dicamba	EPA 8151A_(1/98)	7

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Matrix/Analyte	Method	Notes
Dichloroprop (Dichlorprop)	EPA 8151A_(1/98)	7
Dinoseb (2-sec-butyl-4,6-dinitrophenol, DNBP)	EPA 8151A_(1/98)	7
MCPA	EPA 8151A_(1/98)	7
MCPP	EPA 8151A_(1/98)	7
Pentachlorophenol	EPA 8151A_(1/98)	7
Silvex (2,4,5-TP)	EPA 8151A_(1/98)	7
C8-C10 Aliphatic EPH	WDOE EPH_(1997)	2,7
>C10-C12 Aliphatic EPH	WDOE EPH_(1997)	2,7
>C10-C12 Aromatic EPH	WDOE EPH_(1997)	2,7
>C12-C16 Aliphatic EPH	WDOE EPH_(1997)	2,7
>C12-C16 Aromatic EPH	WDOE EPH_(1997)	2,7
>C16-C21 Aliphatic EPH	WDOE EPH_(1997)	2,7
>C16-C21 Aromatic EPH	WDOE EPH_(1997)	2,7
>C21-C34 Aliphatic EPH	WDOE EPH_(1997)	2,7
>C21-C34 Aromatic EPH	WDOE EPH_(1997)	2,7
Diesel range organics (DRO)	WDOE NWTPH-Dx_(1997)	2,7
Gasoline range organics (GRO)	WDOE NWTPH-Gx_(1997)	2,7
C8-C10 Aromatic VPH	WDOE VPH_(1997)	2,7
C5-C6 Aliphatic VPH	WDOE VPH_(1997)	2,7
>C10-C12 Aliphatic VPH	WDOE VPH_(1997)	2,7
>C10-C12 Aromatic VPH	WDOE VPH_(1997)	2,7
>C12-C13 Aromatic VPH	WDOE VPH_(1997)	2,7
>C6-C8 Aliphatic VPH	WDOE VPH_(1997)	2,7
>C8-C10 Aliphatic VPH	WDOE VPH_(1997)	2,7
Benzene	WDOE VPH_(1997)	2,7
C8-C10 Aliphatic VPH	WDOE VPH_(1997)	7
Ethylbenzene	WDOE VPH_(1997)	2,7
m+p-xylene	WDOE VPH_(1997)	2,7
Methyl tert-butyl ether (MTBE)	WDOE VPH_(1997)	2,7
n-Hexane	WDOE VPH_(1997)	2,7
o-Xylene	WDOE VPH_(1997)	2,7
Toluene	WDOE VPH_(1997)	2,7
Xylene (total)	WDOE VPH_(1997)	2,7
1,1,1,2-Tetrachloroethane	EPA 8260C_(8/06)	7

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Matrix/Analyte	Method	Notes
1,1,1-Trichloroethane	EPA 8260C_(8/06)	7
1,1,2-Trichloroethane	EPA 8260C_(8/06)	7
1,1-Dichloroethane	EPA 8260C_(8/06)	7
1,1-Dichloroethylene	EPA 8260C_(8/06)	7
1,1-Dichloropropene	EPA 8260C_(8/06)	7
1,2,3-Trichlorobenzene	EPA 8260C_(8/06)	7
1,2,3-Trichloropropane	EPA 8260C_(8/06)	7
1,2,4-Trichlorobenzene	EPA 8260C_(8/06)	7
1,2,4-Trimethylbenzene	EPA 8260C_(8/06)	7
1,2-Dibromo-3-chloropropane (DBCP)	EPA 8260C_(8/06)	7
1,2-Dibromoethane (EDB, Ethylene dibromide)	EPA 8260C_(8/06)	7
1,2-Dichlorobenzene	EPA 8260C_(8/06)	7
1,2-Dichloroethane (Ethylene dichloride)	EPA 8260C_(8/06)	7
1,2-Dichloropropane	EPA 8260C_(8/06)	7
1,3,5-Trimethylbenzene	EPA 8260C_(8/06)	7
1,3-Dichlorobenzene	EPA 8260C_(8/06)	7
1,3-Dichloropropane	EPA 8260C_(8/06)	7
1,4-Dichlorobenzene	EPA 8260C_(8/06)	7
2,2-Dichloropropane	EPA 8260C_(8/06)	7
2-Butanone (Methyl ethyl ketone, MEK)	EPA 8260C_(8/06)	7
2-Chloroethyl vinyl ether	EPA 8260C_(8/06)	7
2-Chlorotoluene	EPA 8260C_(8/06)	7
2-Hexanone	EPA 8260C_(8/06)	7
4-Chlorotoluene	EPA 8260C_(8/06)	7
4-Isopropyltoluene (p-Cymene)	EPA 8260C_(8/06)	7
4-Methyl-2-pentanone (MIBK)	EPA 8260C_(8/06)	7
Acetone	EPA 8260C_(8/06)	7
Acetonitrile	EPA 8260C_(8/06)	7
Acrolein (Propenal)	EPA 8260C_(8/06)	7
Acrylonitrile	EPA 8260C_(8/06)	7
Benzene	EPA 8260C_(8/06)	7
Bromobenzene	EPA 8260C_(8/06)	7
Bromochloromethane	EPA 8260C_(8/06)	7
Bromodichloromethane	EPA 8260C_(8/06)	7
Bromoform	EPA 8260C_(8/06)	7
Carbon disulfide	EPA 8260C_(8/06)	7

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Matrix/Analyte	Method	Notes
Carbon tetrachloride	EPA 8260C_(8/06)	7
Chlorobenzene	EPA 8260C_(8/06)	7
Chlorodibromomethane	EPA 8260C_(8/06)	7
Chloroethane (Ethyl chloride)	EPA 8260C_(8/06)	7
Chloroform	EPA 8260C_(8/06)	7
cis-1,2-Dichloroethylene	EPA 8260C_(8/06)	7
cis-1,3-Dichloropropene	EPA 8260C_(8/06)	7
cis-1,4-Dichloro-2-butene	EPA 8260C_(8/06)	7
Dibromomethane	EPA 8260C_(8/06)	7
Dichlorodifluoromethane (Freon-12)	EPA 8260C_(8/06)	7
Ethylbenzene	EPA 8260C_(8/06)	7
Ethyl-t-butylether (ETBE)	EPA 8260C_(8/06)	7
Hexachlorobutadiene	EPA 8260C_(8/06)	7
Hexachloroethane	EPA 8260C_(8/06)	7
Iodomethane (Methyl iodide)	EPA 8260C_(8/06)	7
Isobutyl alcohol (2-Methyl-1-propanol)	EPA 8260C_(8/06)	7
Isopropylbenzene	EPA 8260C_(8/06)	7
m+p-xylene	EPA 8260C_(8/06)	7
Methacrylonitrile	EPA 8260C_(8/06)	7
Methyl acetate	EPA 8260C_(8/06)	7
Methyl bromide (Bromomethane)	EPA 8260C_(8/06)	7
Methyl chloride (Chloromethane)	EPA 8260C_(8/06)	7
Methyl tert-butyl ether (MTBE)	EPA 8260C_(8/06)	7
Methylcyclohexane	EPA 8260C_(8/06)	7
Methylene chloride (Dichloromethane)	EPA 8260C_(8/06)	7
Naphthalene	EPA 8260C_(8/06)	7
n-Butyl alcohol (1-Butanol, n-Butanol)	EPA 8260C_(8/06)	7
n-Butylbenzene	EPA 8260C_(8/06)	7
n-Propylbenzene	EPA 8260C_(8/06)	7
o-Xylene	EPA 8260C_(8/06)	7
sec-Butylbenzene	EPA 8260C_(8/06)	7
Styrene	EPA 8260C_(8/06)	7
tert-amylmethylether (TAME)	EPA 8260C_(8/06)	7
tert-Butylbenzene	EPA 8260C_(8/06)	7
Tetrachloroethylene (Perchloroethylene)	EPA 8260C_(8/06)	7
Tetrahydrofuran (THF)	EPA 8260C_(8/06)	7

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Matrix/Analyte	Method	Notes
Toluene	EPA 8260C_(8/06)	7
trans-1,2-Dichloroethylene	EPA 8260C_(8/06)	7
trans-1,3-Dichloropropylene	EPA 8260C_(8/06)	7
trans-1,4-Dichloro-2-butene	EPA 8260C_(8/06)	7
Trichloroethene (Trichloroethylene)	EPA 8260C_(8/06)	7
Trichlorofluoromethane (Freon 11)	EPA 8260C_(8/06)	7
Vinyl acetate	EPA 8260C_(8/06)	7
Vinyl chloride	EPA 8260C_(8/06)	7
1,2,4,5-Tetrachlorobenzene	EPA 8270D_(2/07)	5,7
1,2-Dichlorobenzene	EPA 8270D_(2/07)	5,7
1,2-Diphenylhydrazine	EPA 8270D_(2/07)	5,7
1,3-Dichlorobenzene	EPA 8270D_(2/07)	5,7
1,4-Dichlorobenzene	EPA 8270D_(2/07)	5,7
1-Methylnaphthalene	EPA 8270D_(2/07)	7
2,3,4,6-Tetrachlorophenol	EPA 8270D_(2/07)	5,7
2,4,5-Trichlorophenol	EPA 8270D_(2/07)	5,7
2,4,6-Trichlorophenol	EPA 8270D_(2/07)	5,7
2,4-Dichlorophenol	EPA 8270D_(2/07)	5,7
2,4-Dimethylphenol	EPA 8270D_(2/07)	5,7
2,4-Dinitrophenol	EPA 8270D_(2/07)	5,7
2,4-Dinitrotoluene (2,4-DNT)	EPA 8270D_(2/07)	5,7
2,6-Dinitrotoluene (2,6-DNT)	EPA 8270D_(2/07)	5,7
2-Chloronaphthalene	EPA 8270D_(2/07)	7
2-Chlorophenol	EPA 8270D_(2/07)	5,7
2-Methylnaphthalene	EPA 8270D_(2/07)	5,7
2-Methylphenol (o-Cresol)	EPA 8270D_(2/07)	5,7
2-Nitroaniline	EPA 8270D_(2/07)	5,7
2-Nitrophenol	EPA 8270D_(2/07)	5,7
3,3'-Dichlorobenzidine	EPA 8270D_(2/07)	5,7
3-Nitroaniline	EPA 8270D_(2/07)	5,7
4,6-Dinitro-2-methylphenol	EPA 8270D_(2/07)	5,7
4-Bromophenyl phenyl ether (BDE-3)	EPA 8270D_(2/07)	5,7
4-Chloro-3-methylphenol	EPA 8270D_(2/07)	5,7
4-Chloroaniline	EPA 8270D_(2/07)	5,7
4-Chlorophenyl phenylether	EPA 8270D_(2/07)	5,7
4-Nitroaniline	EPA 8270D_(2/07)	5,7

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Matrix/Analyte	Method	Notes
4-Nitrophenol	EPA 8270D_(2/07)	5,7
Acenaphthene	EPA 8270D_(2/07)	7
Acenaphthylene	EPA 8270D_(2/07)	7
Acetophenone	EPA 8270D_(2/07)	5,7
Aniline	EPA 8270D_(2/07)	5,7
Anthracene	EPA 8270D_(2/07)	7
Benzaldehyde	EPA 8270D_(2/07)	5,7
Benzidine	EPA 8270D_(2/07)	5,7
Benzo(a)anthracene	EPA 8270D_(2/07)	7
Benzo(a)pyrene	EPA 8270D_(2/07)	7
Benzo(g,h,i)perylene	EPA 8270D_(2/07)	7
Benzo(k)fluoranthene	EPA 8270D_(2/07)	7
Benzo[b]fluoranthene	EPA 8270D_(2/07)	7
Benzoic acid	EPA 8270D_(2/07)	5,7
Benzyl alcohol	EPA 8270D_(2/07)	5,7
bis(2-Chloroethoxy)methane	EPA 8270D_(2/07)	5,7
bis(2-Chloroethyl) ether	EPA 8270D_(2/07)	5,7
bis(2-Chloroisopropyl) ether	EPA 8270D_(2/07)	7
Carbazole	EPA 8270D_(2/07)	7
Chrysene	EPA 8270D_(2/07)	7
Di(2-ethylhexyl)phthalate	EPA 8270D_(2/07)	5,7
Dibenz(a,h) anthracene	EPA 8270D_(2/07)	7
Dibenzofuran	EPA 8270D_(2/07)	7
Diethyl phthalate	EPA 8270D_(2/07)	5,7
Dimethyl phthalate	EPA 8270D_(2/07)	5,7
Di-n-butyl phthalate	EPA 8270D_(2/07)	5,7
Di-n-octyl phthalate	EPA 8270D_(2/07)	5,7
Fluoranthene	EPA 8270D_(2/07)	7
Fluorene	EPA 8270D_(2/07)	7
Hexachlorobenzene	EPA 8270D_(2/07)	5,7
Hexachlorobutadiene	EPA 8270D_(2/07)	5,7
Hexachlorocyclopentadiene	EPA 8270D_(2/07)	5,7
Hexachloroethane	EPA 8270D_(2/07)	5,7
Indeno(1,2,3-cd) pyrene	EPA 8270D_(2/07)	7
Isophorone	EPA 8270D_(2/07)	5,7
Naphthalene	EPA 8270D_(2/07)	7

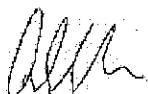
TestAmerica Seattle-Tacoma

Matrix/Analyte	Method	Notes
Nitrobenzene	EPA 8270D_(2/07)	5,7
n-Nitrosodimethylamine	EPA 8270D_(2/07)	5,7
N-Nitroso-di-n-propylamine	EPA 8270D_(2/07)	5,7
n-Nitrosodiphenylamine	EPA 8270D_(2/07)	5,7
Pentachlorophenol	EPA 8270D_(2/07)	5,7
Phenanthrene	EPA 8270D_(2/07)	7
Phenol	EPA 8270D_(2/07)	5,7
Pyrene	EPA 8270D_(2/07)	7
Pyridine	EPA 8270D_(2/07)	5,7
Dibutyltin	Krone 1988	3
Monobutyltin	Krone 1988	3
Tetrabutyltin	Krone 1988	3
Tetraethyl Tin	Krone 1988	3
Tributyltin	Krone 1988	3
Gasoline range organics (GRO)	WDOE NWTPH-Gx_(1997)	2,7,10
Particle Size Distribution	ASTM D 422	7,8
Ignitability	EPA 1020A_1_1992	7
Corrosivity	EPA 9045C_3_1995	7
Particle Size Distribution	PLUMB 1981	7
Particle Size Distribution	PSEP 1986 Wet Sieve	

Matrix/Analyte	Method	Notes
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Accredited Parameter Note Detail

(1) Limited to water only. (2) Washington Department of Ecology Analytical Methods for Petroleum Hydrocarbons, Publication Number ECY 97-602, June 1997. (3) Procedure is an Ion Trap method for determination of tetra-, tri-, di-, and monobutyltin in sediments and pore water. (4) Includes oil matrix. (5) For sediments, modifications are: 30-minute sonication at elevated temperature with a heated ultrasonic bath; use of 40-mL Surlyn coated vials; and extraction of 10 grams of sample with an initial solvent volume of 20 mL instead of extraction of 30 grams of sample with an initial solvent volume of 60 mL. (6) When acid cleanup is not necessary, lab runs according to EPA 8082A protocol. (7) Accreditation based in part on recognition of Oregon NELAP accreditation. (8) Includes hydrometer and modified methods. (9) Interim pending on-site audit to verify lab capability. (10) GC-MS. (11) Provisional accreditation pending submittal of acceptable Proficiency Testing (PT) results (WAC 173-50-110).



02/14/2014

Authentication Signature
 Alan D. Rue, Lab Accreditation Unit Supervisor

Date

APPENDIX C
UST AND WASTE DISPOSAL DOCUMENTATION

2148058-2040

Marine Vacuum Service, Inc.

GENERAL CONTRACTOR

CONTRACTORS LICENSE # MARINVS097JA

P.O. Box 24263 Seattle, Washington 98124

Telephone (206) 762-0240

FAX (206) 763-8084

1-800-540-7491

AST/UST STORAGE TANK PUMP & RINSE CERTIFICATE

Tank Size: 1,000 gals

Last Contents Diesel

Tank Location: Chief Joseph Dam

Marine Vacuum Service, Inc. certifies that the above mentioned tank(s) have been triple rinsed in accordance with the industry standard as outlined in 40 CFR PART 280.70, WAC 173-360-380(I), API 1604, API 2015 and that all residual product and rinsate has been disposed of in accordance with Federal, State and Local regulations. Tanks listed above are **NOT GAS FREE** or **NOT SAFE FOR HOT WORK**

Tank Owner: Chief Joseph Dam

Contractor: Saybr Contractor INC

M.V.S. Representative: Charly Ham

Date: 10.07.2014

Notes:

DBE # D4M1302341

EPA # WAD980974521

A MINORITY BUSINESS ENTERPRISE ID # D4M1302341

SITE AW Regional Disposal - 3rd & Lander
 2733 3RD AVE SOUTH
 SEATTLE, WA 98124 206-652-8865

CUSTOMER
 013213
 Saybr Construcion Inc
 3852 S 66th Street
 Tacoma, WA 98409
 CDL KING COUNTY

SITE 01	TICKET # 946428	CELL
WEIGHMASTER Leslie U.		
DATE/TIME IN 10-07-2014 8:03 pm	DATE/TIME OUT 10-7-2014 8:12 pm	
VEHICLE SAYBRI	CONTAINER	
REFERENCE 2148058	INVOICE	
BILL OF LADING	tank disposal	

P.O.#

SCALE IN	GROSS WEIGHT	10,500	NET TONS	0.79	
SCALE OUT	TARE WEIGHT	8,920	NET WEIGHT	1,580	INBOUND

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	TAX	TOTAL
0.00	YD	TRACKING QTY				
0.79	TN	C&D ISSAQUAH/KING	\$97.50	\$77.03	\$20.35	\$97.38

NET AMOUNT
\$97.38
TENDERED
\$0.00
CHANGE
\$0.00
CHECK#

The undersigned individual signing this document on behalf of Customer acknowledges that he or she has read and understands the terms and conditions on the reverse side and that he or she has the authority to sign this document on behalf of the customer.

SIGNATURE



APPENDIX D
LABORATORY REPORTS AND CHAIN-OF-CUSTODY
DOCUMENTATION

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Seattle
5755 8th Street East
Tacoma, WA 98424
Tel: (253)922-2310

TestAmerica Job ID: 580-45784-1

Client Project/Site: Willows Flat, Washington

For:

Stantec Consulting Corp.
11130 NE 33rd Place
Suite 200
Bellevue, Washington 98004-1465

Attn: Greg McCormick



Authorized for release by:

10/10/2014 4:31:35 PM

Kim Presley, Project Management Assistant I

(253)922-2310

kim.presley@testamericainc.com

Designee for

David Burk, Project Manager I

(253)248-4972

david.burk@testamericainc.com

LINKS

Review your project
results through

TotalAccess

Have a Question?



Visit us at:

www.testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Sample Summary	16
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Case Narrative

Client: Stantec Consulting Corp.
Project/Site: Willows Flat, Washington

TestAmerica Job ID: 580-45784-1

Job ID: 580-45784-1

Laboratory: TestAmerica Seattle

Narrative

Receipt

The samples were received on 10/8/2014 9:20 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 10.8° C.

Except:

The following samples were received at the laboratory outside the required temperature criteria: Base (6') (580-45784-5), East Sidewall (4') (580-45784-3), North End (4') (580-45784-1), South End (4') (580-45784-2), Stockpile #1 (580-45784-6), Stockpile #2 (580-45784-7), Trip Blank (580-45784-9), Trip Blank (580-45784-10), Turbine Top of Tank (580-45784-8), West Sidewall (4') (580-45784-4). The samples were received at a temperature of 10.8°C. The client had unloaded samples onto the counter.

The client has been contacted and the laboratory was instructed to proceed with analysis

These samples were received, however they were not listed on the Chain of Custody (COC): Turbine Top of Tank (580-45784-8), Trip Blank (580-45784-9), Trip Blank (580-45784-10),

For Turbine Top of Tank (580-45784-8) there was no sample collection date or time was listed on the container. The sample was logged in to match the other samples' collection date of 10/7/2014 and a default collection time of 0000. This sample was also logged in for the same analyses as the other samples listed on the COC.

For Trip Blank (580-45784-9) and Trip Blank (580-45784-10) As these are trip blanks, these samples were logged in at a collection date of 10/7/2014 to match the other samples' earliest collection date, and a default sample collection time of 0000. Also, for the requested analyses, these trip blanks are not necessary.

GC Semi VOA - Method NWTPH-Dx:

The following samples Base (6') (580-45784-5) and Stockpile #2 (580-45784-7) contained a hydrocarbon pattern in the diesel range; however, the elution pattern was earlier than the typical diesel fuel pattern used by the laboratory for quantitative purposes:

No additional analytical or quality issues were noted, other than those described above or 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.

Definitions/Glossary

Client: Stantec Consulting Corp.
Project/Site: Willows Flat, Washington

TestAmerica Job ID: 580-45784-1

Qualifiers

GC Semi VOA

Qualifier	Qualifier Description
Y	The chromatographic response resembles a typical fuel pattern.

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, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
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
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: Stantec Consulting Corp.
 Project/Site: Willows Flat, Washington

TestAmerica Job ID: 580-45784-1

Client Sample ID: North End (4')

Lab Sample ID: 580-45784-1

Date Collected: 10/07/14 00:00

Matrix: Solid

Date Received: 10/08/14 09:20

Percent Solids: 86.4

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	ND		28		mg/Kg	☼	10/09/14 16:46	10/10/14 12:22	1
Motor Oil (>C24-C36)	ND		56		mg/Kg	☼	10/09/14 16:46	10/10/14 12:22	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
<i>o-Terphenyl</i>	77		50 - 150				10/09/14 16:46	10/10/14 12:22	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	86		0.10		%			10/09/14 09:56	1
Percent Moisture	14		0.10		%			10/09/14 09:56	1



Client Sample Results

Client: Stantec Consulting Corp.
 Project/Site: Willows Flat, Washington

TestAmerica Job ID: 580-45784-1

Client Sample ID: South End (4')

Lab Sample ID: 580-45784-2

Date Collected: 10/07/14 00:00

Matrix: Solid

Date Received: 10/08/14 09:20

Percent Solids: 97.2

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	ND		25		mg/Kg	☼	10/09/14 16:46	10/10/14 12:58	1
Motor Oil (>C24-C36)	ND		50		mg/Kg	☼	10/09/14 16:46	10/10/14 12:58	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
<i>o-Terphenyl</i>	85		50 - 150				10/09/14 16:46	10/10/14 12:58	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	97		0.10		%			10/09/14 09:56	1
Percent Moisture	2.8		0.10		%			10/09/14 09:56	1



Client Sample Results

Client: Stantec Consulting Corp.
 Project/Site: Willows Flat, Washington

TestAmerica Job ID: 580-45784-1

Client Sample ID: East Sidewall (4')

Lab Sample ID: 580-45784-3

Date Collected: 10/07/14 00:00

Matrix: Solid

Date Received: 10/08/14 09:20

Percent Solids: 96.4

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	ND		25		mg/Kg	☼	10/09/14 16:46	10/10/14 13:17	1
Motor Oil (>C24-C36)	ND		50		mg/Kg	☼	10/09/14 16:46	10/10/14 13:17	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
<i>o-Terphenyl</i>	82		50 - 150				10/09/14 16:46	10/10/14 13:17	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	96		0.10		%			10/09/14 09:56	1
Percent Moisture	3.6		0.10		%			10/09/14 09:56	1



Client Sample Results

Client: Stantec Consulting Corp.
 Project/Site: Willows Flat, Washington

TestAmerica Job ID: 580-45784-1

Client Sample ID: West Sidewall (4')

Lab Sample ID: 580-45784-4

Date Collected: 10/07/14 00:00

Matrix: Solid

Date Received: 10/08/14 09:20

Percent Solids: 69.9

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	ND		35		mg/Kg	☼	10/09/14 16:46	10/10/14 13:35	1
Motor Oil (>C24-C36)	ND		70		mg/Kg	☼	10/09/14 16:46	10/10/14 13:35	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
<i>o-Terphenyl</i>	81		50 - 150				10/09/14 16:46	10/10/14 13:35	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	70		0.10		%			10/09/14 09:56	1
Percent Moisture	30		0.10		%			10/09/14 09:56	1



Client Sample Results

Client: Stantec Consulting Corp.
 Project/Site: Willows Flat, Washington

TestAmerica Job ID: 580-45784-1

Client Sample ID: Base (6')

Lab Sample ID: 580-45784-5

Date Collected: 10/07/14 00:00

Matrix: Solid

Date Received: 10/08/14 09:20

Percent Solids: 96.0

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	1500	Y	25		mg/Kg	☼	10/09/14 16:46	10/10/14 13:53	1
Motor Oil (>C24-C36)	99	Y	51		mg/Kg	☼	10/09/14 16:46	10/10/14 13:53	1
<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>o-Terphenyl</i>	<i>106</i>		<i>50 - 150</i>				<i>10/09/14 16:46</i>	<i>10/10/14 13:53</i>	<i>1</i>

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	96		0.10		%			10/09/14 09:56	1
Percent Moisture	4.0		0.10		%			10/09/14 09:56	1



Client Sample Results

Client: Stantec Consulting Corp.
 Project/Site: Willows Flat, Washington

TestAmerica Job ID: 580-45784-1

Client Sample ID: Stockpile #1

Lab Sample ID: 580-45784-6

Date Collected: 10/07/14 00:00

Matrix: Solid

Date Received: 10/08/14 09:20

Percent Solids: 97.2

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	ND		25		mg/Kg	☼	10/09/14 16:46	10/10/14 14:12	1
Motor Oil (>C24-C36)	ND		50		mg/Kg	☼	10/09/14 16:46	10/10/14 14:12	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
<i>o-Terphenyl</i>	81		50 - 150				10/09/14 16:46	10/10/14 14:12	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	97		0.10		%			10/09/14 09:56	1
Percent Moisture	2.8		0.10		%			10/09/14 09:56	1



Client Sample Results

Client: Stantec Consulting Corp.
 Project/Site: Willows Flat, Washington

TestAmerica Job ID: 580-45784-1

Client Sample ID: Stockpile #2

Lab Sample ID: 580-45784-7

Date Collected: 10/07/14 00:00

Matrix: Solid

Date Received: 10/08/14 09:20

Percent Solids: 97.0

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	27	Y	25		mg/Kg	☼	10/09/14 16:46	10/10/14 14:49	1
Motor Oil (>C24-C36)	ND		50		mg/Kg	☼	10/09/14 16:46	10/10/14 14:49	1
<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>o-Terphenyl</i>	83		50 - 150				10/09/14 16:46	10/10/14 14:49	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	97		0.10		%			10/09/14 09:56	1
Percent Moisture	3.0		0.10		%			10/09/14 09:56	1



QC Sample Results

Client: Stantec Consulting Corp.
Project/Site: Willows Flat, Washington

TestAmerica Job ID: 580-45784-1

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Lab Sample ID: MB 580-172247/1-A

Matrix: Solid

Analysis Batch: 172280

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 172247

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	ND		25		mg/Kg		10/09/14 16:46	10/10/14 11:27	1
Motor Oil (>C24-C36)	ND		50		mg/Kg		10/09/14 16:46	10/10/14 11:27	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
<i>o</i> -Terphenyl	85		50 - 150	10/09/14 16:46	10/10/14 11:27	1

Lab Sample ID: LCS 580-172247/2-A

Matrix: Solid

Analysis Batch: 172280

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 172247

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
#2 Diesel (C10-C24)	500	439		mg/Kg		88	70 - 125
Motor Oil (>C24-C36)	502	470		mg/Kg		94	64 - 127

Surrogate	LCS %Recovery	LCS Qualifier	Limits
<i>o</i> -Terphenyl	89		50 - 150

Lab Sample ID: LCSD 580-172247/3-A

Matrix: Solid

Analysis Batch: 172280

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 172247

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
#2 Diesel (C10-C24)	500	433		mg/Kg		87	70 - 125	2	16
Motor Oil (>C24-C36)	502	471		mg/Kg		94	64 - 127	0	17

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
<i>o</i> -Terphenyl	89		50 - 150

Lab Sample ID: 580-45784-1 DU

Matrix: Solid

Analysis Batch: 172280

Client Sample ID: North End (4')

Prep Type: Total/NA

Prep Batch: 172247

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	Limit
#2 Diesel (C10-C24)	ND		ND		mg/Kg	☼	NC	35
Motor Oil (>C24-C36)	ND		ND		mg/Kg	☼	NC	35

Surrogate	DU %Recovery	DU Qualifier	Limits
<i>o</i> -Terphenyl	81		50 - 150

Lab Chronicle

Client: Stantec Consulting Corp.
Project/Site: Willows Flat, Washington

TestAmerica Job ID: 580-45784-1

Client Sample ID: North End (4')

Lab Sample ID: 580-45784-1

Date Collected: 10/07/14 00:00

Matrix: Solid

Date Received: 10/08/14 09:20

Percent Solids: 86.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3546			172247	10/09/14 16:46	TAA	TAL SEA
Total/NA	Analysis	NWTPH-Dx		1	172280	10/10/14 12:22	JJP	TAL SEA
Total/NA	Analysis	D 2216		1	172183	10/09/14 09:56	RBD	TAL SEA

Client Sample ID: South End (4')

Lab Sample ID: 580-45784-2

Date Collected: 10/07/14 00:00

Matrix: Solid

Date Received: 10/08/14 09:20

Percent Solids: 97.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3546			172247	10/09/14 16:46	TAA	TAL SEA
Total/NA	Analysis	NWTPH-Dx		1	172280	10/10/14 12:58	JJP	TAL SEA
Total/NA	Analysis	D 2216		1	172183	10/09/14 09:56	RBD	TAL SEA

Client Sample ID: East Sidewall (4')

Lab Sample ID: 580-45784-3

Date Collected: 10/07/14 00:00

Matrix: Solid

Date Received: 10/08/14 09:20

Percent Solids: 96.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3546			172247	10/09/14 16:46	TAA	TAL SEA
Total/NA	Analysis	NWTPH-Dx		1	172280	10/10/14 13:17	JJP	TAL SEA
Total/NA	Analysis	D 2216		1	172183	10/09/14 09:56	RBD	TAL SEA

Client Sample ID: West Sidewall (4')

Lab Sample ID: 580-45784-4

Date Collected: 10/07/14 00:00

Matrix: Solid

Date Received: 10/08/14 09:20

Percent Solids: 69.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3546			172247	10/09/14 16:46	TAA	TAL SEA
Total/NA	Analysis	NWTPH-Dx		1	172280	10/10/14 13:35	JJP	TAL SEA
Total/NA	Analysis	D 2216		1	172183	10/09/14 09:56	RBD	TAL SEA

Client Sample ID: Base (6')

Lab Sample ID: 580-45784-5

Date Collected: 10/07/14 00:00

Matrix: Solid

Date Received: 10/08/14 09:20

Percent Solids: 96.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3546			172247	10/09/14 16:46	TAA	TAL SEA
Total/NA	Analysis	NWTPH-Dx		1	172280	10/10/14 13:53	JJP	TAL SEA
Total/NA	Analysis	D 2216		1	172183	10/09/14 09:56	RBD	TAL SEA

TestAmerica Seattle

Lab Chronicle

Client: Stantec Consulting Corp.
Project/Site: Willows Flat, Washington

TestAmerica Job ID: 580-45784-1

Client Sample ID: Stockpile #1

Lab Sample ID: 580-45784-6

Date Collected: 10/07/14 00:00

Matrix: Solid

Date Received: 10/08/14 09:20

Percent Solids: 97.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3546			172247	10/09/14 16:46	TAA	TAL SEA
Total/NA	Analysis	NWTPH-Dx		1	172280	10/10/14 14:12	JJP	TAL SEA
Total/NA	Analysis	D 2216		1	172183	10/09/14 09:56	RBD	TAL SEA

Client Sample ID: Stockpile #2

Lab Sample ID: 580-45784-7

Date Collected: 10/07/14 00:00

Matrix: Solid

Date Received: 10/08/14 09:20

Percent Solids: 97.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3546			172247	10/09/14 16:46	TAA	TAL SEA
Total/NA	Analysis	NWTPH-Dx		1	172280	10/10/14 14:49	JJP	TAL SEA
Total/NA	Analysis	D 2216		1	172183	10/09/14 09:56	RBD	TAL SEA

Laboratory References:

TAL SEA = TestAmerica Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

Certification Summary

Client: Stantec Consulting Corp.
Project/Site: Willows Flat, Washington

TestAmerica Job ID: 580-45784-1

Laboratory: TestAmerica Seattle

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
California	State Program	9	2901	01-31-15
L-A-B	DoD ELAP		L2236	01-19-16
L-A-B	ISO/IEC 17025		L2236	01-19-16
Montana (UST)	State Program	8	N/A	04-30-20
Oregon	NELAP	10	WA100007	11-06-15
USDA	Federal		P330-11-00222	04-08-17
Washington	State Program	10	C553	02-17-15

Sample Summary

Client: Stantec Consulting Corp.
Project/Site: Willows Flat, Washington

TestAmerica Job ID: 580-45784-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-45784-1	North End (4')	Solid	10/07/14 00:00	10/08/14 09:20
580-45784-2	South End (4')	Solid	10/07/14 00:00	10/08/14 09:20
580-45784-3	East Sidewall (4')	Solid	10/07/14 00:00	10/08/14 09:20
580-45784-4	West Sidewall (4')	Solid	10/07/14 00:00	10/08/14 09:20
580-45784-5	Base (6')	Solid	10/07/14 00:00	10/08/14 09:20
580-45784-6	Stockpile #1	Solid	10/07/14 00:00	10/08/14 09:20
580-45784-7	Stockpile #2	Solid	10/07/14 00:00	10/08/14 09:20



TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Seattle
5755 8th Street E.
Tacoma, WA 98424
Tel. 253-922-2310
Fax 253-922-5047
www.testamericainc.com

RUSH
 Short Hold

Chain of Custody Record

Client: Stanec Consulting Client Contact: Greg McFormick Date: 10/8/14 Chain of Custody Number: 24764

Address: 1130 NE 33rd Pl Suite 200 Bellevue, WA 98004 Telephone Number (Area Code)/Fax Number: (425) 922-6392 Lab Number: 45784 Page: 1 of 1

City: Bellevue State: WA Zip Code: 98004 Sampler: Greg McFormick Lab Contact: Same Analysis (Attach list if more space is needed)

Project Name and Location (State): Willows Flat, Washington Billing Contact: Same Containers & Preservatives

Contract/Purchase Order/Quote No. Matrix: TPH-D Special Instructions/Conditions of Receipt

Sample I.D. and Location/Description (Containers for each sample may be combined on one line)	Date	Time	Matrix			Containers & Preservatives					Analysis (Attach list if more space is needed)	
			Air	Aqueous	Sed.	Soil	Unpres.	H2SO4	HNO3	HCl		NaOH
North End (G1)	10/7/14				X							
South End (G1)												
East Sidewalk (G1)												
West Sidewalk (G1)												
Base (G1)												
Stockpile #1												
Stockpile #2												
TURBINE TOP OF TANK	10/8/14				X							
TANK BLANK	10/8/14				X							
TANK BLANK	10/8/14				X							



580-45784 Chain of Custody

#1
Cooler/TB Die @ cor. 10.8 unc 10.3
Cooler Ds @ BL @ Lab
WetPacks Packing BURBLE
CLIENT DRAP

Cooler: Yes No Cooler Temp: _____ Possible Hazard Identification: Non-Hazard Flammable Skin Irritant Poison B Unknown Sample Disposal: Return to Client Archive For _____ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required (business days): 24 Hours 48 Hours 5 Days 10 Days 15 Days Other _____

QC Requirements (Specify)

1. Relinquished By: Greg McFormick / Stanec Date: 10/8/14 Time: 0920 1. Received By: Ben Tyson / Benjamin Tyson Date: 10-8-14 Time: 09:20

2. Relinquished By: Greg McFormick / Stanec Date: _____ Time: _____ 2. Received By: _____ Date: _____ Time: _____

3. Relinquished By: _____ Date: _____ Time: _____ 3. Received By: _____ Date: _____ Time: _____

Comments

DISTRIBUTION: WHITE - Stays with the Samples; CANARY - Returned to Client with Report; PINK - Field Copy

TAL-8274-580 (0210)

Login Sample Receipt Checklist

Client: Stantec Consulting Corp.

Job Number: 580-45784-1

Login Number: 45784

List Source: TestAmerica Seattle

List Number: 1

Creator: Abello, Andrea N

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
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.	False	Cooler temperature outside required temperature criteria.
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.	False	Received extra samples not listed on COC.
Samples are received within Holding Time.	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	

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ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Seattle
5755 8th Street East
Tacoma, WA 98424
Tel: (253)922-2310

TestAmerica Job ID: 580-45784-2

Client Project/Site: Willows Flat, Washington

For:

Stantec Consulting Corp.
11130 NE 33rd Place
Suite 200
Bellevue, Washington 98004-1465

Attn: Greg McCormick

David Burk

Authorized for release by:
10/27/2014 10:08:32 AM

David Burk, Project Manager I
(253)248-4972
david.burk@testamericainc.com

LINKS

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Case Narrative

Client: Stantec Consulting Corp.
Project/Site: Willows Flat, Washington

TestAmerica Job ID: 580-45784-2

Job ID: 580-45784-2

Laboratory: TestAmerica Seattle

Narrative

Receipt

The samples were received on 10/8/2014 9:20 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 10.8° C.

Except:

The following samples were received at the laboratory outside the required temperature criteria: Base (6') (580-45784-5), East Sidewall (4') (580-45784-3), North End (4') (580-45784-1), South End (4') (580-45784-2), Stockpile #1 (580-45784-6), Stockpile #2 (580-45784-7), Trip Blank (580-45784-9), Trip Blank (580-45784-10), Turbine Top of Tank (580-45784-8), West Sidewall (4') (580-45784-4). The samples were received at a temperature of 10.8° C. The client had unloaded samples onto the counter.

The client has been contacted and the laboratory was instructed to proceed with analysis.

These samples were received, however they were not listed on the Chain of Custody (COC): Trip Blank (580-45784-9), Trip Blank (580-45784-10), Turbine Top of Tank (580-45784-8).

Sample #8: No sample collection date or time was listed on the container. The sample was logged in to match the other samples' collection date of 10/7/2014 and a default collection time of 0000. This sample was also logged in for the same analyses as the other samples listed on the COC.

The client requested not to run the Turbine sample.

Sample #9 & 10: As these are trip blanks, these samples were logged in at a collection date of 10/7/2014 to match the other samples' earliest collection date, and a default sample collection time of 0000. Also, for the requested analyses, these trip blanks are not necessary.

Method(s) 5035, 8260B: The client requested additional analyses not listed on the Chain of Custody (COC) for the following sample: Base (6') (580-45784-5). The client was contacted, and the approval was given for running it past the hold time for MeOH extraction.

GC/MS VOA

Method(s) 8260B: The continuing calibration blank (CCB) for analytical batch 172833 contained Methylene Chloride above the reporting limit (RL). All reported samples associated with this CCB were under RL therefore, re-analysis of samples was not performed.

No additional analytical or quality issues were noted, other than those described above or 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

Method(s) NWTPH/EPH: In analysis batch 173560, the %RPD of the laboratory control sample (LCS) and laboratory control standard duplicate (LCSD) for preparation batch 173222 recovered outside control limits for the following analytes: C8-C10 Aliphatics. The individual recoveries in the LCS and LCSD for the affected analyte range were within acceptance criteria; therefore, the data have been qualified and reported.

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

Organic Prep

Method(s) 3550B: In preparation batch 173222, the following samples: (580-45784-5 MS), (580-45784-5 MSD), Base (6') (580-45784-5), contained rocks.

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

Definitions/Glossary

Client: Stantec Consulting Corp.
Project/Site: Willows Flat, Washington

TestAmerica Job ID: 580-45784-2

Qualifiers

GC Semi VOA

Qualifier	Qualifier Description
*	RPD of the LCS and LCSD exceeds the control limits
F1	MS and/or MSD Recovery exceeds the control limits
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
F2	MS/MSD RPD exceeds control limits

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, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
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
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: Stantec Consulting Corp.
Project/Site: Willows Flat, Washington

TestAmerica Job ID: 580-45784-2

Client Sample ID: Base (6')

Lab Sample ID: 580-45784-5

Date Collected: 10/07/14 00:00

Matrix: Solid

Date Received: 10/08/14 09:20

Percent Solids: 96.0

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		16		ug/Kg	☼	10/14/14 09:59	10/16/14 09:53	1
Toluene	ND		41		ug/Kg	☼	10/14/14 09:59	10/16/14 09:53	1
Ethylbenzene	ND		41		ug/Kg	☼	10/14/14 09:59	10/16/14 09:53	1
m-Xylene & p-Xylene	ND		41		ug/Kg	☼	10/14/14 09:59	10/16/14 09:53	1
o-Xylene	ND		41		ug/Kg	☼	10/14/14 09:59	10/16/14 09:53	1
Naphthalene	ND		41		ug/Kg	☼	10/14/14 09:59	10/16/14 09:53	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	103		80 - 120	10/14/14 09:59	10/16/14 09:53	1
Trifluorotoluene (Surr)	122		65 - 140	10/14/14 09:59	10/16/14 09:53	1
4-Bromofluorobenzene (Surr)	104		70 - 120	10/14/14 09:59	10/16/14 09:53	1
Dibromofluoromethane (Surr)	98		75 - 132	10/14/14 09:59	10/16/14 09:53	1
1,2-Dichloroethane-d4 (Surr)	99		71 - 136	10/14/14 09:59	10/16/14 09:53	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzo[a]anthracene	17		5.1		ug/Kg	☼	10/15/14 13:00	10/16/14 14:34	1
Benzo[a]pyrene	ND		5.1		ug/Kg	☼	10/15/14 13:00	10/16/14 14:34	1
Benzo[b]fluoranthene	ND		5.1		ug/Kg	☼	10/15/14 13:00	10/16/14 14:34	1
Benzo[k]fluoranthene	ND		5.1		ug/Kg	☼	10/15/14 13:00	10/16/14 14:34	1
Chrysene	ND		5.1		ug/Kg	☼	10/15/14 13:00	10/16/14 14:34	1
Dibenz(a,h)anthracene	ND		5.1		ug/Kg	☼	10/15/14 13:00	10/16/14 14:34	1
Indeno[1,2,3-cd]pyrene	ND		5.1		ug/Kg	☼	10/15/14 13:00	10/16/14 14:34	1
Naphthalene	19		5.1		ug/Kg	☼	10/15/14 13:00	10/16/14 14:34	1
2-Methylnaphthalene	56		5.1		ug/Kg	☼	10/15/14 13:00	10/16/14 14:34	1
1-Methylnaphthalene	42		5.1		ug/Kg	☼	10/15/14 13:00	10/16/14 14:34	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Terphenyl-d14	100		42 - 151	10/15/14 13:00	10/16/14 14:34	1

Method: NWTPH/EPH - Northwest - Extractable Petroleum Hydrocarbons (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
C8-C10 Aliphatics	ND	*	5.1		mg/Kg	☼	10/20/14 12:52	10/24/14 01:56	1
C8-C10 Aromatics	ND		5.1		mg/Kg	☼	10/20/14 12:52	10/24/14 01:56	1
C10-C12 Aliphatics	ND		5.1		mg/Kg	☼	10/20/14 12:52	10/24/14 01:56	1
C10-C12 Aromatics	ND		5.1		mg/Kg	☼	10/20/14 12:52	10/24/14 01:56	1
C12-C16 Aliphatics	150		5.1		mg/Kg	☼	10/20/14 12:52	10/24/14 01:56	1
C12-C16 Aromatics	5.7		5.1		mg/Kg	☼	10/20/14 12:52	10/24/14 01:56	1
C16-C21 Aliphatics	350		5.1		mg/Kg	☼	10/20/14 12:52	10/24/14 01:56	1
C16-C21 Aromatics	94		5.1		mg/Kg	☼	10/20/14 12:52	10/24/14 01:56	1
C21-C34 Aliphatics	55		5.1		mg/Kg	☼	10/20/14 12:52	10/24/14 01:56	1
C21-C34 Aromatics	20		5.1		mg/Kg	☼	10/20/14 12:52	10/24/14 01:56	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	70		60 - 140	10/20/14 12:52	10/24/14 01:56	1
1-Chlorooctadecane	85		60 - 140	10/20/14 12:52	10/24/14 01:56	1

TestAmerica Seattle

QC Sample Results

Client: Stantec Consulting Corp.
Project/Site: Willows Flat, Washington

TestAmerica Job ID: 580-45784-2

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 580-172594/1-A

Matrix: Solid

Analysis Batch: 172560

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 172594

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		16		ug/Kg		10/14/14 08:00	10/14/14 09:51	1
Toluene	ND		40		ug/Kg		10/14/14 08:00	10/14/14 09:51	1
Ethylbenzene	ND		40		ug/Kg		10/14/14 08:00	10/14/14 09:51	1
m-Xylene & p-Xylene	ND		40		ug/Kg		10/14/14 08:00	10/14/14 09:51	1
o-Xylene	ND		40		ug/Kg		10/14/14 08:00	10/14/14 09:51	1
Naphthalene	ND		40		ug/Kg		10/14/14 08:00	10/14/14 09:51	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	101		80 - 120	10/14/14 08:00	10/14/14 09:51	1
Trifluorotoluene (Surr)	134		65 - 140	10/14/14 08:00	10/14/14 09:51	1
4-Bromofluorobenzene (Surr)	101		70 - 120	10/14/14 08:00	10/14/14 09:51	1
Dibromofluoromethane (Surr)	98		75 - 132	10/14/14 08:00	10/14/14 09:51	1
1,2-Dichloroethane-d4 (Surr)	98		71 - 136	10/14/14 08:00	10/14/14 09:51	1

Lab Sample ID: LCS 580-172594/2-A

Matrix: Solid

Analysis Batch: 172560

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 172594

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	800	741		ug/Kg		93	70 - 128
Toluene	800	735		ug/Kg		92	75 - 126
Ethylbenzene	800	764		ug/Kg		96	78 - 126
m-Xylene & p-Xylene	800	766		ug/Kg		96	78 - 126
o-Xylene	800	758		ug/Kg		95	77 - 127
Naphthalene	800	724		ug/Kg		90	14 - 170

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Toluene-d8 (Surr)	101		80 - 120
Trifluorotoluene (Surr)	125		65 - 140
4-Bromofluorobenzene (Surr)	102		70 - 120
Dibromofluoromethane (Surr)	99		75 - 132
1,2-Dichloroethane-d4 (Surr)	100		71 - 136

Lab Sample ID: LCSD 580-172594/3-A

Matrix: Solid

Analysis Batch: 172560

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 172594

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	800	725		ug/Kg		91	70 - 128	2	19
Toluene	800	730		ug/Kg		91	75 - 126	1	19
Ethylbenzene	800	759		ug/Kg		95	78 - 126	1	23
m-Xylene & p-Xylene	800	766		ug/Kg		96	78 - 126	0	23
o-Xylene	800	745		ug/Kg		93	77 - 127	2	22
Naphthalene	800	669		ug/Kg		84	14 - 170	8	50

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
Toluene-d8 (Surr)	100		80 - 120

TestAmerica Seattle

QC Sample Results

Client: Stantec Consulting Corp.
Project/Site: Willows Flat, Washington

TestAmerica Job ID: 580-45784-2

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

Lab Sample ID: LCSD 580-172594/3-A
Matrix: Solid
Analysis Batch: 172560

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 172594

Surrogate	LCSD		Limits
	%Recovery	Qualifier	
Trifluorotoluene (Surr)	117		65 - 140
4-Bromofluorobenzene (Surr)	102		70 - 120
Dibromofluoromethane (Surr)	102		75 - 132
1,2-Dichloroethane-d4 (Surr)	97		71 - 136

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

Lab Sample ID: MB 580-172792/1-A
Matrix: Solid
Analysis Batch: 172891

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 172792

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Benzo[a]anthracene	ND		5.0		ug/Kg		10/15/14 13:00	10/16/14 11:41	1
Benzo[a]pyrene	ND		5.0		ug/Kg		10/15/14 13:00	10/16/14 11:41	1
Benzo[b]fluoranthene	ND		5.0		ug/Kg		10/15/14 13:00	10/16/14 11:41	1
Benzo[k]fluoranthene	ND		5.0		ug/Kg		10/15/14 13:00	10/16/14 11:41	1
Chrysene	ND		5.0		ug/Kg		10/15/14 13:00	10/16/14 11:41	1
Dibenz(a,h)anthracene	ND		5.0		ug/Kg		10/15/14 13:00	10/16/14 11:41	1
Indeno[1,2,3-cd]pyrene	ND		5.0		ug/Kg		10/15/14 13:00	10/16/14 11:41	1
Naphthalene	ND		5.0		ug/Kg		10/15/14 13:00	10/16/14 11:41	1
2-Methylnaphthalene	ND		5.0		ug/Kg		10/15/14 13:00	10/16/14 11:41	1
1-Methylnaphthalene	ND		5.0		ug/Kg		10/15/14 13:00	10/16/14 11:41	1

Surrogate	MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
Terphenyl-d14	82		42 - 151	10/15/14 13:00	10/16/14 11:41	1

Lab Sample ID: LCS 580-172792/2-A
Matrix: Solid
Analysis Batch: 172891

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 172792

Analyte	Spike Added	LCS	LCS	Unit	D	%Rec	%Rec. Limits
		Result	Qualifier				
Benzo[a]anthracene	1000	883		ug/Kg		88	76 - 119
Benzo[a]pyrene	1000	961		ug/Kg		96	72 - 117
Benzo[b]fluoranthene	1000	930		ug/Kg		93	63 - 132
Benzo[k]fluoranthene	1000	927		ug/Kg		93	63 - 119
Chrysene	1000	896		ug/Kg		90	75 - 114
Dibenz(a,h)anthracene	1000	969		ug/Kg		97	56 - 134
Indeno[1,2,3-cd]pyrene	1000	928		ug/Kg		93	56 - 127
Naphthalene	1000	884		ug/Kg		88	62 - 112
2-Methylnaphthalene	1000	896		ug/Kg		90	64 - 119
1-Methylnaphthalene	1000	922		ug/Kg		92	62 - 118

Surrogate	LCS		Limits
	%Recovery	Qualifier	
Terphenyl-d14	89		42 - 151

TestAmerica Seattle

QC Sample Results

Client: Stantec Consulting Corp.
Project/Site: Willows Flat, Washington

TestAmerica Job ID: 580-45784-2

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

Lab Sample ID: LCSD 580-172792/3-A

Matrix: Solid

Analysis Batch: 172891

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 172792

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzo[a]anthracene	1000	934		ug/Kg		93	76 - 119	6	27
Benzo[a]pyrene	1000	1030		ug/Kg		103	72 - 117	7	30
Benzo[b]fluoranthene	1000	1020		ug/Kg		102	63 - 132	9	30
Benzo[k]fluoranthene	1000	974		ug/Kg		97	63 - 119	5	30
Chrysene	1000	930		ug/Kg		93	75 - 114	4	26
Dibenz(a,h)anthracene	1000	1030		ug/Kg		103	56 - 134	6	30
Indeno[1,2,3-cd]pyrene	1000	1030		ug/Kg		103	56 - 127	10	29
Naphthalene	1000	932		ug/Kg		93	62 - 112	5	26
2-Methylnaphthalene	1000	947		ug/Kg		95	64 - 119	6	27
1-Methylnaphthalene	1000	975		ug/Kg		98	62 - 118	6	30

Surrogate	LCSD		Limits
	%Recovery	Qualifier	
Terphenyl-d14	95		42 - 151

Method: NWTPH/EPH - Northwest - Extractable Petroleum Hydrocarbons (GC)

Lab Sample ID: MB 580-173222/1-B

Matrix: Solid

Analysis Batch: 173560

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 173222

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
C8-C10 Aliphatics	ND		5.0		mg/Kg		10/20/14 12:52	10/24/14 00:39	1
C8-C10 Aromatics	ND		5.0		mg/Kg		10/20/14 12:52	10/24/14 00:39	1
C10-C12 Aliphatics	ND		5.0		mg/Kg		10/20/14 12:52	10/24/14 00:39	1
C10-C12 Aromatics	ND		5.0		mg/Kg		10/20/14 12:52	10/24/14 00:39	1
C12-C16 Aliphatics	ND		5.0		mg/Kg		10/20/14 12:52	10/24/14 00:39	1
C12-C16 Aromatics	ND		5.0		mg/Kg		10/20/14 12:52	10/24/14 00:39	1
C16-C21 Aliphatics	ND		5.0		mg/Kg		10/20/14 12:52	10/24/14 00:39	1
C16-C21 Aromatics	ND		5.0		mg/Kg		10/20/14 12:52	10/24/14 00:39	1
C21-C34 Aliphatics	ND		5.0		mg/Kg		10/20/14 12:52	10/24/14 00:39	1
C21-C34 Aromatics	ND		5.0		mg/Kg		10/20/14 12:52	10/24/14 00:39	1

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
o-Terphenyl	64		60 - 140	10/20/14 12:52	10/24/14 00:39	1
1-Chlorooctadecane	73		60 - 140	10/20/14 12:52	10/24/14 00:39	1

Lab Sample ID: LCS 580-173222/2-B

Matrix: Solid

Analysis Batch: 173560

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 173222

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
C8-C10 Aliphatics	20.1	11.6		mg/Kg		58	50 - 150
C8-C10 Aromatics	6.69	6.20		mg/Kg		93	50 - 150
C10-C12 Aliphatics	6.69	5.46		mg/Kg		82	70 - 130
C10-C12 Aromatics	6.70	5.18		mg/Kg		77	70 - 130
C12-C16 Aliphatics	13.4	11.9		mg/Kg		89	70 - 130
C12-C16 Aromatics	20.1	18.5		mg/Kg		92	70 - 130

TestAmerica Seattle

QC Sample Results

Client: Stantec Consulting Corp.
Project/Site: Willows Flat, Washington

TestAmerica Job ID: 580-45784-2

Method: NWTPH/EPH - Northwest - Extractable Petroleum Hydrocarbons (GC) (Continued)

Lab Sample ID: LCS 580-173222/2-B

Matrix: Solid

Analysis Batch: 173560

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 173222

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
C16-C21 Aliphatics	20.1	21.0		mg/Kg		105	70 - 130
C16-C21 Aromatics	33.4	39.2		mg/Kg		117	70 - 130
C21-C34 Aliphatics	40.1	37.3		mg/Kg		93	70 - 130
C21-C34 Aromatics	53.5	62.7		mg/Kg		117	70 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
<i>o</i> -Terphenyl	97		60 - 140
1-Chlorooctadecane	91		60 - 140

Lab Sample ID: LCSD 580-173222/3-B

Matrix: Solid

Analysis Batch: 173560

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 173222

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
C8-C10 Aliphatics	20.1	25.0	*	mg/Kg		124	50 - 150	73	25
C8-C10 Aromatics	6.69	6.15		mg/Kg		92	50 - 150	1	25
C10-C12 Aliphatics	6.69	5.40		mg/Kg		81	70 - 130	1	25
C10-C12 Aromatics	6.70	5.04		mg/Kg		75	70 - 130	3	25
C12-C16 Aliphatics	13.4	11.4		mg/Kg		85	70 - 130	4	25
C12-C16 Aromatics	20.1	17.4		mg/Kg		87	70 - 130	6	25
C16-C21 Aliphatics	20.1	20.2		mg/Kg		101	70 - 130	4	25
C16-C21 Aromatics	33.4	36.4		mg/Kg		109	70 - 130	7	25
C21-C34 Aliphatics	40.1	35.9		mg/Kg		89	70 - 130	4	25
C21-C34 Aromatics	53.5	57.8		mg/Kg		108	70 - 130	8	25

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
<i>o</i> -Terphenyl	92		60 - 140
1-Chlorooctadecane	90		60 - 140

Lab Sample ID: 580-45784-5 MS

Matrix: Solid

Analysis Batch: 173560

Client Sample ID: Base (6')

Prep Type: Total/NA

Prep Batch: 173222

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
C8-C10 Aliphatics	ND	*	20.7	8.85	F1	mg/Kg	☼	42	50 - 150
C8-C10 Aromatics	ND		6.92	ND		mg/Kg	☼	58	50 - 150
C10-C12 Aliphatics	ND		6.91	10.4		mg/Kg	☼	113	70 - 130
C10-C12 Aromatics	ND		6.92	ND	F1	mg/Kg	☼	58	70 - 130
C12-C16 Aliphatics	150		13.8	192	4	mg/Kg	☼	330	70 - 130
C12-C16 Aromatics	5.7		20.7	20.6		mg/Kg	☼	72	70 - 130
C16-C21 Aliphatics	350		20.7	412	4	mg/Kg	☼	300	70 - 130
C16-C21 Aromatics	94		34.5	124		mg/Kg	☼	88	70 - 130
C21-C34 Aliphatics	55		41.5	94.8		mg/Kg	☼	95	70 - 130
C21-C34 Aromatics	20		55.2	69.6		mg/Kg	☼	90	70 - 130

Surrogate	MS %Recovery	MS Qualifier	Limits
<i>o</i> -Terphenyl	75		60 - 140

TestAmerica Seattle

QC Sample Results

Client: Stantec Consulting Corp.
Project/Site: Willows Flat, Washington

TestAmerica Job ID: 580-45784-2

Method: NWTPH/EPH - Northwest - Extractable Petroleum Hydrocarbons (GC) (Continued)

Lab Sample ID: 580-45784-5 MS

Matrix: Solid

Analysis Batch: 173560

Client Sample ID: Base (6')

Prep Type: Total/NA

Prep Batch: 173222

<i>Surrogate</i>	<i>MS MS</i>		<i>Limits</i>
	<i>%Recovery</i>	<i>Qualifier</i>	
<i>1-Chlorooctadecane</i>	89		60 - 140

Lab Sample ID: 580-45784-5 MSD

Matrix: Solid

Analysis Batch: 173560

Client Sample ID: Base (6')

Prep Type: Total/NA

Prep Batch: 173222

<i>Analyte</i>	<i>Sample Result</i>	<i>Sample Qualifier</i>	<i>Spike Added</i>	<i>MSD MSD</i>		<i>Unit</i>	<i>D</i>	<i>%Rec</i>	<i>%Rec.</i>		<i>RPD</i>	
				<i>Result</i>	<i>Qualifier</i>				<i>Limits</i>	<i>RPD</i>	<i>Limit</i>	
C8-C10 Aliphatics	ND	*	20.7	7.00	F1	mg/Kg	☼	33	50 - 150	23	25	
C8-C10 Aromatics	ND		6.91	ND	F1	mg/Kg	☼	49	50 - 150	13	25	
C10-C12 Aliphatics	ND		6.90	7.40	F1 F2	mg/Kg	☼	69	70 - 130	34	25	
C10-C12 Aromatics	ND		6.91	ND	F1	mg/Kg	☼	51	70 - 130	11	25	
C12-C16 Aliphatics	150		13.8	143	4 F2	mg/Kg	☼	-23	70 - 130	29	25	
C12-C16 Aromatics	5.7		20.7	18.1	F1	mg/Kg	☼	60	70 - 130	13	25	
C16-C21 Aliphatics	350		20.7	314	4 F2	mg/Kg	☼	-175	70 - 130	27	25	
C16-C21 Aromatics	94		34.5	114	F1	mg/Kg	☼	60	70 - 130	8	25	
C21-C34 Aliphatics	55		41.4	74.3	F1	mg/Kg	☼	46	70 - 130	24	25	
C21-C34 Aromatics	20		55.2	65.9		mg/Kg	☼	83	70 - 130	5	25	

<i>Surrogate</i>	<i>MSD MSD</i>		<i>Limits</i>
	<i>%Recovery</i>	<i>Qualifier</i>	
<i>o-Terphenyl</i>	66		60 - 140
<i>1-Chlorooctadecane</i>	77		60 - 140

Lab Chronicle

Client: Stantec Consulting Corp.
Project/Site: Willows Flat, Washington

TestAmerica Job ID: 580-45784-2

Client Sample ID: Base (6')

Lab Sample ID: 580-45784-5

Date Collected: 10/07/14 00:00

Matrix: Solid

Date Received: 10/08/14 09:20

Percent Solids: 96.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			172594	10/14/14 09:59	MMH	TAL SEA
Total/NA	Analysis	8260B		1	172833	10/16/14 09:53	A1C	TAL SEA
Total/NA	Prep	3550B			172792	10/15/14 13:00	ALL	TAL SEA
Total/NA	Analysis	8270C SIM		1	172891	10/16/14 14:34	ERB	TAL SEA
Total/NA	Prep	3550B			173222	10/20/14 12:52	RMB	TAL SEA
Total/NA	Fraction	EPH Frac			173388	10/21/14 13:31	WJR	TAL SEA
Total/NA	Analysis	NWTPH/EPH		1	173560	10/24/14 01:56	EKK	TAL SEA

Laboratory References:

TAL SEA = TestAmerica Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

Certification Summary

Client: Stantec Consulting Corp.
Project/Site: Willows Flat, Washington

TestAmerica Job ID: 580-45784-2

Laboratory: TestAmerica Seattle

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska (UST)	State Program	10	UST-022	03-04-15
California	State Program	9	2901	01-31-15
L-A-B	DoD ELAP		L2236	01-19-16
L-A-B	ISO/IEC 17025		L2236	01-19-16
Montana (UST)	State Program	8	N/A	04-30-20
Oregon	NELAP	10	WA100007	11-06-15
USDA	Federal		P330-11-00222	04-08-17
Washington	State Program	10	C553	02-17-15

Sample Summary

Client: Stantec Consulting Corp.
Project/Site: Willows Flat, Washington

TestAmerica Job ID: 580-45784-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-45784-5	Base (6')	Solid	10/07/14 00:00	10/08/14 09:20

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11

RUSH
 Short Hold

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Seattle
5755 8th Street E.
Tacoma, WA 98424
Tel. 253-922-2310
Fax 253-922-5047
www.testamericainc.com

Client: Stanec Consulting

Address: 1130 NE 33rd Pl Suite 200

Client Contact: Greg McFormick

Date: 10/8/14

Chain of Custody Number: 24764

City: Belleve State: WA Zip Code: 98004

Telephone Number (Area Code)/Fax Number: (425) 922-6392

Lab Number: 45784

Page: 1 of 1

Project Name and Location (State): Willows Flat, Washington

Sampler: Greg McFormick

Analysis (Attach list if more space is needed)

Special Instructions/
Conditions of Receipt

Contract/Purchase Order/Quote No.

Matrix: Same

Containers & Preservatives

Sample I.D. and Location/Description (Containers for each sample may be combined on one line)

Sample I.D. and Location/Description	Date	Time	Air	Aqueous	Sed.	Soil	Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Containers & Preservatives
<u>North End (G1)</u>	<u>10/7/14</u>					X							
<u>South End (G1)</u>													
<u>East Sidewalk (G1)</u>													
<u>West Sidewalk (G1)</u>													
<u>Base (G1)</u>													
<u>Stockpile #1</u>													
<u>Stockpile #2</u>													
<u>TURBINE TOP OF TANK</u>	<u>10/8/14</u>				X								
<u>TANK BLANK</u>	<u>10/8/14</u>				X								
<u>TANK BLANK</u>	<u>10/8/14</u>				X								



580-45784 Chain of Custody

#1
Cooler/TB Die @ cor. 10.8 unc 10.3
Cooler Ds @ BL @ Lab
WetPacks Packing BUBBLE
CLIENT DRAP

Cooler: Yes No Cooler Temp: _____ Possible Hazard Identification: Non-Hazard Flammable Skin Irritant Poison B Unknown Sample Disposal: Return to Client Archive For _____ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required (business days): 24 Hours 48 Hours 5 Days 10 Days 15 Days Other _____

Relinquished By	Signature/Print	Date	Time	Relinquished By	Signature/Print	Date	Time
1. Relinquished By	<u>Greg McFormick</u>	<u>10/8/14</u>	<u>0920</u>	1. Received By	<u>Benjamin Tyson</u>	<u>10-8-14</u>	<u>09:20</u>
2. Relinquished By	<u>Stanec</u>			2. Received By	<u>Benjamin Tyson</u>		
3. Relinquished By	<u>Stanec</u>			3. Received By			

Comments

DISTRIBUTION: WHITE - Stays with the Samples; CANARY - Returned to Client with Report; PINK - Field Copy

Login Sample Receipt Checklist

Client: Stantec Consulting Corp.

Job Number: 580-45784-2

Login Number: 45784

List Source: TestAmerica Seattle

List Number: 1

Creator: Abello, Andrea N

Question	Answer	Comment
Radioactivity wasn't checked or is <= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
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.	False	Cooler temperature outside required temperature criteria.
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.	False	Received extra samples not listed on COC.
Samples are received within Holding Time.	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	

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ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Seattle
5755 8th Street East
Tacoma, WA 98424
Tel: (253)922-2310

TestAmerica Job ID: 580-45784-3

Client Project/Site: Willows Flat, Washington

For:

Stantec Consulting Corp.
11130 NE 33rd Place
Suite 200
Bellevue, Washington 98004-1465

Attn: Greg McCormick

David Burk

Authorized for release by:
10/29/2014 4:15:57 PM

David Burk, Project Manager I
(253)248-4972
david.burk@testamericainc.com

LINKS

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results through
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www.testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Case Narrative

Client: Stantec Consulting Corp.
Project/Site: Willows Flat, Washington

TestAmerica Job ID: 580-45784-3

Job ID: 580-45784-3

Laboratory: TestAmerica Seattle

Narrative

Receipt

The samples were received on 10/8/2014 9:20 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 10.8° C.

Except:

Sample #8: No sample collection date or time was listed on the container. The sample was logged in to match the other samples' collection date of 10/7/2014 and a default collection time of 0000. This sample was also logged in for the same analyses as the other samples listed on the COC.

The client requested not to run the Turbine sample.

GC Semi VOA

Method(s) NWTPH-Dx: In analysis batch 173743, for the following sample(s) from preparation batch 173443: The sample duplicate (DUP) precision was outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample / laboratory control sample duplicate (LCS/LCSD) precision was within acceptance limits.

Method(s) NWTPH-Dx: In analysis batch 174024, for the following sample from preparation batch 173311: The following sample contained a hydrocarbon pattern in the diesel range; however, the elution pattern was earlier than the typical diesel fuel pattern used by the laboratory for quantitative purposes: Turbine Top of Tank (580-45784-8).

No additional analytical or quality issues were noted, other than those described above or 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.

Definitions/Glossary

Client: Stantec Consulting Corp.
Project/Site: Willows Flat, Washington

TestAmerica Job ID: 580-45784-3

Qualifiers

GC Semi VOA

Qualifier	Qualifier Description
Y	The chromatographic response resembles a typical fuel pattern.

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, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
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
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: Stantec Consulting Corp.
 Project/Site: Willows Flat, Washington

TestAmerica Job ID: 580-45784-3

Client Sample ID: Turbine Top of Tank

Lab Sample ID: 580-45784-8

Date Collected: 10/07/14 00:00

Matrix: Solid

Date Received: 10/08/14 09:20

Percent Solids: 65.6

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	17000	Y	380		mg/Kg	☆	10/21/14 12:48	10/28/14 18:27	10
Motor Oil (>C24-C36)	1000		750		mg/Kg	☆	10/21/14 12:48	10/28/14 18:27	10
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
<i>o-Terphenyl</i>	149		50 - 150				10/21/14 12:48	10/28/14 18:27	10

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	66		0.10		%			10/23/14 12:09	1
Percent Moisture	34		0.10		%			10/23/14 12:09	1



QC Sample Results

Client: Stantec Consulting Corp.
Project/Site: Willows Flat, Washington

TestAmerica Job ID: 580-45784-3

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Lab Sample ID: MB 580-173311/1-A

Matrix: Solid

Analysis Batch: 173743

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 173311

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	ND		25		mg/Kg		10/21/14 09:11	10/24/14 14:36	1
Motor Oil (>C24-C36)	ND		50		mg/Kg		10/21/14 09:11	10/24/14 14:36	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
<i>o</i> -Terphenyl	87		50 - 150	10/21/14 09:11	10/24/14 14:36	1

Lab Sample ID: LCS 580-173311/2-A

Matrix: Solid

Analysis Batch: 173743

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 173311

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
#2 Diesel (C10-C24)	500	437		mg/Kg		87	70 - 125
Motor Oil (>C24-C36)	502	483		mg/Kg		96	64 - 127

Surrogate	LCS %Recovery	LCS Qualifier	Limits
<i>o</i> -Terphenyl	86		50 - 150

Lab Sample ID: LCSD 580-173311/3-A

Matrix: Solid

Analysis Batch: 173743

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 173311

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
#2 Diesel (C10-C24)	500	494		mg/Kg		99	70 - 125	12	16
Motor Oil (>C24-C36)	502	551		mg/Kg		110	64 - 127	13	17

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
<i>o</i> -Terphenyl	100		50 - 150

Lab Chronicle

Client: Stantec Consulting Corp.
Project/Site: Willows Flat, Washington

TestAmerica Job ID: 580-45784-3

Client Sample ID: Turbine Top of Tank

Lab Sample ID: 580-45784-8

Date Collected: 10/07/14 00:00

Matrix: Solid

Date Received: 10/08/14 09:20

Percent Solids: 65.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3546			173311	10/21/14 12:48	TAA	TAL SEA
Total/NA	Analysis	NWTPH-Dx		10	174024	10/28/14 18:27	EKK	TAL SEA
Total/NA	Analysis	D 2216		1	173634	10/23/14 12:09	CRH	TAL SEA

Laboratory References:

TAL SEA = TestAmerica Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310



Certification Summary

Client: Stantec Consulting Corp.
Project/Site: Willows Flat, Washington

TestAmerica Job ID: 580-45784-3

Laboratory: TestAmerica Seattle

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska (UST)	State Program	10	UST-022	03-04-15
California	State Program	9	2901	01-31-15
L-A-B	DoD ELAP		L2236	01-19-16
L-A-B	ISO/IEC 17025		L2236	01-19-16
Montana (UST)	State Program	8	N/A	04-30-20
Oregon	NELAP	10	WA100007	11-06-15
USDA	Federal		P330-11-00222	04-08-17
Washington	State Program	10	C553	02-17-15

Sample Summary

Client: Stantec Consulting Corp.
Project/Site: Willows Flat, Washington

TestAmerica Job ID: 580-45784-3

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-45784-8	Turbine Top of Tank	Solid	10/07/14 00:00	10/08/14 09:20

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11

RUSH
 Short Hold

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Seattle
5755 8th Street E.
Tacoma, WA 98424
Tel. 253-922-2310
Fax 253-922-5047
www.testamericainc.com

Client: Stanec Consulting

Address: 1130 NE 33rd Pl Suite 200

Client Contact: Greg McFormick

Date: 10/8/14

Chain of Custody Number: 24764

City: Belleve State: WA Zip Code: 98004

Telephone Number (Area Code)/Fax Number: (425) 922-6392

Lab Number: 45784

Page: 1 of 1

Project Name and Location (State): Willows Flat, Washington

Sampler: Greg McFormick

Analysis (Attach list if more space is needed)

Special Instructions/
Conditions of Receipt

Contract/Purchase Order/Quote No.

Billing Contact: Same

Containers & Preservatives

Sample I.D. and Location/Description
(Containers for each sample may be combined on one line)

Date Time Air Aqueous Sed. Soil Unpres. H2SO4 HNO3 HCl NaOH ZnAc/NaOH

Matrix

TPH-D

580-45784 Chain of Custody

Sample I.D. and Location/Description	Date	Time	Air	Aqueous	Sed.	Soil	Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH
North End (G1)	10/7/14					X						
South End (G1)												
East Sidewalk (G1)												
West Sidewalk (G1)												
Base (G1)												
Storkpile #1												
Storkpile #2												
TURBINE TOP OF TANK	10/8/14				X							
TURBINE BLANK	10/8/14				X							
TURBINE BLANK	10/8/14				X							

#1
Cooler/TB Die @ cor. 10.8 unc 10.3
Cooler Ds @ BL @ Lab
WePacks Packing BURBLE
CLIENT DRAP

Cooler: Yes No Cooler Temp: _____ Possible Hazard Identification: Non-Hazard Flammable Skin Irritant Poison B Unknown Sample Disposal: Return to Client Archive For _____ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required (business days): 24 Hours 48 Hours 5 Days 10 Days 15 Days Other _____

QC Requirements (Specify): _____

1. Relinquished By: Greg McFormick / Stanec Date: 10/8/14 Time: 0920

1. Received By: Ben Tyson / Benjamin Tyson Date: 10-8-14 Time: 09:20

2. Relinquished By: Greg McFormick / Stanec Date: _____ Time: _____

2. Received By: _____ Date: _____ Time: _____

3. Relinquished By: _____ Date: _____ Time: _____

3. Received By: _____ Date: _____ Time: _____

Login Sample Receipt Checklist

Client: Stantec Consulting Corp.

Job Number: 580-45784-3

Login Number: 45784

List Source: TestAmerica Seattle

List Number: 1

Creator: Abello, Andrea N

Question	Answer	Comment
Radioactivity wasn't checked or is <= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
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.	False	Cooler temperature outside required temperature criteria.
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.	False	Received extra samples not listed on COC.
Samples are received within Holding Time.	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	

