Phase II Environmental Site Assessment Sampling and Analysis Plan

2612 and 2613 Burwell Street
Bremerton, Washington 98312

EPA Cooperative Agreement Number:
BF-01J39801

August 29, 2019

Prepared for:

City of Bremerton
Andrea Spencer
345 6th Street, Suite 600
Bremerton, Washington 98337

Prepared by:

Stantec Consulting Services Inc.
601 SW 2nd Avenue, 14th Floor
Portland, Oregon 97204

Project No: 185750574

Sign-off Sheet

Document Title: Phase II Environmental Site Assessment Sampling and Analysis Plan
2612 and 2613 Burwell Street
Bremerton, Washington 98312
EPA Cooperative Agreement Number: BF-01J39801

Prepared by: Joseph Hammer, PMP
Stantec Consulting Services Inc.
601 SW 2nd Avenue, 14th Floor
Portland, Oregon 97204
(503) 220-5412

Date: August 29, 2019

Title	Name	Signature	Date of Approval
EPA Region 10 Brownfields Project Officer	Susan Morales	SMorales	9/9/19
EPA Region 10 Quality Assurance Manager	Donald Brown	KARIN FEDDERSEN-LETHE Digitally signed by KARIN FEDDERSEN-LETHE Date: 2019.09.06 14:18:24 -07'00'	
Washington State Department of Ecology ~~Site Manager~~ NWRO Brownfield Lead	Michael Warfel ~~Bob Warren~~	Michael R. Warfel	Comments provided 9/3/2019
City of Bremerton Project Manager	Andrea Spencer		10/3/19
Stantec Project Manager	Andrea Pedersen	Andrea Pedersen	August 29, 2019
Stantec Health & Safety Officer / Field Manager	Aaron Wisher		August 29, 2019

This document entitled *Phase II Environmental Site Assessment: Sampling and Analysis Plan, 2612 and 2613 Burwell Street, Bremerton, Washington 98312* was prepared by Stantec Consulting Services Inc. (Stantec) for the City of Bremerton. The material in it reflects Stantec's best judgment given the information available at the time of preparation. Any use which a third party makes of this document, or any reliance on or decisions made based on it, are the responsibilities of such third parties. Stantec accepts no responsibility for damages, if any, suffered by any third party because of decisions made or actions based on this document.

Sign-off Sheet

This document was prepared under the supervision and direction of the staff identified below.

Author:	**Joseph Hammer, PMP** **Senior Associate**	Reviewer:	**David Holmes** **Senior Associate**

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1.0 INTRODUCTION

On behalf of the City of Bremerton (the "City"), Stantec Consulting Services Inc. (Stantec) has prepared this Sampling and Analysis Plan (SAP) for a Phase II Environmental Site Assessment (ESA) at 2612 and 2613 Burwell Street in Bremerton, Washington 98312 (the "Property"; see **Figure 1**). The work described herein will be completed in accordance with the Quality Assurance Project Plan (QAPP) prepared for the City Community-Wide Brownfields Assessment Project (Cooperative Agreement BF-01J39801) and approved by the U.S. Environmental Protection Agency (EPA) on September 26, 2018 (Stantec, 2018).

1.1 PROJECT ORGANIZATION

The project implementation team will be led by Stantec Project Manager (PM) Andrea Pedersen. The key team member roles and responsibilities are summarized below. If this organizational structure changes at any time during the project, the change will be documented in an amendment to this SAP.

EPA Region 10 Brownfields Project Officer: Susan Morales
Phone: (206) 553-7299

The EPA Region 10 Brownfields Project Officer (PO) will review and approve the SAP and will monitor activities for this project.

City of Bremerton Project Manager: Andrea Spencer
Phone: (360) 473-5275

The City PM is the primary point-of-contact for communications with the EPA, Washington Department of Ecology (Ecology), and Stantec. The City PM handles overall project management, contract management, project cost accounting, and other business-related project tasks. The City PM will coordinate required reporting to the EPA PO.

Stantec Project Manager: Andrea Pedersen
Phone: (206) 494-5031

The Stantec PM will coordinate project activities, provide technical support and oversight, and will coordinate with internal staff so that the resources necessary to complete the project are available when needed. The Stantec PM will communicate with team members, coordinate daily operations, and oversee the schedule, budget, and technical aspects of the project. The Stantec PM will handle deliverables and manage subcontractor procurement activities. The Stantec PM will review or prepare all deliverables, including verifying the transcription of laboratory data into report text and summary tables, so that high-quality work products are produced. The Stantec PM will handle distributing the finalized, approved SAP to each of the key project personnel via email.

Stantec Health and Safety Officer: Jacqueline Brenner
Phone: (503) 446-7431

The Health and Safety Officer (HSO) will prepare a site-specific Health and Safety Plan (HASP) per Occupational Health and Safety Administration (OSHA) guidelines and Stantec protocol. The HSO will handle documenting that personnel have received appropriate levels of training and that field operations are conducted in accordance with appropriate health and safety protocols.

Stantec Field Manager: Jacqueline Brenner
Phone: (503) 446-7431

The Field Manager (FM) will handle implementing field activities, including scheduling, collecting samples, documentation, and delivery of samples to the laboratory.

Analytical Laboratory: Pace Analytical National Center for Testing & Innovation (formerly ESC Lab Sciences)
Project Manager: Brian Ford
Phone: (615) 773-9772

Pace Analytical National Center for Testing & Innovation (Pace) will handle analysis of soil, groundwater, and soil gas samples collected during the Phase II ESA. Pace is accredited by Ecology for testing of the analytes included in this SAP. The Pace PM assigned to this project will report to the Stantec PM.

1.2 PROPERTY DESCRIPTION AND HISTORY

The Property consists of the following three Kitsap County parcels fronting Burwell Street:

- 3733-007-021-0107; 2612 Burwell Street; 0.11 acres; owned by 1909 Holdings, LLC;
- 3806-005-001-0107; 2613 Burwell Street; 0.09 acres; owned by 1909 Equity, LLC; and
- 3806-005-001-0008; no registered address; 0.18 acres; owned by 1909 Equity, LLC.

The three parcels total approximately 0.38 acres, and the two ownership companies are both registered to Richard Shattuck of Silverdale, Washington. The northern parcel (3733-007-021-0107) is improved with a 2-story, 3,808 square-foot retail/commercial building with a two-bedroom apartment on the second floor of the middle part of the building. There is no basement present beneath the structure and the building is not connected to adjacent structures. The existing improvements were reportedly constructed in 1929 and the two-bedroom apartment was renovated in 2005, including the replacement of all interior finishes. The southern parcels (3806-005-001-0107 and 3806-005-001-0008) are vacant, except for some landscaping, a part of the former building foundation on parcel 3806-005-001-0107, and concrete pavement and a sidewalk on parcel 3806-005-001-0008. The owner is uncertain about the future uses of the parcels, except that the 2-story building may be renovated for commercial use.

A Phase II ESA report for the Property prepared by EBI Consulting (EBI) on behalf of Wells Fargo, dated October 7, 2013, was provided for review. As summarized in the report, the work was conducted following a Phase I ESA conducted at the Property by EBI in the same year, which identified the following recognized environmental conditions (RECs) for the Property:

- A gasoline service station was located on the southern parcel (3806-005-001-0107) at 2613 Burwell Street from approximately 1947 to 1988. No information regarding the operation or closure of any underground storage tanks (USTs) associated with this facility was identified in state or local regulatory files; however, based upon the absence of closure documentation, the potential exists that the USTs remain in the ground and that the historical operation of the gasoline service station had impacted subsurface soil and/or groundwater conditions at the Property.
- Review of historical sources shows that the northern parcel (3733-007-021-0107) at 2612 Burwell Street was previously operated as a machine shop and an auto repair facility.

The Phase II ESA was conducted to evaluate the potential impact to the Property from the former on-site gasoline service station, machine shop, and auto repair facilities. Southern parcel no. 3806-005-001-0008 was not included in the investigation. A ground penetrating radar (GPR) survey was conducted to clear sampling locations and find

potential USTs on parcels 3733-007-021-0107 and 3806-005-001-0107; however, no USTs were identified, just two apparent fuel port lines aboveground on the north side of the building of parcel 3733-007-021-0107. The surveyor did not find that the fuel lines were connected to any tanks.

Five borings were advanced using direct-push method (Geoprobe) to depths of 24-feet below ground surface (bgs) for collection of soil samples and installation of temporary monitoring wells for collection of groundwater samples. Two borings were drilled on parcel 3733-007-021-0107, one near the apparent fuel port lines, and three borings were drilled on parcel 3806-005-001-0107, as shown on **Figure 2**. Soil encountered in the borings consisted of silty sand with some gravel to approximately 12 feet bgs underlain by sandy clay with some gravel to approximately 20 feet bgs and then silty sand with some gravel again to the maximum depth explored of 24 feet bgs. A hydrocarbon odor was noted in soil samples from parcel 3806-005-001-0107 borings from approximately 10-20 feet bgs. Groundwater was encountered in each boring at an approximate depth of 20 feet bgs.

One soil sample and one groundwater sample were collected from each boring for laboratory analysis of volatile organic compounds (VOCs), polycyclic aromatic hydrocarbons (PAHs), and eight Resource Conservation and Recovery Act (RCRA) metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver). Soil samples from borings B-1 and B-2 (parcel 3733-007-021-0107 borings) were collected at a depth of 18-20 feet bgs (just above the water table), and soil samples from borings B-3 through B-5 (parcel 3806-005-001-0107 borings) were collected at a depth of 10-12 feet bgs, where hydrocarbon odors and photoionization detector (PID) readings were greatest.

The measured concentrations of metals in all soil samples and VOCs and PAHs in soil samples from borings B-3 and B-4 were less than the Model Toxics Control Act (MTCA) Method A Cleanup Levels (CULs), where established. VOCs and PAHs were not detected in soil samples from borings B-1, B-2, or B-5. For groundwater samples, tetrachloroethylene (PCE) was detected in each sample at concentrations of 3.3 (from boing B-5) to 131 micrograms per liter (µg/L) (from boring B-3), which exceed the MTCA Method A CUL of 5 µg/L and/or the MTCA Method B CUL of 1 µg/L. Benzene (79.0 µg/L), naphthalene (601 µg/L), 1,2,4-trimethylbenze (1,160 µg/L), 1,3,5-trimethylbenze (284 µg/L), and xylenes (3,060 µg/L) were also detected in the groundwater sample from boring B-3 at concentrations that exceed the MTCA Methods A and B CULs. Benzo(a)pyrene (1.1 µg/L), dibenzo(a,h)anthracene (1.6 µg/L), and indeno(1,2,3-cd)pyrene (1.4 µg/L) were detected in the groundwater sample from boring B-1. The results were reported to Washington Department of Ecology (Ecology) and the Property was given Facility/Site ID (FSID) no. 14873 and Cleanup Site ID (CSID) no. 12909 (for parcels 3733-007-021-0107 and 3806-005-001-0107).

It should be noted that PCE in soil and groundwater has been reported to Ecology at two nearby sites: a former dry cleaner operation at 324-328 Callow Avenue (CSID no. 12910), approximately 300 feet north of the Property, and another former dry cleaner operation at 2525 6th Street (CSID no. 12850), approximately 600 feet northeast of the Property (see **Figure 3**). Additionally, the east-adjacent site to the Property, an auto repair facility, was formerly a gasoline service station, and historical records show several gasoline service stations have operated in the vicinity of the Property.

2.0 SCOPE OF WORK

The scope of work for this Phase II ESA is designed to further assess the documented impacts to the Property's subsurface based on the results of the 2013 EBI Phase II ESA. The primary objectives of the investigation are to:

- Evaluate subsurface soil for potential source(s) of VOC-impacted groundwater across all parcels of the Property and PAH-impacted groundwater at the northern parcel of the Property;
- Evaluate groundwater flow direction(s) and potential impacts from upgradient contamination sources;
- Evaluate the horizontal extent of the impacted soil and groundwater; and
- Evaluate the potential for soil vapor intrusion into the northern parcel building given the documented VOC-impacted groundwater at the Property.

To accomplish these objectives, samples of environmental media will be collected from areas of concern and analyzed for the primary constituents of concern (petroleum compounds, VOCs, and/or PAHs). Standard operating procedures (SOPs) for the work tasks outlined below are presented in the QAPP (Stantec, 2018).

2.1 HEALTH AND SAFETY AND PRE-FIELD ACTIVITIES

Prior to field activities, Stantec will perform the following:

- Prepare a site-specific HASP per OSHA guidelines and Stantec protocols;
- Request the Utility Notification Center to mark underground utilities found in the public right-of-way, next to the Property;
- Contract a private utility locate service provider to identify potential underground utilities/structures within the planned investigation areas;
- Contract with Pace for analytical testing services; and
- Contract with Cascade Drilling, a Washington State licensed driller, for the advancement of soil borings and installation of temporary groundwater monitoring wells and soil vapor sampling points.

A health and safety briefing will be presented by Stantec personnel to the field staff prior to starting field activities.

2.2 SUBSURFACE ASSESSMENT

The site assessment will include the advancement of eight borings for the collection of soil samples and the completion of each boring as a temporary groundwater monitoring well for collection of groundwater samples. Sampling locations are shown on **Figure 2**.

The sampling analysis program is summarized in **Table 1** (soil), **Table 2** (groundwater), **Table 3** (sub-slab soil gas), **Table 4** (investigation-derived waste), and **Table 5**, which presents a summary of the laboratory reporting limits (RLs), method detection limits (MDLs), and regulatory standards for the parameters to be analyzed as part of this investigation.

2.2.1 Soil Sampling

Eight borings will be advanced using direct-push technology (DPT) to a maximum depth of 25 feet bgs for soil sampling. The borings may be terminated at a shallower depth due to refusal or if groundwater is encountered. As previously reported, the water table is expected to be present at a depth of approximately 20 feet bgs.

Soil samples will be obtained by inserting a clear acetate liner into a hollow stainless-steel drill rod and driving the rod into the subsurface using a hydraulically driven hammer. Soil will be continuously logged for lithologic characteristics using the Unified Soil Classification System and screened for potential presence of VOCs using a PID equipped with a 10.6 electron-volt lamp. The soil classification, physical characteristics, odors, and other observed soil conditions will be documented in the project notebook or on field data sheets.

Up to three soil samples will be collected from each boring. One sample will be collected from the near-surface interval (0 to 2 feet bgs) and a second sample will be collected from the boring terminus or just above the water table, whichever occurs first. A third sample will be collected from a mid-depth interval that exhibits the greatest environmental impact based on field observations (e.g., staining, odor, PID results). If no field evidence of environmental impacts is observed, then this third sample will be omitted.

As summarized in **Table 1**, soil samples selected for laboratory analysis will be placed into laboratory-supplied containers and shipped under chain-of-custody procedures to Pace for performance of the following analyses:

- Gasoline range organics (GRO) using method NWTPH-Gx;
- Diesel-range organics (DRO) and heavy oils using method NWTPH-Dx;
- VOCs using EPA Methods 5035 (field preservation) and 8260C;
- PAHs using EPA Method 8270D-SIM;
- Polychlorinated biphenyls (PCBs) using EPA Method 8082A; and
- Resource Conservation and Recovery Act (RCRA) metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver) using EPA Methods 6020 and 7471.

2.2.2 Groundwater Sampling

Following soil sampling, the soil borings will be advanced to approximately 5-10 feet below the water table and completed as temporary groundwater monitoring wells for shallow groundwater sampling. The wells will be constructed using 1-inch (inside diameter) Schedule 40 polyvinyl chloride (PVC) flush-threaded riser and screen with 0.010-inch slots. Up to 30 minutes will be given for the water level to sufficiently stabilize so that the well screens are placed to straddle the water table. Once the well assembly is lowered to the bottom of the boring, sand filter pack consisting of 20/40 Colorado Sand will be placed in the annulus around the screened interval of the well to a depth of 1 to 2 feet above the well screen to prevent natural formation collapse. Because the 1-inch PVC wells are temporary, they will not be installed with a protective surface casing.

The temporary monitoring wells will be developed by pumping to remove fines potentially introduced during installation. A reasonable effort will be made to evacuate three well volumes of groundwater during a maximum well development period of 30 minutes per well. Groundwater samples will be collected after well development. Groundwater will be purged and sampled using low-flow sampling procedures. Sampling will occur once indicator field parameters (turbidity, dissolved oxygen, specific conductance, temperature, pH, and oxidation/reduction potential) have stabilized. If a well is pumped dry (evacuated), then well development activities will cease, samples will be collected following sufficient recovery (enough volume to allow filling of sample containers), and indicator field parameters will be measured and recorded during collection of the sample from the recovered volume. One groundwater sample will be collected from each monitoring well unless free product is observed.

As summarized in **Table 2**, groundwater samples will be collected into laboratory-supplied containers and shipped under chain-of-custody procedures to Pace for performance of the following analyses:

- GRO using method NWTPH-Gx;

- DRO and heavy oils using method NWTPH-Dx;
- VOCs using EPA Method 8260C;
- PAHs using EPA Method 8270D-SIM;
- PCBs using EPA Method 8082A; and
- Dissolved (field filtered) RCRA metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver) using EPA Methods 6020 and 7470.

The elevations of the temporary monitoring wells will be surveyed to an accuracy of 0.01 foot using an arbitrary benchmark of 100 feet using the NAVD99 vertical datum. The surveyed reference point for each monitoring well will be the same location that the depth to groundwater is measured. Following the completion of sampling and surveying activities, the temporary wells will be removed from the ground and the boreholes will be filled with granular bentonite per chapter 173-160 Washington Administrative Code (WAC). The ground surface will then be restored to match existing surface conditions.

2.2.3 Sub-Slab Soil Gas Sampling

Two temporary sub-slab soil gas sampling points will be installed within the northern parcel building (see **Figure 2**) for collection of soil gas samples. The sampling points will be advanced up to 5 feet bgs and fitted with 0.25-inch outside diameter inert, impermeable tubing (e.g., Teflon®). The sampling apparatus will be allowed to equilibrate for at least 30 minutes. Prior to purging or sampling, a shut-in test will be performed to check for leaks in the aboveground sampling system. The shut-in test will be performed by evacuating the system to about 100 inches of water. If the vacuum is maintained for at least one minute the shut-in test is considered successful. Following the shut-in test, three sampling apparatus volumes will be purged to ensure that samples are representative of subsurface vapors. Each sampling point will be checked for leaks by covering the surface seal with an enclosure holding at least 10% helium. A helium detector will be used to screen soil vapor during purging, and to screen soil vapor prior to sample collection after all sample tubing connections have been made. A concentration of helium in the purge sample greater than 5% of the shroud concentration indicates ambient air leakage and will be considered unacceptable. Soil gas samples will be collected into laboratory-supplied Summa canisters.

As summarized in **Table 3**, the soil gas samples will be analyzed for VOCs using EPA Method TO-15 and helium by ASTM 1946.

2.2.4 Quality Assurance/Quality Control Samples

Field quality control samples, including field duplicates and trip blanks, will be collected and analyzed in accordance with the QAPP (Stantec, 2018). If soil sampling equipment requires decontamination between sample collection, one equipment rinsate blank will be collected during the field investigation. If dedicated or disposable sampling equipment is used and decontamination is not applicable, then equipment blanks will not be collected. Trip blanks will be provided by the laboratory and will accompany the sample containers submitted to the laboratory for VOCs analysis.

Laboratory quality assurance samples will include a method blank (a sample of lab reagent water that is known to be contaminant free) in each sample batch to verify that the analytical procedure is free of contaminants. Lab Control Sample/Lab Control Sample Duplicate (LCS/LCSD) samples, which are aliquots of spiked laboratory reagent water, will also be analyzed to determine precision and accuracy.

2.2.5 Investigation-Derived Waste

Soil cuttings and purge water generated as part of the planned activities will be containerized in labeled Department of Transportation-approved drums and staged in an appropriate location on the Property pending analysis for proper disposal. To evaluate whether the investigation-derived waste meets the criteria for hazardous waste, as defined in Title 40 of the Code of Federal Regulations 261.20, one composite soil sample and one grab water sample will be submitted to the laboratory for analysis of hazardous waste characteristic properties (reactivity, corrosivity, ignitability, and toxicity), as summarized in **Table 4**.

2.3 DOCUMENTATION AND REPORTING

Field activities will be documented in a field notebook with sequentially numbered pages and on Stantec field forms per applicable Stantec field sampling SOPs contained in the QAPP. Following receipt of finalized laboratory analytical results and internal data validation, Stantec will prepare a Phase II ESA report that will include the following:

- Narrative description of the Site, purpose and objectives of the investigation, field activities, quality assurance/quality control sampling results, the analytical data, and conclusions and recommendations;
- Tables of analytical results screened against the following standards (where applicable):
  - Model Toxics Control Act (MTCA) Method A CULs for Unrestricted Land Use (Table 745-1 of chapter 173-340 WAC);
  - MTCA Method B CULs for Noncancer Direct-Contact;
  - EPA Regional Screening Levels (RSLs) for Residential and Industrial Soil (November 2018) for reference where MTCA CULs are not established since MTCA CULs take precedence over EPA RSLs;
  - MTCA Method A Groundwater CULs (Table 720-1 of chapter 173-340 WAC);
  - MTCA Method B Groundwater CULs for Noncancer Direct-Contact; and
  - MTCA Methods B and C Sub-Slab Soil Gas Screening Levels.
- Figures depicting the site plan, sampling locations, inferred groundwater flow direction, geologic cross-section, and constituent distribution, as necessary; and
- Appendices, including soil boring logs with temporary well construction details, well development and groundwater sampling data sheets, and laboratory analytical reports.

3.0 SCHEDULE

Stantec will begin the work immediately following receipt of EPA and Ecology approval of this SAP. Field sampling activities are expected to take between 2-3 days to complete. Standard laboratory analytical turnaround time is ten business days.

Stantec will prepare a Limited Phase II ESA report documenting the results of the sampling activities within three to four weeks of the receipt of final laboratory analytical data packages. The anticipated total time to complete the work, not including EPA and Ecology SAP approval time, is estimated to be approximately 6 weeks.

4.0 LIMITATIONS

Stantec has prepared this SAP in accordance with the normal and reasonable standard of care exercised by similar professionals performing services under similar conditions and geographic locations. Except for our stated standard of care, no other warranties or guarantees are offered as part of Stantec's contracted services.

5.0 REFERENCES

EBI Consulting, 2013. Phase II Environmental Site Assessment, 2612-2613 Burwell Street, Bremerton, Washington. October 7.

Stantec, 2018. Master Quality Assurance Project Plan (Revision 0) for Implementation of U.S. EPA Brownfields Assessment Grants at Petroleum and Hazardous Substance Sites, City of Bremerton, Washington, Cooperative Agreement No. BF-01J3980101. August 30.

Table 1
Sample Design - Soil
2612 and 2613 Burwell Street (3 parcels)
Bremerton, Washington 98312

Borehole ID	Sample ID	Sample Depth (feet bgs)	Rationale	Laboratory Analysis					
				Gasoline-Range Organics (NWTPH-Gx)	Diesel and Heavy Oil Range Organics (NWTPH-Dx)	Volatile Organic Compounds (EPA 8260C)	Polycyclic Aromatic Hydrocarbons (EPA 8270D-SIM)	Polychlorinated Biphenyls (EPA 8082A)	RCRA[1] Metals (EPA 6020/7470)
DP01	DP01SO*x-x*	0–2.0	Surface spills	1	1	1	1	1	1
	DP01SO*x-x*	2.0-20.0[2]	Subsurface leaks	1	1	1	1	1	1
	DP01SO*x-x*	20.0–24.0[3]	Soil-water interface	1	1	1	1	1	1
DP02	DP02SO*x-x*	0–2.0	Surface spills	1	1	1	1	1	1
	DP02SO*x-x*	2.0-20.0[2]	Subsurface leaks	1	1	1	1	1	1
	DP02SO*x-x*	20.0–24.0[3]	Soil-water interface	1	1	1	1	1	1
DP03	DP03SO*x-x*	0–2.0	Surface spills	1	1	1	1	1	1
	DP03SO*x-x*	2.0-20.0[2]	Subsurface leaks	1	1	1	1	1	1
	DP03SO*x-x*	20.0–24.0[3]	Soil-water interface	1	1	1	1	1	1
DP04	DP04SO*x-x*	0–2.0	Surface spills	1	1	1	1	1	1
	DP04SO*x-x*	2.0-20.0[2]	Subsurface leaks	1	1	1	1	1	1
	DP04SO*x-x*	20.0–24.0[3]	Soil-water interface	1	1	1	1	1	1
DP05	DP05SO*x-x*	0–2.0	Surface spills	1	1	1	1	1	1
	DP05SO*x-x*	2.0-20.0[2]	Subsurface leaks	1	1	1	1	1	1
	DP05SO*x-x*	20.0–24.0[3]	Soil-water interface	1	1	1	1	1	1
DP06	DP06SO*x-x*	0–2.0	Surface spills	1	1	1	1	1	1
	DP06SO*x-x*	2.0-20.0[2]	Subsurface leaks	1	1	1	1	1	1
	DP06SO*x-x*	20.0–24.0[3]	Soil-water interface	1	1	1	1	1	1
DP07	DP07SO*x-x*	0–2.0	Surface spills	1	1	1	1	1	1
	DP07SO*x-x*	2.0-20.0[2]	Subsurface leaks	1	1	1	1	1	1
	DP07SO*x-x*	20.0–24.0[3]	Soil-water interface	1	1	1	1	1	1
DP08	DP08SO*x-x*	0–2.0	Surface spills	1	1	1	1	1	1
	DP08SO*x-x*	2.0-20.0[2]	Subsurface leaks	1	1	1	1	1	1
	DP08SO*x-x*	20.0–24.0[3]	Soil-water interface	1	1	1	1	1	1
Quality Control Samples									
---	FD0*x*SO	---	Field Duplicate	2	2	2	2	2	2
---	EB01	---	Equipment Blank	*	*	*	*	*	*
---	same as primary	---	MS/MSD	1	1	1	1	1	1
---	TB01SO	---	Trip Blank			1			
			Total	27	27	28	27	27	27

Notes and Abbreviations:

1. Resource Conservation and Recovery Act - arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver.

2. Sample will be collected from the depth interval exhibiting the greatest environmental impact. If no impact is observed, then the sample may be omitted.

3. Sample will be collected from the boring terminus or just above encountered groundwater, whichever occurs first.

* Sample will be collected and analyzed only if non-disposable sampling equipment is used.

MS/MSD - Matrix Spike/Matrix Spike Duplicate

Table 2
Sample Design - Groundwater
2612 and 2613 Burwell Street (3 parcels)
Bremerton, Washington 98312

Borehole ID	Sample ID	Rationale	Laboratory Analysis					
			Gasoline-Range Organics (NWTPH-Gx)	Diesel and Heavy Oil Range Organics (NWTPH-Dx)	Volatile Organic Compounds (EPA 8260C)	Polycyclic Aromatic Hydrocarbons (EPA 8270D-SIM)	Polychlorinated Biphenyls (EPA 8082A)	Dissolved (field filtered) RCRA[1] Metals (EPA 6020/7471)
DP01	DP01WG	Horizontal extent	1	1	1	1	1	1
DP02	DP02WG	Horizontal extent	1	1	1	1	1	1
DP03	DP03WG	Horizontal extent	1	1	1	1	1	1
DP04	DP04WG	Horizontal extent	1	1	1	1	1	1
DP05	DP05WG	Horizontal extent	1	1	1	1	1	1
DP06	DP06WG	Horizontal extent	1	1	1	1	1	1
DP07	DP07WG	Horizontal extent	1	1	1	1	1	1
DP08	DP08WG	Horizontal extent	1	1	1	1	1	1
Quality Control Samples								
---	FD01SO	Field Duplicate	1	1	1	1	1	1
---	EB01	Equipment Blank	*	*	*	*	*	*
---	same as primary	MS/MSD	1	1	1	1	1	1
---	TB01SO	Trip Blank			1			
		Total	10	10	11	10	10	10

Notes and Abbreviations:

1. Resource Conservation and Recovery Act - arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver.

* Sample will be collected and analyzed only if non-disposable sampling equipment is used.

MS/MSD - Matrix Spike/Matrix Spike Duplicate

Table 3
Sample Design - Soil Gas
2612 and 2613 Burwell Street (3 parcels)
Bremerton, Washington 98312

Borehole ID	Sample ID	Rationale	Laboratory Analysis	
			Volatile Organic Compounds (TO-15)	Helium (ASTM 1946)
SV01	SV01AS	VOCs in groundwater	1	1
SV02	SV02AS	VOCs in groundwater	1	1
		Total	2	2

Notes and Abbreviations:
VOCs - volatile organic compounds

Table 4

Sample Design - Investigation-Derived Waste

2612 and 2613 Burwell Street (3 parcels)

Bremerton, Washington 98312

Borehole ID	Sample ID	Laboratory Analysis						
		TCLP Volatile Organic Compounds (EPA 1311 and 8260C)	TCLP Semi-Volatile Organic Hydrocarbons (EPA 1311 and 8270D)	TCLP RCRA 8 Total Metals[1] (EPA 1311 and 6010/ 7470A/7471B)	Total Petroleum Hydrocarbons (EPA 8015D)	Flashpoint (EPA 1010)	Corrosivity (EPA 9045D / 9040C)	Reactivity (EPA 7.3)
---	IDWSO	1	1	1	1	1	1	1
		1	1	1	1	1	1	1

Notes and Abbreviations:

1. Resource Conservation and Recovery Act - arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver.

TCLP - toxicity characteristic leaching procedure

Table 5A
Laboratory Reporting Limits, Method Detection Limits, and Regulatory Standards - Soil Samples
Pace Analytical National Center for Testing Innovation

Analyte Group	Analyte	CAS #	Matrix	Analytical Method	Prep Method	MTCA Method A Cleanup Level[1] (mg/kg)	MTCA Method B Cleanup Level[2] (mg/kg)	MDL	MRL	Units
VOCs	Acetone	67-64-1	Soil	8260C	5035A	--	72000	0.0100	0.0500	mg/kg
VOCs	Acrylonitrile	107-13-1	Soil	8260C	5035A	--	3200	0.00179	0.01	mg/kg
VOCs	Benzene	71-43-2	Soil	8260C	5035A	0.03	320	0.00027	0.001	mg/kg
VOCs	Bromobenzene	108-86-1	Soil	8260C	5035A	---	---	0.000284	0.001	mg/kg
VOCs	Bromodichloromethane	75-27-4	Soil	8260C	5035A	--	1600	0.000254	0.001	mg/kg
VOCs	Bromoform	75-25-2	Soil	8260C	5035A	--	1600	0.000424	0.001	mg/kg
VOCs	Bromomethane	74-83-9	Soil	8260C	5035A	--	112	0.00134	0.005	mg/kg
VOCs	n-Butylbenzene	104-51-8	Soil	8260C	5035A	--	4000	0.000258	0.001	mg/kg
VOCs	sec-Butylbenzene	135-98-8	Soil	8260C	5035A	--	8000	0.000201	0.001	mg/kg
VOCs	tert-Butylbenzene	98-06-6	Soil	8260C	5035A	--	8000	0.000206	0.001	mg/kg
VOCs	Carbon Tetrachloride	56-23-5	Soil	8260C	5035A	--	320	0.000328	0.001	mg/kg
VOCs	Chlorobenzene	108-90-7	Soil	8260C	5035A	--	1600	0.000212	0.001	mg/kg
VOCs	Chlorodibromomethane	124-48-1	Soil	8260C	5035A	--	1600	0.000373	0.001	mg/kg
VOCs	Chloroethane	75-00-3	Soil	8260C	5035A	--	---	0.000946	0.005	mg/kg
VOCs	Chloroform	67-66-3	Soil	8260C	5035A	--	800	0.000229	0.005	mg/kg
VOCs	Chloromethane	74-87-3	Soil	8260C	5035A	--	---	0.000375	0.0025	mg/kg
VOCs	2-Chlorotoluene	95-49-8	Soil	8260C	5035A	--	1600	0.000301	0.001	mg/kg
VOCs	4-Chlorotoluene	106-43-4	Soil	8260C	5035A	---	---	0.00024	0.001	mg/kg
VOCs	1,2-Dibromo-3-Chloropropane	96-12-8	Soil	8260C	5035A	--	16	0.00105	0.005	mg/kg
VOCs	1,2-Dibromoethane	106-93-4	Soil	8260C	5035A	0.005	720	0.000343	0.001	mg/kg
VOCs	Dibromomethane	74-95-3	Soil	8260C	5035A	--	800	0.000382	0.001	mg/kg
VOCs	1,2-Dichlorobenzene	95-50-1	Soil	8260C	5035A	--	7200	0.000305	0.001	mg/kg
VOCs	1,3-Dichlorobenzene	541-73-1	Soil	8260C	5035A	--	---	0.000239	0.001	mg/kg
VOCs	1,4-Dichlorobenzene	106-46-7	Soil	8260C	5035A	--	5600	0.000226	0.001	mg/kg
VOCs	Dichlorodifluoromethane	75-71-8	Soil	8260C	5035A	--	16000	0.000713	0.005	mg/kg
VOCs	1,1-Dichloroethane	75-34-3	Soil	8260C	5035A	--	16000	0.000199	0.001	mg/kg
VOCs	1,2-Dichloroethane	107-06-2	Soil	8260C	5035A	--	480	0.000265	0.001	mg/kg
VOCs	1,1-Dichloroethene	75-35-4	Soil	8260C	5035A	--	4000	0.000303	0.001	mg/kg
VOCs	cis-1,2-Dichloroethene	156-59-2	Soil	8260C	5035A	--	160	0.000235	0.001	mg/kg
VOCs	trans-1,2-Dichloroethene	156-60-5	Soil	8260C	5035A	--	1600	0.000264	0.001	mg/kg
VOCs	1,2-Dichloropropane	78-87-5	Soil	8260C	5035A	--	7200	0.000358	0.001	mg/kg
VOCs	1,1-Dichloropropene	563-58-6	Soil	8260C	5035A	---	---	0.000317	0.001	mg/kg
VOCs	1,3-Dichloropropane	142-28-9	Soil	8260C	5035A	---	---	0.000207	0.001	mg/kg
VOCs	cis-1,3-Dichloropropene	10061-01-5	Soil	8260C	5035A	---	---	0.000262	0.001	mg/kg
VOCs	trans-1,3-Dichloropropene	10061-02-6	Soil	8260C	5035A	---	---	0.000267	0.001	mg/kg
VOCs	2,2-Dichloropropane	594-20-7	Soil	8260C	5035A	---	---	0.000279	0.001	mg/kg
VOCs	Di-Isopropyl Ether	108-20-3	Soil	8260C	5035A	---	---	0.000248	0.001	mg/kg
VOCs	Ethylbenzene	100-41-4	Soil	8260C	5035A	6.0	8000	0.000297	0.001	mg/kg
VOCs	Hexachloro-1,3-Butadiene	87-68-3	Soil	8260C	5035A	--	80	0.000342	0.001	mg/kg
VOCs	Isopropylbenzene	98-82-8	Soil	8260C	5035A	--	8000	0.000243	0.001	mg/kg
VOCs	p-Isopropyltoluene	99-87-6	Soil	8260C	5035A	---	---	0.000204	0.001	mg/kg
VOCs	2-Butanone (MEK)	78-93-3	Soil	8260C	5035A	--	48000	0.00468	0.01	mg/kg
VOCs	Methylene Chloride	75-09-2	Soil	8260C	5035A	0.02	480	0.001	0.005	mg/kg
VOCs	4-Methyl-2-Pentanone (MIBK)	108-10-1	Soil	8260C	5035A	--	6400	0.00188	0.01	mg/kg
VOCs	Methyl Tert-Butyl Ether	1634-04-4	Soil	8260C	5035A	0.10	---	0.000212	0.001	mg/kg
VOCs	Naphthalene	91-20-3	Soil	8260C	5035A	5.0[a]	1600	0.001	0.005	mg/kg
VOCs	n-Propylbenzene	103-65-1	Soil	8260C	5035A	--	8000	0.000206	0.001	mg/kg
VOCs	Styrene	100-42-5	Soil	8260C	5035A	--	16000	0.000234	0.001	mg/kg
VOCs	1,1,1,2-Tetrachloroethane	630-20-6	Soil	8260C	5035A	--	2400	0.000264	0.001	mg/kg
VOCs	1,1,2,2-Tetrachloroethane	79-34-5	Soil	8260C	5035A	--	1600	0.000365	0.001	mg/kg
VOCs	1,1,2-Trichlorotrifluoroethane	76-13-1	Soil	8260C	5035A	--	2400000	0.000365	0.001	mg/kg
VOCs	Tetrachloroethene	127-18-4	Soil	8260C	5035A	0.05	480	0.000276	0.001	mg/kg
VOCs	Toluene	108-88-3	Soil	8260C	5035A	7.0	6400	0.000434	0.005	mg/kg
VOCs	1,2,3-Trichlorobenzene	87-61-6	Soil	8260C	5035A	---	---	0.000306	0.001	mg/kg
VOCs	1,2,4-Trichlorobenzene	120-82-1	Soil	8260C	5035A	--	800	0.000388	0.001	mg/kg
VOCs	1,1,1-Trichloroethane	71-55-6	Soil	8260C	5035A	2.0	160000	0.000286	0.001	mg/kg
VOCs	1,1,2-Trichloroethane	79-00-5	Soil	8260C	5035A	--	320	0.000277	0.001	mg/kg
VOCs	Trichloroethene	79-01-6	Soil	8260C	5035A	0.03	40	0.000279	0.001	mg/kg
VOCs	Trichlorofluoromethane	75-69-4	Soil	8260C	5035A	--	24000	0.000382	0.005	mg/kg
VOCs	1,2,3-Trichloropropane	96-18-4	Soil	8260C	5035A	--	320	0.000741	0.0025	mg/kg
VOCs	1,2,4-Trimethylbenzene	95-63-6	Soil	8260C	5035A	--	---	0.000211	0.001	mg/kg
VOCs	1,2,3-Trimethylbenzene	526-73-8	Soil	8260C	5035A	---	---	0.000287	0.001	mg/kg
VOCs	1,3,5-Trimethylbenzene	108-67-8	Soil	8260C	5035A	--	800	0.000266	0.001	mg/kg
VOCs	Vinyl Chloride	75-01-4	Soil	8260C	5035A	--	240	0.000291	0.001	mg/kg
VOCs	Xylenes, Total	1330-20-7	Soil	8260C	5035A	9.0	16000	0.000698	0.003	mg/kg
VOCs	Toluene-d8	2037-26-5	Soil	8260C	5035A	---	---	---	---	---

Table 5A
Laboratory Reporting Limits, Method Detection Limits, and Regulatory Standards - Soil Samples
Pace Analytical National Center for Testing Innovation

Analyte Group	Analyte	CAS #	Matrix	Analytical Method	Prep Method	MTCA Method A Cleanup Level[1] (mg/kg)	MTCA Method B Cleanup Level[2] (mg/kg)	MDL	MRL	Units
VOCs	Dibromofluoromethane	1868-53-7	Soil	8260C	5035A	---	---	---	---	---
VOCs	4-Bromofluorobenzene	460-00-4	Soil	8260C	5035A	---	---	---	---	---
PAHs	Anthracene	120-12-7	Soil	8270D	3546	--	24000	0.00000800	0.000050	mg/kg
PAHs	Acenaphthene	83-32-9	Soil	8270D	3546	--	4800	0.0000100	0.000050	mg/kg
PAHs	Acenaphthylene	208-96-8	Soil	8270D	3546	--	---	0.00000700	0.000050	mg/kg
PAHs	Benzo(a)Anthracene	56-55-3	Soil	8270D	3546	0.1[b]	---	0.00000830	0.000050	mg/kg
PAHs	Benzo(a)Pyrene	50-32-8	Soil	8270D	3546	0.1[b]	---	0.0000158	0.000050	mg/kg
PAHs	Benzo(b)Fluoranthene	205-99-2	Soil	8270D	3546	0.1[b]	---	0.00000212	0.000050	mg/kg
PAHs	Benzo(g,h,i)Perylene	191-24-2	Soil	8270D	3546	--	---	0.00000227	0.000050	mg/kg
PAHs	Benzo(k)Fluoranthene	207-08-9	Soil	8270D	3546	0.1[b]	---	0.0000255	0.000050	mg/kg
PAHs	Chrysene	218-01-9	Soil	8270D	3546	0.1[b]	---	0.0000144	0.000050	mg/kg
PAHs	Dibenz(a,h)Anthracene	53-70-3	Soil	8270D	3546	0.1[b]	---	0.00000454	0.000050	mg/kg
PAHs	Fluoranthene	206-44-0	Soil	8270D	3546	--	3200	0.0000165	0.000050	mg/kg
PAHs	Fluorene	86-73-7	Soil	8270D	3546	--	3200	0.00000898	0.000050	mg/kg
PAHs	Indeno(1,2,3-cd)Pyrene	193-39-5	Soil	8270D	3546	0.1[b]	---	0.00000739	0.000050	mg/kg
PAHs	Naphthalene	91-20-3	Soil	8270D	3546	5.0[a]	1600	0.0000120	0.000250	mg/kg
PAHs	Phenanthrene	85-01-8	Soil	8270D	3546	--	---	0.0000184	0.000050	mg/kg
PAHs	Pyrene	129-00-0	Soil	8270D	3546	--	2400	0.0000155	0.000050	mg/kg
PAHs	1-Methylnaphthalene	90-12-0	Soil	8270D	3546	5.0[a]	5600	0.0000189	0.000250	mg/kg
PAHs	2-Methylnaphthalene	91-57-6	Soil	8270D	3546	5.0[a]	320	0.0000155	0.000250	mg/kg
PAHs	2-Chloronaphthalene	91-58-7	Soil	8270D	3546	--	6400	0.0000165	0.000250	mg/kg
PAHs	Nitrobenzene-D5	4165-60-0	Soil	8270D	3546	---	---	---	---	---
PAHs	2-Fluorobiphenyl	321-60-8	Soil	8270D	3546	---	---	---	---	---
PAHs	P-Terphenyl-d14	1718-51-0	Soil	8270D	3546	---	---	---	---	---
TPH	GRO	STL00228	Soil	NWTPH_Gx	5035A	30[c]/100	---	2.3	5	mg/Kg
TPH	DRO	STL00163	Soil	NWTPH_Dx	3546	---	2,000	12.3	50	mg/Kg
TPH	RRO	STL00299	Soil	NWTPH_Dx	3546	---	2,000	17.5	50	mg/Kg
ICP Metals	Arsenic	7440-38-2	Soil	6010C	3050/3051/3051A	20	24	0.650	2.00	mg/kg
ICP Metals	Barium	7440-39-3	Soil	6010C	3050/3051/3051A	--	16000	0.170	0.50	mg/kg
ICP Metals	Cadmium	7440-43-9	Soil	6010C	3050/3051/3051A	--	---	0.070	0.50	mg/kg
ICP Metals	Chromium	7440-47-3	Soil	6010C	3050/3051/3051A	--	---	0.140	1.00	mg/kg
ICP Metals	Lead	7439-92-1	Soil	6010C	3050/3051/3051A	250	---	0.190	0.50	mg/kg
ICP Metals	Selenium	7782-49-2	Soil	6010C	3050/3051/3051A	--	400	0.740	2.00	mg/kg
ICP Metals	Silver	7440-22-4	Soil	6010C	3050/3051/3051A	--	400	0.280	1.00	mg/kg
ICPMS Metals	Arsenic	7440-38-2	Soil	6020A	3050/3051/3051A	20	24	0.0025	0.10	mg/kg
ICPMS Metals	Barium	7440-39-3	Soil	6020A	3050/3051/3051A	--	16000	0.0320	0.20	mg/kg
ICPMS Metals	Cadmium	7440-43-9	Soil	6020A	3050/3051/3051A	--	---	0.0160	0.10	mg/kg
ICPMS Metals	Chromium	7440-47-3	Soil	6020A	3050/3051/3051A	--	---	0.0540	0.10	mg/kg
ICPMS Metals	Lead	7439-92-1	Soil	6020A	3050/3051/3051A	250	---	0.0240	0.10	mg/kg
ICPMS Metals	Selenium	7782-49-2	Soil	6020A	3050/3051/3051A	--	400	0.0380	0.10	mg/kg
ICPMS Metals	Silver	7440-22-4	Soil	6020A	3050/3051/3051A	--	400	0.0310	0.10	mg/kg
Other Metals	Mercury	7439-97-6	Soil	7471B	7471A	2.0	---	0.00280	0.020	mg/kg

Notes:
[1] MTCA Method A Soil Cleanup Levels for Unrestricted Land Uses were obtained from Table 745-1 of WAC Chapter 173-340 revised 2013.
[2] MTCA Method B Soil Cleanup Levels for Direct Contact, Non-Cancer were obtained from Ecology Cleanup Levels and Risk Calculation (CLARC) Master Table, updated August 2015.
[3] MDLs and control limits are subject to change as new studies are performed.
[a] Cleanup level for total naphthlenes: total concentration of naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene.
[b] Cleanup level for benzo(a)pyrene; however, if other carcinogenic PAHs present, use this value for cleanup level for total concentration of carcinogenic PAHs.
[c] Cleanup level when benzene is present.

Definitions:
-- = not applicable or not available
CAS = Chemical Abstracts Service
DRO = diesel range organics
GRO = gasoline range organics
ICP = inductively coupled plasma
ICPMS = inductively coupled plasma mass spectrometry
LCL = lower control limit
LCS = laboratory control sample
LCSD = laboratory control sample, duplicate
MDL = method detection limit
mg/kg = milligrams per kilogram
MRL = method reporting limit
MTCA = Model Toxics Control Act
NWTPH-Dx = Northwest Total Petroleum Hydrocarbon (diesel)
NWTPH-Gx = Northwest Total Petroleum Hydrocarbon (gasoline)
PAH = polynuclear aromatic hydrocarbon
QC = quality control
RPDL = relative percent difference limit
TPH = total petroleum hydrocarbons
UCL = upper control limit
VOC = volatile organic compound
WAC = Washington Administrative Code

Table 5B
Laboratory Reporting Limits, Method Detection Limits, and Regulatory Standards - Groundwater Samples
Pace Analytical National Center for Testing Innovation

Analyte Group	Analyte	CAS #	Matrix	Analytical Method	Prep Method	MTCA Method A Cleanup Level[1] (µg/L)	MTCA Method B Cleanup Level[2] (µg/L)	MDL	MRL	Units
VOCs	Acetone	67-64-1	Water	8260C	5030C	--	7200	10.0	50	ug/L
VOCs	Acrolein	107-02-8	Water	8260C	5030C	--	4.0	8.87	50	ug/L
VOCs	Acrylonitrile	107-13-1	Water	8260C	5030C	--	320	1.87	10	ug/L
VOCs	Benzene	71-43-2	Water	8260C	5030C	5.0	32	0.331	1.0	ug/L
VOCs	Bromobenzene	108-86-1	Water	8260C	5030C	--	--	0.352	1.0	ug/L
VOCs	Bromodichloromethane	75-27-4	Water	8260C	5030C	--	160	0.380	1.0	ug/L
VOCs	Bromoform	75-25-2	Water	8260C	5030C	--	160	0.469	1.0	ug/L
VOCs	Bromomethane	74-83-9	Water	8260C	5030C	--	11	0.866	5.0	ug/L
VOCs	n-Butylbenzene	104-51-8	Water	8260C	5030C	--	400	0.361	1.0	ug/L
VOCs	sec-Butylbenzene	135-98-8	Water	8260C	5030C	--	800	0.365	1.0	ug/L
VOCs	Tert-Butylbenzene	98-06-6	Water	8260C	5030C	--	800	0.399	1.0	ug/L
VOCs	Carbon Tetrachloride	56-23-5	Water	8260C	5030C	--	32	0.379	1.0	ug/L
VOCs	Chlorobenzene	108-90-7	Water	8260C	5030C	--	160	0.348	1.0	ug/L
VOCs	Chlorodibromomethane	124-48-1	Water	8260C	5030C	--	160	0.327	1.0	ug/L
VOCs	Chloroethane	75-00-3	Water	8260C	5030C	--	--	0.453	5.0	ug/L
VOCs	Chloroform	67-66-3	Water	8260C	5030C	--	80	0.324	5.0	ug/L
VOCs	Chloromethane	74-87-3	Water	8260C	5030C	--	--	0.276	2.5	ug/L
VOCs	2-Chlorotoluene	95-49-8	Water	8260C	5030C	--	160	0.375	1.0	ug/L
VOCs	4-Chlorotoluene	106-43-4	Water	8260C	5030C	--	--	0.351	1.0	ug/L
VOCs	1,2-Dibromo-3-Chloropropane	96-12-8	Water	8260C	5030C	--	1.6	1.33	5.0	ug/L
VOCs	1,2-Dibromoethane	106-93-4	Water	8260C	5030C	--	72	0.381	1.0	ug/L
VOCs	Dibromomethane	74-95-3	Water	8260C	5030C	--	80	0.346	1.0	ug/L
VOCs	1,2-Dichlorobenzene	95-50-1	Water	8260C	5030C	--	720	0.349	1.0	ug/L
VOCs	1,3-Dichlorobenzene	541-73-1	Water	8260C	5030C	--	--	0.220	1.0	ug/L
VOCs	1,4-Dichlorobenzene	106-46-7	Water	8260C	5030C	--	560	0.274	1.0	ug/L
VOCs	Dichlorodifluoromethane	75-71-8	Water	8260C	5030C	--	1600	0.551	5.0	ug/L
VOCs	1,1-Dichloroethane	75-34-3	Water	8260C	5030C	--	1600	0.259	1.0	ug/L
VOCs	1,2-Dichloroethane	107-06-2	Water	8260C	5030C	--	48	0.361	1.0	ug/L
VOCs	1,1-Dichloroethene	75-35-4	Water	8260C	5030C	--	400	0.398	1.0	ug/L
VOCs	cis-1,2-Dichloroethene	156-59-2	Water	8260C	5030C	--	16	0.260	1.0	ug/L
VOCs	trans-1,2-Dichloroethene	156-60-5	Water	8260C	5030C	--	160	0.396	1.0	ug/L
VOCs	1,2-Dichloropropane	78-87-5	Water	8260C	5030C	--	720	0.306	1.0	ug/L
VOCs	1,1-Dichloropropene	563-58-6	Water	8260C	5030C	--	--	0.352	1.0	ug/L
VOCs	1,3-Dichloropropane	142-28-9	Water	8260C	5030C	--	--	0.366	1.0	ug/L
VOCs	cis-1,3-Dichloropropene	10061-01-5	Water	8260C	5030C	--	--	0.418	1.0	ug/L
VOCs	Trans-1,3-Dichloropropene	10061-02-6	Water	8260C	5030C	--	--	0.419	1.0	ug/L
VOCs	2,2-Dichloropropane	594-20-7	Water	8260C	5030C	--	--	0.321	1.0	ug/L
VOCs	Di-Isopropyl Ether	108-20-3	Water	8260C	5030C	--	--	0.320	1.0	ug/L
VOCs	Ethylbenzene	100-41-4	Water	8260C	5030C	700	800	0.384	1.0	ug/L
VOCs	Hexachloro-1,3-Butadiene	87-68-3	Water	8260C	5030C	--	8.0	0.256	1.0	ug/L
VOCs	Isopropylbenzene	98-82-8	Water	8260C	5030C	--	800	0.326	1.0	ug/L
VOCs	p-Isopropyltoluene	99-87-6	Water	8260C	5030C	--	--	0.350	1.0	ug/L
VOCs	2-Butanone (MEK)	78-93-3	Water	8260C	5030C	--	4800	3.93	10	ug/L
VOCs	Methylene Chloride	75-09-2	Water	8260C	5030C	5.0	48	1.0	5.0	ug/L
VOCs	4-Methyl-2-Pentanone (MIBK)	108-10-1	Water	8260C	5030C	--	640	2.14	10	ug/L
VOCs	Methyl Tert-Butyl Ether	1634-04-4	Water	8260C	5030C	20	--	0.367	1.0	ug/L
VOCs	Naphthalene	91-20-3	Water	8260C	5030C	160[a]	160	1.0	5.0	ug/L
VOCs	n-Propylbenzene	103-65-1	Water	8260C	5030C	--	800	0.349	1.0	ug/L
VOCs	Styrene	100-42-5	Water	8260C	5030C	--	1600	0.307	1.0	ug/L
VOCs	1,1,1,2-Tetrachloroethane	630-20-6	Water	8260C	5030C	--	240	0.385	1.0	ug/L
VOCs	1,1,2,2-Tetrachloroethane	79-34-5	Water	8260C	5030C	--	160	0.130	1.0	ug/L
VOCs	1,1,2-Trichlorotrifluoroethane	76-13-1	Water	8260C	5030C	--	240000	0.303	1.0	ug/L
VOCs	Tetrachloroethene	127-18-4	Water	8260C	5030C	5.0	48	0.372	1.0	ug/L
VOCs	Toluene	108-88-3	Water	8260C	5030C	1000	640	0.412	1.0	ug/L
VOCs	1,2,3-Trichlorobenzene	87-61-6	Water	8260C	5030C	--	--	0.230	1.0	ug/L
VOCs	1,2,4-Trichlorobenzene	120-82-1	Water	8260C	5030C	--	80	0.355	1.0	ug/L
VOCs	1,1,1-Trichloroethane	71-55-6	Water	8260C	5030C	200	16000	0.319	1.0	ug/L
VOCs	1,1,2-Trichloroethane	79-00-5	Water	8260C	5030C	--	32	0.383	1.0	ug/L
VOCs	Trichloroethene	79-01-6	Water	8260C	5030C	5.0	4.0	0.398	1.0	ug/L
VOCs	Trichlorofluoromethane	75-69-4	Water	8260C	5030C	--	2400	1.20	5.0	ug/L
VOCs	1,2,3-Trichloropropane	96-18-4	Water	8260C	5030C	--	32	0.807	2.5	ug/L
VOCs	1,2,4-Trimethylbenzene	95-63-6	Water	8260C	5030C	--	--	0.373	1.0	ug/L
VOCs	1,2,3-Trimethylbenzene	526-73-8	Water	8260C	5030C	--	--	0.321	1.0	ug/L

Table 5B
Laboratory Reporting Limits, Method Detection Limits, and Regulatory Standards - Groundwater Samples
Pace Analytical National Center for Testing Innovation

Analyte Group	Analyte	CAS #	Matrix	Analytical Method	Prep Method	MTCA Method A Cleanup Level[1] (µg/L)	MTCA Method B Cleanup Level[2] (µg/L)	MDL	MRL	Units
VOCs	1,3,5-Trimethylbenzene	108-67-8	Water	8260C	5030C	--	80	0.387	1.0	ug/L
VOCs	Vinyl Chloride	75-01-4	Water	8260C	5030C	--	24	0.259	1.0	ug/L
VOCs	Xylenes, Total	1330-20-7	Water	8260C	5030C	1000	1600	1.06	3.0	ug/L
VOCs	Toluene-d8	2037-26-5	Water	8260C	5030C	--	--	---	---	---
VOCs	Dibromofluoromethane	1868-53-7	Water	8260C	5030C	--	--	---	---	---
VOCs	4-Bromofluorobenzene	460-00-4	Water	8260C	5030C	--	--	---	---	---
PAHs	Anthracene	120-12-7	Water	8270D SIM	3510C	--	4800	0.0080	0.05	ug/L
PAHs	Acenaphthene	83-32-9	Water	8270D SIM	3510C	--	960	0.0100	0.05	ug/L
PAHs	Acenaphthylene	208-96-8	Water	8270D SIM	3510C	--	--	0.0070	0.05	ug/L
PAHs	Benzo(a)Anthracene	56-55-3	Water	8270D SIM	3510C	0.1[b]	--	0.0083	0.05	ug/L
PAHs	Benzo(a)Pyrene	50-32-8	Water	8270D SIM	3510C	0.1[b]	--	0.0158	0.05	ug/L
PAHs	Benzo(b)Fluoranthene	205-99-2	Water	8270D SIM	3510C	0.1[b]	--	0.0021	0.05	ug/L
PAHs	Benzo(g,h,i)Perylene	191-24-2	Water	8270D SIM	3510C	--	--	0.0023	0.05	ug/L
PAHs	Benzo(k)Fluoranthene	207-08-9	Water	8270D SIM	3510C	0.1[b]	--	0.0255	0.05	ug/L
PAHs	Chrysene	218-01-9	Water	8270D SIM	3510C	0.1[b]	--	0.0144	0.05	ug/L
PAHs	Dibenz(a,h)Anthracene	53-70-3	Water	8270D SIM	3510C	0.1[b]	--	0.0045	0.05	ug/L
PAHs	Fluoranthene	206-44-0	Water	8270D SIM	3510C	--	640	0.0165	0.05	ug/L
PAHs	Fluorene	86-73-7	Water	8270D SIM	3510C	--	640	0.0090	0.05	ug/L
PAHs	Indeno(1,2,3-cd)Pyrene	193-39-5	Water	8270D SIM	3510C	0.1[b]	--	0.0074	0.05	ug/L
PAHs	Naphthalene	91-20-3	Water	8270D SIM	3510C	160[a]	160	0.0120	0.25	ug/L
PAHs	Phenanthrene	85-01-8	Water	8270D SIM	3510C	--	--	0.0184	0.05	ug/L
PAHs	Pyrene	129-00-0	Water	8270D SIM	3510C	--	480	0.0155	0.05	ug/L
PAHs	1-Methylnaphthalene	90-12-0	Water	8270D SIM	3510C	160[a]	560	0.0189	0.25	ug/L
PAHs	2-Methylnaphthalene	91-57-6	Water	8270D SIM	3510C	160[a]	32	0.0155	0.25	ug/L
PAHs	Nitrobenzene-d5	4165-60-0	Water	8270D SIM	3510C	--	--	---	---	---
PAHs	2-Fluorobiphenyl	321-60-8	Water	8270D SIM	3510C	--	--	---	---	---
PAHs	p-Terphenyl-d14	1718-51-0	Water	8270D SIM	3510C	--	--	---	---	---
TPH	GRO	STL00228	Water	NWTPH_Gx	5030B	800[c]/1,000	--	0.1	0.25	mg/L
TPH	DRO	STL00163	Water	NWTPH_Dx	3510C	500	--	0.065	0.11	mg/L
TPH	RRO	STL00299	Water	NWTPH_Dx	3510C	500	--	0.096	0.35	mg/L
ICPMS Metals	Arsenic	7440-38-2	Water	6020A	3005A/3010A/3015/3015A	5.0	4.8	0.25	2.0	ug/L
ICPMS Metals	Barium	7440-39-3	Water	6020A	3005A/3010A/3015/3015A	--	3200	0.36	5.0	ug/L
ICPMS Metals	Cadmium	7440-43-9	Water	6020A	3005A/3010A/3015/3015A	5.0	8.0	0.16	1.0	ug/L
ICPMS Metals	Chromium	7440-47-3	Water	6020A	3005A/3010A/3015/3015A	50	--	0.54	2.0	ug/L
ICPMS Metals	Lead	7439-92-1	Water	6020A	3005A/3010A/3015/3015A	15	--	0.24	2.0	ug/L
ICPMS Metals	Selenium	7782-49-2	Water	6020A	3005A/3010A/3015/3015A	--	80	0.38	2.0	ug/L
ICPMS Metals	Silver	7440-22-4	Water	6020A	3005A/3010A/3015/3015A	--	80	0.31	2.0	ug/L
Other Metals	Mercury	7439-97-6	Water	7470A	7470A	2.0	--	0.049	0.20	ug/L

Notes:
[1] MTCA Method A Groundwater Cleanup Levels were obtained from Table 720-1 of WAC Chapter 173-340 revised 2013.
[2] MTCA Method B Groundwater Cleanup Levels for Direct Contact, Non-Cancer were obtained from Ecology Cleanup Levels and Risk Calculation (CLARC) Master Table, updated August 2015.
[3] MDLs and control limits are subject to change as new studies are performed.
[a] Cleanup level for total naphthlenes: total concentration of naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene.
[b] Cleanup level for benzo(a)pyrene; however, if other carcinogenic PAHs present, use this value for cleanup level for total concentration of carcinogenic PAHs.
[c] Cleanup level when benzene is present.

Definitions:
-- = not applicable or not available
CAS = Chemical Abstracts Service
DRO = diesel range organics
GRO = gasoline range organics
ICP = inductively coupled plasma
ICP/MS = inductively coupled plasma mass spectrometry
LCL = lower control limit (laborabory control sample)
LCL = lower control limit (laboratory control sample)
LCS = laboratory control sample
LCSD = laboratory control sample, duplicate
MDL = method detection limit
MRL = method reporting limit
MTCA = Model Toxics Control Act
NWTPH-Dx = Northwest Total Petroleum Hydrocarbon (diesel)
NWTPH-Gx = Northwest Total Petroleum Hydrocarbon (gasoline)
PAH = polynuclear aromatic hydrocarbon
RPDL = relative percent difference limit (laboratory control sample)
TPH = total petroleum hydrocarbons
UCL = upper control limit
ug/L = micrograms per Liter
VOC = volatile organic compound
WAC = Washington Administrative Code

Table 5C
Laboratory Reporting Limits, Method Detection Limits, and Regulatory Standards - Air Samples
Pace Analytical National Center for Testing Innovation

Analyte Group	Analyte	CAS #	Matrix	Analytical Method	MTCA Method B Cleanup Level[1] (µg/m^3)	MTCA Method C Cleanup Level[1] (µg/m^3)	MRL[2] (µg/m^3)
VOCs	Acetone	67-64-1	Air	EPA TO-15	--	--	3.0
VOCs	Allyl Chloride	107-05-1	Air	EPA TO-15	--	--	0.63
VOCs	Benzene	71-43-2	Air	EPA TO-15	457	1000	0.64
VOCs	Benzyl Chloride	100-44-7	Air	EPA TO-15	15	33	1.0
VOCs	Bromodichloromethane	75-27-4	Air	EPA TO-15	--	--	1.3
VOCs	Bromoform	75-25-2	Air	EPA TO-15	--	--	6.2
VOCs	Bromomethane	74-83-9	Air	EPA TO-15	76	167	0.78
VOCs	1,3-Butadiene	106-99-0	Air	EPA TO-15	30	67	4.4
VOCs	Carbon Disulfide	75-15-0	Air	EPA TO-15	10667	23333	1.0
VOCs	Carbon Tetrachloride	56-23-5	Air	EPA TO-15	1524	3333	1.3
VOCs	Chlorobenzene	108-90-7	Air	EPA TO-15	762	1667	0.92
VOCs	Chloroethane	75-00-3	Air	EPA TO-15	152381	333333	0.53
VOCs	Chloroform	67-66-3	Air	EPA TO-15	1493	3267	1.0
VOCs	Chloromethane	74-87-3	Air	EPA TO-15	1371	3000	0.41
VOCs	2-Chlorotoluene	95-49-8	Air	EPA TO-15	--	--	1.0
VOCs	Cyclohexane	110-82-7	Air	EPA TO-15	--	--	0.69
VOCs	Chlorodibromomethane	124-48-1	Air	EPA TO-15	--	--	1.7
VOCs	1,2-Dibromoethane	106-93-4	Air	EPA TO-15	137	300	1.5
VOCs	1,2-Dichlorobenzene	95-50-1	Air	EPA TO-15	3048	6667	1.2
VOCs	1,3-Dichlorobenzene	541-73-1	Air	EPA TO-15	--	--	1.2
VOCs	1,4-Dichlorobenzene	106-46-7	Air	EPA TO-15	12190	26667	1.2
VOCs	1,2-Dichloroethane	107-06-2	Air	EPA TO-15	107	233	0.81
VOCs	1,1-Dichloroethane	75-34-3	Air	EPA TO-15	--	--	0.81
VOCs	1,1-Dichloroethene	75-35-4	Air	EPA TO-15	3048	6667	0.79
VOCs	cis-1,2-Dichloroethene	156-59-2	Air	EPA TO-15	--	--	0.79
VOCs	trans-1,2-Dichloroethene	156-60-5	Air	EPA TO-15	--	--	0.79
VOCs	1,2-Dichloropropane	78-87-5	Air	EPA TO-15	61	133	0.92
VOCs	cis-1,3-Dichloropropene	10061-01-5	Air	EPA TO-15	--	--	0.91
VOCs	trans-1,3-Dichloropropene	10061-02-6	Air	EPA TO-15	--	--	0.91
VOCs	1,4-Dioxane	123-91-1	Air	EPA TO-15	--	--	4.5
VOCs	Ethanol	64-17-5	Air	EPA TO-15	--	--	1.2
VOCs	Ethylbenzene	100-41-4	Air	EPA TO-15	15238	33333	0.87
VOCs	4-Ethyltoluene	622-96-8	Air	EPA TO-15	--	--	1.0
VOCs	Trichlorofluoromethane	75-69-4	Air	EPA TO-15	10667	23333	1.1
VOCs	Dichlorodifluoromethane	75-71-8	Air	EPA TO-15	1524	3333	1.0
VOCs	1,1,2-Trichlorotrifluoroethane	76-13-1	Air	EPA TO-15	457143	1000000	1.5
VOCs	1,2-Dichlorotetrafluoroethane	76-14-2	Air	EPA TO-15	--	--	1.4
VOCs	Heptane	142-82-5	Air	EPA TO-15	--	--	0.82
VOCs	Hexachloro-1,3-Butadiene	87-68-3	Air	EPA TO-15	--	--	6.7
VOCs	n-Hexane	110-54-3	Air	EPA TO-15	10667	23333	0.71
VOCs	Isopropylbenzene	98-82-8	Air	EPA TO-15	6095	13333	1.0
VOCs	Methylene Chloride	75-09-2	Air	EPA TO-15	9143	20000	2.2

Table 5C
Laboratory Reporting Limits, Method Detection Limits, and Regulatory Standards - Air Samples
Pace Analytical National Center for Testing Innovation

Analyte Group	Analyte	CAS #	Matrix	Analytical Method	MTCA Method B Cleanup Level[(1)] (µg/m^3)	MTCA Method C Cleanup Level[(1)] (µg/m^3)	MRL[(2)] (µg/m^3)
VOCs	Methyl Butyl Ketone	591-78-6	Air	EPA TO-15	--	--	5.1
VOCs	2-Butanone (MEK)	78-93-3	Air	EPA TO-15	76190	166667	3.7
VOCs	4-Methyl-2-Pentanone (MIBK)	108-10-1	Air	EPA TO-15	45714	100000	5.1
VOCs	Methyl Methacrylate	80-62-6	Air	EPA TO-15	10667	23333	0.82
VOCs	Methyl Tert-Butyl Ether	1634-04-4	Air	EPA TO-15	45714	100000	1.1
VOCs	Naphthalene	91-20-3	Air	EPA TO-15	46	100	3.3
VOCs	2-Propanol	67-63-0	Air	EPA TO-15	--	--	3.1
VOCs	Propene	115-07-1	Air	EPA TO-15	--	--	3.4
VOCs	Styrene	100-42-5	Air	EPA TO-15	15238	33333	0.85
VOCs	1,1,2,2-Tetrachloroethane	79-34-5	Air	EPA TO-15	--	--	1.4
VOCs	Tetrachloroethene	127-18-4	Air	EPA TO-15	610	1333	1.4
VOCs	Tetrahydrofuran	109-99-9	Air	EPA TO-15	--	--	0.59
VOCs	Toluene	108-88-3	Air	EPA TO-15	76190	166667	0.75
VOCs	1,2,4-Trichlorobenzene	120-82-1	Air	EPA TO-15	30	67	4.7
VOCs	1,1,1-Trichloroethane	71-55-6	Air	EPA TO-15	76190	166667	1.1
VOCs	1,1,2-Trichloroethane	79-00-5	Air	EPA TO-15	3.0	6.7	1.1
VOCs	Trichloroethene	79-01-6	Air	EPA TO-15	30	67	1.1
VOCs	1,2,4-Trimethylbenzene	95-63-6	Air	EPA TO-15	107	233	1.1
VOCs	1,3,5-Trimethylbenzene	108-67-8	Air	EPA TO-15	--	--	1.1
VOCs	2,2,4-Trimethylpentane	540-84-1	Air	EPA TO-15	--	--	0.93
VOCs	Vinyl Chloride	75-01-4	Air	EPA TO-15	1524	3333	0.70
VOCs	Vinyl Bromide	593-60-2	Air	EPA TO-15	--	--	0.78
VOCs	Vinyl Acetate	108-05-4	Air	EPA TO-15	3048	6667	0.51
VOCs	m&p-Xylene	1330-20-7	Air	EPA TO-15	--	--	1.7
VOCs	o-Xylene	95-47-6	Air	EPA TO-15	1524	3333	0.87
VOCs	1,4-Bromofluorobenzene	460-00-4	Air	EPA TO-15	--	--	---

Notes:
(1) MTCA Methods B and C Vapor Intrusion Cleanup Levels, Non-Cancer were obtained from Ecology Cleanup Levels and Risk Calculation (CLARC) Master Table, updated August 2015.
(2) The MRL limits provided are for breathable air matrix. Apply 2X dilution factor for soil gas samples and samples taken in 1L can, and 2X dilution factor for tedlar bag samples.

Definitions:
µg/m^3 = micrograms per cubic meter
CAS = Chemical Abstracts Service
EPA = Environmental Protection Agency
LCL = lower control limit
LCS = laboratory control sample
LCSD = laboratory control sample, duplicate
MRL = method reporting limit
RPDL = relative percent difference limit
UCL = upper control limit
VOC = volatile organic compound

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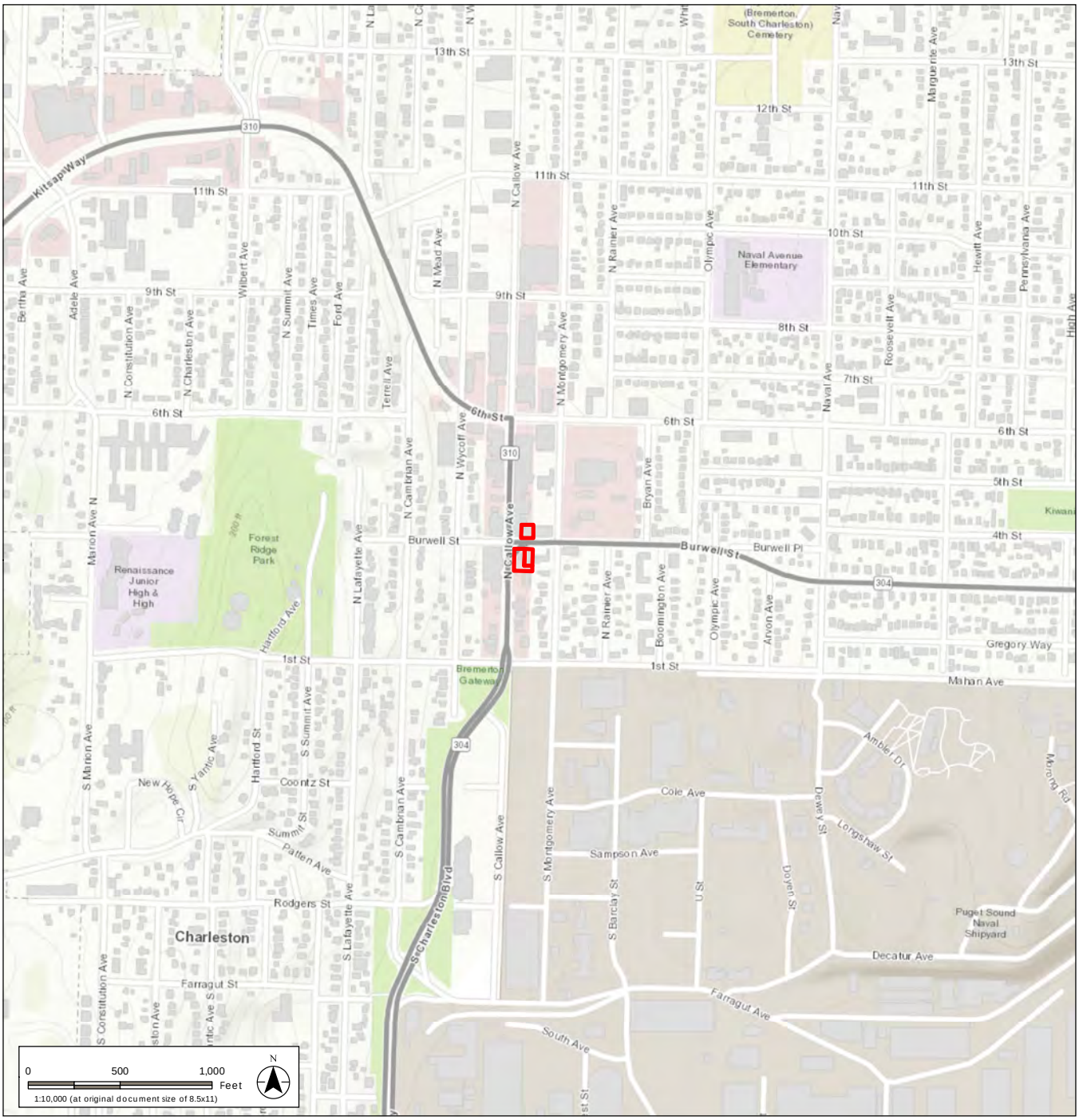

Approximate Property Boundary

Stantec

Project Location 185750574
2612 and 2613 Burwell Street
Bremerton, Washington

Client/Project
City of Bremerton
EPA Brownfield Assessment Grant
Phase II ESA Sampling Analysis Plan

Figure No.
1

Title
Site Location Map

Notes
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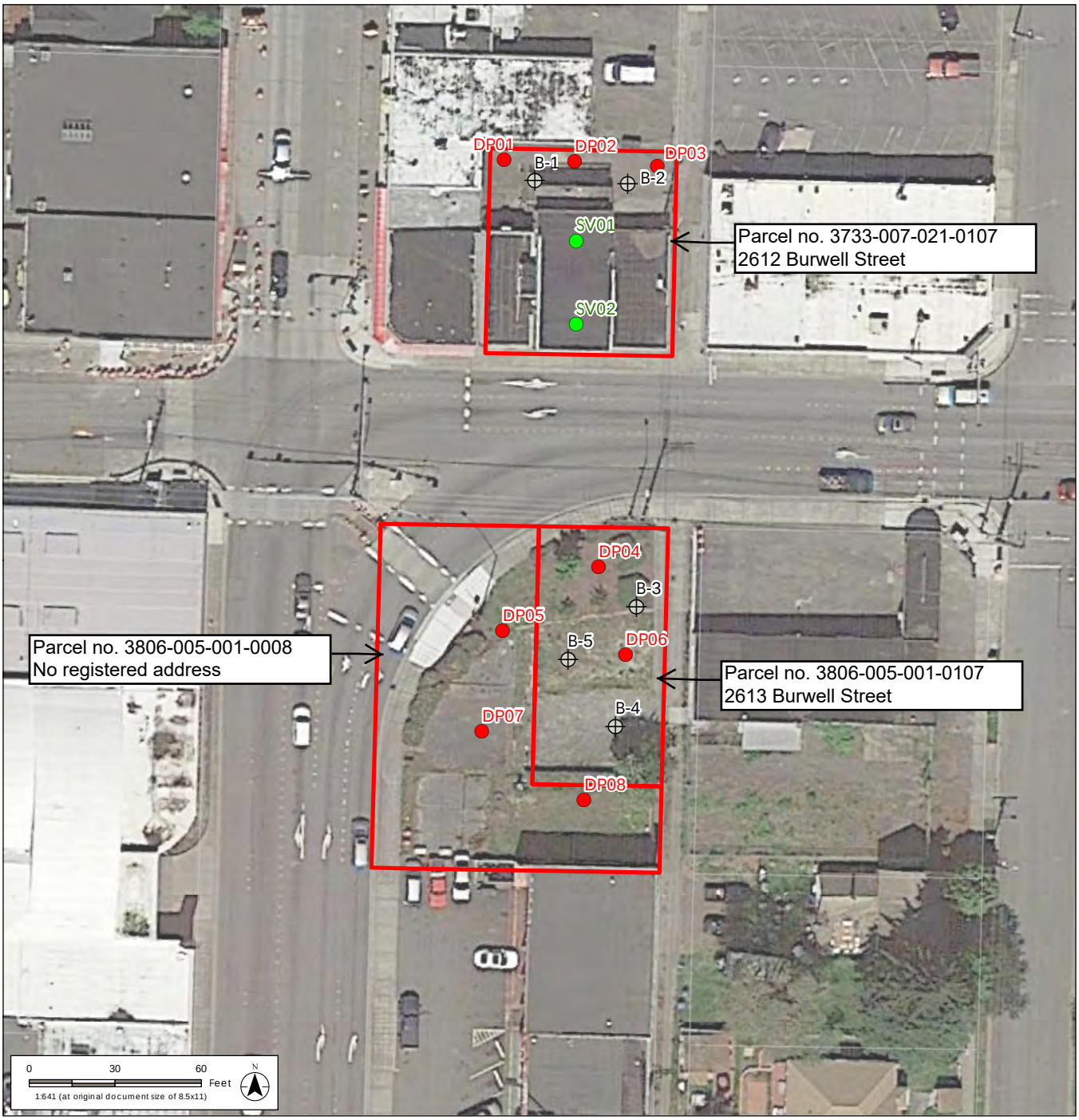

- 2013 Soil and Groundwater Sampling Locations
- Soil and Groundwater Sampling Location
- Sub-Slab Soil Gas Sampling Location
- Approximate Property Boundary
- Tax Lot Boundaries

Notes
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Bremerton, Washington

Client/Project
City of Bremerton
EPA Brownfield Assessment Grant
Phase II ESA Sampling Analysis Plan

Figure No.
2

Title
Proposed Sampling Locations

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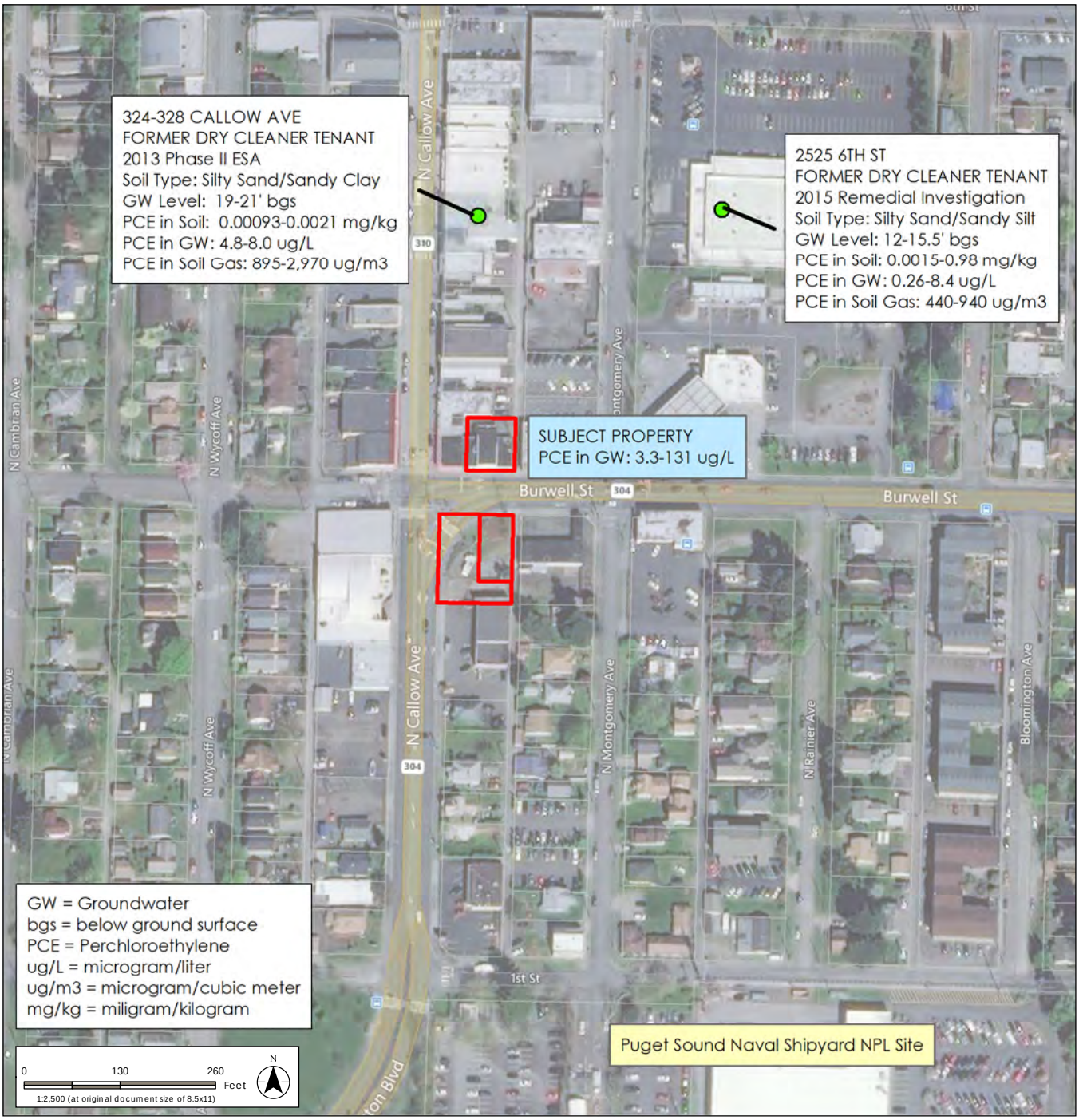

Approximate Property Boundary

Tax Lot Boundaries

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Project Location 185750574
2612 and 2613 Burwell Street
Bremerton, Washington

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City of Bremerton
EPA Brownfield Assessment Grant
Phase II ESA Sampling Analysis Plan

Figure No.
3

Title
Property Location and Sites of Interest

Notes
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