Technical Memorandum

TO: Erik Gerking and Elise Gronewald, Port of Everett

FROM: Dylan Frazer, LG and Evelyn Ives, PE

DATE: May 7, 2021

RE: **Development Guidelines**
Bay Wood Products Property
Everett, Washington
Project No. 0147053.010.019

Introduction

Landau Associates, Inc. (LAI) prepared this document to present development guidelines to address environmental conditions during redevelopment activities at the Port of Everett (Port) Bay Wood Products property (the Property), located in Everett, Washington (Figure 1). The Property is the location of a former sawmill and consists of the upland portion of the Model Toxics Control Act (MTCA) Bay Wood Cleanup Site (Site). The Site is currently listed on the Washington State Department of Ecology (Ecology) Cleanup List (Facility Site Identification [ID] 4438641, Cleanup Site ID 2581), and the Port is working in partnership with Ecology to conduct a remedial investigation (RI) to identify the nature and extent of contamination, a feasibility study (FS) to develop and evaluate a range of remedial strategies, and an interim action during development of the RI and FS.

The development guidelines presented herein are intended to address worker health and safety, and the management of soil and groundwater during construction within the Property based on the RI, FS, and interim action work conducted to date. The guidelines are intended to be used by the Port, Port tenants, and any other parties that develop portions of the Property or otherwise conduct intrusive activities on the Property that may contact potentially contaminated soil and groundwater.

Background

Historical operations associated with the Property include a sawmill, pre-fab shop, dry kilns, re-saw and planer shed, sorting shed, and numerous lumber storage and transfer sheds. The sawmill operations were generally located on the eastern one-third of the Property (see Figure 2). The western approximately two-thirds of the Property was primarily used for lumber and log storage. A log way was located on the southern portion of the Property and large log rafts were located to the northwest and north of the site.

Various sawmill operators have operated at the Property from about 1936 through 1979, but operations appeared to remain substantially the same throughout this period. In 1979 the Property was leased by Bay Wood Products, Inc., who dismantled the sawmill and began using the site as a log storage and processing yard. By 1985 the main operations buildings had been removed from the Property, with the exception of an office/shop building, a large covered shed, and a shop building with

three large truck bays. Several small outbuildings also remained on the northern portion of the Property. In 1994 Bay Wood Products concluded its lease of the Property and the remaining buildings were demolished.

Environmental Conditions

Several environmental investigations and cleanup actions have been completed at the Property to-date and are continuing to be completed at present. Detailed information regarding the historical previous environmental studies and cleanup activities completed are presented in a Draft RI/FS addendum (GeoEngineers 2018). The preliminary screening levels (PSLs) developed in the Draft RI/FS for soil and groundwater at the Property are provided as Attachment A.

The following list summarizes site investigations, earthwork, and cleanup activities that have been conducted in the past; Figure 3 also presents the general areas of previous cleanup activities at the Property:

- **1992 and 1993**: A limited soil investigation and subsequent excavation was conducted to address a small area of polychlorinated biphenyl (PCB)-contaminated soil related to historical electrical transformer releases.
- **1994 and 1995**: Additional soil investigations evaluated wood debris in the upland portion of the Property. This exploration subsequently resulted in the removal of approximately 140,000 cubic yards (CY) of bark, rock, and wood chips from the northwestern portion of the Property (LAI 1994, 1995).
- **1995**: The Port constructed a dike around the western two-thirds of the Property approximately 50 feet (ft) from the shoreline and filled the encompassed area with approximately 200,000 CY of material dredged during maintenance of the Snohomish River Federal Navigation Channel (LAI 1995).
- **2005**: The Port stockpiled dredged material from the 14th Street Bulkhead Replacement Project to facilitate the evaluation for suitability of open-water disposal. Further evaluation showed the stockpiled material exceeded MTCA Method A Cleanup Levels for chlorinated polycyclic aromatic hydrocarbons (cPAHs; RETEC Group 2005).
- **2009**: An area-wide sediment investigation in Port Gardner Bay was conducted and the results are presented in a Draft RI/FS report (Anchor QEA and SLR 2011).
- **2009**: The Port completed two phases of investigation in the marine area to evaluate for potential impacts to sediment from historical operations (Anchor QEA and SLR 2009).
- **2009**: The Port conducted an additional upland soil investigation to evaluate for potential impacts to soil and groundwater from historical operations (Anchor QEA and SLR 2009, 2011).
- **2011**: The Port and Ecology published a Draft RI/FS report for public review and comment (Anchor QEA and SLR 2011; SLR 2009).
- **2012**: The Port conducted an additional investigation of sediment to evaluate the extent of dioxin/furan contamination.

- **2012–2013**: Soil stockpiles containing cPAHs exceeding the PSL were removed from the Property between December 2012 and February 2013 as part of an interim cleanup action. Verification samples collected during this interim action confirmed the complete removal of cPAHs in stockpiled soil exceeding the PSL.
- **2018**: In 2018, JELD-WEN conducted soil sampling in the Low Area of the Property to characterize soil impacts from the unauthorized discharge from the JELD-WEN site. The results of this sampling indicated soil with diesel-range total petroleum hydrocarbon, cPAH, and dioxin/furan concentrations above site screening levels (SLR 2018).

Additionally, an interim action cleanup was conducted at the Property in late 2020 through early 2021, which included environmental cleanup, habitat restoration, and buffer enhancements. Implementation of the interim action was guided by an Interim Action Work Plan and Engineering Design Report (LAI 2020a, b); these documents also presented soil characterization conducted in 2019 and 2020 in both the shoreline and an area along the southeast portion of the Property (the Low Area) that guided the scope of the interim action. The shoreline restoration component of the interim action included removing anthropogenic debris and invasive plant species from the buffer and shoreline areas, reshaping the shoreline to more natural slopes using an excavator during low-tides (in the dry), and replanting the shoreline with native plant species. The Low Area cleanup component of the interim action included excavation of soil in the Low Area to meet a site dioxin/furan remediation level, and capping of any remaining contamination with a 2-ft minimum soil cap and a geotextile/steel fabric. Final documentation of this cleanup is in process, but compliance monitoring data collected to document environmental conditions after completion of the interim action are included in these guidelines.

Residual Soil Contamination

Residual soil contamination may still be present throughout the Property, including in areas where cleanup has been conducted. Cleanup areas, including the recent Shoreline Restoration Area and Low Area, are shown on Figure 3. Based on RI/FS and interim action planning and compliance monitoring sampling of soil remaining onsite, metals, petroleum hydrocarbons, and dioxin/furans are still present, and in some areas, exceed PSLs. Maximum concentrations of these compounds are provided in Table 1. The known nature and extent of residual soil contamination is described in this section; historical sampling locations referenced in the text are illustrated on the figure included in Attachment B.

Metals

Of the soil remaining onsite, metals including mercury, nickel, silver, and thallium were detected at concentrations exceeding PSLs at depths ranging from 8 to 13.5 ft below ground surface (bgs) in samples throughout the upland portion of the Property. The metals in soil are not attributed to a specific source other than the historic fill material used to create the Upland Area of the Property. Specific sampling locations where PSL exceedances were detected are as follows:

- Mercury: PB-3B (10.5 ft bgs)
- Silver and thallium: PB-1A (8 ft bgs) and PB-1B (13 ft bgs)
- Nickel: PB-4A (9.5 ft bgs) and PB-5A (9 ft bgs).

Petroleum Hydrocarbons

Petroleum hydrocarbons are present in subsurface soil at the Property. Diesel- or heavy oil-range hydrocarbons were detected at concentrations above PSLs in three sampling locations (PB-3C/3CR at 6 and 7 ft bgs, PB-5A at 9 ft bgs, and PB-6A at 6 ft bgs) in the vicinity of the former Oil Shop located on the Property and were all taken at depths ranging from 6 to 9 ft bgs. These results indicate that the soil in this area may contain residual concentrations of petroleum hydrocarbons.

Dioxins and Furans

Dioxins and furans are present in soil onsite but are limited to the Low Area and one deep sampling location (PB-3B at 10.5 ft bgs) in the center of the upland portion of the Property. Dioxin/furan contamination in the Low Area was addressed by the 2020–2021 interim action. Excavation of contaminated soil in the Low Area targeted areas with the highest dioxin/furan concentrations to meet a site remediation level (RL) of 13 nanograms per kilogram (ng/kg), which is greater than the PSL for the Property. Final excavation depths ranged between 1 and 3 ft below the former ground surface, and compliance monitoring sampling indicated remaining soil meets the dioxin/furan RL; some concentrations were above the PSL; these compliance monitoring sampling results are presented in Attachment C.

As it was anticipated that this cleanup will leave some residual low-level dioxins/furans contamination remaining in-place (below the RL but potentially above the PSL), a surface cap was installed to prevent direct contact and migration of the residual contamination. The surface cap consists of a minimum of 2 ft of clean backfill placed on top of a non-woven geotextile layer and a steel fabric at the floor of the excavation.

Groundwater Quality

As presented in the Draft RI/FS, dissolved metals (arsenic, copper, nickel, and silver) and cPAHs were detected at concentrations greater than the PSLs in one or more groundwater samples collected from borings (GeoEngineers 2018). The maximum concentrations found in groundwater samples from the Property are provided on Table 1. It should be noted that the maximum detected cPAH concentration was only slightly greater than the PSL. Additionally, the majority of the groundwater data for cPAHs is likely biased high, because samples were collected from borings with temporary well points, which contain relatively high levels of suspended soil particles in comparison to samples from permanent monitoring wells. No cPAHs were detected in the sample collected from the one permanently installed well at the site.

Worker Health and Safety

Because the Property is a MTCA cleanup site, measures are required to protect worker health and safety during intrusive activities. Any contractor that conducts intrusive activities at the Property will need, at a minimum, to comply with the provisions of 29 Code of Federal Regulations (CFR) 1926 and Washington Administrative Code (WAC) 296-155 and will need to develop a site-specific health and safety plan. Unless soil and groundwater quality data are collected for the specific area of intrusive activities, the maximum soil and groundwater concentrations detected during previous investigations on the Property, found in Table 1, should be used in assessing potential worker exposure for health and safety purposes.

Soil Management Guidelines

Soil excavated during development of the Property may contain elevated concentrations of the constituents identified in Table 1. Additionally, the Property was used as an industrial facility for many years and previously unknown soil contamination could be encountered. These soil management guidelines describe procedures for monitoring soil quality during construction and the minimum level of testing recommended to evaluate soil quality.

Construction Observation

All intrusive activities that expose or generate excess soil should be monitored for visual or olfactory evidence of contamination. Such evidence may include discolored soil, unusual odor, the presence of buried drums or tanks, or the presence of sheen or oil. If such conditions are encountered, the work has to be stopped in the area. Under the supervision of an environmental professional, the material excavated from these areas must be segregated and managed as contaminated soil unless subsequent analytical testing demonstrates that the soil meets PSLs. Segregation of such soil should include placement on plastic sheeting or some other method of preventing cross-contamination of surface soil, and covering the soil, as needed, to prevent precipitation and wind from contacting and dispersing the affected soil.

Testing of potentially contaminated soil would need to include all the compounds identified in Table 1 and any other constituents that the observed nature of the material suggests might be appropriate (e.g., gasoline-range petroleum hydrocarbons and related compounds). Additionally, the Port should be notified of the observed condition to determine if further action is required.

Onsite Soil Management

In general, soil managed onsite does not require testing unless it exhibits evidence of contamination, or the soil is relocated from an area that will be paved to an area that will not be paved. General procedures for managing onsite soil are provided below, depending on whether the soil is to be returned to the excavation or placed elsewhere in the Property.

Soil that is to be returned to the excavation should be segregated by the vertical horizon from which the soil was removed and replaced within the same horizon during backfilling. Soil horizons generally consist of 7–9 ft of fill material dredged from the Snohomish River underlain by native alluvial and estuarine deposits. Native deposits consist mostly of stream-laid stratified sediments. The sediment is largely sand, silt, and clay with considerable amounts of organic matter. The thickness of these deposits probably exceeds 90 ft.

Offsite Soil Management

Soil from the Property may require disposal at an offsite facility for a number of reasons, including:

- The soil contains total petroleum hydrocarbons, metals, or dioxin/furans above applicable cleanup levels.
- The soil does not exhibit the physical characteristics appropriate for reuse on the property or for other reasons will be removed from the Property and exceeds the MTCA cleanup levels for unrestricted use.

If soil requires offsite management, additional analyses may be required to determine waste designation and disposal requirements, such as whether the soil can be managed as solid waste or requires management as hazardous waste. The disposal will need to be coordinated with the receiving facility to determine whether additional testing (other than identified constituents of concern) for the soil will be required for waste designation.

Low Area Cap

As described above, a surface cap consisting of a geotextile/steel mesh layer and 2-ft minimum thickness of soil was installed in the Low Area to prevent direct contact and migration of the residual contamination after completion of the Low Area Interim Action cleanup. If excavation below the geotextile separation layer is necessary for construction at the Property, this activity will be coordinated with Ecology, the excavated soil will be managed as contaminated soil, and the geotextile/steel fabric separation layer will be replaced at the new maximum depth. Figures showing the Low Area excavation and the extent of the Low Area cap are provided in Attachment C.

Current site development plans include a potential stormwater outfall in the northern portion of the Low Area. The depth of excavation required for installation of this outfall is not expected to intersect with residual contamination significantly greater than the PSL; however, review of existing analytical data and the depth of the surface cap relative to the current ground surface is recommended during planning for this excavation. The Low Area cap should not be disturbed until Ecology approves the work.

Analytical Testing

Analytical testing may be required for soil on the Property planned for excavation that may be contaminated from previous activities associated with the former sawmills' operational area or the Low Area that was affected by unauthorized discharge. As such, potential testing is limited to fill material (approximately upper 9 ft) associated within the former sawmills' operations and the upper surface of the Low Area. As previously discussed, excavated soil exhibiting evidence of potential contamination should be tested. Other soil, such as native deposits deeper than 9 ft bgs, do not require analytical testing other than that required by others for offsite management, if applicable. Analytical testing of excavated soil is required under the following circumstances:

1) Soil that exhibits indications of contamination, as described in the previous section
2) Soil that cannot be returned to the excavation and is to be reused at locations that will not be paved
3) Soil that is planned for removal from the Property.

Under circumstances 1 and 2, the soil should be tested for the chemicals listed in Table 1. If testing results show exceedance(s) of PSLs, the soil should be removed from the Property.

Soil to be removed from the Property may require additional analyses, required by the receiving facility to determine appropriate disposal options. Soil samples should be collected from the zones exhibiting evidence of potential contamination, if encountered. If no evidence of contamination is present, soil samples should be composited over the entire unit thickness of each geologic unit to be excavated (e.g., historic fill). Samples should be collected from *in situ* soil prior to excavation, if practicable.

The number of samples required to characterize soil requiring testing varies with the volume of soil being managed. Table 2 summarizes the number of soil samples to be collected and tested; alternative sampling frequency may be applicable to soil planned for offsite disposal depending on the requirements of the disposal facility. All analytical testing should be conducted by a commercial laboratory with Ecology accreditation for the applicable analytical methods.

Imported Soil Criteria

Soil imported to the Property must meet PSLs and import fill criteria, specific to the planned use and source of the soil, and should be tested to confirm that it meets these standards. Imported soil quality can be tested and reported by either the commercial source or the party importing the material. Import soil testing should be conducted sufficiently in advance of planned use to ensure that the analytical results can be obtained and evaluated prior to any import of the material to the Property. Regardless of material acceptance based on prior analytical testing, import material should be observed for any evidence of contamination, similar to observations required for excavation of onsite

soil. If any evidence of contamination is observed, the fill should be rejected prior to unloading, or the fill should be segregated for either return to the borrow source or for additional testing to determine whether the fill exceeds the Property's import fill criteria. Recommended analytical testing requirements for upland and shoreline use based on the source of the soil to be provided to Ecology for approval prior to importing the material is detailed in the following sections.

Upland Areas/Commercial Source Characterization Recommendation

For soil imported to upland portions of the Property from a commercial source, analytical data is recommended to be provided at a rate of up to five samples for the first 1,000 CY and one additional sample for each additional 1,000 CY. At a minimum, soil analyses shall demonstrate that the material has total arsenic concentrations less than 20 milligrams per kilogram (mg/kg) and total petroleum concentrations less than 200 mg/kg for diesel- and oil-range hydrocarbons and below laboratory reporting limits for gasoline.

Upland Areas/Non-Commercial Source Characterization Recommendation

For soil imported to upland portions of the Property from a non-commercial source, analytical data is recommended to be provided per Table 2. In addition to meeting requirements listed above for fill for upland areas from commercial sources, soil analyses shall demonstrate that the material meets all site PSLs as presented on Table 1. Additional samples and analyses may be requested by Ecology based on a review of the proposed source.

Shoreline and Buffer Areas/Commercial Source

For soil imported to shoreline portions of the Property, analytical data is recommended to be provided at a rate of up to five samples for the first 1,000 CY and one additional sample for each additional 1,000 CY. In addition to meeting Site PSLs, soil analyses shall demonstrate that the material meets import fill criteria presented in Table 3.

Groundwater Management Guidelines

Because metals and cPAHs may be present in groundwater beneath the Property at concentrations exceeding MTCA cleanup levels for unrestricted use, the groundwater should not be used for domestic purposes (e.g., drinking and bathing). Also, groundwater should not be extracted for any purpose except as needed for construction dewatering.

Depth to groundwater at the Property ranges from about 2.5 to 6 ft bgs; therefore, groundwater will likely be encountered during intrusive activities. Groundwater quality should be evaluated if construction activities require dewatering.

Groundwater sampling and testing in advance of construction dewatering would be required to determine management requirements. If testing demonstrates that groundwater does not exceed any of the site PSLs, extracted groundwater could be infiltrated onsite, if appropriate, or it could be discharged to the City of Everett (City) sanitary or stormwater sewer systems, subject to obtaining a temporary discharge permit from the City. Alternatively, the contractor could select other means of disposing of extracted groundwater, subject to local, state, and federal regulations.

If groundwater is determined to contain concentrations exceeding the Property's groundwater PSLs, as presented in Attachment A, it cannot be infiltrated onsite. The groundwater would need to be discharged to the City sanitary sewer, subject to obtaining a temporary discharge permit, or managed by other means that comply with local, state, and federal regulations.

Use of This Technical Memorandum

This Development Guidelines Technical Memorandum has been prepared for the exclusive use of the Port for specific application to the Bay Wood Products Property. No other party is entitled to rely on the information, conclusions, and recommendations included in this document without the express written consent of LAI. Further, the reuse of information, conclusions, and recommendations provided herein for extensions of the project or for any other project, without review and authorization by LAI, shall be at the user's sole risk. LAI warrants that within the limitations of scope, schedule, and budget, our services have been provided in a manner consistent with that level of care and skill ordinarily exercised by members of the profession currently practicing in the same locality under similar conditions as this project. We make no other warranty, either express or implied.

This document has been prepared under the supervision and direction of the following key staff.

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Attachments

Figure 1. Vicinity Map

Figure 2. Historical Site Features

Figure 3. Historical Cleanup Areas

Table 1. Maximum Preliminary Screening Level Exceedances Detected in Soil and Groundwater

Table 2. Soil Characterization Sampling Frequency

Table 3. Shoreline Import Fill Criteria

Attachment A. Preliminary Screening Levels

Attachment B. Historical Sampling Locations

Attachment C. Low Area Excavation and Cap Figures and Compliance Monitoring Analytical Results

References

Anchor QEA and SLR. 2009. Technical Memorandum: Bay Wood Products Surficial Sediment Results - Port of Everett. Anchor QEA and SLR International Corp. August 18.

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SLR. 2009. Final Work Plan for Remedial Investigation/Feasibility Study and Cleanup Action Plan, Port of Everett Bay Wood Products Site, 200 West Marine View Drive, Everett, Washington 98201. SLR International Corp., West Linn, OR. May 4.

SLR. 2018. Soil Sampling Summary - Port of Everett Property, North Truck Dock Stormwater Sump Investigation - Source Control Evaluation Work Plan, Former E.A. Nord Facility, Everett, Washington. SLR International Corporation. August 16.

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0 0.5 1

Miles

Data Source: Esri 2012

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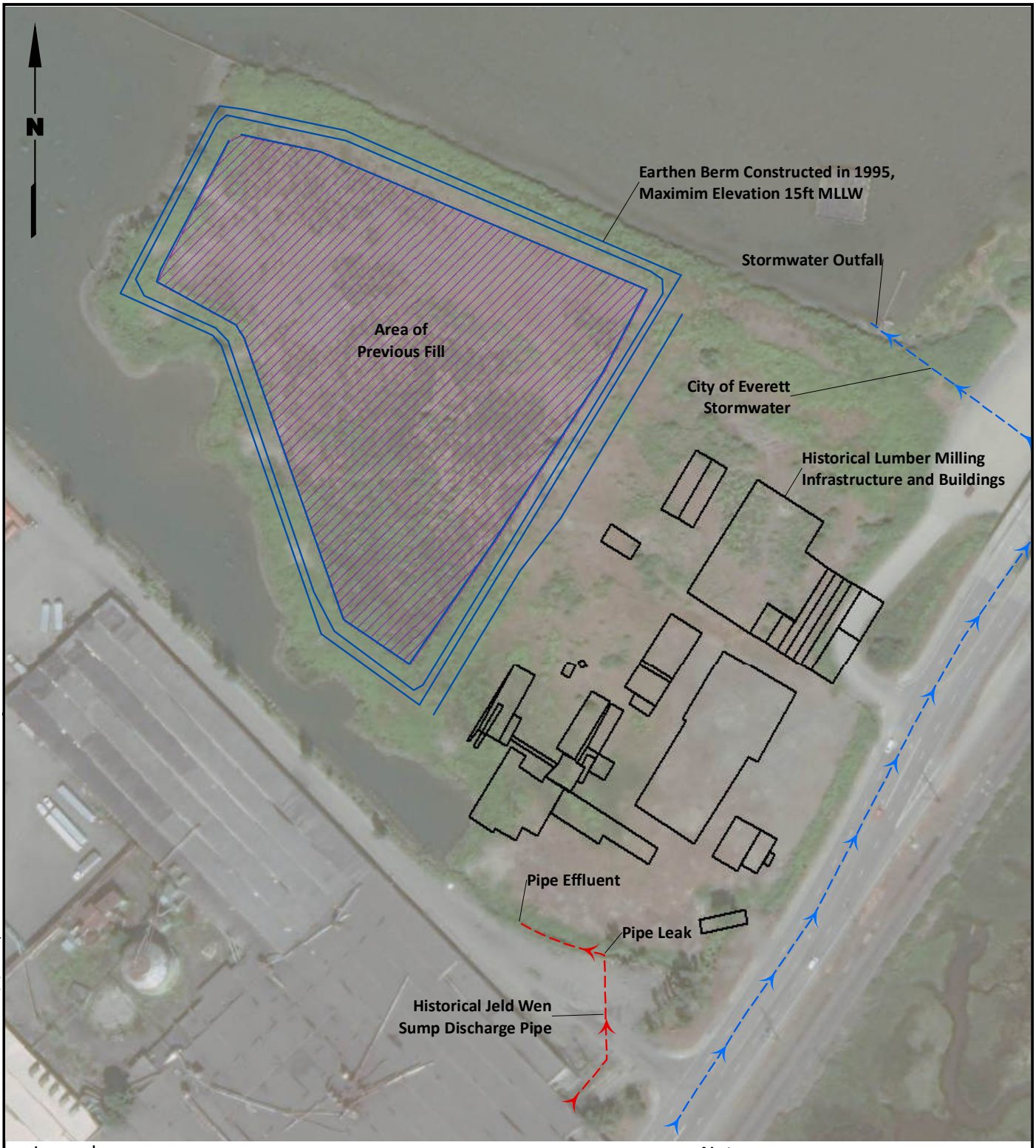
Bay Wood Products Everett, Washington	**Vicinity Map**	Figure 1



Legend

- Discharge Pipe
- City of Everett Stormwater
- Historical Feature

0 170 340

Scale in Feet

Notes

1. MLLW = Mean Lower Low Water
2. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

Data Source: Shannon & Wilson, Inc.; 2019; Geoengineers, 2018
Base Map Source: ESRI World Imagery, 2020

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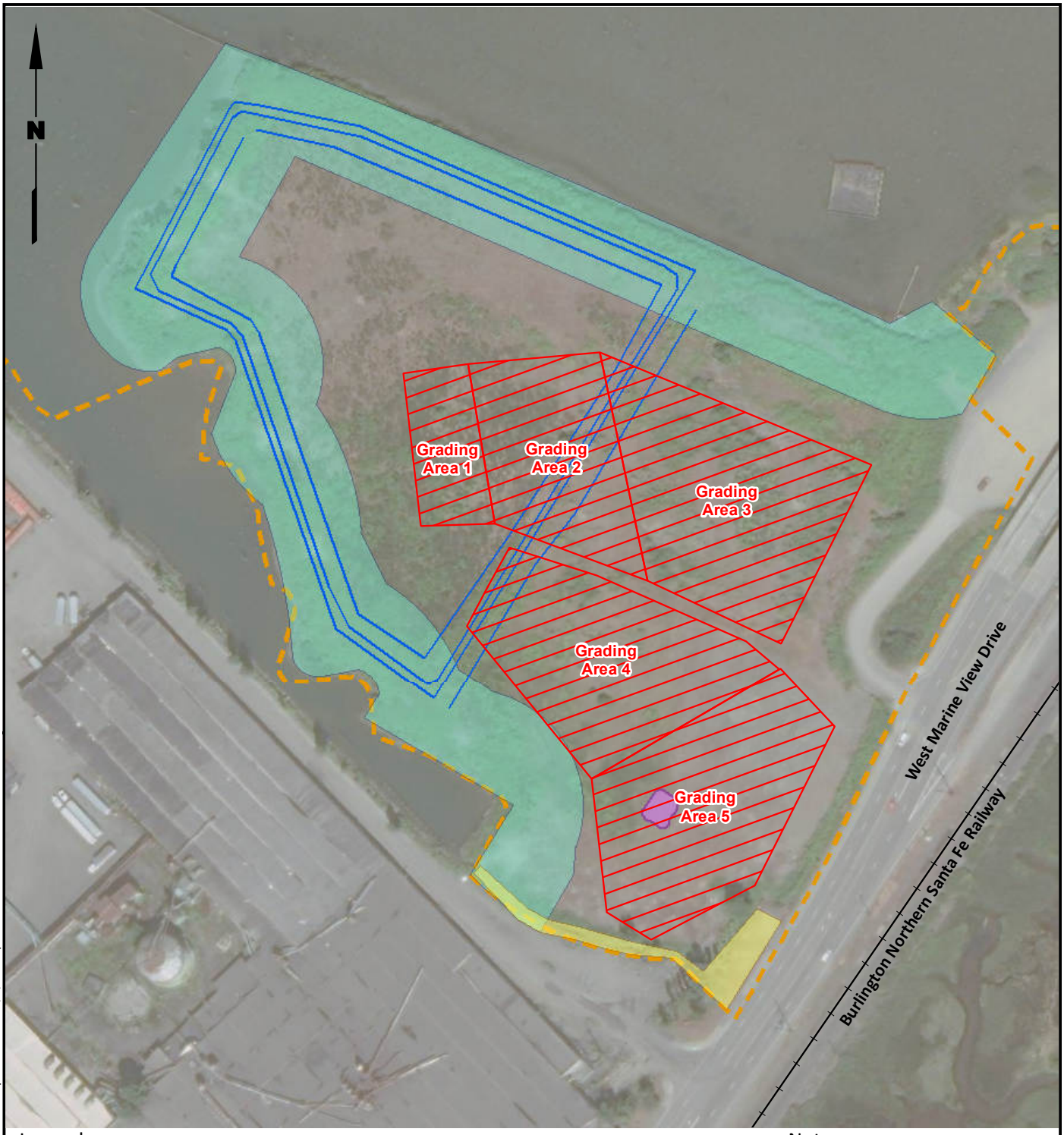
Bay Wood Products Everett, Washington	**Historical Site Features**	Figure 2



Legend

- Stockpile Interim Action Cleanup (2012-2013)
- PCB Cleanup Area (1992-1993)
- Low Area Interim Action Cleanup Area (2020-2021)
- Shoreline Restoration Interim Action Cleanup Area (2020-2021)
- Earthen Berm (1995)
- Site Boundary

Note

1. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

0 175 350

Scale in Feet

Data Source: Shannon & Wilson, Inc.; 2019; Geoengineers, 2018
Base Map Source: ESRI World Imagery, 2020

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Bay Wood Products Everett, Washington	**Historical Cleanup Areas**	Figure 3

Table 1
Maximum Preliminary Screening Level Exceedances
Detected in Soil and Groundwater
Bay Wood Products Site
Everett, Washington

	Maximum Soil Concentration (a)		Maximum Groundwater Concentration (a)
cPAHs	NA		0.07 µg/L (b)
Total Petroleum Hydrocarbons			
Diesel-Range Organics	690 mg/kg		400 µg/L
Oil-Range Organics	550 mg/kg		360 µg/L
Metals			
Arsenic	NA		53 µg/L
Chromium	NA		64 µg/L
Copper	NA		77 µg/L
Lead	NA		25 µg/L
Mercury	0.23 mg/kg		NA
Nickel	82 mg/kg		56 µg/L
Silver	0.94 mg/kg		7.4 (e) µg/L
Thallium	9.5 mg/kg		NA
Zinc			86 µg/L
Dioxin/Furans	9.95 ng/kg		NA

Notes:

(a) Maximum concentrations reported in the Draft RI unless otherwise noted.

(b) Data collected prior to interim action stockpile cleanup conducted in 2012–2013.

(e) The analyte was detected and the detected concentration is considered an estimate.

Abbreviations and Acronyms:

µg/L = micrograms per liter

cPAH = chlorinated polycyclic aromatic hydrocarbon

mg/kg = milligrams per kilogram

NA = not applicable; no PCUL exceedance

ng/kg = nanograms per kilogram

PCUL - preliminary cleanup level

RI = remedial investigation

Table 2
Soil Characterization Sampling Frequency
Bay Wood Products Site
Everett, Washington

Cubic Yards of Soil		Minimum Number of Samples
0–100		3
101–500		5
501–1,000		7
1,001–2,000		10
>2,000		10 + 1 for each additional 500 cubic yards

Table 3
Shoreline Import Fill Criteria
Bay Wood Products Site
Everett, Washington

Washington State Department of Ecology Materials Import Criteria
Bay Wood MTCA Cleanup Site

Analyte	Laboratory Analyses	Import Criteria	Unit
Metals			
Arsenic	EPA 6010/6020	11	mg/kg
Cadmium	EPA 6010/6020	0.8	mg/kg
Chromium	EPA 6010/6020	48	mg/kg
Copper	EPA 6010/6020	100	mg/kg
Lead	EPA 6010/6020	21	mg/kg
Mercury	EPA 7470A/7471A	0.2	mg/kg
Silver	EPA 6010/6020	2	mg/kg
Zinc	EPA 6010/6020	270	mg/kg
Carcinogenic Polycyclic Aromatic Hydrocarbons (cPAHs)			
Total carcinogenic PAHs – TEQ	EPA 8270 SIM	21	µg/kg
Polychlorinated Biphenyls (PCBs)			
Total Dioxin-Like PCBs - human health TEQ	EPA 1668A	2	ng/kg
Total PCBs (Total for Congeners)	EPA 1668A	0.03	mg/kg
Dioxins and Furans			
Total dioxins/furans - TEQ	EPA 1613	5	ng/kg
Total Petroleum Hydrocarbons			
TPH-Diesel Range	NWTPH-HCID*	200	mg/kg
TPH-Oil Range	NWTPH-HCID*	200	mg/kg
TPH-Gas Range	NWTPH-HCID*	30	mg/kg

mg/kg = milligrams per kilogram
mg/kg OC = milligrams per kilogram normalized to organic carbon
µg/kg = micrograms per kilogram
ng/kg = nanograms per kilogram
*If petroleum hydrocarbons are detected above the reporting limits using the NWTPH-HCID method, further analysis of the specific petroleum hydrocarbon range that is detected is required. Import criteria listed are the acceptable laboratory analysis reporting criteria for the NWTPH-HCID analyses.
TEQ = Toxicity Equivalence (https://fortress.wa.gov/ecy/clarc/FocusSheets/tef.pdf)

ATTACHMENT A

Preliminary Screening Levels

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Table 1

Preliminary Soil Screening Levels - Open Space Area

Bay Wood Products Site

Everett, Washington

Analyte	CAS No.	Protection of Human Health and the Environment (MTCA Method A Standard Table Value for Unrestricted Land Use)[1]	Human Health Direct Contact Pathway (MTCA Method B Standard Formula Value for Unrestricted Land Use)		Soil Concentration for Protection of Ecological Receptors[2] (MTCA Table 749-3)	Equilibrium Partition Coefficients[3]			Soil to Groundwater Protection Using Groundwater Preliminary Screening Level[4] (Table 2) per WAC 173-340-740(1)(d) EQ. 747-1/ 747-2		Preliminary Screening Level		Adjustment Factors		Soil Screening Level[9] (After Adjustment for Background and PQL)	
			Carcinogen	Non-Carcinogen		Koc (org.)	Kd (metals)	H (Unitless)	Vadose Zone Soil	Saturated Soil	Vadose Zone Soil	Saturated Soil	Background Concentration[5,6,7]	PQL[8]	Vadose Zone Soil	Saturated Soil
Metals (mg/kg)																
Antimony	7440-36-0	–	–	32	5	–	45	–	163	8.2	5	5	–	5	5	5
Arsenic	7440-38-2	–	0.67	24	7	–	29	–	2.9	0.15	0.67	0.15	20	5	20	20
Beryllium	7440-41-7	–	–	160	10	–	790	–	4,313	216	10	10	0.6	0.1	10	10
Cadmium	7440-43-9	–	–	80	4	–	6.7	–	1.2	0.061	1.2	0.061	1	0.20	1.2	1
Chromium (total - based on Cr(III))	7440-47-3	–	–	120,000	42	–	1,000	–	1,000	50	42	42	48	0.50	48	48
Copper	7440-50-8	–	–	3,200	50	–	22	–	1.1	0.053	1.1	0.053	36	0.2	36	36
Lead	7439-92-1	250	–	–	50	–	10,000	–	1,620	81	50	50	24	2	50	50
Mercury (based on mercuric chloride)	7439-97-6	–	–	24	0.1	–	52	0.47	0.026	0.0013	0.026	0.0013	0.07	0.05	0.07	0.07
Nickel	7440-02-0	–	–	1,600	30	–	65	–	11	0.54	11	0.54	48	1	48	48
Selenium	7782-49-2	–	–	400	0.3	–	5.0	–	7.4	0.38	0.3	0.3	–	5	5	5
Silver	7440-22-4	–	–	400	2	–	8.3	–	0.32	0.016	0.32	0.016	–	0.3	0.32	0.3
Thallium	7440-28-0	–	–	0.8	1	–	71	–	0.31	0.016	0.31	0.016	–	5	5	5
Zinc	7440-66-6	–	–	24,000	86	–	62	–	101	5.0	86	5.0	85	1	86	85
Petroleum Hydrocarbons (mg/kg)																
Gasoline-Range[10]	8006-61-9	30	–	–	100	–	–	–	–	–	30	30	–	5.0	30	30
Diesel-Range	68334-30-5	2,000	–	–	200	–	–	–	–	–	200	200	–	5.0	200	200
Heavy Oil-Range	30109	2,000	–	–	200	–	–	–	–	–	200	200	–	10.0	200	200
BETX Compounds (mg/kg)																
Benzene	71-43-2	–	18	320	–	62	–	2.28E-01	0.0090	0.00056	0.0090	0.00056	–	0.001	0.0090	0.0010
Ethylbenzene	100-41-4	–	–	8,000	–	204	–	3.23E-01	1.1	0.064	1.1	0.064	–	0.001	1.1	0.064
Toluene	108-88-3	–	–	6,400	200	140	–	2.72E-01	3.0	0.17	3.0	0.17	–	0.001	3.0	0.17
Xylenes	1330-20-7	–		16,000	–	233	–	2.79E-01	–	–	16,000	16,000	–	0.001	16,000	16,000
Volatile Organic Compounds (VOCs) (mg/kg)																
1,1,1,2-Tetrachloroethane	630-20-6	–	38	2,400	–	86.03	–	0.1022077	–	–	38	38	–	0.001	38	38
1,1,1-Trichloroethane	71-55-6	–	–	160,000	–	135	–	7.05E-01	1,268	67	1,268	67	–	0.001	1,268	67
1,1,2,2-Tetrachloroethane	79-34-5	–	5	1,600	–	79	–	1.41E-02	0.0026	0.00017	0.0026	0.00017	–	0.002	0.0026	0.0020
1,1,2-trichloro-1,2,2-trifluoroethane (CFC113)	76-13-1	–	–	2,400,000	–	196.8	–	21.504497	–	–	2,400,000	2,400,000	–	0.002	2,400,000	2,400,000
1,1,2-Trichloroethane	79-00-5	–	18	320	–	75	–	3.74E-02	0.010	0.00065	0.010	0.00065	–	0.001	0.010	0.0010
1,1-Dichloroethane	75-34-3	–	175	16,000	–	53	–	2.30E-01	–	–	175	175	–	0.001	175	175
1,1-Dichloroethene	75-35-4	–	–	4,000	–	65	–	1.07E+00	0.023	0.0011	0.023	0.0011	–	0.001	0.023	0.0011
1,1-Dichloropropene	563-58-6	–	–	–	–	–	–	–	–	–	NE	NE	–	0.001	NE	NE
1,2,3-Trichlorobenzene	87-61-6	–	–	–	20	1,383	–	0.0511038	–	–	20	20	–	0.005	20	20
1,2,3-Trichloropropane	96-18-4	–	0.033	320	–	115.8	–	0.0140229	–	–	0.033	0.033	–	0.002	0.033	0.033
1,2,4-Trichlorobenzene	120-82-1	–	34.5	800	20	1,659	–	5.82E-02	0.019	0.00097	0.019	0.00097	–	0.005	0.019	0.005
1,2,4-Trimethylbenzene	95-63-6	–	–	–	–	614		2.52E-01	–	–	NE	NE	–	0.001	NE	NE

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			Carcinogen	Non-Carcinogen		Koc (org.)	Kd (metals)	H (Unitless)	Vadose Zone Soil	Saturated Soil	Vadose Zone Soil	Saturated Soil	Background Concentration[5,6,7]	PQL[8]	Vadose Zone Soil	Saturated Soil
1,2-Dibromo-3-chloropropane	96-12-8	–	1.3	16	–	116	–	6.01E-03	–	–	1.3	1.3	–	0.005	1.3	1.3
1,2-Dichlorobenzene	95-50-1	–	–	7,200	–	379	–	7.79E-02	29	1.7	29	1.7	–	0.001	29	1.7
1,2-Dichloroethane (EDC)	107-06-2	–	11	480	–	38	–	4.01E-02	0.29	0.019	0.29	0.019	–	0.001	0.29	0.019
1,2-Dichloropropane	78-87-5	–	28	7,200	700	47	–	1.15E-01	0.016	0.0010	0.016	0.0010	–	0.001	0.016	0.0010
1,3,5-Trimethylbenzene	108-67-8	–	–	800	–	602.1	–	0.3585446	–	–	800	800	–	0.001	800	800
1,3-Dichlorobenzene	541-73-1	–	–	–	–	–	–	–	–	–	NE	NE	–	0.001	NE	NE
1,3-Dichloropropane	142-28-9	–	–	–	–	72.17	–	0.0399019	–	–	NE	NE	–	0.001	NE	NE
1,4-Dichlorobenzene	106-46-7	–	185	5,600	20	616	–	9.96E-02	0.35	0.019	0.35	0.019	–	0.067	0.35	0.067
2,2-Dichloropropane	594-20-7	–	–	–	–	–	–	–	–	–	NE	NE	–	0.001	NE	NE
2-Butanone (MEK)	78-93-3	–	–	48,000	–	4.51	–	0.0023262	–	–	48,000	48,000	–	0.005	48,000	48,000
2-Chloroethyl Vinyl Ether	110-75-8	–	–	–	–	–	–	–	–	–	NE	NE	–	0.005	NE	NE
2-Chlorotoluene	95-49-8	–	–	1,600	–	382.9	–	0.1459526	–	–	1,600	1,600	–	0.001	1,600	1,600
2-Hexanone	591-78-6	–	–	–	–	15	–	–	–	–	NE	NE	–	0.001	NE	NE
4-Chlorotoluene	106-43-4	–	–	–	–	375	–	–	–	–	NE	NE	–	0.001	NE	NE
4-Methyl-2-Pentanone (Methyl Isobutyl Ketone)	108-10-1	–	–	6,400	–	13	–	5.64E-03	–	–	6,400	6,400	–	0.005	6,400	6,400
Acetone	67-64-1	–	–	72,000	–	0.575	–	1.59E-03	–	–	72,000	72,000	–	0.005	72,000	72,000
Acrolein	107-02-8	–	–	40	–	1	–	4.99E-03	0.020	0.0014	0.020	0.0014	–	0.05	0.05	0.05
Acrylonitrile	107-13-1	–	1.9	3,200	–	9	–	5.64E-03	0.0042	0.00030	0.0042	0.00030	–	0.005	0.005	0.005
Bromobenzene	108-86-1	–	–	–	–	2.34E+02	–	1.01E-01	–	–	NE	NE	–	0.001	NE	NE
Bromochloromethane	74-97-5	–	–	–	–	2.17E+01	–	5.97E-02	–	–	NE	NE	–	0.005	NE	NE
Bromoform	75-25-2	–	130	1,600	–	126	–	2.19E-02	0.18	0.011	0.18	0.011	–	0.001	0.18	0.011
Bromomethane	74-83-9	–	–	112	–	9	–	2.56E-01	4.4	0.28	4.4	0.28	–	0.001	4.4	0.28
Carbon Disulfide	75-15-0	–	–	8,000	–	45.7	–	1.24E+00	–	–	8,000	8,000	–	0.001	8,000	8,000
Carbon Tetrachloride	56-23-5	–	14	320	–	152	–	1.25E+00	0.0032	0.00015	0.0032	0.00015	–	0.001	0.0032	0.0010
Chlorobenzene	108-90-7	–	–	1,600	40	224	–	1.52E-01	7.0	0.41	7.0	0.41	–	0.001	7.0	0.41
Chloroethane	75-00-3	–	–	–	–	21.73	–	4.54E-01	–	–	NE	NE	–	0.005	NE	NE
Chloroform	67-66-3	–	32	800	–	53	–	1.50E-01	0.29	0.019	0.29	0.019	–	0.001	0.29	0.019
Chloromethane	74-87-3	–	–	–	–	6	–	3.61E-01	–	–	NE	NE	–	0.001	NE	NE
Cis-1,2-Dichloroethene	156-59-2	–	–	160	–	35.5	–	1.67E-01	–	–	160	160	–	0.001	160	160
Cis-1,3-Dichloropropene	10061-01-5	–	–	–	–	–	–	–	–	–	NE	NE	–	0.001	NE	NE
Dibromochloromethane	124-48-1	–	12	1600	–	63.1	–	3.21E-02	0.016	0.0010	0.016	0.0010	–	0.001	0.016	0.0010
Dibromomethane	74-95-3	–	–	800	–	21.73	–	3.36E-02	–	–	800	800	–	0.001	800	800
Dichlorobromomethane	75-27-4	–	16	1,600	–	55	–	6.56E-02	0.019	0.0012	0.019	0.0012	–	0.001	0.019	0.0012
Dichlorodifluoromethane (CFC 12)	75-71-8	–	–	16,000	–	43.89	–	1.40E+01	–	–	16,000	16,000	–	0.001	16,000	16,000
1,2-Dibromoethane (EDB)	106-93-4	–	0.50	720	–	66	–	2.66E-02	–	–	0.50	0.50	–	0.001	0.50	0.50
Hexachlorobutadiene	87-68-3	–	13	80	–	53,700	–	3.34E-01	0.54	0.027	0.54	0.027	–	0.005	0.54	0.027
Isopropylbenzene	98-82-8	–	–	8,000	–	698	–	4.70E-01	–	–	8,000	8,000	–	0.001	8,000	8,000
Methyl Iodide	74-88-4	–	–	–	–	–	–	–	–	–	NE	NE	–	0.001	NE	NE
Methyl t-Butyl Ether (MTBE)	1634-04-4	–	560	–	–	11	–	1.80E-02	–	–	560.0	560.0	–	0.001	560.0	560

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			Carcinogen	Non-Carcinogen		Koc (org.)	Kd (metals)	H (Unitless)	Vadose Zone Soil	Saturated Soil	Vadose Zone Soil	Saturated Soil	Background Concentration[5,6,7]	PQL[8]	Vadose Zone Soil	Saturated Soil
Methylene Chloride	75-09-2	--	500	480	--	10	--	8.98E-02	1.1	0.07	1.1	0.07	--	0.002	1.1	0.07
Naphthalene	91-20-3	--	--	1,600	--	1,191	--	1.98E-02	131	7.0	131	7.0	--	0.005	131	7.0
n-Butylbenzene	104-51-8	--	--	4,000	--	1,482	--	6.50E-01	--	--	4,000	4,000	--	0.001	4,000	4,000
n-Propylbenzene	103-65-1	--	--	8,000	--	813	--	4.29E-01	--	--	8,000	8,000	--	0.001	8,000	8,000
p-Isopropyltoluene	99-87-6	--	--	--	--	--	--	--	--	--	NE	NE	--	0.001	NE	NE
sec-Butylbenzene	135-98-8	--	--	8,000	--	1,331	--	0.72	--	--	8,000	8,000	--	0.001	8,000	8,000
Styrene	100-42-5	--	--	16,000	300	912	--	1.13E-01	--	--	300	300	--	0.001	300	300
tert-Butylbenzene	98-06-6	--	--	8,000	--	1,001	--	0.54	--	--	8,000	8,000	--	0.001	8,000	8,000
Tetrachloroethene (PCE)	127-18-4	--	480	480	--	265	--	7.54E-01	0.075	0.0039	0.075	0.0039	--	0.001	0.075	0.0039
Trans-1,2-Dichloroethene	156-60-5	--	--	1,600	--	38	--	3.85E-01	22	1.3	22	1.3	--	0.001	22	1.3
Trans-1,3-Dichloropropene	10061-02-6	--	--	--	--	--	--	--	--	--	NE	NE	--	0.001	NE	NE
Trans-1,4-Dichloro-2-butene	110-57-6	--	--	--	--	132	--	0.027	--	--	NE	NE	--	0.005	NE	NE
Trichloroethene (TCE)	79-01-6	--	12	40	--	94	--	4.22E-01	0.0057	0.00033	0.0057	0.00033	--	0.001	0.0057	0.0010
Trichlorofluoromethane (CFC 11)	75-69-4	--	--	24,000	--	44	--	3.97E+00	--	--	24,000	24,000	--	0.001	24,000	24,000
Vinyl Acetate	108-05-4	--	--	80,000	--	5.25	--	2.10E-02	--	--	80,000	80,000	--	0.005	80,000	80,000
Vinyl Chloride	75-01-4	--	0.67	240	--	18.6	--	1.11E+00	0.0063	0.00031	0.0063	0.00031	--	0.001	0.0063	0.001
Semi-volatile Organic Compounds (SVOCs) (mg/kg)																
1,2,4-Trichlorobenzene	120-82-1	--	35	800	20	1,659	--	5.82E-02	0.037	0.0019	0.037	0.0019	--	0.067	0.067	0.067
1,2-Dichlorobenzene	95-50-1	--	--	7,200	--	379	--	7.79E-02	29	1.7	29	1.7	--	0.067	29	1.7
1,3-Dichlorobenzene	541-73-1	--	--	--	--	--	--	--	--	--	NE	NE	--	0.067	NE	NE
1,4-Dichlorobenzene	106-46-7	--	185	5,600	20	616	--	9.96E-02	0.35	0.019	0.35	0.019	--	0.067	0.35	0.067
2,2'-Oxybis[1-chloropropane]	52438-91-2	--	14	3,200	--	83	--	3.03E-03	0.21	0.014	0.21	0.014	--	0.067	0.21	0.067
2,4,5-Trichlorophenol	95-95-4	--	--	8,000	4	1,597	--	1.78E-04	22	1.1	4	1.1	--	0.33	4	1.1
2,4,6-Trichlorophenol	88-06-2	--	91	80	10	381	--	3.19E-04	0.035	0.0020	0.035	0.0020	--	0.33	0.33	0.33
2,4-Dichlorophenol	120-83-2	--	--	240	--	147	--	1.30E-04	0.24	0.015	0.24	0.015	--	0.33	0.33	0.33
2,4-Dimethylphenol	105-67-9	--	--	1,600	--	209	--	8.20E-05	0.79	0.048	0.79	0.048	--	0.067	0.79	0.07
2,4-Dinitrophenol	51-28-5	--	--	160	20	0.01	--	1.82E-05	1.2	0.086	1.2	0.086	--	0.67	1.2	0.67
2,4-Dinitrotoluene	121-14-2	--	3.2	160	--	96	--	3.80E-06	0.018	0.0011	0.018	0.0011	--	0.33	0.33	0.33
2,6-Dinitrotoluene	606-20-2	--	0.67	24	--	69	--	3.06E-05	--	--	0.67	0.67	--	0.33	0.67	0.67
2-Chloronaphthalene	91-58-7	--	--	6,400	--	2,478	--	1.31E-02	10	0.50	10	0.50	--	0.067	10	0.50
2-Chlorophenol	95-57-8	--	--	400	--	388	--	1.60E-02	0.20	0.011	0.20	0.011	--	0.067	0.20	0.067
2-Nitroaniline	88-74-4	--	--	800	--	111	--	2.41E-06	--	--	800	800	--	0.33	800	800
2-Nitrophenol	88-75-5	--	--	--	--	--	--	--	--	--	NE	NE	--	0.33	NE	NE
3,3'-Dichlorobenzidine	91-94-1	--	2.2	--	--	724	--	1.64E-07	0.092	0.0051	0.092	0.0051	--	0.33	0.33	0.33
3-Nitroaniline	99-09-2	--	--	--	--	--	--	--	--	--	NE	NE	--	0.33	NE	NE
4,6-Dinitro-2-methylphenol	534-52-1	--	--	--	--	754	--	5.72E-05	0.48	0.026	0.48	0.026	--	0.67	0.67	0.67
4-Bromophenyl-phenylether	101-55-3	--	--	--	--	--	--	--	--	--	NE	NE	--	0.067	NE	NE
4-Chloro-3-Methylphenol	59-50-7	--	--	--	--	492	--	1.00E-04	0.50	0.028	0.50	0.028	--	0.33	0.50	0.33
4-Chloroaniline	106-47-8	--	5.0	320	--	66	--	1.36E-05	--	--	5.0	5.0	--	0.33	5.0	5.0
4-Chlorophenyl-phenylether	7005-72-3	--	--	--	--	--	--	--	--	--	NE	NE	--	0.067	NE	NE
4-Nitroaniline	100-01-6	--	--	--	--	109		5.15E-08	--	--	NE	NE	--	0.33	NE	NE

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			Carcinogen	Non-Carcinogen		Koc (org.)	Kd (metals)	H (Unitless)	Vadose Zone Soil	Saturated Soil	Vadose Zone Soil	Saturated Soil	Background Concentration[5,6,7]	PQL[8]	Vadose Zone Soil	Saturated Soil
4-Nitrophenol	100-02-7	--	--	--	7	--	--	--	--	--	7	7	--	0.33	7	7
Benzoic acid	65-85-0	--	--	320,000	--	0.6	--	6.31E-05	--	--	320,000	320,000	--	0.67	320,000	320,000
Benzyl alcohol	100-51-6	--	--	8,000	--	21	--	1.38E-05	--	--	8,000	8,000	--	0.33	8,000	8,000
bis(2-Chloroethoxy)methane	111-91-1	--	--	--	--	14	--	1.57E-04	--	--	NE	NE	--	0.067	NE	NE
bis(2-chloroethyl)ether	111-44-4	--	0.91	--	--	76	--	7.38E-04	0.0055	0.00036	0.0055	0.00036	--	0.067	0.067	0.067
bis(2-Ethylhexyl)phthalate	117-81-7	--	71	1600	--	111,123	--	4.18E-06	6.7	0.33	6.7	0.33	--	0.067	6.7	0.33
Butylbenzylphthalate	85-68-7	--	530	16000	--	13,746	--	5.17E-05	0.28	0.014	0.28	0.014	--	0.067	0.28	0.067
Carbazole	86-74-8	--	--	--	--	3,390	--	6.26E-07	--	--	NE	NE	--	0.067	NE	NE
Dibenzofuran	132-64-9	--	--	80	--	9,161	--	8.71E-03	--	--	80	80	--	0.067	80	80
Diethylphthalate	84-66-2	--	--	64,000	100	82	--	1.85E-05	3.4	0.22	3.4	0.22	--	0.067	3.4	0.22
Dimethylphthalate	131-11-3	--	--	--	200	--	--	--	--	--	200	200	--	0.067	200	200
Di-n-butylphthalate	84-74-2	--	--	8,000	200	1,567	--	3.85E-08	1.1	0.056	1.1	0.056	--	0.067	1.1	0.067
Di-n-octylphthalate	117-84-0	--	--	800	--	83,200,000	--	2.74E-03	--	--	800	800	--	0.067	800	800
Hexachlorobenzene	118-74-1	--	0.63	64	17	80,000	--	5.41E-02	1.6	0.080	0.63	0.080	--	0.067	0.63	0.080
Hexachlorobutadiene	87-68-3	--	13	80	--	53,700	--	3.34E-01	3.2	0.16	3.2	0.16	--	0.067	3.2	0.16
Hexachlorocyclopentadiene	77-47-4	--	--	480	10	200,000	--	1.11E+00	20	1.0	10	1.0	--	0.067	10	1.0
Hexachloroethane	67-72-1	--	25	56	--	1,780	--	1.59E-01	0.080	0.0041	0.080	0.0041	--	0.067	0.080	0.067
Isophorone	78-59-1	--	1,100	16,000	--	47	--	2.72E-04	0.54	0.037	0.54	0.037	--	0.067	0.54	0.067
Nitrobenzene	98-95-3	--	--	160	40	119	--	9.84E-04	2.0	0.13	2.0	0.13	--	0.067	2.0	0.13
n-Nitroso-di-n-propylamine	621-64-7	--	0.14	--	--	24	--	9.23E-05	0.0045	0.00031	0.0045	0.00031	--	0.067	0.067	0.067
n-Nitrosodiphenylamine	86-30-6	--	200	--	20	1,290	--	2.05E-04	0.030	0.0016	0.030	0.0016	--	0.067	0.07	0.067
o-Cresol (2-Methylphenol)	95-48-7	--	--	4,000	--	91	--	4.92E-05	--	--	4,000	4,000	--	0.067	4,000	4,000
p-Cresol (4-Methylphenol)	106-44-5	--	--	8,000	--	300	--	4.09E-05	--	--	8,000	8,000	--	0.067	8,000	8,000
Pentachlorophenol	87-86-5	--	2.5	400	3	592	--	1.00E-06	0.16	0.0088	0.16	0.0088	--	0.17	0.17	0.17
Phenol	108-95-2	--	--	24,000	30	29	--	1.63E-05	915	63	30	30	--	0.033	30	30
Non-carcinogenic Polycyclic Aromatic Hydrocarbons (PAHs) (mg/kg)																
1-Methylnaphthalene	90-12-0	--	35	5,600	--	2,528	--	2.10E-02	--	--	35	35	--	0.005	35	35
2-Methylnaphthalene	91-57-6	--	--	320	--	2,478	--	2.12E-02	--	--	320	320	--	0.005	320	320
Acenaphthene	83-32-9	--	--	4,800	20	4,898	--	6.36E-03	9.2	0.47	9.2	0.47	--	0.005	9.2	0.47
Acenaphthylene	208-96-8	--	--	--	--	--	--	--	--	--	NE	NE	--	0.005	NE	NE
Anthracene	120-12-7	--	--	24,000	--	23,493	--	2.67E-03	190	9.5	190	9.5	--	0.005	190	9.5
Benzo[g,h,i]perylene	191-24-2	--	--	--	--	--	--	--	--	--	NE	NE	--	0.005	NE	NE
Fluoranthene	206-44-0	--	--	3,200	--	49,096	--	6.60E-04	16	0.79	16	0.79	--	0.005	16	0.79
Fluorene	86-73-7	--	--	3,200	30	7,707	--	2.61E-03	11	0.56	11	0.56		0.005	11	0.56
Naphthalene	91-20-3	--	--	1,600	--	1,191	--	1.98E-02	131	7.0	131	7.0	--	0.005	131	7.0
Phenanthrene	85-01-8	--	--	--	--	--	--	--	--	--	NE	NE	--	0.005	NE	NE
Pyrene	129-00-0	--	--	2,400	--	67,992	--	4.51E-04	41	2.0	41	2.0	--	0.005	41	2.0
Carcinogenic Polycyclic Aromatic Hydrocarbons (cPAHs) (mg/kg)																
Benzo[a]anthracene	56-55-3	--	1.4	--	--	357,537	--	1.37E-04	0.072	0.0036	0.072	0.0036	--	0.005	0.072	0.005
Benzo[a]pyrene	50-32-8	--	0.14	--	12	968,774	--	4.63E-05	0.19	0.0097	0.14	0.0097	--	0.005	0.14	0.0097
Benzo[b]fluoranthene	205-99-2	--	1.4	--	--	1,230,000	--	4.55E-03	0.25	0.012	0.25	0.012	--	0.005	0.25	0.012

Analyte	CAS No.	Protection of Human Health and the Environment (MTCA Method A Standard Table Value for Unrestricted Land Use)[1]	Human Health Direct Contact Pathway (MTCA Method B Standard Formula Value for Unrestricted Land Use)		Soil Concentration for Protection of Ecological Receptors[2] (MTCA Table 749-3)	Equilibrium Partition Coefficients[3]			Soil to Groundwater Protection Using Groundwater Preliminary Screening Level[4] (Table 2) per WAC 173-340-740(1)(d) EQ. 747-1/ 747-2		Preliminary Screening Level		Adjustment Factors		Soil Screening Level[9] (After Adjustment for Background and PQL)	
			Carcinogen	Non-Carcinogen		Koc (org.)	Kd (metals)	H (Unitless)	Vadose Zone Soil	Saturated Soil	Vadose Zone Soil	Saturated Soil	Background Concentration[5,6,7]	PQL[8]	Vadose Zone Soil	Saturated Soil
Benzo[k]fluoranthene	207-08-9	--	14	--	--	1,230,000	--	3.40E-05	0.32	0.016	0.32	0.016	--	0.005	0.32	0.016
Chrysene	218-01-9	--	137	--	--	398,000	--	3.88E-03	0.25	0.012	0.25	0.012	--	0.005	0.25	0.012
Dibenz[a,h]anthracene	53-70-3	--	0.14	--	--	1,789,101	--	6.03E-07	0.36	0.018	0.14	0.02	--	0.005	0.14	0.018
Indeno[1,2,3-c,d]pyrene	193-39-5	--	1.4	--	--	3,470,000	--	6.56E-05	0.69	0.035	0.69	0.035	--	0.005	0.69	0.035
cPAHs TEQ	--	--	0.14	--	--	968,774	--	4.63E-05	0.19	0.0097	0.14	0.0097	--	0.005	0.14	0.010
Polychlorinated Biphenyls (PCBs) (mg/kg)																
PCB-aroclor 1016	12674-11-2	--	14	5.6	--	107,300	--	8.18E-03	0.02	0.0011	0.02	0.0011	--	0.05	0.05	0.05
PCB-aroclor 1242	53469-21-9	--	--	--	--	78,100	--	1.40E-02	--	--	NE	NE	--	0.05	NE	NE
PCB-aroclor 1248	12672-29-6	--	--	--	--	76,530	--	1.80E-02	--	--	NE	NE	--	0.05	NE	NE
PCB-aroclor 1254	11097-69-1	--	0.50	1.6	--	130,500	--	1.16E-02	0.03	0.0013	0.03	0.0013	--	0.05	0.05	0.05
PCB-aroclor 1260	11096-82-5	--	0.50	--	--	822,400	--	1.37E-02	0.49	0.025	0.49	0.025	--	0.05	0.49	0.05
Total PCBs (sum of Aroclors or Congeners)	1336-36-3	1	0.50	--	0.65	309,000	--	1.70E-02	0.309	0.0155	0.309	0.0155	--	0.033	0.309	0.033
Dioxins and Furans (ng/kg)																
Total dioxins/furans - human health TEQ	--	--	13	93	2	249,100	--	2.04E-03	0.080	0.0040	0.080	0.0040	5.2	2.2	5.2	5.2

Notes:

[1] MTCA Method A soil cleanup levels are shown for those chemicals for which Method B values are not available (e.g., petroleum hydrocarbons and lead). The MTCA Method A value for total PCBs is also included in the table because it captures the chemical-specific level mandated in the Federal Toxic Substance Control Act.

[2] Lowest ecological indicator soil concentration protective of plants, soil biota, and wildlife.

[3] Values for Kd and/or Koc and/or Henry's Law Constant not available from CLARC were referenced from EPA's Estimation Programs Interface (EPI) Suite version 4.11, Oak Ridge National Laboratory's Risk Assessment Information System or EPA's May 2016 Regional Screening Level tables.

[4] Calculated concentrations protective of groundwater as marine surface water are calculated based on groundwater screening levels. Soil concentrations protective of groundwater as drinking water have not been calculated as groundwater and adjacent marine surface water at the site is not a current or future drinking water source.

[5] Metals background values (Puget Sound Region 90th percentile values) are from *Natural Background Soil Metals Concentrations in Washington State* (Ecology Publication #94-115, 1994).

[6] Background for arsenic as established in the MTCA A Table 745-1 (WAC 173-340-900).

[7] Background for dioxins/furans from "Natural Background for Dioxins/Furans in WA Soils." Ecology Technical Memorandum #8 dated August 9, 2010.

[8] Lowest available PQL value from Analytical Resources, Inc. (ARI) of Tukwila, Washington.

[9] Screening level is based on lowest of soil concentrations protective of human health and the environment (MTCA Method B table value for unrestricted land use sites), human health from direct contact (MTCA Method B standard formula values for carcinogens and non-carcinogens), and terrestrial receptors, adjusted for background and PQL.

[10] Value for gasoline-range petroleum hydrocarbons if benzene is present. If benzene is not present, screening level is 100 mg/kg.

MTCA = Model Toxics Control Act

Koc = Soil organic carbon-water partitioning coefficient (L/kg)

mg/kg = Milligrams per kilogram

NE = not established

Green shading indicates the basis for the preliminary soil screening level.

Kd = Distribution coefficient for metals (L/kg)

H = Henrys Law constant (unitless)

TEQ = toxic equivalent concentration (toxicity equivalency factor [TEF] values are presented in Table 7).

PQL = Practical quantitation limit

mg/kg = Milligrams per kilogram

PQL = Practical quantitation limit

Table 2

Preliminary Groundwater Screening Levels

Bay Wood Products Site

Everett, Washington

Analyte	CAS No.	State Surface Water Quality Criteria[2]			National Toxics Rule[3]			Clean Water Act[4]			MTCA Method B Surface Water Cleanup Level (Standard Formula Value)		Lowest of MTCA Method A and B Groundwater Cleanup Level[5]	Preliminary Screening Level	Adjustment Factors[8]		Groundwater Screening Level[9] (After Adjustment for Background and PQL)
		Marine Water		Protection of Human Health	Marine Protection of Aquatic Life		AWQC for Protection of Human Health	Marine Protection of Aquatic Life		AWQC for Protection of Human Health	Carcinogen	Non-Carcinogen			Background Concentration[6,7]	PQL	
		Acute	Chronic		Acute	Chronic		Acute	Chronic								
Metals[1] (µg/L)																	
Antimony	7440-36-0	--	--	180	--	--	4,300	--	--	640	--	1,037	n/a	180	--	0.2	180
Arsenic	7440-38-2	69	36	10	69	36	0.14	69	36	0.14	0.098	17.68	n/a	0.098	5	3.0	5
Beryllium	7440-41-7	--	--	--	--	--	--	--	--	--	--	273	n/a	273	--	0.6	273
Cadmium	7440-43-9	42	9.3	--	42	9.3	--	40	8.8	--	--	40.5	n/a	8.8	--	0.2	8.8
Chromium (total)[10]	7440-47-3	1,100	50	--	1,100	50	--	1,100	50	--	--	240,000	n/a	50	--	1.0	50
Copper	7440-50-8	4.8	3.1	--	2.4	2.4	--	4.8	3.1	--	--	2,880	n/a	2.4	--	1.0	2.4
Lead	7439-92-1	210	8.1	--	210	8.1	--	210	8.1	--	--	--	n/a	8.1	--	0.4	8.1
Mercury[11]	7439-97-6	1.8	0.025	--	2.1	0.025	0.15	1.8	0.94	0.3	--	--	n/a	0.025	--	0.01	0.025
Nickel	7440744	74	8.2	190	74	8.2	4,600	74	8.2	4,600	--	1,103	n/a	8.2	--	1.0	8.2
Selenium	7782-49-2	290	71	480	290	71	--	290	71	4,200	--	2,701	n/a	71	--	6.0	71
Silver	7440-22-4	1.9	--	--	1.9	--	--	1.9	--	--	--	25,926	n/a	1.9	--	0.2	1.9
Thallium	7440-28-0	--	--	0.27	--	--	6.3	--	--	0.47	--	0.22	n/a	0.22	--	0.2	0.22
Zinc	7440-66-6	90	81	2900	90	81	--	90	81	26,000	--	16,548	n/a	81	--	0.5	81
Petroleum Hydrocarbons[12] (µg/L)																	
Gasoline-Range[13]	--	--	--	--	--	--	--	--	--	--	--	--	800	800	--	250	800
Diesel-Range	--	--	--	--	--	--	--	--	--	--	--	--	500	500	--	250	500
Heavy Oil-Range	--	--	--	--	--	--	--	--	--	--	--	--	500	500	--	500	500
BETX Compounds (µg/L)																	
Benzene[14]	71-43-2	--	--	1.6	--	--	71	--	--	16	23	1,990	n/a	1.6	--	1.0	1.6
Ethylbenzene	100-41-4	--	--	270	--	--	29,000	--	--	130	--	6,823	n/a	130	--	1.0	130
Toluene	108-88-3	--	--	410	--	--	200,000	--	--	520	--	18,855	n/a	410	--	1.0	410
Xylenes	1330-20-7	--	--	--	--	--	--	--	--	--	--	--	1,600	1,600	--	1.0	1,600
Volatile Organic Compounds (VOCs) (µg/L)																	
1,1,1,2-Tetrachloroethane	630-20-6	--	--	--	--	--	--	--	--	--	--	--	1.7	1.7	--	0.2	1.7
1,1,1-Trichloroethane	71-55-6	--	--	160,000	--	--	--	--	--	200,000	--	926,000	n/a	160,000	--	0.2	160,000
1,1,2,2-Tetrachloroethane	79-34-5	--	--	0.46	--	--	11	--	--	3	6.5	10,400	n/a	0.46	--	0.2	0.46
1,1,2-trichloro-1,2,2-trifluoroethane (CFC113)	76-13-1	--	--	--	--	--	--	--	--	--	--	--	240,000	240,000	--	0.2	240,000
1,1,2-Trichloroethane	79-00-5	--	--	1.8	--	--	42	--	--	8.9	25	2,305	n/a	1.8	--	0.2	1.8
1,1-Dichloroethane	75-34-3	--	--	--	--	--	--	--	--	--	--	--	7.7	7.7	--	0.2	7.7
1,1-Dichloroethene	75-35-4	--	--	4,100	--	--	3.2	--	--	20,000	--	23,100	n/a	3.2	--	0.2	3.2
1,1-Dichloropropene	563-58-6	--	--	--	--	--	--	--	--	--	--	--	--	NE	--	0.20	NE
1,2,3-Trichlorobenzene	87-61-6	--	--	--	--	--	--	--	--	--	--	--	--	NE	--	0.50	NE
1,2,3-Trichloropropane	96-18-4	--	--	--	--	--	--	--	--	--	--	--	0.0015	0.0015	--	0.5	0.5
1,2,4-Trichlorobenzene	120-82-1	--	--	0.14	--	--	--	--	--	0.076	2.03	236	n/a	0.076	--	0.5	0.5
1,2,4-Trimethylbenzene	95-63-6	--	--	--	--	--	--	--	--	--	--	--	--	NE	--	0.2	NE
1,2-Dibromo-3-chloropropane	96-12-8	--	--	--	--	--	--	--	--	--	--	--	0.055	0.055	--	0.5	0.5

DRAFT

Analyte	CAS No.	State Surface Water Quality Criteria[2]			National Toxics Rule[3]			Clean Water Act[4]			MTCA Method B Surface Water Cleanup Level (Standard Formula Value)		Lowest of MTCA Method A and B Groundwater Cleanup Level[5]	Preliminary Screening Level	Adjustment Factors[8]		Groundwater Screening Level[9] (After Adjustment for Background and PQL)
		Marine Water		Protection of Human Health	Marine Protection of Aquatic Life		AWQC for Protection of Human Health	Marine Protection of Aquatic Life		AWQC for Protection of Human Health					Background Concentration[6,7]	PQL	
		Acute	Chronic		Acute	Chronic		Acute	Chronic		Carcinogen	Non-Carcinogen					
1,2-Dichlorobenzene	95-50-1	--	--	2,500	--	--	17,000	--	--	3,000	--	4,167	n/a	2,500	--	0.2	2,500
1,2-Dichloroethane (EDC)	107-06-2	--	--	120	--	--	99	--	--	650	59	13,000	n/a	59	--	0.2	59
1,2-Dichloropropane	78-87-5	--	--	3.1	--	--	--	--	--	31	44	56,900	n/a	3.1	--	0.2	3.1
1,3,5-Trimethylbenzene	108-67-8	--	--	--	--	--	--	--	--	--	--	--	80	80	--	0.2	80
1,3-Dichlorobenzene	541-73-1	--	--	16	--	--	2,600	--	--	10	--	--	n/a	10	--	0.2	10
1,3-Dichloropropane	142-28-9	--	--	--	--	--	--	--	--	--	--	--	--	NE	--	0.20	NE
1,4-Dichlorobenzene	106-46-7	--	--	580	--	--	2,600.0	--	--	900	21	3,240	n/a	21	--	0.2	21
2,2-Dichloropropane	594-20-7	--	--	--	--	--	--	--	--	--	--	--	--	NE	--	0.20	NE
2-Butanone (MEK)	78-93-3	--	--	--	--	--	--	--	--	--	--	--	4,800	4,800	--	5.0	4,800
2-Chloroethyl Vinyl Ether	110-75-8	--	--	--	--	--	--	--	--	--	--	--	--	NE	--	1.0	NE
2-Chlorotoluene	95-49-8	--	--	--	--	--	--	--	--	--	--	--	160	160	--	1.0	160
2-Hexanone	591-78-6	--	--	--	--	--	--	--	--	--	--	--	--	NE	--	5.00	NE
4-Chlorotoluene	106-43-4	--	--	--	--	--	--	--	--	--	--	--	--	NE	--	0.20	NE
4-Methyl-2-Pentanone (Methyl Isobutyl Ketone)	108-10-1	--	--	--	--	--	--	--	--	--	--	--	640	640	--	5.0	640
Acetone	67-64-1	--	--	--	--	--	--	--	--	--	--	--	7,200	7,200	--	5.0	7,200
Acrolein	107-02-8	--	--	1.1	--	--	780	--	--	400	--	--	n/a	1.1	--	5.0	5.0
Acrylonitrile	107-13-1	--	--	0.028	--	--	0.66	--	--	7.0	0.40	3,460	n/a	0.028	--	1.0	1.0
Bromobenzene	108-86-1	--	--	--	--	--	--	--	--	--	--	--	--	NE	--	0.20	NE
Bromochloromethane	74-97-5	--	--	--	--	--	--	--	--	--	--	--	--	NE	--	0.20	NE
Bromoform	75-25-2	--	--	27	--	--	360	--	--	120	216	13,600	n/a	27	--	0.2	27
Bromomethane	74-83-9	--	--	2,400	--	--	4,000	--	--	10,000	--	955	n/a	955	--	1.0	955
Carbon Disulfide	75-15-0	--	--	--	--	--	--	--	--	--	--	--	800	800	--	0.2	800
Carbon Tetrachloride	56-23-5	--	--	0.35	--	--	4.4	--	--	5	4.9	546	n/a	0.35	--	0.2	0.35
Chlorobenzene	108-90-7	--	--	890	--	--	21,000	--	--	800	--	5,190	n/a	800	--	0.2	800
Chloroethane	75-00-3	--	--	--	--	--	--	--	--	--	--	--	--	NE	--	0.2	NE
Chloroform	67-66-3	--	--	1,200	--	--	470	--	--	2,000	55	6,820	n/a	55	--	0.2	55
Chloromethane	74-87-3	--	--	--	--	--	--	--	--	--	--	--	--	NE	--	0.5	NE
Cis-1,2-Dichloroethene	156-59-2	--	--	--	--	--	--	--	--	--	--	--	16	16	--	0.2	16
Cis-1,3-Dichloropropene	10061-01-5	--	--	--	--	--	--	--	--	--	--	--	--	NE	--	0.2	NE
Dibromochloromethane	124-48-1	--	--	3	--	--	34	--	--	21	20	13,600	n/a	3	--	0.2	3
Dibromomethane	74-95-3	--	--	--	--	--	--	--	--	--	--	--	80	80	--	0.2	80
Dichlorobromomethane	75-27-4	--	--	3.6	--	--	22	--	--	27	28	13,600	n/a	3.6	--	0.2	3.6
Dichlorodifluoromethane (CFC 12)	75-71-8	--	--	--	--	--	--	--	--	--	--	--	1,600	1,600	--	0.2	1,600
1,2-Dibromoethane (EDB)	106-93-4	--	--	--	--	--	--	--	--	--	--	--	0.01	0.01	--	0.2	0.2
Hexachlorobutadiene	87-68-3	--	--	4.1	--	--	50	--	--	0.01	30	926	n/a	0.01	--	0.5	0.5
Isopropylbenzene	98-82-8	--	--	--	--	--	--	--	--	--	--	--	800	800	--	0.2	800
Methyl Iodide	74-88-4	--	--	--	--	--	--	--	--	--	--	--	--	NE	--	1.0	NE
Methyl t-Butyl Ether (MTBE)	1634-04-4	--	--	--	--	--	--	--	--	--	--	--	20	20	--	0.5	20
Methylene Chloride	75-09-2	--	--	250	--	--	1,600	--	--	1,000	3,600	17,300	n/a	250	--	1.0	250
Naphthalene	91-20-3	--	--	--	--	--	--	--	--	--	--	4,710	n/a	4,710	--	0.5	4,710
n-Butylbenzene	104-51-8	--	--	--	--	--	--	--	--	--	--	--	400	400	--	0.2	400
n-Propylbenzene	103-65-1	--	--	--	--	--	--	--	--	--	--	--	800	800	--	0.2	800
p-Isopropyltoluene	99-87-6	--	--	--	--	--	--	--	--	--	--	--	--	NE	--	0.2	NE

GeoEngineers

Analyte	CAS No.	State Surface Water Quality Criteria[2]			National Toxics Rule[3]			Clean Water Act[4]			MTCA Method B Surface Water Cleanup Level (Standard Formula Value)		Lowest of MTCA Method A and B Groundwater Cleanup Level[5]	Preliminary Screening Level	Adjustment Factors[8]		Groundwater Screening Level[9] (After Adjustment for Background and PQL)
		Marine Water		Protection of Human Health	Marine Protection of Aquatic Life		AWQC for Protection of Human Health	Marine Protection of Aquatic Life		AWQC for Protection of Human Health					Background Concentration[6,7]	PQL	
		Acute	Chronic		Acute	Chronic		Acute	Chronic		Carcinogen	Non-Carcinogen					
sec-Butylbenzene	135-98-8	--	--	--	--	--	--	--	--	--	--	--	800	800	--	0.2	800
Styrene	100-42-5	--	--	--	--	--	--	--	--	--	--	--	100	100	--	0.2	100
tert-Butylbenzene	98-06-6	--	--	--	--	--	--	--	--	--	--	--	800	800	--	0.2	800
Tetrachloroethene (PCE)	127-18-4	--	--	7.1	--	--	8.9	--	--	29	100	502	n/a	7.1	--	0.2	7.1
Trans-1,2-Dichloroethene	156-60-5	--	--	5,800	--	--	--	--	--	4,000	--	32,400	n/a	4,000	--	0.2	4,000
Trans-1,3-Dichloropropene	10061-02-6	--	--	--	--	--	--	--	--	--	--	--	--	NE	--	0.2	NE
Trans-1,4-Dichloro-2-butene	110-57-6	--	--	--	--	--	--	--	--	--	--	--	--	NE	--	0.2	NE
Trichloroethene (TCE)	79-01-6	--	--	0.86	--	--	81	--	--	7	13	118	n/a	0.86	--	0.2	0.86
Trichlorofluoromethane (CFC 11)	75-69-4	--	--	--	--	--	--	--	--	--	--	--	2,400	2,400	--	0.2	2,400
Vinyl Acetate	108-05-4	--	--	--	--	--	--	--	--	--	--	--	8,000	8,000	--	0.2	8,000
Vinyl Chloride	75-01-4	--	--	0.26	--	--	525	--	--	1.6	3.7	6,480	n/a	0.26	--	1.0	1.0
Semi-volatile Organic Compounds (SVOCs) (µg/L)																	
1,2,4-Trichlorobenzene	120-82-1	--	--	0.14	--	--	--	--	--	0.076	2.0	236	n/a	0.076	--	1.0	1.0
1,2-Dichlorobenzene	95-50-1	--	--	2,500	--	--	17,000	--	--	3,000	--	4,170	n/a	2,500	--	1.0	2,500
1,3-Dichlorobenzene	541-73-1	--	--	16	--	--	2,600	--	--	10	--	--	n/a	10	--	1.0	10
1,4-Dichlorobenzene	106-46-7	--	--	580	--	--	2,600	--	--	900	21	3,240	n/a	21	--	1.0	21
2,2'-Oxybis[1-chloropropane]	108-60-1	--	--	--	--	--	--	--	--	--	37	42,000	n/a	37	--	1.0	37
2,4,5-Trichlorophenol	95-95-4	--	--	--	--	--	--	--	--	600	--	--	n/a	600	--	5.0	600
2,4,6-Trichlorophenol	88-06-2	--	--	0.28	--	--	6.5	--	--	2.8	3.93	17.3	n/a	0.3	--	3.0	3.0
2,4-Dichlorophenol	120-83-2	--	--	34	--	--	790	--	--	60	--	190	n/a	34	--	3.0	34
2,4-Dimethylphenol	105-67-9	--	--	97	--	--	--	--	--	3,000	--	552	n/a	97	--	3.0	97
2,4-Dinitrophenol	51-28-5	--	--	610	--	--	14,000	--	--	300	--	3,457	n/a	300	--	20	300
2,4-Dinitrotoluene	121-14-2	--	--	0.18	--	--	9.1	--	--	1.7	5.5	1,365	n/a	0.2	--	3.0	3.0
2,6-Dinitrotoluene	606-20-2	--	--	--	--	--	--	--	--	--	--	--	0.058	0.058	--	3.0	3.0
2-Chloronaphthalene	91-58-7	--	--	180	--	--	--	--	--	1,000	--	1,040	n/a	180	--	1.0	180
2-Chlorophenol	95-57-8	--	--	17	--	--	--	--	--	--	--	100	n/a	17	--	1.0	17
2-Nitroaniline	88-74-4	--	--	--	--	--	--	--	--	--	--	--	160	160	--	3.0	160
2-Nitrophenol	88-75-5	--	--	--	--	--	--	--	--	--	--	--	--	NE	--	3.0	NE
3,3'-Dichlorobenzidine	91-94-1	--	--	0.0033	--	--	0.077	--	--	0.15	0.046	--	n/a	0.003	--	5.0	5.0
3-Nitroaniline	99-09-2	--	--	--	--	--	--	--	--	--	--	--	--	NE	--	3.0	NE
4,6-Dinitro-2-methylphenol	534-52-1	--	--	25	--	--	--	--	--	--	--	--	--	25	--	10.0	25.0
4-Bromophenyl-phenylether	101-55-3	--	--	--	--	--	--	--	--	--	--	--	--	NE	--	1.0	NE
4-Chloro-3-methylphenol	59-50-7	--	--	36	--	--	--	--	--	--	--	--	--	36	--	3.0	36.0
4-Chloroaniline	106-47-8	--	--	--	--	--	--	--	--	--	--	--	0.22	0.22	--	5.0	5
4-Chlorophenyl-phenylether	7005-72-3	--	--	--	--	--	--	--	--	--	--	--	--	NE	--	1.0	NE
4-Nitroaniline	100-01-6	--	--	--	--	--	--	--	--	--	--	--	--	NE	--	3.0	NE
4-Nitrophenol	100-02-7	--	--	--	--	--	--	--	--	--	--	--	--	NE	--	10.0	NE
Benzoic acid	65-85-0	--	--	--	--	--	--	--	--	--	--	--	64,000	64,000	--	20.0	64,000
Benzyl alcohol	100-51-6	--	--	--	--	--	--	--	--	--	--	--	800	800	--	2.0	800
bis(2-Chloroethoxy)methane	111-91-1	--	--	--	--	--	--	--	--	--	--	--	--	NE	--	1.0	NE
bis(2-chloroethyl)ether	111-44-4	--	--	0.06	--	--	1.4	--	--	2.2	0.85	--	n/a	0.06	--	1.0	1.0
bis(2-Ethylhexyl)phthalate	117-81-7	--	--	0.25	--	--	5.9	--	--	0.37	3.6	399	n/a	0.25	--	3.0	3.0
Butylbenzylphthalate	85-68-7	--	--	0.58	--	--	--	--	--	0.10	8.3	1,260	n/a	0.10	--	1.0	1.0

Analyte	CAS No.	State Surface Water Quality Criteria[2]			National Toxics Rule[3]			Clean Water Act[4]			MTCA Method B Surface Water Cleanup Level (Standard Formula Value)		Lowest of MTCA Method A and B Groundwater Cleanup Level[5]	Preliminary Screening Level	Adjustment Factors[8]		Groundwater Screening Level[9] (After Adjustment for Background and PQL)
		Marine Water		Protection of Human Health	Marine Protection of Aquatic Life		AWQC for Protection of Human Health	Marine Protection of Aquatic Life		AWQC for Protection of Human Health					Background Concentration[6,7]	PQL	
		Acute	Chronic		Acute	Chronic		Acute	Chronic		Carcinogen	Non-Carcinogen					
Carbazole	86-74-8	--	--	--	--	--	--	--	--	--	--	--	--	NE	--	1.0	NE
Dibenzofuran	132-64-9	--	--	--	--	--	--	--	--	--	--	--	16	16	--	1.0	16
Diethylphthalate	84-66-2	--	--	5,000	--	--	120,000	--	--	600	--	28,412	n/a	600	--	1.0	600
Dimethylphthalate	131-11-3	--	--	130,000	--	--	2,900,000	--	--	2,000	--	--	n/a	2,000	--	1.0	2,000
Di-n-butylphthalate	84-74-2	--	--	510	--	--	12,000	--	--	30	--	2,913	n/a	30	--	1.0	30
Di-n-octylphthalate	117-84-0	--	--	--	--	--	--	--	--	--	--	--	160	160	--	1.0	160
Hexachlorobenzene	118-74-1	--	--	0.000052	--	--	0.00077	--	--	0.000079	0.0005	0.24	n/a	0.000052	--	1.0	1
Hexachlorobutadiene	87-68-3	--	--	4.1	--	--	50	--	--	0.01	30	926	n/a	0.01	--	3.0	3.0
Hexachlorocyclopentadiene	77-47-4	--	--	630	--	--	17,000	--	--	4	--	3,620	n/a	4	--	5.0	5.0
Hexachloroethane	67-72-1	--	--	0.13	--	--	8.9	--	--	0.1	1.86	21	n/a	0.1	--	2.0	2.0
Isophorone	78-59-1	--	--	110	--	--	600	--	--	1,800	1,550	118,000	n/a	110	--	1.0	110
Nitrobenzene	98-95-3	--	--	320	--	--	1,900	--	--	600	--	1,790	n/a	320	--	1.0	320
n-Nitroso-di-n-propylamine	621-64-7	--	--	0.058	--	--	--	--	--	0.51	0.84	--	n/a	0.06	--	1.0	1.0
n-Nitrosodiphenylamine	86-30-6	--	--	0.69	--	--	16	--	--	6.0	9.5	--	n/a	0.7	--	1.0	1.0
o-Cresol (2-Methylphenol)	95-48-7	--	--	--	--	--	--	--	--	--	--	--	400	400	--	1.0	400
p-Cresol (4-Methylphenol)	106-44-5	--	--	--	--	--	--	--	--	--	--	--	800	800	--	2.0	800
Pentachlorophenol	87-86-5	13	7.9	0.1	13	7.9	8.2	13	7.9	0.04	1.5	1,180	n/a	0.04	--	10	10
Phenol	108-95-2	--	--	200,000	--	--	4,600,000	--	--	300,000	--	556,000	n/a	200,000	--	1.0	200,000
Non-carcinogenic Polycyclic Aromatic Hydrocarbons (PAHs) (µg/L)																	
1-Methylnaphthalene	90-12-0	--	--	--	--	--	--	--	--	--	--	--	1.5	1.5	--	1.0	1.5
2-Methylnaphthalene	91-57-6	--	--	--	--	--	--	--	--	--	--	--	32	32	--	1.0	32
Acenaphthene	83-32-9	--	--	110	--	--	--	--	--	90	--	648	n/a	90	--	1.0	90
Acenaphthylene	208-96-8	--	--	--	--	--	--	--	--	--	--	--	--	NE	--	1.0	NE
Anthracene	120-12-7	--	--	4,600	--	--	110,000	--	--	400	--	25,926	n/a	400	--	1.0	400
Benzo[g,h,i]perylene	191-24-2	--	--	--	--	--	--	--	--	--	--	--	--	NE	--	1.0	NE
Fluoranthene	206-44-0	--	--	16	--	--	370	--	--	20	--	86	n/a	16	--	1.0	16
Fluorene	86-73-7	--	--	610	--	--	14,000	--	--	70	--	3,457	n/a	70	--	1.0	70
Naphthalene	91-20-3	--	--	--	--	--	--	--	--	--	--	4,710	n/a	4,710	--	1.0	4,710
Phenanthrene	85-01-8	--	--	--	--	--	--	--	--	--	--	--	--	NE	--	1.0	NE
Pyrene	129-00-0	--	--	460	--	--	11,000	--	--	30	--	2,593	n/a	30	--	1.0	30
Carcinogenic Polycyclic Aromatic Hydrocarbons (cPAHs) (µg/L)																	
Benzo[a]anthracene	56-55-3	--	--	0.021	--	--	0.031	--	--	0.0013	0.30	--	n/a	0.0013	--	0.01	0.01
Benzo[a]pyrene	50-32-8	--	--	0.0021	--	--	0.031	--	--	0.00013	0.03	--	n/a	0.00013	--	0.01	0.01
Benzo[b]fluoranthene	205-99-2	--	--	0.021	--	--	0.031	--	--	0.0013	0.30	--	n/a	0.0013	--	0.01	0.01
Benzo[k]fluoranthene	207-08-9	--	--	0.21	--	--	0.031	--	--	0.013	3.0	--	n/a	0.013	--	0.01	0.013
Chrysene	218-01-9	--	--	2.1	--	--	0.031	--	--	0.13	30	--	n/a	0.031	--	0.01	0.031
Dibenz[a,h]anthracene	53-70-3	--	--	0.0021	--	--	0.031	--	--	0.00013	0.03	--	n/a	0.00013	--	0.01	0.01
Indeno[1,2,3-c,d]pyrene	193-39-5	--	--	0.021	--	--	0.031	--	--	0.0013	0.30	--	n/a	0.0013	--	0.01	0.01
cPAHs TEQ	--	--	--	0.0021	--	--	0.031	--	--	0.00013	0.03	--	n/a	0.00013	--	0.01	0.01
Polychlorinated Biphenyls (PCBs) (µg/L)																	
PCB-aroclor 1016	12674-11-2	--	--	--	--	0.03	--	--	--	--	0.0030	0.0059	n/a	0.0030	--	0.01	0.01
PCB-aroclor 1242	53469-21-9	--	--	--	--	--	--	--	--	--	--	--	--	NE	--	0.01	NE

Analyte	CAS No.	State Surface Water Quality Criteria[2]			National Toxics Rule[3]			Clean Water Act[4]			MTCA Method B Surface Water Cleanup Level (Standard Formula Value)		Lowest of MTCA Method A and B Groundwater Cleanup Level[5]	Preliminary Screening Level	Adjustment Factors[8]		Groundwater Screening Level[9] (After Adjustment for Background and PQL)
		Marine Water		Protection of Human Health	Marine Protection of Aquatic Life		AWQC for Protection of Human Health	Marine Protection of Aquatic Life		AWQC for Protection of Human Health	Carcinogen	Non-Carcinogen			Background Concentration[6,7]	PQL	
		Acute	Chronic		Acute	Chronic		Acute	Chronic								
PCB-aroclor 1248	12672-29-6	--	--	--	--	--	--	--	--	--	--	--	--	NE	--	0.01	NE
PCB-aroclor 1254	11097-69-1	--	--	--	--	0.03	--	--	--	--	0.00011	0.0017	n/a	0.00011	--	0.01	0.01
PCB-aroclor 1260	11096-82-5	--	--	--	--	0.03	--	--	--	--	--	--	n/a	0.030	--	0.01	0.03
Total PCBs (sum of Aroclors or Congeners)	1336-36-3	10	0.03	0.00017	--	0.03	0.00017	--	0.03	0.000064	0.00011	--	n/a	0.000064	--	0.05	0.05
Dioxins and Furans (ng/L)																	
Total dioxins/furans - human health TEQ	--	--	--	0.000064	--	--	0.000014	--	--	0.0000051	0.000010	0.00036	n/a	0.0000051	--	0.016	0.016

Notes:

[1] Metals criteria apply to either the dissolved metals fraction or total metals fraction. The groundwater metals concentrations for both fractions will initially be screened against the preliminary screening levels. Additional evaluation may be necessary to evaluate groundwater concentrations depending on the fraction of groundwater that the preliminary screening level is based on.

[2] Protection of aquatic life and human health from WAC 173-201A-240.

[3] Protection of aquatic life and human health from 40 CFR Part 131 (National Toxics Rule).

[4] National Recommended Water Quality Criteria (EPA 2015).

[5] The preliminary screening levels provided in this column are based on protection of groundwater as drinking water and are being used at the request of Ecology. Screening and cleanup levels based on drinking water are not applicable to groundwater at the Site as groundwater is not a current or future drinking water source and the highest beneficial use of groundwater is as surface water. Surface water at the Site is marine water and is non-potable. Groundwater cleanup levels will be developed based on groundwater criteria applicable to the Site. The values presented are the lowest of the MTCA Method A and Method B carcinogenic and non-carcinogenic criteria for groundwater. These values are only included for analytes without available surface water criteria.

[6] Background concentration for Washington State.

[7] Background for arsenic as established in the MTCA Method A Table 720-1 (WAC 173-340-900).

[8] Lowest available PQL value from Analytical Resources, Inc. (ARI) of Tukwila, Washington identified in the Work Plan (GeoEngineers 2014). The PQL values for cPAH TEQ and total PCBs are also based on the lowest available values from ARI.

[9] Screening level is based on lowest of Federal and State marine surface water concentrations protective of aquatic life and human health from consumption of aquatic life including MTCA Method B standard formula values for carcinogens and non-carcinogen, and adjusted for background and the practical quantification limit (PQL) for all analytes with available surface water criteria. For analytes for which surface water criteria are not available, the screening level is based on protection of groundwater as drinking water (see footnote 5).

[10] State Surface Water Quality Criteria, National Toxic Rule and Clean Water Act values are based on hexavalent chromium; trivalent chromium values are not available. MTCA Method B Surface Water Cleanup Levels are based on trivalent chromium.

[11] Clean Water Act, Ambient Water Quality Criteria (AWQC) for Protection of Human Health value for mercury is based on methylmercury.

[12] MTCA Method A groundwater cleanup level.

[13] Value for gasoline-range petroleum hydrocarbons if benzene is present. If benzene is not present, screening level is 1,000 µg/L.

[14] The Clean Water Act, AWQC for Protection of Human Health value for benzene (16 µg/L) is the lower end of EPA's recommended range of 16 to 58 µg/L. The lower value is being used as the preliminary screening level at the request of Ecology. The CLARC Master Spreadsheet recommended using the upper end of EPA's range (14 to 51 µg/L) in the August 2015 version.

AWQC = Ambient Water Quality Criteria

MTCA = Model Toxics Control Act

PQL = Practical quantitation limit

-- = No screening criteria available.

µg/L = Microgram per liter

n/a = not applicable. Value not included because an applicable surface water criterion is available.

ng/L = Nanogram per liter

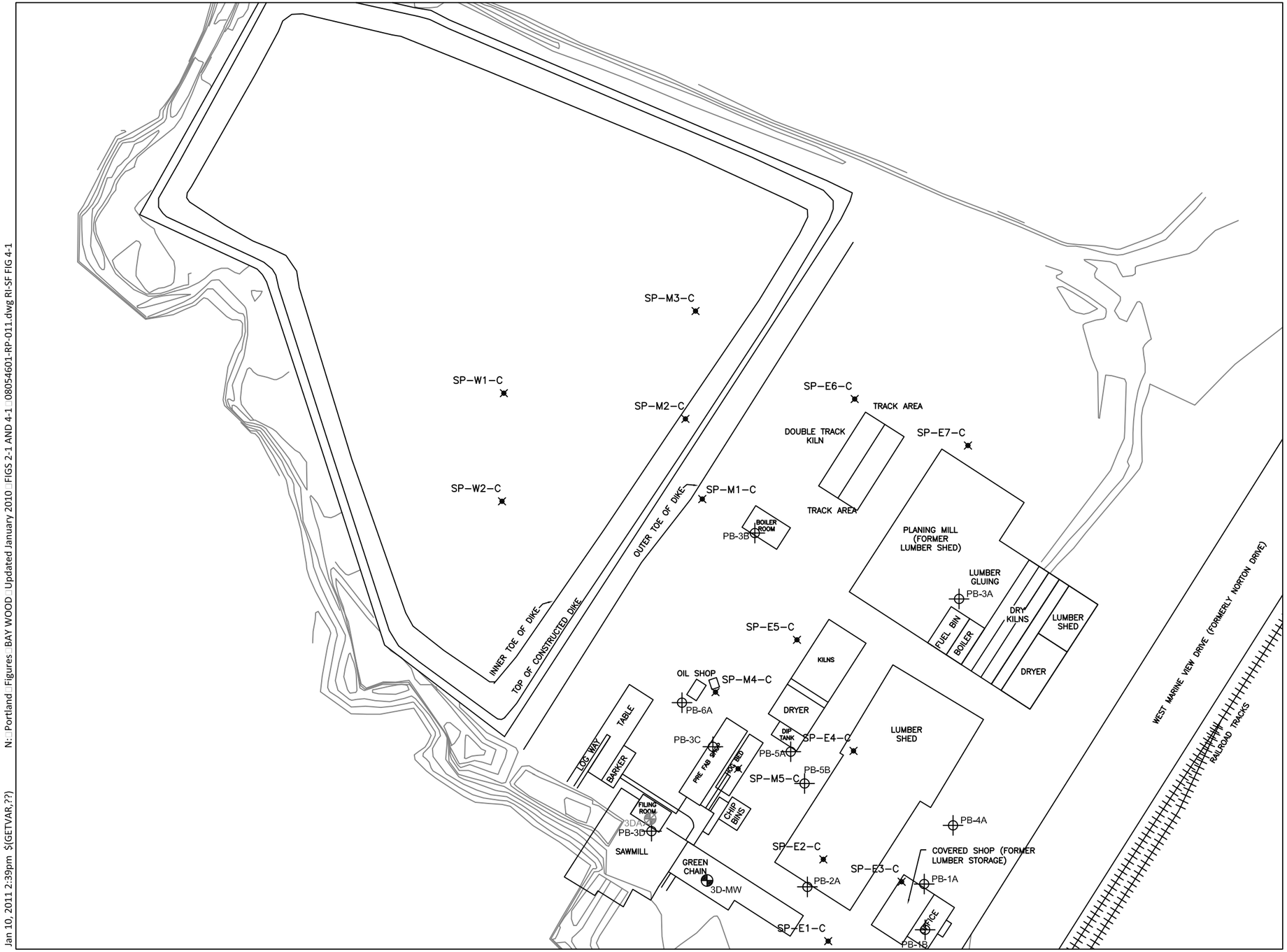
NE = Not established

TEQ = Toxic equivalent concentration (toxicity equivalency factor (TEF) values are presented in Table 4).

Green shading indicates the basis for the preliminary groundwater screening level.

ATTACHMENT B

Historical Sampling Locations



LEGEND:

- FORMER SITE FEATURES
- GEOPROBE BORING LOCATION (SLR 2009)
- SOIL STOCKPILE COMPOSITE SAMPLE LOCATION (SLR 2009)
- MONITORING WELL LOCATION (SLR 2010)
- INCOMPLETE MONITORING WELL (MET REFUSAL)

0 100
Scale in Feet

NOTES:

1. OCTOBER 1995 PRESTON POINT POST EVACUATION SURVEY COMPLETED BY REID MIDDLETON, LYNWOOD, WASHINGTON.
2. JANUARY 1, 1971 PUBLISHER FOREST PRODUCTS PLANT LAYOUT
3. VARIOUS SANBORN MAPS AND AERIAL PHOTOGRAPHS
4. THIS DRAWING IS FOR CONCEPTUAL PURPOSES ONLY. DATA ARE NOT GEOREFERENCED AND ACTUAL LOCATIONS MAY VARY. NOT ALL STRUCTURES ARE SHOWN.

SOURCE: SLR DRAWING "SITE PLAN WITH 2009 UPLAND SAMPLING LOCATIONS", DATED OCTOBER 25, 2010.

Jan 10, 2011 2:39pm $(GETVAR,??) N:\Portland\Figures\BAY WOOD\Updated January 2010\FIGS 2-1 AND 4-1\08054601-RP-011.dwg RI-SF FIG 4-1

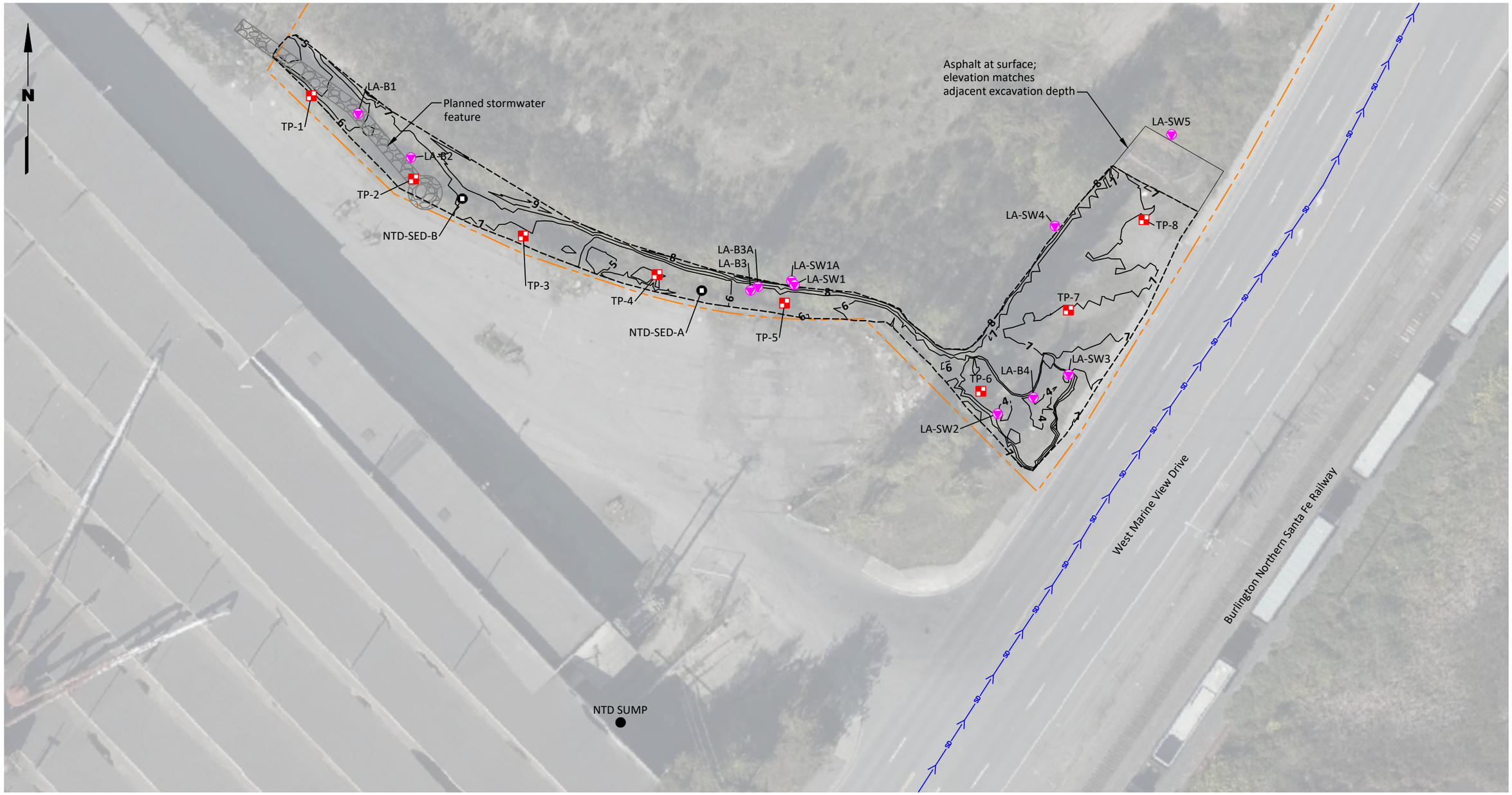
ANCHOR QEA

SLR

Figure 4-1
Site Plan with 2009 Upland Sampling Locations
Bay Wood Products RI/FS

ATTACHMENT C

Low Area Excavation and Cap Figures and Compliance Monitoring Analytical Results



Legend

- Low Area Compliance Monitoring Sampling Location
- Low Area Characterization Test Pit/Sampling Location
- Soil Sample Location (SLR 2018)
- City of Everett Stormdrain
- Site Boundary
- 2021 As-Built Excavation Contour (1ft interval)
- Excavation Limits

0 40 80

Scale in Feet

Note

1. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

Source: Strider Construction, 2021; GeoEngineers 2018; Metron 2018; SLR 2018; ©Bing 2019

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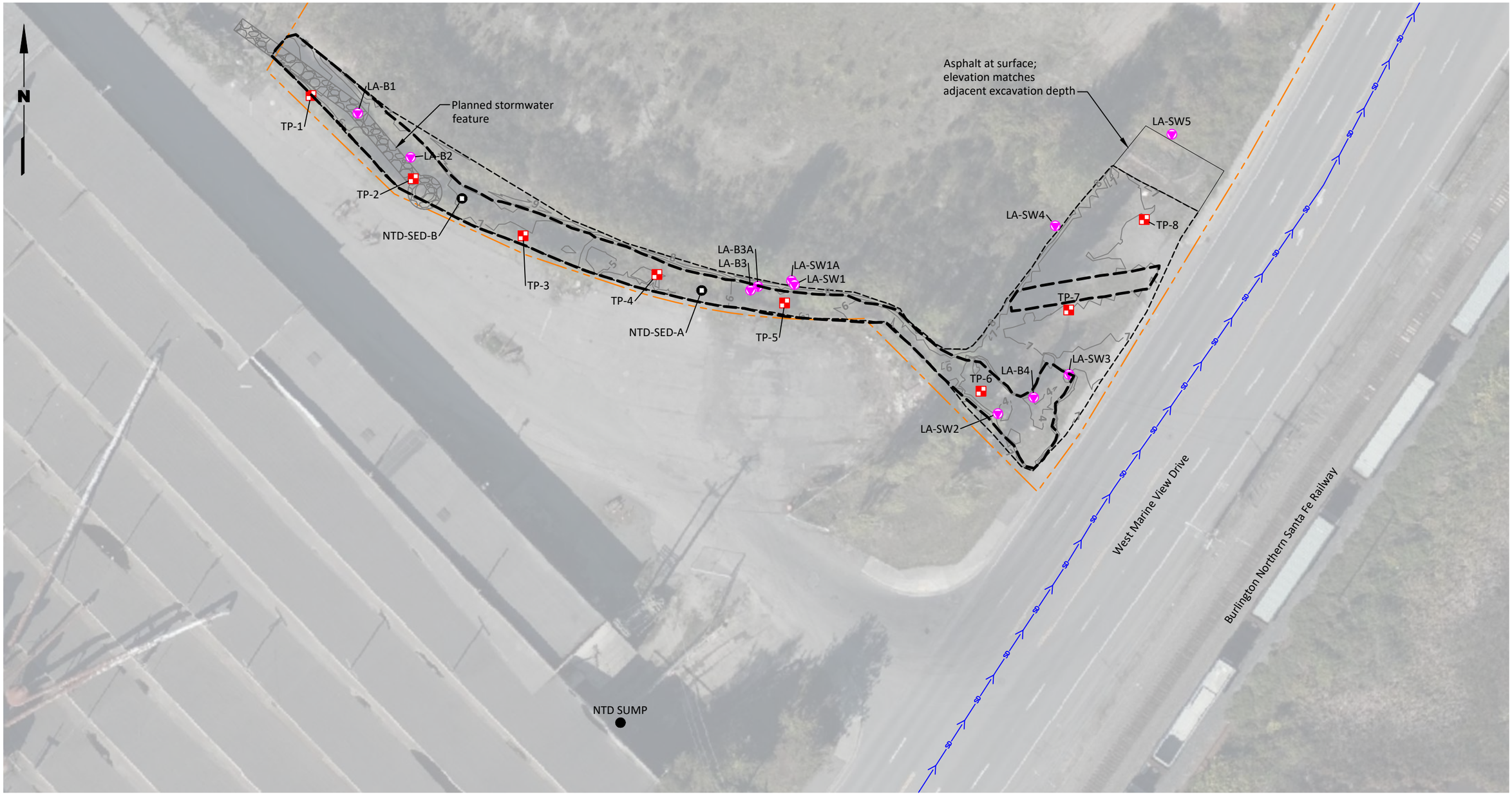
Baywood Products 2nd Interim Action Everett, Washington	**Low Area Excavation and Compliance Monitoring Sampling Locations**	Figure C-1

Landau Associates | G:\Projects\147\053\010\019\Low Area As-builts\F02 LowAreaExcavation.dwg | 5/7/2021 10:53 AM | EZICK



Legend

- Low Area Compliance Monitoring Sampling Location
- Low Area Characterization Test Pit/Sampling Location
- Soil Sample Location (SLR 2018)
- City of Everett Stormdrain
- Site Boundary
- 2021 As-Built Excavation Contour (1ft interval)
- Excavation Limits
- Limits of Critterfence/Geotextile Cap

0 40 80

Scale in Feet

Note

1. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

Source: Strider Construction, 2021; GeoEngineers 2018; Metron 2018; SLR 2018; ©Bing 2019

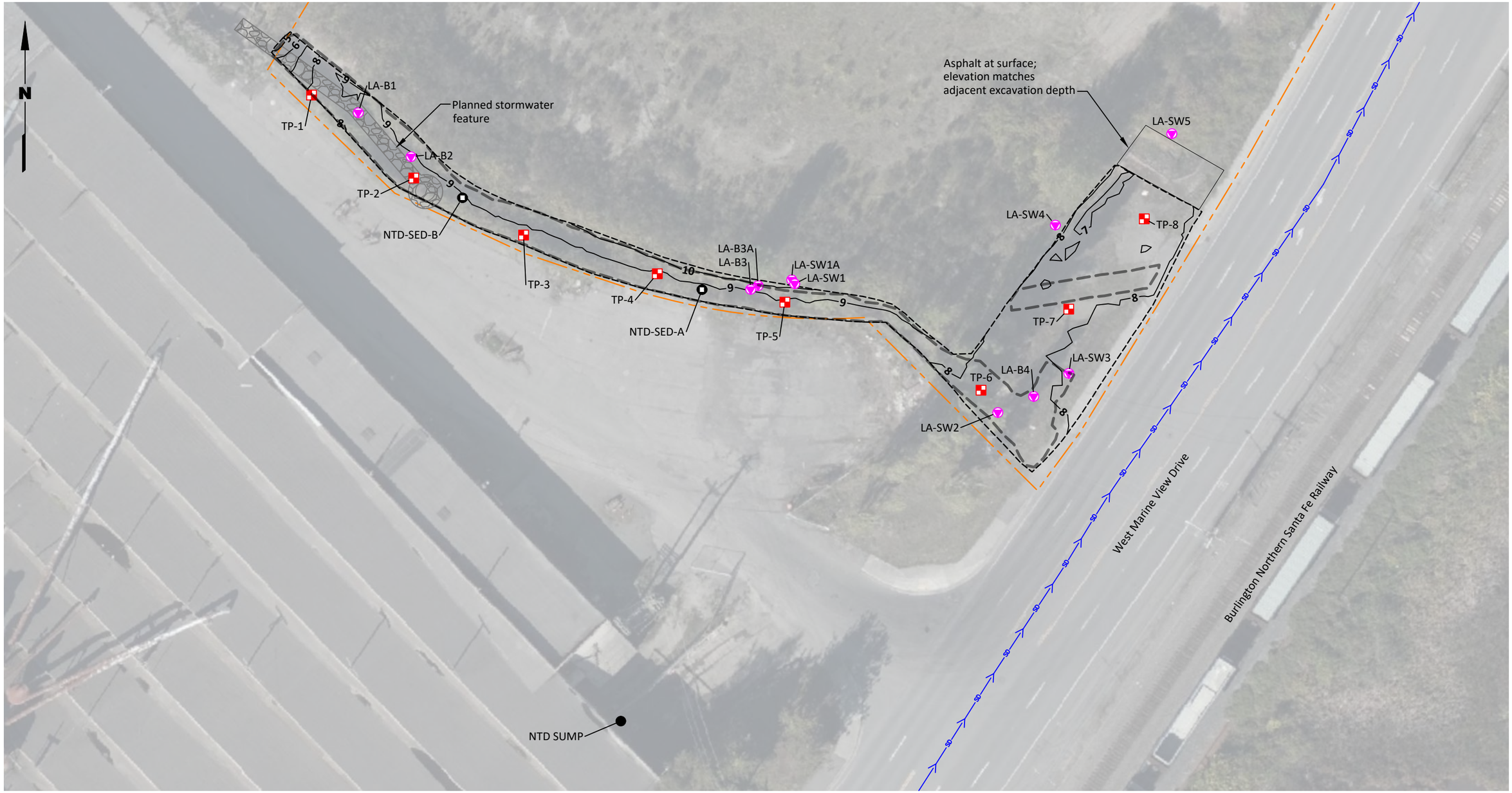
LANDAU ASSOCIATES

Baywood Products
2nd Interim Action
Everett, Washington

Low Area Cap Extent

Figure
C-2

Landau Associates | G:\Projects\147\053\010\019\Low Area As-builts\F03 Low Area Cap Extent.dwg | 5/7/2021 11:19 AM | EZICK



Landau Associates | G:\Projects\147\053\010\019\Low Area As-builts\F04 Low Area FG.dwg | 5/7/2021 11:23 AM | EZICK

Legend

- Low Area Compliance Monitoring Sampling Location
- Low Area Characterization Test Pit/Sampling Location
- Soil Sample Location (SLR 2018)
- City of Everett Stormdrain
- Site Boundary
- 2021 As-built Finished Grade Contour (1ft interval)
- Extent of Finished Grade
- Limits of Critterfence/Geotextile Cap

0 40 80

Scale in Feet

Note

1. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

Source: Strider Construction, 2021; GeoEngineers 2018; Metron 2018; SLR 2018; ©Bing 2019

LANDAU ASSOCIATES

Baywood Products
Engineering Design Report
Everett, Washington

Low Area Finished Grade

Figure
C-3

Table C-1
Low Area Compliance Monitoring Analytical Results
Bay Wood 2nd Interim Action
Everett, Washington

Analyte	Interim Action Remediation Level	Field Sample ID, Laboratory SDG, Sample Date									
		LA-SW1-201208 EV20120054 12/8/2020	LA-SW2-201209 EV20120061 12/9/2020	LA-SW3-201209 EV20120061 12/9/2020	LA-SW4-201209 EV20120061 12/9/2020	LA-SW5-201209 EV20120061 12/9/2020	LA-B1-201208 EV20120054 12/8/2020	LA-B2-201208 EV20120054 12/8/2020	LA-B3-201208 EV20120054 12/8/2020	LA-B3A-210301 EV21030006 3/1/2021	LA-B4-201209 EV20120061 12/9/2020
Dioxins/Furans (ng/kg; SW-846 1613B)											
2,3,7,8-TCDD	NL	0.13 U	0.28 U	**0.30 J**	0.084 U	0.086 U	0.58 U	0.70 U	2.5 J	0.05 UJ	0.64 U
1,2,3,7,8-PeCDD	NL	0.39 U	**1.85 J**	**0.95 J**	0.080 U	0.10 U	0.32 U	3.3 U	17.8 J	0.065 UJ	**1.94 J**
1,2,3,4,7,8-HxCDD	NL	**1.95 J**	**2.9**	0.87 U	0.20 U	0.14 U	**1.00 J**	5.2 UJ	57.1 J	0.25 UJ	**2.47 J**
1,2,3,6,7,8-HxCDD	NL	**6.68**	**8.86**	2.10 U	0.22 U	0.14 U	**3.38**	12.0 U	170	**1.1 J**	8.20 U
1,2,3,7,8,9-HxCDD	NL	**3.35**	**5.17**	**1.54 J**	0.21 U	0.14 U	1.00 U	12.0 U	94.4 J	0.43 UJ	**5.35**
1,2,3,4,6,7,8-HpCDD	NL	**192**	**241**	**35.8**	**6.33**	**1.60 J**	**84.7**	**152**	5,350	**32.5 J**	**247**
OCDD	NL	**1,900**	**2,590**	**420**	**71.9**	**15.1**	**915**	**2,100 J-**	56,600	**342 J**	**3,210**
2,3,7,8-TCDF	NL	0.19 U	1.60 U	**2.95**	0.075 U	0.071 U	0.40 U	0.56 U	2.7 U	0.079 UJ	**6.13**
1,2,3,7,8-PeCDF	NL	0.23 U	**1.04 J**	**1.30 J**	0.087 U	0.078 U	0.34 U	0.86 U	9.5 J	0.072 UJ	**2.24 J**
2,3,4,7,8-PeCDF	NL	0.80 U	**1.92 J**	**2.07 J**	0.074 U	0.062 U	0.29 U	1.2 U	19.4 J	0.12 UJ	**3.64**
1,2,3,4,7,8-HxCDF	NL	**1.74 J**	**2.74 J**	**0.97 J**	0.14 U	0.093 U	**0.75 J**	3.3 UJ	39.8 J	**0.294 J**	2.90 U
1,2,3,6,7,8-HxCDF	NL	**1.05 J**	**1.50 J**	**0.91 J**	0.11 U	0.098 U	0.55 U	3.4 U	33.3 J	0.21 UJ	2.00 U
2,3,4,6,7,8-HxCDF	NL	**3.01**	4.40 U	1.20 U	0.13 U	0.095 U	**1.05 J**	3.4 U	61.2 J	**0.413 J**	**4.70**
1,2,3,7,8,9-HxCDF	NL	0.52 U	0.77 U	0.61 U	0.20 U	0.13 U	0.80 U	6.1 U	13.4 J	0.078 UJ	**1.19 J**
1,2,3,4,6,7,8-HpCDF	NL	**29.4**	**49.0**	**10.5**	**1.48 J**	**0.34 J**	**18.6**	25.0 U	732	**6.47 J**	**43.6**
1,2,3,4,7,8,9-HpCDF	NL	**2.08 J**	2.2 U	0.52 U	0.28 U	0.16 U	**0.60 J**	4.1 UJ	49.6 J	0.38 UJ	3.20 U
OCDF	NL	**74.4**	**136**	**22.3**	**4.07 J**	**1.36 J**	**44.4**	**46.8 J**	1,910	**9.15 J**	**113**
Total Tetra-Dioxins	NL	**0.59**	**15.6**	**41.2**	**0.258**	0.086 U	0.58 U	**2.55**	9.0	**0.577 J**	**60.7**
Total Penta-Dioxins	NL	**0.32**	**18.1**	**32.0**	0.080 U	0.10 U	**0.81**	3.3 U	77.4	**0.375 J**	**70.3**
Total Hexa-Dioxins	NL	**33.2**	**68.0**	**30.8**	0.22 U	0.14 U	**12.7**	**45.5**	887	**5.4 J**	**82.1**
Total Hepta-Dioxins	NL	**318**	**448**	**71.2**	**6.33**	**3.82**	**144**	**281**	9,050	**59.5 J**	**465**
Total Tetra-Furans	NL	**0.33**	**12.8**	**45.8**	0.075 U	0.071 U	0.40 U	**0.94**	12.6	**0.06 J**	**71.8**
Total Penta-Furans	NL	**9.17**	**32.7**	**22.9**	0.087 U	**0.107**	**1.33**	**9.0**	224	**1.33 J**	**45.0**
Total Hexa-Furans	NL	**37.1**	**65.4**	**14.8**	0.20 U	0.13 U	**19.2**	**11.6**	885	**6.31 J**	**62.1**
Total Hepta-Furans	NL	**81.2**	**127**	**25.4**	**3.52**	**0.34**	**46.2**	4.1 U	1,870	**13 J**	**125**
Total TEQ (ND = DL/2)	13 (a)	**4.88**	**8.53**	**3.25**	**0.26**	**0.17**	**2.55**	**5.95**	152	**0.746 J**	**9.19**

Notes:

J = The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

J- = The result is an estimated quantity and the result may be biased low.

UJ = The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

Bold text indicates detected analyte.

Grayed back text indicates soil represented by this sample was overexcavated and a follow-up compliance monitoring sample was collected.

Green shading indicates detected analyte exceeds applicable screening level.

(a) Dioxin/furan TEQ soil screening level in the low area is based on the MTCA Method B human health direct contact pathway (13 ng/kg); the Sitewide for dioxin/furan TEQ based on background concentrations is 5.2 ng/kg

Abbreviations and Acronyms:

DL = detection limit

ID = identification

MTCA = Model Toxics Control Act

ND = not detected

ng/kg = nanograms per kilogram

NL = not listed

SDG = sample delivery group