FINAL STUDY AREA INVESTIGATION—AQUATIC LANDS LEASE

WEYERHAEUSER SAWMILL ABERDEEN/SEAPORT LANDING SITE

FACILITY SITE ID 1126, CLEANUP SITE ID 4987, AGREED ORDER ID 11225
WASHINGTON STATE DEPARTMENT OF NATURAL RESOURCES AQUATIC LANDS LEASE NO. 22-092275

Prepared for

GRAYS HARBOR HISTORICAL SEAPORT AUTHORITY

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The material and data in this report were prepared under the supervision and direction of the undersigned.

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ACRONYMS AND ABBREVIATIONS

AET	Apparent effects threshold
ARI	Analytical Resources, Inc.
bgs	below ground surface
bml	below mudline
BTEX	benzene, toluene, ethylbenzene, and xylenes
cm	centimeter
COI	chemical of interest
cPAH	carcinogenic PAH
CSL	cleanup screening level
CSM	conceptual site model
CUL	cleanup level
dioxins	polychlorinated dibenzo-p-dioxins and -furans
DNR	Department of Natural Resources
dw	dry weight
Ecology	Washington State Department of Ecology
FS	feasibility study
GHHSA	Grays Harbor Historical Seaport Authority
leased Property	approximately 16.9-acre leased tidelands at the Weyerhaeuser Sawmill Aberdeen/Seaport Landing Site property
MFA	Maul Foster & Alongi, Inc.
mg/kg	milligrams per kilogram
MTCA	Model Toxics Control Act
NAPL	nonaqueous-phase liquids
NAVD-88	North American Vertical Datum of 1988
NPDES	National Pollutant Discharge Elimination System
OC	organic carbon-normalized
PARIS	Ecology Water Quality Permitting and Reporting Information System
PCP	pentachlorophenol
pg/g	picograms per gram
ppt	parts per thousand
QIN	Quinault Indian Nation
RI	remedial investigation
SAI	Study Area Investigation
SAIAA	Study Area Investigation and Alternatives Analysis
SAIC	Science Applications International Corporation
SCO	sediment cleanup objective

ACRONYMS AND ABBREVIATIONS (CONTINUED)

Site	Weyerhaeuser Sawmill Aberdeen/Seaport Landing Site
SMS	Sediment Management Standards
SVOC	semivolatile organic compound
TEE	terrestrial ecological evaluation
TEQ	toxicity equivalence quotient
TOC	total organic carbon
TPH	total petroleum hydrocarbons
ug/kg	micrograms per kilogram
USEPA	U.S. Environmental Protection Agency
WAC	Washington Administrative Code
WQC	National Recommended Water Quality Criteria

1 INTRODUCTION

1.1 Purpose and Objectives

Maul Foster & Alongi, Inc. (MFA) has prepared this Study Area Investigation (SAI) Report for the Grays Harbor Historical Seaport Authority (GHHSA) to characterize nature and extent of environmental impacts at the approximately 16.9-acre leased tidelands (herein referred to as "the leased Property") at the Weyerhaeuser Sawmill Aberdeen/Seaport Landing Site. The Site is located adjacent to the Chehalis River at 500 North Custer Street in Aberdeen, Washington (see Figure 1-1). The Weyerhaeuser Sawmill Aberdeen/Seaport Landing Site includes approximately 23.6 acres of upland property and the adjacent tidelands (i.e., the leased Property), which are leased from the Washington State Department of Natural Resources (DNR) under lease number 22-092275 (see Figure 1-2). Historically, the Weyerhaeuser Sawmill Aberdeen/Seaport Landing Site was used as a lumber mill by Weyerhaeuser and other wood products companies. The leased Property is proposed for future use as the homeport for the *Lady Washington* and *Hawaiian Chieftain* tall ships as part of a new maritime heritage facility called Seaport Landing.

Environmental sampling previously conducted in the former sawmill area and the lumber shed processing operations area (see Figure 1-3) indicates that hazardous substances have impacted sediments on the leased Property. Prior investigations indicate that polychlorinated dibenzo-p-dioxins and -furans (dioxins); semivolatile organic compounds (SVOCs), including polycyclic aromatic hydrocarbons (PAHs), total petroleum hydrocarbons (TPH), polychlorinated biphenyls (PCBs), metals including mercury, and woodwaste, are present in sediment on the leased Property.

This report describes results of investigations that have been conducted at the leased Property, including the most recent investigations in October 2015.[1] Prior investigations informed identification of chemicals of interest (COIs) for the leased Property as well as the approximate spatial extent of the 2015 investigation area. The purpose of the 2015 investigation was to generate data to characterize the nature and extent of contaminants in the leased Property media relative to appropriate cleanup levels (CULs). The results will inform additional characterization needs (data gaps) to be addressed as part of the forthcoming remedial investigation (RI) activities.

Note that this report addresses only the leased Property. The upland property will be evaluated separately.

1.2 Regulatory Framework

On August 17, 2015, the GHHSA entered into Agreed Order DE 11225 with Ecology. The order required the GHHSA to investigate the aquatic lease area and produce an SAI Report. This report has been prepared to satisfy the requirements of the Agreed Order.

[1] A stormwater sample collected in January 2016 is also discussed in this report.

The Weyerhaeuser Sawmill Aberdeen/Seaport Landing Site is listed on Ecology's database as Facility Site ID 1126/Cleanup Site ID 4987. This SAI focuses on the leased Property and is not intended to be a complete RI for the Site as defined by the Washington State Department of Ecology (Ecology) under the Model Toxics Control Act (MTCA).

Weyerhaeuser assumed the aquatic land lease at the time of the property acquisition in 1955. A prior aquatic land lease (Aquatic Land Lease No. 22-A02150) was signed by DNR on September 13, 2001. Subsequently, GHHSA entered into a sublease agreement with Weyerhaeuser for the leased Property. In addition to the sublease agreement, DNR, Weyerhaeuser, and GHHSA jointly entered into a consent to sublease agreement that identifies a number of requirements to be completed before the termination of the master tideland lease. These include a requirement to submit an RI and feasibility study (FS) report for the leased Property. On April 14, 2017, the GHHSA entered into aquatic lands lease No. 22-092275 with the DNR. This tract borders the GHHSA-owned properties to the north, along the Chehalis River.

DNR requires "bookend" sediment sampling at the initiation and termination of an aquatic lease in order to differentiate baseline sediment conditions from impacts that may have occurred during the lease period, as well as to evaluate long-term trends in sediment conditions. On February 2, 2011, in correspondence with Weyerhaeuser, DNR requested sediment sampling and proposed a sampling approach for the leased Property. Floyd|Snider, consultant to Weyerhaeuser, proposed a reduction to the DNR-requested sampling in a proposal letter prepared for Weyerhaeuser on March 15, 2012 (Floyd|Snider, 2012). On March 26, 2012, DNR modified the Floyd|Snider proposed sediment sampling plan (DNR, 2012) by expanding the analyte list for three proposed surface sediment samples from the Chehalis River and requested three sediment core samples in the Former Mill Area, an area within the leased Property (see Figure 1-3).

MFA conducted sediment sampling on November 7-8, 2013, consistent with an Ecology and DNR-approved Sampling and Analysis Plan (MFA, 2013). The results of the investigation were provided to Ecology and DNR in a sediment sampling report on February 5, 2014 (MFA, 2014). On April 4, 2014, DNR requested an RI/FS for the leased Property (DNR, 2014). During a July 2, 2014 meeting between DNR, Ecology, the GHHSA, and MFA, an RI/FS work plan due date of October 2, 2014, was set. Comments on the sediment sampling report were received from Ecology by e-mail on July 9, 2014 (Ecology, 2014a), and these were addressed in the SAI work plan (MFA, 2015). Subsequent revisions to the sampling and analytical approach were made at the request of Ecology and are captured herein.

This SAI has been completed for the leased Property to address the substantive requirements of MTCA (Washington Administrative Code [WAC] 173-340) and the Sediment Management Standards (SMS) (WAC 173-204-550). This report was submitted to Ecology on April 11, 2017. MFA received comments on April 5, 2019, and is now submitting this revised report incorporating those comments.

1.3 Quinault Indian Nation Treaty Rights

The Quinault Indian Nation (QIN) is a sovereign Tribal government with federally protected treaty rights. Their 1856 treaty provides Quinault tribal members the right to harvest fish and shellfish in their usual and accustomed areas, which include Grays Harbor and streams that empty into Grays

Harbor. Harvest in Grays Harbor is conducted in tribally regulated gillnet fisheries via drift gillnetting or setnetting. Drift gillnetting consists of deploying a gillnet across the Chehalis River, perpendicular to the shoreline. Setnets are affixed to the Chehalis Riverbank on one end and secured with an anchor in the Chehalis at the other end.

Tribal fishing operations, including both drift gillnetting and setnetting methods, are conducted within the leased Property and directly offshore. Setnets are occasionally affixed to trees and other shoreline features along the shoreline within the leased Property. Any in-water activities have the potential to impact the QIN fishers' use of this portion of the Chehalis River for federally protected treaty fishing. GHHSA is negotiating a Memorandum of Agreement with the QIN to formalize coordination related to the Site. Further coordination with the QIN will help identify all potential fishing and harvesting uses in the area and will be described in the forthcoming RI report.

2 BACKGROUND

The background and physical setting descriptions below for the leased Property are summarized from site investigations, interviews with the GHHSA, and review of past environmental reports.

2.1 Location and Current Property Conditions

The Site is located in the alluvial meander plain of the Chehalis River in the northwestern margins of the Willapa Hills physiographic region of southwest Washington. Located at 500 North Custer Street in Aberdeen, the Site is approximately 2 miles upriver from Grays Harbor. The City of Aberdeen is situated in southwestern Washington, approximately 15 miles from the Pacific Ocean and approximately 70 air miles west-southwest of Tacoma, Washington. US Highway 101 and US Highway 105 are located less than 0.25 mile south of the site. The Weyerhaeuser Sawmill Aberdeen/Seaport Landing Site property is situated in sections 9 and 10 of township 17 north, range 9 west, Willamette Base Meridian. It is bordered on the west by a former boatyard and marine service center, to the east by a log storage yard, to the north by the Chehalis River, and to the south by residential and commercial development.

2.2 Property History

The operational history of the Weyerhaeuser Sawmill Aberdeen/Seaport Landing Site property is detailed in a Level I environmental site assessment (PES, 2010). Sawmills had operated on the Weyerhaeuser Sawmill Aberdeen/Seaport Landing Site property, on both the uplands and leased Property, since before 1900. The South Aberdeen waterfront has been developed for commercial and industrial use since the early 1890s. The piling (commonly referred to as a pile field) at the mouth of Shannon Slough marks the location of an early Aberdeen salmon cannery. In the late 1890s, the Aberdeen Lumber sawmill was constructed on the upland property with logs rafted along the shoreline to feed the mill. Aberdeen Lumber was later sold, becoming Schafer Brothers Lumber and Door Co.

Mill #4. The business expanded, and so did its footprint. Schafer Brothers later sold the property to Simpson Timber Company.

Weyerhaeuser acquired the property in 1955 and operated several sawmills and associated support facilities through January 2009, when the mill known as the small log sawmill was permanently closed. Until the mid-1960s raw logs were brought to the mill in log rafts on the Chehalis River and tied up to pilings in the river in front of the Big Mill. After the mid-1960s, raw logs were brought to the mill by truck and staged on log decks at various locations in and adjacent to the property. The Big Mill was originally configured to manufacture shingles and slats for housing construction. During World War II, the Big Mill was converted for manufacturing ship keels for the war effort. The precursor to the small log mill was added in 1972; small log mill operations were performed in the upland portion of the site outside the leased Property. The last upgrade to the small log mill took place in 2003. In 2006, the Big Mill and attached finger pier were closed; the associated structures were removed between 2006 and 2008. This area is now known as the Former Mill Area. The small log mill continued to operate into early 2009. The GHHSA acquired the Weyerhaeuser Sawmill Aberdeen/Seaport Landing Site uplands on March 29, 2013. Currently, there are no active wood-products-manufacturing operations at the property. Historical and current site features are shown in Figure 1-3.

2.3 Shoreline Modifications and Historical Fill Events

Historical Sanborn maps from 1906, 1914, 1928, 1948, and 1989 provided in Appendix A offer insight into the development of the Weyerhaeuser Sawmill Aberdeen/Seaport Landing Site property. Specifically, the Sanborn maps depict development of mill-related structures on pilings in the Chehalis River, shoreline modifications resulting from filling events, and other important details regarding the composition of fill materials. Shoreline modifications since 1906 illustrated in the Sanborn maps in Appendix A are summarized below.

1906: The 1906 Sanborn maps show a mill and related structures extending into the Chehalis from Front Street between North Custer and Columbus streets. The structures are constructed on posts. These former mill structures were farther east than subsequent mill structures that formed the Former Mill Area. The 1906 mill and mill-related structures were in the approximate location of the present-day former Main Shipping Shed. While this particular area is not depicted in the 1914 Sanborns, by 1928 these mill structures no longer exist. In fact, new mill-related structures are constructed in the location of the area now referred to as the Former Mill Area (see Figure 1-3) to the west of Custer Street and extending approximately to Clark Street.

Shoreline on either side of the 1906 mill area is not fully depicted in the maps. However, the shoreline along Front Street at the mouth of the Shannon Slough is undeveloped. There is another mill to the east of the present-day Weyerhaeuser Sawmill Aberdeen/Seaport Landing Site, just east of Lawrence Street. Sanborn maps show mill-related development consisting primarily of irregular lumber piles on planked fill or planked on sawdust.

1914: As noted above, the 1906 mill area is not visible in the 1914 Sanborn maps. However, the Sanborn maps show that the shoreline at the mouth of Shannon Slough has been modified to extend farther north into the Chehalis River, as it was filled in with irregular lumber piles.

1928: The 1928 Sanborn maps show further offshore development north into the Chehalis River. As noted in the 1906 description, the 1906 mill structures had been removed and the mill area shifted farther west between Custer and Clark streets. All of the structures shown are constructed on planks in the Chehalis River. The wharf that is currently on the Weyerhaeuser Sawmill Aberdeen/Seaport Landing Site is constructed as of 1928—the wharf and mill site are built on pilings. Shoreline to the east of the Weyerhaeuser Sawmill Aberdeen/Seaport Landing Site is relatively unchanged.

1948: As of 1948, the area between the planked over-water structures and Front Street between Clark and Custer have been filled in with refuse and planked. The over-water structures remain on planks. Shoreline to the east of the Weyerhaeuser Sawmill Aberdeen/Seaport Landing Site is relatively unchanged as of 1948.

1989: As of 1989, the entire former in-water area of the Chehalis north of Custer Street and to the east to Shannon Slough has been filled. According to the Sanborns, fill material in this area consisted of earth and rock and lumber piles on filled ground. The area east of Shannon Slough is shown as fill consisting of sawdust piles.

2.4 Leased Property Operations

Former facility operations in the leased Property area, with demonstrated or potential environmental impacts, are discussed below. These former operational areas of interest were carried forward for evaluation and characterization. Upland facility operations are not included in this discussion but are detailed in the Level I environmental site assessment (PES, 2010). The areas of interest identified below are shown on Figure 1-3.

2.4.1 Former Mill Area and Pocket Beach

The mill that appeared in the 1928 Sanborns between Custer and Clark streets was originally constructed on pilings over the Chehalis River and the pocket beach area. This area is referred to as the Former Mill Area. Mill facilities and equipment were installed over plank flooring. Before 1970, there was no spill protection to prevent spills on the flooring from falling into the river below. In the mid-1970s, Weyerhaeuser reportedly reworked the flooring to prevent releases through the planking. Beginning in approximately 1980, containment pans were installed beneath all mill hydraulic components.

The original mill at this site was closed in 2006 and was removed between 2006 and 2008, exposing the Chehalis River and the pocket beach. Over 1,000 creosoted wood pilings were also removed from this area during mill demolition. It is unknown whether these pilings were pulled out completely or removed to mudline. This data gap will be addressed during the RI. Creosote-treated piles can be harmful and toxic to aquatic species. Therefore, the removal of the creosote-treated pilings has been a major focus of DNR's Restoration Program and has also been used in the regulatory process to generate mitigation credits. Since removal of the mill and pilings and debris in the Chehalis River, the pocket beach area has been colonized by vegetation characteristic of wetland environments, such as cattail (*Typha sp.*) and rushes (*Juncus sp.*). This location in the river has also been observed to be a

depositional area with debris including loose pilings and household appliances floating downstream and becoming lodged against the wharf.

2.4.2 Lumber Shed

The lumber shed located in the northwest corner of the leased Property was used to store finished products. Historically, an iron fuel-oil tank was used to supply the fuel-oil-fired internal combustion engine powered cranes at the west end of the wharf. According to the GHHSA staff, a fire destroyed much of this area in 1965.

2.4.3 Former Boiler

Wood-fired boilers were located adjacent to the powerhouse at the east end of the wharf. The boilers contained asbestos that reportedly was removed during demolition of the mill. One transformer is currently present at the powerhouse and is not known to contain PCBs. The powerhouse has been cleaned and a vault below the powerhouse has been cleaned and filled with pea gravel. An oil house was also located next to the powerhouse.

2.4.4 Tidelands and Beach Area

Along the Chehalis River, the area between the Former Mill Area and the mouth of Shannon Slough consists of former tidal flats that historically were filled with unknown types and quantities of debris, including construction debris and woodwaste. See Section 2.3 for information detailing what is known, based on historical Sanborn maps, regarding these fill events.

2.4.5 Shannon Slough

Shannon Slough meanders from south to north across the eastern portion of the property and discharges into the Chehalis River next to the former chip area. Shannon Slough receives stormwater runoff from the property, upstream residential areas, and the highway. Currently, after passing through catch basins and oil/water separators, stormwater is discharged through various culverts directly into Shannon Slough or into the Chehalis River. The Weyerhaeuser Sawmill Aberdeen/Seaport Landing Site National Pollutant Discharge Elimination System (NPDES) sampling location is at the outfall along the west bank of the slough. Releases of paint waste to Shannon Slough in 1989 resulted in a Clean Water Act conviction and subsequent remediation activities (PES, 2010). Shannon Slough discharges to the Chehalis River in the leased Property, forming a small deltaic feature. Multiple pilings are present in the mudflats along the northeastern portion of the slough. Information is not available regarding whether these pilings contain creosote. According to Sanborn Fire Insurance Maps (provided in Appendix A), the pilings have been on the Property since at least 1906. Given their age, it is reasonable to assume that the pilings were creosote-treated.

2.5 Previous Investigations

Environmental data collected at and in the vicinity of the leased Property, dating back to 1999, are summarized below. Historical and current sample locations are shown on Figure 2-1.

2.5.1 Ecology Sediment Investigation

In 1999, Ecology conducted a sediment quality investigation on the Chehalis River (Ecology, 1999). Two of the samples (7S and 14S) collected during this investigation came from the leased Property. Samples were analyzed for all SMS compounds and for the presence of wood debris. There were no exceedances of the SMS, and no woodwaste accumulations were observed. The absence of impacts at these locations helped inform the spatial sampling extent for the 2013 and 2015 investigations.

2.5.2 Level I Environmental Site Assessment

In August 2010, PES prepared an extensive Level I environmental site assessment report. The document summarized past releases of contaminants to the leased Property, including the following:

- In 1989, red-end paint wastes (containing 1,1,1-trichloroethane and naphthalene) were released to Shannon Slough, resulting in a U.S. Environmental Protection Agency (USEPA) fine and cleanup action. PAHs; pentachlorophenol (PCP); and benzene, toluene, ethylbenzene, and xylenes (BTEX) were detected in sediments, but PCBs were not.
- In 1992, storm system sediments (in catch basins and oil/water separators, located on the Seaport Authority property) were evaluated. Aroclor 1260 was detected at 959 micrograms per kilogram (ug/kg) at CB-1, located southwest of the planer. PAHs and BTEX were commonly detected in the storm system sediments, with dibenzofuran, phenol, and 2- and 4-methylphenol detected at the catch basin at the main shipping shed. Stormwater outfall locations were evaluated during a stormwater system evaluation conducted by MFA in May 2015. The results of this evaluation are presented in Section 2.5.7.
- Between 2006 and 2008, the Big Mill (which sat over the pocket beach area) was demolished. Over 1,000 piles were removed during the demolition.
- The facility stormwater pollution prevention plan significant spills report lists three spills: a June 2001 release of 17.5 gallons of hydraulic oil (with 1 gallon spilling into the Chehalis River); an August 2002 release of 4 gallons of hydraulic oil to the Chehalis River; and a March 2005 release of 50 gallons of diesel fuel to land near the stacker (in the upland area).
- The Big Mill, originally constructed in 1924, contained hydraulic equipment installed over plank flooring. Drip pans were installed under the hydraulic equipment in approximately 1980.

Numerous recognized environmental conditions were also identified in the Level I environmental site assessment for the upland Seaport Authority Property (PES, 2010).

2.5.3 Phase II Environmental Site Assessment

In April 2011, Science Applications International Corporation (SAIC) conducted a soil and sediment investigation at the leased Property (SAIC, 2011) on behalf of DNR. Three composited sediment samples were collected near the Wharf Area immediately downstream of the 1999 Ecology sample

location 7s (see Figure 2-1). The surface sediment samples were analyzed for all SMS constituents and for the presence of woodwaste and dioxins. Butyl benzyl phthalate was detected at a concentration slightly above the sediment cleanup objective (SCO). No accumulation of woodwaste was encountered. Surface sediment dioxins with a toxicity equivalence quotient (TEQ) of 6.1 picograms per gram (pg/g) were detected in the area. The absence of woodwaste and the low-level concentrations of SMS constituents in sediment at these locations helped inform the spatial sampling extent for the 2013 and 2015 investigations.

SAIC also collected surface and subsurface sediments in the Former Mill Area (see Figure 2-1). Fine wood debris was encountered in surface sediment at two of the three locations, with woodwaste observed in all subsurface sediment throughout the length of the cores (i.e., 5 feet below mudline [bml]). Surface and core sediment samples from all three locations were tested for SMS chemicals. A composite of the three surface samples was analyzed for dioxins. The reported dioxin TEQ was 68 pg/g. Two of the sample locations had initial surface mercury detections in excess of the SMS cleanup screening level (CSL). Subsequent averaging with split samples collected by Weyerhaeuser found that the surface mercury concentrations exceeded the sediment quality standard but were below the CSL. One of the sample locations had surface exceedances of the SMS CSL for bis(2-ethylhexyl) phthalate and 1,4-dichlorobenzene. There were also concentrations of several chemicals in subsurface sediment above SMS CSLs. Note, however, that surface sediments are the point of compliance under the SMS (Ecology, 2008). These results showed potential for woodwaste and chemical impacts in this area and informed additional investigations conducted in 2013 and 2015.

SAIC further collected six soil borings from the filled tidelands area to depths of 5 feet below ground surface (bgs) (see Figure 2-1 for locations SB1 through SB6; note that SB5 and SB6 are outside the leased Property). Generally, the soil cores were observed to have dark brown, sandy sawdust at a depth of approximately 4 to 5 feet bgs, overlain by light brown sawdust and wood chips. Soil samples were analyzed for MTCA Method A constituents (up to three sample depth horizons per location), and two composite soil samples from each of the filled tideland areas were analyzed for dioxins. No chemicals were detected above MTCA Method A criteria, with the exception of motor oil at 1.5 to 3 feet bgs and 3 to 5 feet bgs at sample location SB-6, which is outside the leased Property. The dioxin TEQs for the composite soil samples collected in the filled tidelands were 13.5 pg/g and 2.37 pg/g for the composite samples from locations SB1-SB3 and SB4-SB6, respectively.

2.5.4 Water Investigation Report

In January 2010, Floyd|Snider evaluated water quality at the upper pocket beach area under the Former Mill Area. After evaluating the seeps and river water, the study concluded that the water coming from the seeps does not have the same general chemical parameters as the river water, suggesting that the seeps are not bank storage of river water captured during high tide, but more likely are related to groundwater discharge. Analytical data showed low-level detections of metals and TPH at the stormwater outfall and seep locations, and samples were non-detect for volatile organic compounds. Also, the study indicated that an intermittent sheen previously observed at one of the seeps in 2009 was not observed during the Weyerhaeuser Sawmill Aberdeen/Seaport Landing Site visit in January 2010.

2.5.5 NPDES Data Review

When the facility was active, stormwater was managed under an NPDES industrial stormwater permit administered by Ecology (Permit Nos. SO3001015 and WAR001015). Data from the facility NPDES stormwater program obtained from the Ecology Water Quality Permitting and Reporting Information System (PARIS) were retrieved. Between 2003 and 2007, the facility had benchmark exceedances for pH, turbidity, biological oxygen demand, and zinc. MFA searched the PARIS database for NPDES data on August 1, 2014, and May 1, 2019; not all facility NPDES data were available in the database.

2.5.6 2013 Leased Property Sediment Sampling

In November 2013, MFA collected sediment samples from six locations in the Former Mill Area (pocket beach) and in the Chehalis River (see Figure 2-1). The 2013 investigation data were originally presented in the sediment sampling report (MFA, 2014) and the results are discussed herein alongside the results from the more recent October 2015 investigation. The sampling approach is briefly described below.

The Chehalis River surface sediment samples (CR-01 through CR-03) were analyzed for SMS constituents with marine criteria, dioxins, and total organic carbon (TOC). No impacts, including woodwaste, were observed in surface sediments collected in the Chehalis River portion of the leased Property. Therefore, analysis was not conducted for conventional parameters used to evaluate toxicity in sediment impacted with woodwaste.

DNR and Ecology requested sampling in the Former Mill Area to further delineate historical elevated concentrations of butyl benzyl phthalate, PCP, mercury, and dioxins (DNR, 2012). Sediment cores were analyzed using a tiered approach, and the list of analytes included mercury, dioxins, PCBs, SVOCs, and TPH. Analysis for conventional parameters (TOC, total volatile solids, total solids, ammonia, total sulfides, and percent fines) was conducted on surface sediment samples and some subsurface sediment containing more than 25 percent woodwaste by volume.

2.5.7 Stormwater System Evaluation

As discussed in Section 2.5.2, sediment contamination resulting from potential stormwater pathways present at the Weyerhaeuser Sawmill Aberdeen/Seaport Landing Site were noted in the PES report (PES, 2010). Based on this possibility, MFA conducted a stormwater system evaluation in May 2015. MFA's review of existing stormwater system plans available for the Weyerhaeuser Sawmill Aberdeen/Seaport Landing Site indicated inconsistences between "as-built" drawings of stormwater features at the Weyerhaeuser Sawmill Aberdeen/Seaport Landing Site and the actual location of features.

MFA field-verified the stormwater system features, including catch basins and outfalls, and recorded locations using a handheld global positioning system receiver. When possible, stormwater conveyance features were opened to verify diameter of pipe connections present and approximate direction of piping entering and leaving the feature. Locations of stormwater features observed at the leased Property are included in Figure 2-2.

Two catch basins with associated outfalls (OFs 2 and 14) were observed at the west of the Weyerhaeuser Sawmill Aberdeen/Seaport Landing Site and appeared to discharge on the neighboring Pakonen Boatyard facility (see Figure 2-2). The ultimate location of the outfall was not visually observed because of dense vegetation and high tide at the time of observation. The outlet from the catch basin attached to OF 14 is composed of a cement 8-inch-diameter pipe while OF 2 piping is composed of 12-inch-diameter corrugated metal pipe. No water was present in these catch basins during observation; however, indications of recent stormwater flow though these catch basins was observed. OF 2 drains an area where lumber was formerly stored and loaded onto ships, while OF 14 drains a driveway that accesses the site on the west side.

In the fall of 2015, MFA oversaw the cleaning of the site's stormwater catch basins, oil/water separators, and storm lines. The cleaning removed sediment and solids buildup from within the pipes, catch basins, and oil/water separators. Following cleaning of the system, a camera video inspection was performed to evaluate the existing conditions of the pipe network. Based on initial observations, the storm lines are in poor condition. MFA is currently working with the GHHSA on a design to improve/enhance the stormwater system at the site; the design will also allow the system to serve as a showcase for best management practices for stormwater. One stormwater sample was collected in the pocket beach area as part of this investigation in 2016; the results are included in the analysis below.

3 LEASED PROPERTY INVESTIGATION

MFA conducted the leased Property investigation in October 2015. The investigation included characterization of tideland soils, groundwater, seep water, and surface and subsurface sediments.

3.1 Objectives and Approach

Consistent with the SMS, and as stipulated in WAC 173-204-550, the purpose of this SAI was to collect, develop, and evaluate information sufficient to allow establishment of cleanup standards and selection of a cleanup action, should that be deemed necessary.

The investigation objectives related to hazardous substances included the following:

- Information gathering with respect to physical site features that have the potential to contribute to or transport contamination, e.g., storm drain system.
- Identification and characterization of significant hazardous substance source areas in the leased Property through a review of historical information; investigation results; and the collection of environmental samples for physical observation, field screening, and chemical analyses.
- Evaluation of contaminant migration pathways at the Weyerhaeuser Sawmill Aberdeen/Seaport Landing Site. Key elements relevant to contaminant migration include,

but are not limited to, the rate and direction of groundwater flow, preferential migration pathways, and sediment-river interactions.

- Determination of the nature, extent, and distribution of hazardous substances, focusing on the vertical and lateral extent of contamination.
- Identification of all current and reasonably likely future human and ecological receptors that may be exposed to hazardous substances.
- Evaluation of the risk to human health and the environment from releases of hazardous substances at or from the leased Property.
- Generation or use of data of sufficient quality for site characterization and risk assessment.
- Development of the information required for evaluating and designing source control measures or remedial actions to address contaminant releases, if deemed necessary.

The SAI scope was designed to address characterization needs resulting from the previous investigations described in Section 2.5. Additional characterization needs will be identified and will be addressed as part of forthcoming RI activities; evaluation of the need for and type of remedial actions will be described in the forthcoming FS. Potential sources of impacts and features of interest on the leased Property include the Chehalis River and the following areas (shown in Figure 1-3):

- Former Mill Area and pocket beach
- Lumber shed area
- Wharf area
- Former boiler area
- Tidelands and beach area
- Shannon Slough

3.2 Field Investigation

The SAI was conducted on the leased Property in general accordance with the SAI work plan (MFA, 2015) in October 2015. Four soil borings upgradient of the pocket beach were advanced using a GeoProbe® direct-push drill rig for soil and reconnaissance groundwater sampling. Surface and subsurface sediment samples were collected from the pocket beach and the Chehalis River, using manual and mechanically assisted (GeoProbe) sampling techniques from a barge, and an opportunistic seep sample was collected from the pocket beach area. The investigation included geologic characterization, observation of visually apparent impacts, and analysis of samples for COIs. Figure 2-1 shows sample locations, and the field sampling methodology is presented in Appendix B.

3.2.1 Soil and Reconnaissance Groundwater

Four borings (CR-20, 21, 22, and 23) were advanced in the tidelands area immediately upgradient of the pocket beach retaining wall. Samples from these upland borings were collected to assess potential for subsurface impacts associated with former mill operations in this area. Soil from these four borings

were evaluated in the field for visual impacts (e.g., woodwaste) and field screened using a photoionization detector. Soil boring logs are provided as Appendix C. Woodwaste impacts were observed at all boring locations, and one soil sample from each location was submitted to the laboratory for analysis for COIs; see Table 3-1 for soil descriptions.

Reconnaissance groundwater samples were collected from all four boring locations to evaluate potential upgradient sources to the pocket beach. Five-foot temporary well screens were installed in each respective boring location, and water quality parameters were collected prior to sampling as described in Appendix B. Groundwater sample details and associated COI analyses are provided in Table 3-1. Groundwater water quality parameters are provided in Table 3-2.

3.2.2 Seep Water and Stormwater

An opportunistic seep sample was collected from the pocket beach area location shown on Figure 2-1 during low tide as described in Appendix B. The seep sample was submitted to the laboratory for analysis for the COIs listed in Table 3-1. Water quality parameters were collected prior to sample collection (see Table 3-2).

One stormwater sample was collected in the pocket beach area in 2016 (STORM-01). Collection conditions for this sample (i.e.., conditions of runoff, drain location, and whether before or after drains were cleaned) are unknown and will be assessed during RI activities.

3.2.3 Sediment

Surface (0 to 0.33 feet bml) and subsurface sediment samples were collected in multiple areas within the leased Property according to methods described in Appendix B. Surface sediment locations were typically accessed during low tide when the sediment was exposed to characterize sediment conditions at the SMS-defined point of compliance (i.e., 0 to 10 centimeters [cm] bml or, equivalently, 0 to 0.33 feet bml). Subsurface sediment samples were collected to delineate the vertical and lateral extent of impacts observed previously in the Former Mill Area. Borings were advanced systematically along transects or in defined areas of interest in order to fully characterize extent of visual impacts, focusing specifically on the presence of woodwaste in sediment. If woodwaste was observed in a certain boring location, additional cores were advanced along transects (oriented either parallel or perpendicular to the shoreline) to delineate the extent of visual impacts (i.e., until woodwaste impacts were not observed at a location). Surface and shallow subsurface sediment samples were also typically collected for chemical analysis at the locations where woodwaste impacts were not observed to evaluate whether chemical impacts extended beyond visually observed impacts.

A summary of sample locations, date collected, sediment lithological descriptions, and associated COI analyses is presented in Table 3-3. The following sediment samples were collected, grouped by area of interest, with locations shown in Figure 2-1:

- **Pocket Beach (Former Mill Area):** Four borings (CR-11, 12, 13, and 14) were advanced in the pocket beach portion of the Former Mill Area. These cores were advanced, using a GeoProbe drill rig, to visually unimpacted sediment underlying the visual impacts. Visually

unimpacted sediment was present at depths ranging between 10 and 22 feet bml. Samples were collected from the respective areas of visually unimpacted sediment underlying visual impacts from each boring location and submitted to the laboratory for analysis. In addition, a sediment sample was collected from within the visual impacts from each core; this sample was then homogenized into one composite sample and sent to the laboratory in order to characterize the visually impacted material for possible future disposal. Sheen and associated nonaqueous-phase liquids (NAPL) were observed at borings CR-11, CR-12, and CR-14, within woodwaste accumulations.

- **CR-15 Transect (Former Mill Area):** Cores were stepped out along the CR-15 transect perpendicular to the shoreline until no visual impacts were observed in the sediment cores. Four borings in total were advanced along the CR-15 transect (CR-15A, B, C, and D). Non-visually-impacted sediment was observed only at the northernmost boring location, CR-15C. Note that although four borings were advanced along this transect, CR-15C is in fact the northernmost location. One surface and one subsurface sample from this core were collected and submitted to the laboratory for analysis as the CR-15 transect "clean" confirmation sample. Because of poor surface sediment recovery with the GeoProbe drill rig, surface sediment was collected using a manual PONAR sediment sampler at the same core location. Samples from all other cores in this transect were collected in approximately 5-foot intervals for archiving.

- **CR-16 Transect (Former Mill Area):** Cores were stepped out along the CR-16 transect perpendicular to the shoreline until no visual impacts were observed in the sediment cores. Three borings in total were advanced along the CR-16 transect (CR-16A, B, and C). However, cores consisted primarily of woodwaste at all of the locations along this transect. No additional borings were advanced to the north along this transect, as non-visually-impacted sediment was encountered along the CR-15, CR-17, and CR-18 transects (CR-17 and CR-18 are described below). The CR-15, CR-17, and CR-18 transects are expected to be representative of the northernmost extent of woodwaste impacts north of the pocket beach, and the surface and subsurface samples collected from the CR-16A location were submitted to the laboratory for archive. Because of poor surface sediment recovery with the GeoProbe drill rig, surface sediment was collected using a manual PONAR sediment sampler at the same core location. A slight sheen was observed at CR-16B.

- **CR-17 Transect (Former Mill Area and Chehalis River):** Cores were stepped out along the CR-17 transect perpendicular to the river shoreline until no visual impacts were observed in the sediment cores. Two borings in total were advanced along the CR-17 transect (CR-17C and D). Non-visually-impacted sediment was observed at the northernmost boring location, CR-17D. Note that, since boring locations CR-17A and CR-17B were not attempted during this investigation because boring CR-17C was the first location drilled along the transect and visual impacts were observed, cores along this transect were subsequently stepped out to the north to location CR-17D. One surface and one subsurface sample from CR-17D were collected and submitted to the laboratory for analysis. Samples from all other cores in this transect were collected in approximately 5-foot intervals for archiving. Because of poor surface sediment recovery with the GeoProbe

drill rig, surface sediment was collected using a manual PONAR sediment sampler at the same core location.

- **CR-18 Transect (Former Mill Area):** Cores were stepped out along the CR-18 transect perpendicular to the shoreline until no visual impacts were observed in the sediment cores. Two borings in total were advanced along the CR-18 transect (CR-18A and B). Non-visually-impacted sediment was observed at the northernmost boring location, CR-18B. One surface and one subsurface sample from CR-18B were collected and submitted to the laboratory for analysis. Samples from all other cores in this transect were collected in approximately 5-foot intervals for archiving. Because of poor surface sediment recovery with the GeoProbe drill rig, surface sediment was collected using a manual PONAR sediment sampler at the same core location.

- **CR-19 Transect (Former Mill Area and Chehalis River):** Cores were stepped out east along the CR-19 transect parallel to the river shoreline until no visual impacts were observed in the sediment cores. Cores were then stepped out perpendicular to the shore to delineate extent of visual impacts to the north. Ten borings in total were advanced along the CR-19 transect (CR-19A, B, C, D, E, F, G, H, I, and J). Non-visually-impacted sediment was observed at only two locations:

  - The easternmost boring location CR-19F, thus delineating the easternmost extent of visual impacts
  - The northeasternmost boring CR-19I, thus delineating the northeasternmost extent of visual impacts

  One surface and one subsurface sediment sample from CR-19F was collected and submitted to the laboratory for analysis. Samples from some other cores in this transect were collected in approximately 5-foot intervals for archiving. Because of poor surface sediment recovery with the GeoProbe drill rig, surface sediment was collected using a manual PONAR sediment sampler at the same core location.

- **Lumber Shed / OF-2:** Two composite surface samples were collected in the vicinity of the former lumber storage shed area (CR-07 and CR24). In addition, the CR-24 sublocations were in the direct discharge area of a Weyerhaeuser Sawmill Aberdeen/Seaport Landing Site outfall (OF-2). Each sampling area consisted of four discrete sublocations, samples from which were field composited and submitted to the laboratory for analysis. Discrete surface material from each sublocation was archived. Trace amounts of woodwaste were observed at locations LS-02 and LS-03 (within the CR-07 sample group).

- **Wharf Area:** Cores were advanced along the northern edge of the existing over-water wharf to delineate visual impacts west of the Former Mill Area. Only non-visually-impacted sediment was encountered at both locations explored (CR-25 and CR-26); woodwaste was not observed. Cores could not be advanced farther east along the wharf because a large dredge barge, *The Patriot,* was continuously docked at the wharf during the 2015 investigation. Therefore, a confirmation surface and subsurface sample was collected from the easternmost location (CR-26) and the subsurface sample was submitted to the

laboratory for analysis. Because of poor surface sediment recovery with the GeoProbe drill rig, surface sediment was collected using a manual PONAR sediment sampler at the same core location.

- **Former Boiler Area:** Two composite surface samples were collected in the vicinity of the Former Boiler (CR-08A and CR08-B). Each composite area consisted of four discrete sublocations, samples from which were field composited and submitted to the laboratory for analysis. As these sample locations were not in an area exposed under any tidal conditions, surface samples were collected via PONAR grab sampler (methodology described in Appendix B). Discrete surface material from each sublocation was archived. Two borings were advanced in the former boiler area (CR08A-FB04 and CR08B-FB05). Woodwaste impacts were observed in subsurface sediment from both locations, with only trace amounts of surface woodwaste observed at FB-05 and FB-06 (within the CR-08B sample group). Samples were collected in the non-visually-impacted sediment beneath visual impacts at each location and submitted to the laboratory for analysis.
- **Beach Area:** Two composite surface samples were collected along the beach area east of the pocket beach (CR-09A and CR-09B). Each composite area consisted of four discrete sublocations, samples from which were field composited and submitted to the laboratory for analysis. Discrete surface material from each sublocation was archived. In addition, near surface material from 0.33 to 1 foot bml as well as 1 to 2 feet bml was collected from each sublocation and archived. Woodwaste was observed at all eight sublocations between the surface and 2 feet bml.
- **Shannon Slough:** One composite surface sample was collected in the intertidal area where Shannon Slough enters the Chehalis River. Sublocations were located along a north-south transect. This composite area consisted of four sublocations, samples from which were field composited and submitted to the laboratory for analysis. Discrete material from each sublocation was archived. Woodwaste was observed at all four sublocations between the surface and 0.33 feet bml.

4 LEASED PROPERTY CONDITIONS

Leased Property conditions, including topography; geology and hydrogeology; stormwater pathways; aquatic environment; and beneficial water and land uses are described below.

4.1 Topography and Bathymetry

Figure 4-1 shows the Leased Property and vicinity topography and bathymetry. According to the U.S. Geological Survey Aberdeen, Washington, 7.5-minute series topographic map, the leased Property is located at elevations near sea level along the shoreline up to approximately 20 feet above mean sea level. The topography northeast of Aberdeen gradually slopes upward toward the foothills and peaks of the Olympic Mountains. The topography to the east, southeast, and south consists of rolling hills.

Surface water bodies in the vicinity of the leased Property include the Chehalis River; the Wishkah River; one small, unnamed drainage channel that enters the Chehalis River beyond the east end of the Property; and Shannon Slough, which enters the Chehalis River at an embayment located in the middle of the leased Property. The Chehalis River is tidally influenced, and some areas of the leased Property are periodically submerged at high tide. All surface water drainages in the area ultimately discharge to the Chehalis River.

4.2 Geology and Hydrogeology

The Weyerhaeuser Sawmill Aberdeen/Seaport Landing Site is located in the alluvial meander plain of the Chehalis River on the northwestern margins of the Willapa Hills physiographic region of southwestern Washington. The topography of the Willapa Hills is generally characterized by gentle rolling hills with straight, moderate slopes descending to wide valley floors.

The Chehalis River valley is filled with variable thicknesses of recent alluvium consisting of river-deposited gravels, sands, and silts. Near the ocean, the thicknesses of these alluvial deposits can be significant (more than 100 feet) because of valley filling as rising sea levels decrease the river's ability to transport sediments downstream. Well logs from resource protection wells in the vicinity of the Weyerhaeuser Sawmill Aberdeen/Seaport Landing Site indicate that alluvium in the area of the Weyerhaeuser Sawmill Aberdeen/Seaport Landing Site is at least 60 feet thick and consists of sands, silts, and clayey silts. Logs from borings located along State Highway 12 to the north indicate that the bedrock encountered below the alluvium is silt/sandstone.

Cross sections from a 1951 map of the Weyerhaeuser Sawmill Aberdeen/Seaport Landing Site provided by Weyerhaeuser indicate that much of the area of the main mill facilities was tideland prior to, and during, the early development of the Weyerhaeuser Sawmill Aberdeen/Seaport Landing Site in the late 1800s and early 1900s. Most of the early Weyerhaeuser Sawmill Aberdeen/Seaport Landing Site structures were constructed on wood-piling support platforms.

The four upland soil borings advanced upgradient of the pocket beach area in 2015 indicate that silts and silty sands are present at depths of 8 to 9 feet bgs in upland areas (Table 3-1). The silts and silty sands were overlain by woodwaste (up to 80 percent by volume of primarily wood and bark chips) of varying thicknesses—occasionally woodwaste layers were over 5 feet thick. Woodwaste typically occurred around 4.5 to 5 feet bgs surrounding the pocket beach. This layer of woodwaste was overlain primarily by gravelly sands, comprising the layer to the ground surface.

On the shoreline where SAIC advanced borings on behalf of DNR in 2011, dark brown, sandy sawdust was observed at approximately 4 to 5 feet bgs, overlain by light brown sawdust and woodchips, with crushed gravel at the surface (SAIC, 2011).

Depth to groundwater in the upland areas of the leased Property is approximately 4 to 5 feet bgs. Based on geologic logs from previous environmental investigations, groundwater flow in the area is generally to the northwest; however, flow direction and gradient may be tidally affected. Groundwater likely discharges to the Chehalis River. A previous study determined that water originating from seeps in the pocket beach area had a different chemical signature than Chehalis River water, suggesting that the seeps do not represent bank storage of river water inundated during high tide (Floyd|Snider,

2010). An opportunistic seep sample was collected from an active seep along the western edge of the pocket beach area during the 2015 investigation. Water quality parameters, including conductivity and pH, collected for both the seep sample and nearby reconnaissance groundwater samples are similar to each other (see Table 3-2), and are all different from levels measured in Chehalis River pore water (locations CR-01 through CR-03, approximately 16,000 microsiemens/cm [MFA, 2015]), suggesting that the seep water is more similar to groundwater.

4.3 Aquatic Environment and Bottom Substrate

The Chehalis River offshore of the leased Property is a tidal river that is frequented by commercial and recreational fisherman and provides habitat to multiple fish species including Chinook, coho, and chum salmon and steelhead and bull trout (which is listed under the federal Endangered Species Act as threatened). Following removal of the mill, pilings, and debris in the Former Mill Area, the pocket beach area was colonized by vegetation characteristic of wetland environments, such as cattail and rushes. Whether saltwater species are present is unknown, but this will be evaluated as part of the RI. This section of the river has been observed to be a depositional area, with debris including loose pilings and household appliances floating downstream and becoming lodged against the wharf. The apparent depositional nature of this section of river is further discussed below. Along the Chehalis River, the area between the pocket beach and the mouth of Shannon Slough consists of former tidal flats that historically were filled with unknown types and quantities of debris, including construction debris and woodwaste. Shannon Slough meanders from south to north across the property and discharges to the Chehalis River, forming a small deltaic feature. Multiple pilings are present in the mudflats along the northeastern portion of the slough.

Salinity data in 2013 Chehalis River sediment samples (e.g., samples CR-01 through CR-03) indicate that this area is estuarine according to SMS guidance. SMS suggest that estuarine environments have salinity ranging from 0.5 to 25 parts per thousand (ppt). Samples collected in this area that were analyzed for salinity had salinity values ranging from 6.9 to 11 ppt.

Bathymetry data (see Figure 4-1) indicate that the riverbank slopes steeply, with the top of the riverbank at an elevation of approximately 13 feet NAVD-88, and the slope at approximately -30 feet North American Vertical Datum of 1988 (NAVD-88). Elevations in the pocket beach area range from approximately 9 feet NAVD-88 to 6 feet NAVD-88. The Chehalis River, which flows along the northern portion of the site, is tidally connected to Grays Harbor and the Pacific Ocean, resulting in a mixed semidiurnal tidal regime (i.e., two different high, and two different low tides per lunar day). During site visits in 2013 and 2015, MFA observed that the pocket beach and other beach features in the leased Property were fully inundated at high tide and exposed at low tide.

Selected sediment samples collected in 2013 and 2015 were analyzed for grain size distribution. Percentages of fines (silt and clay) were consistent within the pocket beach (CR-04 through CR-06), ranging from 29.7 percent in surface to 42.1 percent in subsurface sediment. Similarly, percent gravel was consistent and ranged from 20.2 percent to 23.6 percent. Surface sediment at CR-19D near the beach area showed higher percent fines (77.8 percent). In general, the presence of fines indicates areas of deposition, where surface water velocities may be lower, allowing fine particles to settle. Total fines data indicate that the beach area experiences more deposition than the pocket beach.

Sediment samples collected in 2013 and 2015 were analyzed for TOC. TOC concentrations at the Lumber Shed and Former Boiler areas ranged from 1.09 percent to 3.08 percent. Percent TOC was similar in the 2013 Chehalis River samples (CR-01 through CR-03) and the eastern portion of the leased Property (beach area and Shannon Slough), ranging from 2.06 to 4.39 percent. In contrast, percent TOC was substantially higher in the three samples (CR-04 through -06) collected in 2013 in the Former Mill Area, ranging from 13.6 percent to 49.5 percent in surface and subsurface sediments. These TOC concentrations are well above the range considered normal (0.5 to 3.5 percent) (Ecology, 2015). TOC concentrations in Former Mill Area samples collected in 2015 beyond the extent of visual impacts (e.g., woodwaste) ranged from 0.415 percent to 3.99 percent, with an average (2.47 percent) well within the range considered normal.

Sediment characteristics observed in borings are provided in Table 3-3 for locations throughout the leased Property.

Additional work to further characterize the depositional regime, as well as evaluation of the flooding regime, will be conducted as part of the RI.

4.3.1 Woodwaste

Woodwaste in large volumes can overwhelm the assimilative capacity of sediment and affect the aquatic environment physically, chemically, and biologically. Woodwaste impacts can result from: the physical presence of woodwaste, which prevents biota from thriving and recruiting in and on native, healthy substrate; decreased dissolved oxygen due to microbial decomposition, which can create an unhealthy or toxic environment for biota; and decomposition by-products such as sulfides, ammonia, and phenols, which can cause or contribute to toxicity. As a result, woodwaste can be considered a deleterious substance in the environment that is subject to cleanup, consistent with MTCA and SMS rules.

Significant accumulations of woodwaste (>25 percent) were observed in the Former Boiler Area and extend eastward from the Former Mill Area to and including the beach area (see Table 3-3). During the 2015 investigation, wood debris or other debris would in some cases obstruct the core liner and an additional boring was advanced nearby (typically within 5 to 10 feet) until a sample was obtained (see Appendix B for sampling methodology). In the recovered samples the material was generally compressed into the bottom of the liner, and therefore Table 3-3 often indicates "no recovery" of the first couple feet of sediment. However, visual observation confirmed that the upper material recovered within the liner is likely surface material because the material coloration was characteristic of surface sediment and the observations matched surface materials retrieved in the same location with a PONAR grab sampler. These observations helped inform the estimated extents of woodwaste at locations with significant accumulations. Figures 4-2, 4-3, and 4-4, respectively, show the estimated woodwaste thickness; the estimated surface sediment thickness overlying woodwaste; and a cross section showing woodwaste and overlying sediment thicknesses. These figures demonstrate that woodwaste extends from near the surface to significant depths (more than 10 feet) and that with distance from shore, the woodwaste thickness decreases and the sediment layer overlying the woodwaste increases.

4.4 Beneficial Water and Land Uses

Providing protection for the highest beneficial use (i.e., the use requiring the highest quality in the resource) of water will generally also provide protection for other existing and future beneficial uses of water. Based on hydrogeological conditions observed on the Site and on regional topography, the following surface water and shallow groundwater conditions are present in the area:

- Surface water in the region discharges to the Pacific Ocean.
- Shallow groundwater in the area appears to flow toward the Chehalis River.

There is no known beneficial use of groundwater at the leased Property. One water well within a 1-mile search radius of the Weyerhaeuser Sawmill Aberdeen/Seaport Landing Site was identified in the regulatory agency database search conducted by Environmental Data Resources, Inc., as part of the Level I environmental site assessment (PES, 2010). This well is a public water supply well operated by the City of Aberdeen. The well is located northwest of the Weyerhaeuser Sawmill Aberdeen/Seaport Landing Site, across the Chehalis River. Currently, there are no potable water wells on the Weyerhaeuser Sawmill Aberdeen/Seaport Landing Site, let alone the leased Property area. Groundwater monitoring wells installed in the past as part of previous investigations are still present, although in unknown condition. The condition of these monitoring wells will be addressed during the RI. According to Weyerhaeuser, all of the monitoring wells previously installed at the Weyerhaeuser Sawmill Aberdeen/Seaport Landing Site have been decommissioned. Groundwater under and near the leased Property is likely to remain unused for the indefinite future and the City of Aberdeen will continue to provide public water.

Shallow groundwater under and near the Property likely discharges to the Chehalis River, and current and reasonably likely future uses of the river include recreation, fishing, and fish and wildlife habitat. Grays Harbor provides habitat for a number of shellfish species, including clams, mussels, and Dungeness crab. There is limited information on the potential presence of shellfish in the Chehalis River upstream of the SR 101 bridge. Recent field investigation conducted as part of the environmental impact statement for the SR 520 Pontoon Construction facility, located approximately 1 mile downstream of the Weyerhaeuser Sawmill Aberdeen/Seaport Landing Site property, found softshell clams (*Mya arenaria*) in the lower intertidal zone.

As described above, the QIN tribal fishing operations, including both drift gillnetting and setnetting methods, are conducted directly offshore of the Weyerhaeuser Sawmill Aberdeen/Seaport Landing Site property and within the leased Property. It is unknown whether the QIN presently use the river for shellfish. This data gap will be addressed during the RI.

The Weyerhaeuser Sawmill Aberdeen/Seaport Landing Site property is currently used by the GHHSA as their headquarters. The future-use plan for the Weyerhaeuser Sawmill Aberdeen/Seaport Landing Site is to develop a maritime heritage center with education, public access, tourism, and commercial uses. The leased Property is currently zoned by the City of Aberdeen for industrial use, but a land use and zoning change to waterfront mixed-use is in process. According to the DNR lease, the leased Property's permitted uses include moorage of vessels, public access, and education activities.

5 CONCEPTUAL SITE MODEL

The primary purpose of the conceptual site model (CSM) is to identify potential contaminant sources, evaluate contaminant fate and transport mechanisms, identify potential receptor groups, and describe pathways by which those receptors may be exposed to leased-Property-related chemicals in the environment.

Potential source areas and chemical release and transport mechanisms that can allow chemicals to migrate to potential receptors are summarized for the leased Property. In addition, a discussion of significant exposure points, pathways, and potential receptors for the leased Property is presented separately in individual sections. The human health and ecological CSM depicting exposure pathways and potential receptors is shown in Figure 5-1. Note that CSMs are dynamic, and the CSM will be reevaluated and updated as part of the forthcoming RI as additional information is obtained.

5.1 Source Characterization

Suspected historical sources of sediment impacts at the leased Property include releases from the overwater mill and upland operations related to wood processing. Potential historical sources are discussed in Section2.4, and include:

- Spills from the overwater sawmill hydraulic equipment previously located in the leased Property.
- Releases to sediment from overwater structures currently and formerly located in the leased Property.
- Releases from upland historical site operations that migrated to the leased aquatic land via stormwater or groundwater transport. Petroleum products, antifreeze, various oils and lubricants, boiler treatment chemicals, anti-sapstain mixtures (which contained PCP until approximately 1986), inks, red end paint (until the early 1990s), and paints and solvents were used and/or stored during historical sawmill operations. A trough is present in the planer/wood treatment building. It is unknown how this feature functioned. This data gap will be addressed during the RI.
- Wood-fired boilers and two wood-refuse burners identified at the Weyerhaeuser Sawmill Aberdeen/Seaport Landing Site. Operation of this equipment is associated with dioxin formation; the historical disposition of boiler ash at the site is unknown (PES, 2010).
- Historically, PCB-containing equipment supporting site operations was present. Note all PCB-containing transformers and light ballasts were removed from the site between 1990 and 2001, and USEPA identified no other PCB-containing equipment at the site in 2006 (PES, 2010).

- Background sources (further described below), including stormwater discharge to Shannon Slough.
- Accumulations of woodwaste from historical sawmill operations, including the chip loader and various processes in the Former Mill Area. Impacts from woodwaste include the physical presence of the woodwaste, decreased dissolved oxygen concentrations in sediment, and increased concentrations of woodwaste decomposition products, such as sulfides, ammonia, and phenols, that can cause or contribute to toxicity.

5.2 Background Sources

In addition to former mill-related sources, upstream or ubiquitous sources of chemicals and deleterious substances have the potential to impact the aquatic leased Property. The Chehalis River has a long history of industrial activity that could result in the release of contaminants and wood debris similar to what has been observed at the leased Property. Shannon Slough, which discharges to the Chehalis River, receives considerable stormwater input from roads and neighborhoods upgradient of the Weyerhaeuser Sawmill Aberdeen/Seaport Landing Site. Further, persistent organic pollutants such as dioxins, PCBs, and PAHs are known to be widespread in the environment.

Dioxins and PAHs can result from both natural and anthropogenic sources. The area around the leased Property is an urban environment where industrial activity has been conducted and a city has been established for over 100 years. In urban areas vehicle emissions, back-yard trash burning, structure fires, stormwater runoff, and other common events and activities can generate these chemicals (USEPA, 2006). Therefore, low levels are commonly present in sediment because of natural and/or non-point anthropogenic activities.

PCBs are a class of persistent, bioaccumulative, and toxic compounds that historically had a wide range of uses, including electrical transformers, hydraulic systems, lubricants, surface coatings, adhesives, plasticizers, inks, insulating materials, pesticides, and consumer products (Ecology, 2014b). In the Puget Sound, surface runoff is the largest pathway to aquatic environments, followed by wastewater treatment plants and air deposition. PCBs are ubiquitous throughout the natural environment, including sediment, and are found in animal tissue throughout the food chain.

Metals, including mercury, are naturally occurring elements in the environment, and can be concentrated by human activities. The distribution of naturally occurring metals is controlled by geologic processes that occur across different physiographic regions. Metals are commonly transferred to the marine environment from sewage treatment facilities, atmospheric deposition, and continental weathering.

5.3 Fate and Transport of Contaminants

The primary potential contaminant transport mechanisms operating at the leased Property are deposition to sediment from former facility operations, outfall discharge to sediments, stormwater runoff to sediments, atmospheric deposition to sediments, sediment erosion caused by waves, erosion of sediment caused by propeller wash, water current sediment erosion, and food chain transfer originating from impacted media.

Former facility operations are described in Section 2.4. Potential mechanisms of contaminant transport to the leased Property include stormwater flow from uplands (i.e., in the Former Mill upland area surrounding the pocket beach) to surface water and sediment. Stormwater discharges to leased Property sediments have the potential to transfer contaminants to areas adjacent to stormwater outfalls at the pocket beach and Shannon Slough, as well as through overland flow. Upstream runoff from residential, highway, and other properties may be impacting Shannon Slough.

Groundwater in the leased Property likely discharges to leased Property sediment and the Chehalis River (see Section 4.2). Groundwater discharge to surface water is therefore considered a complete transport pathway.

In sediments, physical transport of contaminants can be upward (advection/diffusion, ebullition), downward (advection/diffusion, burial), or lateral (resuspension/deposition); bioturbation caused by benthic organisms can further displace or mix contaminants. In water, contaminants can move by the same advective and diffusive forces operating in the sediment, by sorption to/from sediments resuspended by currents or scour events, or via bioturbation (e.g., releases from sediment to the water column). The relative importance of the above processes will vary, depending on the chemical and physical properties of a released contaminant. The properties of sediment and the dynamics of groundwater flow also shape contaminant fate and transport. The most significant site-specific transport mechanisms are discussed further below.

A number of processes, including water flow, wave erosion, and propeller wash, have the potential to impact sediment transport in the Chehalis River. Since this reach of the Chehalis River is tidally influenced, some sediment resuspension likely occurs during the ebb and flood of the tides. While wind waves may be a mechanism for erosion in the Chehalis River, these waves are likely to be a less significant transport mechanism than the larger wakes from passing vessels. Portions of the leased property in the Chehalis River are potentially vulnerable to erosion from propeller wash where vessels may operate now or in the future. Sediment resuspension and redistribution due to river and wave energy inputs is not expected to be a significant transport mechanism closer to shore in the pocket beach and beach areas, where presence of fines indicates a depositional environment.

5.4 Potential Human Health Exposure Scenarios

The primary purpose of the human health CSM is to identify potential receptor groups and to describe pathways by which those populations may be exposed to Property-related chemicals in the environment (USEPA, 1989). Populations that may be exposed to contaminants at a site and pathways by which these populations may come into contact with contaminants are identified. A complete pathway requires:

- A source and mechanism for release of constituents
- A transport or retention medium
- A potential environmental contact (exposure point) with the affected medium
- An exposure route at the exposure point

The CSM presented below shows potentially significant pathways and receptors under current and reasonable future leased Property scenarios. The evaluation of the leased Property focuses on the most important factors that may cause possible exposures.

The GHHSA staff currently occupies the office building and use other structures remaining on Weyerhaeuser Sawmill Aberdeen/Seaport Landing Site. Public use and access to the leased Property upland portion are currently limited. The leased Property upland portion is proposed for future use as the homeport for the *Lady Washington* and *Hawaiian Chieftain* tall ships as part of a new maritime heritage facility called Weyerhaeuser Sawmill Aberdeen/Seaport Landing Site. Users would include the public and staff who work at the facility. The Chehalis River is frequented by industrial marine users, fishers, and recreationists.

The principal human receptors who have the potential to contact leased Property media are further described below. As noted above, the CSM will be refined as part of RI activities as additional information regarding river uses is obtained.

Property users—Current and future users of the upland areas, occupational workers and public visitors, may come into contact with the leased Property soils. Occupational workers may come into contact with the Chehalis River while maintaining the area. Future visitors may come into contact with the leased Property soils while touring and exploring the Weyerhaeuser Sawmill Aberdeen/Seaport Landing Site. While these groups may also come into direct contact with leased Property sediment and surface water, the exposure is anticipated to be occasional and incidental. However, because development plans for the leased Property will evolve over time and the exposure of leased Property users to nearshore sediment and surface water may change over time, the exposure scenarios are considered potentially complete.

Recreationists—The water recreation scenario includes assorted beach and water activities, including activities related to operation of personal watercraft. Individuals may come into contact with sediment and surface water while operating vessels; however, adult exposure is expected to be generally limited to contact with sediment and surface water while entering and exiting the water. Swimming is not a common activity in the area, given boat traffic and dangerous currents; any limited swimming that does occur likely is significantly limited in duration and frequency, given Aberdeen weather conditions. Because of the strongly hydrophobic nature of the COIs, exposure via surface water is not expected to be a significant pathway. However, children may be exposed to sediment through direct contact if playing in nearshore beach areas. Current and reasonably likely future recreational use is not expected to change significantly in the foreseeable future.

Fishers—Areas directly offshore of the Weyerhaeuser Sawmill Aberdeen/Seaport Landing Site property and within the leased Property are in the QIN's usual and accustomed tribal fishing area. Fishers generally angle near the leased Property by boat, using hook and line and/or large nets. The shoreline is not conducive to shore fishing. Fishers may include adults and children. Fish are caught for personal consumption by sport fishermen and tribes during permitted times of the year. Because of the strongly hydrophobic nature of the COIs, exposure to fishers via surface water is not expected to be a significant pathway. The primary exposure pathway for potential fishers is consumption of aquatic biota. Other exposure pathways relevant to fishers could include contact with sediment during net fishing or harvesting shellfish.

Further coordination with the QIN is needed and additional information on current fishing and harvesting uses will be obtained as part of the RI.

5.5 Potential Ecological Receptors

Water-dependent ecological receptors, including plants, benthic invertebrates, fish (piscivorous, omnivorous, and benthivorous), piscivorous mammals, and piscivorous raptors are the primary potential ecological receptors.

Relevant exposure media for ecological receptors include sediment and fish tissue (for receptors at higher trophic levels). Plants, benthic invertebrates, fish, birds, and mammals may all be exposed to chemicals present in sediment. Specifically, plants and benthic invertebrates may be exposed to chemicals through direct contact with and uptake from sediment; fish may be exposed to chemicals through direct contact with sediment and ingestion of food that has accumulated contaminants. Birds and mammals may be exposed to chemicals through incidental ingestion of sediment and consumption of food that has accumulated contaminants. Although birds and mammals may have some dermal exposure to chemicals in sediment, this exposure route is considered insignificant because of external protection such as fur and feathers.

5.6 Terrestrial Ecological Evaluation

A terrestrial ecological evaluation (TEE) was conducted to characterize potential risks to terrestrial ecological receptors that may be present in the leased Property uplands. The results of the TEE are provided in Appendix D. These results will be further evaluated in the context of any upland soil remedy proposed, to ensure that a selected remedy is protective of ecological receptors as well as of human health.

6 SCREENING LEVELS

Soil, groundwater, surface water, and sediment screening levels protective of human health and ecological receptors are described in the following sections.

6.1 Soil

Soil concentrations are evaluated relative to MTCA Method A and B soil CULs. Method A CULs rely on various endpoints described in WAC 173-340-900 Table 740-1 and are applicable for simple sites undergoing routine cleanup actions, or sites with relatively few hazardous substances. Method B CULs have been applied in cases where Method A CULs are unavailable. Method B CULs are applicable to all sites; generic default assumptions are used to calculate risk-based screening levels protective against direct contact via ingestion or dermal contact by humans, with target risk levels set at the MTCA acceptable risk level. In cases where cancer and noncancer effects values are available for a chemical,

the lower value is applied. Finally, metals concentrations are compared with natural background values.

6.2 Groundwater Seep Water, and Stormwater

As discussed in Section 4.2, groundwater likely discharges to the Chehalis River. Groundwater, seep water, and stormwater concentrations are therefore compared with surface water screening levels protective of human health and aquatic receptors. Specifically, water chemistry data are compared to the most stringent USEPA freshwater[2] National Recommended Water Quality Criteria (WQC) for the protection of aquatic life and human health in surface water (USEPA, 2019). Where WQC were not available, water data were compared to MTCA Method B screening surface water CULs. In cases where cancer and noncancer effects Method B CULs are available for a chemical, the lower value is applied. For TPH, the Method A CUL for groundwater was used. Note that groundwater is not used for drinking at the leased Property.

The seep sample results likely represent groundwater as it discharges to surface water and are also evaluated against the surface water screening levels.

6.3 Sediment

Sediment screening levels protective of ecological receptors and human health are described in the following sections. Sediment background conditions reflecting natural and/or regional sources are considered in the screening level development, consistent with recommendations and guidance provided in Ecology (2017).

6.3.1 Risk-based Benthic Criteria

Washington SMS marine benthic criteria are appropriate for marine and low-salinity sediments and were developed from regional databases that included a broad suite of metals and organics concentrations, as well as toxicity data for a variety of different tests and endpoints. The marine criteria were developed using the Apparent Effects Threshold (AET) approach. AETs were calculated separately based on biological testing toxicity and associated endpoints, with the lowest AET informing the SCO criteria representing a no-adverse-effects level for benthic communities, including no acute or chronic adverse direct toxicity effects. The second-lowest AET informs the CSL criteria representing a minimum-adverse-effects level for benthic communities.

The SMS marine SCO and CSL values are based on dry weight (dw) AETs for metals and polar organics and on AETs normalized to TOC for nonpolar organics (WAC 173-204-562). At sample locations where the TOC content is outside the range considered normal (i.e., 0.5 to 3.5 percent) it is recommended that nonpolar organics not be organic carbon-normalized (OC). It is recommended instead that the sample dw concentrations be compared with the dw AETs for nonpolar organics, as provided in Ecology (2017).

[2] According to Ecology's "Water Quality Atlas" application, waters in the vicinity of the site are considered to be fresh for the purposes of water quality criteria (Ecology, 2016).

Consistent with the above, the leased Property sediment data are compared with the applicable SCO and CSL (dw or OC) values to determine the potential for adverse effects to benthic receptors.

6.3.2 Background Concentrations

Developing site-specific risk-based CULs for human fish consumption, or ecological bioaccumulation risk pathways for bioaccumulative chemicals, requires site-specific sediment and tissue data to calculate a biota-sediment accumulation factor. No such data are available for the site. Even when site-specific data are available, risk-based screening levels for fish consumption are often below natural or regional background levels, or below laboratory practical quantitation limits, regardless of the exposure assumptions. In these situations, Ecology recommends using regional or natural background sediment concentrations for CULs of bioaccumulative chemicals for these pathways (Ecology, 2017).

To evaluate nearby concentrations of these compounds, existing Chehalis River sediment data collected within 1 mile of the leased Property were queried from Ecology's EIM database; 33 samples were identified, at 27 locations (see Table 6-1 and Figure 6-1). Minimum, maximum, and average concentrations are summarized below. Note that data from the nearby Chehalis River sediment are used for comparison purposes only, and the evaluation below is not considered a robust assessment of natural background or ambient concentrations:

- Twenty-five of the samples were analyzed for PCB Aroclors. These were not detected in any of the samples evaluated; however, many reporting limits were elevated compared to those currently achievable and attained for leased Property samples. Reporting limits ranged from 0.64 ug/kg to 69 ug/kg, with an average reporting limit of 21.5 ug/kg.
- Fourteen of the samples were analyzed for dioxins. Dioxin TEQs were calculated for the EIM data, resulting in a minimum TEQ of 0.35 pg/g, a maximum TEQ of 13 pg/g, and an average TEQ of 3.72 pg/g.
- Thirty-three of the samples were analyzed for mercury. Mercury concentrations ranged from not detected at a reporting limit of 0.02 milligram per kilogram (mg/kg) to a maximum concentration of 0.14 mg/kg. The average mercury concentration detected was 0.05 mg/kg.
- Thirty of the samples were analyzed for PAHs. PAHs were not detected in six samples. Three samples had anomalously high concentrations (more than 500 ug/kg) and were removed from consideration as background samples. Carcinogenic PAH (cPAH) TEQs were calculated, resulting in a minimum TEQ of 3 ug/kg and a maximum of 74 ug/kg. The average concentration of detections was 29.2 ug/kg.

This evaluation shows that diffuse background sources, such as atmospheric deposition or stormwater, may affect leased Property sediments. Therefore, risk-based fish ingestion screening levels and ecological screening levels for bioaccumulatives are not developed. However, human sediment direct contact and incidental ingestion screening levels for bioaccumulatives are often above background levels, and these are described in the following section. The need for additional risk-based criteria will be evaluated as part of the RI.

6.3.3 Sediment Direct Contact and Incidental Ingestion

This section describes the development of screening levels protective of a hypothetical recreationist exposed to sediments via direct contact and incidental ingestion. While exposure to sediments under current and future scenarios is anticipated to be occasional and incidental (see Section 5.4), development plans for the leased Property may evolve over time, and the exposure scenario is considered potentially complete. Specifically, the current evaluation accounts for a child's exposure to sediment while playing on the beach. Potential exposure to fishers through incidental ingestion or through direct contact while harvesting fish or shellfish is not evaluated at this time.

Sediment direct contact and incidental ingestion screening levels are developed for widespread bioaccumulative chemicals (PCBs, dioxins, mercury, and cPAHs) that are typically above natural background (Ecology, 2017) and are listed as persistent bioaccumulative toxins (WAC-173-333-310). Bioaccumulative chemicals have the potential to result in adverse effects as a result of repeated, long-term exposure. Models for deriving screening levels were developed for these chemical classes, using chemical-specific model parameters; results are provided in Appendix E. The screening levels protective of the child beach play scenario for cancer effects were calculated consistent with WAC 173-340-740 equation 740-5 and Equation 9-1 in Ecology (2017), using exposure parameters from Table 9-1 from Ecology (2017). Most of the screening levels were developed using the approach presented in SCUM II; screening levels for PCBs[3] were developed using toxicity values from the CLARC database.

$$SL_C = \frac{ARLc * BW * AT}{EF * ED[(IR * AB * SFo)/10^6\ mg/kg) + (SA * AF * ABS * SFd)/10^6\ mg/kg)]}$$

where:

SL_C is the sediment screening level for recreationists (mg/kg);

ARL_C is the acceptable risk level for individual carcinogens (unitless, $1*10^{-6}$);

BW is the body weight over the exposure duration (16 kg);

AT is the averaging time (75 years, or equivalently 23,375 days);

EF is the exposure frequency (41 days);

ED is the exposure duration (six years);

IR is the sediment ingestion rate (200 mg/day);

AB is the gastrointestinal absorption factor (unitless, chemical-specific);

SFo is the oral cancer potency factor ($[mg/kg\text{-}day]^{-1}$, chemical-specific);

GI is the gastrointestinal absorption conversion factor (unitless, chemical-specific);

SA is the dermal surface area (2,200 square centimeters [cm^2]);

[3] Ecology (2017) evaluates PCBs as congeners. Congener data are unavailable for the site, and the toxicity factor for PCBs as Aroclors from the CLARC database was applied.

AF is the adherence factor (0.2 mg/cm^2/day);

ABS is the dermal absorption fraction (unitless, chemical-specific); and

SFd is the dermal cancer potency factor ([mg/kg-day]$^{-1}$, derived as SFo/GI).

The resulting screening levels are 3,100 ug/kg for total PCBs, 100 pg/g for dioxin TEQ, and 850 ug/kg cPAH TEQ, protective against cancer effects. In addition, Ecology (2015) provides a screening level of 64 mg/kg for mercury (as methylmercury), based on noncancer effects.

Note that for PCBs, dioxins, and cPAHs, the noncancer-effects screening levels are higher (i.e., are less protective) than the cancer-effects screening levels (Ecology, 2015). The values derived above are therefore protective against both the cancer and noncancer endpoints. There is some uncertainty associated with several model parameters, including the exposure frequency and duration, the sediment ingestion rate, and the adherence factor. However, all model parameters are based on Ecology (2015) recommendations, and the screening levels are expected to be protective for a reasonable maximum exposure scenario of child beach play. Note that comparing a total mercury concentration to a methylmercury screening level will err on the side of being overly protective; this comparison assumes that 100 percent of the total mercury measured is in the form of methyl mercury, which is typically not the case.

6.3.4 Woodwaste Scoring

Three samples collected in 2013 containing more than 25 percent woodwaste by volume (Birkland, 1999) were analyzed for conventional sediment parameters, including total solids, total volatile solids, and TOC. The percent woodwaste volume was determined in the field by a geologist, based on visual observations, consistent with Unified Soil Classification System procedures. These parameters, along with other chemical analytes, including phenol, ammonia, and sulfide, are used to score each location according to Table A-3 of the draft DNR guidance (Integral, 2011). In addition, a surface (0 to 0.33 foot bml) sample was collected in 2015 (CR19D-SSD-CONV) for conventional parameters to inform whether buried woodwaste has the potential to significantly affect overlying surface sediments; significant woodwaste was observed in the subsurface beginning at approximately 4.2 feet bgs at this location. Woodwaste scores are tallied based on sediment parameter values and can result in determinations ranging from "Low Concern" to "High Concern."

7 ANALYTICAL RESULTS

Laboratory analyses of the 2015 investigation samples were performed by Analytical Resources, Inc. (ARI) in Tukwila, Washington, and NVL Laboratories in Seattle, Washington. Laboratory analytical reports are provided as Appendix F. Analytical data and the laboratory's internal quality assurance and quality control data were reviewed to assess whether they meet project-specific data quality objectives. This review was performed consistent with accepted USEPA procedures (USEPA, 2014a,b,c) and appropriate laboratory and method-specific guidelines (ARI, 2014; USEPA, 1986). The data validation memoranda summarizing data evaluation procedures, data usability, and deviations from specific field

and/or laboratory methods for the August 2015 investigation data are included as Appendix G. The data are considered acceptable for their intended use, with the appropriate data qualifiers assigned.

Data collected between 2011 and 2015 are evaluated below. Table 7-1 summarizes the samples collected, locations, depths, and analyses performed.

7.1 Soil

Soil borings were advanced to approximately 5 feet bgs in the area immediately upgradient of the pocket beach and tidelands area (sample locations CR 20 through 23 and SB 1 through 6; see Figure 2-1). Since woodwaste was observed at all boring locations, one subsurface soil sample from each location was analyzed for COIs (see Table 3-1). Metals, PCBs, SVOCS, TPH, and dioxins/furans were detected in one or more samples. Soil analytical results and screening levels summarized in Table 7-2 are as follows:

- Except for chromium, metals are below the soil screening levels at all locations; however, concentrations are below Washington state-wide natural background conditions of 42 mg/kg (Ecology, 1994).
- Total PCBs were detected at CR-20 and CR-21. CR-20 (2,170 ug/kg) exceeds the soil screening level between 3.3 and 5 feet bgs, whereas CR-21 (163 ug/kg) between 3.5 and 5 feet bgs is well below the screening level of 1,000 ug/kg. PCBs were not detected at CR-22 and CR-23.
- SVOCs were generally not detected or are well below the screening levels, with the following exceptions: benzo(a)pyrene and cPAH TEQ exceedances at CR-20 and CR-21 between approximately 3.5 and 5 feet bgs. The results are less than an order of magnitude above the screening levels. Note that cPAH TEQs were not calculated for soil locations SB4, SB5, and SB6 because PAH reporting limits were significantly elevated.
- Soil concentrations for lube-oil-range TPH exceed the screening level at CR-20 and CR-21 between approximately 3.5 and 5 feet bgs, and at SB6 between 1.5 and 5 feet bgs. Note that SB6 is outside the leased Property boundary.
- Low-level dioxins lower than the screening level were detected at CR-21 and CR-23 (from 3.5 to 5 feet bgs and 1.5 to 3 feet bgs, respectively) and in composites from locations SB1 through SB6. Dioxin TEQs at CR-20 (90 pg/g) between 3.3 and 5 feet bgs and at CR-22 (35.8 pg/g) between 3 and 4.5 bgs are above the soil screening level of 13 pg/g.

Subsurface impacts associated with multiple COIs were observed at CR-20 and CR-21, located immediately south of the pocket beach inlet and within the Former Mill Area footprint. CR-22 and CR-23 are located northeast of the Former Mill Area footprint, in a former tidal flat area that has been filled. With the exception of low-level dioxins at CR-22, no impacts were observed at these locations.

Note that outside the leased Property boundary, at SB6, TPH exceeded CULs, and chemicals typically associated with TPH, such as PAHs, were not detected at elevated reporting limits.

7.2 Groundwater, Seep Water, and Stormwater

Reconnaissance groundwater samples were collected from four boring locations (CR-20, CR-21, CR-22, and CR23) to evaluate potential upgradient sources to the pocket beach. Five-foot temporary well screens were installed in each boring location. An opportunistic seep sample was also collected from the pocket beach area to assess whether discharge is representative of groundwater. One stormwater sample was collected (STORM-01). Collection conditions for this sample (i.e., conditions of runoff, drain location, and whether before or after drains were cleaned) will be determined during RI activities.

Groundwater data will be compared to groundwater screening levels as part of the upland RI. Based on the potential for discharge to the river, groundwater, seep water, and stormwater results were compared to surface water screening levels (see Section 6.2 for screening level discussion). The analytical data, associated screening levels, and results of the screening are summarized in Table 7-3 for groundwater, seep water, and stormwater. Summarized results of the screening are as follows:

- Groundwater and seep water:
  - Dissolved metals were not detected in groundwater or seep water. Total mercury was detected below the screening level at CR-21 and CR-22. Total chromium was detected at all groundwater locations except CR-20, at concentrations below the surface water screening level.
  - Total PCBs were non-detect at all locations.
  - SVOCs were not detected above the screening levels.
  - Diesel-range and/or lube-oil-range TPH concentrations exceed the screening levels at all locations for groundwater. Diesel-range and/or lube-oil-range TPH concentrations were detected in seep water. During future[upcoming?] investigations, the chromatograms will be requested from the laboratory to ensure that there are no biogenic interferences from woodwaste.
  - Dioxins/furans were not detected in any of the groundwater or seep water samples.
- Stormwater:
  - Dissolved chromium and zinc were detected below screening levels in stormwater. Total arsenic, chromium, copper, lead, mercury, and zinc were detected in the stormwater sample. The total arsenic level was above the human health WQC for surface water.
  - Total PCBs were non-detect at all locations.
  - SVOCs were not detected.
  - Diesel-range and/or lube-oil-range TPH concentrations were not detected in stormwater.

- Dioxins/furans were detected in the stormwater sample. The dioxin TEQ for the stormwater sample exceeded the human health WQC for 2,3,7,8-TCDD; however, it is noted that the result is well below the USEPA maximum contaminant level of 30 micrograms per liter.

COI concentrations in groundwater are generally non-detect or below the surface water screening levels, with the exception of total chromium, 1-methylnaphthalene, and TPH. Groundwater at the leased Property is not used for drinking water and therefore no associated risks are expected; groundwater potability will be evaluated as part of the upland RI work.

The results show that certain COIs detected in soil do not appear to leach to groundwater in appreciable amounts, e.g., PCBs and benzo(a)pyrene exceeded soil screening levels and were not detected in groundwater. In contrast, TPH was detected in both media, and groundwater discharge may constitute an ongoing source to the pocket beach river area. TPH was also detected in seep water; however, the seep concentrations are an order of magnitude lower than in groundwater (see Table 7-3), and may reflect some attenuation of groundwater before it reaches surface water and sediments.

7.3 Sediment

Surface and subsurface sediment samples were collected in multiple areas of interest within the leased Property and were analyzed for COIs. Sediment results were compared to the applicable SMS criteria (SCOs and CSLs), as well as background conditions (see Section 6.3.2) and direct-contact and incidental-ingestion screening levels (see Section 6.3.3). In some cases, conventional sediment parameters were analyzed to determine potential toxicity effects associated with woodwaste (see Section 6.3.4). Sediment analytical results are shown in Table 7-4 (dw basis as reported by the laboratory). Table 7-5 shows the data screening; data are presented as dw or OC, as dictated by the associated TOC content and SMS criteria (see Section 6.3.1). Sediment chemical exceedances are shown on Figure 7-1. The results are described in the following subsections by area of interest.

7.3.1 Former Mill Area/Pocket Beach

Surface and subsurface sediment samples were collected at multiple locations in the Former Mill Area/pocket beach (CR-04 through CR-06 and CR-11 through CR-14), as well as along transects (transects CR-15, -17, -18, and -19) that extend north and east of this area (see Figure 2-1). CR-04 through CR-06 samples were collected within the pocket beach fill. CR-04 was collected at three depths (0 to 0.33 foot, 1 to 2.5 feet, and 2.5 to 5 feet). CR-05 was collected at two depths (0 to 0.33 foot and 0.33 to 2.5 feet), and CR-06 was collected at two depths (0 to 0.33 foot and 1 to 2.5 feet). To determine if the substrate is clean, CR-11 through CR-14 were collected below the fill material, at depths ranging from 11 to 23 feet. CR-15 through CR-19 are transects taken in the shallow fill north of the pocket beach, each collected at two depths (0 to 0.33 foot and 0.5 to 1 foot). Woodwaste accumulation was observed at multiple locations (see Table 3-3 and Figure 4-2). Surface sediments are the point of compliance under the SMS; however, for discussion purposes, subsurface results are also compared with screening levels. Metals, PCBs, SVOCS, TPH, and dioxins were detected. Sediment analytical results and screening levels, summarized in Table 7-5, are as follows:

- Total metals are non-detect or are below the benthic sediment screening levels in surface and subsurface sediment samples impacted by woodwaste (locations CR-04, CR-05, and CR-06), with the following exceptions:
  - Mercury at CR-04 and CR-06. Mercury marginally exceeds the SCO (0.41 mg/kg dw), but not the CSL (0.59 mg/kg dw) in surface sediment at CR-06, whereas both criteria are exceeded in surface sediment at CR-04 (6.2 mg/kg dw). Mercury was also previously found to exceed SCO levels in 2011 in this area in sample locations SSFM2 and SSFM3 in the surface and subsurface.
  - Zinc exceeded the SCO, but not the CSL, in one sample collected in 2011 at location SCFM2 between 0 and 2.7 feet bml. Zinc concentrations did not exceed screening levels in the more recent, 2013 and 2015, sampling events.

  Total metals are non-detect or are below the SCO and CSL in subsurface samples collected just beyond the vertical extent of woodwaste impacts observed (e.g., CR-14) and in samples collected beyond the lateral extent of impacts (e.g., CR-18B).

  Mercury is well below the beach direct-contact screening level of 64 mg/kg dw in all sediment samples.

- In surface samples collected from locations impacted by woodwaste (CR-04 CR-05, and SCFM3A), total PCBs exceed the SCO (evaluated on a dw basis because of elevated TOC) but are below the CSL. Concentrations generally increase with depth (as observed in samples taken up to approximately 2.5 feet bml) in these samples.

  Total PCBs were not detected or were detected at concentrations below the SCO and the CSL in surface and subsurface sediment samples collected beyond the vertical or lateral extent of woodwaste impacts.

  Total PCBs are below the beach direct-contact screening level of 3,100 ug/kg dw in all sediment samples.

- Several SVOCs, including PAHs in some cases, exceeded the SCO and/or CSL in surface sediment at locations impacted by woodwaste (CR-04, CR-05, SSFM2 and SCFM3). SVOCs were not analyzed in surface sediment at CR-06 where woodwaste impacts were observed; SCO and CSL exceedances were observed at 1 to 2.5 feet bml at CR-06. Concentrations generally increase with depth (to approximately 2.5 feet bml) in these samples.

  SVOCs and PAHs are non-detect or are below the sediment screening levels in surface and subsurface sediment in all other samples collected beyond the vertical or lateral extent of woodwaste impacts, with the exception of 4-methyphenol at CR-12 at 15 feet bml.

  The cPAH TEQs are below the beach direct-contact screening level of 850 ug/kg dw in all surface sediment samples.

- The average dioxin TEQ concentration of 46.1 pg/g dioxin TEQ in surface locations impacted by woodwaste (i.e., at CR-04 through CR-06) is consistent with dioxin TEQs previously reported for this area (68 pg/g in 2011). Concentrations increase with depth (to approximately 2.5 feet bml, the maximum depth analyzed) at CR-04 but not at CR-06.

Surface sediment concentrations (average of 8.55 pg/g dioxin TEQ) are low level in surface samples collected beyond the lateral extent of woodwaste impacts (e.g., to the north and east of the Former Mill Area at CR-15C, CR-17D, CR-18B, and CR-19F). Similarly, the sample collected beyond the vertical extent of impacts at CR-11 (23 feet bml) is low level (2.38 pg/g).

Surface sediment concentrations are well below the beach direct-contact screening level of 100 pg/g dioxin TEQ.

- TPH was detected in the diesel- and motor-oil range in all samples collected at locations impacted by woodwaste (CR-04 and CR-06). All surface sediment locations except CR-05 were above the MTCA A soil residual saturation screening level (i.e., 2,000 mg/kg) and the diesel-range SMS freshwater sediment CSL (i.e., 510 mg/kg). Note that sheen, petroleum-hydrocarbon-like odor, and dark-colored water or water-NAPL mixtures were observed below approximately 1 foot bml at all these locations during the 2013 investigation, and concentrations typically increase with depth (to approximately 2.5 feet bml). During the 2015 investigation, sheen and associated NAPL were observed in subsurface (9 to 12 feet bml) woodwaste accumulations at borings CR-11, CR-12, and CR-14. The shallow NAPL impacts described during the 2013 investigation were not observed in the pocket beach area during the 2015 investigation, likely because of poor surface sediment recovery by the GeoProbe drill rig.

  TPH concentrations observed during the 2015 investigation in locations not impacted by woodwaste are well below the freshwater sediment CSL (510 mg/kg) in the sample collected beyond the vertical extent of impacts (CR-11, 23 feet bml) and are non-detect or are well below the freshwater CSL in surface samples collected beyond the lateral extent of woodwaste impacts (i.e., at CR-15C, CR-17D, CR-18B, and CR-19F, located north and east of the Former Mill Area). No NAPL was observed at these locations.

As a whole, the results show that sediment concentrations (for mercury, PCBs, and/or SVOCs including PAHs) generally exceed SCOs or CSLs and appear to correlate with areas impacted by significant woodwaste accumulation. However, further evaluation will be needed to determine to what extent sediment and woodwaste impacts correlate spatially. Concentrations of mercury, PCBs, cPAH TEQ, and dioxin TEQ are elevated relative to nearby Chehalis River samples (found in the EIM database) that may represent background condition (see Section 6.3.2). TPH is also elevated, and water-NAPL mixtures were observed. Surface sediment concentrations are below the human health beach direct-contact screening levels, and unacceptable risks via this pathway are not expected.

Samples were also collected for analysis at locations where woodwaste was not observed, including subsurface samples beyond the vertical extent of woodwaste impacts and surface sediment samples beyond the lateral extent of woodwaste accumulations. Chemical concentrations are typically below the SMS criteria in the subsurface samples where sediment with no woodwaste was encountered (i.e., samples CR-11 through CR-14). The lateral extent sample locations (CR-15C, CR-17D, CR-18B, and CR-19F) are north and east of the Former Mill Area, and the results show no exceedances of the SMS criteria or direct-contact screening levels in all samples (surface and near surface). In addition, PCBs were generally non-detect and cPAH and dioxin TEQs (average of 47 ug/kg and 8.55 pg/g, respectively) are similar to concentrations observed in other parts of the river (average TEQ of 29.2

ug/kg and 3.72 pg/g, respectively). These results therefore help delineate the northern lateral extent (also see the Wharf Area results discussed below) as well as the eastern lateral extent (also see the Tidelands/Beach Area and Shannon Slough results below) of chemical impacts (see Figure 7-1).

There is a need to profile the pocket beach area to inform waste disposal options. Specifically, toxicity characteristic leaching procedure evaluation of mercury and lead in sediments will be needed. In addition, the northern extent of elevated contaminant concentrations is not well-defined. Samples collected farthest north were analyzed and are below screening levels; however, additional sampling to the south (near the inner pocket beach) is needed to refine the extent. This will be evaluated as part of RI activities.

7.3.2 Lumber Shed Area

Two surface composite samples were collected in the lumber shed area (CR-07 and CR-24; see Figure 2-1). Metals, PCBs, SVOCS, and TPH were detected. Woodwaste is absent or was observed in trace amounts at all locations (see Table 3-3). Analytical results and screening levels, summarized in Table 7-5, are as follows.

- Total metals are non-detect or are below the benthic and beach direct-contact sediment screening levels.
- Total PCBs were detected at CR-24 (54 ug/kg dw; 3,462 ug/kg OC) at concentrations well below the OC SMS criteria and the direct-contact screening level (3,100 ug/kg dw). PCBs were not detected at CR-07.
- SVOCs were not detected or are well below the sediment screening levels, including the cPAH TEQ beach direct-contact screening level of 850 ug/kg dw.
- TPH was detected in the diesel- and motor-oil range in both samples at concentrations below the MTCA A soil residual saturation screening level (i.e., 2,000 mg/kg) and the freshwater sediment CSL (510 mg/kg).

The results show that sediment concentrations are below the benthic and beach direct-contact screening levels in this area. The PCB detection is consistent with the range of reporting limits (0.64 ug/kg to 69 ug/kg) for Chehalis River samples in the vicinity (see Section 6.3.2) and is somewhat higher than other investigation areas where PCBs were not detected. Similarly, the cPAH TEQ concentrations (average of 119 ug/kg) are somewhat elevated relative to nearby river concentrations (average TEQ of 29.2 ug/kg).

7.3.3 Wharf Area

A subsurface (0.5 to 1 foot bml) sample was collected at CR-26 in the wharf area in 2015 (see Figure 2-1), while several composites were collected in surface sediment in 2011 below the Wharf (DNR-SSDD-COMP, DNR-SSDF-COMP, DNR-SSDU-COMP, and DNR-SSD-SUPCOMP samples [the last sample is a composite of the original three samples]). Woodwaste was not observed in this area (see Table 3-3). Surface sediments are the point of compliance under the SMS; subsurface

concentrations are evaluated relative to SMS criteria for context only. Metals and SVOCS were detected. Analytical results and screening levels are summarized in Table 7-5 and are as follows.

- Total metals were non-detect or are below the benthic and beach direct-contact sediment screening levels.
- PCBs were not detected.
- SVOCs were not detected or are well below the sediment benthic screening levels, with the exception of benzyl alcohol and butyl benzyl phthalate. The concentration of benzyl alcohol (64 ug/kg dw) marginally exceeds the SMS SCO (57 ug/kg dw) and is below the SMS CSL (73 ug/kg dw). The butyl benzyl phthalate concentration (5,000 ug/kg-OC) marginally exceeds the SCO of 4,900 ug/kg-OC and is well below the CSL of 64,000 mg/kg-OC. The cPAH TEQ (17 ug/kg) is below the direct-contact screening level of 850 ug/kg dw.

The results show that sediment concentrations are generally below screening levels in this area, with the exception of butyl benzyl phthalate and benzyl alcohol, which marginally exceed the SMS SCO. The cPAH TEQ concentration is low level and similar to nearby river concentrations (average TEQ of 29.2 ug/kg).

7.3.4 Former Boiler Area

Surface and subsurface composite samples were collected at two locations in the Former Boiler area (see Figure 2-1)—specifically, two surface composites (CR08A and CR08B), and one core sample from below the visible woodwaste in each composite sample area. Significant woodwaste accumulation was observed to 18 feet deep in the core from CR-08A and to 7 feet deep in the core from CR-08B (see Table 3-3). Metals, PCBs, SVOCS, TPH, and dioxins were detected. Analytical results and screening levels, summarized in Table 7-5, are as follows:

- Total metals are non-detect or are below the benthic and beach direct-contact sediment levels in surface and subsurface sediment.
- Total PCBs were detected in surface sediment at CR-08B (14 ug/kg dw; 683 ug/kg OC) at concentrations well below the OC SMS criteria and the beach direct-contact screening level. PCBs were not detected in the subsurface or in surface sediment at CR-08A.
- SVOCs were not detected or are well below the sediment screening levels, with the exception of butyl benzyl phthalate in surface sediment at CR-08B. The concentration exceeds the SMS SCO and is below the SMS CSL. The cPAH TEQs (range: 56 to 106 ug/kg) are below the beach direct-contact screening level of 850 ug/kg dw.
- Dioxin TEQs ranged from 17.6 pg/g to 30.4 pg/g in surface sediment; subsurface concentrations are lower (approximately 5 pg/g). The concentrations are well below the direct-contact screening level of 100 pg/g dioxin TEQ.
- TPH was detected in the diesel- and motor-oil range in surface and subsurface samples at concentrations (ranging from 26 to 320 mg/kg dw) below the MTCA A soil residual

saturation screening level (i.e., 2,000 mg/kg) and the freshwater sediment SCO (340 mg/kg).

The results show that surface sediment concentrations are generally below screening levels in this area, with the exception of butyl benzyl phthalate, which exceeds the SMS SCO at CR-08B. The PCB detection is low level and consistent with the range of reporting limits (0.64 ug/kg to 69 ug/kg) reported for Chehalis River samples in the vicinity (see Section 6.3.2), whereas surface sediment cPAH and dioxin TEQ concentrations are slightly elevated when compared to nearby river concentrations (average TEQ of 29.2 ug/kg and 3.72 pg/g, respectively).

7.3.5 Tidelands and Beach Area

Two surface composite samples were collected in this area (CR-09A and CR-09B; see Figure 2-1). Significant woodwaste accumulation was observed to the full depth of the 2-foot cores at CR-09A, and to a lesser extent in the 2-foot cores at CR0-9B (see Table 3-3). Metals, SVOCS, and dioxins were detected. Analytical results and screening levels are summarized in Table 7-5 and are as follows:

- Total metals are non-detect or are below the benthic and beach direct-contact sediment levels at all locations.
- Total PCBs were not detected.
- SVOCs were not detected or are well below the sediment benthic screening levels, with the exception of benzyl alcohol in surface sediment at CR-09B. The concentration (58 ug/kg dw) marginally exceeds the SMS SCO (57 ug/kg dw) and is below the SMS CSL (73 ug/kg dw). The cPAH TEQs (average of 16 ug/kg) are below the beach direct-contact screening level of 850 ug/kg dw.
- Dioxin TEQs ranged from 6.10 pg/g to 7.92 pg/g in surface sediment. The concentrations are well below the beach direct-contact screening level of 100 pg/g dioxin TEQ.

The results show that sediment concentrations are generally below screening levels in this area, with the exception of benzyl alcohol, which exceeds the SMS SCO at CR-09B. Surface sediment cPAH and dioxin TEQ concentrations are low level and are similar to nearby river concentrations (average TEQ of 29.2 ug/kg and 3.72 pg/g, respectively).

7.3.6 Shannon Slough

A composite surface sample (CR-10) was collected in the mouth of the slough (see Figure 2-1). Approximately 15 percent woodwaste (an amount not considered significant) was observed in all four composite points (see Table 3-3). Metals and SVOCS were detected. Analytical results and screening levels are summarized in Table 7-5 and are as follows:

- Total metals are non-detect or are below the benthic and beach direct-contact sediment screening levels.
- Total PCBs were not detected.

- SVOCs were not detected or are well below the benthic and beach direct-contact sediment screening levels.

The results show that sediment concentrations are below benthic and beach direct-contact screening levels in this area. The surface sediment cPAH TEQ concentration of 51 ug/kg is low level but slightly higher than nearby river concentrations (average TEQ of 29.2 ug/kg); samples from this area were not analyzed for dioxins.

7.3.7 Chehalis River (2013)

Three surface samples (CR-01 through CR-03) were collected in deeper water in the river in 2013 (see Figure 2-1). Woodwaste was not observed (in surface sediment) at these locations (see Table 3-3). Metals, PCBs, SVOCS, and dioxins were detected. Analytical results and screening levels are summarized in Table 7-5 and are as follows:

- Total metals are non-detect or are below the benthic and beach sediment screening levels at all locations.
- Total PCBs were not detected in CR-01 and CR-03. Total PCBs were detected in surface sediment at CR-02 (12 ug/kg dw; 374 ug/kg OC) at concentrations well below the OC SMS criteria and the beach direct-contact screening level.
- SVOCs were not detected or are well below the sediment screening levels, with the exception of 4-methylphenol in CR-02. The concentration (730 ug/kg dw) is marginally above the SMS SCO and CSL (670 ug/kg dw for both criteria). The cPAH TEQs (average of 19 ug/kg) are well below the beach direct-contact screening level of 850 ug/kg dw.
- Dioxin TEQs ranged from 12.2 pg/g to 15.6 pg/g in surface sediment. The concentrations are well below the beach direct-contact screening level of 100 pg/g dioxin TEQ.

The results show that sediment concentrations are generally below screening levels in this area, with the exception of 4-methylphenol at CR-02. Surface sediment cPAH TEQ concentrations (average of 19 ug/kg) are low level and are similar to nearby river concentrations (average TEQ of 29.2 ug/kg). Surface sediment dioxin TEQ is slightly elevated compared to nearby river concentrations (3.72 pg/g).

7.3.8 Woodwaste Scoring Results

The samples collected in 2013 in the Former Mill Area contained more than 25 percent woodwaste by volume and were scored for woodwaste impacts. Woodwaste was consistently observed under offshore of the GHHSA beneath sediment. The thickest layers of woodwaste beneath sediment were observed in the Former Boiler Area and in the pocket beach area of the Former Mill Area (see Figure 4-2). These areas both contain layers of woodwaste that are over 12 feet thick, buried beneath less than 5 feet of sediment. Farther from shore, both the woodwaste layer and the layer of overlying sediment generally become thinner.

Woodwaste scores, shown in Table 7-6, range from "Medium Concern" to "High Concern" at the Former Mill Area locations (CR-04 through CR-06). These results show potential for aquatic toxicity

associated with woodwaste in the Former Mill Area. In addition, a surface (0 to 0.33 foot bml) sample collected in 2015 (CR19D-SSD-CONV) was evaluated to inform whether buried woodwaste has the potential to significantly affect overlying surface sediments (see Section 6.3.4). Conventional parameters such as TOC and total volatile solids (TVS) are significantly lower at CR-19D, and this location scored as "Low Concern." The limited woodwaste-related data from the area to the east indicates that woodwaste-related toxicity in that area may not be of concern. The results also show that in areas where woodwaste is buried (in the case of CR-19D, woodwaste was observed approximately 4 feet bml), parameters associated with woodwaste and with potential for toxicity (i.e., ammonia and sulfides) may be found at concentrations similar to those measured in the Former Mill Area. Further, higher concentrations of chemicals associated with woodwaste (e.g., benzoic acid, phenols, benzyl alcohol, PAHs) are correlated with areas where more woodwaste was observed. Outside the Former Mill Area/pocket beach area, exceedances of these woodwaste-related chemicals in sediment were infrequent.

Additional woodwaste delineation efforts, and potential for associated toxicity, will be addressed as part of RI activities. Potential data gap areas include the area north of transect CR-19 and the area near the chip loader (chip area blower building vicinity). In addition, prior sampling focused on delineating the bottom extent of woodwaste, and additional data (and sampling approaches specific to that objective) refining the top of woodwaste extent may be needed. Specific approaches, including additional woodwaste physical extent sampling, bioassays, pore water sampling, and sediment chemistry, will be considered in addressing remaining data gaps.

LIMITATIONS

The services undertaken in completing this report were performed consistent with generally accepted professional consulting principles and practices. No other warranty, express or implied, is made. These services were performed consistent with our agreement with our client. This report is solely for the use and information of our client unless otherwise noted. Any reliance on this report by a third party is at such party's sole risk.

Opinions and recommendations contained in this report apply to conditions existing when services were performed and are intended only for the client, purposes, locations, time frames, and project parameters indicated. We are not responsible for the impacts of any changes in environmental standards, practices, or regulations subsequent to performance of services. We do not warrant the accuracy of information supplied by others, or the use of segregated portions of this report.

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TABLES

Table 3-1
Soil, Groundwater, and Seep Sample Descriptions and Analyses
Seaport Landing Aquatic Land Lease
Aberdeen, Washington

Sample Location	Lithologic Description (bgs)	PID Reading (ppm)	Sample ID	Matrix	Depth (bgs)	Notes	Depth to Water (feet bgs)	Analytical Suite (Soil)	Analytical Suite (Water)
CR-20	**0.0 to 3.0 feet:** No recovery.	NA	NA	NA	NA	NA	NA	NA	NA
	3.0 to 3.3 feet: Clayey sand; dark brown; 40% fines, high plasticity; 40% sand; 20% gravel; trace organic material; moist.	NA	NA	NA	NA	NA	NA	NA	NA
	3.3 to 7.0 feet: Sandy gravel; brownish gray; 30% sand, fine to coarse; 70% gravel, medium to coarse, subangular. **@ 4.0 feet:** Clay lens; reddish brown. **@ 5.0 to 5.3 feet:** Wood waste; 80% wood waste, primarily large woodchips; 20% black silty sand.	NA	CR20-S-5.0 CR20-GW-5.0	S GW	3.3 to 5.0 feet 5.0 feet	Composited soil from 3.3 to 5.0 feet (above the wood waste) in order to obtain enough sample volume. PID instrument did not function for this boring because of rain. Temporary screen set from 3.0 to 8.0 feet.	4	Total Metals TPH PAHs Phenol PCBs Dioxins/Furans SVOC	Total Metals Dissolved Metals PCBs SVOC Mercury TPH
	7.0 to 7.5 feet: Concrete.	NA	NA	NA	NA	NA	NA	NA	NA
	7.5 to 10.0 feet: No recovery.	NA	NA	NA	NA	NA	NA	NA	NA
CR-21	**0.0 to 3.0 feet:** No recovery.	NA	NA	NA	NA	NA	NA	NA	NA
	3.0 to 4.8 feet: Gravelly sand; brown; 10% fines, nonplastic; 40% sand, fine to medium; 50% gravel, subangular (rock fragments), medium to large; moist. **4.8 to 5.0 feet:** Wood waste; 80% wood waste, primarily large woodchips; 20% black silty sand.	102.9 at 4.0 feet bgs	CR21-S-5.0 CR21-GW-10.0	S GW	3.5 to 5.0 feet 10.0 feet	Composited soil from 3.5 to 5.0 feet (above the wood waste) in order to obtain enough sample volume. Temporary screen set from 5.0 to 10.0 feet.	4.8	Total Metals TPH PAHs Phenol PCBs Dioxins/Furans SVOC	Total Metals Dissolved Metals PCBs SVOC Mercury TPH
	5.0 to 8.5 feet: No recovery.	NA	NA	NA	NA	NA	NA	NA	NA
	8.5 to 10.0 feet: Silty sand; blackish brown; 30% fines, nonplastic to medium plasticity; 50% sand, fine to medium; 20% gravel, medium, subrounded; wet.	53.5 at 8.5 feet bgs	NA	NA	NA	NA	NA	NA	NA

Table 3-1
Soil, Groundwater, and Seep Sample Descriptions and Analyses
Seaport Landing Aquatic Land Lease
Aberdeen, Washington

Sample Location	Lithologic Description (bgs)	PID Reading (ppm)	Sample ID	Matrix	Depth (bgs)	Notes	Depth to Water (feet bgs)	Analytical Suite (Soil)	Analytical Suite (Water)
CR-22	**0.0 to 2.0 feet:** No recovery.	NA	NA	NA	NA	NA	NA	NA	NA
	2.0 to 3.0 feet: Well graded sand; brown; 20% fines, nonplastic; 60% sand, fine to coarse; 20% gravel, subangular; rock shards, some organic material.	NA	NA	NA	NA	NA	NA	NA	NA
	3.0 to 4.5 feet: Silty sand; reddish brown; 40% fines, medium plasticity; 60% sand, coarse; trace gravel. **4.5 to 4.8 feet:** Wood waste lens, primarily bark chips and large wood chips.	2.0 at 3.0 feet bgs	CR22-S-3.0 CR22-GW-9.0	S GW	3.0 to 4.5 feet 9.0 feet	Composited material from 1.5 to 3.0 feet to obtain sufficient sample volume for soil sample. Temporary screen set from 4.0 to 9.0 feet bgs.	4.7	Total Metals Phenol PAHs PCBs SVOC Mercury TPH Dioxins/Furans	Total Metals Dissolved Metals PCBs SVOC Mercury TPH
	4.8 to 5.0 feet: Poorly graded sand; gray; 10% fines; 90% sand, medium, poorly graded; saturated (FILL).	NA	NA	NA	NA	NA	NA	NA	NA
	5.0 to 7.0 feet: No recovery.	NA	NA	NA	NA	NA	NA	NA	NA
	7.0 to 8.0 feet: Poorly graded sand; gray; 10% fines; 90% sand, medium, poorly graded; saturated (FILL).	NA	NA	NA	NA	NA	NA	NA	NA
	8.0 to 9.0 feet: Wood waste.	NA	NA	NA	NA	NA	NA	NA	NA
	9.0 to 10.0 feet: Silt w/ wood waste; grayish brown; 70% fines, nonplastic; 30% wood waste, primarily bark chips.	8.8 at 10.0 feet bgs	NA	NA	NA	NA	NA	NA	NA
CR-23	**0.0 to 1.0 feet:** No recovery.	NA	NA	NA	NA	NA	NA	NA	NA
	1.0 to 1.5 feet: Gravelly silt; brown; 40% fines, high plasticity; 10% sand; 25% gravel, subrounded, large; 25% wood waste, primarily large woodchips and bark pieces.	NA	NA	NA	NA	NA	NA	NA	NA
	1.5 to 2.5 feet: Gravelly sand; grayish brown; 20% fines; 50% sand; 30% gravel, fine to medium, subrounded to subangular.	NA	CR23-S-3.0 CR23-GW-6.0	S GW	1.5 to 3.0 feet 6.0 feet	Composited material from 1.5 to 3.0 feet to obtain sufficient sample volume. Temporary screen set from 1.0 to 6.0 feet bgs.	4.8	Total Metals Phenol PAHs PCBs SVOC Mercury TPH Dioxins/Furans	Total Metals Dissolved Metals PCBs SVOC Mercury TPH
	2.5 to 3.0 feet: Gravel w/ sand; 10% fines, 20% sand; 70% gravel, fine to large.	30.8 at 2.5 feet bgs							
	3.0 to 4.0 feet: Poorly graded sand; gray; 20% fines; 70% sand, poorly graded, medium; 10% gravel (FILL).	57.7 at 4.0 feet bgs	NA	NA	NA	NA	NA	NA	NA

Table 3-1
Soil, Groundwater, and Seep Sample Descriptions and Analyses
Seaport Landing Aquatic Land Lease
Aberdeen, Washington

Sample Location	Lithologic Description (bgs)	PID Reading (ppm)	Sample ID	Matrix	Depth (bgs)	Notes	Depth to Water (feet bgs)	Analytical Suite (Soil)	Analytical Suite (Water)
CR-23	**4.0 to 5.0 feet:** Wood waste; 80% wood waste; 20% gray sandy silt.	NA	NA	NA	NA	NA	NA	NA	NA
	5.0 to 7.5 feet: No recovery.	NA	NA	NA	NA	NA	NA	NA	NA
	7.5 to 9.0 feet: Wood waste; 80% wood waste; 20% gray sandy silt.	NA	NA	NA	NA	NA	NA	NA	NA
	9.0 to 10.0 feet: Silt w/ wood waste; dark brown; 70% fines, medium plasticity; 30% wood waste, primarily bark chips.	NA	NA	NA	NA	NA	NA	NA	NA
SEEP-01	NA	NA	NA	Seep Water	NA	NA	NA	NA	PCBs SVOC Mercury TPH

NOTES:
bgs = below ground surface.
GW = groundwater.
ID = identification.
NA = not applicable.
PAH = polycyclic aromatic hydrocarbon.
PCB = polychlorinated biphenyls.
PID = photoionization detector.
ppm = parts per million.
SVOC = semivolatile organic compound.
TPH = total petroleum hydrocrabons.

Table 3-2
Groundwater and Seep Water Field Parameters
Seaport Landing Aquatic Land Lease
Aberdeen, Washington

Location:	CR-20	CR-21	CR-22	CR-23	SEEP-01
Sample Name:	CR20-GW-5.0	CR21-GW-10	CR22-GW-9.0	CR23-GW-6.0	Seep-01
Collection Date:	10/12/2015	10/12/2015	10/13/2015	10/13/2015	10/12/2015
Collection Depth (temporary well screen midpoint, ft bgs):	5.5	7.5	6.5	3.5	0
Field Parameters					
Conductivity (uS/cm)	805	539	741	887	587
pH	6.82	5.75	5.99	6.10	6.52
Temperature (°C)	17.6	16.9	17.2	17.6	16.6
Turbidity (NTU)	20.3	107	118	196	5.51

NOTES:
°C = degrees Celsius.
ft bgs = feet below ground surface.
NTU = nephelometric turbidity units.
uS/cm = microsiemens per centimeter.

Table 3-3
Sediment Sample Descriptions and Analyses
Seaport Landing Aquatic Land Lease
Aberdeen, Washington

Sample Location	Boring / Surface Sample Sublocation	Lithologic Description (bgs/bml)	PID Reading (ppm)	Sample ID	Depth (bgs/bml)	Notes	Analytical Suite
Lumber Shed							
CR-07	LS-01	**0.0 to 0.3 feet:** Sand w/ gravel; grayish brown; 60% sand, well graded but mostly coarse; 40% gravel, large, subrounded.	NA	LS01	0-0.33 feet bml	NA	***Archive***
	LS-02	**0.0 to 0.3 feet:** Silt; grayish brown; 80% fines, medium plasticity; 10% sand, 10% gravel, large, subrounded; trace wood waste.	NA	LS02	0-0.33 feet bml	NA	***Archive***
	LS-03	**0.0 to 0.3 feet:** Silt; grayish brown; 80% fines, medium plasticity; 10% sand, 10% gravel, large, subrounded; trace wood waste.	NA	LS03	0-0.33 feet bml	NA	***Archive***
	LS-04	**0.0 to 0.3 feet:** Sand w/ gravel; grayish brown; 60% sand, well graded but mostly coarse; 40% gravel, large, subrounded.	NA	LS04	0-0.33 feet bml	NA	***Archive***
	CR-07-SSD-COMP	NA	NA	LS04	0-0.33 feet bml	Composite sample from all four sublocations	Total Metals TOC PAHs PCBs SVOC Mercury TPH ***Archive***
CR-24	LS-05	**0.0 to 0.1 feet:** Sand w/ cobbles; reddish brown.	NA	NA	NA	NA	NA
		0.1 to 0.3 feet: Sand; gray; 10% fines, 80% sand, poorly graded, medium; 10% cobbles, subrounded.	NA	LS05	0-0.33 feet bml	NA	***Archive***
	LS-06	**0.0 to 0.3 feet:** Silty clay; black; 80% fines, high plasticity; 10% sand, poorly graded, medium; 10% cobbles, subrounded.	NA	LS06	0-0.33 feet bml	NA	***Archive***
	LS-07	**0.0 to 0.3 feet:** Silty clay; grayish brown; 80% fines, high plasticity; 10% sand, poorly graded, medium; 10% cobbles, subrounded.	NA	LS07	0-0.33 feet bml	NA	***Archive***
	LS-08	**0.0 to 0.3 feet:** Silty clay; grayish brown; 80% fines, high plasticity; 10% sand, poorly graded, medium; 10% cobbles, subrounded.	NA	LS08	0-0.33 feet bml	NA	***Archive***
	CR-24-SSD-COMP	NA	NA	CR-24-SSD-COMP	0-0.33 feet bml	Composite sample from all four sublocations	Total Metals TOC PAHs PCBs +J7+A8:J26+J7+A8:J26+J7+A8:J26+ A8:J26

Table 3-3
Sediment Sample Descriptions and Analyses
Seaport Landing Aquatic Land Lease
Aberdeen, Washington

Sample Location	Boring / Surface Sample Sublocation	Lithologic Description (bgs/bml)	PID Reading (ppm)	Sample ID	Depth (bgs/bml)	Notes	Analytical Suite
Former Boiler							
	FB-01	**0.0 to 0.3 feet:** Silt; brownish black; 80% fines, 20% gravel, subrounded; trace organic and biological material, trace algae on surface sediment.	NA	FB01	0-0.33 feet bml	NA	***Archive***
	FB-02	**0.0 to 0.3 feet:** Silt; brownish black; 80% fines, 20% gravel, subrounded; trace organic and biological material.	NA	FB02	0-0.33 feet bml	NA	***Archive***
	FB-03	**0.0 to 0.3 feet:** Gravelly sand; reddish brown; 10% fines; 50% sand, medium to coarse; 40% gravel, fine to large, subrounded.	NA	FB03	0-0.33 feet bml	NA	***Archive***
	FB-04	**0.0 to 0.3 feet:** Silt w/ gravel; brown to black; 80% fines; 20% gravel, subrounded, medium to large. **@ 3 cm:** Thin, red-orange layer of iron staining.	NA	FB04	0-0.33 feet bml	NA	***Archive***
CR-08A	CR08A-SSD-COMP	NA	NA	CR08A-SSD-COMP	0-0.33 feet bml	Composite sample from all four sublocations	Total Metals TOC Phenol PAHs PCBs SVOC Mercury Asbestos TPH Dioxins/Furans Archive
	CR08A-FB04	**0.0 to 3.0 feet:** No recovery.	NA	NA	NA	NA	NA
		3.0 to 5.0 feet: Sawdust; 80% sawdust, reddish brownish black; 20% sand, medium to coarse.	NA	NA	NA	NA	NA
		5.0 to 9.5 feet: No recovery.	NA	NA	NA	NA	NA
		9.5 to 15.0 feet: Sawdust; 80% sawdust, reddish brownish black; 20% sand, medium to coarse.	NA	NA	NA	NA	NA
		15.0 to 17.0 feet: No recovery.	NA	NA	NA	NA	NA
		17.0 to 18.3 feet: Sawdust; 80% sawdust, reddish brownish black; 20% sand, medium to coarse. **@ 17.0 to 17.2 feet:** Occasional brick shards.	NA	NA	NA	NA	NA

Table 3-3
Sediment Sample Descriptions and Analyses
Seaport Landing Aquatic Land Lease
Aberdeen, Washington

Sample Location	Boring / Surface Sample Sublocation	Lithologic Description (bgs/bml)	PID Reading (ppm)	Sample ID	Depth (bgs/bml)	Notes	Analytical Suite
CR-08A	CR08A-FB04	**18.3 to 20.0 feet:** Silty sand; gray; 40% fines, medium plasticity; 60% sand, fine to medium.	NA	CR08A-SBSD	18.3 -20.0 feet bml	Composited material from 18.3 to 20.0 feet in order to obtain sufficient sample volume	Total Metals TOC Phenol PAHs PCBs SVOC Mercury TPH Dioxins/Furans Archive
CR-08B	FB-05	**0.0 to 0.3 feet:** Silty sand; dark grayish brown; 40% fines, medium plasticity; 50% sand; 10% gravel; trace woody debris.	NA	FB05	0-0.33 feet bml	NA	***Archive***
	FB-06	**0.0 to 0.3 feet:** Silty sand; gray; 40% fines, medium plasticity; 60% sand; trace woody debris.	NA	FB06	0-0.33 feet bml	NA	***Archive***
	FB-07	**0.0 to 0.3 feet:** Silty sand; grayish brown; 40% fines, medium plasticity; 60% sand; trace gravel.	NA	FB07	0-0.33 feet bml	NA	***Archive***
	FB-08	**0.0 to 0.3 feet:** Silty sand; grayish brown; 40% fines, medium plasticity; 60% sand; trace gravel.	NA	FB08	0-0.33 feet bml	NA	***Archive***
	CR08B-SSD-COMP	NA	NA	CR08B-SSD-COMP	0-0.33 feet bml	Composite sample from all four sublocations	Total Metals TOC Phenol PAHs PCBs SVOC Mercury Asbestos TPH Dioxins/Furans Archive
	CR08B-FB05	**0.0 to 3.5 feet:** No recovery.	NA	NA	NA	NA	NA
		3.5 to 7.0 feet: Sandy silt; gray; 50% fines; 30% sand, very fine; 20% wood waste, primarily sawdust and wood chips. **@ 4.5 to 4.6 feet:** Sawdust; 80% sawdust, 20% sandy silt.	NA	NA	NA	NA	NA

Table 3-3
Sediment Sample Descriptions and Analyses
Seaport Landing Aquatic Land Lease
Aberdeen, Washington

Sample Location	Boring / Surface Sample Sublocation	Lithologic Description (bgs/bml)	PID Reading (ppm)	Sample ID	Depth (bgs/bml)	Notes	Analytical Suite
CR-08B	CR08B-FB05	**7.0 to 10.0 feet:** Sandy silt; gray; 60% fines; 40% sand, very fine.	NA	CR08B-SBSD	8.0 feet bml	NA	Total Metals TOC Phenol PAHs PCBs SVOC Mercury TPH Dioxins/Furans Archive
Chehalis River							
CR-01 (2013 Sample)	CR-01	**0.0 to 0.33 feet:** Gray silty sand (SM);, loose, trace organic debris.	NA	CR01-10cm	0-0.33 feet bml	NA	Total Metals TOC Phenol PAHs PCBs SVOC Mercury Dioxins/Furans
CR-02 (2013 Sample)	CR-02	**0.0 to 0.33 feet:** Gray to tan silty sand (SM);, loose, trace organic debris;, tan mottles.	NA	CR02-10cm	0-0.33 feet bml	NA	Total Metals TOC Phenol PAHs PCBs SVOC Mercury Dioxins/Furans
CR-03 (2013 Sample)	CR-03	**0.0 to 0.33 feet:** Gray silty sand (SM);, loose, trace organic debris.	NA	CR03-10cm	0-0.33 feet bml	NA	Total Metals TOC Phenol PAHs PCBs SVOC Mercury Dioxins/Furans

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Sediment Sample Descriptions and Analyses
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Sample Location	Boring / Surface Sample Sublocation	Lithologic Description (bgs/bml)	PID Reading (ppm)	Sample ID	Depth (bgs/bml)	Notes	Analytical Suite
Beach Area							
CR-09A	BA-01	**0.0 to 2.0 feet:** 30% gravel, angular; 40% wood waste, sawdust, and bark; 30% silty sand, gray on top and reddish tan towards 2.0 feet.	NA	BA01-0-10cm BA01-10cm-1 BA01-1-2	0-0.33 feet bml 0.33-1 ft bml 1-2 ft bml	NA	***Archive***
	BA-02	**0.0 to 2.0 feet:** 20% gravel, angular; 50% wood waste, sawdust, and bark; 30% silty sand, gray.	NA	BA02-0-10cm BA02-10cm-1 BA02-1-2	0-0.33 feet bml 0.33-1 ft bml 1-2 ft bml	NA	***Archive***
	BA-03	**0.0 to 2.0 feet:** 20% gravel, angular; 50% wood waste, sawdust, and bark; 30% silty sand, gray.	NA	BA03-0-10cm BA03-10cm-1 BA03-1-2	0-0.33 feet bml 0.33-1 ft bml 1-2 ft bml	NA	***Archive***
	BA-04	**0.0 to 2.0 feet:** 30% gravel, angular; 20% wood waste, sawdust and bark; 50% silty sand, gray.	NA	BA04-0-10cm BA04-10cm-1 BA04-1-2	0-0.33 feet bml 0.33-1 ft bml 1-2 ft bml	NA	***Archive***
	CR09A-SSD-COMP	NA	NA	CR09A-SSD-COMP	0-0.33 feet bml	Composite sample from all four sublocations	Total Metals TOC PAHs PCBs SVOC Mercury Dioxins/Furans Archive
CR-09B	BA-05	**0.0 to 2.0 feet:** 30% gravel, angular; 20% wood waste, sawdust, and bark; 50% silty sand, gray.	NA	BA05-0-10cm BA05-10cm-1 BA05-1-2	0-0.33 feet bml 0.33-1 ft bml 1-2 ft bml	NA	***Archive***
	BA-06	**0.0 to 2.0 feet:** 30% gravel, angular; 15% wood waste, sawdust, and bark; 55% silty sand, gray.	NA	BA06-0-10cm BA06-10cm-1 BA06-1-2	0-0.33 feet bml 0.33-1 ft bml 1-2 ft bml	NA	***Archive***
	BA-07	**0.0 to 2.0 feet:** 30% gravel, angular; 15% wood waste, sawdust, and bark; 55% silty sand, gray.	NA	BA07-0-10cm BA07-10cm-1 BA07-1-2	0-0.33 feet bml 0.33-1 ft bml 1-2 ft bml	NA	***Archive***
	BA-08	**0.0 to 2.0 feet:** 30% gravel, angular; 15% wood waste, sawdust, and bark; 55% silty sand, gray.	NA	BA08-0-10cm BA08-10cm-1 BA08-1-2	0-0.33 feet bml 0.33-1 ft bml 1-2 ft bml	NA	***Archive***
	CR09B-SSD-COMP	NA	NA	CR09B-SSD-COMP	0-0.33 feet bml	Composite sample from all four sublocations	Total Metals TOC PAHs PCBs SVOC Mercury Dioxins/Furans Archive

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Sample Location	Boring / Surface Sample Sublocation	Lithologic Description (bgs/bml)	PID Reading (ppm)	Sample ID	Depth (bgs/bml)	Notes	Analytical Suite
Shannon Slough							
CR-10	SM-01	**0.0 to 2.0 feet:** 30% gravel, angular; 15% wood waste, sawdust, and bark; 55% silty sand, gray.	NA	SM-01	0-0.33 feet bml	NA	***Archive***
	SM-02	**0.0 to 2.0 feet:** 30% gravel, angular; 15% wood waste, sawdust, and bark; 55% silty sand, gray.	NA	SM-02	0-0.33 feet bml	NA	***Archive***
	SM-03	**0.0 to 2.0 feet:** 30% gravel, angular; 15% wood waste, sawdust, and bark; 55% silty sand, gray.	NA	SM-03	0-0.33 feet bml	NA	***Archive***
	SM-04	**0.0 to 2.0 feet:** 30% gravel, angular; 15% wood waste, sawdust, and bark; 55% silty sand, gray.	NA	SM-04	0-0.33 feet bml	NA	***Archive***
	CR10-SSD-COMP	NA	NA	CR10-SSD-COMP	0-0.33 feet bml	Composite sample from all four sublocations	Total Metals Phenol TOC PAHs PCBs SVOC Mercury Archive
Former Mill Area and Chehalis River							
CR-04 (2013 Sample)	CR-04	**0.0 to 5.0 feet:** Tan sandy silt (ML) with 50% to 75% wood waste;, wet, medium density; pockets of dark-colored water/product mixture at 2.5 feet bml. Angular lumber and construction debris.	NA	CR04-10cm CR04-2.5 CR04-2.5-5	0-0.33 feet bml 1-2.5 ft bml 2.5-5 ft bml	Only conventionals analyzed at CR-04-2.5-5	Total Metals TOC Phenol PAHs PCBs SVOC Mercury Dioxins/Furans TPH Conventionals
CR-05 (2013 Sample)	CR-05	**0.0 to 3.5 feet:** Tan silty sand (ML) with 10% to 80% wood waste under 4 mm; wet, medium density; pockets of black-colored water/product mixture. Angular lumber and construction debris.	NA	CR05-10cm CR05-2.5	0-0.33 feet bml 0.33-2.5 ft bml	NA	Total Metals TOC Phenol PAHs PCBs SVOC Mercury Dioxins/Furans TPH Conventionals

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Sample Location	Boring / Surface Sample Sublocation	Lithologic Description (bgs/bml)	PID Reading (ppm)	Sample ID	Depth (bgs/bml)	Notes	Analytical Suite
CR-06 (2013 Sample)	CR-06	**0.0 to 5.0 feet:** Tan silty sand (ML) with 70% wood waste under 4 mm; wet, medium density; pockets of black-colored water/product mixture; angular lumber and construction debris.	NA	CR-06-10cm CR06-2.5	0-0.33 feet bml 1-2.5 ft bml	NA	Total Metals TOC Phenol PAHs PCBs SVOC Mercury Dioxins/Furans TPH Conventionals
CR-11	CR-11	**0.0 to 2.8 feet:** No recovery.	NA	NA	NA	NA	NA
		2.8 to 5.0 feet: Wood waste; tan to black; hydrocarbon-like odor.	NA	NA	NA	NA	NA
		5.0 to 5.8 feet: No recovery.	NA	NA	NA	NA	NA
		5.8 to 6.4 feet: Sand; gray; 100% sand, medium.	NA	NA	NA	NA	NA
		6.4 feet to 9.4 feet: Sandy silt; gray; 50% fines, plastic; 30% sand; 20% woody debris. **@ 8.8 feet:** Sand lens.	NA	NA	NA	NA	NA
		9.4 to 10.0 feet: Wood waste; 80% woodwaste; 20% gray sandy silt.	NA	NA	NA	NA	NA
		10.0 to 11.2 feet: No recovery.	NA	NA	NA	NA	NA
	CR-11	**11.2 to 22.5 feet:** Wood waste; 80% woodwaste; 20% gray sandy silt; wet. **@12.0 feet:** Sheen.	17.2 at 12.0 feet bgs	NA	NA	NA	NA
	CR-11	**22.5 to 25.0 feet:** Sandy silt; plastic fines.	6.4 at 25.0 feet bgs	CR11-SBSD-23	23	NA	Total Metals TOC PAHs PCBs SVOC Mercury TPH-Dx Dioxins/Furans Archive

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Sample Location	Boring / Surface Sample Sublocation	Lithologic Description (bgs/bml)	PID Reading (ppm)	Sample ID	Depth (bgs/bml)	Notes	Analytical Suite
CR-12	CR-12	**0.0 to 2.8 feet:** No recovery.	NA	NA	NA	NA	NA
		2.8 to 5.0 feet: Wood waste; sawdust, lumber, some silt; sulfur odor; wet.	NA	NA	NA	NA	NA
		5.0 to 7.0 feet: No recovery.	NA	NA	NA	NA	NA
		7.0 to 10.0 feet: Wood waste; sawdust, lumber, some silt; sulfur odor; wet.	NA	NA	NA	NA	NA
		10.0 to 11.9 feet: No recovery.	NA	NA	NA	NA	NA
		11.9 to 12.3 feet: Wood waste; sawdust, lumber, some silt; sheen; sulfur odor; wet.	98.7 at 12.0 feet bgs	NA	NA	NA	NA
		12.3 to 13.8 feet: 80% silty sand; 20% wood waste.	NA	NA	NA	NA	NA
		13.8 to 15.0 feet: Sandy silt; gray; 60% fines, plastic; 40% sand, fine, micaceous.	10.1 at 15.0 feet bgs	CR12-SBSD-15	15	NA	Total Metals TOC PAHs PCBs SVOC Mercury Archive
CR-13	CR-13	**0.0 to 2.5 feet:** No recovery.	NA	NA	NA	NA	NA
		2.5 to 5.0 feet: Wood waste (lumber); slight sulfur odor; wet.	NA	NA	NA	NA	NA
		5.0 to 6.8 feet: No recovery.	NA	NA	NA	NA	NA
		6.8 to 8.7 feet: Wood waste (lumber); slight sulfur odor; wet.	NA	NA	NA	NA	NA
		8.7 to 10.0 feet: Sandy silt; gray; 60% fines, plastic; 40% sand, fine, micaceous.	2.0 at 8.0 feet bgs	NA	NA	NA	NA
		10.0 to 11.1 feet: No recovery.	NA	NA	NA	NA	NA
		11.1 to 15.0 feet: Sandy silt; gray; 60% fines, plastic; 40% sand, fine, micaceous.	1.7 at 11.0 feet bgs	CR13-SBSD-11	11	NA	Total Metals TOC PAHs PCBs SVOC Mercury Archive

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Sample Location	Boring / Surface Sample Sublocation	Lithologic Description (bgs/bml)	PID Reading (ppm)	Sample ID	Depth (bgs/bml)	Notes	Analytical Suite
CR-14	CR-14	**0.0 to 1.5 feet:** No recovery.	NA	NA	NA	NA	NA
		1.5 to 5.0 feet: Tan sawdust; sulfur odor; wet.	NA	NA	NA	NA	NA
		5.0 to 7.2 feet: No recovery.	NA	NA	NA	NA	NA
		7.2 to 9.3 feet: Tan sawdust; sulfur odor; sheen and hydrocarbon product at bottom; wet.	102 at 8.0 feet bgs	NA	NA	NA	NA
		9.3 to 10.0 feet: Sandy silt; gray; 70% fines, plastic; 30% sand, fine; slight sulfur odor; slightly micaceous.	NA	NA	NA	NA	NA
		10.0 to 12.0 feet: No recovery.	NA	NA	NA	NA	NA
		12.0 to 15.0 feet: Sandy silt; gray; 70% fines, plastic; 30% sand, fine, micaceous.	0.0 at 14.0 feet bgs	CR14-SBSD-12	12	NA	Total Metals TOC PAHs PCBs SVOC Mercury Archive
NA	CR11-14-SBSD-COMP	NA	NA	CR11-14-SBSD-COMP	NA	Composite sample from CR11-14 sampled from within visual impacts.	TCLP Lead and Mercury ***Archive***
CR-15A	CR-15A	**0.0 to 4.5 feet:** No recovery.	NA	NA	NA	NA	NA
		4.5 to 5.0 feet: Sawdust.	NA	CR15A-5	5	NA	***Archive***
		5.0 to 7.0 feet: No recovery.	NA	NA	NA	NA	NA
		7.0 to 9.2 feet: Wood waste. 70% wood waste, primarily woodchips and sawdust; 30% blackish brown sandy silt.	NA	NA	NA	NA	NA
		9.2 to 9.5 feet: Sandy silt lens.	NA	NA	NA	NA	NA
		9.5 to 11.0 feet: Wood waste. 70% wood waste, primarily woodchips and sawdust; 30% blackish brown sandy silt.	NA	CR15A-11	11	NA	***Archive***
CR-15B	CR-15B	**0.0 to 3.5 feet**: No recovery.	NA	NA	NA	NA	NA
		3.5 to 5.0 feet: Wood waste. 70% wood waste, primarily woodchips; 30% brownish black sandy silt.	NA	CR15B-0-10cm CR15b-5	0-0.33 feet bml 5.0 feet bml	Could not drill through wood encountered at 5.0 feet bml. Likely wood boards.	***Archive***

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Sample Location	Boring / Surface Sample Sublocation	Lithologic Description (bgs/bml)	PID Reading (ppm)	Sample ID	Depth (bgs/bml)	Notes	Analytical Suite
CR-15C	CR-15C	**0.0 to 0.3 feet:** No recovery.	NA	NA	NA	NA	NA
		0.3 to 5.0 feet: Silty sand; blackish gray; 30% fines, fine, medium plasticity; 70% sand, fine.	NA	CR15C-SSD CR15C-SBSD CR15C-5.0	0-0.33 feet bml 0.5-1.0 feet bml 5.0??	Sample from 5.0 is purely an archive sample.	Total Metals TOC PAHs PCBs SVOC Mercury TPH Dioxins/Furans Archive
CR-15D	CR-15D	**0.0 to 7.0 feet:** No recovery.	NA	NA	NA	NA	NA
		7.0 to 8.1 feet: Wood waste; 80% wood waste; 20% gray sandy silt.	NA	NA	NA	NA	NA
		8.1 to 10.0 feet: Sandy silt; grayish brown; 70% fines, medium to high plasticity; 30% sand, fine; some wood waste and other organic material.	NA	NA	NA	NA	NA
CR-16A	CR-16A	**0.0 to 1.5 feet:** No recovery.	NA	NA	NA	NA	NA
		1.5 to 5.0 feet: Sawdust; 80% sawdust with reddish brown wood waste; 20% sandy silt.	NA	CR16A-0-10cm CR16A-5	0-0.33 feet bml 5.0 feet bml	NA	***Archive***
		5.0 to 8.5 feet: No recovery.	NA	NA	NA	NA	NA
		8.5 to 9.5 feet: Sawdust; 80% sawdust with reddish brown wood waste; 20% sandy silt.	NA	NA	NA	NA	NA
		9.5 to 10.0 feet: Sandy silt; dark gray; 50% fines, high plasticity; 35% sand, poorly graded, fine; 15% wood waste and organic debris.	NA	NA	NA	NA	NA
	CR-16A	**10.0 to 12.0 feet:** No recovery.	NA	NA	NA	NA	NA
		12.0 to 15.0 feet: Sandy silt; gray; 70% fines, plastic; 30% sand, fine.	NA	CR16A-14	14.0 feet bml	NA	***Archive***

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Sample Location	Boring / Surface Sample Sublocation	Lithologic Description (bgs/bml)	PID Reading (ppm)	Sample ID	Depth (bgs/bml)	Notes	Analytical Suite
CR-16B	CR-16B	**0.0 to 4.2 feet:** No recovery.	NA	NA	NA	NA	NA
		4.2 to 5.0 feet: Sawdust; reddish brown; 70% sawdust and some wood debris; 30% sandy silt.	NA	CR16B-0-10cm	0-0.33 feet bml	NA	***Archive***
		5.0 to 6.5 feet: No recovery.	NA	NA	NA	NA	NA
		6.5 to 10.0 feet: Sawdust; reddish brown; 70% sawdust and wood waste; 30% sandy silt; slight sheen.	NA	CR16B-10.0	10	NA	***Archive***
		10.0 to 11.0 feet: No recovery.	NA	NA	NA	NA	NA
		11.0 to 12.0 feet: Sawdust; reddish brown; 70% sawdust and wood waste; 30% sandy silt; slight sheen.	NA	NA	NA	NA	NA
		12.0 to 15.0 feet: Fine sand w/ silt; gray; 20% fines, medium to high plasticity; 80% sand, fine to medium.	NA	CR16B-13.0	13	NA	***Archive***
CR-16C	CR-16C	**0.0 to 4.0 feet:** No recovery.	NA	NA	NA	NA	NA
		4.0 to 5.0 feet: Wood waste; 80% wood waste; 20% gray sandy silt.	NA	NA	NA	NA	NA
		5.0 to 8.5 feet: No recovery.	NA	NA	NA	NA	NA
		8.5 to 9.8 feet: Wood waste; 80% wood waste; 20% gray sandy silt.	NA	NA	NA	NA	NA
		9.8 to 10.0 feet: Fine sand w/ silt; gray; 20% fines, medium plasticity to high plasticity; 80% sand, fine to medium.	NA	NA	NA	NA	NA
		10.0 to 13.0 feet: No recovery.	NA	NA	NA	NA	NA
		13.0 to 15.0 feet: Wood waste; 80% wood waste; 20% gray sandy silt.	NA	NA	NA	Material was likely sloughing; therefore, this segment may not be representative of the subsurface.	NA
		15.0 to 20.0 feet: Little recovery.	NA	NA	NA	Virtually no recovery. Intense sloughing.	NA

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Sample Location	Boring / Surface Sample Sublocation	Lithologic Description (bgs/bml)	PID Reading (ppm)	Sample ID	Depth (bgs/bml)	Notes	Analytical Suite
CR-17C	CR-17C	**0.0 to 2.5 feet:** No recovery.	NA	NA	NA	NA	NA
		2.5 to 4.5 feet: Sandy silt; grayish brown; 60% fines, 40% sand, very fine. **@ 4.0 to 4.5 feet:** Large chunks of wood chips and bark pieces.	NA	CR17C-0-10cm	0-0.33 feet bml	NA	***Archive***
		4.5 to 5.0 feet: Silty sand; grayish brown; 40% fines, high plasticity; 60% sand, very fine; trace wood waste.	NA	NA	NA	NA	NA
		5.0 to 8.0 feet: No recovery.	NA	NA	NA	NA	NA
		8.0 to 10.0 feet: Silty sand; grayish brown; 40% fines, high plasticity; 60% sand, very fine; trace wood waste.	NA	CR17C-9.5	9.5 feet bml	NA	***Archive***
CR-17D	CR-17D	**0.0 to 2.0 feet:** No recovery.	NA	NA	NA	NA	NA
		2.0 to 5.0 feet: Silty sand; grayish brown; 40% fines, high plasticity; 60% sand, very fine.	NA	CR17D-SSD CR17D-SBSD	0-0.33 feet bml 0.5-1.0 feet bml	Obtained extra sample volume for CR17D-SSD via ponar grab.	Total Metals TOC PAHs PCBs SVOC Mercury TPH Dioxins/Furans Archive
CR-18A	CR-18A	**0.0 to 4.5 feet:** No recovery.	NA	NA	NA	NA	NA
		4.5 to 5.0 feet: 100% wood waste, primarily wood chips and bark.	NA	NA	NA	NA	NA
		5.0 to 7.8 feet: No recovery.	NA	NA	NA	NA	NA
		7.8 to 8.7 feet: Wood waste; 80% wood waste, 20% silty sand.	NA	NA	NA	NA	NA
		8.7 to 9.5 feet: Sandy silt; grayish black; 60% fines, plastic; 40% sand, fine.	NA	CR18A-9.0	9.0 feet bml	NA	***Archive***
		9.5 to 10.0 feet: Wood waste; 80% wood waste, 20% silty sand.	NA	NA	NA	NA	NA
CR-18B	CR-18B	**0.0 to 3.0 feet:** No recovery.	NA	NA	NA	NA	NA
		3.0 to 12.0 feet: Silty sand; blackish brownish gray; 40% fines; 60% sand, very fine.	NA	CR18B-SSD CR18B-SBSD	0-0.33 feet bml 0.5-1.0 feet bml	Unable to collect archive samples because there were no other sample containers.	Total Metals TOC Phenol PAHs PCBs SVOC Mercury TPH Dioxins/Furans

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Sample Location	Boring / Surface Sample Sublocation	Lithologic Description (bgs/bml)	PID Reading (ppm)	Sample ID	Depth (bgs/bml)	Notes	Analytical Suite
CR-19A	CR-19A	**0.0 to 3.0 feet:** No recovery.	NA	NA	NA	NA	NA
		3.0 to 3.7 feet: Sandy silt w/ wood waste; gray; 40% fines, loose; 30% sand; 30% wood waste.	NA	NA	NA	NA	NA
		3.7 to 4.0 feet: Sandy silt; grayish brown; 60% fines, 40% sand, very fine.	NA	NA	NA	Did not collect archive sample from this location as it did not provide any new information.	NA
		4.0 to 5.0 feet: Sawdust; 80% sawdust; 20% sandy silt.	NA	NA	NA	NA	NA
		5.0 to 8.0 feet: No recovery.	NA	NA	NA	NA	NA
		8.0 to 9.0 feet: Wood waste; 70% wood waste; 30% gray sandy silt.	NA	NA	NA	NA	NA
		9.0 to 10.0 feet: Silty Sand w/ wood waste; 80% gray silty sand, 20% wood waste.	NA	NA	NA	NA	NA
CR-19B	CR-19B	**0.0 to 2.0 feet**: No recovery.	NA	NA	NA	NA	NA
		2.0 to 4.5 feet: Silty sand; grayish brown; 40% fines, high plasticity; 60% sand, very fine, loose from 2.0 to 3.0 feet, then becomes denser; occasional chunks of wood waste.	NA	CR19B-0-10cm	0-0.33 feet bml	NA	***Archive***
		4.5 to 5.0 feet: Sawdust; 80% sawdust; 20% silty sand.	NA	NA	NA	NA	NA
		5.0 to 7.5 feet: No recovery.	NA	NA	NA	NA	NA
		7.5 to 8.7 feet: Sawdust; 80% sawdust; 20% silty sand.	NA	NA	NA	NA	NA
		8.7 to 10.0 feet: Sandy silt; grayish black; 50% fines, plastic; 35% sand, fine; 15% wood waste, primarily large chunks.	NA	CR19B-10	10	NA	***Archive***
CR-19C	CR-19C	**0.0 to 2.4 feet:** No recovery.	NA	NA	NA	NA	NA
		2.4 to 5.0 feet: Silty sand; blackish brown; 40% fines, high plasticity; 60% sand, very fine. **@ 4.0 to 4.1 feet:** Large chunks of woodchips and wood waste. **@ 4.5 to 4.6 feet:** Large chunks of woodchips and wood waste.	NA	NA	NA	It is uncertain whether this woodwaste is associated with former mill activities.	NA

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Sample Location	Boring / Surface Sample Sublocation	Lithologic Description (bgs/bml)	PID Reading (ppm)	Sample ID	Depth (bgs/bml)	Notes	Analytical Suite
CR-19D	CR-19D	**0.0 to 1.0 feet**: No recovery.	NA	NA	NA	NA	NA
		1.0 to 4.2 feet: Silty sand; blackish gray; 40% fines, high plasticity; 60% sand, very fine, loose from 1.0 to 2.0 feet, then becomes denser.	NA	CR19D-0-10cm CR19D-SSD-CONV	0-0.33 feet bml	Both samples were collected from 0-10cm bml. Additional sample volume was obtained via ponar.	***Archive*** Conventionals
		4.2 to 5.0 feet: Sawdust; tannish brown; 80% sawdust and some wood debris; 20% sandy silt.	NA	NA	NA	NA	NA
		5.0 to 7.5 feet: No recovery.	NA	NA	NA	NA	NA
		7.5 to 8.5 feet: Sawdust; tannish brown; 80% sawdust and some wood debris; 20% sandy silt.	NA	NA	NA	NA	NA
		8.5 to 10.0 feet: Silty sand; grayish black; 40% fines, high plasticity; 60% sand, very fine; trace wood waste.	NA	CR19D-9.0	9.0 feet bml	NA	***Archive***
CR-19E	CR-19E	**0.0 to 3.2 feet:** No recovery.	NA	NA	NA	NA	NA
		3.2 to 5.0 feet: Silty sand w/ wood waste; brownish black; 60% wood waste, 40% silty sand.	NA	NA	NA	NA	NA
		5.0 to 7.7 feet: No recovery.	NA	NA	NA	NA	NA
		7.7 to 8.5 feet: Silty sand w/ wood waste; brownish black; 60% wood waste, 40% silty sand.	NA	NA	NA	NA	NA
		8.5 to 9.5 feet: Wood waste; 80% wood waste, 20% silty sand.	NA	NA	NA	NA	NA
		9.5 to 10.0 feet: Silty sand w/ wood waste; brownish black; 60% wood waste, 40% silty sand.	NA	NA	NA	Did not collect archive sample from this location as it did not provide any new information.	NA
CR-19F	CR-19F	**0.0 to 2.5 feet:** No recovery.	NA	NA	NA	NA	NA
		2.5 to 10.0 feet: Silty sand; grayish brown; 40% fines; 60% sand; loose from approximately 2.5 to 3.5 feet, then becomes denser.	NA	CR19F-SSD CR19F-SBSD CR19F-SBSD-DUP CR19F-5 CR19F-9.0	0-0.33 feet bml 0.5-1.0 feet bml 5.0 feet bml 9.0 feet bml	NA	Total Metals TOC Phenol PAHs PCBs SVOC Mercury TPH Dioxins/Furans Archive

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Sample Location	Boring / Surface Sample Sublocation	Lithologic Description (bgs/bml)	PID Reading (ppm)	Sample ID	Depth (bgs/bml)	Notes	Analytical Suite
CR-19G	CR-19G	**0.0 to 2.5 feet:** No recovery.	NA	NA	NA	NA	NA
		2.5 to 7.5 feet: Silty sand; grayish brown; 35% fines; 50% sand; 15% wood chips. **@ 4.0 to 7.5 feet:** Wood chips increase to approximately 40%. Individual chips are up to 2 inches long.	NA	CR19G-0-10cm	0-0.33 feet bml	NA	***Archive***
		7.5 to 10.0 feet: Silty sand; grayish brown; 40% fines; 60% sand; dense.	NA	NA	NA	NA	NA
CR-19H	CR-19H	**0.0 to 5.0 feet:** No recovery.	NA	NA	NA	No recovery. Did not log or sample.	NA
CR-19I	CR-19I	**0.0 to 1.0 feet:** No recovery.	NA	NA	NA	NA	NA
		1.0 to 10.0 feet: Silty sand; grayish brown; 40% fines, medium plasticity; 60% sand, very fine to fine; loose to 3.0 feet, then becomes denser.	NA	NA	NA	Did not collect sample because already obtained clean confirmation samples to the east.	NA
CR-19J	CR-19J	**0.0 to 4.0 feet:** No recovery.	NA	NA	NA	NA	NA
		4.0 to 5.0 feet: 60% silty sand, gray; 40% wood waste, primarily large chips.	NA	NA	NA	NA	NA
		5.0 to 8.7 feet: No recovery.	NA	NA	NA	NA	NA
		8.7 to 10.0 feet: Wood waste; 70% wood waste, 30% silty sand, brownish black.	NA	NA	NA	NA	NA
Wharf Area							
CR-25	CR-25	**0.0 to 1.0 feet:** No recovery.	NA	NA	NA	NA	NA
		1.0 to 5.0 feet: Silty sand; blackish gray; 20% fines; 80% sand, very fine to fine.		CR25-0-10cm CR25-5	0-0.33 feet bml 5.0 feet bml	NA	***Archive***
CR-26	CR-26	**0.0 to 1.0 feet:** No recovery.	NA	NA	NA	NA	NA
		1.0 to 5.0 feet: Silty sand; blackish gray; 30% fines, high plasticity; 70% sand, very fine to fine.	NA	CR26-SSD CR26-SBSD	0-0.33 feet bml 0.5 -1.0 feet bml	NA	Total Metals TOC Phenol PAHs PCBs SVOC Mercury Archive

Table 3-3
Sediment Sample Descriptions and Analyses
Seaport Landing Aquatic Land Lease
Aberdeen, Washington

Notes:

bgs = below ground surface.

bml = below mudline.

cm = centimeter.

ID = identification.

NA = not applicable.

PAH = polycyclic aromatic hydrocarbon.

PCB = polychlorinated biphenyl.

PID = photoionization detector.

ppm = parts per million.

SVOC = semivolatile organic compound.

TCLP = Toxicity Characteristic Leaching Procedure.

TOC = total organic carbon.

TPH = total petroleum hydrocarbon.

Table 6-1
Background Chehalis River Sediment Concentrations
Seaport Landing Aquatic Land Lease
Aberdeen, Washington

Location:	2S	8S	11S	12S	13S	AB7	GRAYS00C9	GRAYS00C10	GRAYS00C11	GRAYS0199-C6	GRAYS0199-C7	GRAYS0199-C8	GRAYS0199-C9
Sample Name:	98148242	98148248	98148252	98148253	98148254	56-S	C9	C10	C11	C6	C7	C8	C9
Sample Replicate:	--	--	--	--	--	--	--	--	--	--	--	--	--
Collection Date:	3/31/1998	3/31/1998	3/31/1998	3/31/1998	3/31/1998	7/7/2008	7/19/2000	7/20/2000	7/20/2000	6/9/2004	6/9/2004	6/9/2004	6/7/2004
Collection Depth (ft bgs):	0.3	0.3	0.3	0.3	0.3	0.8	0.3	0.3	0.3	0.5	0.5	0.5	0.5
Total Metals (mg/kg)													
Mercury	0.074	0.096	0.139	0.06	0.035	0.025	0.05 U	0.07 U	0.06 U	0.03	0.02	0.01 B	0.01 B
PCBs (ug/kg)													
Total PCBs	--	--	--	--	--	5.5 U	36 U	37 U	38 U	9.9 U	20 U	20 U	9.8 U
Dioxin/Furans (pg/g)													
Dioxin TEQ	--	--	--	--	--	0.42	--	--	--	--	--	--	--
cPAHs (ug/kg)													
cPAH TEQ	43 J	62 J	1068	588	3341	7.0 [b] J	19 U	30 J	16 J	9.9 U	7.0 J	8.3 J	16 J

Table 6-1
Background Chehalis River Sediment Concentrations
Seaport Landing Aquatic Land Lease
Aberdeen, Washington

Location:	GRAYS0199-C10	GRAYS0199-C11	GRAYS0319-C2	GRAYS0319-C3	GRAYS0319-C14	GRAYS0319-C15	GRAYS0319-C16	GRAYS0319-C17	GRAYS0319-C18	PGHO&M9642	PGHO&M9642
Sample Name:	C10	C11	AB22	AB23	SA24	SA25	SA26	SA27	SA28	C1/1[a]	C1/1[a]
Sample Replicate:	--	--	--	--	--	--	--	--	--	1	2
Collection Date:	6/7/2004	6/7/2004	11/8/2011	11/8/2011	11/9/2011	11/9/2011	11/9/2011	11/9/2011	11/9/2011	2/2/1996	2/2/1996
Collection Depth (ft bgs):	0.5	1.1	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.5	0.5
Total Metals (mg/kg)											
Mercury	0.02	0.01 B	0.03 U	0.03 U	0.03 U	0.02 U	0.06	0.03 U	0.03 U	0.04 U	0.03 U
PCBs (ug/kg)											
Total PCBs	20 U	20 U	9.5 U	9.5 U	9.6 U	9.6 U	9.9 U	9.8 U	9.6 U	53 U	--
Dioxin/Furans (pg/g)											
Dioxin TEQ	--	--	1.6	0.84	1.4	1.4	7.8	1.2	1.3	--	--
cPAHs (ug/kg)											
cPAH TEQ	10 U	9.9 U□	19 U	20 U	19 U	19 U	19 U	19 U	19 U	26 U	--

Table 6-1
Background Chehalis River Sediment Concentrations
Seaport Landing Aquatic Land Lease
Aberdeen, Washington

Location:	SA8	SA9	SA9-R	SA9-R	WBCGH0257-C1	WBCGH0257-C1	WEYER92C1	WEYER92C1	WEYER93C1
Sample Name:	64-S	72-S	72-R	72-S	DMMU 1[a]	DMMU 1[a]	C1[a]	C1[a]	C1
Sample Replicate:	--	--	--	--	1	2	1	2	--
Collection Date:	7/7/2008	7/7/2008	1/26/2009	1/26/2009	4/25/2008	4/25/2008	3/2/1992	3/2/1992	1/9/1993
Collection Depth (ft bgs):	0.3	0.3	0.3	0.3	0.3	0.3	1.7	1.7	2.9
Total Metals (mg/kg)									
Mercury	0.008 T	0.046	0.032	0.032	0.08	0.08	0.08	0.1	0.12
PCBs (ug/kg)									
Total PCBs	5.7 U	5.7 U	--	0.64 U	25 U	--	69 U	69 U	26 U
Dioxin/Furans (pg/g)									
Dioxin TEQ	0.35	1.6	--	--	4.2	--	13	10	6.4
cPAHs (ug/kg)									
cPAH TEQ	25	12 J	--	2.9 J	47 J	--	55	74	34 J

Table 6-1
Background Chehalis River Sediment Concentrations
Seaport Landing Aquatic Land Lease
Aberdeen, Washington

NOTES:

-- = not analyzed or not available.

cPAH = carcinogenic PAH.

ft bgs = feet below ground surface.

J = result is estimated.

mg/kg = milligrams per kilogram.

PAH = polycyclic aromatic hydrocarbon.

pg/g = picograms per gram (parts per trillion).

T = calculated result.

TEQ = toxicity equivalence.

ug/kg = micrograms per kilogram.

U = result is non-detect at method reporting limit.

[a]Samples C1 from location WEYER92C1 (upriver location), DMMU 1, and C1/1 have two sets of results identified as lab replicate 1 and lab replicate 2. Results associated with lab replicate 1 are assumed to be for the primary field sample, and results associated with lab replicate 2 are assumed to be for a replicate sample (either a field or laboratory replicate). TEQ is the highest reporting limit value when all carcinogenic contituents are non-detect.

[b]Sample GH08-AB7-49-56-S from location AB cPAH TEQ was calculated with benzo(b)fluoranthene but not benzo(k)fluoranthene or total benzofluoranthenes, because only benzo(b)fluoranthene was available.

Table 7-1
Sample Summary
Seaport Landing Aquatic Lands Lease
Aberdeen, Washington

Sample Location	Sample ID	Sample Type	Collection Depth	Composite Sample ID	Composite Analysis	Analysis	X Coordinate (Easting)	Y Coordinate (Northing)
2011 Sediment Sampling - Dock Area (SAIC)								
DNR-SSDF	DF-comp-g1	Surface Grab	0-10 cm bml	DNR-SSDF-COMP[a]	Composite samples DNR-SSDF-COMP, DNR-SSD-COMP, and DNR-SSDU-COMP analyzed for SMS, TOC, Dioxins/Furans. Composite sample DNR-SSD-SUPCOMP analyzed only for Dioxins/Furans.	*Archive*	816535.4	615382.8
	DF-comp-g2	Surface Grab	0-10 cm bml			*Archive*	816587.3	615399.6
	DF-comp-g3	Surface Grab	0-10 cm bml			*Archive*	816654.7	615426.7
	DF-comp-g4	Surface Grab	0-10 cm bml			*Archive*	816702.7	615452.1
DNR-SSDD	DD-comp-g2	Surface Grab	0-10 cm bml	DNR-SSDD-COMP[a]		*Archive*	816597.4	615384.2
	DD-comp-g1	Surface Grab	0-10 cm bml			*Archive*	816540.4	615365.5
DNR-SSDU	DU-comp-g1	Surface Grab	0-10 cm bml	DNR-SSDU-COMP[a]		*Archive*	816661.1	615412.6
	DU-comp-g2	Surface Grab	0-10 cm bml			*Archive*	816710.1	615432.5
2011 Sediment Sampling - Former Mill Area (SAIC)								
SSFM1/SCFM1	DNR-SSFM1	Surface Grab	0-10 cm bml	DNR-SSFM1-COMP	Composite sample DNR-SSFM1-COMP analyzed only for Dioxins/Furans.	SMS, TOC, Dioxins/Furans	816927.6	615411.7
	DNR-SCFM1A	Sediment Core	0-2.5 ft bml			SMS, TOC, Dioxins/Furans		
	DNR-SCFM1B	Sediment Core	2.5-5 ft bml			*Archive*		
SSFM2/SCFM2	DNR-SSFM2	Surface Grab	0-10 cm bml			SMS, TOC, Dioxins/Furans	816917.7	615341.3
	DNR-SCFM2A	Sediment Core	0-2.7 ft bml			SMS, TOC, Dioxins/Furans		
	DNR-SCFM2B	Sediment Core	2.7-4.6 ft bml			SMS, TOC, Dioxins/Furans		
SSFM3/SCFM3	DNR-SSFM3	Surface Grab	0-10 cm bml			SMS, TOC, Dioxins/Furans	816993.8	615375.3
	DNR-SCFM3A	Sediment Core	0-3.0 ft bml			SMS, TOC, Dioxins/Furans		
	DNR-SCFM3B	Sediment Core	3.0-4.2 ft bml			*Archive*		
2011 Soil Boring - Filled Tidelands (SAIC)								
SB1	DNR-SB1A	Soil Boring	4.25-5 ft bgs	DNR-SB123B-COMP	Composite sample DNR-SB123B-COMP analyzed only for Dioxins/Furans.	SMS, Sb, Se, Pesticides, SVOCs, TPH-Dx/Gx, VOCs	817396.8	615547.2
	DNR-SB1B	Soil Boring	0-4.25 ft bgs			SMS, Sb, Se, Pesticides, SVOCs, TPH-Dx/Gx, VOCs		
SB2	DNR-SB2A	Soil Boring	0-3.75 ft bgs			SMS, Sb, Se, Pesticides, SVOCs, TPH-Dx/Gx, VOCs	817607.5	615592.4
	DNR-SB2B	Soil Boring	3.75-5 ft bgs			SMS, Sb, Se, Pesticides, SVOCs, TPH-Dx/Gx, VOCs		
SB3	DNR-SB3A	Soil Boring	0-3.5 ft bgs			SMS, Sb, Se, Pesticides, SVOCs, TPH-Dx/Gx, VOCs	817746.2	615611.4
	DNR-SB3B	Soil Boring	3.5-4.25 ft bgs			SMS, Sb, Se, Pesticides, SVOCs, TPH-Dx/Gx, VOCs		
	DNR-SB3C	Soil Boring	4.25-5 ft bgs			SMS, Sb, Se, Pesticides, SVOCs, TPH-Dx/Gx, VOCs		
SB4	DNR-SB4A	Soil Boring	0-2.75 ft bgs	DNR-SB456B-COMP	Composite sample DNR-SB456B-COMP analyzed only for Dioxins/Furans.	SMS, Sb, Se, Pesticides, SVOCs, TPH-Dx/Gx, VOCs	818211.3	615863.9
	DNR-SB4B	Soil Boring	2.75-5 ft bgs			SMS, Sb, Se, Pesticides, SVOCs, TPH-Dx/Gx, VOCs		
SB5	DNR-SB5A	Soil Boring	4-5 ft bgs			SMS, Sb, Se, Pesticides, SVOCs, TPH-Dx/Gx, VOCs	818463.1	615892.4
	DNR-SB5B	Soil Boring	0-4 ft bgs			SMS, Sb, Se, Pesticides, SVOCs, TPH-Dx/Gx, VOCs		
SB6	DNR-SB6A	Soil Boring	1.5-3 ft bgs			SMS (with no chlorobenzenes), Sb, Se, Pesticides, SVOCs, TPH-Dx/Gx, VOCs	818653.1	615950.9
	DNR-SB6B	Soil Boring	0-1.5 ft bgs			SMS, Sb, Se, Pesticides, SVOCs, TPH-Dx/Gx, VOCs		
	DNR-SB6C	Soil Boring	3-5 ft bgs			SMS, Sb, Se, Pesticides, SVOCs, TPH-Dx/Gx, VOCs		
1998 Chehalis River								
7S (Weyerhaeuser Sawmill)	98148247	Surface Grab	0-0.33 ft bml			Metals, SVOCs, TOC, Grain Size	816725.3	615520.4
14S (Chip Facility Ditch)	98148255	Surface Grab	0-0.33 ft bml			Metals, SVOCs, TOC, Grain Size	817787.0	615810.5
2013 Chehalis River								
CR-01	CR01-10cm	Surface Grab	0-0.33 ft bml			SMS, Dioxins/Furans, TOC, Pore water conductivity/salinity	817108.7	615592.3
CR-02	CR02-10cm	Surface Grab	0-0.33 ft bml			SMS, Dioxins/Furans, TOC, Pore water conductivity/salinity	817677.5	615747.8
CR-03	CR03-10cm	Surface Grab	0-0.33 ft bml			SMS, Dioxins/Furans, TOC, Pore water conductivity/salinity	818247.9	615977.6

Table 7-1
Sample Summary
Seaport Landing Aquatic Lands Lease
Aberdeen, Washington

Sample Location	Sample ID	Sample Type	Collection Depth	Composite Sample ID	Composite Analysis	Analysis	X Coordinate (Easting)	Y Coordinate (Northing)
Lumber Shed								
CR-07	LS01	Surface Grab	0-0.33 ft bml	CR-07-SSD-COMP	Composite sample analyzed for Hg, As, Cd, Cr, Pb, PCB Aroclors, TPH-Dx, SVOCs, TOC.	*Archive*	816410.3	615268.1
	LS02	Surface Grab	0-0.33 ft bml			*Archive*	816434.0	615275.5
	LS03	Surface Grab	0-0.33 ft bml			*Archive*	816415.9	615251.6
	LS04	Surface Grab	0-0.33 ft bml			*Archive*	816439.6	615259.0
CR-24	LS05	Surface Grab	0-0.33 ft bml	CR-24-SSD-COMP	Composite sample analyzed for SMS, TPH-Dx, TOC.	*Archive*	816430.0	615206.7
	LS06	Surface Grab	0-0.33 ft bml			*Archive*	816455.3	615214.3
	LS07	Surface Grab	0-0.33 ft bml			*Archive*	816441.3	615169.4
	LS08	Surface Grab	0-0.33 ft bml			*Archive*	816465.9	615176.6
Former Boiler								
CR-08A	FB01	Surface Grab	0-0.33 ft bml	CR08A-SSD-COMP	Composite sample analyzed for SMS, Dioxins/Furans, TOC.	*Archive*	816763.5	615451.3
	FB02	Surface Grab	0-0.33 ft bml			*Archive*	816774.1	615431.8
	FB03	Surface Grab	0-0.33 ft bml			*Archive*	816780.9	615409.3
	FB04	Surface Grab	0-0.33 ft bml			*Archive*	816788.2	615462.2
	CR08A-FB04	Soil Boring	18.3-20.0 ft bml	CR08A-SBSD		SMS, Dioxins/Furans, TPH-Dx, TOC		
CR-08B	FB05	Surface Grab	0-0.33 ft bml	CR08B-SSD-COMP	Composite sample analyzed for SMS, Dioxins/Furans, TPH-Dx, TOC.	*Archive*	816743.6	615502.0
	FB06	Surface Grab	0-0.33 ft bml			*Archive*	816761.6	615510.0
	FB07	Surface Grab	0-0.33 ft bml			*Archive*	816752.8	615481.8
	FB08	Surface Grab	0-0.33 ft bml			*Archive*	816770.8	615489.8
	CR08B-FB05	Soil Boring	8.0 ft bml	CR08B-SBSD		SMS, Dioxins/Furans, TPH-Dx		
Beach Area								
CR-09A	BA01-0-10cm	Surface Grab	0-0.33 ft bml	CR09A-SSD-COMP (0-0.33 ft bml samples only)	Composite sample analyzed for SMS, Dioxins/Furans, TOC	*Archive*	817246.5	615567.5
	BA01-10cm-1	Subsurface Grab	0.33-1 ft bml			*Archive*		
	BA01-1-2	Subsurface Grab	1-2 ft bml			*Archive*		
	BA02-0-10cm	Surface Grab	0-0.33 ft bml			*Archive*	817284.9	615574.7
	BA02-10cm-1	Subsurface Grab	0.33-1 ft bml			*Archive*		
	BA02-1-2	Subsurface Grab	1-2 ft bml			*Archive*		
	BA03-0-10cm	Surface Grab	0-0.33 ft bml			*Archive*	817324.9	615582.8
	BA03-10cm-1	Subsurface Grab	0.33-1 ft bml			*Archive*		
	BA03-1-2	Subsurface Grab	1-2 ft bml			*Archive*		
	BA04-0-10cm	Surface Grab	0-0.33 ft bml			*Archive*	817363.2	615590.1
	BA04-10cm-1	Subsurface Grab	0.33-1 ft bml			*Archive*		
	BA04-1-2	Subsurface Grab	1-2 ft bml			*Archive*		
CR-09B	BA05-0-10cm	Surface Grab	0-0.33 ft bml	CR09B-SSD-COMP (0-0.33 ft bml samples only)	Composite sample analyzed for SMS, Dioxins/Furans, TOC	*Archive*	817419.8	615601.7
	BA05-10cm-1	Subsurface Grab	0.33-1 ft bml			*Archive*		
	BA05-1-2	Subsurface Grab	1-2 ft bml			*Archive*		
	BA06-0-10cm	Surface Grab	0-0.33 ft bml			*Archive*	817455.9	615609.0
	BA06-10cm-1	Subsurface Grab	0.33-1 ft bml			*Archive*		
	BA06-1-2	Subsurface Grab	1-2 ft bml			*Archive*		
	BA07-0-10cm	Surface Grab	0-0.33 ft bml			*Archive*	817494.3	615616.3
	BA07-10cm-1	Subsurface Grab	0.33-1 ft bml			*Archive*		
	BA07-1-2	Subsurface Grab	1-2 ft bml			*Archive*		
	BA08-0-10cm	Surface Grab	0-0.33 ft bml			*Archive*	817530.6	615622.1
	BA08-10cm-1	Subsurface Grab	0.33-1 ft bml			*Archive*		
	BA08-1-2	Subsurface Grab	1-2 ft bml			*Archive*		

Table 7-1
Sample Summary
Seaport Landing Aquatic Lands Lease
Aberdeen, Washington

Sample Location	Sample ID	Sample Type	Collection Depth	Composite Sample ID	Composite Analysis	Analysis	X Coordinate (Easting)	Y Coordinate (Northing)
Shannon Slough								
CR-10	SM-01	Surface Grab	0-0.33 ft bml	CR10-SSD-COMP	Composite sample analyzed for SMS, TOC	*Archive*	817850.5	615752.9
	SM-02	Surface Grab	0-0.33 ft bml			*Archive*	817862.7	615733.0
	SM-03	Surface Grab	0-0.33 ft bml			*Archive*	817874.9	615712.5
	SM-04	Surface Grab	0-0.33 ft bml			*Archive*	817887.9	615691.9
Former Mill Area and Chehalis River								
CR-04	CR04-10cm	Sediment Core	0-0.33 ft bml			Hg, PCB Aroclors, Dioxin/Furans, SVOCs, TPH-Dx, Ammonia-N, Sulfide, TOC, TVS, Grain Size	816947.228	615369.500
	CR04-2.5	Sediment Core	1-2.5 ft bml			Hg, PCB Aroclors, Dioxins/Furans, SVOCs, TPH-Dx		
	CR04-2.5-5	Sediment Core	2.5-5 ft bml			Phenol, Ammonia-N, Sulfide, TOC, TVS, Grain Size		
CR-05	CR05-10cm	Sediment Core	0-0.33 ft bml			Hg, PCB Aroclors, Dioxin/Furans, SVOCs, TPH-Dx, Ammonia-N, Sulfide, TOC, TVS, Grain Size	816990.438	615478.297
	CR05-2.5	Sediment Core	0.33-2.5 ft bml			Hg, PCB Aroclors, Dioxin/Furans, SVOCs, TPH-Dx		
CR-06	CR-06-10cm	Sediment Core	0-0.33 ft bml			Hg, Dioxin/Furans, Phenol, Butylbenzylphthalate, PCP, Ammonia-N, Sulfide, TOC, TVS, Grain Size	817048.694	615391.877
	CR06-2.5	Sediment Core	1-2.5 ft bml			SMS, Dioxin/Furans, TPH-Dx, Ammonia-N, Sulfide, TOC, TVS		
CR-11	CR11-SBSD-23	Sediment Core	23.0 ft bml	CR11-14-SBSD-COMP (composited from sediment core samples CR11-SBSD-23, CR12-SBSD-15, CR13-SBSD-11, and CR14-SBSD-12)	Composite sample analyzed for TCLP Hg and Pb	SMS, Dioxins/Furans, TPH-Dx, TOC	816991.9	615315.6
CR-12	CR12-SBSD-15	Sediment Core	15.0 ft bml			SMS, TOC	816912.0	615368.0
CR-13	CR13-SBSD-11	Sediment Core	11.0 ft bml			SMS, TOC	816971.4	615392.6
CR-14	CR14-SBSD-12	Sediment Core	12.0 ft bml			SMS, TOC	816903.9	615401.5
CR-15A	CR15A-5	Sediment Core	5.0 ft bml			*Archive*	816889.4	615491.3
	CR15A-11	Sediment Core	11.0 ft bml			*Archive*		
CR-15B	CR15B-0-10cm	Surface Grab	0-0.33 ft bml			*Archive*	816876.6	615511.6
	CR15b-5	Sediment Core	5.0 ft bml			*Archive*		
CR-15C	CR15C-SSD	Surface Grab	0-0.33 ft bml			SMS, Dioxins/Furans, TPH-Dx, TOC	816844.6	615562.5
	CR15C-SBSD	Sediment Core	0.5-1.0 ft bml			SMS, TOC		
	CR15C-5.0	Sediment Core	5.0 ft bml			*Archive*		
CR-15D	NA	Sediment Core	NA			Visual observation only	816875.2	615544.1
CR-16A	CR16A-0-10cm	Surface Grab	0-0.33 ft bml			*Archive*	816925.0	615448.6
	CR16A-5	Sediment Core	5.0 ft bml			*Archive*		
	CR16A-14	Sediment Core	14.0 ft bml			*Archive*		
CR-16B	CR16B-0-10cm	Surface Grab	0-0.33 ft bml			*Archive*	816906.2	615470.1
	CR16B-10.0	Sediment Core	10.0 ft bml			*Archive*		
	CR16B-13.0	Sediment Core	13.0 ft bml			*Archive*		
CR-16C	NA	Sediment Core	NA			Visual observation only	816894.7	615487.4
CR-17C	CR17C-0-10cm	Surface Grab	0-0.33 ft bml			*Archive*	816953.1	615568.1
	CR17C-9.5	Sediment Core	9.5 ft bml			*Archive*		
CR-17D	CR17D-SSD	Surface Grab	0-0.33 ft bml			SMS, Dioxins/Furans, TPH-Dx, TOC	816931.9	615579.0
	CR17D-SBSD	Sediment Core	0.5-1.0 ft bml			SMS, TOC		
CR-18A	CR18A-9.0	Sediment Core	9.0 ft bml			*Archive*	816840.1	615504.3
CR-18B	CR18B-SSD	Surface Grab	0-0.33 ft bml			SMS, Dioxins/Furans, TPH-Dx, TOC	816818.6	615556.8
	CR18B-SBSD	Sediment Core	0.5-1.0 ft bml			SMS, TOC		
CR-19A	NA	Sediment Core	NA			Visual observation only	817044.9	615580.1
CR-19B	CR19B-0-10cm	Surface Grab	0-0.33 ft bml			*Archive*	817160.8	615606.2
	CR19B-10	Sediment Core	10.0 ft bml			*Archive*		

Table 7-1
Sample Summary
Seaport Landing Aquatic Lands Lease
Aberdeen, Washington

Sample Location	Sample ID	Sample Type	Collection Depth	Composite Sample ID	Composite Analysis	Analysis	X Coordinate (Easting)	Y Coordinate (Northing)
CR-19C	NA	Sediment Core	NA			Visual observation only	817110.6	615622.2
CR-19D	CR19D-0-10cm	Surface Grab	0-0.33 ft bml		Both samples were collected from 0-10cm bml. Additional sample volume was obtained via ponar.	*Archive*	817263.7	615628.3
	CR19D-SSD-CONV	Surface Grab				Ammonia-N, Sulfide, TOC, Fixed Solids, TVS		
	CR19D-9.0	Sediment Core	9.0 ft bml			*Archive*		
CR-19E	NA	Sediment Core	NA			Visual observation only	817191.5	615653.0
CR-19F	CR19F-SSD	Surface Grab	0-0.33 ft bml			SMS, Dioxins/Furans, TPH-Dx, TOC	817438.3	615694.3
	CR19F-SBSD	Sediment Core	0.5-1.0 ft bml			SMS, TOC		
	CR19F-SBSD-DUP	Sediment Core	0.5-1.0 ft bml			SMS, TOC		
	CR19F-5	Sediment Core	5.0 ft bml			*Archive*		
	CR19F-9.0	Sediment Core	9.0 ft bml			*Archive*		
CR-19G	CR19G-0-10cm	Surface Grab	0-0.33 ft bml			*Archive*	817365.8	615647.6
CR-19H	NA	Sediment Core	NA			Visual observation only	817306.1	615651.0
CR-19I	NA	Sediment Core	NA			Visual observation only	817290.7	615683.1
CR-19J	NA	Sediment Core	NA			Visual observation only	817030.8	615599.6
Wharf Area								
CR-25	CR25-0-10cm	Surface Grab	0-0.33 ft bml			*Archive*	816572.5	615481.4
	CR25-5	Sediment Core	5.0 ft bml			*Archive*		
CR-26	CR26-SSD	Surface Grab	0-0.33 ft bml			*Archive*	816624.6	615498.9
	CR26-SBSD	Sediment Core	0.5 -1.0 ft bml			SMS		
2015 - Upland								
CR-20	CR20-S-5.0	Soil Boring	3.3-5.0 ft bgs			Hg, As, Cd, Cr, Pb, Dioxins/Furans, PCB Aroclors, TPH-Dx, SVOCs	816940.8	615297.8
	CR20-GW-5.0	Groundwater Boring	5.0 ft bgs			Hg, As, Cd, Cr, Pb, PCB Aroclors, TPH-Dx, SVOCs		
CR-21	CR21-S-5.0	Soil Boring	3.5-5.0 ft bgs			Hg, As, Cd, Cr, Pb, Dioxins/Furans, PCB Aroclors, TPH-Dx, SVOCs	817042.3	615341.0
	CR21-GW-10.0	Groundwater Boring	10.0 ft bgs			Hg, As, Cd, Cr, Pb, PCB Aroclors, TPH-Dx, SVOCs		
CR-22	CR22-S-3.0	Soil Boring	3.0-4.5 ft bgs			Hg, As, Cd, Cr, Pb, Dioxins/Furans, PCB Aroclors, TPH-Dx, SVOCs	817044.4	615423.7
	CR22-GW-9.0	Groundwater Boring	9.0 ft bgs			Hg, As, Cd, Cr, Pb, PCB Aroclors, TPH-Dx, SVOCs		
CR-23	CR23-S-3.0	Soil Boring	1.5-3.0 ft bgs			Hg, As, Cd, Cr, Pb, Dioxins/Furans, PCB Aroclors, TPH-Dx, SVOCs	817073.4	615401.6
	CR23-GW-6.0	Groundwater Boring	6.0 ft bgs			Hg, As, Cd, Cr, Pb, PCB Aroclors, TPH-Dx, SVOCs		
SEEP-01	SEEP-01	Surface Water	NA			Hg, PCB Aroclors, TPH-Dx, SVOCs	816918.5	615313.4
Storm-01	Storm-01	Stormwater	NA			SMS, Dioxins/Furans, TPH-Dx	816931.4	615330.4
2015 - Upland - Outside DNR Lease Area								
B01	B01-S-4.5	Soil Boring	4.5 ft bgs			Hg, As, Cd, Cr, Pb, HCID, SVOCs, VOCs	817175.8	615194.5
	B01-GW-10.0	Groundwater Boring	10.0 ft bgs			Hg, As, Cd, Cr, Pb, HCID, SVOCs, VOCs		
B02	B02-S-5.0	Soil Boring	5.0 ft bgs			Hg, As, Cd, Cr, Pb, HCID, TPH-Dx, SVOCs, VOCs	817111.2	615305.6
	B02-GW-6	Groundwater Boring	6.0 ft bgs			Hg, As, Cd, Cr, Pb, HCID, TPH-Dx, SVOCs, VOCs		
B03	B03-S-5.0	Soil Boring	5.0 ft bgs			Hg, As, Cd, Cr, Pb, HCID, TPH-Dx, SVOCs, VOCs	817070.2	615137.7
	B03-GW-10	Groundwater Boring	10.0 ft bgs			Hg, As, Cd, Cr, Pb, HCID, TPH-Dx, SVOCs, VOCs		

NOTES:

Composite sample DNR-SSFM1-COMP analyzed only for Dioxins/Furans.

Coordinates are Washington State Plane South, NAD83 feet.

Ammonia-N = ammonia as nitrogen.

As = arsenic.

Cd = cadmium.

cm bml = centimeters below mudline.

Cr = chromium.

DNR = Department of Natural Resources.

ft bgs = feet below ground surface.

ft bml = feet below mudline.

ID = identification.

HCID = hydrocarbon identification.

Hg = mercury.

NA = not applicable.

Pb = lead.

PCB = polychlorinated biphenyls.

PCP = pentachlorophenol.

Sb = antimony.

Se = selenium.

SMS = sediment management standards.

SVOCs = semivolatile organic compounds.

TCLP = Toxicity Characteristic Leaching Procedure.

TOC = total organic carbon.

TPH-Dx = diesel- and lube oil-range total petroleum hydrocarbons.

TPH-Gx = gasoline-range total petroleum hydrocarbons.

TVS = total volatile solids.

VOCs = volatile organic compounds.

[a]DNR-SSDF-COM, DNR-SSDD-COMP, and DNR-SSDU-COMP were further composited as sample DNR-SSD-SUPCOMP.

Table 7-2
Soil Analytical Results and Screening Criteria
Seaport Landing Aquatic Land Lease
Aberdeen, Washington

		Location:	CR-20	CR-21	CR-22	CR-23	SB1		SB2		SB3		
		Sample Name:	CR20-S-5.0	CR21-S-5.0	CR22-S-3.0	CR23-S-3.0	DNR-SB1B	DNR-SB1A	DNR-SB2A	DNR-SB2B	DNR-SB3A	DNR-SB3B	DNR-SB3C
		Collection Date:	10/12/2015	10/12/2015	10/13/2015	10/13/2015	April-2011	April-2011	April-2011	April-2011	April-2011	April-2011	April-2011
		Collection Depth (ft bgs):	3.3 - 5.0	3.5 - 5.0	3.0 - 4.5	1.5 - 3.0	0 - 4.25	4.25 - 5	0 - 3.75	3.57 - 5	0 - 3.5	3.5 - 4.25	4.25 - 5
	MTCA A Soil CUL	MTCA B Soil CUL											
Total Metals (mg/kg)													
Antimony	NV	3200	--	--	--	--	3.3 U	5.2 U	3.2 U	4.9 U	5 U	3.5 U	3.2 U
Arsenic	20	0.67	10 U	10 U	10 U	6 U	3.3 U	5.2 U	3.2 U	4.9 U	5 U	3.5 U	3.2 U
Cadmium	2	80	0.6 U	0.5 U	0.6 U	0.2 U	0.55 UL	0.87 UL	0.54 UL	0.82 UL	0.83 UL	0.58 UL	0.53 UL
Chromium	19/2000[a]	240/120000[a]	**71 J**	**32 J**	**37**	**35.5**	**3.5**	**3.8**	**4**	**7.3**	6.6	**19**	**5.3**
Copper	NV	3200	--	--	--	--	**11**	**8.1**	**11**	**12**	14	**26**	**10**
Lead	250	NV	--	--	--	--	**2.6**	**3.3**	**2.8**	**5.9**	5.2	**5.4**	**4.8**
Mercury	2	NV	0.03 U	**0.02**	**0.09**	0.02 U	**0.023**	**0.043**	**0.04**	0.026 U	0.041	**0.021**	**0.046**
Selenium	NV	400	--	--	--	--	5.5 U	8.7 U	5.4 U	8.2 U	8.3 U	5.8 U	5.3 U
Silver	NV	400	--	--	--	--	**1.6**	1.7 U	**1.1**	**1.6**	**1.8**	**2.3**	**1.2**
Zinc	NV	24000	--	--	--	--	**32**	**30**	**25**	**54**	**45**	**43**	**25**
PCBs (ug/kg)													
Aroclor 1016	NV	5600	19 U	17 U	19 U	17 U	11 U	21 U	13 U	17 U	19 U	12 U	14 U
Aroclor 1221	NV	NV	19 U	17 U	19 U	17 U	11 U	21 U	13 U	17 U	19 U	12 U	14 U
Aroclor 1232	NV	NV	19 U	17 U	19 U	17 U	11 U	21 U	13 U	17 U	19 U	12 U	14 U
Aroclor 1242	NV	NV	19 U	17 U	19 U	17 U	11 U	21 U	13 U	17 U	19 U	12 U	14 U
Aroclor 1248	NV	NV	**530**	**34**	19 U	17 U	11 U	21 U	13 U	17 U	19 U	12 U	14 U
Aroclor 1254	NV	500	**710 J**	**73 J**	19 U	17 U	11 U	21 U	13 U	17 U	19 U	12 U	14 U
Aroclor 1260	NV	500	**930**	**56**	19 U	17 U	11 U	21 U	13 U	17 U	19 U	12 U	14 U
Aroclor 1268	NV	NV	19 U	17 U	19 U	17 U	--	--	--	--	--	--	--
Total PCBs	1000	500	**2170 J**	**163 J**	19 U	17 U	11 U	21 U	13 U	17 U	19 U	12 U	14 U
SVOCs (ug/kg)													
1,2,4-Trichlorobenzene	NV	34000	280 U	92 U	38 U	19 U	1.9 UH	8.9 U*	5.5 U*	5.3 U*	6 U*	3.3 U	8.8 U*
1,2-Dichlorobenzene	NV	7200000	280 U	92 U	38 U	19 U	0.96 UH	4.4 U*	2.7 U*	2.6 U*	3 U*	1.6 U	4.4 U*
1,3-Dichlorobenzene	NV	NV	280 U	92 U	38 U	19 U	0.96 UH	4.4 U*	2.7 U*	2.6 U*	3 U*	1.6 U	4.4 U*
1,4-Dichlorobenzene	NV	190000	280 U	92 U	38 U	19 U	0.96 UH	4.4 U*	2.7 U*	2.6 U*	3 U*	1.6 U	4.4 U*
1-Methylnaphthalene	NV	34000	280 U	92 U	38 U	19 U	35 U	64 U	42 U	53 U	56 U	37 U	43 U
2,4,5-Trichlorophenol	NV	8000000	1400 U	460 U	190 U	93 U	120 U	210 U	140 U	180 U	190 U	120 U	140 U
2,4,6-Trichlorophenol	NV	80000	1400 U	460 U	190 U	93 U	170 U	320 U	210 U	270 U	280 U	180 U	220 U
2,4-Dichlorophenol	NV	240000	1400 U	460 U	190 U	93 U	120 U	210 U	140 U	180 U	190 U	120 U	140 U
2,4-Dimethylphenol	NV	1600000	1400 U	460 U	190 U	93 U	120 U	210 U	140 U	180 U	190 U	120 U	140 U
2,4-Dinitrophenol	NV	160000	2800 U	920 U	380 U	190 U	1200 U	2100 U	1400 U	1800 U	1900 U	1200 U	1400 U
2,4-Dinitrotoluene	NV	3200	1400 U	460 U	190 U	93 U	120 U	210 U	140 U	180 U	190 U	120 U	140 U
2,6-Dinitrotoluene	NV	670	1400 U	460 U	190 U	93 U	120 U	210 U	140 U	180 U	190 U	120 U	140 U
2-Chloronaphthalene	NV	6400000	280 U	92 U	38 U	19 U	23 U	43 U	28 U	35 U	37 U	24 U	29 U
2-Chlorophenol	NV	400000	280 U	92 U	38 U	19 U	120 U	210 U	140 U	180 U	190 U	120 U	140 U

Table 7-2
Soil Analytical Results and Screening Criteria
Seaport Landing Aquatic Land Lease
Aberdeen, Washington

		Location:	CR-20	CR-21	CR-22	CR-23	SB1		SB2		SB3		
		Sample Name:	CR20-S-5.0	CR21-S-5.0	CR22-S-3.0	CR23-S-3.0	DNR-SB1B	DNR-SB1A	DNR-SB2A	DNR-SB2B	DNR-SB3A	DNR-SB3B	DNR-SB3C
		Collection Date:	10/12/2015	10/12/2015	10/13/2015	10/13/2015	April-2011	April-2011	April-2011	April-2011	April-2011	April-2011	April-2011
		Collection Depth (ft bgs):	3.3 - 5.0	3.5 - 5.0	3.0 - 4.5	1.5 - 3.0	0 - 4.25	4.25 - 5	0 - 3.75	3.57 - 5	0 - 3.5	3.5 - 4.25	4.25 - 5
	MTCA A Soil CUL	MTCA B Soil CUL											
2-Methylnaphthalene	NV	320000	280 U	**46 J**	**26 J**	19 U	23 U	43 U	28 U	35 U	37 U	24 U	**59**
2-Methylphenol	NV	NV	280 U	92 U	38 U	19 U	120 U	210 U	140 U	180 U	190 U	120 U	140 U
2-Nitroaniline	NV	800000	1400 U	460 U	190 U	93 U	120 U	210 U	140 U	180 U	190 U	120 U	140 U
2-Nitrophenol	NV	NV	280 U	92 U	38 U	19 U	120 U	210 U	140 U	180 U	190 U	120 U	140 U
3,3-Dichlorobenzidine	NV	2200	1400 R	460 R	190 R	93 R	230 U	430 U	280 U	350 U	370 U	240 U	290 U
3,4-Methylphenol	NV	80000	--	--	--	--	230 U	430 U	280 U	350 U	370 U	240 U	**680**
3-Nitroaniline	NV	NV	1400 R	460 R	190 R	93 R	120 U	210 U	140 U	180 U	190 U	120 U	140 U
4,6-Dinitro-2-methylphenol	NV	NV	2800 U	920 U	380 U	190 U	1200 U	2100 U	1400 U	1800 U	1900 U	1200 U	1400 U
4-Bromophenylphenyl ether	NV	NV	280 U	92 U	38 U	19 U	120 U	210 U	140 U	180 U	190 U	120 U	140 U
4-Chloro-3-methylphenol	NV	NV	1400 U	460 U	190 U	93 U	120 U	210 U	140 U	180 U	190 U	120 U	140 U
4-Chloroaniline	NV	5000	1400 R	460 R	190 R	93 R	120 U	210 U	140 U	180 U	190 U	120 U	140 U
4-Chlorophenylphenyl ether	NV	NV	280 U	92 U	38 U	19 U	120 U	210 U	140 U	180 U	190 U	120 U	140 U
4-Methylphenol	NV	NV	280 U	**92**	38 U	19 U	--	--	--	--	--	--	--
4-Nitroaniline	NV	NV	1400 U	460 U	190 U	93 U	120 U	210 U	140 U	180 U	190 U	120 U	140 U
4-Nitrophenol	NV	NV	1400 U	460 U	190 U	93 U	1200 U	2100 U	1400 U	1800 U	1900 U	1200 U	1400 U
Acenaphthene	NV	4800000	**140 J**	**420**	38 U	19 U	23 U	43 U	28 U	35 U	37 U	24 U	29 U
Acenaphthylene	NV	NV	280 U	92 U	38 U	19 U	23 U	43 U	28 U	35 U	37 U	24 U	29 U
Anthracene	NV	24000000	280 U	**150**	38 U	19 U	23 U	43 U	28 U	35 U	37 U	24 U	29 U
Benzo(a)anthracene	NV	1400	**140 J**	**210**	**21 J**	19 U	29 U	53 U	**48**	44 U	46 U	31 U	36 U
Benzo(a)pyrene	100	140	**160 J**	**180**	**28 J**	19 U	**46**	64 U	**58**	53 U	56 U	37 U	43 U
Benzo(b)fluoranthene	NV	1370	--	--	--	--	**95**	43 U	**110**	35 U	37 U	24 U	29 U
Benzo(ghi)perylene	NV	NV	280 U	92 U	**32 J**	19 U	**52**	53 U	35 U	44 U	46 U	31 U	36 U
Benzo(k)fluoranthene	NV	13700	--	--	--	--	29 U	53 U	35 U	44 U	46 U	31 U	36 U
Benzoic acid	NV	320000000	2800 U	920 U	380 U	190 U	2900 U	5300 U	3500 U	4400 U	4600 U	3100 U	3600 U
Benzyl alcohol	NV	8000000	280 U	92 U	38 U	19 U	120 U	210 U	140 U	180 U	190 U	120 U	140 U
Bis(2-chloro-1-methylethyl)ether	NV	14000	280 U	92 U	38 U	19 U	170 U	320 U	210 U	270 U	280 U	180 U	220 U
Bis(2-chloroethoxy)methane	NV	NV	280 U	92 U	38 U	19 U	120 U	210 U	140 U	180 U	190 U	120 U	140 U
Bis(2-chloroethyl)ether	NV	910	280 U	92 U	38 U	19 U	120 U	210 U	140 U	180 U	190 U	120 U	140 U
Bis(2-ethylhexyl)phthalate	NV	71000	**570 J**	230 U	**3100**	47 U	1700 U	3200 U	2100 U	2700 U	2800 U	1800 U	2200 U
Butylbenzylphthalate	NV	530000	280 U	92 U	38 U	19 U	120 U	210 U	140 U	180 U	190 U	120 U	140 U
Carbazole	NV	NV	280 UJ	92 UJ	38 UJ	19 UJ	170 U	320 U	210 U	270 U	280 U	180 U	220 U
Chrysene	NV	140000	**470**	**480**	**75**	19 U	**49**	53 U	**170**	44 U	46 U	**49**	36 U
Dibenzo(a,h)anthracene	NV	140	280 U	92 U	38 U	19 U	46 U	86 U	56 U	71 U	74 U	49 U	58 U
Dibenzofuran	NV	80000	280 U	**100**	38 U	19 U	120 U	210 U	140 U	180 U	190 U	120 U	140 U
Diethyl phthalate	NV	64000000	280 U	92 U	38 U	19 U	120 U	210 U	140 U	180 U	190 U	120 U	140 U
Dimethyl phthalate	NV	NV	280 U	92 U	38 U	19 U	120 U	210 U	140 U	180 U	190 U	120 U	140 U

Table 7-2
Soil Analytical Results and Screening Criteria
Seaport Landing Aquatic Land Lease
Aberdeen, Washington

		Location:	CR-20	CR-21	CR-22	CR-23	SB1		SB2		SB3		
		Sample Name:	CR20-S-5.0	CR21-S-5.0	CR22-S-3.0	CR23-S-3.0	DNR-SB1B	DNR-SB1A	DNR-SB2A	DNR-SB2B	DNR-SB3A	DNR-SB3B	DNR-SB3C
		Collection Date:	10/12/2015	10/12/2015	10/13/2015	10/13/2015	April-2011	April-2011	April-2011	April-2011	April-2011	April-2011	April-2011
		Collection Depth (ft bgs):	3.3 - 5.0	3.5 - 5.0	3.0 - 4.5	1.5 - 3.0	0 - 4.25	4.25 - 5	0 - 3.75	3.57 - 5	0 - 3.5	3.5 - 4.25	4.25 - 5
	MTCA A Soil CUL	MTCA B Soil CUL											
Di-n-butyl phthalate	NV	8000000	280 U	92 U	38 U	19 U	230 U	430 U	280 U	350 U	370 U	240 U	290 U
Di-n-octyl phthalate	NV	800000	280 U	92 U	38 U	19 U	230 U	430 U	280 U	350 U	370 U	240 U	290 U
Fluoranthene	NV	3200000	**600**	**640**	**28 J**	**11 J**	**35**	43 U	**71**	35 U	37 U	**200**	**42**
Fluorene	NV	3200000	**160 J**	**300**	38 U	19 U	23 U	43 U	28 U	35 U	37 U	24 U	29 U
Hexachlorobenzene	NV	630	280 U	92 U	38 U	19 U	58 U	110 U	69 U	88 U	93 U	61 U	72 U
Hexachlorobutadiene	NV	13000	280 U	92 U	38 U	19 U	0.96 UH	4.4 U*	2.7 U*	2.6 U*	3 U*	1.6 U	4.4 U*
Hexachlorocyclopentadiene	NV	480000	1400 U	460 U	190 U	93 U	120 U	210 U	140 U	180 U	190 U	120 U	140 U
Hexachloroethane	NV	25000	280 U	92 U	38 U	19 U	120 U	210 U	140 U	180 U	190 U	120 U	140 U
Indeno(1,2,3-cd)pyrene	NV	1400	280 U	92 U	38 U	19 U	46 U	86 U	56 U	71 U	74 U	49 U	58 U
Isophorone	NV	1100000	280 U	92 U	38 U	19 U	120 U	210 U	140 U	180 U	190 U	120 U	140 U
Naphthalene	5000	1600000	280 U	**65 J**	**270**	19 U	4.8 UH	22 U*	14 U*	13 U*	15 U*	8.2 U	**63**
Nitrobenzene	NV	160000	280 U	92 U	38 U	19 U	120 U	210 U	140 U	180 U	190 U	120 U	140 U
N-Nitrosodiphenylamine	NV	200000	280 U	92 U	38 U	19 U	58 U	110 U	69 U	88 U	93 U	61 U	72 U
N-Nitrosodipropylamine	NV	140	280 U	92 U	38 U	19 U	120 U	210 U	140 U	180 U	190 U	120 U	140 U
Pentachlorophenol	NV	2500	1400 U	460 U	190 U	93 U	230 U	430 U	280 U	350 U	370 U	240 U	290 U
Phenanthrene	NV	NV	**510**	**920**	**23 J**	**11 J**	23 U	43 U	**62**	35 U	37 U	24 U	**100**
Phenol	NV	24000000	280 UJ	92 UJ	38 UJ	19 UJ	120 U	210 U	140 U	180 U	190 U	120 U	140 U
Pyrene	NV	2400000	**530**	**610**	**30 J**	**11 J**	**38**	43 U	**85**	35 U	37 U	**140**	**81**
Total Benzofluoranthenes	NV	1400[b]	**300 J**	**320**	**62 J**	37 U	--	--	--	--	--	--	--
cPAH TEQ	190[a]	NV	**240 J**	**250**	**41 J**	37 U	**63.5**	**48.3**	**82.9**	**40.0**	**42.1**	**28.2**	**32.5**
Dioxins and Furans (pg/g)													
1,2,3,4,6,7,8-HpCDD	NV	NV	**2650**	**373**	**1260**	**26**	--	--	--	--	--	--	--
1,2,3,4,6,7,8-HpCDF	NV	NV	**653**	**37.9**	**188**	**2.97**	--	--	--	--	--	--	--
1,2,3,4,7,8,9-HpCDF	NV	NV	**32**	**1.48**	12.5 U	0.221 U	--	--	--	--	--	--	--
1,2,3,4,7,8-HxCDD	NV	NV	**36.1**	**3.49**	**8.65**	0.193 U	--	--	--	--	--	--	--
1,2,3,4,7,8-HxCDF	NV	NV	**17**	**2.11**	**4.09 J**	**0.114 J**	--	--	--	--	--	--	--
1,2,3,6,7,8-HxCDD	NV	NV	**184**	**23.6**	**38.2**	**1.54**	--	--	--	--	--	--	--
1,2,3,6,7,8-HxCDF	NV	NV	**9.97**	**1.55**	**4.2 J**	0.153 U	--	--	--	--	--	--	--
1,2,3,7,8,9-HxCDD	NV	NV	**16.7**	**8.09**	**12.1**	**2.35**	--	--	--	--	--	--	--
1,2,3,7,8,9-HxCDF	NV	NV	**8.52**	**1.3**	**1.82 J**	0.155 U	--	--	--	--	--	--	--
1,2,3,7,8-PeCDD	NV	NV	**10.8**	**1.97**	**3.14 J**	**1.31**	--	--	--	--	--	--	--
1,2,3,7,8-PeCDF	NV	NV	4.85 U	**0.859 J**	**1.08 J**	0.0558 U	--	--	--	--	--	--	--
2,3,4,6,7,8-HxCDF	NV	NV	**40**	**1.58**	**7.81**	0.133 U	--	--	--	--	--	--	--
2,3,4,7,8-PeCDF	NV	NV	**5.51**	0.727 U	**0.807 J**	0.0598 U	--	--	--	--	--	--	--
2,3,7,8-TCDD	NV	13	**6.42**	0.467 U	1.41 U	**1.68**	--	--	--	--	--	--	--
2,3,7,8-TCDF	NV	NV	**5.07**	0.657 U	**0.552 J**	0.0538 U	--	--	--	--	--	--	--

Table 7-2
Soil Analytical Results and Screening Criteria
Seaport Landing Aquatic Land Lease
Aberdeen, Washington

		Location:	CR-20	CR-21	CR-22	CR-23	SB1		SB2		SB3		
		Sample Name:	CR20-S-5.0	CR21-S-5.0	CR22-S-3.0	CR23-S-3.0	DNR-SB1B	DNR-SB1A	DNR-SB2A	DNR-SB2B	DNR-SB3A	DNR-SB3B	DNR-SB3C
		Collection Date:	10/12/2015	10/12/2015	10/13/2015	10/13/2015	April-2011	April-2011	April-2011	April-2011	April-2011	April-2011	April-2011
		Collection Depth (ft bgs):	3.3 - 5.0	3.5 - 5.0	3.0 - 4.5	1.5 - 3.0	0 - 4.25	4.25 - 5	0 - 3.75	3.57 - 5	0 - 3.5	3.5 - 4.25	4.25 - 5
	MTCA A Soil CUL	MTCA B Soil CUL											
OCDD	NV	NV	**18400**	**2480**	**30800 J**	**298**	--	--	--	--	--	--	--
OCDF	NV	NV	**1490**	**42.8**	**412**	**4.82**	--	--	--	--	--	--	--
Total HpCDDs	NV	NV	**4760**	**708**	**2900**	**52.5**	--	--	--	--	--	--	--
Total HpCDFs	NV	NV	3080 U	**114**	695 U	10.2 U	--	--	--	--	--	--	--
Total HxCDDs	NV	NV	843 U	**117**	**205**	27.3 U	--	--	--	--	--	--	--
Total HxCDFs	NV	NV	1340 U	95.5 U	**243**	5.78 U	--	--	--	--	--	--	--
Total PeCDDs	NV	NV	**140**	14.9 U	**18.2**	**13.3**	--	--	--	--	--	--	--
Total PeCDFs	NV	NV	316 U	36.3 U	48.6 U	**0.846**	--	--	--	--	--	--	--
Total TCDDs	NV	NV	79.6 U	4.89 U	13.6 U	11.4 U	--	--	--	--	--	--	--
Total TCDFs	NV	NV	50.9 U	7.08 U	5.25 U	0.103 U	--	--	--	--	--	--	--
Dioxin TEQ	13	NV	**90.0**	**11.4 J**	**35.8 J**	**3.82 J**	--	--	--	--	--	--	--
TPH (mg/kg)													
Gasoline-~~r~~Range Hydrocarbons	30/100	NV	--	--	--	--	4.7 U	11 U	5.6 U	7.1 U	11 U	7.3 U	**8.1**
Diesel-~~r~~Range Hydrocarbons	2000	NV	**480**	**620**	**120**	**21**	**61 Y**	**1100 Z**	**83 Y**	**230 Z**	**270 Z**	**67 Z**	**440 Z**
Lube Oil-~~r~~Range Hydrocarbons	2000	NV	**2600**	**3600**	**980**	**51**	**540**	**1000 Y**	**940**	**700 Y**	**780 Y**	**190 Y**	**630 Y**
Pesticides (ug/kg)													
Aldrin	NV	59	--	--	--	--	1.1 U	2.1 U	1.3 U	1.7 U	1.9 U	1.2 U	1.4 U
Alpha-BHC	NV	160	--	--	--	--	1.1 U	2.1 U	1.3 U	1.7 U	1.9 U	1.2 U	1.4 U
Beta-BHC	NV	556	--	--	--	--	1.1 U	2.1 U	1.3 U	1.7 U	1.9 U	1.2 U	1.4 U
Delta-BHC	NV	NV	--	--	--	--	1.1 U	2.1 U	1.3 U	1.7 U	1.9 U	1.2 U	1.4 U
Lindane	10	910	--	--	--	--	1.1 U	2.1 U	1.3 U	1.7 U	1.9 U	1.2 U	1.4 U
cis-Chlordane	NV	NV	--	--	--	--	1.1 U	2.1 U	1.3 U	1.7 U	1.9 U	1.2 U	1.4 U
Gamma-Chlordane	NV	NV	--	--	--	--	1.1 U	2.1 U	1.3 U	1.7 U	1.9 U	1.2 U	1.4 U
Chlordane	NV	2900	--	--	--	--	1.1 U	2.1 U	1.3 U	1.7 U	1.9 U	1.2 U	1.4 U
4,4'-DDD	NV	4200	--	--	--	--	2.3 U	4.2 U	2.7 U^	3.5 U^	3.8 U^	2.4 U^	2.8 U^
4,4'-DDE	NV	2900	--	--	--	--	2.3 U^	4.2 U	2.7 U^	3.5 U	3.8 U	2.4 U	2.8 U
4,4'-DDT	3000	2900	--	--	--	--	2.3 U^	4.2 U^	2.7 U^	3.5 U^	3.8 U^	2.4 U^	2.8 U^
Total DDTs	NV	NV	--	--	--	--	2.3 U	4.2 U	2.7 U	3.5 U	3.8 U	2.4 U	2.8 U
Dieldrin	NV	63	--	--	--	--	2.3 U^	4.2 U	2.7 U^	3.5 U	3.8 U	2.4 U	2.8 U
Endosulfan I	NV	480000	--	--	--	--	1.1 U	2.1 U	1.3 U	1.7 U	1.9 U	1.2 U	1.4 U
Endosulfan II	NV	480000	--	--	--	--	2.3 U^	4.2 U	2.7 U^	3.5 U	3.8 U	2.4 U	2.8 U
Endosulfan Sulfate	NV	NV	--	--	--	--	2.3 U	4.2 U	2.7 U	3.5 U	3.8 U	2.4 U	2.8 U
Endrin	NV	24000	--	--	--	--	2.3 U	4.2 U	2.7 U	3.5 U	3.8 U	2.4 U	2.8 U
Endrin Aldehyde	NV	NV	--	--	--	--	2.3 U	4.2 U	2.7 U	3.5 U	3.8 U	2.4 U	2.8 U
Endrin Ketone	NV	NV	--	--	--	--	2.3 U	4.2 U	2.7 U	3.5 U	3.8 U	2.4 U	2.8 U
Heptachlor	NV	220	--	--	--	--	1.1 U	2.1 U	1.3 U	1.7 U	1.9 U	1.2 U	1.4 U

Table 7-2
Soil Analytical Results and Screening Criteria
Seaport Landing Aquatic Land Lease
Aberdeen, Washington

		Location:	CR-20	CR-21	CR-22	CR-23	SB1		SB2		SB3		
		Sample Name:	CR20-S-5.0	CR21-S-5.0	CR22-S-3.0	CR23-S-3.0	DNR-SB1B	DNR-SB1A	DNR-SB2A	DNR-SB2B	DNR-SB3A	DNR-SB3B	DNR-SB3C
		Collection Date:	10/12/2015	10/12/2015	10/13/2015	10/13/2015	April-2011	April-2011	April-2011	April-2011	April-2011	April-2011	April-2011
		Collection Depth (ft bgs):	3.3 - 5.0	3.5 - 5.0	3.0 - 4.5	1.5 - 3.0	0 - 4.25	4.25 - 5	0 - 3.75	3.57 - 5	0 - 3.5	3.5 - 4.25	4.25 - 5
	MTCA A Soil CUL	MTCA B Soil CUL											
Heptachlor Epoxide	NV	110	--	--	--	--	1.1 U	2.1 U	1.3 U	1.7 U	1.9 U	1.2 U	1.4 U
Methoxychlor	NV	400000	--	--	--	--	11 U	21 U	13 U	17 U	19 U	12 U	14 U
Toxaphene	NV	910	--	--	--	--	110 U^	210 U^	130 U^	170 U^	190 U^	120 U^	140 U^
VOCs (ug/kg)													
1,1,1,2-Tetrachloroethane	NV	39000	--	--	--	--	0.96 UH	4.4 U*	2.7 U*	2.6 U*	3 U*	1.6 U	4.4 U*
1,1,1-Trichloroethane	2000	160000000	--	--	--	--	0.96 UH	4.4 U	2.7 U	2.6 U	3 U	1.6 U	4.4 U
1,1,2,2-Tetrachloroethane	NV	5000	--	--	--	--	1.9 UH	8.9 U*	5.5 U*	5.3 U*	6 U*	3.3 U	8.8 U*
1,1,2-Trichloroethane	NV	18000	--	--	--	--	0.96 UH	4.4 U	2.7 U	2.6 U	3 U	1.6 U	4.4 U
1,1-Dichloroethane	NV	180000	--	--	--	--	0.96 UH	4.4 U	2.7 U	2.6 U	3 U	1.6 U	4.4 U
1,1-Dichloroethene	NV	4000000	--	--	--	--	4.8 UH	22 U	14 U	13 U	15 U	8.2 U	22 U
1,1-Dichloropropene	NV	NV	--	--	--	--	0.96 UH	4.4 U	2.7 U	2.6 U	3 U	1.6 U	4.4 U
1,2,3-Trichlorobenzene	NV	NV	--	--	--	--	1.9 UH	8.9 U*	5.5 U*	5.3 U*	6 U*	3.3 U	8.8 U*
1,2,3-Trichloropropane	NV	33	--	--	--	--	0.96 UH	4.4 U*	2.7 U*	2.6 U*	3 U*	1.6 U	4.4 U*
1,2,4-Trimethylbenzene	NV	NV	--	--	--	--	**3.2**	8.9 U*	5.5 U*	5.3 U*	6 U*	3.3 U	8.8 U*
1,2-Dibromo-3-chloropropane	NV	1250	--	--	--	--	1.9 UJH	8.9 U*	5.5 U*	5.3 U*	6 U*	3.3 U	8.8 U*
1,2-Dichloroethane	NV	11000	--	--	--	--	0.96 UH	4.4 U	2.7 U	2.6 U	3 U	1.6 U	4.4 U
1,2-Dichloropropane	NV	28000	--	--	--	--	0.96 UH	4.4 U	2.7 U	2.6 U	3 U	1.6 U	4.4 U
1,3,5-Trimethylbenzene	NV	800000	--	--	--	--	4.8 UH	22 U*	14 U*	13 U*	15 U*	8.2 U	22 U*
1,3-Dichloropropane	NV	NV	--	--	--	--	0.96 UH	4.4 U	2.7 U	2.6 U	3 U	1.6 U	4.4 U
2,2-Dichloropropane	NV	NV	--	--	--	--	0.96 UH	4.4 U	2.7 U	2.6 U	3 U	1.6 U	4.4 U
2-Chlorotoluene	NV	1600000	--	--	--	--	1.9 UH	8.9 U*	5.5 U*	5.3 U*	6 U*	3.3 U	8.8 U*
4-Chlorotoluene	NV	NV	--	--	--	--	1.9 UH	8.9 U*	5.5 U*	5.3 U*	6 U*	3.3 U	8.8 U*
Benzene	30	18200	--	--	--	--	0.96 UH	4.4 U	2.7 U	2.6 U	3 U	1.6 U	4.4 U
Bromobenzene	NV	NV	--	--	--	--	1.9 UH	8.9 U*	5.5 U*	5.3 U*	6 U*	3.3 U	8.8 U*
Bromochloromethane	NV	NV	--	--	--	--	0.96 UH	4.4 U	2.7 U	2.6 U	3 U	1.6 U	4.4 U
Bromoform	NV	130000	--	--	--	--	0.96 UH	4.4 U*	2.7 U*	2.6 U*	3 U*	1.6 U	4.4 U*
Bromomethane	NV	110000	--	--	--	--	0.96 UH	4.4 U	2.7 U	2.6 U	3 U	1.6 U	4.4 U
Carbon Tetrachloride	NV	14000	--	--	--	--	0.96 UH	4.4 U	2.7 U	2.6 U	3 U	1.6 U	4.4 U
Chlorobenzene	NV	1600000	--	--	--	--	0.96 UH	4.4 U*	2.7 U*	2.6 U*	3 U*	1.6 U	4.4 U*
Chlorodibromomethane	NV	12000	--	--	--	--	0.96 UH	4.4 U	2.7 U	2.6 U	3 U	1.6 U	4.4 U
Chloroethane	NV	NV	--	--	--	--	0.96 UH	4.4 U	2.7 U	2.6 U	3 U	1.6 U	4.4 U
Chloroform	NV	32000	--	--	--	--	0.96 UH	4.4 U	2.7 U	2.6 U	3 U	1.6 U	4.4 U
Chloromethane	NV	NV	--	--	--	--	0.96 UH	4.4 U	2.7 U	2.6 U	3 U	1.6 U	4.4 U
cis-1,2-Dichloroethene	NV	160000	--	--	--	--	0.96 UH	4.4 U	2.7 U	2.6 U	3 U	1.6 U	4.4 U
cis-1,3-Dichloropropene	NV	10000[c]	--	--	--	--	0.96 UH	4.4 U	2.7 U	2.6 U	3 U	1.6 U	4.4 U
Cumene	NV	800000	--	--	--	--	1.9 UH	8.9 U*	5.5 U*	**8.3 ***	6 U*	3.3 U	8.8 U*

Table 7-2
Soil Analytical Results and Screening Criteria
Seaport Landing Aquatic Land Lease
Aberdeen, Washington

		Location:	CR-20	CR-21	CR-22	CR-23	SB1		SB2		SB3		
		Sample Name:	CR20-S-5.0	CR21-S-5.0	CR22-S-3.0	CR23-S-3.0	DNR-SB1B	DNR-SB1A	DNR-SB2A	DNR-SB2B	DNR-SB3A	DNR-SB3B	DNR-SB3C
		Collection Date:	10/12/2015	10/12/2015	10/13/2015	10/13/2015	April-2011	April-2011	April-2011	April-2011	April-2011	April-2011	April-2011
		Collection Depth (ft bgs):	3.3 - 5.0	3.5 - 5.0	3.0 - 4.5	1.5 - 3.0	0 - 4.25	4.25 - 5	0 - 3.75	3.57 - 5	0 - 3.5	3.5 - 4.25	4.25 - 5
	MTCA A Soil CUL	MTCA B Soil CUL											
Dibromomethane	NV	800000	--	--	--	--	0.96 UH	4.4 U	2.7 U	2.6 U	3 U	1.6 U	4.4 U
Dichlorobromomethane	NV	16000	--	--	--	--	0.96 UH	4.4 U	2.7 U	2.6 U	3 U	1.6 U	4.4 U
Dichlorodifluoromethane (CFC-12)	NV	16000000	--	--	--	--	0.96 UH	4.4 U	2.7 U	2.6 U	3 U	1.6 U	4.4 U
Ethylbenzene	6000	8000000	--	--	--	--	0.96 UH	4.4 U*	2.7 U*	2.6 U*	3 U*	1.6 U	4.4 U*
Ethylene Dibromide	5	500	--	--	--	--	0.96 UH	4.4 U	2.7 U	2.6 U	3 U	1.6 U	4.4 U
Methyl t-butyl ether	100	556000	--	--	--	--	0.96 UH	4.4 U	2.7 U	2.6 U	3 U	1.6 U	4.4 U
Methylene Chloride	20	500000	--	--	--	--	14 UH	67 U	41 U	40 U	45 U	25 U	66 U
m, p-Xylene	NV	16000000	--	--	--	--	1.9 UH	8.9 U*	5.5 U*	5.3 U*	6 U*	3.3 U	8.8 U*
n-Butylbenzene	NV	4000000	--	--	--	--	1.9 UH	8.9 U*	5.5 U*	5.3 U*	6 U*	3.3 U	8.8 U*
n-Propylbenzene	NV	8000000	--	--	--	--	0.96 UH	4.4 U*	2.7 U*	2.6 U*	3 U*	1.6 U	4.4 U*
o-Xylene	NV	16000000	--	--	--	--	0.96 UH	4.4 U*	2.7 U*	2.6 U*	3 U*	1.6 U	4.4 U*
p-Isopropyltoluene	NV	NV	--	--	--	--	**50**	**25 ***	5.5 U*	**70 ***	6 U*	3.3 U	**23 ***
sec-Butylbenzene	NV	8000000	--	--	--	--	1.9 UH	8.9 U*	5.5 U*	5.3 U*	6 U*	3.3 U	8.8 U*
Styrene	NV	16000000	--	--	--	--	1.9 UH	8.9 U*	5.5 U*	5.3 U*	6 U*	3.3 U	8.8 U*
tert-Butylbenzene	NV	8000000	--	--	--	--	1.9 UH	8.9 U*	5.5 U*	5.3 U*	6 U*	3.3 U	8.8 U*
Tetrachloroethene	50	480000	--	--	--	--	0.96 UH	4.4 U	2.7 U	2.6 U	3 U	1.6 U	4.4 U
Toluene	7000	6400000	--	--	--	--	1.9 UH	8.9 U	5.5 U	**9.1**	6 U	3.3 U	8.8 U
trans-1,2-Dichloroethene	NV	1600000	--	--	--	--	0.96 UH	4.4 U	2.7 U	2.6 U	3 U	1.6 U	4.4 U
trans-1,3-Dichloropropene	NV	10000[c]	--	--	--	--	0.96 UH	4.4 U	2.7 U	2.6 U	3 U	1.6 U	4.4 U
Trichloroethene	30	12000	--	--	--	--	0.96 UH	4.4 U	2.7 U	2.6 U	3 U	1.6 U	4.4 U
Trichlorofluoromethane (CFC-11)	NV	24000000	--	--	--	--	0.96 UH	4.4 U	2.7 U	2.6 U	3 U	1.6 U	4.4 U
Vinyl Chloride	NV	240000	--	--	--	--	0.96 UH	4.4 U	2.7 U	2.6 U	3 U	1.6 U	4.4 U
Total Xylenes	--	--	--	--	--	--	--	--	--	--	--	--	--

Table 7-2
Soil Analytical Results and Screening Criteria
Seaport Landing Aquatic Land Lease
Aberdeen, Washington

		Location:	SB1, SB2, SB3	SB4		SB5		SB6			SB4, SB5, SB6
		Sample Name:	DNR-SB123B-COMP	DNR-SB4A	DNR-SB4B	DNR-SB5B	DNR-SB5A	DNR-SB6B	DNR-SB6A	DNR-SB6C	DNR-SB456B-COMP
		Collection Date:	April-2011	April-2011	April-2011	April-2011	April-2011	April-2011	April-2011	April-2011	April-2011
		Collection Depth (ft bgs):	NA	0 - 2.7	2.75 - 5	0 - 4	4 - 5	0 - 1.5	1.5 - 3	3 - 5	NA
	MTCA A Soil CUL	MTCA B Soil CUL									
Total Metals (mg/kg)											
Antimony	NV	3200	--	12 U	8.2 U	11 U	15 U	8.2 U	5.4 U	14 U	--
Arsenic	20	0.67	--	12 U	8.2 U	11 U	15 U	8.2 U	5.4 U	14 U	--
Cadmium	2	80	--	1.9 U	1.4 U	1.8 U	2.5 U	1.4 UL	0.89 U	2.4 U	--
Chromium	19/2000[a]	240/120000[a]	--	5 U	3.6 U	4.6 U	6.6 U	**11**	**3.5**	6.1 U	--
Copper	NV	3200	--	**12**	**5**	3.5 U	**5.7**	**35**	**8.3**	**5.2**	--
Lead	250	NV	--	5.8 U	4.1 U	5.3 U	7.6 U	**12**	2.7 U	7.1 U	--
Mercury	2	NV	--	0.073 U	0.053 U	0.054 U	0.061 U	0.049 U	**0.041**	0.068 U	--
Selenium	NV	400	--	19 U	14 U	18 U	25 U	14 U	8.9 U	24 U	--
Silver	NV	400	--	3.9 U	2.7 U	3.5 U	5 U	**7.1**	1.8 U	4.7 U	--
Zinc	NV	24000	--	**29**	**9.7**	**10**	**18**	**120**	**30**	**18**	--
PCBs (ug/kg)											
Aroclor 1016	NV	5600	--	45 U	34 U	37 U	55 U	35 U	24 U	50 U	--
Aroclor 1221	NV	NV	--	45 U	34 U	37 U	55 U	35 U	24 U	50 U	--
Aroclor 1232	NV	NV	--	45 U	34 U	37 U	55 U	35 U	24 U	50 U	--
Aroclor 1242	NV	NV	--	45 U	34 U	37 U	55 U	35 U	24 U	50 U	--
Aroclor 1248	NV	NV	--	45 U	34 U	37 U	55 U	35 U	24 U	50 U	--
Aroclor 1254	NV	500	--	45 U	34 U	37 U	55 U	35 U	24 U	50 U	--
Aroclor 1260	NV	500	--	45 U	34 U	37 U	55 U	35 U	24 U	50 U	--
Aroclor 1268	NV	NV	--	--	--	--	--	--	--	--	--
Total PCBs	1000	500	--	45 U	34 U	37 U	55 U	35 U	24 U	50 U	--
SVOCs (ug/kg)											
1,2,4-Trichlorobenzene	NV	34000	--	24 U*	7.8 U*	17 U	26 U*	6.4 U	--	10 U*	--
1,2-Dichlorobenzene	NV	7200000	--	12 U*	3.9 U*	8.3 U	13 U*	3.2 U	--	5.2 U*	--
1,3-Dichlorobenzene	NV	NV	--	12 U*	3.9 U*	8.3 U	13 U*	3.2 U	--	5.2 U*	--
1,4-Dichlorobenzene	NV	190000	--	12 U*	3.9 U*	8.3 U	13 U*	3.2 U	--	5.2 U*	--
1-Methylnaphthalene	NV	34000	--	280 U	210 U	230 U	340 U	100 U	140 U	300 U	--
2,4,5-Trichlorophenol	NV	8000000	--	930 U	690 U	750 U	1100 U	350 U	480 U	990 U	--
2,4,6-Trichlorophenol	NV	80000	--	1400 U	1000 U	1100 U	1700 U	520 U	720 U	1500 U	--
2,4-Dichlorophenol	NV	240000	--	930 U	690 U	750 U	1100 U	350 U	480 U	990 U	--
2,4-Dimethylphenol	NV	1600000	--	930 U	690 U	750 U	1100 U	350 U	480 U	990 U	--
2,4-Dinitrophenol	NV	160000	--	9300 U	6900 U	7500 U	11000 U	3500 U	4800 U	9900 U	--
2,4-Dinitrotoluene	NV	3200	--	930 U	690 U	750 U	1100 U	350 U	480 U	990 U	--
2,6-Dinitrotoluene	NV	670	--	930 U	690 U	750 U	1100 U	350 U	480 U	990 U	--
2-Chloronaphthalene	NV	6400000	--	190 U	140 U	150 U	220 U	69 U	95 U	200 U	--
2-Chlorophenol	NV	400000	--	930 U	690 U	750 U	1100 U	350 U	480 U	990 U	--

Table 7-2
Soil Analytical Results and Screening Criteria
Seaport Landing Aquatic Land Lease
Aberdeen, Washington

		Location:	SB1, SB2, SB3	SB4		SB5		SB6			SB4, SB5, SB6
		Sample Name:	DNR-SB123B-COMP	DNR-SB4A	DNR-SB4B	DNR-SB5B	DNR-SB5A	DNR-SB6B	DNR-SB6A	DNR-SB6C	DNR-SB456B-COMP
		Collection Date:	April-2011	April-2011	April-2011	April-2011	April-2011	April-2011	April-2011	April-2011	April-2011
		Collection Depth (ft bgs):	NA	0 - 2.7	2.75 - 5	0 - 4	4 - 5	0 - 1.5	1.5 - 3	3 - 5	NA
	MTCA A Soil CUL	MTCA B Soil CUL									
2-Methylnaphthalene	NV	320000	--	190 U	140 U	150 U	220 U	69 U	95 U	200 U	--
2-Methylphenol	NV	NV	--	930 U	690 U	750 U	1100 U	350 U	480 U	990 U	--
2-Nitroaniline	NV	800000	--	930 U	690 U	750 U	1100 U	350 U	480 U	990 U	--
2-Nitrophenol	NV	NV	--	930 U	690 U	750 U	1100 U	350 U	480 U	990 U	--
3,3-Dichlorobenzidine	NV	2200	--	1900 U	1400 U	1500 U	2200 U	690 U	950 U	2000 U	--
3,4-Methylphenol	NV	80000	--	1900 U	1400 U	1500 U	2200 U	690 U	950 U	2000 U	--
3-Nitroaniline	NV	NV	--	930 U	690 U	750 U	1100 U	350 U	480 U	990 U	--
4,6-Dinitro-2-methylphenol	NV	NV	--	9300 U	6900 U	7500 U	11000 U	3500 U	4800 U	9900 U	--
4-Bromophenylphenyl ether	NV	NV	--	930 U	690 U	750 U	1100 U	350 U	480 U	990 U	--
4-Chloro-3-methylphenol	NV	NV	--	930 U	690 U	750 U	1100 U	350 U	480 U	990 U	--
4-Chloroaniline	NV	5000	--	930 U	690 U	750 U	1100 U	350 U	480 U	990 U	--
4-Chlorophenylphenyl ether	NV	NV	--	930 U	690 U	750 U	1100 U	350 U	480 U	990 U	--
4-Methylphenol	NV	NV	--	--	--	--	--	--	--	--	--
4-Nitroaniline	NV	NV	--	930 U	690 U	750 U	1100 U	350 U	480 U	990 U	--
4-Nitrophenol	NV	NV	--	9300 U	6900 U	7500 U	11000 U	3500 U	4800 U	9900 U	--
Acenaphthene	NV	4800000	--	190 U	140 U	150 U	220 U	69 U	95 U	200 U	--
Acenaphthylene	NV	NV	--	190 U	140 U	150 U	220 U	69 U	95 U	200 U	--
Anthracene	NV	24000000	--	190 U	140 U	150 U	220 U	69 U	95 U	200 U	--
Benzo(a)anthracene	NV	1400	--	230 U	170 U	190 U	280 U	86 U	120 U	250 U	--
Benzo(a)pyrene	100	140	--	280 U	210 U	230 U	340 U	100 U	140 U	300 U	--
Benzo(b)fluoranthene	NV	1370	--	190 U	140 U	150 U	220 U	69 U	95 U	200 U	--
Benzo(ghi)perylene	NV	NV	--	230 U	170 U	190 U	280 U	86 U	120 U	250 U	--
Benzo(k)fluoranthene	NV	13700	--	230 U	170 U	190 U	280 U	86 U	120 U	250 U	--
Benzoic acid	NV	320000000	--	23000 U	17000 U	19000 U	28000 U	8600 U	12000 U	25000 U	--
Benzyl alcohol	NV	8000000	--	930 U	690 U	750 U	1100 U	350 U	480 U	990 U	--
Bis(2-chloro-1-methylethyl)ether	NV	14000	--	1400 U	1000 U	1100 U	1700 U	520 U	720 U	1500 U	--
Bis(2-chloroethoxy)methane	NV	NV	--	930 U	690 U	750 U	1100 U	350 U	480 U	990 U	--
Bis(2-chloroethyl)ether	NV	910	--	930 U	690 U	750 U	1100 U	350 U	480 U	990 U	--
Bis(2-ethylhexyl)phthalate	NV	71000	--	14000 U	10000 U	11000 U	17000 U	5200 U	7200 U	15000 U	--
Butylbenzylphthalate	NV	530000	--	930 U	690 U	750 U	1100 U	350 U	480 U	990 U	--
Carbazole	NV	NV	--	1400 U	1000 U	1100 U	1700 U	520 U	720 U	1500 U	--
Chrysene	NV	140000	--	230 U	170 U	190 U	280 U	86 U	120 U	250 U	--
Dibenzo(a,h)anthracene	NV	140	--	370 U	280 U	300 U	450 U	140 U	190 U	400 U	--
Dibenzofuran	NV	80000	--	930 U	690 U	750 U	1100 U	350 U	480 U	990 U	--
Diethyl phthalate	NV	64000000	--	930 U	690 U	750 U	1100 U	350 U	480 U	990 U	--
Dimethyl phthalate	NV	NV	--	930 U	690 U	750 U	1100 U	350 U	480 U	990 U	--

Table 7-2
Soil Analytical Results and Screening Criteria
Seaport Landing Aquatic Land Lease
Aberdeen, Washington

		Location:	SB1, SB2, SB3	SB4		SB5		SB6			SB4, SB5, SB6
		Sample Name:	DNR-SB123B-COMP	DNR-SB4A	DNR-SB4B	DNR-SB5B	DNR-SB5A	DNR-SB6B	DNR-SB6A	DNR-SB6C	DNR-SB456B-COMP
		Collection Date:	April-2011	April-2011	April-2011	April-2011	April-2011	April-2011	April-2011	April-2011	April-2011
		Collection Depth (ft bgs):	NA	0 - 2.7	2.75 - 5	0 - 4	4 - 5	0 - 1.5	1.5 - 3	3 - 5	NA
	MTCA A Soil CUL	MTCA B Soil CUL									
Di-n-butyl phthalate	NV	8000000	--	1900 U	1400 U	1500 U	2200 U	690 U	950 U	2000 U	--
Di-n-octyl phthalate	NV	800000	--	1900 U	1400 U	1500 U	2200 U	690 U	950 U	2000 U	--
Fluoranthene	NV	3200000	--	190 U	140 U	150 U	220 U	69 U	**140**	200 U	--
Fluorene	NV	3200000	--	190 U	140 U	150 U	220 U	69 U	95 U	200 U	--
Hexachlorobenzene	NV	630	--	460 U	340 U	380 U	560 U	170 U	240 U	500 U	--
Hexachlorobutadiene	NV	13000	--	12 U*	3.9 U*	8.3 U	13 U*	3.2 U	--	5.2 U*	--
Hexachlorocyclopentadiene	NV	480000	--	930 U	690 U	750 U	1100 U	350 U	480 U	990 U	--
Hexachloroethane	NV	25000	--	930 U	690 U	750 U	1100 U	350 U	480 U	990 U	--
Indeno(1,2,3-cd)pyrene	NV	1400	--	370 U	280 U	300 U	450 U	140 U	190 U	400 U	--
Isophorone	NV	1100000	--	930 U	690 U	750 U	1100 U	350 U	480 U	990 U	--
Naphthalene	5000	1600000	--	59 U*	19 U*	41 U	64 U*	16 U	25 U*	26 U*	--
Nitrobenzene	NV	160000	--	930 U	690 U	750 U	1100 U	350 U	480 U	990 U	--
N-Nitrosodiphenylamine	NV	200000	--	460 U	340 U	380 U	560 U	170 U	240 U	500 U	--
N-Nitrosodipropylamine	NV	140	--	930 U	690 U	750 U	1100 U	350 U	480 U	990 U	--
Pentachlorophenol	NV	2500	--	1900 U	1400 U	1500 U	2200 U	690 U	950 U	2000 U	--
Phenanthrene	NV	NV	--	190 U	140 U	150 U	220 U	69 U	**170**	200 U	--
Phenol	NV	24000000	--	930 U	690 U	750 U	1100 U	350 U	480 U	990 U	--
Pyrene	NV	2400000	--	190 U	140 U	150 U	220 U	69 U	**120**	200 U	--
Total Benzofluoranthenes	NV	1400[b]	--	--	--	--	--	--	--	--	--
cPAH TEQ	190[a]	NV	--	NC	NC	NC	NC	NC	NC	NC	--
Dioxins and Furans (pg/g)											
1,2,3,4,6,7,8-HpCDD	NV	NV	**600**	--	--	--	--	--	--	--	**55**
1,2,3,4,6,7,8-HpCDF	NV	NV	**32**	--	--	--	--	--	--	--	7.3 U
1,2,3,4,7,8,9-HpCDF	NV	NV	6.7 U	--	--	--	--	--	--	--	0.92 U
1,2,3,4,7,8-HxCDD	NV	NV	**4.4 J**	--	--	--	--	--	--	--	1.6 U
1,2,3,4,7,8-HxCDF	NV	NV	**4.6 J**	--	--	--	--	--	--	--	0.75 U
1,2,3,6,7,8-HxCDD	NV	NV	**19**	--	--	--	--	--	--	--	2.1 U
1,2,3,6,7,8-HxCDF	NV	NV	1.7 U	--	--	--	--	--	--	--	0.57 U
1,2,3,7,8,9-HxCDD	NV	NV	**7.8**	--	--	--	--	--	--	--	1.3 U
1,2,3,7,8,9-HxCDF	NV	NV	1.1 U	--	--	--	--	--	--	--	0.74 U
1,2,3,7,8-PeCDD	NV	NV	2.1 U	--	--	--	--	--	--	--	1 U
1,2,3,7,8-PeCDF	NV	NV	0.89 U	--	--	--	--	--	--	--	0.9 U
2,3,4,6,7,8-HxCDF	NV	NV	1.5 U	--	--	--	--	--	--	--	0.55 U
2,3,4,7,8-PeCDF	NV	NV	1.1 U	--	--	--	--	--	--	--	0.95 U
2,3,7,8-TCDD	NV	13	0.49 U	--	--	--	--	--	--	--	0.94 U
2,3,7,8-TCDF	NV	NV	1.5 U	--	--	--	--	--	--	--	1.9 U

Table 7-2
Soil Analytical Results and Screening Criteria
Seaport Landing Aquatic Land Lease
Aberdeen, Washington

		Location:	SB1, SB2, SB3	SB4		SB5		SB6			SB4, SB5, SB6
		Sample Name:	DNR-SB123B-COMP	DNR-SB4A	DNR-SB4B	DNR-SB5B	DNR-SB5A	DNR-SB6B	DNR-SB6A	DNR-SB6C	DNR-SB456B-COMP
		Collection Date:	April-2011	April-2011	April-2011	April-2011	April-2011	April-2011	April-2011	April-2011	April-2011
		Collection Depth (ft bgs):	NA	0 - 2.7	2.75 - 5	0 - 4	4 - 5	0 - 1.5	1.5 - 3	3 - 5	NA
	MTCA A Soil CUL	MTCA B Soil CUL									
OCDD	NV	NV	**5900**	--	--	--	--	--	--	--	**570**
OCDF	NV	NV	**74**	--	--	--	--	--	--	--	**23 J**
Total HpCDDs	NV	NV	**1500**	--	--	--	--	--	--	--	**100**
Total HpCDFs	NV	NV	**110**	--	--	--	--	--	--	--	**16**
Total HxCDDs	NV	NV	**120**	--	--	--	--	--	--	--	4.6 U
Total HxCDFs	NV	NV	**73**	--	--	--	--	--	--	--	4.3 U
Total PeCDDs	NV	NV	2.1 U	--	--	--	--	--	--	--	1 U
Total PeCDFs	NV	NV	**7.5**	--	--	--	--	--	--	--	1.5 U
Total TCDDs	NV	NV	0.49 U	--	--	--	--	--	--	--	1.1 U
Total TCDFs	NV	NV	1.5 U	--	--	--	--	--	--	--	1.9 U
Dioxin TEQ	13	NV	**13**	--	--	--	--	--	--	--	**2.4**
TPH (mg/kg)											
Gasoline-~~r~~Range Hydrocarbons	30/100	NV	--	31 U	14 U	15 U	31 U	15 U	19 U	20 U	--
Diesel-~~r~~Range Hydrocarbons	2000	NV	--	220 U	180 U	180 U	260 U	85 U	**610 Y**	**320 Y**	--
Lube Oil-~~r~~Range Hydrocarbons	2000	NV	--	440 U	**1700**	**560**	530 U^	**220**	**2200**	**2300**	--
Pesticides (ug/kg)											
Aldrin	NV	59	--	4.5 U	3.4 U	3.7 U	5.5 U	3.5 U	2.4 U	5 U	--
Alpha-BHC	NV	160	--	4.5 U	3.4 U	3.7 U	5.5 U	3.5 U	2.4 U	5 U	--
Beta-BHC	NV	556	--	4.5 U	3.4 U	3.7 U	5.5 U	3.5 U	2.4 U	5 U	--
Delta-BHC	NV	NV	--	4.5 U	3.4 U	3.7 U	5.5 U	3.5 U	2.4 U	5 U	--
Lindane	10	910	--	4.5 U	3.4 U	3.7 U	5.5 U	3.5 U	2.4 U	5 U	--
cis-Chlordane	NV	NV	--	4.5 U	3.4 U	3.7 U	5.5 U	3.5 U	2.4 U	5 U	--
Gamma-Chlordane	NV	NV	--	4.5 U	3.4 U	3.7 U	5.5 U	3.5 U	2.4 U	5 U	--
Chlordane	NV	2900	--	4.5 U	3.4 U	3.7 U	5.5 U	3.5 U	2.4 U	5 U	--
4,4'-DDD	NV	4200	--	9 U^	6.8 U^	7.4 U^	11 U^	7 U^	4.9 U^	10 U^	--
4,4'-DDE	NV	2900	--	9 U	6.8 U	7.4 U	11 U	7 U	4.9 U	10 U	--
4,4'-DDT	3000	2900	--	9 U^	6.8 U^	7.4 U^	11 U^	7 U^	4.9 U^	10 U^	--
Total DDTs	NV	NV	--	9 U	6.8 U	7.4 U	11 U	7 U	4.9 U	10 U	--
Dieldrin	NV	63	--	9 U	6.8 U	7.4 U	11 U	7 U^	4.9 U	10 U	--
Endosulfan I	NV	480000	--	4.5 U	3.4 U	3.7 U	5.5 U	3.5 U	2.4 U	5 U	--
Endosulfan II	NV	480000	--	9 U	6.8 U	7.4 U	11 U	7 U^	4.9 U	10 U	--
Endosulfan Sulfate	NV	NV	--	9 U	6.8 U	7.4 U	11 U	7 U	4.9 U	10 U	--
Endrin	NV	24000	--	9 U	6.8 U	7.4 U	11 U	7 U	4.9 U	10 U	--
Endrin Aldehyde	NV	NV	--	9 U	6.8 U	7.4 U	11 U	7 U	4.9 U	10 U	--
Endrin Ketone	NV	NV	--	9 U	6.8 U	7.4 U	11 U	7 U	4.9 U	10 U	--
Heptachlor	NV	220	--	4.5 U	3.4 U	3.7 U	5.5 U	3.5 U	2.4 U	5 U	--

Table 7-2
Soil Analytical Results and Screening Criteria
Seaport Landing Aquatic Land Lease
Aberdeen, Washington

		Location:	SB1, SB2, SB3	SB4		SB5		SB6			SB4, SB5, SB6
		Sample Name:	DNR-SB123B-COMP	DNR-SB4A	DNR-SB4B	DNR-SB5B	DNR-SB5A	DNR-SB6B	DNR-SB6A	DNR-SB6C	DNR-SB456B-COMP
		Collection Date:	April-2011	April-2011	April-2011	April-2011	April-2011	April-2011	April-2011	April-2011	April-2011
		Collection Depth (ft bgs):	NA	0 - 2.7	2.75 - 5	0 - 4	4 - 5	0 - 1.5	1.5 - 3	3 - 5	NA
	MTCA A Soil CUL	MTCA B Soil CUL									
Heptachlor Epoxide	NV	110	--	4.5 U	3.4 U	3.7 U	5.5 U	3.5 U	2.4 U	5 U	--
Methoxychlor	NV	400000	--	45 U	34 U	37 U	55 U	35 U	24 U	50 U	--
Toxaphene	NV	910	--	450 U^	340 U^	370 U	550 U^	350 U^	240 U	500 U	--
VOCs (ug/kg)											
1,1,1,2-Tetrachloroethane	NV	39000	--	12 U*	3.9 U*	8.3 U	13 U*	3.2 U	5 U*	5.2 U*	--
1,1,1-Trichloroethane	2000	160000000	--	12 U	3.9 U	8.3 U	13 U	3.2 U	5 U	5.2 U	--
1,1,2,2-Tetrachloroethane	NV	5000	--	24 U*	7.8 U*	17 U	26 U*	6.4 U	10 U*	10 U*	--
1,1,2-Trichloroethane	NV	18000	--	12 U	3.9 U	8.3 U	13 U	3.2 U	5 U	5.2 U	--
1,1-Dichloroethane	NV	180000	--	12 U	3.9 U	8.3 U	13 U	3.2 U	5 U	5.2 U	--
1,1-Dichloroethene	NV	4000000	--	59 U	19 U	41 U	64 U	16 U	25 U	26 U	--
1,1-Dichloropropene	NV	NV	--	12 U	3.9 U	8.3 U	13 U	3.2 U	5 U	5.2 U	--
1,2,3-Trichlorobenzene	NV	NV	--	24 U*	7.8 U*	17 U	26 U*	6.4 U	10 U*	10 U*	--
1,2,3-Trichloropropane	NV	33	--	12 U*	3.9 U*	8.3 U	13 U*	3.2 U	5 U*	5.2 U*	--
1,2,4-Trimethylbenzene	NV	NV	--	24 U*	7.8 U*	17 U	26 U*	6.4 U	10 U*	10 U*	--
1,2-Dibromo-3-chloropropane	NV	1250	--	24 U*	7.8 U*	17 U	26 U*	6.4 U	10 UJ*	10 U*	--
1,2-Dichloroethane	NV	11000	--	12 U	3.9 U	8.3 U	13 U	3.2 U	5 U	5.2 U	--
1,2-Dichloropropane	NV	28000	--	12 U	3.9 U	8.3 U	13 U	3.2 U	5 U	5.2 U	--
1,3,5-Trimethylbenzene	NV	800000	--	59 U*	19 U*	41 U	64 U*	16 U	25 U*	26 U*	--
1,3-Dichloropropane	NV	NV	--	12 U	3.9 U	8.3 U	13 U	3.2 U	5 U	5.2 U	--
2,2-Dichloropropane	NV	NV	--	12 U	3.9 U	8.3 U	13 U	3.2 U	5 U	5.2 U	--
2-Chlorotoluene	NV	1600000	--	24 U*	7.8 U*	17 U	26 U*	6.4 U	10 U*	10 U*	--
4-Chlorotoluene	NV	NV	--	24 U*	7.8 U*	17 U	26 U*	6.4 U	10 U*	10 U*	--
Benzene	30	18200	--	12 U	3.9 U	8.3 U	13 U	3.2 U	5 U	5.2 U	--
Bromobenzene	NV	NV	--	24 U*	7.8 U*	17 U	26 U*	6.4 U	10 U*	10 U*	--
Bromochloromethane	NV	NV	--	12 U	3.9 U	8.3 U	13 U	3.2 U	5 U	5.2 U	--
Bromoform	NV	130000	--	12 U*	3.9 U*	8.3 U	13 U*	3.2 U	5 U*	5.2 U*	--
Bromomethane	NV	110000	--	12 U	3.9 U	8.3 U	13 U	3.2 U	5 U	5.2 U	--
Carbon Tetrachloride	NV	14000	--	12 U	3.9 U	8.3 U	13 U	3.2 U	5 U	5.2 U	--
Chlorobenzene	NV	1600000	--	12 U*	3.9 U*	8.3 U	13 U*	3.2 U	5 U*	5.2 U*	--
Chlorodibromomethane	NV	12000	--	12 U	3.9 U	8.3 U	13 U	3.2 U	5 U	5.2 U	--
Chloroethane	NV	NV	--	12 U	3.9 U	8.3 U	13 U	3.2 U	5 U	5.2 U	--
Chloroform	NV	32000	--	12 U	3.9 U	8.3 U	13 U	3.2 U	5 U	5.2 U	--
Chloromethane	NV	NV	--	12 U	3.9 U	8.3 U	13 U	3.2 U	5 U	5.2 U	--
cis-1,2-Dichloroethene	NV	160000	--	12 U	3.9 U	8.3 U	13 U	3.2 U	5 U	5.2 U	--
cis-1,3-Dichloropropene	NV	10000[c]	--	12 U	3.9 U	8.3 U	13 U	3.2 U	5 U	5.2 U	--
Cumene	NV	800000	--	24 U*	**9.6 ***	17 U	26 U*	6.4 U	10 U*	**19 ***	--

Table 7-2
Soil Analytical Results and Screening Criteria
Seaport Landing Aquatic Land Lease
Aberdeen, Washington

		Location:	SB1, SB2, SB3	SB4		SB5		SB6			SB4, SB5, SB6
		Sample Name:	DNR-SB123B-COMP	DNR-SB4A	DNR-SB4B	DNR-SB5B	DNR-SB5A	DNR-SB6B	DNR-SB6A	DNR-SB6C	DNR-SB456B-COMP
		Collection Date:	April-2011	April-2011	April-2011	April-2011	April-2011	April-2011	April-2011	April-2011	April-2011
		Collection Depth (ft bgs):	NA	0 - 2.7	2.75 - 5	0 - 4	4 - 5	0 - 1.5	1.5 - 3	3 - 5	NA
	MTCA A Soil CUL	MTCA B Soil CUL									
Dibromomethane	NV	800000	--	12 U	3.9 U	8.3 U	13 U	3.2 U	5 U	5.2 U	--
Dichlorobromomethane	NV	16000	--	12 U	3.9 U	8.3 U	13 U	3.2 U	5 U	5.2 U	--
Dichlorodifluoromethane (CFC-12)	NV	16000000	--	12 U	3.9 U	8.3 U	13 U	3.2 U	5 U	5.2 U	--
Ethylbenzene	6000	8000000	--	12 U*	7.6 *	8.3 U	13 U*	3.2 U	5 U*	**35 ***	--
Ethylene Dibromide	5	500	--	12 U	3.9 U	8.3 U	13 U	3.2 U	5 U	5.2 U	--
Methyl t-butyl ether	100	556000	--	12 U	3.9 U	8.3 U	13 U	3.2 U	5 U	5.2 U	--
Methylene Chloride	20	500000	--	180 U	58 U	120 U	190 U	48 U	76 U	78 U	--
m, p-Xylene	NV	16000000	--	24 U*	**14 ***	17 U	26 U*	6.4 U	10 U*	**15 ***	--
n-Butylbenzene	NV	4000000	--	24 U*	7.8 U*	17 U	26 U*	6.4 U	10 U*	10 U*	--
n-Propylbenzene	NV	8000000	--	12 U*	3.9 U*	8.3 U	13 U*	3.2 U	5 U*	5.2 U*	--
o-Xylene	NV	16000000	--	12 U*	**5 ***	8.3 U	13 U*	3.2 U	5 U*	5.2 U*	--
p-Isopropyltoluene	NV	NV	--	24 U*	**42 ***	17 U	26 U*	6.4 U	79 *	120 *	--
sec-Butylbenzene	NV	8000000	--	24 U*	7.8 U*	17 U	26 U*	6.4 U	10 U*	10 U*	--
Styrene	NV	16000000	--	24 U*	7.8 U*	17 U	26 U*	6.4 U	10 U*	10 U*	--
tert-Butylbenzene	NV	8000000	--	24 U*	7.8 U*	17 U	26 U*	6.4 U	10 U*	10 U*	--
Tetrachloroethene	50	480000	--	12 U	3.9 U	8.3 U	13 U	3.2 U	5 U	5.2 U	--
Toluene	7000	6400000	--	24 U	**68**	17 U	26 U	6.4 U	**11**	**19**	--
trans-1,2-Dichloroethene	NV	1600000	--	12 U	3.9 U	8.3 U	13 U	3.2 U	5 U	5.2 U	--
trans-1,3-Dichloropropene	NV	10000[c]	--	12 U	3.9 U	8.3 U	13 U	3.2 U	5 U	5.2 U	--
Trichloroethene	30	12000	--	12 U	3.9 U	8.3 U	13 U	3.2 U	5 U	5.2 U	--
Trichlorofluoromethane (CFC-11)	NV	24000000	--	12 U	3.9 U	8.3 U	13 U	3.2 U	5 U	5.2 U	--
Vinyl Chloride	NV	240000	--	12 U	3.9 U	8.3 U	13 U	3.2 U	5 U	5.2 U	--
Total Xylenes	--	--	--	-- U	**19**	17 U	26 U	6.4 U	10 U	**15**	--

Table 7-2
Soil Analytical Results and Screening Criteria
Seaport Landing Aquatic Land Lease
Aberdeen, Washington

NOTES:
Detections are in **bold** font.
Results that exceed MTCA CULs are shaded except for arsenic and chromium because concentrations of these metals are below natural background conditions. Non-detect results are not evaluated against ~~cleanup levels~~ CULs.
-- = not analyzed.
^ = data qualifier as shown in 2011 SAIC Weyerhaeuser Aquatic Lands Lease Confirmatory Sampling Data Report. Data qualifier definition unavailable.
* = internal standard or LCS/LCSD exceeds control limits.
cPAH = carcinogenic PAHs.
CUL - cleanup level.
ft bgs = feet below ground surface.
J = result is an estimated value.
LCS = laboratory control sample.
LCSD = LCS duplicate.
mg/kg = milligrams per kilogram (parts per million).
MTCA = Model Toxics Control Act
MTCA A = MTCA Method A soil, unrestricted land use.
MTCA B = MTCA Method B soil, lower of available direct contact cancer or non-cancer value.
NC = not calculated due to significantly elevated reporting limits.
NV = no value.
PAH = polycyclic aromatic hydrocarbons.
PAH TEQ = PAH toxicity equivalence, based on benzo(a)pyrene.
PCBs = polychlorinated biphenyls.
pg/g = picograms per gram.
R = result is rejected.
SAIC = Science Applications International Corporation.
SVOCs = semivolatile organic compounds
TEQ = toxicity equivalence quotient.
TPH = total petroleum hydrocarbon.
U = result is non-detect.
ug/kg = micrograms per kilogram.
UH = the result is non-detect and was prepared or analyzed beyond the specified holding time.
UL = data qualifier as shown in 2011 SAIC Weyerhaeuser Aquatic Lands Lease Confirmatory Sampling Data Report. Data qualifier definition unavailable.
VOCs = volatile organic compounds.
Y = the chromatographic response resembles a typical fuel pattern (from a general Test America lab report qualifier definition page).
Z = data qualifier as shown in 2011 SAIC Weyerhaeuser Aquatic Lands Lease Confirmatory Sampling Data Report. Data qualifier definition unavailable.
[a]Value is for hexavalent chromium/trivalent chromium.
[b]Value is for benzo(b)fluoranthene.
[c]Value is for 1,3-dichloropropene.
[d]Value was updated from 100 ug/kg based on personal communication with the Washington Department of Ecology in 2019.

Table 7-3
Groundwater, Seep, and Stormwater Analytical Results and In-Water Screening Criteria
Seaport Landing Aquatic Land Lease
Aberdeen, Washington

Location:	Surface Water SLV[a]	SLV Source	CR-20	CR-21	CR-22	CR-23	SEEP-01	STORM-01
Sample Name:			CR20-GW-5.0	CR21-GW-10	CR22-GW-9.0	CR23-GW-6.0	Seep-01	Storm-01
Collection Date:			10/12/2015	10/12/2015	10/13/2015	10/13/2015	10/12/2015	1/12/2016
Collection Depth (well screen midpoint, ft bgs):			5.5	7.5	6.5	3.5	0	NA
Dissolved Metals (ug/L)								
Arsenic	150[b]	EPA AQ CCC	50 U	50 U	50 U	50 U	--	0.2 U
Cadmium	0.72[b]	EPA AQ CCC	2 U	2 U	2 U	2 U	--	0.1 U
Chromium	74[b,c]	EPA AQ CCC	5 U	5 U	5 U	5 U	--	**1**
Copper	11[b,d]	EPA AQ BLM[c]	--	--	--	--	--	0.5 U
Lead	3.2[b]	EPA AQ CCC	--	--	--	--	--	0.1 U
Mercury	0.77[b]	EPA AQ CCC	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Silver	26000	MTCA B SW	--	--	--	--	--	0.2 U
Zinc	17000	MTCA B SW	--	--	--	--	--	**37**
Total Metals (ug/L)								
Arsenic	0.018	EPA HH WO	50 U	50 U	50 U	50 U	--	**0.6**
Cadmium	41[e]	MTCA B SW	2 U	2 U	2 U	2 U	--	0.1 U
Chromium	240000[c]	MTCA B SW	5 U	**66**	**13**	**11**	--	**1.2**
Copper	1300	EPA HH WO	--	--	--	--	--	**4.3**
Lead	NV	NV	20 U	20 U	20 U	20 U	--	**2**
Mercury	NV	NV	0.1 U	**0.1**	**0.1**	0.1 U	0.1 U	**0.2**
Silver	3.2	EPA AQ CMC	--	--	--	--	--	0.2 U
Zinc	120	EPA AQ CCC/CMC	--	--	--	--	--	**60**
PCBs (ug/L)								
Aroclor 1016	0.0030	MTCA B SW	1 U	1 U	1 U	1 U	1 U	1 U
Aroclor 1221	NV	NV	1 U	1 U	1 U	1 U	1 U	1 U
Aroclor 1232	NV	NV	1 U	1 U	1 U	1 U	1 U	1 U
Aroclor 1242	NV	NV	1 U	1 U	1 U	1 U	1 U	1 U
Aroclor 1248	NV	NV	1 U	1 U	1 U	1 U	1 U	1 U
Aroclor 1254	0.00010	MTCA B SW	1 U	1 U	1 U	1 U	1 U	1 U
Aroclor 1260	NV	NV	1 U	1 U	1 U	1 U	1 U	1 U
Aroclor 1268	NV	NV	1 U	1 U	1 U	1 U	1 U	1 U
Total PCBs	0.000064	EPA HH WO/O	1 U	1 U	1 U	1 U	1 U	1 U
SVOCs (ug/L)								
1,2,4-Trichlorobenzene	0.071	EPA HH WO	1 U	1 U	1 U	1 U	1 U	1.1 U
1,2-Dichlorobenzene	1000	EPA HH WO	1 U	1 U	1 U	1 U	1 U	1.1 U
1,3-Dichlorobenzene	7	EPA HH WO	1 U	1 U	1 U	1 U	1 U	--
1,4-Dichlorobenzene	300	EPA HH WO	1 U	1 U	1 U	1 U	1 U	1.1 U
1-Methylnaphthalene	NV	NV	1 U	1 U	**1.7**	**2**	1 U	--
2,4,5-Trichlorophenol	300	EPA HH WO	5 U	5 U	5 U	5 U	5 U	--
2,4,6-Trichlorophenol	1.5	EPA HH WO	3 U	3 U	3 U	3 U	3 U	--
2,4-Dichlorophenol	10	EPA HH WO	3 U	3 U	3 U	3 U	3 U	--
2,4-Dimethylphenol	100	EPA HH WO	3 U	3 U	3 U	3 U	3 U	3.3 U

Table 7-3
Groundwater, Seep, and Stormwater Analytical Results and In-Water Screening Criteria
Seaport Landing Aquatic Land Lease
Aberdeen, Washington

Location:	Surface Water SLV[a]	SLV Source	CR-20	CR-21	CR-22	CR-23	SEEP-01	STORM-01
Sample Name:			CR20-GW-5.0	CR21-GW-10	CR22-GW-9.0	CR23-GW-6.0	Seep-01	Storm-01
Collection Date:			10/12/2015	10/12/2015	10/13/2015	10/13/2015	10/12/2015	1/12/2016
Collection Depth (well screen midpoint, ft bgs):			5.5	7.5	6.5	3.5	0	NA
2,4-Dinitrophenol	10	EPA HH WO	20 UJ	20 UJ	20 UJ	20 UJ	20 UJ	--
2,4-Dinitrotoluene	0.049	EPA HH WO	3 U	3 U	3 U	3 U	3 U	--
2,6-Dinitrotoluene	NV	NV	3 U	3 U	3 U	3 U	3 U	--
2-Chloronaphthalene	800	EPA HH WO	1 U	1 U	1 U	1 U	1 U	--
2-Chlorophenol	30	EPA HH WO	1 U	1 U	1 U	1 U	1 U	--
2-Methylnaphthalene	NV	NV	1 U	1 U	**1.7**	**2**	1 U	1.1 U
2-Methylphenol	NV	NV	1 U	1 U	1 U	1 U	1 U	1.1 U
2-Nitroaniline	NV	NV	3 U	3 U	3 U	3 U	3 U	--
2-Nitrophenol	NV	NV	3 U	3 U	3 U	3 U	3 U	--
3,3-Dichlorobenzidine	0.049	EPA HH WO	5 U	5 U	5 U	5 U	5 U	--
3-Nitroaniline	NV	NV	3 U	3 U	3 U	3 U	3 U	--
4,6-Dinitro-2-methylphenol	2	EPA HH WO	10 U	10 U	10 U	10 U	10 U	--
4-Bromophenylphenyl ether	NV	NV	1 U	1 U	1 U	1 U	1 U	--
4-Chloro-3-methylphenol	500	EPA HH WO	3 U	3 U	3 U	3 U	3 U	--
4-Chloroaniline	NV	NV	5 U	5 U	5 U	5 U	5 U	--
4-Chlorophenylphenyl ether	NV	NV	1 U	1 U	1 U	1 U	1 U	--
4-Methylphenol	NV	NV	2 U	2 U	2 U	**1.4 J**	2 U	2.2 U
4-Nitroaniline	NV	NV	3 U	3 U	3 U	3 U	3 U	--
4-Nitrophenol	NV	NV	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	--
Acenaphthene	70	EPA HH WO	1 U	1 U	**4.1**	**0.8 J**	1 U	1.1 U
Acenaphthylene	NV	NV	1 U	1 U	1 U	1 U	1 U	1.1 U
Anthracene	300	EPA HH WO	1 U	1 U	1 U	1 U	1 U	1.1 U
Benzo(a)anthracene	0.0012	EPA HH WO	1 U	1 U	1 U	1 U	1 U	1.1 U
Benzo(a)pyrene	0.00012	EPA HH WO	1 U	1 U	1 U	1 U	1 U	1.1 U
Benzo(ghi)perylene	NV	NV	1 U	1 U	1 U	1 U	1 U	1.1 U
Benzoic acid	NV	NV	20 UJ	20 UJ	20 UJ	**14 J**	20 UJ	22 U
Benzyl alcohol	NV	NV	2 U	2 U	2 U	2 U	2 U	2.2 U
Bis(2-chloro-1-methylethyl)ether	200	EPA HH WO	1 U	1 U	1 U	1 U	1 U	--
Bis(2-chloroethoxy)methane	NV	NV	1 U	1 U	1 U	1 U	1 U	--
Bis(2-chloroethyl)ether	0.03	EPA HH WO	1 U	1 U	1 U	1 U	1 U	--
Bis(2-ethylhexyl)phthalate	0.32	EPA HH WO	3 U	3 U	3 U	3 U	3 U	3.3 U
Butylbenzylphthalate	0.10	EPA HH WO	1 U	1 U	1 U	1 U	1 U	1.1 U
Carbazole	NV	NV	1 U	1 U	**0.7 J**	1 U	1 U	--
Chrysene	0.12	EPA HH WO	1 U	1 U	1 U	1 U	1 U	1.1 U
Dibenzo(a,h)anthracene	0.00012	EPA HH WO	1 U	1 U	1 U	1 U	1 U	1.1 U
Dibenzofuran	NV	NV	1 U	1 U	**1.4**	1 U	1 U	1.1 U
Diethyl phthalate	600	EPA HH WO/O	1 U	1 U	1 U	1 U	1 U	1.1 U
Dimethyl phthalate	2000	EPA HH WO/O	1 U	1 U	1 U	1 U	1 U	1.1 U
Di-n-butyl phthalate	20	EPA HH WO	1 U	1 U	1 U	1 U	1 U	1.1 U

Table 7-3
Groundwater, Seep, and Stormwater Analytical Results and In-Water Screening Criteria
Seaport Landing Aquatic Land Lease
Aberdeen, Washington

Location:	Surface Water SLV[a]	SLV Source	CR-20	CR-21	CR-22	CR-23	SEEP-01	STORM-01
Sample Name:			CR20-GW-5.0	CR21-GW-10	CR22-GW-9.0	CR23-GW-6.0	Seep-01	Storm-01
Collection Date:			10/12/2015	10/12/2015	10/13/2015	10/13/2015	10/12/2015	1/12/2016
Collection Depth (well screen midpoint, ft bgs):			5.5	7.5	6.5	3.5	0	NA
Di-n-octyl phthalate	NV	NV	1 U	1 U	1 U	1 U	1 U	1.1 U
Fluoranthene	20	EPA HH WO/O	1 U	1 U	**0.7 J**	1 U	1 U	1.1 U
Fluorene	50	EPA HH WO	1 U	1 U	**2**	1 U	1 U	1.1 U
Hexachlorobenzene	0.000079	EPA HH WO/O	1 U	1 U	1 U	1 U	1 U	1.1 U
Hexachlorobutadiene	0.01	EPA HH WO/O	3 U	3 U	3 U	3 U	3 U	3.3 U
Hexachlorocyclopentadiene	4	EPA HH WO/O	5 UJ	5 UJ	5 UJ	5 UJ	5 UJ	--
Hexachloroethane	0.1	EPA HH WO/O	2 U	2 U	2 U	2 U	2 U	--
Indeno(1,2,3-cd)pyrene	0.0012	EPA HH WO	1 U	1 U	1 U	1 U	1 U	1.1 U
Isophorone	34	EPA HH WO	1 U	1 U	1 U	1 U	1 U	--
Naphthalene	4700	MTCA B SW	1 U	1 U	**13**	**5.5**	1 U	1.1 U
Nitrobenzene	10	EPA HH WO	1 U	1 U	1 U	1 U	1 U	--
N-Nitrosodiphenylamine	3.3	EPA HH WO	1 U	1 U	1 U	1 U	1 U	1.1 U
N-Nitrosodipropylamine	0.005	EPA HH WO	1 U	1 U	1 U	1 U	1 U	--
Pentachlorophenol	0.03	EPA HH WO	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	11 U
Phenanthrene	NV	NV	1 U	1 U	**1.7**	**0.6 J**	1 U	1.1 U
Phenol	4000	EPA HH WO	1 U	1 U	1 U	1 U	1 U	1.1 U
Pyrene	20	EPA HH WO	1 U	1 U	**0.5 J**	1 U	1 U	1.1 U
Total Benzofluoranthenes	0.0012[e]	EPA HH WO	2 U	2 U	2 U	2 U	2 U	2.2 U
TPH (ug/L)								
Diesel-range Hydrocarbons	500	MTCA A GW	**1000**	**720**	**450**	**3400 J**	**220**	100 U
Lube Oil-range Hydrocarbons	500	MTCA A GW	**1600**	**3100**	**960**	**3200 J**	**330**	200 U
Dioxins/Furans (pg/L)								
Dioxin/Furan TEQ	0.005[f]	EPA HH WO	--	--	--	--	--	**7.25 J**

Table 7-3
Groundwater, Seep, and Stormwater Analytical Results and In-Water Screening Criteria
Seaport Landing Aquatic Land Lease
Aberdeen, Washington

NOTES:
Detections are in **bold** font.
Results that exceed screening levels are shaded. Non-detect results are not evaluated against screening levels.
BLM = biotic ligand model.
CUL = cleanup level.
EPA AQ BLM = USEPA national recommended water quality criteria for freshwater aquatic life, biotic ligand model.
EPA AQ CCC = USEPA national recommended water quality criteria for freshwater aquatic life, criterion continuous concentration.
EPA AQ CCC/CMC = USEPA national recommended water quality criteria for freshwater aquatic life. The criterion continuous concentration and criterion maximum concentrations are equivalent.
EPA AQ CMC = USEPA national recommended water quality criteria for freshwater aquatic life, criterion maximum concentration.
EPA HH WO = USEPA national recommended water quality criteria for human health, consumption of water and organism.
EPA HH WO/O = USEPA national recommended water quality criteria for human health. The consumption of water and organism and consumption of water criteria are equivalent.
ft bgs = feet below ground surface.
J = result is an estimated value.
MTCA = Model Toxics Control Act.
MTCA A GW = MTCA Method A CUL for groundwater.
MTCA B SW = MTCA Method B, lower of available cancer or non-cancer CUL for surface water.
NA = not applicable.
NV = no value.
PCB = polychlorinated biphenyl.
pg/L = picogram per liter.
SLV = screening level value.
SVOC = semivolatile organic compound.
TEQ = toxicity equivalence quotient.
Total PCBs = sum of PCB Aroclors. The highest non-detect value is used when all constituents are non-detect.
TPH = total petroleum hydrocarbon.
U = result is non-detect at method reporting limit.
ug/L = micrograms per liter.
UJ = result is non-detect at or above method reporting limit. Reported value is estimated.
USEPA = U.S. Environmental Protection Agency.

[a]SLV is lower of available USEPA national recommended water quality criteria for freshwater aquatic life or human health. MTCA B SW CUL is provided when USEPA criteria are not available. MTCA A GW CUL provided for TPH.

[b]Freshwater criterion is expressed in terms of the dissolved metal in the water column.

[c]Value is for trivalent chromium.

[d]Freshwater chronic ambient water quality criteria generated using the BLM. Water quality parameters used as inputs to the BLM were measured by the Washington Department of Ecology in Longfellow Creek in 2012 and are reported here: https://fortress.wa.gov/ecy/publications/documents/1303041.pdf.

[e]Value is for MTCA B nonpotable surface water.

[e]Value is for benzo(b)fluoranthene, as a value for total benzofluoranthenes is not available.

[f]Value is for 2,3,7,8-TCDD.

Table 7-4
Sediment Analytical Results
Seaport Landing Aquatic Land Lease
Aberdeen, Washington

Investigation Area:	Lumber Shed		Former Boiler				Beach Area		Shannon Slough
Location:	CR-07	CR-24	CR-08A		CR-08B		CR-09A	CR-09B	CR-10
Sample Name:	CR-07-SSD-COMP	CR-24-SSD-COMP	CR08a-SSD-COMP	CR08A-SBSD	CR08b-SSD-COMP	CR08b-SBSD	CR09a-SSD-COMP	CR09b-SSD-COMP	CR10-SSD-COMP
Collection Date:	10/13/2015	10/13/2015	10/14/2015	10/15/2015	10/14/2015	10/15/2015	10/13/2015	10/13/2015	10/14/2015
Collection Depth (ft bml):	0-0.33	0-0.33	0-0.33	18.3-20.0	0-0.33	8.0	0-0.33	0-0.33	0-0.33
Dioxins/Furans (pg/g)									
1,2,3,4,6,7,8-HpCDD	--	--	**583**	**14.5**	**955**	12.5	**95.4**	**107**	--
1,2,3,4,6,7,8-HpCDF	--	--	**33.1**	**1.26**	**75.8**	0.295 U	**14.6**	**23.9**	--
1,2,3,4,7,8,9-HpCDF	--	--	2.1 U	0.25 U	**3.72**	0.0959 J	**0.908 J**	**1.15**	--
1,2,3,4,7,8-HxCDD	--	--	**2.33**	0.583 U	**2.96**	0.589 J	**1.32**	**1.57**	--
1,2,3,4,7,8-HxCDF	--	--	**1.42**	**0.217 J**	**4.39**	0.111 J	0.991 U	1.16 U	--
1,2,3,6,7,8-HxCDD	--	--	**10.7**	**1.3**	**22.3**	1.71	**5.25**	**6.27**	--
1,2,3,6,7,8-HxCDF	--	--	**0.798 J**	**0.178 J**	**2.13**	0.14 J	**0.626 J**	**0.924 J**	--
1,2,3,7,8,9-HxCDD	--	--	**8.01**	**5.31**	**13.9**	7.04	**5.49**	**7.96**	--
1,2,3,7,8,9-HxCDF	--	--	0.0933 U	0.258 U	**1.62**	0.146 U	**0.395 J**	**0.42 J**	--
1,2,3,7,8-PeCDD	--	--	**2.87**	**1.76**	**4.81**	2.68	**1.99**	**3.16**	--
1,2,3,7,8-PeCDF	--	--	0.483 U	**0.141 J**	**0.978 J**	0.288 U	0.383 U	**0.394 J**	--
2,3,4,6,7,8-HxCDF	--	--	**1.46**	**0.188 J**	**3.84**	0.105 J	**0.991**	**1.36**	--
2,3,4,7,8-PeCDF	--	--	**0.506 J**	**0.0704 J**	**1.06**	0.201 J	0.379 U	0.528 U	--
2,3,7,8-TCDD	--	--	**1.71**	**1.55**	**2.79**	2.06	**1.18**	2.06 U	--
2,3,7,8-TCDF	--	--	**1.06**	**0.088 J**	**2.48**	0.529 J	**0.831 J**	**1.63**	--
OCDD	--	--	**13700 J**	**130**	**22200 J**	45.4 U	**700**	**788**	--
OCDF	--	--	**73.9**	**6.41**	**128**	0.802 U	**23.8**	**33.8**	--
Total HpCDDs	--	--	**1650**	**32.3**	**4120**	26.3	**225**	**273**	--
Total HpCDFs	--	--	126 U	3.43 U	243 U	0.643 U	**37.3**	58.9 U	--
Total HxCDDs	--	--	147 U	33.2 U	**321**	45.4 U	48.3 U	72.3 U	--
Total HxCDFs	--	--	44 U	1.27 U	119 U	0.888 U	22.2 U	30.8 U	--
Total PeCDDs	--	--	25.9 U	12.7 U	**38.2**	21.9 U	12.4 U	21 U	--
Total PeCDFs	--	--	12.8 U	0.428 U	35.9 U	2.08 U	10.6 U	16.5 U	--
Total TCDDs	--	--	23.9 U	12 U	25 U	21.4 U	8.55 U	15.4 U	--
Total TCDFs	--	--	10.9 U	0.656 U	21.7 U	10.7 U	6.42 U	12.5 U	--
Dioxin TEQ	--	--	**17.6**	**4.31**	**30.4**	**5.97**	**6.10**	**7.92**	--
Total Metals (mg/kg)									
Arsenic	20 U	20 U	**30**	**20**	**20**	20	9 U	9 U	**30**
Cadmium	0.8 U	0.9 U	0.4 U	0.7 U	0.4 U	0.7 U	0.4 U	**0.4**	0.4 U
Chromium	**43**	**49**	**52**	**39**	**42**	40	**31**	**39.9**	**42**
Copper	--	**81.5**	**134**	**57.8**	**61.1**	55.3	**40.8**	**49.2**	**54.8**
Lead	**11**	**21**	**30**	**8**	**14**	10	**8**	**10**	**11**
Mercury	**0.04**	**0.16**	**0.06**	0.03 U	**0.06**	0.07	**0.04**	**0.06**	**0.07**
Silver	--	1 U	0.6 U	1 U	0.7 U	1 U	0.5 U	0.5 U	0.6 U
Zinc	--	**107**	**134**	**71**	**90**	75	**68**	**80**	**83**

Table 7-4
Sediment Analytical Results
Seaport Landing Aquatic Land Lease
Aberdeen, Washington

Investigation Area:	Lumber Shed		Former Boiler				Beach Area		Shannon Slough
Location:	CR-07	CR-24	CR-08A		CR-08B		CR-09A	CR-09B	CR-10
Sample Name:	CR-07-SSD-COMP	CR-24-SSD-COMP	CR08a-SSD-COMP	CR08A-SBSD	CR08b-SSD-COMP	CR08b-SBSD	CR09a-SSD-COMP	CR09b-SSD-COMP	CR10-SSD-COMP
Collection Date:	10/13/2015	10/13/2015	10/14/2015	10/15/2015	10/14/2015	10/15/2015	10/13/2015	10/13/2015	10/14/2015
Collection Depth (ft bml):	0-0.33	0-0.33	0-0.33	18.3-20.0	0-0.33	8.0	0-0.33	0-0.33	0-0.33
TCLP Metals (mg/L)									
Lead	--	--	--	--	--	--	--	--	--
Mercury	--	--	--	--	--	--	--	--	--
PCBs (ug/kg)									
Aroclor 1016	19 U	19 U	19 U	18 U	18 U	18 U	18 U	19 U	19 U
Aroclor 1221	19 U	19 U	19 U	18 U	18 U	18 U	18 U	19 U	19 U
Aroclor 1232	19 U	19 U	19 U	18 U	18 U	18 U	18 U	19 U	19 U
Aroclor 1242	19 U	19 U	19 U	18 U	18 U	18 U	18 U	19 U	19 U
Aroclor 1248	19 U	19 U	19 U	18 U	18 U	18 U	18 U	19 U	19 U
Aroclor 1254	19 U	**30**	19 U	18 U	18 U	18 U	18 U	19 U	19 U
Aroclor 1260	19 U	**24**	19 U	18 U	**14 J**	18 U	18 U	19 U	19 U
Aroclor 1268	19 U	19 U	19 U	18 U	18 U	18 U	18 U	19 U	19 U
Total PCBs[a]	19 U	**54**	19 U	18 U	**14 J**	18 U	18 U	19 U	19 U
SVOCs (ug/kg)									
1,2,4-Trichlorobenzene	19 U	4.8 U	4.8 U	5 U	4.8 U	4.9 U	4.7 U	4.8 U	**3 J**
1,2-Dichlorobenzene	19 U	4.8 U	4.8 U	5 U	4.8 U	1.8 J	4.7 U	4.8 U	**3.3 J**
1,3-Dichlorobenzene	19 U	--	--	--	--	--	--	--	--
1,4-Dichlorobenzene	19 U	4.8 U	**2.4 J**	5 U	4.8 U	4.9 U	**4.2 J**	4.8 U	**3.7 J**
2,4-Dimethylphenol	97 U	24 U	24 U	25 U	24 U	**17 J**	24 U	24 U	25 U
2-Methylphenol	19 U	**8.4**	4.8 U	5 U	4.8 U	4.9 U	**4 J**	**7.3**	**7.7**
3,4-Methylphenol	--	--	--	--	--	--	--	--	--
4-Methylphenol	**26**	**120**	**28 J**	**190 J**	**210**	**560 J**	**26**	19 U	**160 J**
Benzoic acid	**170 J**	**680**	**180 J**	**110 J**	**330 J**	**290 J**	**230**	**380**	**210 J**
Benzyl alcohol	19 U	19 U	**27**	**17 J**	19 U	**50**	19 U	**58**	**22**
Bis(2-ethylhexyl)phthalate	**58**	**66**	48 U	50 U	48 U	49 U	**43 J**	**39 J**	50 U
Butylbenzylphthalate	19 U	4.8 U	4.8 U	5 U	**320**	4.9 U	**5.1**	4.8 U	5 U
Dibenzofuran	**45**	**47**	**25**	**14 J**	**53**	**65**	19 U	19 U	**28**
Diethylphthalate	19 U	19 U	**19**	20 U	36 U	**25**	19 U	19 U	20 U
Dimethyl phthalate	19 U	4.8 U	4.8 U	5 U	4.8 U	4.9 U	4.7 U	4.8 U	5 U
Di-n-butyl phthalate	19 U	**130**	19 U	20 U	19 U	20 U	19 U	19 U	20 U
Di-n-octyl phthalate	19 U	19 U	**710**	20 U	19 U	20 U	19 U	19 U	20 U
Hexachlorobenzene	19 U	4.8 U	4.8 U	5 U	4.8 U	4.9 U	4.7 U	4.8 U	**3.3 J**
Hexachlorobutadiene	19 U	4.8 U	4.8 U	5 U	4.8 U	4.9 U	4.7 U	4.8 U	**2.8 J**
N-Nitrosodiphenylamine	19 U	4.8 U	4.8 U	5 U	4.8 U	4.9 U	4.7 U	4.8 U	5 U
Pentachlorophenol	97 U	**86 J**	**14 J**	20 U	**11 J**	20 U	19 UJ	19 UJ	**23**
Phenol	**18 J**	**100**	**35**	**22**	**71**	**53**	**130**	**200**	**51**

Table 7-4
Sediment Analytical Results
Seaport Landing Aquatic Land Lease
Aberdeen, Washington

Investigation Area:	Lumber Shed		Former Boiler				Beach Area		Shannon Slough
Location:	CR-07	CR-24	CR-08A		CR-08B		CR-09A	CR-09B	CR-10
Sample Name:	CR-07-SSD-COMP	CR-24-SSD-COMP	CR08a-SSD-COMP	CR08A-SBSD	CR08b-SSD-COMP	CR08b-SBSD	CR09a-SSD-COMP	CR09b-SSD-COMP	CR10-SSD-COMP
Collection Date:	10/13/2015	10/13/2015	10/14/2015	10/15/2015	10/14/2015	10/15/2015	10/13/2015	10/13/2015	10/14/2015
Collection Depth (ft bml):	0-0.33	0-0.33	0-0.33	18.3-20.0	0-0.33	8.0	0-0.33	0-0.33	0-0.33
PAHs (ug/kg)									
1-Methylnaphthalene	**18 J**	**16 J**	**16 J**	**13 J**	**29**	**50**	**9.5 J**	19 U	**15 J**
2-Methylnaphthalene	**40**	19 U	**23**	20 U	19 U	**79**	19 U	19 U	**26**
Acenaphthene	**35**	**25**	**16 J**	**18 J**	**51**	**75**	19 U	19 U	**24**
Acenaphthylene	**16 J**	**19**	**14 J**	**56**	**51**	**300**	19 U	19 U	**59**
Anthracene	**57**	**65**	**27**	**15 J**	**71**	**72**	19 U	**11 J**	**26**
Benzo(a)anthracene	**130**	**120**	**43**	20 U	**94**	**46**	19 U	**14 J**	**46**
Benzo(a)pyrene	**67**	**84**	**37**	20 U	**67**	**44**	19 U	**12 J**	**32**
Benzo(ghi)perylene	**57**	**56**	**28**	20 U	**54**	**44**	19 U	**14 J**	**29**
Chrysene	**180**	**160**	**74**	20 U	**130**	**73**	**10 J**	**24**	**56**
Dibenzo(a,h)anthracene	**18 J**	**19**	**9.5**	5 U	**12**	**6.4**	4.7 U	**3.9 J**	**8.5**
Fluoranthene	**450**	**380**	**110**	**44**	**280**	**290**	**22**	**52**	**180**
Fluorene	**48**	**29**	19 U	**15 J**	**52**	**66**	19 U	**14 J**	**29**
Indeno(1,2,3-cd)pyrene	**43**	**54**	**26**	20 U	**46**	**28**	19 U	**13 J**	**19 J**
Naphthalene	**88**	**120**	**110**	**180**	**170**	**800**	**45**	19 U	**200**
Phenanthrene	**190**	**160**	**92**	**60**	**220**	**430**	**26**	**52**	**110**
Pyrene	**360**	**300**	**84**	**41**	**250**	**300**	**17 J**	**40**	**150**
Total Benzofluoranthenes	**230**	**230**	**100**	40 U	**220**	**92**	**12 J**	**34 J**	**110**
Total HPAHs	**1535 J**	**1403**	**512**	**85**	**1153**	**923**	**61 J**	**207 J**	**631 J**
Total LPAHs	**434 J**	**418**	**259 J**	**344 J**	**615**	**1743**	**71**	**96 J**	**448**
cPAH TEQ	**111 J**	**128**	**56**	ND	**106**	**62**	**13 J**	**19 J**	**51 J**
Petroleum Hydrocarbons (mg/kg)									
Gasoline	--	--	--	--	--	--	--	--	--
Diesel	**180**	**370**	--	**26**	**130**	**170**	--	--	--
Motor-Oil Range	**520**	**850**	--	**74**	**320**	**280**	--	--	--
Conventionals									
Ammonia (as N) (mg N/kg)	--	--	--	--	--	--	--	--	--
Sulfide (mg/kg)	--	--	--	--	--	--	--	--	--
Total Organic Carbon (%)	**1.09**	**1.56**	**1.92**	**1.29**	**2.05**	**3.08**	**4.39**	**2.99**	**2.94**
Total Volatile Solids (%)	--	--	--	--	--	--	--	--	--
Fixed Solids (%)	--	--	--	--	--	--	--	--	--
Total Solids (%)	**67.22**	**54.35**	**47.46**	**63.97**	**44.38**	**55.76**	**55.6**	**59.33**	**45.44**
Grain Size (%)									
Gravel	--	--	--	--	--	--	--	--	--
Very coarse sand	--	--	--	--	--	--	--	--	--
Coarse sand	--	--	--	--	--	--	--	--	--
Medium sand	--	--	--	--	--	--	--	--	--
Fine sand	--	--	--	--	--	--	--	--	--

Table 7-4
Sediment Analytical Results
Seaport Landing Aquatic Land Lease
Aberdeen, Washington

Investigation Area:	Lumber Shed		Former Boiler				Beach Area		Shannon Slough
Location:	CR-07	CR-24	CR-08A		CR-08B		CR-09A	CR-09B	CR-10
Sample Name:	CR-07-SSD-COMP	CR-24-SSD-COMP	CR08a-SSD-COMP	CR08A-SBSD	CR08b-SSD-COMP	CR08b-SBSD	CR09a-SSD-COMP	CR09b-SSD-COMP	CR10-SSD-COMP
Collection Date:	10/13/2015	10/13/2015	10/14/2015	10/15/2015	10/14/2015	10/15/2015	10/13/2015	10/13/2015	10/14/2015
Collection Depth (ft bml):	0-0.33	0-0.33	0-0.33	18.3-20.0	0-0.33	8.0	0-0.33	0-0.33	0-0.33
Very fine sand	--	--	--	--	--	--	--	--	--
Coarse silt	--	--	--	--	--	--	--	--	--
Medium silt	--	--	--	--	--	--	--	--	--
Fine silt	--	--	--	--	--	--	--	--	--
Very fine silt	--	--	--	--	--	--	--	--	--
Coarse clay	--	--	--	--	--	--	--	--	--
Medium clay	--	--	--	--	--	--	--	--	--
Fine clay	--	--	--	--	--	--	--	--	--
Total fines	--	--	--	--	--	--	--	--	--
Asbestos (%)									
Asbestos	--	--	<1	<1	<1	<1	--	--	--
Pore Water Analysis									
Conductivity (uS/cm)	--	--	--	--	--	--	--	--	--
Salinity (ppt)	--	--	--	--	--	--	--	--	--

Table 7-4
Sediment Analytical Results
Seaport Landing Aquatic Land Lease
Aberdeen, Washington

Investigation Area:	Chehalis River (2013)			Former Mill Area and Chehalis River						
Location:	CR-01	CR-02	CR-03	CR-04			CR-05		CR-06	
Sample Name:	CR01-10cm	CR02-10cm	CR03-10cm	CR04-10cm	CR04-2.5	CR04-5	CR05-10cm	CR05-2.5	CR06-10cm	CR06-2.5
Collection Date:	11/08/2013	11/08/2013	11/08/2013	11/07/2013	11/08/2013	11/08/2013	11/08/2013	11/08/2013	11/07/2013	11/07/2013
Collection Depth (ft bml):	0-0.33	0-0.33	0-0.33	0-0.33	1-2.5	2.5-5	0-0.33	0.33-2.5	0-0.33	1-2.5
Dioxins/Furans (pg/g)										
1,2,3,4,6,7,8-HpCDD	**211**	**201**	**66.1**	**817**	**4070**	--	**1820**	**12200**	**1080**	**1090**
1,2,3,4,6,7,8-HpCDF	**31.9**	**113**	**24.7**	**165**	**919**	--	**437**	**1170**	**258**	**276**
1,2,3,4,7,8,9-HpCDF	**1.59**	**4.94**	**0.894 J**	7.55 U	**42.8**	--	**19.8**	**81.3**	**13.2**	**15.5**
1,2,3,4,7,8-HxCDD	**1.76**	**1.96**	**1.42**	**4.26**	**32.5**	--	**11.2**	**24.5**	**12.7**	**8.21**
1,2,3,4,7,8-HxCDF	**2.77**	**4.6**	**1.02**	**7.26**	**35.9**	--	**15.3**	**115**	**18.1**	**21.7**
1,2,3,6,7,8-HxCDD	**9.98**	**10.4**	**4.81**	**54.5**	**350**	--	**136**	**1020**	**63.8**	**72.8**
1,2,3,6,7,8-HxCDF	**1.19**	**3.22**	**0.862 J**	**3.38**	**18.9**	--	**10.9**	**51.7**	**8.9**	**8.35**
1,2,3,7,8,9-HxCDD	**11.1**	**12.4**	**12.9**	**10.2**	**48.1**	--	**29.9**	**98.1**	**16.5**	**15.4**
1,2,3,7,8,9-HxCDF	0.778 U	**0.886 J**	**0.268 J**	**2.45**	**14.6**	--	**6.11**	**62.9**	**4.79**	**4.66**
1,2,3,7,8-PeCDD	**3.93**	**4.53**	**5.08**	**4.34**	**18.8**	--	**13.9**	**34.1**	**9.35**	**8.27**
1,2,3,7,8-PeCDF	**0.683 J**	**0.804 J**	**0.508 J**	**2.06**	**12.4**	--	**4.73**	**41.4**	**3.28**	**3.24**
2,3,4,6,7,8-HxCDF	**1.8**	**5.58**	**0.785 J**	**5.09**	**22.2**	--	**11.1**	**69.3**	**16.9**	**16.3**
2,3,4,7,8-PeCDF	**0.814 J**	**1.13**	**0.594 J**	**3.43**	**15.7**	--	**5.82**	**43.5**	**5.96**	**5.87**
2,3,7,8-TCDD	**2.62**	**2.89**	**3.56**	1.14 U	**3.97**	--	**3**	**5.26**	**2.09**	**2.11**
2,3,7,8-TCDF	**1.96**	**2.18**	**1.34**	**3.53**	**16**	--	**6.3**	**54.3**	**4.87**	**4.95**
OCDD	**1690**	**1550**	**489**	**5340 J**	**23500 J**	--	**10300 J**	**68300 J**	**7830 J**	**6810 J**
OCDF	**51**	**211**	**36.4**	**476**	**1900**	--	**863**	**3100**	**680**	**652**
Total HpCDDs	**485**	**433**	**167**	**1530**	**7520**	--	**3750**	**21300**	**2480**	**2050**
Total HpCDFs	87.1 U	**310**	**55.9**	678 U	**3910**	--	**1560**	5060 U	**950**	1120 U
Total HxCDDs	**97**	**114**	80.8 U	350 U	1540 U	--	1010 U	**4840**	742 U	783 U
Total HxCDFs	52.5 U	**125**	24.4 U	301 U	**2130**	--	**853**	6030 U	463 U	518 U
Total PeCDDs	**25.8**	**34.9**	**30.6**	68.7 U	133 U	--	334 U	862 U	**88.7**	67 U
Total PeCDFs	18 U	47.6 U	13.2 U	101 U	658 U	--	281 U	2660 U	203 U	147 U
Total TCDDs	17.4 U	28.1 U	24.7 U	17.5 U	32.6 U	--	73.6 U	**180**	42.6 U	**28.7**
Total TCDFs	12.4 U	33 U	16.7 U	27.9 U	119 U	--	78.1 U	558 U	82.8 U	62.3 U
Dioxin TEQ	**12.9**	**15.6**	**12.2**	**26.7**	**140**	--	**67.6**	**359**	**44.0**	**43.5**
Total Metals (mg/kg)										
Arsenic	10 U	9 U	10 U	--	--	--	--	--	--	20 U
Cadmium	**0.5**	**0.4**	0.5 U	--	--	--	--	--	--	1 U
Chromium	**40 J**	**38.5 J**	**48 J**	--	--	--	--	--	--	**26** J
Copper	**58 J**	**56.3 J**	**65.4 J**	--	--	--	--	--	--	**96** J
Lead	**7**	**9**	**8**	--	--	--	--	--	--	**110**
Mercury	**0.05**	**0.1**	**0.09**	**6.2**	**0.5 J**	--	**0.16**	**0.5** J	**0.55**	**0.53**
Silver	0.7 U	0.6 U	0.8 U	--	--	--	--	--	--	1 U
Zinc	**87**	**79**	**91**	--	--	--	--	--	--	**237**

Table 7-4
Sediment Analytical Results
Seaport Landing Aquatic Land Lease
Aberdeen, Washington

Investigation Area:	Chehalis River (2013)			Former Mill Area and Chehalis River						
Location:	CR-01	CR-02	CR-03	CR-04			CR-05		CR-06	
Sample Name:	CR01-10cm	CR02-10cm	CR03-10cm	CR04-10cm	CR04-2.5	CR04-5	CR05-10cm	CR05-2.5	CR06-10cm	CR06-2.5
Collection Date:	11/08/2013	11/08/2013	11/08/2013	11/07/2013	11/08/2013	11/08/2013	11/08/2013	11/08/2013	11/07/2013	11/07/2013
Collection Depth (ft bml):	0-0.33	0-0.33	0-0.33	0-0.33	1-2.5	2.5-5	0-0.33	0.33-2.5	0-0.33	1-2.5
TCLP Metals (mg/L)										
Lead	--	--	--	--	--	--	--	--	--	--
Mercury	--	--	--	--	--	--	--	--	--	--
PCBs (ug/kg)										
Aroclor 1016	18 U	19 U	19 U	20 UJ	19 UJ	--	20 UJ	19 UJ	--	20 U
Aroclor 1221	18 U	19 U	19 U	20 UJ	19 UJ	--	20 UJ	19 UJ	--	20 U
Aroclor 1232	23 U	38 U	46 U	20 UJ	19 UJ	--	20 UJ	19 UJ	--	20 U
Aroclor 1242	18 U	19 U	19 U	20 UJ	19 UJ	--	20 UJ	19 UJ	--	20 U
Aroclor 1248	18 U	19 U	19 U	29 UJ	48 UJ	--	29 UJ	97 UJ	--	99 U
Aroclor 1254	18 U	**12 J**	19 U	97 UJ	**440 J**	--	98 UJ	**490 J**	--	200 U
Aroclor 1260	18 U	19 U	19 U	**200 J**	**730 J**	--	**180 J**	**670 J**	--	**690**
Aroclor 1268	--	--	--	--	--	--	--	--	--	--
Total PCBs[a]	23 U	**12 J**	46 U	**200 J**	**1170 J**	--	**180 J**	**1160 J**	--	**690**
SVOCs (ug/kg)										
1,2,4-Trichlorobenzene	4.8 U	4.9 U	4.8 U	100 UJ	81 UJ	--	**43 J**	**74 J**	--	70 U
1,2-Dichlorobenzene	4.8 U	4.9 U	4.8 U	100 UJ	81 UJ	--	58 UJ	88 UJ	--	70 U
1,3-Dichlorobenzene	4.8 U	4.9 U	4.8 U	100 UJ	81 UJ	--	**620 J**	**280 J**	--	70 U
1,4-Dichlorobenzene	4.8 U	**19** J	4.8 U	100 UJ	81 UJ	--	**1000 J**	**540 J**	--	70 U
2,4-Dimethylphenol	24 U	24 U	24 U	530 UJ	400 UJ	--	290 UJ	440 UJ	--	350 U
2-Methylphenol	4.8 U	4.9 U	**3.3 J**	100 UJ	81 UJ	--	**44 J**	88 UJ	--	**45 J**
3,4-Methylphenol	--	--	--	--	--	--	--	--	--	--
4-Methylphenol	**30**	**730**	**60**	420 UJ	320 UJ	--	**310 J**	**280 J**	--	**420**
Benzoic acid	190 U	**240**	**180 J**	**1700 J**	3200 UJ	--	**950 J**	3500 UJ	--	**860 J**
Benzyl alcohol	**15 J**	**43 J**	**43** J	420 UJ	320 UJ	--	230 UJ	350 UJ	--	280 U
Bis(2-ethylhexyl)phthalate	**29 J**	49 U	48 U	1000 UJ	**870 J**	--	**960 J**	**9400 J**	--	**1900**
Butylbenzylphthalate	4.8 U	4.9 U	4.8 U	58 UJ	81 UJ	--	58 UJ	88 UJ	310 UJ	70 U
Dibenzofuran	**12 J**	**20**	19 U	420 UJ	**210 J**	--	**310 J**	**230 J**	--	**490**
Diethylphthalate	**56**	**20**	**36**	420 UJ	320 UJ	--	230 UJ	350 UJ	--	**270 J**
Dimethyl phthalate	4.8 U	**3.1 J**	**2.5 J**	100 UJ	81 UJ	--	58 UJ	88 UJ	--	70 U
Di-n-butyl phthalate	19 U	20 U	19 U	420 UJ	320 UJ	--	230 UJ	350 UJ	--	280 U
Di-n-octyl phthalate	19 U	20 U	19 U	420 UJ	320 UJ	--	230 UJ	350 UJ	--	280 U
Hexachlorobenzene	4.8 U	4.9 U	4.8 U	100 UJ	81 UJ	--	58 UJ	88 UJ	--	70 U
Hexachlorobutadiene	4.8 U	4.9 U	4.8 U	100 UJ	81 UJ	--	58 UJ	88 UJ	--	70 U
N-Nitrosodiphenylamine	4.8 U	4.9 U	4.8 U	100 UJ	81 UJ	--	58 UJ	88 UJ	--	70 U
Pentachlorophenol	19 U	20 U	19 U	**270 J**	**400 J**	--	230 UJ	350 UJ	1500 UJ	**240 J**
Phenol	**24**	**94**	**43**	**290 J**	**390 J**	**980** J	**570 J**	**530 J**	**370 J**	**240 J**

Table 7-4
Sediment Analytical Results
Seaport Landing Aquatic Land Lease
Aberdeen, Washington

Investigation Area:	Chehalis River (2013)			Former Mill Area and Chehalis River						
Location:	CR-01	CR-02	CR-03	CR-04			CR-05		CR-06	
Sample Name:	CR01-10cm	CR02-10cm	CR03-10cm	CR04-10cm	CR04-2.5	CR04-5	CR05-10cm	CR05-2.5	CR06-10cm	CR06-2.5
Collection Date:	11/08/2013	11/08/2013	11/08/2013	11/07/2013	11/08/2013	11/08/2013	11/08/2013	11/08/2013	11/07/2013	11/07/2013
Collection Depth (ft bml):	0-0.33	0-0.33	0-0.33	0-0.33	1-2.5	2.5-5	0-0.33	0.33-2.5	0-0.33	1-2.5
PAHs (ug/kg)										
1-Methylnaphthalene	--	--	--	--	--	--	--	--	--	--
2-Methylnaphthalene	19 U	**28**	19 U	420 UJ	320 UJ	--	**310**	350 UJ	--	**780**
Acenaphthene	**14 J**	**20**	19 U	420 UJ	**180 J**	--	**210**	**390 J**	--	**490**
Acenaphthylene	19 U	**68**	19 U	420 UJ	320 UJ	--	**170**	350 UJ	--	**520**
Anthracene	**14 J**	**16 J**	19 U	420 UJ	**290 J**	--	**230**	**320 J**	--	**750**
Benzo(a)anthracene	**28**	**11 J**	19 U	**250 J**	**640 J**	--	**390**	**680 J**	--	**1300**
Benzo(a)pyrene	**21**	20 U	19 U	**300 J**	**680 J**	--	**340 J**	**530 J**	--	**1200**
Benzo(ghi)perylene	**14 J**	**15 J**	19 U	**230 J**	**660 J**	--	**260 J**	**300 J**	--	**590**
Chrysene	**35**	**17 J**	19 U	**530 J**	**940 J**	--	**420 J**	**460 J**	--	**1600**
Dibenzo(a,h)anthracene	**3 J**	4.9 U	4.8 U	**120 J**	**360 J**	--	**94 J**	**190 J**	--	**150**
Fluoranthene	**100**	**63**	**25**	**590 J**	**2200 J**	--	**1300 J**	**3900 J**	--	**3200**
Fluorene	**14 J**	**15 J**	19 U	420 UJ	**180 J**	--	**260 J**	**230 J**	--	**650**
Indeno(1,2,3-cd)pyrene	19 U	20 U	19 U	420 UJ	**480 J**	--	**200 J**	**190 J**	--	**490**
Naphthalene	**25**	**280**	**23**	**420 J**	**340 J**	--	**720 J**	**440 J**	--	**1800**
Phenanthrene	**47**	**89**	**19**	**320 J**	**370 J**	--	**700 J**	**470 J**	--	**3600**
Pyrene	**110**	**61**	**21**	**700 J**	**1800 J**	--	**1300 J**	**3100 J**	--	**3600**
Total Benzofluoranthenes	**52**	**22 J**	**13 J**	**550 J**	**1700 J**	--	**660**	**810 J**	--	**2000**
Total HPAHs	**363**	**189**	**59**	**3270 J**	**9460 J**	--	**4964 J**	**10160 J**	--	**14130**
Total LPAHs	**114**	**488**	**42**	**740 J**	**1360 J**	--	**2290 J**	**1850 J**	--	**7810**
cPAH TEQ	**31**	**15**	**13**	**418 J**	**1007 J**	--	**479 J**	**722 J**	--	**1610**
Petroleum Hydrocarbons (mg/kg)										
Gasoline	--	--	--	--	--	--	--	--	--	54 UJ
Diesel	--	--	--	**2400 J**	**3200 J**	--	**1200 J**	**3200 J**	--	**20000**
Motor-Oil Range	--	--	--	**7400 J**	**10000 J**	--	**4800 J**	**13000 J**	--	**60000**
Conventionals										
Ammonia (as N) (mg N/kg)	--	--	--	0.47 U	--	**15.2**	**7.21**	--	**1.37**	**14.0**
Sulfide (mg/kg)	--	--	--	**6.46**	--	**179**	**320**	--	**906**	**2910**
Total Organic Carbon (%)	**2.06 J**	**3.21 J**	**2.91 J**	**31.4 J**	--	**16.5 J**	**13.6 J**	--	**35.6 J**	**49.5 J**
Total Volatile Solids (%)	--	--	--	**59.91**	--	**38.2**	**36.49**	--	**60.05**	**69.23**
Fixed Solids (%)	--	--	--	--	--	--	--	--	--	--
Total Solids (%)	**44.09**	**51.8**	**36.4**	**20.62**	--	**19.98**	**30.32**	--	**21.4**	**21.59**
Grain Size (%)										
Gravel	--	--	--	**22.8**	--	**23.6**	**20.2**	--	**22.7**	--
Very coarse sand	--	--	--	**13.8**	--	**13**	**11.4**	--	**13**	--
Coarse sand	--	--	--	**14.2**	--	**10.7**	**13.2**	--	**15.7**	--
Medium sand	--	--	--	**8.5**	--	**6.1**	**10.5**	--	**11.9**	--
Fine sand	--	--	--	**3.7**	--	**3.2**	**6**	--	**5.1**	--

Table 7-4
Sediment Analytical Results
Seaport Landing Aquatic Land Lease
Aberdeen, Washington

Investigation Area:	Chehalis River (2013)			Former Mill Area and Chehalis River						
Location:	CR-01	CR-02	CR-03	CR-04			CR-05		CR-06	
Sample Name:	CR01-10cm	CR02-10cm	CR03-10cm	CR04-10cm	CR04-2.5	CR04-5	CR05-10cm	CR05-2.5	CR06-10cm	CR06-2.5
Collection Date:	11/08/2013	11/08/2013	11/08/2013	11/07/2013	11/08/2013	11/08/2013	11/08/2013	11/08/2013	11/07/2013	11/07/2013
Collection Depth (ft bml):	0-0.33	0-0.33	0-0.33	0-0.33	1-2.5	2.5-5	0-0.33	0.33-2.5	0-0.33	1-2.5
Very fine sand	--	--	--	**1.4**	--	**1.4**	**3.5**	--	**2**	--
Coarse silt	--	--	--	**7.2**	--	**1.3**	**8.1**	--	**4.1**	--
Medium silt	--	--	--	**5.9**	--	**10.6**	**7.7**	--	**5.1**	--
Fine silt	--	--	--	**6.2**	--	**8.9**	**5.1**	--	**4.5**	--
Very fine silt	--	--	--	**4.8**	--	**6.1**	**4.5**	--	**3.7**	--
Coarse clay	--	--	--	**2.9**	--	**4.3**	**2.1**	--	**2.7**	--
Medium clay	--	--	--	**2.6**	--	**3.7**	**2.4**	--	**2.1**	--
Fine clay	--	--	--	**6.1**	--	**7.2**	**5.4**	--	**7.4**	--
Total fines	--	--	--	**35.6**	--	**42.1**	**35.3**	--	**29.7**	--
Asbestos (%)										
Asbestos	--	--	--	--	--	--	--	--	--	--
Pore Water Analysis										
Conductivity (uS/cm)	**18700**	**12200**	**17500**	--	--	--	--	--	--	--
Salinity (ppt)	**11**	**6.9**	**10.2**	--	--	--	--	--	--	--

Table 7-4
Sediment Analytical Results
Seaport Landing Aquatic Land Lease
Aberdeen, Washington

Investigation Area:	Former Mill Area and Chehalis River										
Location:	CR-11	CR-12	CR-13	CR-14	CR-11-14-COMP	CR-15C		CR-17D		CR-18B	
Sample Name:	CR11-SBSD-23	CR12-SBSD-15	CR13-SBSD-11	CR14-SBSD-12	CR11-14-SBSD-COMP	CR15C-SSD	CR15C-SBSD	CR17-D-SSD	CR17-D-SBSD	CR18B-SSD	CR18B-SBSD
Collection Date:	10/13/2015	10/13/2015	10/13/2015	10/13/2015	10/13/2015	10/14/2015	10/14/2015	10/15/2015	10/15/2015	10/16/2015	10/16/2015
Collection Depth (ft bml):	23	15	11	12	11-23	0-0.33	0.5-1.0	0-0.33	0.5-1.0	0-0.33	0.5-1.0
Dioxins/Furans (pg/g)							--				
1,2,3,4,6,7,8-HpCDD	**6.64**	--	--	--	--	100	--	**56.2**	--	**30.9**	--
1,2,3,4,6,7,8-HpCDF	0.317 U	--	--	--	--	25.3	--	**8.12**	--	**7.34**	--
1,2,3,4,7,8,9-HpCDF	0.0458 U	--	--	--	--	0.959 U	--	0.483 U	--	**0.332 J**	--
1,2,3,4,7,8-HxCDD	0.255 U	--	--	--	--	1.22	--	0.736 U	--	**0.758 J**	--
1,2,3,4,7,8-HxCDF	**0.0319 J**	--	--	--	--	1.25 U	--	**0.596 J**	--	0.424 U	--
1,2,3,6,7,8-HxCDD	0.631 U	--	--	--	--	5.48	--	**2.94**	--	**2.46**	--
1,2,3,6,7,8-HxCDF	0.0339 U	--	--	--	--	0.806 J	--	**0.37 J**	--	0.294 U	--
1,2,3,7,8,9-HxCDD	**2.76**	--	--	--	--	10	--	**6.33**	--	**8**	--
1,2,3,7,8,9-HxCDF	0.112 U	--	--	--	--	0.338 U	--	0.324 U	--	0.226 U	--
1,2,3,7,8-PeCDD	**1.02**	--	--	--	--	3.65	--	**2.49**	--	**3.28**	--
1,2,3,7,8-PeCDF	0.0398 U	--	--	--	--	0.408 J	--	0.213 U	--	0.157 U	--
2,3,4,6,7,8-HxCDF	0.0438 U	--	--	--	--	1.21 U	--	0.443 U	--	**0.469 J**	--
2,3,4,7,8-PeCDF	0.0418 U	--	--	--	--	0.505 U	--	0.239 U	--	0.183 U	--
2,3,7,8-TCDD	**0.936 J**	--	--	--	--	2.7	--	**1.85**	--	**2.36**	--
2,3,7,8-TCDF	0.0339 U	--	--	--	--	1.55	--	0.406 U	--	0.381 U	--
OCDD	**33.1**	--	--	--	--	790	--	**475**	--	**189**	--
OCDF	**1.08 J**	--	--	--	--	33.1	--	**14**	--	**10.9**	--
Total HpCDDs	**15.5**	--	--	--	--	275	--	**150**	--	**73.7**	--
Total HpCDFs	1.28 U	--	--	--	--	60.7 U	--	21.2 U	--	**17.4**	--
Total HxCDDs	18.1 U	--	--	--	--	76.1 U	--	45.8 U	--	46.9 U	--
Total HxCDFs	0.599 U	--	--	--	--	28.1 U	--	10.8 U	--	8.92 U	--
Total PeCDDs	**7.59**	--	--	--	--	26.5	--	16.7 U	--	20.5 U	--
Total PeCDFs	0.111 U	--	--	--	--	12.6 U	--	4.66 U	--	4.65 U	--
Total TCDDs	7.61 U	--	--	--	--	20.3 U	--	12.4 U	--	15.9 U	--
Total TCDFs	0.303 U	--	--	--	--	13.7 U	--	4.27 U	--	4.57 U	--
Dioxin TEQ	**2.38**	--	--	--	--	**9.99**	--	**6.29**	--	**7.35**	--
Total Metals (mg/kg)											
Arsenic	20 U	20 U	9 U	20 U	--	20	21	**21**	**30**	**30**	**20**
Cadmium	0.6 U	0.8 U	**0.4**	0.8 U	--	0.5 U	0.3 U	0.4 U	0.4 U	0.4 U	0.4 U
Chromium	**37**	**48**	**41.3**	**49**	--	40	34.5	**34.4**	**40**	**41**	**36**
Copper	**47**	**62.2**	**55.1**	**63**	--	51.9	54.7	**51.1**	**58.2**	**62.7**	**53.4**
Lead	6 U	**11**	**9**	**12**	--	11	9	**9**	**12**	**10**	**10**
Mercury	0.03 U	**0.09**	**0.07**	**0.09**	--	0.06 U	0.04	**0.04**	**0.07**	0.05 U	**0.07**
Silver	1 U	1 U	0.5 U	1 U	--	0.8 U	0.5 U	0.5 U	0.6 U	0.6 U	0.6 U
Zinc	**78**	**86**	**76**	**90**	--	77	69	**70**	**79**	**76**	**73**

Table 7-4
Sediment Analytical Results
Seaport Landing Aquatic Land Lease
Aberdeen, Washington

Investigation Area:	Former Mill Area and Chehalis River										
Location:	CR-11	CR-12	CR-13	CR-14	CR-11-14-COMP	CR-15C		CR-17D		CR-18B	
Sample Name:	CR11-SBSD-23	CR12-SBSD-15	CR13-SBSD-11	CR14-SBSD-12	CR11-14-SBSD-COMP	CR15C-SSD	CR15C-SBSD	CR17-D-SSD	CR17-D-SBSD	CR18B-SSD	CR18B-SBSD
Collection Date:	10/13/2015	10/13/2015	10/13/2015	10/13/2015	10/13/2015	10/14/2015	10/14/2015	10/15/2015	10/15/2015	10/16/2015	10/16/2015
Collection Depth (ft bml):	23	15	11	12	11-23	0-0.33	0.5-1.0	0-0.33	0.5-1.0	0-0.33	0.5-1.0
TCLP Metals (mg/L)											
Lead	--	--	--	--	0.1 U	--	--	--	--	--	--
Mercury	--	--	--	--	0.0001 U	--	--	--	--	--	--
PCBs (ug/kg)											
Aroclor 1016	17 U	20 U	20 U	20 U	--	20 U	18 U	19 U	20 U	18 U	19 U
Aroclor 1221	17 U	20 U	20 U	20 U	--	20 U	18 U	19 U	20 U	18 U	19 U
Aroclor 1232	17 U	20 U	20 U	20 U	--	20 U	18 U	19 U	20 U	18 U	19 U
Aroclor 1242	17 U	20 U	20 U	20 U	--	20 U	18 U	19 U	20 U	18 U	19 U
Aroclor 1248	17 U	20 U	20 U	20 U	--	20 U	18 U	19 U	20 U	18 U	19 U
Aroclor 1254	17 U	20 U	20 U	20 U	--	20 U	18 U	19 U	**18 J**	18 U	19 U
Aroclor 1260	17 U	20 U	20 U	20 U	--	20 U	18 U	19 U	20 U	18 U	19 U
Aroclor 1268	17 U	20 U	20 U	20 U	--	20 U	18 U	19 U	20 U	18 U	19 U
Total PCBs[a]	17 U	20 U	20 U	20 U	--	20 U	18 U	19 U	**18 J**	18 U	19 U
SVOCs (ug/kg)											
1,2,4-Trichlorobenzene	4.7 U	4.9 U	4.9 U	4.9 U	--	4.9 U	4.9 U	4.8 U	**4.8 J**	5 U	5 U
1,2-Dichlorobenzene	4.7 U	4.9 U	4.9 U	4.9 U	--	4.9 U	4.9 U	4.8 U	**1.6 J**	5 U	5 U
1,3-Dichlorobenzene	--	--	--	--	--	--	--	--	--	--	--
1,4-Dichlorobenzene	4.7 U	4.9 U	4.9 U	4.9 U	--	4.9 U	4.9 U	4.8 U	4.9 U	5 U	5 U
2,4-Dimethylphenol	23 U	24 U	24 U	24 U	--	24 U	24 U	24 U	24 U	25 U	25 U
2-Methylphenol	4.7 U	4.9 U	**7.2**	4.9 U	--	4.9 U	4.9 U	4.8 U	4.9 U	5 U	5 U
3,4-Methylphenol	--	--	--	--	--	--	--	--	--	--	--
4-Methylphenol	19 U	**870 J**	**150**	**130**	--	**89**	**52**	19 UJ	**120 J**	**42**	20 U
Benzoic acid	190 U	**440**	**260**	**200**	--	**250 J**	**160 J**	**150 J**	**230 J**	**160 J**	**210 J**
Benzyl alcohol	19 U	**23**	**46**	**20**	--	20 U	20 U	**16 J**	**48**	20 U	20 U
Bis(2-ethylhexyl)phthalate	47 U	49 U	49 U	49 U	--	**29 J**	49 U	48 U	**38 J**	50 U	50 U
Butylbenzylphthalate	4.7 U	4.9 U	**7.3**	**4.7 J**	--	4.9 U	4.9 U	**3.4 J**	4.9 U	**7.2**	**2.8 J**
Dibenzofuran	19 U	**40**	20 U	**20**	--	**24**	**21**	19 U	**84**	20 U	20 U
Diethylphthalate	19 U	20 U	20 U	20 U	--	21 U	26 U	19 U	19 U	40 U	20 U
Dimethyl phthalate	4.7 U	4.9 U	4.9 U	4.9 U	--	4.9 U	4.9 U	4.8 U	4.9 U	5 U	5 U
Di-n-butyl phthalate	19 U	20 U	20 U	20 U	--	20 U	20 U	19 U	19 U	20 U	20 U
Di-n-octyl phthalate	19 U	20 U	20 U	20 U	--	20 U	20 U	19 U	19 U	20 U	20 U
Hexachlorobenzene	4.7 U	4.9 U	4.9 U	4.9 U	--	4.9 U	4.9 U	4.8 U	4.9 U	5 U	5 U
Hexachlorobutadiene	4.7 U	4.9 U	4.9 U	4.9 U	--	4.9 U	4.9 U	4.8 U	4.9 U	5 U	5 U
N-Nitrosodiphenylamine	4.7 U	4.9 UJ	4.9 U	4.9 U	--	4.9 U	4.9 U	4.8 U	4.9 U	5 U	5 U
Pentachlorophenol	19 UJ	20 UJ	20 UJ	20 UJ	--	20 UJ	20 UJ	19 U	**21**	20 U	20 U
Phenol	**8.4 J**	**64**	**44**	**50**	--	**50**	20 U	**16 J**	**39**	**81**	20 U

Table 7-4
Sediment Analytical Results
Seaport Landing Aquatic Land Lease
Aberdeen, Washington

Investigation Area:	Former Mill Area and Chehalis River										
Location:	CR-11	CR-12	CR-13	CR-14	CR-11-14-COMP	CR-15C		CR-17D		CR-18B	
Sample Name:	CR11-SBSD-23	CR12-SBSD-15	CR13-SBSD-11	CR14-SBSD-12	CR11-14-SBSD-COMP	CR15C-SSD	CR15C-SBSD	CR17-D-SSD	CR17-D-SBSD	CR18B-SSD	CR18B-SBSD
Collection Date:	10/13/2015	10/13/2015	10/13/2015	10/13/2015	10/13/2015	10/14/2015	10/14/2015	10/15/2015	10/15/2015	10/16/2015	10/16/2015
Collection Depth (ft bml):	23	15	11	12	11-23	0-0.33	0.5-1.0	0-0.33	0.5-1.0	0-0.33	0.5-1.0
PAHs (ug/kg)											
1-Methylnaphthalene	19 U	**24**	**22**	**16 J**	--	**15 J**	**18 J**	19 U	**23**	20 U	20 U
2-Methylnaphthalene	19 U	**41**	20 U	**21**	--	**19 J**	**18 J**	19 U	**31**	20 U	20 U
Acenaphthene	19 U	**41**	**31**	**20**	--	**38**	**37**	19 U	**420**	20 U	**16 J**
Acenaphthylene	19 U	**110**	**110**	**61**	--	**15 J**	**15 J**	19 U	**20**	20 U	**17 J**
Anthracene	19 U	**41**	**28**	**18 J**	--	**18 J**	**20**	19 U	**110**	20 U	**24**
Benzo(a)anthracene	**11 J**	**30**	**20**	**17 J**	--	**56**	**64**	19 U	**160**	**29**	**99**
Benzo(a)pyrene	19 U	20 U	20 U	20 U	--	**31**	**35**	19 U	**81**	**12 J**	**68**
Benzo(ghi)perylene	19 U	**30**	**30**	**20**	--	**23**	**14 J**	19 U	**36**	20 U	**27**
Chrysene	**12 J**	**43**	**29**	**25**	--	**61**	**69**	**8.6 J**	**210**	**66**	**93**
Dibenzo(a,h)anthracene	4.7 U	**6.3**	**4.3 J**	**3.2 J**	--	**4 J**	**4.3 J**	**2.3 J**	**15**	5 U	**8**
Fluoranthene	**24**	**150**	**100**	**88**	--	**120**	**110**	**25**	**600**	**82**	**210**
Fluorene	19 U	**47**	**35**	**23**	--	**29**	**20**	19 U	**140**	**11 J**	**12 J**
Indeno(1,2,3-cd)pyrene	19 U	**24**	**18 J**	**15 J**	--	**18 J**	**17 J**	19 U	**41**	20 U	**27**
Naphthalene	19 U	**370**	**300**	**190**	--	**64**	**35**	**13 J**	**110**	**29**	**22**
Phenanthrene	**19**	**210**	**150**	**120**	--	**91**	**69**	**19**	**360**	**26**	**27**
Pyrene	**23**	**150**	**110**	**87**	--	**98**	**80**	**20**	**470**	**62**	**220**
Total Benzofluoranthenes	**16 J**	**61**	**40**	**39**	--	**100**	**100**	**13 J**	**240**	**39 J**	**180**
Total HPAHs	**86 J**	**494 J**	**351 J**	**294 J**	--	**511 J**	**493.3 J**	**68.9 J**	**1853**	**290 J**	**932 J**
Total LPAHs	**19**	**819**	**654**	**432 J**	--	**255 J**	**196 J**	**32 J**	**1160**	**66 J**	**118 J**
cPAH TEQ	**14 J**	**23**	**19 J**	**18 J**	--	**49 J**	**54 J**	**13 J**	**129**	**21 J**	**100**
Petroleum Hydrocarbons (mg/kg)											
Gasoline	--	--	--	--	--	--	--	--	--	--	--
Diesel	7 U	--	--	--	--	**77**	--	**24**	--	**44**	--
Motor-Oil Range	**19**	--	--	--	--	**190**	--	**46**	--	**92**	--
Conventionals											
Ammonia (as N) (mg N/kg)	--	--	--	--	--	--	--	--	--	--	--
Sulfide (mg/kg)	--	--	--	--	--	--	--	--	--	--	--
Total Organic Carbon (%)	**0.415**	**3.33**	**2.5**	**3.22**	--	**3.17**	**1.73**	**1.61**	**3.05**	**1.95**	**2.45**
Total Volatile Solids (%)	--	--	--	--	--	--	--	--	--	--	--
Fixed Solids (%)	--	--	--	--	--	--	--	--	--	--	--
Total Solids (%)	**72.59**	**56.65**	**57.95**	**57.04**	--	**35.1**	**57.47**	**52.1**	**48.09**	**46.44**	**47.88**
Grain Size (%)											
Gravel	--	--	--	--	--	--	--	--	--	--	--
Very coarse sand	--	--	--	--	--	--	--	--	--	--	--
Coarse sand	--	--	--	--	--	--	--	--	--	--	--
Medium sand	--	--	--	--	--	--	--	--	--	--	--
Fine sand	--	--	--	--	--	--	--	--	--	--	--

Table 7-4
Sediment Analytical Results
Seaport Landing Aquatic Land Lease
Aberdeen, Washington

Investigation Area:	Former Mill Area and Chehalis River										
Location:	CR-11	CR-12	CR-13	CR-14	CR-11-14-COMP	CR-15C		CR-17D		CR-18B	
Sample Name:	CR11-SBSD-23	CR12-SBSD-15	CR13-SBSD-11	CR14-SBSD-12	CR11-14-SBSD-COMP	CR15C-SSD	CR15C-SBSD	CR17-D-SSD	CR17-D-SBSD	CR18B-SSD	CR18B-SBSD
Collection Date:	10/13/2015	10/13/2015	10/13/2015	10/13/2015	10/13/2015	10/14/2015	10/14/2015	10/15/2015	10/15/2015	10/16/2015	10/16/2015
Collection Depth (ft bml):	23	15	11	12	11-23	0-0.33	0.5-1.0	0-0.33	0.5-1.0	0-0.33	0.5-1.0
Very fine sand	--	--	--	--	--	--	--	--	--	--	--
Coarse silt	--	--	--	--	--	--	--	--	--	--	--
Medium silt	--	--	--	--	--	--	--	--	--	--	--
Fine silt	--	--	--	--	--	--	--	--	--	--	--
Very fine silt	--	--	--	--	--	--	--	--	--	--	--
Coarse clay	--	--	--	--	--	--	--	--	--	--	--
Medium clay	--	--	--	--	--	--	--	--	--	--	--
Fine clay	--	--	--	--	--	--	--	--	--	--	--
Total fines	--	--	--	--	--	--	--	--	--	--	--
Asbestos (%)											
Asbestos	--	--	--	--	--	--	--	--	--	--	--
Pore Water Analysis											
Conductivity (uS/cm)	--	--	--	--	--	--	--	--	--	--	--
Salinity (ppt)	--	--	--	--	--	--	--	--	--	--	--

Table 7-4
Sediment Analytical Results
Seaport Landing Aquatic Land Lease
Aberdeen, Washington

Investigation Area:	Former Mill Area and Chehalis River				Wharf Area
Location:	CR-19D	CR-19F			CR-26
Sample Name:	CR19D-SSD-CONV	CR19F-SSD	CR19F-SBSD	CR19F-SBSD-DUP	CR26-SBSD
Collection Date:	10/16/2015	10/16/2015	10/16/2015	10/16/2015	10/15/2015
Collection Depth (ft bml):	0-0.33	0-0.33	0.5-1.0	0.5-1.0	0.5-1.0
Dioxins/Furans (pg/g)					
1,2,3,4,6,7,8-HpCDD	--	**141**	--	--	--
1,2,3,4,6,7,8-HpCDF	--	**24.3**	--	--	--
1,2,3,4,7,8,9-HpCDF	--	**1.04**	--	--	--
1,2,3,4,7,8-HxCDD	--	**1.35**	--	--	--
1,2,3,4,7,8-HxCDF	--	**1.37**	--	--	--
1,2,3,6,7,8-HxCDD	--	**9.89**	--	--	--
1,2,3,6,7,8-HxCDF	--	**1.07**	--	--	--
1,2,3,7,8,9-HxCDD	--	**8.91**	--	--	--
1,2,3,7,8,9-HxCDF	--	0.571 U	--	--	--
1,2,3,7,8-PeCDD	--	**3.01**	--	--	--
1,2,3,7,8-PeCDF	--	0.613 U	--	--	--
2,3,4,6,7,8-HxCDF	--	**1.73**	--	--	--
2,3,4,7,8-PeCDF	--	**0.557 J**	--	--	--
2,3,7,8-TCDD	--	**2.16**	--	--	--
2,3,7,8-TCDF	--	**7.75**	--	--	--
OCDD	--	**1010**	--	--	--
OCDF	--	**36.8**	--	--	--
Total HpCDDs	--	**340**	--	--	--
Total HpCDFs	--	62.7 U	--	--	--
Total HxCDDs	--	93 U	--	--	--
Total HxCDFs	--	40.2 U	--	--	--
Total PeCDDs	--	26.4 U	--	--	--
Total PeCDFs	--	23.6 U	--	--	--
Total TCDDs	--	20.6 U	--	--	--
Total TCDFs	--	25.6 U	--	--	--
Dioxin TEQ	--	**10.6**	--	--	--
Total Metals (mg/kg)					
Arsenic	--	**20**	**22**	**23**	**24**
Cadmium	--	0.4 U	0.4 U	0.3 U	0.4 U
Chromium	--	**41**	**50.5**	**51.3**	**39.3**
Copper	--	**53.1**	**60**	**53.3**	**55.9**
Lead	--	**11**	**13**	**14**	**11**
Mercury	--	**0.05**	**0.05**	**0.07**	**0.09**
Silver	--	0.6 U	0.6 U	0.5 U	0.6 U
Zinc	--	**74**	**80**	**79**	**75**

Table 7-4
Sediment Analytical Results
Seaport Landing Aquatic Land Lease
Aberdeen, Washington

Investigation Area:	Former Mill Area and Chehalis River				Wharf Area
Location:	CR-19D	CR-19F			CR-26
Sample Name:	CR19D-SSD-CONV	CR19F-SSD	CR19F-SBSD	CR19F-SBSD-DUP	CR26-SBSD
Collection Date:	10/16/2015	10/16/2015	10/16/2015	10/16/2015	10/15/2015
Collection Depth (ft bml):	0-0.33	0-0.33	0.5-1.0	0.5-1.0	0.5-1.0
TCLP Metals (mg/L)					
Lead	--	--	--	--	--
Mercury	--	--	--	--	--
PCBs (ug/kg)					
Aroclor 1016	--	18 U	19 U	20 U	19 U
Aroclor 1221	--	18 U	19 U	20 U	19 U
Aroclor 1232	--	18 U	19 U	20 U	19 U
Aroclor 1242	--	18 U	19 U	20 U	19 U
Aroclor 1248	--	18 U	19 U	20 U	19 U
Aroclor 1254	--	18 U	19 U	20 U	19 U
Aroclor 1260	--	18 U	19 U	20 U	19 U
Aroclor 1268	--	18 U	19 U	20 U	19 U
Total PCBs[a]	--	18 U	19 U	20 U	19 U
SVOCs (ug/kg)					
1,2,4-Trichlorobenzene	--	4.8 U	5 U	5 U	4.9 U
1,2-Dichlorobenzene	--	4.8 U	5 U	5 U	4.9 U
1,3-Dichlorobenzene	--	--	--	--	--
1,4-Dichlorobenzene	--	4.8 U	5 U	5 U	4.9 U
2,4-Dimethylphenol	--	24 U	25 U	25 U	24 U
2-Methylphenol	--	4.8 U	5 U	5 U	**5.4**
3,4-Methylphenol	--	--	--	--	--
4-Methylphenol	--	19 U	**230**	**320**	**45**
Benzoic acid	--	**170 J**	**240**	**370**	**440**
Benzyl alcohol	--	19 U	**27**	**28**	**64**
Bis(2-ethylhexyl)phthalate	--	48 U	50 U	**32 J**	49 U
Butylbenzylphthalate	--	**8.1**	**9.3**	**7.4**	4.9 U
Dibenzofuran	--	**15 J**	**25**	**28**	**25**
Diethylphthalate	--	22 U	24 U	38 U	20 U
Dimethyl phthalate	--	4.8 U	5 U	5 U	4.9 U
Di-n-butyl phthalate	--	19 U	20 U	20 U	20 U
Di-n-octyl phthalate	--	19 U	20 U	20 U	20 U
Hexachlorobenzene	--	4.8 U	5 U	5 U	4.9 U
Hexachlorobutadiene	--	4.8 U	5 U	5 U	4.9 U
N-Nitrosodiphenylamine	--	4.8 U	5 U	5 U	4.9 U
Pentachlorophenol	--	19 U	20 UJ	20 UJ	20 UJ
Phenol	**93 J+**	**89**	**47**	**68**	**76**

Table 7-4
Sediment Analytical Results
Seaport Landing Aquatic Land Lease
Aberdeen, Washington

Investigation Area:	Former Mill Area and Chehalis River				Wharf Area
Location:	CR-19D	CR-19F			CR-26
Sample Name:	CR19D-SSD-CONV	CR19F-SSD	CR19F-SBSD	CR19F-SBSD-DUP	CR26-SBSD
Collection Date:	10/16/2015	10/16/2015	10/16/2015	10/16/2015	10/15/2015
Collection Depth (ft bml):	0-0.33	0-0.33	0.5-1.0	0.5-1.0	0.5-1.0
PAHs (ug/kg)					
1-Methylnaphthalene	--	19 U	20 U	**13 J**	**11 J**
2-Methylnaphthalene	--	**10 J**	**13 J**	**22**	20 U
Acenaphthene	--	**12 J**	**27**	**31**	**29**
Acenaphthylene	--	19 U	20 U	**18 J**	**9.7 J**
Anthracene	--	**15 J**	**30**	**26**	**14 J**
Benzo(a)anthracene	--	**12 J**	**21**	**37**	**18 J**
Benzo(a)pyrene	--	19 U	20 U	20 U	20 U
Benzo(ghi)perylene	--	19 U	20 U	**15 J**	**13 J**
Chrysene	--	**21**	**30**	**64**	**26**
Dibenzo(a,h)anthracene	--	4.8 U	5 U	**3.1 J**	**3.1 J**
Fluoranthene	--	**41**	**94**	**150**	**75**
Fluorene	--	**12 J**	**29**	**27**	**23**
Indeno(1,2,3-cd)pyrene	--	19 U	20 U	**14 J**	**8.8 J**
Naphthalene	--	**56**	**62**	**98**	**51**
Phenanthrene	--	**36**	**110**	**140**	**39**
Pyrene	--	**35**	**83**	**130**	**70**
Total Benzofluoranthenes	--	**19 J**	**27 J**	**60**	**36 J**
Total HPAHs	--	**128 J**	**255 J**	**493.1 J**	**249.9 J**
Total LPAHs	--	**131 J**	**258**	**340 J**	**165.7 J**
cPAH TEQ	--	**14 J**	**16 J**	**22 J**	**17 J**
Petroleum Hydrocarbons (mg/kg)					
Gasoline	--	--	--	--	--
Diesel	--	**93**	--	--	--
Motor-Oil Range	--	**240**	--	--	--
Conventionals					
Ammonia (as N) (mg N/kg)	**18.6**	--	--	--	--
Sulfide (mg/kg)	**605**	--	--	--	--
Total Organic Carbon (%)	**3.99**	**2.77**	**2.76**	**2.59**	**1.52**
Total Volatile Solids (%)	**8.58**	--	--	--	--
Fixed Solids (%)	**44.8**	--	--	--	--
Total Solids (%)	**39.38**	**49.31**	**50.3**	**51.43**	**46.69**
Grain Size (%)					
Gravel	**1**	--	--	--	--
Very coarse sand	**3.8**	--	--	--	--
Coarse sand	**1.8**	--	--	--	--
Medium sand	**2**	--	--	--	--
Fine sand	**4.6**	--	--	--	--

Table 7-4
Sediment Analytical Results
Seaport Landing Aquatic Land Lease
Aberdeen, Washington

Investigation Area:	Former Mill Area and Chehalis River				Wharf Area
Location:	CR-19D	CR-19F			CR-26
Sample Name:	CR19D-SSD-CONV	CR19F-SSD	CR19F-SBSD	CR19F-SBSD-DUP	CR26-SBSD
Collection Date:	10/16/2015	10/16/2015	10/16/2015	10/16/2015	10/15/2015
Collection Depth (ft bml):	0-0.33	0-0.33	0.5-1.0	0.5-1.0	0.5-1.0
Very fine sand	**8.9**	--	--	--	--
Coarse silt	**16**	--	--	--	--
Medium silt	**20.1**	--	--	--	--
Fine silt	**14.6**	--	--	--	--
Very fine silt	**7.3**	--	--	--	--
Coarse clay	**5.9**	--	--	--	--
Medium clay	**3.4**	--	--	--	--
Fine clay	**10.5**	--	--	--	--
Total fines	**77.8**	--	--	--	--
Asbestos (%)					
Asbestos	--	--	--	--	--
Pore Water Analysis					
Conductivity (uS/cm)	--	--	--	--	--
Salinity (ppt)	--	--	--	--	--

Table 7-4
Sediment Analytical Results
Seaport Landing Aquatic Land Lease
Aberdeen, Washington

NOTES:
Detections are in **bold** font.
-- = not analyzed.
< = less than the limit of detection.
cm = centimeter.
cPAH = carcinogenic PAH.
ft bml = feet below mudline.
HPAH = high-molecular-weight PAH.
J = result is an estimated value.
LPAH = low-molecular-weight PAH.
mg/kg = milligrams per kilogram.
mg/L = milligrams per liter.
mg N/kg = milligrams of nitrogen per kilogram.
ND = not detected.
PAH = polycyclic aromatic hydrocarbon.
PCB = polychlorinated biphenyl.
pg/g = picograms per gram (parts per trillion).
ppt = parts per thousand.
SIM = selective ion monitoring.
SVOC = semivolatile organic compound. When samples were analyzed by both 8270D and 8270D SIM methods, or when samples were reanalyzed, the higher detected value or lower non-detect value was used.
TEQ = toxicity equivalence quotient.
TCLP = toxicity characteristic leaching procedure.
Total PCBs = sum of PCB Aroclors.
U = result is non-detect at method reporting limit.
UJ = result is non-detect at or above method reporting limit. Reported value is estimated.
ug/kg = micrograms per kilogram.
uS/cm = microSiemen = (micromhos) per centimeter.
[a]Calculated value. Only detected values are summed.

Table 7-5
Sediment Analytical Results and Screening Criteria
Seaport Landing Aquatic Land Lease
Aberdeen, Washington

Investigation Area:	SMS Marine Cleanup Screening Levels				Lumber Shed		Former Boiler			
Location:					CR-07	CR-24	CR-08A		CR-08B	
Sample Name:					CR-07-SSD-COMP	CR-24-SSD-COMP	CR08a-SSD-COMP	CR08A-SBSD	CR08b-SSD-COMP	CR08b-SBSD
Collection Date:	SCO—Dry Weight	CSL—Dry Weight	SCO—Organic Carbon	CSL—Organic Carbon	10/13/2015	10/13/2015	10/14/2015	10/15/2015	10/14/2015	10/15/2015
Collection Depth (ft bml):					0-0.33	0-0.33	0-0.33	18.3-20.0	0-0.33	8.0
Conventionals (%)										
Total Organic Carbon	NV	NV	NV	NV	**1.09**	**1.56**	**1.92**	**1.29**	**2.05**	**3.08**
PCBs (ug/kg-OC)										
Total PCBs[b]	NA	NA	12000	65000	1743 U	**3462**	990 U	1395 U	**683 J**	584 U
SVOCs (ug/kg-OC)										
1,2,4-Trichlorobenzene	NA	NA	810	1800	1743 U	308 U	250 U	388 U	234 U	159 U
1,2-Dichlorobenzene	NA	NA	2300	2300	1743 U	308 U	250 U	388 U	234 U	**58 J**
1,4-Dichlorobenzene	NA	NA	3100	9000	1743 U	308 U	**125 J**	388 U	234 U	159 U
Bis(2-ethylhexyl)phthalate	NA	NA	47000	78000	**5321**	**4231**	2500 U	3876 U	2341 U	1591 U
Butylbenzylphthalate	NA	NA	4900	64000	1743 U	308 U	250 U	388 U	**15610**	159 U
Dibenzofuran	NA	NA	15000	58000	**4128**	**3013**	**1302**	**1085 J**	**2585**	**2110**
Diethylphthalate	NA	NA	61000	110000	1743 U	1218 U	**990**	1550 U	1756 U	**812**
Dimethyl phthalate	NA	NA	53000	53000	1743 U	308 U	250 U	388 U	234 U	159 U
Di-n-butyl phthalate	NA	NA	220000	1700000	1743 U	**8333**	990 U	1550 U	927 U	649 U
Di-n-octyl phthalate	NA	NA	58000	4500000	1743 U	1218 U	**36979**	1550 U	927 U	649 U
Hexachlorobenzene	NA	NA	380	2300	1743 U	308 U	250 U	388 U	234 U	159 U
Hexachlorobutadiene	NA	NA	3900	6200	1743 U	308 U	250 U	388 U	234 U	159 U
N-Nitrosodiphenylamine	NA	NA	11000	11000	1743 U	308 U	250 U	388 U	234 U	159 U
PAHs (ug/kg-OC)										
2-Methylnaphthalene	NA	NA	38000	64000	**3670**	1218 U	**1198**	1550 U	927 U	**2565**
Acenaphthene	NA	NA	16000	57000	**3211**	**1603**	**833 J**	**1395 J**	**2488**	**2435**
Acenaphthylene	NA	NA	66000	66000	**1468 J**	**1218**	**729 J**	**4341**	**2488**	**9740**
Anthracene	NA	NA	220000	1200000	**5229**	**4167**	**1406**	**1163 J**	**3463**	**2338**
Benzo(a)anthracene	NA	NA	110000	270000	**11927**	**7692**	**2240**	1550 U	**4585**	**1494**
Benzo(a)pyrene	NA	NA	99000	210000	**6147**	**5385**	**1927**	1550 U	**3268**	**1429**
Benzo(ghi)perylene	NA	NA	31000	78000	**5229**	**3590**	**1458**	1550 U	**2634**	**1429**
Chrysene	NA	NA	110000	460000	**16514**	**10256**	**3854**	1550 U	**6341**	**2370**
Dibenzo(a,h)anthracene	NA	NA	12000	33000	**1651 J**	**1218**	**495**	388 U	**585**	**208**
Fluoranthene	NA	NA	160000	1200000	**41284**	**24359**	**5729**	**3411**	**13659**	**9416**
Fluorene	NA	NA	23000	79000	**4404**	**1859**	990 U	**1163 J**	**2537**	**2143**
Indeno(1,2,3-cd)pyrene	NA	NA	34000	88000	**3945**	**3462**	**1354**	1550 U	**2244**	**909**
Naphthalene	NA	NA	99000	170000	**8073**	**7692**	**5729**	**13953**	**8293**	**25974**
Phenanthrene	NA	NA	100000	480000	**17431**	**10256**	**4792**	**4651**	**10732**	**13961**
Pyrene	NA	NA	1000000	1400000	**33028**	**19231**	**4375**	**3178**	**12195**	**9740**
Total Benzofluoranthenes	NA	NA	230000	450000	**21101**	**14744**	**5208**	3101 U	**10732**	**2987**
Total HPAHs[b]	NA	NA	960000	5300000	**140826 J**	**89936**	**26641 J**	**6589 J**	**56244**	**29981**
Total LPAHs[b]	NA	NA	370000	780000	**39817 J**	**26795**	**13490**	**26667**	**30000**	**56591**
PCBs—dry weight (ug/kg)										
Aroclor 1016	NV	NV	NA	NA	19 U	19 U	19 U	18 U	18 U	18 U
Aroclor 1221	NV	NV	NA	NA	19 U	19 U	19 U	18 U	18 U	18 U

Table 7-5
Sediment Analytical Results and Screening Criteria
Seaport Landing Aquatic Land Lease
Aberdeen, Washington

Investigation Area:	SMS Marine Cleanup Screening Levels				Lumber Shed		Former Boiler			
Location:					CR-07	CR-24	CR-08A		CR-08B	
Sample Name:					CR-07-SSD-COMP	CR-24-SSD-COMP	CR08a-SSD-COMP	CR08A-SBSD	CR08b-SSD-COMP	CR08b-SBSD
Collection Date:	SCO—Dry	CSL—Dry	SCO—Organic	CSL—Organic	10/13/2015	10/13/2015	10/14/2015	10/15/2015	10/14/2015	10/15/2015
Aroclor 1232	NV	NV	NA	NA	19 U	19 U	19 U	18 U	18 U	18 U
Aroclor 1242	NV	NV	NA	NA	19 U	19 U	19 U	18 U	18 U	18 U
Aroclor 1248	NV	NV	NA	NA	19 U	19 U	19 U	18 U	18 U	18 U
Aroclor 1254	NV	NV	NA	NA	19 U	**30**	19 U	18 U	18 U	18 U
Aroclor 1260	NV	NV	NA	NA	19 U	**24**	19 U	18 U	**14 J**	18 U
Aroclor 1268	NV	NV	NA	NA	19 U	19 U	19 U	18 U	18 U	18 U
Total PCBs[b]	130	1000	NA	NA	19 U	**54**	19 U	18 U	**14 J**	18 U
SVOCs—dry weight (ug/kg)										
1,2,4-Trichlorobenzene	31	51	NA	NA	19 U	4.8 U	4.8 U	5 U	4.8 U	4.9 U
1,2-Dichlorobenzene	35	50	NA	NA	19 U	4.8 U	4.8 U	5 U	4.8 U	**1.8 J**
1,4-Dichlorobenzene	110	110	NA	NA	19 U	4.8 U	**2.4 J**	5 U	4.8 U	4.9 U
Bis(2-ethylhexyl)phthalate	1300	1900	NA	NA	**58**	**66**	48 U	50 U	48 U	49 U
Butylbenzylphthalate	63	900	NA	NA	19 U	4.8 U	4.8 U	5 U	**320**	4.9 U
Dibenzofuran	540	540	NA	NA	**45**	**47**	**25**	**14 J**	**53**	**65**
Diethylphthalate	200	>1200	NA	NA	19 U	19 U	**19**	20 U	36 U	**25**
Dimethyl phthalate	71	160	NA	NA	19 U	4.8 U	4.8 U	5 U	4.8 U	4.9 U
Di-n-butyl phthalate	1400	1400	NA	NA	19 U	**130**	19 U	20 U	19 U	20 U
Di-n-octyl phthalate	6200	6200	NA	NA	19 U	19 U	**710**	20 U	19 U	20 U
Hexachlorobenzene	22	70	NA	NA	19 U	4.8 U	4.8 U	5 U	4.8 U	4.9 U
Hexachlorobutadiene	11	120	NA	NA	19 U	4.8 U	4.8 U	5 U	4.8 U	4.9 U
N-Nitrosodiphenylamine	28	40	NA	NA	19 U	4.8 U	4.8 U	5 U	4.8 U	4.9 U
PAHs—dry weight (ug/kg)										
2-Methylnaphthalene	670	670	NA	NA	**40**	19 U	**23**	20 U	19 U	**79**
Acenaphthene	500	500	NA	NA	**35**	**25**	**16 J**	**18 J**	**51**	**75**
Acenaphthylene	1300	1300	NA	NA	**16 J**	**19**	**14 J**	**56**	**51**	**300**
Anthracene	960	960	NA	NA	**57**	**65**	**27**	**15 J**	**71**	**72**
Benzo(a)anthracene	1300	1600	NA	NA	**130**	**120**	**43**	20 U	**94**	**46**
Benzo(a)pyrene	1600	1600	NA	NA	**67**	**84**	**37**	20 U	**67**	**44**
Benzo(ghi)perylene	670	720	NA	NA	**57**	**56**	**28**	20 U	**54**	**44**
Chrysene	1400	2800	NA	NA	**180**	**160**	**74**	20 U	**130**	**73**
Dibenzo(a,h)anthracene	230	230	NA	NA	**18 J**	**19**	**9.5**	5 U	**12**	**6.4**
Fluoranthene	1700	2500	NA	NA	**450**	**380**	**110**	**44**	**280**	**290**
Fluorene	540	540	NA	NA	**48**	**29**	19 U	**15 J**	**52**	**66**
Indeno(1,2,3-cd)pyrene	600	690	NA	NA	**43**	**54**	**26**	20 U	**46**	**28**
Naphthalene	2100	2100	NA	NA	**88**	**120**	**110**	**180**	**170**	**800**
Phenanthrene	1500	1500	NA	NA	**190**	**160**	**92**	**60**	**220**	**430**
Pyrene	2600	3300	NA	NA	**360**	**300**	**84**	**41**	**250**	**300**
Total Benzofluoranthenes	3200	3600	NA	NA	**230**	**230**	**100**	40 U	**220**	**92**
Total HPAHs[b]	12000	17000	NA	NA	**1535 J**	**1403**	**512**	**85**	**1153**	**923**
Total LPAHs[b]	5200	5200	NA	NA	**434 J**	**418**	**259 J**	**344 J**	**615**	**1743**

Table 7-5
Sediment Analytical Results and Screening Criteria
Seaport Landing Aquatic Land Lease
Aberdeen, Washington

Investigation Area:	SMS Marine Cleanup Screening Levels				Lumber Shed		Former Boiler			
Location:					CR-07	CR-24	CR-08A		CR-08B	
Sample Name:					CR-07-SSD-COMP	CR-24-SSD-COMP	CR08a-SSD-COMP	CR08A-SBSD	CR08b-SSD-COMP	CR08b-SBSD
Collection Date:	SCO—Dry	CSL—Dry	SCO—Organic	CSL—Organic	10/13/2015	10/13/2015	10/14/2015	10/15/2015	10/14/2015	10/15/2015
Total Metals—dry weight (mg/kg)										
Arsenic	57	93	NA	NA	20 U	20 U	**30**	**20**	**20**	20
Cadmium	5.1	6.7	NA	NA	0.8 U	0.9 U	0.4 U	0.7 U	0.4 U	0.7 U
Chromium	260	270	NA	NA	**43**	**49**	**52**	**39**	**42**	40
Copper	390	390	NA	NA	--	**81.5**	**134**	**57.8**	**61.1**	55.3
Lead	450	530	NA	NA	**11**	**21**	**30**	**8**	**14**	10
Mercury	0.41	0.59	NA	NA	**0.04**	**0.16**	**0.06**	0.03 U	**0.06**	0.07
Silver	6.1	6.1	NA	NA	--	1 U	0.6 U	1 U	0.7 U	1 U
Zinc	410	960	NA	NA	--	**107**	**134**	**71**	**90**	75
SVOCs—dry weight (ug/kg)										
1,3-Dichlorobenzene	NA	NA	NA	NA	19 U	--	--	--	--	--
2,4-Dimethylphenol	29	29	NA	NA	97 U	24 U	24 U	25 U	24 U	**17 J**
2-Methylphenol	63	63	NA	NA	19 U	**8.4**	4.8 U	5 U	4.8 U	4.9 U
3,4-Methylphenol	NA	NA	NA	NA	--	--	--	--	--	--
4-Methylphenol	670	670	NA	NA	**26**	**120**	**28 J**	**190 J**	**210**	**560 J**
Benzoic acid	650	650	NA	NA	**170 J**	**680**	**180 J**	**110 J**	**330 J**	**290 J**
Benzyl alcohol	57	73	NA	NA	19 U	19 U	**27**	**17 J**	19 U	**50**
Pentachlorophenol	360	690	NA	NA	97 U	**86 J**	**14 J**	20 U	**11 J**	20 U
Phenol	420	1200	NA	NA	**18 J**	**100**	**35**	**22**	**71**	**53**
PAHs—dry weight (ug/kg)										
1-Methylnaphthalene	NV	NV	NA	NA	**18 J**	**16 J**	**16 J**	**13 J**	**29**	**50**
TCLP Metals (mg/L)										
Lead	NA	NA	NA	NA	--	--	--	--	--	--
Mercury	NA	NA	NA	NA	--	--	--	--	--	--
Dioxins/Furans—dry weight (pg/g)										
1,2,3,4,6,7,8-HpCDD	NV	NV	NA	NA	--	--	**583**	**14.5**	**955**	12.5
1,2,3,4,6,7,8-HpCDF	NV	NV	NA	NA	--	--	**33.1**	**1.26**	**75.8**	0.295 U
1,2,3,4,7,8,9-HpCDF	NV	NV	NA	NA	--	--	2.1 U	0.25 U	**3.72**	0.0959 J
1,2,3,4,7,8-HxCDD	NV	NV	NA	NA	--	--	**2.33**	0.583 U	**2.96**	0.589 J
1,2,3,4,7,8-HxCDF	NV	NV	NA	NA	--	--	**1.42**	**0.217 J**	**4.39**	0.111 J
1,2,3,6,7,8-HxCDD	NV	NV	NA	NA	--	--	**10.7**	**1.3**	**22.3**	1.71
1,2,3,6,7,8-HxCDF	NV	NV	NA	NA	--	--	**0.798 J**	**0.178 J**	**2.13**	0.14 J
1,2,3,7,8,9-HxCDD	NV	NV	NA	NA	--	--	**8.01**	**5.31**	**13.9**	7.04
1,2,3,7,8,9-HxCDF	NV	NV	NA	NA	--	--	0.0933 U	0.258 U	**1.62**	0.146 U
1,2,3,7,8-PeCDD	NV	NV	NA	NA	--	--	**2.87**	**1.76**	**4.81**	2.68
1,2,3,7,8-PeCDF	NV	NV	NA	NA	--	--	0.483 U	**0.141 J**	**0.978 J**	0.288 U
2,3,4,6,7,8-HxCDF	NV	NV	NA	NA	--	--	**1.46**	**0.188 J**	**3.84**	0.105 J
2,3,4,7,8-PeCDF	NV	NV	NA	NA	--	--	**0.506 J**	**0.0704 J**	**1.06**	0.201 J
2,3,7,8-TCDD	NV	NV	NA	NA	--	--	**1.71**	**1.55**	**2.79**	2.06
2,3,7,8-TCDF	NV	NV	NA	NA	--	--	**1.06**	**0.088 J**	**2.48**	0.529 J
OCDD	NV	NV	NA	NA	--	--	**13700 J**	**130**	**22200 J**	45.4 U

Table 7-5
Sediment Analytical Results and Screening Criteria
Seaport Landing Aquatic Land Lease
Aberdeen, Washington

Investigation Area:	SMS Marine Cleanup Screening Levels				Lumber Shed		Former Boiler			
Location:					CR-07	CR-24	CR-08A		CR-08B	
Sample Name:					CR-07-SSD-COMP	CR-24-SSD-COMP	CR08a-SSD-COMP	CR08A-SBSD	CR08b-SSD-COMP	CR08b-SBSD
Collection Date:	SCO—Dry	CSL—Dry	SCO—Organic	CSL—Organic	10/13/2015	10/13/2015	10/14/2015	10/15/2015	10/14/2015	10/15/2015
OCDF	NV	NV	NA	NA	--	--	**73.9**	**6.41**	**128**	0.802 U
Total HpCDDs	NV	NV	NA	NA	--	--	**1650**	**32.3**	**4120**	26.3
Total HpCDFs	NV	NV	NA	NA	--	--	126 U	3.43 U	243 U	0.643 U
Total HxCDDs	NV	NV	NA	NA	--	--	147 U	33.2 U	**321**	45.4 U
Total HxCDFs	NV	NV	NA	NA	--	--	44 U	1.27 U	119 U	0.888 U
Total PeCDDs	NV	NV	NA	NA	--	--	25.9 U	12.7 U	**38.2**	21.9 U
Total PeCDFs	NV	NV	NA	NA	--	--	12.8 U	0.428 U	35.9 U	2.08 U
Total TCDDs	NV	NV	NA	NA	--	--	23.9 U	12 U	25 U	21.4 U
Total TCDFs	NV	NV	NA	NA	--	--	10.9 U	0.656 U	21.7 U	10.7 U
Dioxin TEQ	NV	NV	NA	NA	--	--	**17.6**	**4.31**	**30.4**	**5.97**
Petroleum Hydrocarbons—dry weight (mg/kg)										
Gasoline	NV	NV	NV	NV	--	--	--	--	--	--
Diesel	NV	NV	NV	NV	**180**	**370**	--	**26**	**130**	**170**
Motor-Oil Range	NV	NV	NV	NV	**520**	**850**	--	**74**	**320**	**280**
Conventionals										
Ammonia (as N) (mg N/kg)	NV	NV	NV	NV	--	--	--	--	--	--
Sulfide (mg/kg)	NV	NV	NV	NV	--	--	--	--	--	--
Total Volatile Solids (%)	NV	NV	NV	NV	--	--	--	--	--	--
Fixed Solids (%)	NV	NV	NV	NV	--	--	--	--	--	--
Total solids (%)	NV	NV	NV	NV	**67.22**	**54.35**	**47.46**	**63.97**	**44.38**	**55.76**
Grain Size (%)										
Gravel	NV	NV	NV	NV	--	--	--	--	--	--
Very coarse sand	NV	NV	NV	NV	--	--	--	--	--	--
Coarse sand	NV	NV	NV	NV	--	--	--	--	--	--
Medium sand	NV	NV	NV	NV	--	--	--	--	--	--
Fine sand	NV	NV	NV	NV	--	--	--	--	--	--
Very fine sand	NV	NV	NV	NV	--	--	--	--	--	--
Coarse silt	NV	NV	NV	NV	--	--	--	--	--	--
Medium silt	NV	NV	NV	NV	--	--	--	--	--	--
Fine silt	NV	NV	NV	NV	--	--	--	--	--	--
Very fine silt	NV	NV	NV	NV	--	--	--	--	--	--
Coarse clay	NV	NV	NV	NV	--	--	--	--	--	--
Medium clay	NV	NV	NV	NV	--	--	--	--	--	--
Fine clay	NV	NV	NV	NV	--	--	--	--	--	--
Total fines	NV	NV	NV	NV	--	--	--	--	--	--
Asbestos (%)										
Asbestos	NV	NV	NV	NV	--	--	<1	<1	<1	<1
Pore Water Analysis										
Conductivity (uS/cm)	NV	NV	NV	NV	--	--	--	--	--	--
Salinity (ppt)	NV	NV	NV	NV	--	--	--	--	--	--

Table 7-5
Sediment Analytical Results and Screening Criteria
Seaport Landing Aquatic Land Lease
Aberdeen, Washington

Investigation Area:	SMS Marine Cleanup Screening Levels				Beach Area		Shannon Slough	Chehalis River (2013)		
Location:					CR-09A	CR-09B	CR-10	CR-01	CR-02	CR-03
Sample Name:					CR09a-SSD-COMP	CR09b-SSD-COMP	CR10-SSD-COMP	CR01-10cm	CR02-10cm	CR03-10cm
Collection Date:	SCO—Dry Weight	CSL—Dry Weight	SCO—Organic Carbon	CSL—Organic Carbon	10/13/2015	10/13/2015	10/14/2015	11/08/2013	11/08/2013	11/08/2013
Collection Depth (ft bml):					0-0.33	0-0.33	0-0.33	0-0.33	0-0.33	0-0.33
Conventionals (%)										
Total Organic Carbon	NV	NV	NV	NV	**4.39**	**2.99**	**2.94**	**2.06 J**	**3.21 J**	**2.91 J**
PCBs (ug/kg-OC)										
Total PCBs[b]	NA	NA	12000	65000	410 U	635 U	646 U	1117 U	**374 J**	1581 U
SVOCs (ug/kg-OC)										
1,2,4-Trichlorobenzene	NA	NA	810	1800	107 U	161 U	**102 J**	233 U	153 U	165 U
1,2-Dichlorobenzene	NA	NA	2300	2300	107 U	161 U	**112 J**	233 U	153 U	165 U
1,4-Dichlorobenzene	NA	NA	3100	9000	**96 J**	161 U	**126 J**	233 U	**592 J**	165 U
Bis(2-ethylhexyl)phthalate	NA	NA	47000	78000	**979 J**	**1304 J**	1701 U	**1408 J**	1526 U	1649 U
Butylbenzylphthalate	NA	NA	4900	64000	**116**	161 U	170 U	233 U	153 U	165 U
Dibenzofuran	NA	NA	15000	58000	433 U	635 U	**952**	**583 J**	**623**	653 U
Diethylphthalate	NA	NA	61000	110000	433 U	635 U	680 U	**2718**	**623**	**1237**
Dimethyl phthalate	NA	NA	53000	53000	107 U	161 U	170 U	233 U	**97 J**	**86 J**
Di-n-butyl phthalate	NA	NA	220000	1700000	433 U	635 U	680 U	922 U	623 U	653 U
Di-n-octyl phthalate	NA	NA	58000	4500000	433 U	635 U	680 U	922 U	623 U	653 U
Hexachlorobenzene	NA	NA	380	2300	107 U	161 U	**112 J**	233 U	153 U	165 U
Hexachlorobutadiene	NA	NA	3900	6200	107 U	161 U	**95 J**	233 U	153 U	165 U
N-Nitrosodiphenylamine	NA	NA	11000	11000	107 U	161 U	170 U	233 U	153 U	165 U
PAHs (ug/kg-OC)										
2-Methylnaphthalene	NA	NA	38000	64000	433 U	635 U	**884**	922 U	**872**	653 U
Acenaphthene	NA	NA	16000	57000	433 U	635 U	**816**	**680 J**	**623**	653 U
Acenaphthylene	NA	NA	66000	66000	433 U	635 U	**2007**	922 U	**2118**	653 U
Anthracene	NA	NA	220000	1200000	433 U	**368 J**	**884**	**680 J**	**498 J**	653 U
Benzo(a)anthracene	NA	NA	110000	270000	433 U	**468 J**	**1565**	**1359**	**343 J**	653 U
Benzo(a)pyrene	NA	NA	99000	210000	433 U	**401 J**	**1088**	**1019**	623 U	653 U
Benzo(ghi)perylene	NA	NA	31000	78000	433 U	**468 J**	**986**	**680 J**	**467 J**	653 U
Chrysene	NA	NA	110000	460000	**228 J**	**803**	**1905**	**1699**	**530 J**	653 U
Dibenzo(a,h)anthracene	NA	NA	12000	33000	107 U	**130 J**	**289**	**146 J**	**153** U	165 U
Fluoranthene	NA	NA	160000	1200000	**501**	**1739**	**6122**	**4854**	**1963**	**859**
Fluorene	NA	NA	23000	79000	433 U	**468 J**	**986**	**680 J**	**467 J**	653 U
Indeno(1,2,3-cd)pyrene	NA	NA	34000	88000	433 U	**435 J**	**646 J**	922 U	623 U	653 U
Naphthalene	NA	NA	99000	170000	**1025**	635 U	**6803**	**1214**	**8723**	**790**
Phenanthrene	NA	NA	100000	480000	**592**	**1739**	**3741**	**2282**	**2773**	**653**
Pyrene	NA	NA	1000000	1400000	**387 J**	**1338**	**5102**	**5340**	**1900**	**722**
Total Benzofluoranthenes	NA	NA	230000	450000	**273 J**	**1137 J**	**3741**	**2524**	**685 J**	**447 J**
Total HPAHs[b]	NA	NA	960000	5300000	**1390**	**6920 J**	**21446**	**17621**	**5888**	**2027**
Total LPAHs[b]	NA	NA	370000	780000	**1617 J**	**3211 J**	**15238 J**	**5534**	**15202**	**1443**
PCBs—dry weight (ug/kg)										
Aroclor 1016	NV	NV	NA	NA	18 U	19 U	19 U	18 U	19 U	19 U
Aroclor 1221	NV	NV	NA	NA	18 U	19 U	19 U	18 U	19 U	19 U

Table 7-5
Sediment Analytical Results and Screening Criteria
Seaport Landing Aquatic Land Lease
Aberdeen, Washington

Investigation Area:	SMS Marine Cleanup Screening Levels				Beach Area		Shannon Slough	Chehalis River (2013)		
Location:					CR-09A	CR-09B	CR-10	CR-01	CR-02	CR-03
Sample Name:					CR09a-SSD-COMP	CR09b-SSD-COMP	CR10-SSD-COMP	CR01-10cm	CR02-10cm	CR03-10cm
Collection Date:	SCO—Dry	CSL—Dry	SCO—Organic	CSL—Organic	10/13/2015	10/13/2015	10/14/2015	11/08/2013	11/08/2013	11/08/2013
Aroclor 1232	NV	NV	NA	NA	18 U	19 U	19 U	23 U	38 U	46 U
Aroclor 1242	NV	NV	NA	NA	18 U	19 U	19 U	18 U	19 U	19 U
Aroclor 1248	NV	NV	NA	NA	18 U	19 U	19 U	18 U	19 U	19 U
Aroclor 1254	NV	NV	NA	NA	18 U	19 U	19 U	18 U	**12 J**	19 U
Aroclor 1260	NV	NV	NA	NA	18 U	19 U	19 U	18 U	19 U	19 U
Aroclor 1268	NV	NV	NA	NA	18 U	19 U	19 U	--	--	--
Total PCBs[b]	130	1000	NA	NA	18 U	19 U	19 U	23 U	**12 J**	46 U
SVOCs—dry weight (ug/kg)										
1,2,4-Trichlorobenzene	31	51	NA	NA	4.7 U	4.8 U	**3 J**	4.8 U	4.9 U	4.8 U
1,2-Dichlorobenzene	35	50	NA	NA	4.7 U	4.8 U	**3.3 J**	4.8 U	4.9 U	4.8 U
1,4-Dichlorobenzene	110	110	NA	NA	**4.2 J**	4.8 U	**3.7 J**	4.8 U	**19 J**	4.8 U
Bis(2-ethylhexyl)phthalate	1300	1900	NA	NA	**43 J**	**39 J**	50 U	**29 J**	49 U	48 U
Butylbenzylphthalate	63	900	NA	NA	**5.1**	4.8 U	5 U	4.8 U	4.9 U	4.8 U
Dibenzofuran	540	540	NA	NA	19 U	19 U	**28**	**12 J**	**20**	19 U
Diethylphthalate	200	>1200	NA	NA	19 U	19 U	20 U	**56**	**20**	**36**
Dimethyl phthalate	71	160	NA	NA	4.7 U	4.8 U	5 U	4.8 U	3.1 J	**2.5 J**
Di-n-butyl phthalate	1400	1400	NA	NA	19 U	19 U	20 U	19 U	20 U	19 U
Di-n-octyl phthalate	6200	6200	NA	NA	19 U	19 U	20 U	19 U	20 U	19 U
Hexachlorobenzene	22	70	NA	NA	4.7 U	4.8 U	**3.3 J**	4.8 U	4.9 U	4.8 U
Hexachlorobutadiene	11	120	NA	NA	4.7 U	4.8 U	**2.8 J**	4.8 U	4.9 U	4.8 U
N-Nitrosodiphenylamine	28	40	NA	NA	4.7 U	4.8 U	5 U	4.8 U	4.9 U	4.8 U
PAHs—dry weight (ug/kg)										
2-Methylnaphthalene	670	670	NA	NA	19 U	19 U	**26**	19 U	**28**	19 U
Acenaphthene	500	500	NA	NA	19 U	19 U	**24**	**14 J**	**20**	19 U
Acenaphthylene	1300	1300	NA	NA	19 U	19 U	**59**	19 U	**68**	19 U
Anthracene	960	960	NA	NA	19 U	**11 J**	**26**	**14 J**	**16 J**	19 U
Benzo(a)anthracene	1300	1600	NA	NA	19 U	**14 J**	**46**	**28**	**11 J**	19 U
Benzo(a)pyrene	1600	1600	NA	NA	19 U	**12 J**	**32**	**21**	20 U	19 U
Benzo(ghi)perylene	670	720	NA	NA	19 U	**14 J**	**29**	**14 J**	**15 J**	19 U
Chrysene	1400	2800	NA	NA	**10 J**	**24**	**56**	**35**	**17 J**	19 U
Dibenzo(a,h)anthracene	230	230	NA	NA	4.7 U	**3.9 J**	**8.5**	**3 J**	4.9 U	4.8 U
Fluoranthene	1700	2500	NA	NA	**22**	**52**	**180**	**100**	**63**	**25**
Fluorene	540	540	NA	NA	19 U	**14 J**	**29**	**14 J**	**15 J**	19 U
Indeno(1,2,3-cd)pyrene	600	690	NA	NA	19 U	**13 J**	**19 J**	19 U	20 U	19 U
Naphthalene	2100	2100	NA	NA	**45**	19 U	**200**	**25**	**280**	**23**
Phenanthrene	1500	1500	NA	NA	**26**	**52**	**110**	**47**	**89**	**19**
Pyrene	2600	3300	NA	NA	**17 J**	**40**	**150**	**110**	**61**	**21**
Total Benzofluoranthenes	3200	3600	NA	NA	**12 J**	**34 J**	**110**	**52**	**22 J**	**13 J**
Total HPAHs[b]	12000	17000	NA	NA	**61 J**	**207 J**	**631 J**	**363**	**189**	**59**
Total LPAHs[b]	5200	5200	NA	NA	**71**	**96 J**	**448**	**114**	**488**	**42**

Table 7-5
Sediment Analytical Results and Screening Criteria
Seaport Landing Aquatic Land Lease
Aberdeen, Washington

Investigation Area:	SMS Marine Cleanup Screening Levels				Beach Area		Shannon Slough	Chehalis River (2013)		
Location:					CR-09A	CR-09B	CR-10	CR-01	CR-02	CR-03
Sample Name:					CR09a-SSD-COMP	CR09b-SSD-COMP	CR10-SSD-COMP	CR01-10cm	CR02-10cm	CR03-10cm
Collection Date:	SCO—Dry	CSL—Dry	SCO—Organic	CSL—Organic	10/13/2015	10/13/2015	10/14/2015	11/08/2013	11/08/2013	11/08/2013
Total Metals—dry weight (mg/kg)										
Arsenic	57	93	NA	NA	9 U	9 U	**30**	10 U	9 U	10 U
Cadmium	5.1	6.7	NA	NA	0.4 U	**0.4**	0.4 U	**0.5**	**0.4**	0.5 U
Chromium	260	270	NA	NA	**31**	**39.9**	**42**	**40 J**	**38.5 J**	**48 J**
Copper	390	390	NA	NA	**40.8**	**49.2**	**54.8**	**58 J**	**56.3 J**	**65.4 J**
Lead	450	530	NA	NA	**8**	**10**	**11**	**7**	**9**	**8**
Mercury	0.41	0.59	NA	NA	**0.04**	**0.06**	**0.07**	**0.05**	**0.1**	**0.09**
Silver	6.1	6.1	NA	NA	0.5 U	0.5 U	0.6 U	0.7 U	0.6 U	0.8 U
Zinc	410	960	NA	NA	**68**	**80**	**83**	**87**	**79**	**91**
SVOCs—dry weight (ug/kg)										
1,3-Dichlorobenzene	NA	NA	NA	NA	--	--	--	4.8 U	4.9 U	4.8 U
2,4-Dimethylphenol	29	29	NA	NA	24 U	24 U	25 U	24 U	24 U	24 U
2-Methylphenol	63	63	NA	NA	**4 J**	**7.3**	**7.7**	4.8 U	4.9 U	**3.3 J**
3,4-Methylphenol	NA	NA	NA	NA	--	--	--	--	--	--
4-Methylphenol	670	670	NA	NA	**26**	19 U	**160 J**	**30**	**730**	**60**
Benzoic acid	650	650	NA	NA	**230**	**380**	**210 J**	190 U	**240**	**180 J**
Benzyl alcohol	57	73	NA	NA	19 U	**58**	**22**	**15 J**	**43 J**	**43 J**
Pentachlorophenol	360	690	NA	NA	19 UJ	19 UJ	**23**	19 U	20 U	19 U
Phenol	420	1200	NA	NA	**130**	**200**	**51**	**24**	**94**	**43**
PAHs—dry weight (ug/kg)										
1-Methylnaphthalene	NV	NV	NA	NA	**9.5 J**	19 U	**15 J**	--	--	--
TCLP Metals (mg/L)										
Lead	NA	NA	NA	NA	--	--	--	--	--	--
Mercury	NA	NA	NA	NA	--	--	--	--	--	--
Dioxins/Furans—dry weight (pg/g)										
1,2,3,4,6,7,8-HpCDD	NV	NV	NA	NA	**95.4**	**107**	--	**211**	**201**	**66.1**
1,2,3,4,6,7,8-HpCDF	NV	NV	NA	NA	**14.6**	**23.9**	--	**31.9**	**113**	**24.7**
1,2,3,4,7,8,9-HpCDF	NV	NV	NA	NA	**0.908 J**	**1.15**	--	**1.59**	**4.94**	**0.894 J**
1,2,3,4,7,8-HxCDD	NV	NV	NA	NA	**1.32**	**1.57**	--	**1.76**	**1.96**	**1.42**
1,2,3,4,7,8-HxCDF	NV	NV	NA	NA	0.991 U	1.16 U	--	**2.77**	**4.6**	**1.02**
1,2,3,6,7,8-HxCDD	NV	NV	NA	NA	**5.25**	**6.27**	--	**9.98**	**10.4**	**4.81**
1,2,3,6,7,8-HxCDF	NV	NV	NA	NA	**0.626 J**	**0.924 J**	--	**1.19**	**3.22**	**0.862 J**
1,2,3,7,8,9-HxCDD	NV	NV	NA	NA	**5.49**	**7.96**	--	**11.1**	**12.4**	**12.9**
1,2,3,7,8,9-HxCDF	NV	NV	NA	NA	**0.395 J**	**0.42 J**	--	0.778 U	**0.886 J**	**0.268 J**
1,2,3,7,8-PeCDD	NV	NV	NA	NA	**1.99**	**3.16**	--	**3.93**	**4.53**	**5.08**
1,2,3,7,8-PeCDF	NV	NV	NA	NA	0.383 U	**0.394 J**	--	**0.683 J**	**0.804 J**	**0.508 J**
2,3,4,6,7,8-HxCDF	NV	NV	NA	NA	**0.991**	**1.36**	--	**1.8**	**5.58**	**0.785 J**
2,3,4,7,8-PeCDF	NV	NV	NA	NA	0.379 U	0.528 U	--	**0.814 J**	**1.13**	**0.594 J**
2,3,7,8-TCDD	NV	NV	NA	NA	**1.18**	2.06 U	--	**2.62**	**2.89**	**3.56**
2,3,7,8-TCDF	NV	NV	NA	NA	**0.831 J**	**1.63**	--	**1.96**	**2.18**	**1.34**
OCDD	NV	NV	NA	NA	**700**	**788**	--	**1690**	**1550**	**489**

Table 7-5
Sediment Analytical Results and Screening Criteria
Seaport Landing Aquatic Land Lease
Aberdeen, Washington

Investigation Area:	SMS Marine Cleanup Screening Levels				Beach Area		Shannon Slough	Chehalis River (2013)		
Location:					CR-09A	CR-09B	CR-10	CR-01	CR-02	CR-03
Sample Name:					CR09a-SSD-COMP	CR09b-SSD-COMP	CR10-SSD-COMP	CR01-10cm	CR02-10cm	CR03-10cm
Collection Date:	SCO—Dry	CSL—Dry	SCO—Organic	CSL—Organic	10/13/2015	10/13/2015	10/14/2015	11/08/2013	11/08/2013	11/08/2013
OCDF	NV	NV	NA	NA	**23.8**	**33.8**	--	**51**	**211**	**36.4**
Total HpCDDs	NV	NV	NA	NA	**225**	**273**	--	**485**	**433**	**167**
Total HpCDFs	NV	NV	NA	NA	**37.3**	58.9 U	--	87.1 U	**310**	**55.9**
Total HxCDDs	NV	NV	NA	NA	48.3 U	72.3 U	--	**97**	**114**	80.8 U
Total HxCDFs	NV	NV	NA	NA	22.2 U	30.8 U	--	52.5 U	**125**	24.4 U
Total PeCDDs	NV	NV	NA	NA	12.4 U	21 U	--	**25.8**	**34.9**	**30.6**
Total PeCDFs	NV	NV	NA	NA	10.6 U	16.5 U	--	18 U	47.6 U	13.2 U
Total TCDDs	NV	NV	NA	NA	8.55 U	15.4 U	--	17.4 U	28.1 U	24.7 U
Total TCDFs	NV	NV	NA	NA	6.42 U	12.5 U	--	12.4 U	33 U	16.7 U
Dioxin TEQ	NV	NV	NA	NA	**6.10**	**7.92**	--	**12.9**	**15.6**	**12.2**
Petroleum Hydrocarbons—dry weight (mg/kg)										
Gasoline	NV	NV	NV	NV	--	--	--	--	--	--
Diesel	NV	NV	NV	NV	--	--	--	--	--	--
Motor-Oil Range	NV	NV	NV	NV	--	--	--	--	--	--
Conventionals										
Ammonia (as N) (mg N/kg)	NV	NV	NV	NV	--	--	--	--	--	--
Sulfide (mg/kg)	NV	NV	NV	NV	--	--	--	--	--	--
Total Volatile Solids (%)	NV	NV	NV	NV	--	--	--	--	--	--
Fixed Solids (%)	NV	NV	NV	NV	--	--	--	--	--	--
Total solids (%)	NV	NV	NV	NV	**55.6**	**59.33**	**45.44**	**44.09**	**51.8**	**36.4**
Grain Size (%)										
Gravel	NV	NV	NV	NV	--	--	--	--	--	--
Very coarse sand	NV	NV	NV	NV	--	--	--	--	--	--
Coarse sand	NV	NV	NV	NV	--	--	--	--	--	--
Medium sand	NV	NV	NV	NV	--	--	--	--	--	--
Fine sand	NV	NV	NV	NV	--	--	--	--	--	--
Very fine sand	NV	NV	NV	NV	--	--	--	--	--	--
Coarse silt	NV	NV	NV	NV	--	--	--	--	--	--
Medium silt	NV	NV	NV	NV	--	--	--	--	--	--
Fine silt	NV	NV	NV	NV	--	--	--	--	--	--
Very fine silt	NV	NV	NV	NV	--	--	--	--	--	--
Coarse clay	NV	NV	NV	NV	--	--	--	--	--	--
Medium clay	NV	NV	NV	NV	--	--	--	--	--	--
Fine clay	NV	NV	NV	NV	--	--	--	--	--	--
Total fines	NV	NV	NV	NV	--	--	--	--	--	--
Asbestos (%)										
Asbestos	NV	NV	NV	NV	--	--	--	--	--	--
Pore Water Analysis										
Conductivity (uS/cm)	NV	NV	NV	NV	--	--	--	**18700**	**12200**	**17500**
Salinity (ppt)	NV	NV	NV	NV	--	--	--	**11**	**6.9**	**10.2**

Table 7-5
Sediment Analytical Results and Screening Criteria
Seaport Landing Aquatic Land Lease
Aberdeen, Washington

Investigation Area:	SMS Marine Cleanup Screening Levels				Former Mill Area/Pocket Beach and Chehalis River						
Location:					Old Mill North	Old Mill North	Old Mill North	Old Mill West	Old Mill East	Old Mill West	Old Mill West
Sample Name:					DNR-SSFM1	DNR-SCFM1A	DNR-SSFM1-COMP	DNR-SSFM2	DNR-SSFM3	DNR-SCFM2A	DNR-SCFM2B
Collection Date:	SCO—Dry Weight	CSL—Dry Weight	SCO—Organic Carbon	CSL—Organic Carbon	Apr-11	Apr-11	Apr-11	Apr-11	Apr-11	Apr-11	Apr-11
Collection Depth (ft bml):					0-0.33	0-2.5	0-0.33	0-0.33	0-0.33	0-2.7	2.7-4.6
Conventionals (%)											
Total Organic Carbon	NV	NV	NV	NV	**25**	**28**	--	**32**	**30**	**21**	**40**
PCBs (ug/kg-OC)											
Total PCBs[b]	NA	NA	12000	65000	160 U	**50**	--	178 U	213 U	**162 P**	16 U
SVOCs (ug/kg-OC)											
1,2,4-Trichlorobenzene	NA	NA	810	1800	84 U	82 U	--	94 U	110 U	114 U	80 U
1,2-Dichlorobenzene	NA	NA	2300	2300	84 U	82 U	--	94 U	110 U	114 U	80 U
1,4-Dichlorobenzene	NA	NA	3100	9000	84 U	82 U	--	**406**	110 U	**2000**	80 U
Bis(2-ethylhexyl)phthalate	NA	NA	47000	78000	2520 U	2429 U	--	**12188**	3267 U	**4286**	2425 U
Butylbenzylphthalate	NA	NA	4900	64000	168 U	161 U		188 U	217 U	229 U	160 U
Dibenzofuran	NA	NA	15000	58000	**300**	**607**	--	**244**	**600**	**857**	160 U
Diethylphthalate	NA	NA	61000	110000	168 U	161 U	--	188 U	217 U	229 U	160 U
Dimethyl phthalate	NA	NA	53000	53000	168 U	161 U	--	188 U	217 U	229 U	160 U
Di-n-butyl phthalate	NA	NA	220000	1700000	336 U	325 U	--	375 U	433 U	**457**	325 U
Di-n-octyl phthalate	NA	NA	58000	4500000	336 U	325 U	--	375 U	**1067**	**1952**	**375**
Hexachlorobenzene	NA	NA	380	2300	84 U	82 U	--	94 U	110 U	114 U	80 U
Hexachlorobutadiene	NA	NA	3900	6200	84 U	82 U	--	94 U	110 U	114 U	80 U
N-Nitrosodiphenylamine	NA	NA	11000	11000	84 U	82 U	--	94 U	110 U	114 U	80 U
PAHs (ug/kg-OC)											
2-Methylnaphthalene	NA	NA	38000	64000	**188**	**207**	--	**66**	**467**	**1238**	**183**
Acenaphthene	NA	NA	16000	57000	**680**	**1286**	--	**81**	**533**	**1000**	**243**
Acenaphthylene	NA	NA	66000	66000	**180**	**189**	--	**116**	**500**	**857**	**128**
Anthracene	NA	NA	220000	1200000	**276**	**429**	--	**375**	**767**	**1000**	**113**
Benzo(a)anthracene	NA	NA	110000	270000	**840**	**929**	--	**875**	**1933**	**3476**	**300**
Benzo(a)pyrene	NA	NA	99000	210000	**520**	**929**	--	**531**	**1633**	**2571**	**450**
Benzo(ghi)perylene	NA	NA	31000	78000	**272**	**429**	--	**406**	**967**	**1190**	**250**
Chrysene	NA	NA	110000	460000	**920**	**1214**	--	**1313**	**2333**	**3762**	**525**
Dibenzo(a,h)anthracene	NA	NA	12000	33000	68 U	**132**	--	75 U	**277**	**410**	65 U
Fluoranthene	NA	NA	160000	1200000	**2920**	**3571**	--	**3125**	**4333**	**7143**	**800**
Fluorene	NA	NA	23000	79000	**440**	**1071**	--	**194**	**567**	**952**	**198**
Indeno(1,2,3-cd)pyrene	NA	NA	34000	88000	**244**	**464**	--	**344**	**733**	**1048**	**243**
Naphthalene	NA	NA	99000	170000	**520**	**357**	--	**109**	**867**	**3857**	**525**
Phenanthrene	NA	NA	100000	480000	**680**	**3214**	--	**813**	**3667**	**4238**	**600**
Pyrene	NA	NA	1000000	1400000	**2440**	**2750**	--	**2344**	**4667**	**7143**	**1200**
Total Benzofluoranthenes	NA	NA	230000	450000	**1240**	**2143**	--	**2156**	**4000**	**7143**	65 U
Total HPAHs[b]	NA	NA	960000	5300000	**9396**	**12561**	--	**11094**	**20877**	**33886**	**3768**
Total LPAHs[b]	NA	NA	370000	780000	**2776**	**6546**	--	**1688**	**6900**	**11905**	**1805**
PCBs—dry weight (ug/kg)											
Aroclor 1016	NV	NV	NA	NA	40 U	4.5 U	--	57 U	64 U	4.7 U	6.5 U
Aroclor 1221	NV	NV	NA	NA	40 U	4.5 U	--	57 U	64 U	4.7 U	6.5 U

Table 7-5
Sediment Analytical Results and Screening Criteria
Seaport Landing Aquatic Land Lease
Aberdeen, Washington

Investigation Area:	SMS Marine Cleanup Screening Levels				Former Mill Area/Pocket Beach and Chehalis River						
Location:					Old Mill North	Old Mill North	Old Mill North	Old Mill West	Old Mill East	Old Mill West	Old Mill West
Sample Name:					DNR-SSFM1	DNR-SCFM1A	DNR-SSFM1-COMP	DNR-SSFM2	DNR-SSFM3	DNR-SCFM2A	DNR-SCFM2B
Collection Date:	SCO—Dry	CSL—Dry	SCO—Organic	CSL—Organic	Apr-11	Apr-11	Apr-11	Apr-11	Apr-11	Apr-11	Apr-11
Aroclor 1232	NV	NV	NA	NA	40 U	4.5 U	--	57 U	64 U	4.7 U	6.5 U
Aroclor 1242	NV	NV	NA	NA	40 U	4.5 U	--	57 U	64 U	4.7 U	6.5 U
Aroclor 1248	NV	NV	NA	NA	40 U	4.5 U	--	57 U	64 U	4.7 U	6.5 U
Aroclor 1254	NV	NV	NA	NA	40 U	4.5 U	--	57 U	64 U	4.7 U	6.5 U
Aroclor 1260	NV	NV	NA	NA	40 U	**14**	--	57 U	64 U	**34 P**	6.5 U
Aroclor 1268	NV	NV	NA	NA	--	--	--	--	--	--	--
Total PCBs[b]	130	1000	NA	NA	40 U	**14**	--	57 U	64 U	**34**	6.5 U
SVOCs—dry weight (ug/kg)											
1,2,4-Trichlorobenzene	31	51	NA	NA	21 U	23 U	--	30 U	33 U	24 U	32 U
1,2-Dichlorobenzene	35	50	NA	NA	21 U	23 U	--	30 U	33 U	24 U	32 U
1,4-Dichlorobenzene	110	110	NA	NA	21 U	23 U	--	**130**	33 U	**420**	32 U
Bis(2-ethylhexyl)phthalate	1300	1900	NA	NA	630 U	680 U	--	**3900**	980 U	**900**	970 U
Butylbenzylphthalate	63	900	NA	NA	42 U	45 U		60 U	65 U	48 U	64 U
Dibenzofuran	540	540	NA	NA	**75**	**170**	--	**78**	**180**	**180**	64 U
Diethylphthalate	200	>1200	NA	NA	42 U	45 U	--	60 U	65 U	48 U	64 U
Dimethyl phthalate	71	160	NA	NA	42 U	45 U	--	60 U	65 U	48 U	64 U
Di-n-butyl phthalate	1400	1400	NA	NA	84 U	91 U	--	120 U	130 U	**96**	130 U
Di-n-octyl phthalate	6200	6200	NA	NA	84 U	91 U	--	120 U	**320**	**410**	**150**
Hexachlorobenzene	22	70	NA	NA	21 U	23 U	--	30 U	33 U	24 U	32 U
Hexachlorobutadiene	11	120	NA	NA	21 U	23 U	--	30 U	33 U	24 U	32 U
N-Nitrosodiphenylamine	28	40	NA	NA	21 U	23 U	--	30 U	33 U	24 U	32 U
PAHs—dry weight (ug/kg)											
2-Methylnaphthalene	670	670	NA	NA	**47**	**58**	--	**21**	**140**	**260**	**73**
Acenaphthene	500	500	NA	NA	**170**	**360**	--	**26**	**160**	**210**	**97**
Acenaphthylene	1300	1300	NA	NA	**45**	**53**	--	**37**	**150**	**180**	**51**
Anthracene	960	960	NA	NA	**69**	**120**	--	**120**	**230**	**210**	**45**
Benzo(a)anthracene	1300	1600	NA	NA	**210**	**260**	--	**280**	**580**	**730**	**120**
Benzo(a)pyrene	1600	1600	NA	NA	**130**	**260**	--	**170**	**490**	**540**	**180**
Benzo(ghi)perylene	670	720	NA	NA	**68**	**120**	--	**130**	**290**	**250**	**100**
Chrysene	1400	2800	NA	NA	**230**	**340**	--	**420**	**700**	**790**	**210**
Dibenzo(a,h)anthracene	230	230	NA	NA	17 U	**37**	--	24 U	**83**	**86**	26 U
Fluoranthene	1700	2500	NA	NA	**730**	**1000**	--	**1000**	**1300**	**1500**	**320**
Fluorene	540	540	NA	NA	**110**	**300**	--	**62**	**170**	**200**	**79**
Indeno(1,2,3-cd)pyrene	600	690	NA	NA	**61**	**130**	--	**110**	**220**	**220**	**97**
Naphthalene	2100	2100	NA	NA	**130**	**100**	--	**35**	**260**	**810**	**210**
Phenanthrene	1500	1500	NA	NA	**170**	**900**	--	**260**	**1100**	**890**	**240**
Pyrene	2600	3300	NA	NA	**610**	**770**	--	**750**	**1400**	**1500**	**480**
Total Benzofluoranthenes	3200	3600	NA	NA	**310**	**600**	--	**690**	**1200**	**1500**	26 U
Total HPAHs[b]	12000	17000	NA	NA	**2349**	**3517**	--	**3550**	**6263**	**7116**	**1507**
Total LPAHs[b]	5200	5200	NA	NA	**694**	**1833**	--	**540**	**2070**	**2500**	**722**

Table 7-5
Sediment Analytical Results and Screening Criteria
Seaport Landing Aquatic Land Lease
Aberdeen, Washington

Investigation Area:	SMS Marine Cleanup Screening Levels				Former Mill Area/Pocket Beach and Chehalis River						
Location:					Old Mill North	Old Mill North	Old Mill North	Old Mill West	Old Mill East	Old Mill West	Old Mill West
Sample Name:					DNR-SSFM1	DNR-SCFM1A	DNR-SSFM1-COMP	DNR-SSFM2	DNR-SSFM3	DNR-SCFM2A	DNR-SCFM2B
Collection Date:	SCO—Dry	CSL—Dry	SCO—Organic	CSL—Organic	Apr-11	Apr-11	Apr-11	Apr-11	Apr-11	Apr-11	Apr-11
Total Metals—dry weight (mg/kg)											
Arsenic	57	93	NA	NA	**12**	8.2 U	--	16 U	18 U	10 U	17 U
Cadmium	5.1	6.7	NA	NA	**3.3**	1.4 U	--	2.7 U	3 U	1.7 U	2.9 U
Chromium	260	270	NA	NA	**60**	**19**	--	**21**	**24**	**35**	**9.5**
Copper	390	390	NA	NA	**120**	**76**	--	**73**	**100**	**85**	**25**
Lead	450	530	NA	NA	**31**	**260**	--	**46**	**99**	**180**	**24**
Mercury	0.41	0.59	NA	NA	**0.19**	**0.18**	--	**1.2**	**0.77**	**2.5**	**2**
Silver	6.1	6.1	NA	NA	3.8 U	2.7 U	--	5.4 U	6 U	3.3 U	5.7 U
Zinc	410	960	NA	NA	**120**	**120**	--	**310**	**230**	**580**	**67**
SVOCs—dry weight (ug/kg)											
1,3-Dichlorobenzene	NA	NA	NA	NA	--	--	--	--	--	--	--
2,4-Dimethylphenol	29	29	NA	NA	42 U	45 U	--	60 U	65 U	48 U	64 U
2-Methylphenol	63	63	NA	NA	42 U	45 U	--	60 U	65 U	48 U	64 U
3,4-Methylphenol	NA	NA	NA	NA	**150**	**210**	--	120 U	**650**	**240**	**1100**
4-Methylphenol	670	670	NA	NA	--	--	--	--	--	--	--
Benzoic acid	650	650	NA	NA	1100 U	1100 U	--	1500 U	1600 U	1200 U	1600 U
Benzyl alcohol	57	73	NA	NA	42 U	45 U	--	60 U	65 U	48 U	64 U
Pentachlorophenol	360	690	NA	NA	84 U	91 U	--	120 U	130 U	**2100**	**180**
Phenol	420	1200	NA	NA	42 U	**52**	--	60 U	**77**	**130**	**230**
PAHs—dry weight (ug/kg)											
1-Methylnaphthalene	NV	NV	NA	NA	--	--	--	--	--	--	--
TCLP Metals (mg/L)											
Lead	NA	NA	NA	NA	--	--	--	--	--	--	--
Mercury	NA	NA	NA	NA	--	--	--	--	--	--	--
Dioxins/Furans—dry weight (pg/g)											
1,2,3,4,6,7,8-HpCDD	NV	NV	NA	NA	--	--	2400	--	--	--	--
1,2,3,4,6,7,8-HpCDF	NV	NV	NA	NA	--	--	290	--	--	--	--
1,2,3,4,7,8,9-HpCDF	NV	NV	NA	NA	--	--	**12 JQ**	--	--	--	--
1,2,3,4,7,8-HxCDD	NV	NV	NA	NA	--	--	**13 JQ**	--	--	--	--
1,2,3,4,7,8-HxCDF	NV	NV	NA	NA	--	--	**22 J**	--	--	--	--
1,2,3,6,7,8-HxCDD	NV	NV	NA	NA	--	--	**180**	--	--	--	--
1,2,3,6,7,8-HxCDF	NV	NV	NA	NA	--	--	9.5 U	--	--	--	--
1,2,3,7,8,9-HxCDD	NV	NV	NA	NA	--	--	**39**	--	--	--	--
1,2,3,7,8,9-HxCDF	NV	NV	NA	NA	--	--	3.9 U	--	--	--	--
1,2,3,7,8-PeCDD	NV	NV	NA	NA	--	--	11 U	--	--	--	--
1,2,3,7,8-PeCDF	NV	NV	NA	NA	--	--	4.5 U	--	--	--	--
2,3,4,6,7,8-HxCDF	NV	NV	NA	NA	--	--	8.9 U	--	--	--	--
2,3,4,7,8-PeCDF	NV	NV	NA	NA	--	--	7.5 U	--	--	--	--
2,3,7,8-TCDD	NV	NV	NA	NA	--	--	**2.7 J**	--	--	--	--
2,3,7,8-TCDF	NV	NV	NA	NA	--	--	**5.3 CON**	--	--	--	--
OCDD	NV	NV	NA	NA	--	--	**16000**	--	--	--	--

Table 7-5
Sediment Analytical Results and Screening Criteria
Seaport Landing Aquatic Land Lease
Aberdeen, Washington

Investigation Area:	SMS Marine Cleanup Screening Levels				Former Mill Area/Pocket Beach and Chehalis River						
Location:					Old Mill North	Old Mill North	Old Mill North	Old Mill West	Old Mill East	Old Mill West	Old Mill West
Sample Name:					DNR-SSFM1	DNR-SCFM1A	DNR-SSFM1-COMP	DNR-SSFM2	DNR-SSFM3	DNR-SCFM2A	DNR-SCFM2B
Collection Date:	SCO—Dry	CSL—Dry	SCO—Organic	CSL—Organic	Apr-11	Apr-11	Apr-11	Apr-11	Apr-11	Apr-11	Apr-11
OCDF	NV	NV	NA	NA	--	--	**690**	--	--	--	--
Total HpCDDs	NV	NV	NA	NA	--	--	**5400**	--	--	--	--
Total HpCDFs	NV	NV	NA	NA	--	--	**1200**	--	--	--	--
Total HxCDDs	NV	NV	NA	NA	--	--	**1400**	--	--	--	--
Total HxCDFs	NV	NV	NA	NA	--	--	**630**	--	--	--	--
Total PeCDDs	NV	NV	NA	NA	--	--	**53**	--	--	--	--
Total PeCDFs	NV	NV	NA	NA	--	--	**120**	--	--	--	--
Total TCDDs	NV	NV	NA	NA	--	--	**19**	--	--	--	--
Total TCDFs	NV	NV	NA	NA	--	--	**56**	--	--	--	--
Dioxin TEQ	NV	NV	NA	NA	--	--	**68**	--	--	--	--
Petroleum Hydrocarbons—dry weight (mg/kg)											
Gasoline	NV	NV	NV	NV	--	--	--	--	--	--	--
Diesel	NV	NV	NV	NV	--	--	--	--	--	--	--
Motor-Oil Range	NV	NV	NV	NV	--	--	--	--	--	--	--
Conventionals											
Ammonia (as N) (mg N/kg)	NV	NV	NV	NV	**25**	**28**	--	**32**	**30**	**21**	**40**
Sulfide (mg/kg)	NV	NV	NV	NV	**24**	**22**	--	**17**	**15**	**21**	**15**
Total Volatile Solids (%)	NV	NV	NV	NV	--	--	--	--	--	--	--
Fixed Solids (%)	NV	NV	NV	NV	--	--	--	--	--	--	--
Total solids (%)	NV	NV	NV	NV	**24**	**22**	**21.7**	**17**	**15**	**21**	**15**
Grain Size (%)											
Gravel	NV	NV	NV	NV	--	--	--	--	--	--	--
Very coarse sand	NV	NV	NV	NV	--	--	--	--	--	--	--
Coarse sand	NV	NV	NV	NV	--	--	--	--	--	--	--
Medium sand	NV	NV	NV	NV	--	--	--	--	--	--	--
Fine sand	NV	NV	NV	NV	--	--	--	--	--	--	--
Very fine sand	NV	NV	NV	NV	--	--	--	--	--	--	--
Coarse silt	NV	NV	NV	NV	--	--	--	--	--	--	--
Medium silt	NV	NV	NV	NV	--	--	--	--	--	--	--
Fine silt	NV	NV	NV	NV	--	--	--	--	--	--	--
Very fine silt	NV	NV	NV	NV	--	--	--	--	--	--	--
Coarse clay	NV	NV	NV	NV	--	--	--	--	--	--	--
Medium clay	NV	NV	NV	NV	--	--	--	--	--	--	--
Fine clay	NV	NV	NV	NV	--	--	--	--	--	--	--
Total fines	NV	NV	NV	NV	--	--	--	--	--	--	--
Asbestos (%)											
Asbestos	NV	NV	NV	NV	--	--	--	--	--	--	--
Pore Water Analysis											
Conductivity (uS/cm)	NV	NV	NV	NV	--	--	--	--	--	--	--
Salinity (ppt)	NV	NV	NV	NV	--	--	--	--	--	--	--

Table 7-5
Sediment Analytical Results and Screening Criteria
Seaport Landing Aquatic Land Lease
Aberdeen, Washington

Investigation Area:	SMS Marine Cleanup Screening Levels				Former Mill Area/Pocket Beach and Chehalis River					
Location:					Old Mill East	CR-04	CR-04	CR-04	CR-05	CR-05
Sample Name:					DNR-SCFM3A	CR04-10cm	CR04-2.5	CR04-5	CR05-10cm	CR05-2.5
Collection Date:	SCO—Dry Weight	CSL—Dry Weight	SCO—Organic Carbon	CSL—Organic Carbon	Apr-11	11/07/2013	11/08/2013	11/08/2013	11/08/2013	11/08/2013
Collection Depth (ft bml):					0-3.0	0-0.33	1-2.5	2.5-5	0-0.33	0.33-2.5
Conventionals (%)										
Total Organic Carbon	NV	NV	NV	NV	**31**	**31.4 J**	--	**16.5 J**	**13.6 J**	--
PCBs (ug/kg-OC)										
Total PCBs[b]	NA	NA	12000	65000	**1290**	NA	NA	--	NA	NA
SVOCs (ug/kg-OC)										
1,2,4-Trichlorobenzene	NA	NA	810	1800	**645**	NA	NA	--	NA	NA
1,2-Dichlorobenzene	NA	NA	2300	2300	419 U	NA	NA	--	NA	NA
1,4-Dichlorobenzene	NA	NA	3100	9000	419 U	NA	NA	--	NA	NA
Bis(2-ethylhexyl)phthalate	NA	NA	47000	78000	12581 U	NA	NA	--	NA	NA
Butylbenzylphthalate	NA	NA	4900	64000	839 U	NA	NA	--	NA	NA
Dibenzofuran	NA	NA	15000	58000	**1129**	NA	NA	--	NA	NA
Diethylphthalate	NA	NA	61000	110000	839 U	NA	NA	--	NA	NA
Dimethyl phthalate	NA	NA	53000	53000	839 U	NA	NA	--	NA	NA
Di-n-butyl phthalate	NA	NA	220000	1700000	1677 U	NA	NA	--	NA	NA
Di-n-octyl phthalate	NA	NA	58000	4500000	**2871**	NA	NA	--	NA	NA
Hexachlorobenzene	NA	NA	380	2300	419 U	NA	NA	--	NA	NA
Hexachlorobutadiene	NA	NA	3900	6200	419 U	NA	NA	--	NA	NA
N-Nitrosodiphenylamine	NA	NA	11000	11000	419 U	NA	NA	--	NA	NA
PAHs (ug/kg-OC)										
2-Methylnaphthalene	NA	NA	38000	64000	**419**	NA	NA	NA	NA	NA
Acenaphthene	NA	NA	16000	57000	**3548**	NA	NA	NA	NA	NA
Acenaphthylene	NA	NA	66000	66000	**277**	NA	NA	NA	NA	NA
Anthracene	NA	NA	220000	1200000	**1032**	NA	NA	NA	NA	NA
Benzo(a)anthracene	NA	NA	110000	270000	**2258**	NA	NA	NA	NA	NA
Benzo(a)pyrene	NA	NA	99000	210000	**1323**	NA	NA	NA	NA	NA
Benzo(ghi)perylene	NA	NA	31000	78000	**806**	NA	NA	NA	NA	NA
Chrysene	NA	NA	110000	460000	**2290**	NA	NA	NA	NA	NA
Dibenzo(a,h)anthracene	NA	NA	12000	33000	323 U	NA	NA	NA	NA	NA
Fluoranthene	NA	NA	160000	1200000	**10645**	NA	NA	NA	NA	NA
Fluorene	NA	NA	23000	79000	**1645**	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	NA	NA	34000	88000	**645**	NA	NA	NA	NA	NA
Naphthalene	NA	NA	99000	170000	**903**	NA	NA	NA	NA	NA
Phenanthrene	NA	NA	100000	480000	**1806**	NA	NA	NA	NA	NA
Pyrene	NA	NA	1000000	1400000	**8710**	NA	NA	NA	NA	NA
Total Benzofluoranthenes	NA	NA	230000	450000	323 U	NA	NA	NA	NA	NA
Total HPAHs[b]	NA	NA	960000	5300000	**26677**	NA	NA	NA	NA	NA
Total LPAHs[b]	NA	NA	370000	780000	**9213**	NA	NA	NA	NA	NA
PCBs—dry weight (ug/kg)										
Aroclor 1016	NV	NV	NA	NA	5.3 U	20 UJ	19 UJ	--	20 UJ	19 UJ
Aroclor 1221	NV	NV	NA	NA	5.3 U	20 UJ	19 UJ	--	20 UJ	19 UJ

Table 7-5
Sediment Analytical Results and Screening Criteria
Seaport Landing Aquatic Land Lease
Aberdeen, Washington

Investigation Area:	SMS Marine Cleanup Screening Levels				Former Mill Area/Pocket Beach and Chehalis River					
Location:					Old Mill East	CR-04	CR-04	CR-04	CR-05	CR-05
Sample Name:					DNR-SCFM3A	CR04-10cm	CR04-2.5	CR04-5	CR05-10cm	CR05-2.5
Collection Date:	SCO—Dry	CSL—Dry	SCO—Organic	CSL—Organic	Apr-11	11/07/2013	11/08/2013	11/08/2013	11/08/2013	11/08/2013
Aroclor 1232	NV	NV	NA	NA	5.3 U	20 UJ	19 UJ	--	20 UJ	19 UJ
Aroclor 1242	NV	NV	NA	NA	5.3 U	20 UJ	19 UJ	--	20 UJ	19 UJ
Aroclor 1248	NV	NV	NA	NA	5.3 U	29 UJ	48 UJ	--	29 UJ	97 UJ
Aroclor 1254	NV	NV	NA	NA	5.3 U	97 UJ	**440 J**	--	98 UJ	**490 J**
Aroclor 1260	NV	NV	NA	NA	**400**	**200 J**	**730 J**	--	**180 J**	**670 J**
Aroclor 1268	NV	NV	NA	NA	--	--	--	--	--	--
Total PCBs[b]	130	1000	NA	NA	**400**	**200 J**	**1170 J**	--	**180 J**	**1160 J**
SVOCs—dry weight (ug/kg)										
1,2,4-Trichlorobenzene	31	51	NA	NA	**200**	100 UJ	81 UJ	--	**43 J**	**74 J**
1,2-Dichlorobenzene	35	50	NA	NA	130 U	100 UJ	81 UJ	--	58 UJ	88 UJ
1,4-Dichlorobenzene	110	110	NA	NA	130 U	100 UJ	81 UJ	--	**1000 J**	**540 J**
Bis(2-ethylhexyl)phthalate	1300	1900	NA	NA	3900 U	1000 UJ	**870 J**	--	**960 J**	**9400 J**
Butylbenzylphthalate	63	900	NA	NA	260 U	58 UJ	81 UJ	--	58 UJ	88 UJ
Dibenzofuran	540	540	NA	NA	**350**	420 UJ	**210 J**	--	**310 J**	**230 J**
Diethylphthalate	200	>1200	NA	NA	260 U	420 UJ	320 UJ	--	230 UJ	350 UJ
Dimethyl phthalate	71	160	NA	NA	260 U	100 UJ	81 UJ	--	58 UJ	88 UJ
Di-n-butyl phthalate	1400	1400	NA	NA	520 U	420 UJ	320 UJ	--	230 UJ	350 UJ
Di-n-octyl phthalate	6200	6200	NA	NA	**890**	420 UJ	320 UJ	--	230 UJ	350 UJ
Hexachlorobenzene	22	70	NA	NA	130 U	100 UJ	81 UJ	--	58 UJ	88 UJ
Hexachlorobutadiene	11	120	NA	NA	130 U	100 UJ	81 UJ	--	58 UJ	88 UJ
N-Nitrosodiphenylamine	28	40	NA	NA	130 U	100 UJ	81 UJ	--	58 UJ	88 UJ
PAHs—dry weight (ug/kg)										
2-Methylnaphthalene	670	670	NA	NA	**130**	420 UJ	320 UJ	--	**310**	350 UJ
Acenaphthene	500	500	NA	NA	**1100**	420 UJ	**180 J**	--	**210**	**390 J**
Acenaphthylene	1300	1300	NA	NA	**86**	420 UJ	320 UJ	--	**170**	350 UJ
Anthracene	960	960	NA	NA	**320**	420 UJ	**290 J**	--	**230**	**320 J**
Benzo(a)anthracene	1300	1600	NA	NA	**700**	**250 J**	**640 J**	--	**390**	**680 J**
Benzo(a)pyrene	1600	1600	NA	NA	**410**	**300 J**	**680 J**	--	**340 J**	**530 J**
Benzo(ghi)perylene	670	720	NA	NA	**250**	**230 J**	**660 J**	--	**260 J**	**300 J**
Chrysene	1400	2800	NA	NA	**710**	**530 J**	**940 J**	--	**420 J**	**460 J**
Dibenzo(a,h)anthracene	230	230	NA	NA	100 U	**120 J**	**360 J**	--	**94 J**	**190 J**
Fluoranthene	1700	2500	NA	NA	**3300**	**590 J**	**2200 J**	--	**1300 J**	**3900 J**
Fluorene	540	540	NA	NA	**510**	420 UJ	**180 J**	--	**260 J**	**230 J**
Indeno(1,2,3-cd)pyrene	600	690	NA	NA	**200**	420 UJ	**480 J**	--	**200 J**	**190 J**
Naphthalene	2100	2100	NA	NA	**280**	**420 J**	**340 J**	--	**720 J**	**440 J**
Phenanthrene	1500	1500	NA	NA	**560**	**320 J**	**370 J**	--	**700 J**	**470 J**
Pyrene	2600	3300	NA	NA	**2700**	**700 J**	**1800 J**	--	**1300 J**	**3100 J**
Total Benzofluoranthenes	3200	3600	NA	NA	100 U	**550 J**	**1700 J**	--	**660**	**810 J**
Total HPAHs[b]	12000	17000	NA	NA	**8270**	**3270 J**	**9460 J**	--	**4964 J**	**10160 J**
Total LPAHs[b]	5200	5200	NA	NA	**2856**	**740 J**	**1360 J**	--	**2290 J**	**1850 J**

Table 7-5
Sediment Analytical Results and Screening Criteria
Seaport Landing Aquatic Land Lease
Aberdeen, Washington

Investigation Area:	SMS Marine Cleanup Screening Levels				Former Mill Area/Pocket Beach and Chehalis River					
Location:					Old Mill East	CR-04	CR-04	CR-04	CR-05	CR-05
Sample Name:					DNR-SCFM3A	CR04-10cm	CR04-2.5	CR04-5	CR05-10cm	CR05-2.5
Collection Date:	SCO—Dry	CSL—Dry	SCO—Organic	CSL—Organic	Apr-11	11/07/2013	11/08/2013	11/08/2013	11/08/2013	11/08/2013
Total Metals—dry weight (mg/kg)										
Arsenic	57	93	NA	NA	14 U	--	--	--	--	--
Cadmium	5.1	6.7	NA	NA	2.3 U	--	--	--	--	--
Chromium	260	270	NA	NA	**27**	--	--	--	--	--
Copper	390	390	NA	NA	**84**	--	--	--	--	--
Lead	450	530	NA	NA	**68**	--	--	--	--	--
Mercury	0.41	0.59	NA	NA	**0.54**	**6.2**	**0.5 J**	--	**0.16**	**0.5 J**
Silver	6.1	6.1	NA	NA	4.7 U	--	--	--	--	--
Zinc	410	960	NA	NA	**250**	--	--	--	--	--
SVOCs—dry weight (ug/kg)										
1,3-Dichlorobenzene	NA	NA	NA	NA	--	100 UJ	81 UJ	--	**620 J**	**280 J**
2,4-Dimethylphenol	29	29	NA	NA	260 U	530 UJ	400 UJ	--	290 UJ	440 UJ
2-Methylphenol	63	63	NA	NA	260 U	100 UJ	81 UJ	--	**44 J**	88 UJ
3,4-Methylphenol	NA	NA	NA	NA	520 U	--	--	--	--	--
4-Methylphenol	670	670	NA	NA	--	420 UJ	320 UJ	--	**310 J**	**280 J**
Benzoic acid	650	650	NA	NA	6500 U	**1700 J**	3200 UJ	--	**950 J**	3500 UJ
Benzyl alcohol	57	73	NA	NA	260 U	420 UJ	320 UJ	--	230 UJ	350 UJ
Pentachlorophenol	360	690	NA	NA	520 U	**270 J**	**400 J**	--	230 UJ	350 UJ
Phenol	420	1200	NA	NA	260 U	**290 J**	**390 J**	**980 J**	**570 J**	**530 J**
PAHs—dry weight (ug/kg)										
1-Methylnaphthalene	NV	NV	NA	NA	--	--	--	--	--	--
TCLP Metals (mg/L)										
Lead	NA	NA	NA	NA	--	--	--	--	--	--
Mercury	NA	NA	NA	NA	--	--	--	--	--	--
Dioxins/Furans—dry weight (pg/g)										
1,2,3,4,6,7,8-HpCDD	NV	NV	NA	NA	--	**817**	**4070**	--	**1820**	**12200**
1,2,3,4,6,7,8-HpCDF	NV	NV	NA	NA	--	**165**	**919**	--	**437**	**1170**
1,2,3,4,7,8,9-HpCDF	NV	NV	NA	NA	--	7.55 U	**42.8**	--	**19.8**	**81.3**
1,2,3,4,7,8-HxCDD	NV	NV	NA	NA	--	**4.26**	**32.5**	--	**11.2**	**24.5**
1,2,3,4,7,8-HxCDF	NV	NV	NA	NA	--	**7.26**	**35.9**	--	**15.3**	**115**
1,2,3,6,7,8-HxCDD	NV	NV	NA	NA	--	**54.5**	**350**	--	**136**	**1020**
1,2,3,6,7,8-HxCDF	NV	NV	NA	NA	--	**3.38**	**18.9**	--	**10.9**	**51.7**
1,2,3,7,8,9-HxCDD	NV	NV	NA	NA	--	**10.2**	**48.1**	--	**29.9**	**98.1**
1,2,3,7,8,9-HxCDF	NV	NV	NA	NA	--	**2.45**	**14.6**	--	**6.11**	**62.9**
1,2,3,7,8-PeCDD	NV	NV	NA	NA	--	**4.34**	**18.8**	--	**13.9**	**34.1**
1,2,3,7,8-PeCDF	NV	NV	NA	NA	--	**2.06**	**12.4**	--	**4.73**	**41.4**
2,3,4,6,7,8-HxCDF	NV	NV	NA	NA	--	**5.09**	**22.2**	--	**11.1**	**69.3**
2,3,4,7,8-PeCDF	NV	NV	NA	NA	--	**3.43**	**15.7**	--	**5.82**	**43.5**
2,3,7,8-TCDD	NV	NV	NA	NA	--	1.14 U	**3.97**	--	**3**	**5.26**
2,3,7,8-TCDF	NV	NV	NA	NA	--	**3.53**	**16**	--	**6.3**	**54.3**
OCDD	NV	NV	NA	NA	--	**5340 J**	**23500 J**	--	**10300 J**	**68300 J**

Table 7-5
Sediment Analytical Results and Screening Criteria
Seaport Landing Aquatic Land Lease
Aberdeen, Washington

Investigation Area:	SMS Marine Cleanup Screening Levels				Former Mill Area/Pocket Beach and Chehalis River					
Location:					Old Mill East	CR-04	CR-04	CR-04	CR-05	CR-05
Sample Name:					DNR-SCFM3A	CR04-10cm	CR04-2.5	CR04-5	CR05-10cm	CR05-2.5
Collection Date:	SCO—Dry	CSL—Dry	SCO—Organic	CSL—Organic	Apr-11	11/07/2013	11/08/2013	11/08/2013	11/08/2013	11/08/2013
OCDF	NV	NV	NA	NA	--	**476**	**1900**	--	**863**	**3100**
Total HpCDDs	NV	NV	NA	NA	--	**1530**	**7520**	--	**3750**	**21300**
Total HpCDFs	NV	NV	NA	NA	--	678 U	**3910**	--	**1560**	5060 U
Total HxCDDs	NV	NV	NA	NA	--	350 U	1540 U	--	1010 U	**4840**
Total HxCDFs	NV	NV	NA	NA	--	301 U	**2130**	--	**853**	6030 U
Total PeCDDs	NV	NV	NA	NA	--	68.7 U	133 U	--	334 U	862 U
Total PeCDFs	NV	NV	NA	NA	--	101 U	658 U	--	281 U	2660 U
Total TCDDs	NV	NV	NA	NA	--	17.5 U	32.6 U	--	73.6 U	**180**
Total TCDFs	NV	NV	NA	NA	--	27.9 U	119 U	--	78.1 U	558 U
Dioxin TEQ	NV	NV	NA	NA	--	**26.7**	**140**	--	**67.6**	**359**
Petroleum Hydrocarbons—dry weight (mg/kg)										
Gasoline	NV	NV	NV	NV	--	--	--	--	--	--
Diesel	NV	NV	NV	NV	--	**2400 J**	**3200 J**	**--**	**1200 J**	**3200 J**
Motor-Oil Range	NV	NV	NV	NV	--	**7400 J**	**10000 J**	**--**	**4800 J**	**13000 J**
Conventionals										
Ammonia (as N) (mg N/kg)	NV	NV	NV	NV	**31**	0.47 U	--	**15.2**	**7.21**	--
Sulfide (mg/kg)	NV	NV	NV	NV	**19**	**6.46**	--	**179**	**320**	--
Total Volatile Solids (%)	NV	NV	NV	NV	--	**59.91**	--	**38.2**	**36.49**	--
Fixed Solids (%)	NV	NV	NV	NV	--	--	--	--	--	--
Total solids (%)	NV	NV	NV	NV	**19**	**20.62**	--	**19.98**	**30.32**	--
Grain Size (%)										
Gravel	NV	NV	NV	NV	--	**22.8**	--	**23.6**	**20.2**	--
Very coarse sand	NV	NV	NV	NV	--	**13.8**	--	**13**	**11.4**	--
Coarse sand	NV	NV	NV	NV	--	**14.2**	--	**10.7**	**13.2**	--
Medium sand	NV	NV	NV	NV	--	**8.5**	--	**6.1**	**10.5**	--
Fine sand	NV	NV	NV	NV	--	**3.7**	--	**3.2**	**6**	--
Very fine sand	NV	NV	NV	NV	--	**1.4**	--	**1.4**	**3.5**	--
Coarse silt	NV	NV	NV	NV	--	**7.2**	--	**1.3**	**8.1**	--
Medium silt	NV	NV	NV	NV	--	**5.9**	--	**10.6**	**7.7**	--
Fine silt	NV	NV	NV	NV	--	**6.2**	--	**8.9**	**5.1**	--
Very fine silt	NV	NV	NV	NV	--	**4.8**	--	**6.1**	**4.5**	--
Coarse clay	NV	NV	NV	NV	--	**2.9**	--	**4.3**	**2.1**	--
Medium clay	NV	NV	NV	NV	--	**2.6**	--	**3.7**	**2.4**	--
Fine clay	NV	NV	NV	NV	--	**6.1**	--	**7.2**	**5.4**	--
Total fines	NV	NV	NV	NV	--	**35.6**	--	**42.1**	**35.3**	--
Asbestos (%)										
Asbestos	NV	NV	NV	NV	--	--	--	--	--	--
Pore Water Analysis										
Conductivity (uS/cm)	NV	NV	NV	NV	--	--	--	--	--	--
Salinity (ppt)	NV	NV	NV	NV	--	--	--	--	--	--

Table 7-5
Sediment Analytical Results and Screening Criteria
Seaport Landing Aquatic Land Lease
Aberdeen, Washington

Investigation Area:	SMS Marine Cleanup Screening Levels				Former Mill Area/Pocket Beach and Chehalis River						
Location:					CR-06	CR-06	CR-11	CR-12	CR-13	CR-14	CR-11-14-COMP
Sample Name:					CR06-10cm	CR06-2.5	CR11-SBSD-23	CR12-SBSD-15	CR13-SBSD-11	CR14-SBSD-12	CR11-14-SBSD-COMP
Collection Date:	SCO—Dry Weight	CSL—Dry Weight	SCO—Organic Carbon	CSL—Organic Carbon	11/07/2013	11/07/2013	10/13/2015	10/13/2015	10/13/2015	10/13/2015	10/13/2015
Collection Depth (ft bml):					0-0.33	1-2.5	23	15	11	12	11-23
Conventionals (%)											
Total Organic Carbon	NV	NV	NV	NV	**35.6 J**	**49.5 J**	**0.415**	**3.33**	**2.5**	**3.22**	--
PCBs (ug/kg-OC)											
Total PCBs[b]	NA	NA	12000	65000	--	NA	4096 U	601 U	800 U	621 U	--
SVOCs (ug/kg-OC)											
1,2,4-Trichlorobenzene	NA	NA	810	1800	--	NA	1133 U	147 U	196 U	152 U	--
1,2-Dichlorobenzene	NA	NA	2300	2300	--	NA	1133 U	147 U	196 U	152 U	--
1,4-Dichlorobenzene	NA	NA	3100	9000	--	NA	1133 U	147 U	196 U	152 U	--
Bis(2-ethylhexyl)phthalate	NA	NA	47000	78000	--	NA	11325 U	1471 U	1960 U	1522 U	--
Butylbenzylphthalate	NA	NA	4900	64000	--	NA	1133 U	147 U	**292**	**146 J**	--
Dibenzofuran	NA	NA	15000	58000	--	NA	4578 U	**1201**	800 U	**621**	--
Diethylphthalate	NA	NA	61000	110000	--	NA	4578 U	601 U	800 U	621 U	--
Dimethyl phthalate	NA	NA	53000	53000	--	NA	1133 U	147 U	196 U	152 U	--
Di-n-butyl phthalate	NA	NA	220000	1700000	--	NA	4578 U	601 U	800 U	621 U	--
Di-n-octyl phthalate	NA	NA	58000	4500000	--	NA	4578 U	601 U	800 U	621 U	--
Hexachlorobenzene	NA	NA	380	2300	--	NA	1133 U	147 U	196 U	152 U	--
Hexachlorobutadiene	NA	NA	3900	6200	--	NA	1133 U	147 U	196 U	152 U	--
N-Nitrosodiphenylamine	NA	NA	11000	11000	--	NA	1133 U	147 UJ	196 U	152 U	--
PAHs (ug/kg-OC)											
2-Methylnaphthalene	NA	NA	38000	64000	NA	NA	4578 U	**1231**	800 U	**652**	--
Acenaphthene	NA	NA	16000	57000	NA	NA	4578 U	**1231**	**1240**	**621**	--
Acenaphthylene	NA	NA	66000	66000	NA	NA	4578 U	**3303**	**4400**	**1894**	--
Anthracene	NA	NA	220000	1200000	NA	NA	4578 U	**1231**	**1120**	**559 J**	--
Benzo(a)anthracene	NA	NA	110000	270000	NA	NA	**2651 J**	**901**	**800**	**528 J**	--
Benzo(a)pyrene	NA	NA	99000	210000	NA	NA	4578 U	601 U	800 U	621 U	--
Benzo(ghi)perylene	NA	NA	31000	78000	NA	NA	4578 U	**901**	**1200**	**621**	--
Chrysene	NA	NA	110000	460000	NA	NA	**2892 J**	**1291**	**1160**	**776**	--
Dibenzo(a,h)anthracene	NA	NA	12000	33000	NA	NA	1133 U	**189**	**172 J**	**99 J**	--
Fluoranthene	NA	NA	160000	1200000	NA	NA	**5783**	**4505**	**4000**	**2733**	--
Fluorene	NA	NA	23000	79000	NA	NA	4578 U	**1411**	**1400**	**714**	--
Indeno(1,2,3-cd)pyrene	NA	NA	34000	88000	NA	NA	4578 U	**721**	**720 J**	**466 J**	--
Naphthalene	NA	NA	99000	170000	NA	NA	4578 U	**11111**	**12000**	**5901**	--
Phenanthrene	NA	NA	100000	480000	NA	NA	**4578**	**6306**	**6000**	**3727**	--
Pyrene	NA	NA	1000000	1400000	NA	NA	**5542**	**4505**	**4400**	**2702**	--
Total Benzofluoranthenes	NA	NA	230000	450000	NA	NA	**3855 J**	**1832**	**1600**	**1211**	--
Total HPAHs[b]	NA	NA	960000	5300000	NA	NA	**20723**	**14844**	**14052**	**9137 J**	--
Total LPAHs[b]	NA	NA	370000	780000	NA	NA	**4578 J**	**24595**	**26160 J**	**13416 J**	--
PCBs—dry weight (ug/kg)											
Aroclor 1016	NV	NV	NA	NA	--	20 U	17 U	20 U	20 U	20 U	--
Aroclor 1221	NV	NV	NA	NA	--	20 U	17 U	20 U	20 U	20 U	--

Table 7-5
Sediment Analytical Results and Screening Criteria
Seaport Landing Aquatic Land Lease
Aberdeen, Washington

Investigation Area:	SMS Marine Cleanup Screening Levels				Former Mill Area/Pocket Beach and Chehalis River						
Location:					CR-06	CR-06	CR-11	CR-12	CR-13	CR-14	CR-11-14-COMP
Sample Name:					CR06-10cm	CR06-2.5	CR11-SBSD-23	CR12-SBSD-15	CR13-SBSD-11	CR14-SBSD-12	CR11-14-SBSD-COMP
Collection Date:	SCO—Dry	CSL—Dry	SCO—Organic	CSL—Organic	11/07/2013	11/07/2013	10/13/2015	10/13/2015	10/13/2015	10/13/2015	10/13/2015
Aroclor 1232	NV	NV	NA	NA	--	20 U	17 U	20 U	20 U	20 U	--
Aroclor 1242	NV	NV	NA	NA	--	20 U	17 U	20 U	20 U	20 U	--
Aroclor 1248	NV	NV	NA	NA	--	99 U	17 U	20 U	20 U	20 U	--
Aroclor 1254	NV	NV	NA	NA	--	200 U	17 U	20 U	20 U	20 U	--
Aroclor 1260	NV	NV	NA	NA	--	**690**	17 U	20 U	20 U	20 U	--
Aroclor 1268	NV	NV	NA	NA	--	--	17 U	20 U	20 U	20 U	--
Total PCBs[b]	130	1000	NA	NA	--	**690**	17 U	20 U	20 U	20 U	--
SVOCs—dry weight (ug/kg)											
1,2,4-Trichlorobenzene	31	51	NA	NA	--	70 U	4.7 U	4.9 U	4.9 U	4.9 U	--
1,2-Dichlorobenzene	35	50	NA	NA	--	70 U	4.7 U	4.9 U	4.9 U	4.9 U	--
1,4-Dichlorobenzene	110	110	NA	NA	--	70 U	4.7 U	4.9 U	4.9 U	4.9 U	--
Bis(2-ethylhexyl)phthalate	1300	1900	NA	NA	--	**1900**	47 U	49 U	49 U	49 U	--
Butylbenzylphthalate	63	900	NA	NA	310 UJ	70 U	4.7 U	4.9 U	**7.3**	**4.7 J**	--
Dibenzofuran	540	540	NA	NA	--	**490**	19 U	**40**	20 U	**20**	--
Diethylphthalate	200	>1200	NA	NA	--	**270 J**	19 U	20 U	20 U	20 U	--
Dimethyl phthalate	71	160	NA	NA	--	70 U	4.7 U	4.9 U	4.9 U	4.9 U	--
Di-n-butyl phthalate	1400	1400	NA	NA	--	280 U	19 U	20 U	20 U	20 U	--
Di-n-octyl phthalate	6200	6200	NA	NA	--	280 U	19 U	20 U	20 U	20 U	--
Hexachlorobenzene	22	70	NA	NA	--	70 U	4.7 U	4.9 U	4.9 U	4.9 U	--
Hexachlorobutadiene	11	120	NA	NA	--	70 U	4.7 U	4.9 U	4.9 U	4.9 U	--
N-Nitrosodiphenylamine	28	40	NA	NA	--	70 U	4.7 U	4.9 UJ	4.9 U	4.9 U	--
PAHs—dry weight (ug/kg)											
2-Methylnaphthalene	670	670	NA	NA	--	**780**	19 U	**41**	20 U	**21**	--
Acenaphthene	500	500	NA	NA	--	**490**	19 U	**41**	**31**	**20**	--
Acenaphthylene	1300	1300	NA	NA	--	**520**	19 U	**110**	**110**	**61**	--
Anthracene	960	960	NA	NA	--	**750**	19 U	**41**	**28**	**18 J**	--
Benzo(a)anthracene	1300	1600	NA	NA	--	**1300**	**11 J**	**30**	**20**	**17 J**	--
Benzo(a)pyrene	1600	1600	NA	NA	--	**1200**	19 U	20 U	20 U	20 U	--
Benzo(ghi)perylene	670	720	NA	NA	--	**590**	19 U	**30**	**30**	**20**	--
Chrysene	1400	2800	NA	NA	--	**1600**	**12 J**	**43**	**29**	**25**	--
Dibenzo(a,h)anthracene	230	230	NA	NA	--	**150**	4.7 U	**6.3**	**4.3 J**	**3.2 J**	--
Fluoranthene	1700	2500	NA	NA	--	**3200**	**24**	**150**	**100**	**88**	--
Fluorene	540	540	NA	NA	--	**650**	19 U	**47**	**35**	**23**	--
Indeno(1,2,3-cd)pyrene	600	690	NA	NA	--	**490**	19 U	**24**	**18 J**	**15 J**	--
Naphthalene	2100	2100	NA	NA	--	**1800**	19 U	**370**	**300**	**190**	--
Phenanthrene	1500	1500	NA	NA	--	**3600**	**19**	**210**	**150**	**120**	--
Pyrene	2600	3300	NA	NA	--	**3600**	**23**	**150**	**110**	**87**	--
Total Benzofluoranthenes	3200	3600	NA	NA	--	**2000**	**16 J**	**61**	**40**	**39**	--
Total HPAHs[b]	12000	17000	NA	NA	--	**14130**	**86 J**	**494 J**	**351 J**	**294 J**	--
Total LPAHs[b]	5200	5200	NA	NA	--	**7810**	**19**	**819**	**654**	**432 J**	--

Table 7-5
Sediment Analytical Results and Screening Criteria
Seaport Landing Aquatic Land Lease
Aberdeen, Washington

Investigation Area:	SMS Marine Cleanup Screening Levels				Former Mill Area/Pocket Beach and Chehalis River						
Location:					CR-06	CR-06	CR-11	CR-12	CR-13	CR-14	CR-11-14-COMP
Sample Name:					CR06-10cm	CR06-2.5	CR11-SBSD-23	CR12-SBSD-15	CR13-SBSD-11	CR14-SBSD-12	CR11-14-SBSD-COMP
Collection Date:	SCO—Dry	CSL—Dry	SCO—Organic	CSL—Organic	11/07/2013	11/07/2013	10/13/2015	10/13/2015	10/13/2015	10/13/2015	10/13/2015
Total Metals—dry weight (mg/kg)											
Arsenic	57	93	NA	NA	--	20 U	20 U	20 U	9 U	20 U	--
Cadmium	5.1	6.7	NA	NA	--	1 U	0.6 U	0.8 U	**0.4**	0.8 U	--
Chromium	260	270	NA	NA	--	**26 J**	**37**	**48**	**41.3**	**49**	--
Copper	390	390	NA	NA	--	**96 J**	**47**	**62.2**	**55.1**	**63**	--
Lead	450	530	NA	NA	--	**110**	6 U	**11**	**9**	**12**	--
Mercury	0.41	0.59	NA	NA	**0.55**	**0.53**	0.03 U	**0.09**	**0.07**	**0.09**	--
Silver	6.1	6.1	NA	NA	--	1 U	1 U	1 U	0.5 U	1 U	--
Zinc	410	960	NA	NA	--	**237**	**78**	**86**	**76**	**90**	--
SVOCs—dry weight (ug/kg)											
1,3-Dichlorobenzene	NA	NA	NA	NA	--	70 U	--	--	--	--	--
2,4-Dimethylphenol	29	29	NA	NA	--	350 U	23 U	24 U	24 U	24 U	--
2-Methylphenol	63	63	NA	NA	--	**45 J**	4.7 U	4.9 U	**7.2**	4.9 U	--
3,4-Methylphenol	NA	NA	NA	NA	--	--	--	--	--	--	--
4-Methylphenol	670	670	NA	NA	--	**420**	19 U	**870 J**	**150**	**130**	--
Benzoic acid	650	650	NA	NA	--	**860 J**	190 U	**440**	**260**	**200**	--
Benzyl alcohol	57	73	NA	NA	--	280 U	19 U	**23**	**46**	**20**	--
Pentachlorophenol	360	690	NA	NA	1500 UJ	**240 J**	19 UJ	20 UJ	20 UJ	20 UJ	--
Phenol	420	1200	NA	NA	**370 J**	**240 J**	**8.4 J**	**64**	**44**	**50**	--
PAHs—dry weight (ug/kg)											
1-Methylnaphthalene	NV	NV	NA	NA	--	--	19 U	**24**	**22**	**16 J**	--
TCLP Metals (mg/L)											
Lead	NA	NA	NA	NA	--	--	--	--	--	--	0.1 U
Mercury	NA	NA	NA	NA	--	--	--	--	--	--	0.0001 U
Dioxins/Furans—dry weight (pg/g)											
1,2,3,4,6,7,8-HpCDD	NV	NV	NA	NA	**1080**	**1090**	**6.64**	--	--	--	--
1,2,3,4,6,7,8-HpCDF	NV	NV	NA	NA	**258**	**276**	0.317 U	--	--	--	--
1,2,3,4,7,8,9-HpCDF	NV	NV	NA	NA	**13.2**	**15.5**	0.0458 U	--	--	--	--
1,2,3,4,7,8-HxCDD	NV	NV	NA	NA	**12.7**	**8.21**	0.255 U	--	--	--	--
1,2,3,4,7,8-HxCDF	NV	NV	NA	NA	**18.1**	**21.7**	**0.0319 J**	--	--	--	--
1,2,3,6,7,8-HxCDD	NV	NV	NA	NA	**63.8**	**72.8**	0.631 U	--	--	--	--
1,2,3,6,7,8-HxCDF	NV	NV	NA	NA	**8.9**	**8.35**	0.0339 U	--	--	--	--
1,2,3,7,8,9-HxCDD	NV	NV	NA	NA	**16.5**	**15.4**	**2.76**	--	--	--	--
1,2,3,7,8,9-HxCDF	NV	NV	NA	NA	**4.79**	**4.66**	0.112 U	--	--	--	--
1,2,3,7,8-PeCDD	NV	NV	NA	NA	**9.35**	**8.27**	**1.02**	--	--	--	--
1,2,3,7,8-PeCDF	NV	NV	NA	NA	**3.28**	**3.24**	0.0398 U	--	--	--	--
2,3,4,6,7,8-HxCDF	NV	NV	NA	NA	**16.9**	**16.3**	0.0438 U	--	--	--	--
2,3,4,7,8-PeCDF	NV	NV	NA	NA	**5.96**	**5.87**	0.0418 U	--	--	--	--
2,3,7,8-TCDD	NV	NV	NA	NA	**2.09**	**2.11**	**0.936 J**	--	--	--	--
2,3,7,8-TCDF	NV	NV	NA	NA	**4.87**	**4.95**	0.0339 U	--	--	--	--
OCDD	NV	NV	NA	NA	**7830 J**	**6810 J**	**33.1**	--	--	--	--

Table 7-5
Sediment Analytical Results and Screening Criteria
Seaport Landing Aquatic Land Lease
Aberdeen, Washington

Investigation Area:	SMS Marine Cleanup Screening Levels				Former Mill Area/Pocket Beach and Chehalis River						
Location:					CR-06	CR-06	CR-11	CR-12	CR-13	CR-14	CR-11-14-COMP
Sample Name:					CR06-10cm	CR06-2.5	CR11-SBSD-23	CR12-SBSD-15	CR13-SBSD-11	CR14-SBSD-12	CR11-14-SBSD-COMP
Collection Date:	SCO—Dry	CSL—Dry	SCO—Organic	CSL—Organic	11/07/2013	11/07/2013	10/13/2015	10/13/2015	10/13/2015	10/13/2015	10/13/2015
OCDF	NV	NV	NA	NA	**680**	**652**	**1.08 J**	--	--	--	--
Total HpCDDs	NV	NV	NA	NA	**2480**	**2050**	**15.5**	--	--	--	--
Total HpCDFs	NV	NV	NA	NA	**950**	1120 U	1.28 U	--	--	--	--
Total HxCDDs	NV	NV	NA	NA	742 U	783 U	18.1 U	--	--	--	--
Total HxCDFs	NV	NV	NA	NA	463 U	518 U	0.599 U	--	--	--	--
Total PeCDDs	NV	NV	NA	NA	**88.7**	67 U	**7.59**	--	--	--	--
Total PeCDFs	NV	NV	NA	NA	203 U	147 U	0.111 U	--	--	--	--
Total TCDDs	NV	NV	NA	NA	42.6 U	**28.7**	7.61 U	--	--	--	--
Total TCDFs	NV	NV	NA	NA	82.8 U	62.3 U	0.303 U	--	--	--	--
Dioxin TEQ	NV	NV	NA	NA	**44.0**	**43.5**	**2.38**	--	--	--	--
Petroleum Hydrocarbons—dry weight (mg/kg)											
Gasoline	NV	NV	NV	NV	--	54 UJ	--	--	--	--	--
Diesel	NV	NV	NV	NV	--	**20000**	7 U	--	--	--	--
Motor-Oil Range	NV	NV	NV	NV	--	**60000**	**19**	--	--	--	--
Conventionals											
Ammonia (as N) (mg N/kg)	NV	NV	NV	NV	**1.37**	**14.0**	--	--	--	--	--
Sulfide (mg/kg)	NV	NV	NV	NV	**906**	**2910**	--	--	--	--	--
Total Volatile Solids (%)	NV	NV	NV	NV	**60.05**	**69.23**	--	--	--	--	--
Fixed Solids (%)	NV	NV	NV	NV	--	--	--	--	--	--	--
Total solids (%)	NV	NV	NV	NV	**21.4**	**21.59**	**72.59**	**56.65**	**57.95**	**57.04**	--
Grain Size (%)											
Gravel	NV	NV	NV	NV	**22.7**	--	--	--	--	--	--
Very coarse sand	NV	NV	NV	NV	**13**	--	--	--	--	--	--
Coarse sand	NV	NV	NV	NV	**15.7**	--	--	--	--	--	--
Medium sand	NV	NV	NV	NV	**11.9**	--	--	--	--	--	--
Fine sand	NV	NV	NV	NV	**5.1**	--	--	--	--	--	--
Very fine sand	NV	NV	NV	NV	**2**	--	--	--	--	--	--
Coarse silt	NV	NV	NV	NV	**4.1**	--	--	--	--	--	--
Medium silt	NV	NV	NV	NV	**5.1**	--	--	--	--	--	--
Fine silt	NV	NV	NV	NV	**4.5**	--	--	--	--	--	--
Very fine silt	NV	NV	NV	NV	**3.7**	--	--	--	--	--	--
Coarse clay	NV	NV	NV	NV	**2.7**	--	--	--	--	--	--
Medium clay	NV	NV	NV	NV	**2.1**	--	--	--	--	--	--
Fine clay	NV	NV	NV	NV	**7.4**	--	--	--	--	--	--
Total fines	NV	NV	NV	NV	**29.7**	--	--	--	--	--	--
Asbestos (%)											
Asbestos	NV	NV	NV	NV	--	--	--	--	--	--	--
Pore Water Analysis											
Conductivity (uS/cm)	NV	NV	NV	NV	--	--	--	--	--	--	--
Salinity (ppt)	NV	NV	NV	NV	--	--	--	--	--	--	--

Table 7-5
Sediment Analytical Results and Screening Criteria
Seaport Landing Aquatic Land Lease
Aberdeen, Washington

Investigation Area:	SMS Marine Cleanup Screening Levels				Former Mill Area/Pocket Beach and Chehalis River					
Location:					CR-15C		CR-17D		CR-18B	
Sample Name:					CR15C-SSD	CR15C-SBSD	CR17-D-SSD	CR17-D-SBSD	CR18B-SSD	CR18B-SBSD
Collection Date:	SCO—Dry Weight	CSL—Dry Weight	SCO—Organic Carbon	CSL—Organic Carbon	10/14/2015	10/14/2015	10/15/2015	10/15/2015	10/16/2015	10/16/2015
Collection Depth (ft bml):					0-0.33	0.5-1.0	0-0.33	0.5-1.0	0-0.33	0.5-1.0
Conventionals (%)										
Total Organic Carbon	NV	NV	NV	NV	**3.17**	**1.73**	**1.61**	**3.05**	**1.95**	**2.45**
PCBs (ug/kg-OC)										
Total PCBs[b]	NA	NA	12000	65000	631 U	1040 U	1180 U	**590 J**	923 U	776 U
SVOCs (ug/kg-OC)										
1,2,4-Trichlorobenzene	NA	NA	810	1800	155 U	283 U	298 U	**157 J**	256 U	204 U
1,2-Dichlorobenzene	NA	NA	2300	2300	155 U	283 U	298 U	**52 J**	256 U	204 U
1,4-Dichlorobenzene	NA	NA	3100	9000	155 U	283 U	298 U	161 U	256 U	204 U
Bis(2-ethylhexyl)phthalate	NA	NA	47000	78000	**915 J**	2832 U	2981 U	**1246 J**	2564 U	2041 U
Butylbenzylphthalate	NA	NA	4900	64000	155 U	283 U	**211 J**	161 U	**369**	**114 J**
Dibenzofuran	NA	NA	15000	58000	**757**	**1214**	1180 U	**2754**	1026 U	816 U
Diethylphthalate	NA	NA	61000	110000	662 U	1503 U	1180 U	623 U	2051 U	816 U
Dimethyl phthalate	NA	NA	53000	53000	155 U	283 U	298 U	161 U	256 U	204 U
Di-n-butyl phthalate	NA	NA	220000	1700000	631 U	1156 U	1180 U	623 U	1026 U	816 U
Di-n-octyl phthalate	NA	NA	58000	4500000	631 U	1156 U	1180 U	623 U	1026 U	816 U
Hexachlorobenzene	NA	NA	380	2300	155 U	283 U	298 U	161 U	256 U	204 U
Hexachlorobutadiene	NA	NA	3900	6200	155 U	283 U	298 U	161 U	256 U	204 U
N-Nitrosodiphenylamine	NA	NA	11000	11000	155 U	283 U	298 U	161 U	256 U	204 U
PAHs (ug/kg-OC)										
2-Methylnaphthalene	NA	NA	38000	64000	**599 J**	**1040 J**	1180 U	**1016**	1026 U	816 U
Acenaphthene	NA	NA	16000	57000	**1199**	**2139**	1180 U	**13770**	1026 U	**653 J**
Acenaphthylene	NA	NA	66000	66000	**473 J**	**867 J**	1180 U	**656**	1026 U	**694 J**
Anthracene	NA	NA	220000	1200000	**568 J**	**1156**	1180 U	**3607**	1026 U	**980**
Benzo(a)anthracene	NA	NA	110000	270000	**1767**	**3699**	1180 U	**5246**	**1487**	**4041**
Benzo(a)pyrene	NA	NA	99000	210000	**978**	**2023**	1180 U	**2656**	**615 J**	**2776**
Benzo(ghi)perylene	NA	NA	31000	78000	**726**	**809 J**	1180 U	**1180**	1026 U	**1102**
Chrysene	NA	NA	110000	460000	**1924**	**3988**	**534 J**	**6885**	**3385**	**3796**
Dibenzo(a,h)anthracene	NA	NA	12000	33000	**126 J**	**249 J**	**143 J**	**492**	256 U	**327**
Fluoranthene	NA	NA	160000	1200000	**3785**	**6358**	**1553**	**19672**	**4205**	**8571**
Fluorene	NA	NA	23000	79000	**915**	**1156**	1180 U	**4590**	**564 J**	**490 J**
Indeno(1,2,3-cd)pyrene	NA	NA	34000	88000	**568 J**	**983 J**	1180 U	**1344**	1026 U	**1102**
Naphthalene	NA	NA	99000	170000	**2019**	**2023**	**807 J**	**3607**	**1487**	**898**
Phenanthrene	NA	NA	100000	480000	**2871**	**3988**	**1180**	**11803**	**1333**	**1102**
Pyrene	NA	NA	1000000	1400000	**3091**	**4624**	**1242**	**15410**	**3179**	**8980**
Total Benzofluoranthenes	NA	NA	230000	450000	**3155**	**5780**	**807 J**	**7869**	**2000 J**	**7347**
Total HPAHs[b]	NA	NA	960000	5300000	**16120 J**	**28514 J**	**4280 J**	**60754**	**14872 J**	**38041 J**
Total LPAHs[b]	NA	NA	370000	780000	**8044 J**	**11329 J**	**1988 J**	**38033**	**3385 J**	**4816**
PCBs—dry weight (ug/kg)										
Aroclor 1016	NV	NV	NA	NA	20 U	18 U	19 U	20 U	18 U	19 U
Aroclor 1221	NV	NV	NA	NA	20 U	18 U	19 U	20 U	18 U	19 U

Table 7-5
Sediment Analytical Results and Screening Criteria
Seaport Landing Aquatic Land Lease
Aberdeen, Washington

Investigation Area:	SMS Marine Cleanup Screening Levels				Former Mill Area/Pocket Beach and Chehalis River					
Location:					CR-15C		CR-17D		CR-18B	
Sample Name:					CR15C-SSD	CR15C-SBSD	CR17-D-SSD	CR17-D-SBSD	CR18B-SSD	CR18B-SBSD
Collection Date:	SCO—Dry	CSL—Dry	SCO—Organic	CSL—Organic	10/14/2015	10/14/2015	10/15/2015	10/15/2015	10/16/2015	10/16/2015
Aroclor 1232	NV	NV	NA	NA	20 U	18 U	19 U	20 U	18 U	19 U
Aroclor 1242	NV	NV	NA	NA	20 U	18 U	19 U	20 U	18 U	19 U
Aroclor 1248	NV	NV	NA	NA	20 U	18 U	19 U	20 U	18 U	19 U
Aroclor 1254	NV	NV	NA	NA	20 U	18 U	19 U	**18 J**	18 U	19 U
Aroclor 1260	NV	NV	NA	NA	20 U	18 U	19 U	20 U	18 U	19 U
Aroclor 1268	NV	NV	NA	NA	20 U	18 U	19 U	20 U	18 U	19 U
Total PCBs[b]	130	1000	NA	NA	20 U	18 U	19 U	**18 J**	18 U	19 U
SVOCs—dry weight (ug/kg)										
1,2,4-Trichlorobenzene	31	51	NA	NA	4.9 U	4.9 U	4.8 U	**4.8 J**	5 U	5 U
1,2-Dichlorobenzene	35	50	NA	NA	4.9 U	4.9 U	4.8 U	**1.6 J**	5 U	5 U
1,4-Dichlorobenzene	110	110	NA	NA	4.9 U	4.9 U	4.8 U	4.9 U	5 U	5 U
Bis(2-ethylhexyl)phthalate	1300	1900	NA	NA	**29 J**	49 U	48 U	**38 J**	50 U	50 U
Butylbenzylphthalate	63	900	NA	NA	4.9 U	4.9 U	**3.4 J**	4.9 U	**7.2**	**2.8 J**
Dibenzofuran	540	540	NA	NA	**24**	**21**	19 U	**84**	20 U	20 U
Diethylphthalate	200	>1200	NA	NA	21 U	26 U	19 U	19 U	40 U	20 U
Dimethyl phthalate	71	160	NA	NA	4.9 U	4.9 U	4.8 U	4.9 U	5 U	5 U
Di-n-butyl phthalate	1400	1400	NA	NA	20 U	20 U	19 U	19 U	20 U	20 U
Di-n-octyl phthalate	6200	6200	NA	NA	20 U	20 U	19 U	19 U	20 U	20 U
Hexachlorobenzene	22	70	NA	NA	4.9 U	4.9 U	4.8 U	4.9 U	5 U	5 U
Hexachlorobutadiene	11	120	NA	NA	4.9 U	4.9 U	4.8 U	4.9 U	5 U	5 U
N-Nitrosodiphenylamine	28	40	NA	NA	4.9 U	4.9 U	4.8 U	4.9 U	5 U	5 U
PAHs—dry weight (ug/kg)										
2-Methylnaphthalene	670	670	NA	NA	**19 J**	**18 J**	19 U	**31**	20 U	20 U
Acenaphthene	500	500	NA	NA	**38**	**37**	19 U	**420**	20 U	**16 J**
Acenaphthylene	1300	1300	NA	NA	**15 J**	**15 J**	19 U	**20**	20 U	**17 J**
Anthracene	960	960	NA	NA	**18 J**	**20**	19 U	**110**	20 U	**24**
Benzo(a)anthracene	1300	1600	NA	NA	**56**	**64**	19 U	**160**	**29**	**99**
Benzo(a)pyrene	1600	1600	NA	NA	**31**	**35**	19 U	**81**	**12 J**	**68**
Benzo(ghi)perylene	670	720	NA	NA	**23**	**14 J**	19 U	**36**	20 U	**27**
Chrysene	1400	2800	NA	NA	**61**	**69**	**8.6 J**	**210**	**66**	**93**
Dibenzo(a,h)anthracene	230	230	NA	NA	**4 J**	**4.3 J**	**2.3 J**	**15**	5 U	**8**
Fluoranthene	1700	2500	NA	NA	**120**	**110**	**25**	**600**	**82**	**210**
Fluorene	540	540	NA	NA	**29**	**20**	19 U	**140**	**11 J**	**12 J**
Indeno(1,2,3-cd)pyrene	600	690	NA	NA	**18 J**	**17 J**	19 U	**41**	20 U	**27**
Naphthalene	2100	2100	NA	NA	**64**	**35**	**13 J**	**110**	**29**	**22**
Phenanthrene	1500	1500	NA	NA	**91**	**69**	**19**	**360**	**26**	**27**
Pyrene	2600	3300	NA	NA	**98**	**80**	**20**	**470**	**62**	**220**
Total Benzofluoranthenes	3200	3600	NA	NA	**100**	**100**	**13 J**	**240**	**39 J**	**180**
Total HPAHs[b]	12000	17000	NA	NA	**511 J**	**493.3 J**	**68.9 J**	**1853**	**290 J**	**932 J**
Total LPAHs[b]	5200	5200	NA	NA	**255 J**	**196 J**	**32 J**	**1160**	**66 J**	**118 J**

Table 7-5
Sediment Analytical Results and Screening Criteria
Seaport Landing Aquatic Land Lease
Aberdeen, Washington

Investigation Area:	SMS Marine Cleanup Screening Levels				Former Mill Area/Pocket Beach and Chehalis River					
Location:					CR-15C		CR-17D		CR-18B	
Sample Name:					CR15C-SSD	CR15C-SBSD	CR17-D-SSD	CR17-D-SBSD	CR18B-SSD	CR18B-SBSD
Collection Date:	SCO—Dry	CSL—Dry	SCO—Organic	CSL—Organic	10/14/2015	10/14/2015	10/15/2015	10/15/2015	10/16/2015	10/16/2015
Total Metals—dry weight (mg/kg)										
Arsenic	57	93	NA	NA	20	21	**21**	**30**	**30**	**20**
Cadmium	5.1	6.7	NA	NA	0.5 U	0.3 U	0.4 U	0.4 U	0.4 U	0.4 U
Chromium	260	270	NA	NA	40	34.5	**34.4**	**40**	**41**	**36**
Copper	390	390	NA	NA	51.9	54.7	**51.1**	**58.2**	**62.7**	**53.4**
Lead	450	530	NA	NA	11	9	**9**	**12**	**10**	**10**
Mercury	0.41	0.59	NA	NA	0.06 U	0.04	**0.04**	**0.07**	0.05 U	**0.07**
Silver	6.1	6.1	NA	NA	0.8 U	0.5 U	0.5 U	0.6 U	0.6 U	0.6 U
Zinc	410	960	NA	NA	77	69	**70**	**79**	**76**	**73**
SVOCs—dry weight (ug/kg)										
1,3-Dichlorobenzene	NA	NA	NA	NA	--	--	--	--	--	--
2,4-Dimethylphenol	29	29	NA	NA	24 U	24 U	24 U	24 U	25 U	25 U
2-Methylphenol	63	63	NA	NA	4.9 U	4.9 U	4.8 U	4.9 U	5 U	5 U
3,4-Methylphenol	NA	NA	NA	NA	--	--	--	--	--	--
4-Methylphenol	670	670	NA	NA	**89**	**52**	19 UJ	**120 J**	**42**	20 U
Benzoic acid	650	650	NA	NA	**250 J**	**160 J**	**150 J**	**230 J**	**160 J**	**210 J**
Benzyl alcohol	57	73	NA	NA	20 U	20 U	**16 J**	**48**	20 U	20 U
Pentachlorophenol	360	690	NA	NA	20 UJ	20 UJ	19 U	**21**	20 U	20 U
Phenol	420	1200	NA	NA	**50**	20 U	**16 J**	**39**	**81**	20 U
PAHs—dry weight (ug/kg)										
1-Methylnaphthalene	NV	NV	NA	NA	**15 J**	**18 J**	19 U	**23**	20 U	20 U
TCLP Metals (mg/L)										
Lead	NA	NA	NA	NA	--	--	--	--	--	--
Mercury	NA	NA	NA	NA	--	--	--	--	--	--
Dioxins/Furans—dry weight (pg/g)										
1,2,3,4,6,7,8-HpCDD	NV	NV	NA	NA	100	--	**56.2**	--	**30.9**	--
1,2,3,4,6,7,8-HpCDF	NV	NV	NA	NA	25.3	--	**8.12**	--	**7.34**	--
1,2,3,4,7,8,9-HpCDF	NV	NV	NA	NA	0.959 U	--	0.483 U	--	**0.332 J**	--
1,2,3,4,7,8-HxCDD	NV	NV	NA	NA	1.22	--	0.736 U	--	**0.758 J**	--
1,2,3,4,7,8-HxCDF	NV	NV	NA	NA	1.25 U	--	**0.596 J**	--	0.424 U	--
1,2,3,6,7,8-HxCDD	NV	NV	NA	NA	5.48	--	**2.94**	--	**2.46**	--
1,2,3,6,7,8-HxCDF	NV	NV	NA	NA	0.806 J	--	**0.37 J**	--	0.294 U	--
1,2,3,7,8,9-HxCDD	NV	NV	NA	NA	10	--	**6.33**	--	**8**	--
1,2,3,7,8,9-HxCDF	NV	NV	NA	NA	0.338 U	--	0.324 U	--	0.226 U	--
1,2,3,7,8-PeCDD	NV	NV	NA	NA	3.65	--	**2.49**	--	**3.28**	--
1,2,3,7,8-PeCDF	NV	NV	NA	NA	0.408 J	--	0.213 U	--	0.157 U	--
2,3,4,6,7,8-HxCDF	NV	NV	NA	NA	1.21 U	--	0.443 U	--	**0.469 J**	--
2,3,4,7,8-PeCDF	NV	NV	NA	NA	0.505 U	--	0.239 U	--	0.183 U	--
2,3,7,8-TCDD	NV	NV	NA	NA	2.7	--	**1.85**	--	**2.36**	--
2,3,7,8-TCDF	NV	NV	NA	NA	1.55	--	0.406 U	--	0.381 U	--
OCDD	NV	NV	NA	NA	790	--	**475**	--	**189**	--

Table 7-5
Sediment Analytical Results and Screening Criteria
Seaport Landing Aquatic Land Lease
Aberdeen, Washington

Investigation Area:	SMS Marine Cleanup Screening Levels				Former Mill Area/Pocket Beach and Chehalis River					
Location:					CR-15C		CR-17D		CR-18B	
Sample Name:					CR15C-SSD	CR15C-SBSD	CR17-D-SSD	CR17-D-SBSD	CR18B-SSD	CR18B-SBSD
Collection Date:	SCO—Dry	CSL—Dry	SCO—Organic	CSL—Organic	10/14/2015	10/14/2015	10/15/2015	10/15/2015	10/16/2015	10/16/2015
OCDF	NV	NV	NA	NA	33.1	--	**14**	--	**10.9**	--
Total HpCDDs	NV	NV	NA	NA	275	--	**150**	--	**73.7**	--
Total HpCDFs	NV	NV	NA	NA	60.7 U	--	21.2 U	--	**17.4**	--
Total HxCDDs	NV	NV	NA	NA	76.1 U	--	45.8 U	--	46.9 U	--
Total HxCDFs	NV	NV	NA	NA	28.1 U	--	10.8 U	--	8.92 U	--
Total PeCDDs	NV	NV	NA	NA	26.5	--	16.7 U	--	20.5 U	--
Total PeCDFs	NV	NV	NA	NA	12.6 U	--	4.66 U	--	4.65 U	--
Total TCDDs	NV	NV	NA	NA	20.3 U	--	12.4 U	--	15.9 U	--
Total TCDFs	NV	NV	NA	NA	13.7 U	--	4.27 U	--	4.57 U	--
Dioxin TEQ	NV	NV	NA	NA	**9.99**	--	**6.29**	--	**7.35**	--
Petroleum Hydrocarbons—dry weight (mg/kg)										
Gasoline	NV	NV	NV	NV	--	--	--	--	--	--
Diesel	NV	NV	NV	NV	**77**	--	**24**	--	**44**	--
Motor-Oil Range	NV	NV	NV	NV	**190**	--	**46**	--	**92**	--
Conventionals										
Ammonia (as N) (mg N/kg)	NV	NV	NV	NV	--	--	--	--	--	--
Sulfide (mg/kg)	NV	NV	NV	NV	--	--	--	--	--	--
Total Volatile Solids (%)	NV	NV	NV	NV	--	--	--	--	--	--
Fixed Solids (%)	NV	NV	NV	NV	--	--	--	--	--	--
Total solids (%)	NV	NV	NV	NV	**35.1**	**57.47**	**52.1**	**48.09**	**46.44**	**47.88**
Grain Size (%)										
Gravel	NV	NV	NV	NV	--	--	--	--	--	--
Very coarse sand	NV	NV	NV	NV	--	--	--	--	--	--
Coarse sand	NV	NV	NV	NV	--	--	--	--	--	--
Medium sand	NV	NV	NV	NV	--	--	--	--	--	--
Fine sand	NV	NV	NV	NV	--	--	--	--	--	--
Very fine sand	NV	NV	NV	NV	--	--	--	--	--	--
Coarse silt	NV	NV	NV	NV	--	--	--	--	--	--
Medium silt	NV	NV	NV	NV	--	--	--	--	--	--
Fine silt	NV	NV	NV	NV	--	--	--	--	--	--
Very fine silt	NV	NV	NV	NV	--	--	--	--	--	--
Coarse clay	NV	NV	NV	NV	--	--	--	--	--	--
Medium clay	NV	NV	NV	NV	--	--	--	--	--	--
Fine clay	NV	NV	NV	NV	--	--	--	--	--	--
Total fines	NV	NV	NV	NV	--	--	--	--	--	--
Asbestos (%)										
Asbestos	NV	NV	NV	NV	--	--	--	--	--	--
Pore Water Analysis										
Conductivity (uS/cm)	NV	NV	NV	NV	--	--	--	--	--	--
Salinity (ppt)	NV	NV	NV	NV	--	--	--	--	--	--

Table 7-5
Sediment Analytical Results and Screening Criteria
Seaport Landing Aquatic Land Lease
Aberdeen, Washington

Investigation Area:	SMS Marine Cleanup Screening Levels				Former Mill Area/Pocket Beach and Chehalis River				
Location:					CR-19D	CR-19F	CR-19F		CR-26
Sample Name:					CR19D-SSD-CONV	CR19F-SSD	CR19F-SBSD	CR19F-SBSD-DUP	CR26-SBSD
Collection Date:	SCO—Dry Weight	CSL—Dry Weight	SCO—Organic Carbon	CSL—Organic Carbon	10/16/2015	10/16/2015	10/16/2015	10/16/2015	10/15/2015
Collection Depth (ft bml):					0-0.33	0-0.33	0.5-1.0	0.5-1.0	0.5-1.0
Conventionals (%)									
Total Organic Carbon	NV	NV	NV	NV	**3.99**	**2.77**	**2.76**	**2.59**	**1.52**
PCBs (ug/kg-OC)									
Total PCBs[b]	NA	NA	12000	65000	--	650 U	688 U	772 U	1250 U
SVOCs (ug/kg-OC)									
1,2,4-Trichlorobenzene	NA	NA	810	1800	--	173 U	181 U	193 U	322 U
1,2-Dichlorobenzene	NA	NA	2300	2300	--	173 U	181 U	193 U	322 U
1,4-Dichlorobenzene	NA	NA	3100	9000	--	173 U	181 U	193 U	322 U
Bis(2-ethylhexyl)phthalate	NA	NA	47000	78000	--	1733 U	1812 U	**1236 J**	3224 U
Butylbenzylphthalate	NA	NA	4900	64000	--	**292**	**337**	**286**	322 U
Dibenzofuran	NA	NA	15000	58000	--	**542 J**	**906**	**1081**	**1645**
Diethylphthalate	NA	NA	61000	110000	--	794 U	870 U	1467 U	1316 U
Dimethyl phthalate	NA	NA	53000	53000	--	173 U	181 U	193 U	322 U
Di-n-butyl phthalate	NA	NA	220000	1700000	--	686 U	725 U	772 U	1316 U
Di-n-octyl phthalate	NA	NA	58000	4500000	--	686 U	725 U	772 U	1316 U
Hexachlorobenzene	NA	NA	380	2300	--	173 U	181 U	193 U	322 U
Hexachlorobutadiene	NA	NA	3900	6200	--	173 U	181 U	193 U	322 U
N-Nitrosodiphenylamine	NA	NA	11000	11000	--	173 U	181 U	193 U	322 U
PAHs (ug/kg-OC)									
2-Methylnaphthalene	NA	NA	38000	64000	--	**361 J**	**471 J**	**849**	1316 U
Acenaphthene	NA	NA	16000	57000	--	**433 J**	**978**	**1197**	**1908**
Acenaphthylene	NA	NA	66000	66000	--	686 U	725 U	**695 J**	**638 J**
Anthracene	NA	NA	220000	1200000	--	**542 J**	**1087**	**1004**	**921 J**
Benzo(a)anthracene	NA	NA	110000	270000	--	**433 J**	**761**	**1429**	**1184 J**
Benzo(a)pyrene	NA	NA	99000	210000	--	686 U	725 U	772 U	1316 U
Benzo(ghi)perylene	NA	NA	31000	78000	--	686 U	725 U	**579 J**	**855 J**
Chrysene	NA	NA	110000	460000	--	**758**	**1087**	**2471**	**1711**
Dibenzo(a,h)anthracene	NA	NA	12000	33000	--	173 U	181 U	**120 J**	**204 J**
Fluoranthene	NA	NA	160000	1200000	--	**1480**	**3406**	**5792**	**4934**
Fluorene	NA	NA	23000	79000	--	**433 J**	**1051**	**1042**	**1513**
Indeno(1,2,3-cd)pyrene	NA	NA	34000	88000	--	686 U	725 U	**541 J**	**579 J**
Naphthalene	NA	NA	99000	170000	--	**2022**	**2246**	**3784**	**3355**
Phenanthrene	NA	NA	100000	480000	--	**1300**	**3986**	**5405**	**2566**
Pyrene	NA	NA	1000000	1400000	--	**1264**	**3007**	**5019**	**4605**
Total Benzofluoranthenes	NA	NA	230000	450000	--	**686 J**	**978 J**	**2317**	**2368 J**
Total HPAHs[b]	NA	NA	960000	5300000	--	**4621 J**	**9239**	**19039 J**	**16441 J**
Total LPAHs[b]	NA	NA	370000	780000	--	**4729 J**	**9348 J**	**13127 J**	**10901 J**
PCBs—dry weight (ug/kg)									
Aroclor 1016	NV	NV	NA	NA	--	18 U	19 U	20 U	19 U
Aroclor 1221	NV	NV	NA	NA	--	18 U	19 U	20 U	19 U

Table 7-5
Sediment Analytical Results and Screening Criteria
Seaport Landing Aquatic Land Lease
Aberdeen, Washington

Investigation Area:	SMS Marine Cleanup Screening Levels				Former Mill Area/Pocket Beach and Chehalis River				
Location:					CR-19D	CR-19F	CR-19F		CR-26
Sample Name:					CR19D-SSD-CONV	CR19F-SSD	CR19F-SBSD	CR19F-SBSD-DUP	CR26-SBSD
Collection Date:	SCO—Dry	CSL—Dry	SCO—Organic	CSL—Organic	10/16/2015	10/16/2015	10/16/2015	10/16/2015	10/15/2015
Aroclor 1232	NV	NV	NA	NA	--	18 U	19 U	20 U	19 U
Aroclor 1242	NV	NV	NA	NA	--	18 U	19 U	20 U	19 U
Aroclor 1248	NV	NV	NA	NA	--	18 U	19 U	20 U	19 U
Aroclor 1254	NV	NV	NA	NA	--	18 U	19 U	20 U	19 U
Aroclor 1260	NV	NV	NA	NA	--	18 U	19 U	20 U	19 U
Aroclor 1268	NV	NV	NA	NA	--	18 U	19 U	20 U	19 U
Total PCBs[b]	130	1000	NA	NA	--	18 U	19 U	20 U	19 U
SVOCs—dry weight (ug/kg)									
1,2,4-Trichlorobenzene	31	51	NA	NA	--	4.8 U	5 U	5 U	4.9 U
1,2-Dichlorobenzene	35	50	NA	NA	--	4.8 U	5 U	5 U	4.9 U
1,4-Dichlorobenzene	110	110	NA	NA	--	4.8 U	5 U	5 U	4.9 U
Bis(2-ethylhexyl)phthalate	1300	1900	NA	NA	--	48 U	50 U	**32 J**	49 U
Butylbenzylphthalate	63	900	NA	NA	--	**8.1**	**9.3**	**7.4**	4.9 U
Dibenzofuran	540	540	NA	NA	--	**15 J**	**25**	**28**	**25**
Diethylphthalate	200	>1200	NA	NA	--	22 U	24 U	38 U	20 U
Dimethyl phthalate	71	160	NA	NA	--	4.8 U	5 U	5 U	4.9 U
Di-n-butyl phthalate	1400	1400	NA	NA	--	19 U	20 U	20 U	20 U
Di-n-octyl phthalate	6200	6200	NA	NA	--	19 U	20 U	20 U	20 U
Hexachlorobenzene	22	70	NA	NA	--	4.8 U	5 U	5 U	4.9 U
Hexachlorobutadiene	11	120	NA	NA	--	4.8 U	5 U	5 U	4.9 U
N-Nitrosodiphenylamine	28	40	NA	NA	--	4.8 U	5 U	5 U	4.9 U
PAHs—dry weight (ug/kg)									
2-Methylnaphthalene	670	670	NA	NA	--	**10 J**	**13 J**	**22**	20 U
Acenaphthene	500	500	NA	NA	--	**12 J**	**27**	**31**	**29**
Acenaphthylene	1300	1300	NA	NA	--	19 U	20 U	**18 J**	**9.7 J**
Anthracene	960	960	NA	NA	--	**15 J**	**30**	**26**	**14 J**
Benzo(a)anthracene	1300	1600	NA	NA	--	**12 J**	**21**	**37**	**18 J**
Benzo(a)pyrene	1600	1600	NA	NA	--	19 U	20 U	20 U	20 U
Benzo(ghi)perylene	670	720	NA	NA	--	19 U	20 U	**15 J**	**13 J**
Chrysene	1400	2800	NA	NA	--	**21**	**30**	**64**	**26**
Dibenzo(a,h)anthracene	230	230	NA	NA	--	4.8 U	5 U	**3.1 J**	**3.1 J**
Fluoranthene	1700	2500	NA	NA	--	**41**	**94**	**150**	**75**
Fluorene	540	540	NA	NA	--	**12 J**	**29**	**27**	**23**
Indeno(1,2,3-cd)pyrene	600	690	NA	NA	--	19 U	20 U	**14 J**	**8.8 J**
Naphthalene	2100	2100	NA	NA	--	**56**	**62**	**98**	**51**
Phenanthrene	1500	1500	NA	NA	--	**36**	**110**	**140**	**39**
Pyrene	2600	3300	NA	NA	--	**35**	**83**	**130**	**70**
Total Benzofluoranthenes	3200	3600	NA	NA	--	**19 J**	**27 J**	**60**	**36 J**
Total HPAHs[b]	12000	17000	NA	NA	--	**128 J**	**255 J**	**493.1 J**	**249.9 J**
Total LPAHs[b]	5200	5200	NA	NA	--	**131 J**	**258**	**340 J**	**165.7 J**

Table 7-5
Sediment Analytical Results and Screening Criteria
Seaport Landing Aquatic Land Lease
Aberdeen, Washington

Investigation Area:	SMS Marine Cleanup Screening Levels				Former Mill Area/Pocket Beach and Chehalis River				
Location:					CR-19D	CR-19F	CR-19F		CR-26
Sample Name:					CR19D-SSD-CONV	CR19F-SSD	CR19F-SBSD	CR19F-SBSD-DUP	CR26-SBSD
Collection Date:	SCO—Dry	CSL—Dry	SCO—Organic	CSL—Organic	10/16/2015	10/16/2015	10/16/2015	10/16/2015	10/15/2015
Total Metals—dry weight (mg/kg)									
Arsenic	57	93	NA	NA	**--**	**20**	**22**	**23**	**24**
Cadmium	5.1	6.7	NA	NA	--	0.4 U	0.4 U	0.3 U	0.4 U
Chromium	260	270	NA	NA	--	**41**	**50.5**	**51.3**	**39.3**
Copper	390	390	NA	NA	--	**53.1**	**60**	**53.3**	**55.9**
Lead	450	530	NA	NA	--	**11**	**13**	**14**	**11**
Mercury	0.41	0.59	NA	NA	--	**0.05**	**0.05**	**0.07**	**0.09**
Silver	6.1	6.1	NA	NA	--	0.6 U	0.6 U	0.5 U	0.6 U
Zinc	410	960	NA	NA	--	**74**	**80**	**79**	**75**
SVOCs—dry weight (ug/kg)									
1,3-Dichlorobenzene	NA	NA	NA	NA	--	--	--	--	--
2,4-Dimethylphenol	29	29	NA	NA	--	24 U	25 U	25 U	24 U
2-Methylphenol	63	63	NA	NA	--	4.8 U	5 U	5 U	**5.4**
3,4-Methylphenol	NA	NA	NA	NA	--	--	--	--	--
4-Methylphenol	670	670	NA	NA	--	19 U	**230**	**320**	**45**
Benzoic acid	650	650	NA	NA	--	**170 J**	**240**	**370**	**440**
Benzyl alcohol	57	73	NA	NA	--	19 U	**27**	**28**	**64**
Pentachlorophenol	360	690	NA	NA	--	19 U	20 UJ	20 UJ	20 UJ
Phenol	420	1200	NA	NA	**93 J+**	**89**	**47**	**68**	**76**
PAHs—dry weight (ug/kg)									
1-Methylnaphthalene	NV	NV	NA	NA	--	19 U	20 U	**13 J**	**11 J**
TCLP Metals (mg/L)									
Lead	NA	NA	NA	NA	--	--	--	--	--
Mercury	NA	NA	NA	NA	--	--	--	--	--
Dioxins/Furans—dry weight (pg/g)									
1,2,3,4,6,7,8-HpCDD	NV	NV	NA	NA	--	**141**	--	--	--
1,2,3,4,6,7,8-HpCDF	NV	NV	NA	NA	--	**24.3**	--	--	--
1,2,3,4,7,8,9-HpCDF	NV	NV	NA	NA	--	**1.04**	--	--	--
1,2,3,4,7,8-HxCDD	NV	NV	NA	NA	--	**1.35**	--	--	--
1,2,3,4,7,8-HxCDF	NV	NV	NA	NA	--	**1.37**	--	--	--
1,2,3,6,7,8-HxCDD	NV	NV	NA	NA	--	**9.89**	--	--	--
1,2,3,6,7,8-HxCDF	NV	NV	NA	NA	--	**1.07**	--	--	--
1,2,3,7,8,9-HxCDD	NV	NV	NA	NA	--	**8.91**	--	--	--
1,2,3,7,8,9-HxCDF	NV	NV	NA	NA	--	0.571 U	--	--	--
1,2,3,7,8-PeCDD	NV	NV	NA	NA	--	**3.01**	--	--	--
1,2,3,7,8-PeCDF	NV	NV	NA	NA	--	0.613 U	--	--	--
2,3,4,6,7,8-HxCDF	NV	NV	NA	NA	--	**1.73**	--	--	--
2,3,4,7,8-PeCDF	NV	NV	NA	NA	--	**0.557 J**	--	--	--
2,3,7,8-TCDD	NV	NV	NA	NA	--	**2.16**	--	--	--
2,3,7,8-TCDF	NV	NV	NA	NA	--	**7.75**	--	--	--
OCDD	NV	NV	NA	NA	--	**1010**	--	--	--

Table 7-5
Sediment Analytical Results and Screening Criteria
Seaport Landing Aquatic Land Lease
Aberdeen, Washington

Investigation Area:	SMS Marine Cleanup Screening Levels				Former Mill Area/Pocket Beach and Chehalis River				
Location:					CR-19D	CR-19F	CR-19F		CR-26
Sample Name:					CR19D-SSD-CONV	CR19F-SSD	CR19F-SBSD	CR19F-SBSD-DUP	CR26-SBSD
Collection Date:	SCO—Dry	CSL—Dry	SCO—Organic	CSL—Organic	10/16/2015	10/16/2015	10/16/2015	10/16/2015	10/15/2015
OCDF	NV	NV	NA	NA	--	**36.8**	--	--	--
Total HpCDDs	NV	NV	NA	NA	--	**340**	--	--	--
Total HpCDFs	NV	NV	NA	NA	--	62.7 U	--	--	--
Total HxCDDs	NV	NV	NA	NA	--	93 U	--	--	--
Total HxCDFs	NV	NV	NA	NA	--	40.2 U	--	--	--
Total PeCDDs	NV	NV	NA	NA	--	26.4 U	--	--	--
Total PeCDFs	NV	NV	NA	NA	--	23.6 U	--	--	--
Total TCDDs	NV	NV	NA	NA	--	20.6 U	--	--	--
Total TCDFs	NV	NV	NA	NA	--	25.6 U	--	--	--
Dioxin TEQ	NV	NV	NA	NA	--	**10.6**	--	--	--
Petroleum Hydrocarbons—dry weight (mg/kg)									
Gasoline	NV	NV	NV	NV	--	--	--	--	--
Diesel	NV	NV	NV	NV	--	**93**	--	--	--
Motor-Oil Range	NV	NV	NV	NV	--	**240**	--	--	--
Conventionals									
Ammonia (as N) (mg N/kg)	NV	NV	NV	NV	**18.6**	--	--	--	--
Sulfide (mg/kg)	NV	NV	NV	NV	**605**	--	--	--	--
Total Volatile Solids (%)	NV	NV	NV	NV	**8.58**	--	--	--	--
Fixed Solids (%)	NV	NV	NV	NV	**44.8**	--	--	--	--
Total solids (%)	NV	NV	NV	NV	**39.38**	**49.31**	**50.3**	**51.43**	**46.69**
Grain Size (%)									
Gravel	NV	NV	NV	NV	**1**	--	--	--	--
Very coarse sand	NV	NV	NV	NV	**3.8**	--	--	--	--
Coarse sand	NV	NV	NV	NV	**1.8**	--	--	--	--
Medium sand	NV	NV	NV	NV	**2**	--	--	--	--
Fine sand	NV	NV	NV	NV	**4.6**	--	--	--	--
Very fine sand	NV	NV	NV	NV	**8.9**	--	--	--	--
Coarse silt	NV	NV	NV	NV	**16**	--	--	--	--
Medium silt	NV	NV	NV	NV	**20.1**	--	--	--	--
Fine silt	NV	NV	NV	NV	**14.6**	--	--	--	--
Very fine silt	NV	NV	NV	NV	**7.3**	--	--	--	--
Coarse clay	NV	NV	NV	NV	**5.9**	--	--	--	--
Medium clay	NV	NV	NV	NV	**3.4**	--	--	--	--
Fine clay	NV	NV	NV	NV	**10.5**	--	--	--	--
Total fines	NV	NV	NV	NV	**77.8**	--	--	--	--
Asbestos (%)									
Asbestos	NV	NV	NV	NV	--	--	--	--	--
Pore Water Analysis									
Conductivity (uS/cm)	NV	NV	NV	NV	--	--	--	--	--
Salinity (ppt)	NV	NV	NV	NV	--	--	--	--	--

Table 7-5
Sediment Analytical Results and Screening Criteria
Seaport Landing Aquatic Land Lease
Aberdeen, Washington

Investigation Area:	SMS Marine Cleanup Screening Levels				Wharf Area			
Location:					Downstream Dock	Dock Front	Upstream Dock	Composite
Sample Name:					DNR-SSDD-COMP	DNR-SSDF-COMP	DNR-SSDU-COMP	DNR-SSD-SUPCOMP[c]
Collection Date:	SCO—Dry Weight	CSL—Dry Weight	SCO—Organic Carbon	CSL—Organic Carbon	Apr-11	Apr-11	Apr-11	Apr-11
Collection Depth (ft bml):					0-0.33	0-0.33	0-0.33	0-0.33
Conventionals (%)								
Total Organic Carbon	NV	NV	NV	NV	**1.2**	**2.4**	**0.65**	--
PCBs (ug/kg-OC)								
Total PCBs[b]	NA	NA	12000	65000	1000 U	875 U	1846 U	--
SVOCs (ug/kg-OC)								
1,2,4-Trichlorobenzene	NA	NA	810	1800	333 U	333 U	338 U	--
1,2-Dichlorobenzene	NA	NA	2300	2300	333 U	333 U	338 U	--
1,4-Dichlorobenzene	NA	NA	3100	9000	333 U	333 U	338 U	--
Bis(2-ethylhexyl)phthalate	NA	NA	47000	78000	10000 U	10000 U	10308 U	--
Butylbenzylphthalate	NA	NA	4900	64000	667 U	**5000**	692 U	--
Dibenzofuran	NA	NA	15000	58000	**750**	**1125** H	692 U	--
Diethylphthalate	NA	NA	61000	110000	667 U	667 U	692 U	--
Dimethyl phthalate	NA	NA	53000	53000	667 U	667 U	692 U	--
Di-n-butyl phthalate	NA	NA	220000	1700000	1333 U	1333 U	1369 U	--
Di-n-octyl phthalate	NA	NA	58000	4500000	1333 U	1333 U	1369 U	--
Hexachlorobenzene	NA	NA	380	2300	333 U	333 U	338 U	--
Hexachlorobutadiene	NA	NA	3900	6200	333 U	333 U	338 U	--
N-Nitrosodiphenylamine	NA	NA	11000	11000	333 U	333 U	338 U	--
PAHs (ug/kg-OC)								
2-Methylnaphthalene	NA	NA	38000	64000	**308**	**542** H	137 U	--
Acenaphthene	NA	NA	16000	57000	**650**	**1833** H	**308**	--
Acenaphthylene	NA	NA	66000	66000	**308**	**292** H	**231**	--
Anthracene	NA	NA	220000	1200000	**4333**	**1667** H	**877**	--
Benzo(a)anthracene	NA	NA	110000	270000	**5917**	**8750** H	**3538**	--
Benzo(a)pyrene	NA	NA	99000	210000	**5083**	**8750** H	**3538**	--
Benzo(ghi)perylene	NA	NA	31000	78000	**2583**	**3167** H	**1846**	--
Chrysene	NA	NA	110000	460000	**10833**	**13333** H	**6154**	--
Dibenzo(a,h)anthracene	NA	NA	12000	33000	**917**	**1292** H	**492**	--
Fluoranthene	NA	NA	160000	1200000	**16667**	**8750** H	**4000**	--
Fluorene	NA	NA	23000	79000	**2833**	**1625** H	**415**	--
Indeno(1,2,3-cd)pyrene	NA	NA	34000	88000	**2583**	**3292** H	**1692**	--
Naphthalene	NA	NA	99000	170000	133 U	**417**	137 U	--
Phenanthrene	NA	NA	100000	480000	**9167**	**5417** H	**1692**	--
Pyrene	NA	NA	1000000	1400000	**14167**	**8750** H	**4154**	--
Total Benzofluoranthenes	NA	NA	230000	450000	**12500**	**16667** H	**7077**	--
Total HPAHs[b]	NA	NA	960000	5300000	**71250**	**72750**	**32492**	--
Total LPAHs[b]	NA	NA	370000	780000	**17292**	**11250**	**3523**	--
PCBs—dry weight (ug/kg)								
Aroclor 1016	NV	NV	NA	NA	12 U	21 U	12 U	--
Aroclor 1221	NV	NV	NA	NA	12 U	21 U	12 U	--

Table 7-5
Sediment Analytical Results and Screening Criteria
Seaport Landing Aquatic Land Lease
Aberdeen, Washington

Investigation Area:	SMS Marine Cleanup Screening Levels				Wharf Area			
Location:					Downstream Dock	Dock Front	Upstream Dock	Composite
Sample Name:					DNR-SSDD-COMP	DNR-SSDF-COMP	DNR-SSDU-COMP	DNR-SSD-SUPCOMP[c]
Collection Date:	SCO—Dry	CSL—Dry	SCO—Organic	CSL—Organic	Apr-11	Apr-11	Apr-11	Apr-11
Aroclor 1232	NV	NV	NA	NA	12 U	21 U	12 U	--
Aroclor 1242	NV	NV	NA	NA	12 U	21 U	12 U	--
Aroclor 1248	NV	NV	NA	NA	12 U	21 U	12 U	--
Aroclor 1254	NV	NV	NA	NA	12 U	21 U	12 U	--
Aroclor 1260	NV	NV	NA	NA	12 U	21 U	12 U	--
Aroclor 1268	NV	NV	NA	NA	--	--	--	--
Total PCBs[b]	130	1000	NA	NA	12 U	21 U	12 U	--
SVOCs—dry weight (ug/kg)								
1,2,4-Trichlorobenzene	31	51	NA	NA	4 U	8 U	2.2 U	--
1,2-Dichlorobenzene	35	50	NA	NA	4 U	8 U	2.2 U	--
1,4-Dichlorobenzene	110	110	NA	NA	4 U	8 U	2.2 U	--
Bis(2-ethylhexyl)phthalate	1300	1900	NA	NA	120 U	240 U	67 U	--
Butylbenzylphthalate	63	900	NA	NA	8 U	120	4.5 U	
Dibenzofuran	540	540	NA	NA	**9**	**27 H**	4.5 U	--
Diethylphthalate	200	>1200	NA	NA	8 U	16 U	4.5 U	--
Dimethyl phthalate	71	160	NA	NA	8 U	16 U	4.5 U	--
Di-n-butyl phthalate	1400	1400	NA	NA	16 U	32 U	8.9 U	--
Di-n-octyl phthalate	6200	6200	NA	NA	16 U	32 U	8.9 U	--
Hexachlorobenzene	22	70	NA	NA	4 U	8 U	2.2 U	--
Hexachlorobutadiene	11	120	NA	NA	4 U	8 U	2.2 U	--
N-Nitrosodiphenylamine	28	40	NA	NA	4 U	8 U	2.2 U	--
PAHs—dry weight (ug/kg)								
2-Methylnaphthalene	670	670	NA	NA	**3.7**	**13 H**	0.89 U	--
Acenaphthene	500	500	NA	NA	**7.8**	**44 H**	**2**	--
Acenaphthylene	1300	1300	NA	NA	**3.7**	**7 H**	**1.5**	--
Anthracene	960	960	NA	NA	**52**	**40 H**	**5.7**	--
Benzo(a)anthracene	1300	1600	NA	NA	**71**	**210 H**	**23**	--
Benzo(a)pyrene	1600	1600	NA	NA	**61**	**210 H**	**23**	--
Benzo(ghi)perylene	670	720	NA	NA	**31**	**76 H**	**12**	--
Chrysene	1400	2800	NA	NA	**130**	**320 H**	**40**	--
Dibenzo(a,h)anthracene	230	230	NA	NA	**11**	**31 H**	**3.2**	--
Fluoranthene	1700	2500	NA	NA	**200**	**210 H**	**26**	--
Fluorene	540	540	NA	NA	**34**	**39 H**	**2.7**	--
Indeno(1,2,3-cd)pyrene	600	690	NA	NA	**31**	**79 H**	**11**	--
Naphthalene	2100	2100	NA	NA	1.6 U	**10**	0.89 U	--
Phenanthrene	1500	1500	NA	NA	**110**	**130 H**	**11**	--
Pyrene	2600	3300	NA	NA	**170**	**210 H**	**27**	--
Total Benzofluoranthenes	3200	3600	NA	NA	**150**	**400 H**	**46**	--
Total HPAHs[b]	12000	17000	NA	NA	**855**	**1746 H**	**211.2**	--
Total LPAHs[b]	5200	5200	NA	NA	**207.5**	**270 H**	**22.9**	--

Table 7-5
Sediment Analytical Results and Screening Criteria
Seaport Landing Aquatic Land Lease
Aberdeen, Washington

Investigation Area:	SMS Marine Cleanup Screening Levels				Wharf Area			
Location:					Downstream Dock	Dock Front	Upstream Dock	Composite
Sample Name:					DNR-SSDD-COMP	DNR-SSDF-COMP	DNR-SSDU-COMP	DNR-SSD-SUPCOMP[c]
Collection Date:	SCO—Dry	CSL—Dry	SCO—Organic	CSL—Organic	Apr-11	Apr-11	Apr-11	Apr-11
Total Metals—dry weight (mg/kg)								
Arsenic	57	93	NA	NA	3.3 U	5.9 U	2.7 U	--
Cadmium	5.1	6.7	NA	NA	**1.7**	0.98 U	0.45 U	--
Chromium	260	270	NA	NA	**14**	**28**	**13**	--
Copper	390	390	NA	NA	**39**	**61**	**43**	--
Lead	450	530	NA	NA	**3.7**	**9.1**	**6.1**	--
Mercury	0.41	0.59	NA	NA	**0.025**	**0.074**	0.018 U	--
Silver	6.1	6.1	NA	NA	1.1 U	2 U	0.9 U	--
Zinc	410	960	NA	NA	**41**	**75**	**39**	--
SVOCs—dry weight (ug/kg)								
1,3-Dichlorobenzene	NA	NA	NA	NA	--	--	--	--
2,4-Dimethylphenol	29	29	NA	NA	8 U	16 U	4.5 U	--
2-Methylphenol	63	63	NA	NA	8 U	16 U	4.5 U	--
3,4-Methylphenol	NA	NA	NA	NA	16 U	32 U	8.9 U	--
4-Methylphenol	670	670	NA	NA	--	--	--	--
Benzoic acid	650	650	NA	NA	200 U	400 U	110 U	--
Benzyl alcohol	57	73	NA	NA	8 U	16 U	4.5 U	--
Pentachlorophenol	360	690	NA	NA	16 U	32 U	8.9 U	--
Phenol	420	1200	NA	NA	8 U	16 U	4.5 U	--
PAHs—dry weight (ug/kg)								
1-Methylnaphthalene	NV	NV	NA	NA	--	--	--	--
TCLP Metals (mg/L)								
Lead	NA	NA	NA	NA	--	--	--	--
Mercury	NA	NA	NA	NA	--	--	--	--
Dioxins/Furans—dry weight (pg/g)								
1,2,3,4,6,7,8-HpCDD	NV	NV	NA	NA	--	--	--	250
1,2,3,4,6,7,8-HpCDF	NV	NV	NA	NA	--	--	--	10
1,2,3,4,7,8,9-HpCDF	NV	NV	NA	NA	--	--	--	1.5 U
1,2,3,4,7,8-HxCDD	NV	NV	NA	NA	--	--	--	1.1 U
1,2,3,4,7,8-HxCDF	NV	NV	NA	NA	--	--	--	1.5 U
1,2,3,6,7,8-HxCDD	NV	NV	NA	NA	--	--	--	**5.5 J**
1,2,3,6,7,8-HxCDF	NV	NV	NA	NA	--	--	--	0.43 U
1,2,3,7,8,9-HxCDD	NV	NV	NA	NA	--	--	--	**3.7 J**
1,2,3,7,8,9-HxCDF	NV	NV	NA	NA	--	--	--	0.59 U
1,2,3,7,8-PeCDD	NV	NV	NA	NA	--	--	--	0.75 U
1,2,3,7,8-PeCDF	NV	NV	NA	NA	--	--	--	0.49 U
2,3,4,6,7,8-HxCDF	NV	NV	NA	NA	--	--	--	0.43 U
2,3,4,7,8-PeCDF	NV	NV	NA	NA	--	--	--	0.53 U
2,3,7,8-TCDD	NV	NV	NA	NA	--	--	--	**0.65 J**
2,3,7,8-TCDF	NV	NV	NA	NA	--	--	--	0.43 U
OCDD	NV	NV	NA	NA	--	--	--	**1700**

Table 7-5
Sediment Analytical Results and Screening Criteria
Seaport Landing Aquatic Land Lease
Aberdeen, Washington

Investigation Area:	SMS Marine Cleanup Screening Levels				Wharf Area			
Location:					Downstream Dock	Dock Front	Upstream Dock	Composite
Sample Name:					DNR-SSDD-COMP	DNR-SSDF-COMP	DNR-SSDU-COMP	DNR-SSD-SUPCOMP[c]
Collection Date:	SCO—Dry	CSL—Dry	SCO—Organic	CSL—Organic	Apr-11	Apr-11	Apr-11	Apr-11
OCDF	NV	NV	NA	NA	--	--	--	**19**
Total HpCDDs	NV	NV	NA	NA	--	--	--	**1300**
Total HpCDFs	NV	NV	NA	NA	--	--	--	**40**
Total HxCDDs	NV	NV	NA	NA	--	--	--	**93**
Total HxCDFs	NV	NV	NA	NA	--	--	--	**21**
Total PeCDDs	NV	NV	NA	NA	--	--	--	1.7 U
Total PeCDFs	NV	NV	NA	NA	--	--	--	**1.5** U
Total TCDDs	NV	NV	NA	NA	--	--	--	**1.5**
Total TCDFs	NV	NV	NA	NA	--	--	--	0.43 U
Dioxin TEQ	NV	NV	NA	NA	--	--	--	**5.4**
Petroleum Hydrocarbons—dry weight (mg/kg)								
Gasoline	NV	NV	NV	NV	--	--	--	--
Diesel	NV	NV	NV	NV	--	--	--	--
Motor-Oil Range	NV	NV	NV	NV	--	--	--	--
Conventionals								
Ammonia (as N) (mg N/kg)	NV	NV	NV	NV	**1.2**	**2.4**	**0.65**	--
Sulfide (mg/kg)	NV	NV	NV	NV	**84**	**45**	**80**	--
Total Volatile Solids (%)	NV	NV	NV	NV	--	--	--	--
Fixed Solids (%)	NV	NV	NV	NV	--	--	--	--
Total solids (%)	NV	NV	NV	NV	**84**	**45**	**80**	**79.1**
Grain Size (%)								
Gravel	NV	NV	NV	NV	--	--	--	--
Very coarse sand	NV	NV	NV	NV	--	--	--	--
Coarse sand	NV	NV	NV	NV	--	--	--	--
Medium sand	NV	NV	NV	NV	--	--	--	--
Fine sand	NV	NV	NV	NV	--	--	--	--
Very fine sand	NV	NV	NV	NV	--	--	--	--
Coarse silt	NV	NV	NV	NV	--	--	--	--
Medium silt	NV	NV	NV	NV	--	--	--	--
Fine silt	NV	NV	NV	NV	--	--	--	--
Very fine silt	NV	NV	NV	NV	--	--	--	--
Coarse clay	NV	NV	NV	NV	--	--	--	--
Medium clay	NV	NV	NV	NV	--	--	--	--
Fine clay	NV	NV	NV	NV	--	--	--	--
Total fines	NV	NV	NV	NV	--	--	--	--
Asbestos (%)								
Asbestos	NV	NV	NV	NV	--	--	--	--
Pore Water Analysis								
Conductivity (uS/cm)	NV	NV	NV	NV	--	--	--	--
Salinity (ppt)	NV	NV	NV	NV	--	--	--	--

Table 7-5
Sediment Analytical Results and Screening Criteria
Seaport Landing Aquatic Land Lease
Aberdeen, Washington

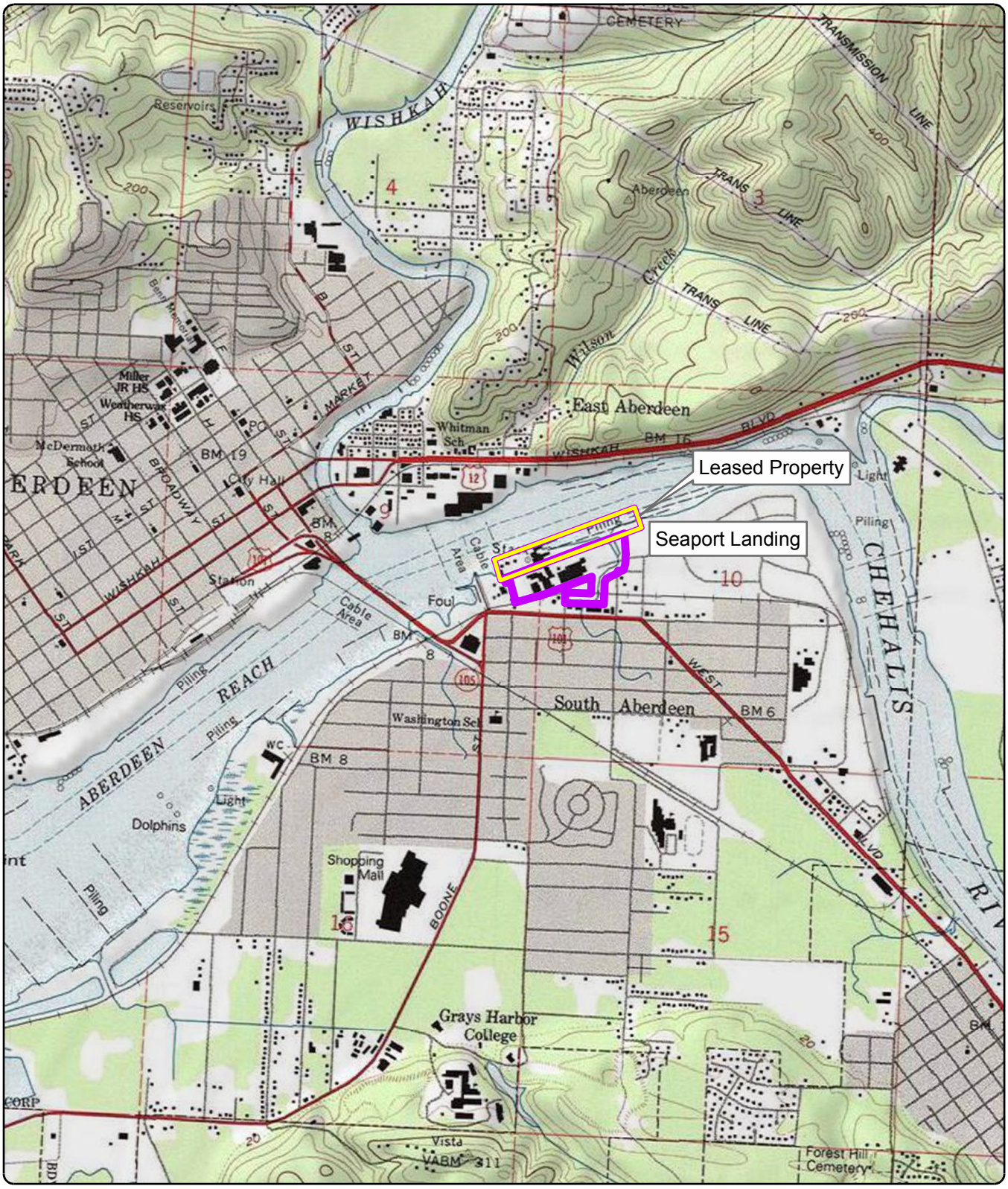
NOTES:
Detections are in **bold** font.
Detections that exceed marine benthic criteria are shaded gray. Non-detect results are not screened against criteria.
-- = not analyzed.
< = less than the limit of detection.
CSL = cleanup screening level.
ft bml = feet below mudline.
HPAH = high-molecular-weight PAH.
J = result is an estimated value.
LPAH = low-molecular-weight PAH.
mg N/kg = milligrams of nitrogen per kilogram.
mg/kg = milligrams per kilogram.
mg/L = milligrams per liter.
NA = not applicable.
NV = no value.
OC =organic carbon.
PAH = polycyclic aromatic hydrocarbon.
PCB = polychlorinated biphenyl.
pg/g = picograms per gram (parts per trillion).
ppt = parts per thousand.
SIM = selective ion monitoring.
SMS = Sediment Management Standards.
SVOC = semivolatile organic compound. When samples were analyzed by both 8270D and 8270D SIM methods, or when samples were reanalyzed, the higher detected value or lower non-detect value was used.
TEQ = toxicity equivalence quotient.
TCLP = toxicity characteristic leaching procedure.
Total PCBs = sum of PCB Aroclors.
U = result is non-detect at method reporting limit.
ug/kg = micrograms per kilogram.
UJ = result is non-detect at or above method reporting limit. Reported value is estimated.
uS/cm = microSiemen =(micromhos) per centimeter.
WAC = Washington Administrative Code.
[a]Dry weight AET values are used when TOC results are outside the range of 0.5 to 3.5%.
[b]Calculated value. Only detected values are summed.
[c]DNR-SSD-SUPCOMP is a composite sample of DNR-SSDD, DNR-SSDF, and DNR-SSDU composites.

Table 7-6
Woodwaste Toxicity Scoring
Seaport Landing Aquatic Land Lease
Aberdeen, Washington

		Location:	CR-04		CR-04		CR-05		CR-06		CR-06		CR-19D	
		Sample Name:	CR04-10cm		CR04-5		CR05-10cm		CR06-10cm		CR06-2.5		CR-19D-SSD-CONV	
		Collection Date:	11/07/2013		11/08/2013		11/08/2013		11/07/2013		11/07/2013		10/16/2015	
		Collection Depth (ft bgs):	0-0.33		4-5		0-0.33		0-0.33		1-2.5		0-0.33	
	Woodwaste Scoring Criteria (DNR, 2011)													
	Score Criteria Level 1	Score Criteria Level 2		Points		Points		Points		Points		Points		Points
Phenol	420	1,200	290 J	0	980 J	1	570 J	1	370 J	0	240 J	0	93 J	0
Ammonia (as N) (mg N/kg)	≥30<40	≥40	0.47 U	0	15.2	0	7.21	0	1.37	0	14.0	0	18.6	0
Sulfide (mg/kg)	≥200<300	≥300	6.46	0	179	0	320	2	906	2	2910	2	605	2
Total Organic Carbon (%)	≥5<10	≥10	31.4 J	2	16.5 J	2	13.6 J	2	35.6 J	2	49.5 J	2	3.99	0
Total Volatile Solids (%)	≥10<15	>15	59.91	2	38.2	2	36.49	2	60.05	2	69.23	2	8.58	0
Total Solids (%)	≤50≥40	<40	20.62	2	19.98	2	30.32	2	21.4	2	21.59	2	39.38	2
Total Score														
				6		7		9		8		8		4

NOTES:
<5 = low concern.
≥5 < 6 = low medium concern.
≥6 < 7 = medium concern.
>7 = high concern.
ft bgs = feet below ground surface.
J = result is an estimated value.
mg N/kg = milligrams of nitrogen per kilogram.
mg/kg = milligrams per kilogram.
U = result is non-detect at method reporting limit.

FIGURES



Site Address: 500 North Custer Street, Aberdeen, Washington
Source: US Geological Survey (1990) 7.5-minute topographic quadrangle: Aberdeen
Section 9 & 10, Township 17 North, Range 9 West

Approximate Aquatic Lease Area

Seaport Authority Property

Figure 1-1
Property Location
Aberdeen, Washington

0 1,000 2,000
Feet

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Path: X:\1044.02.01-02 Grays Harbor Seaport Authority\Projects\Seaport_Landing_RI_FS\Fig1-1_Property Location_MJ.mxd
Print Date: 1/4/2017
Approved By: M. Novak
Produced By: mjosef
Project: 0863.01.05

Source: Aerial photograph obtained from Esri ArcGIS Online; parcels and roads obtained from Grays Harbor County; harbor lines obtained from Washington Dept. of Natural Resources.

Produced by Maul Foster & Alongi, Inc.

GRAYS HARBOR HISTORICAL SEAPORT

Legend

Approximate Aquatic Lease Areas (with Lease Number)

- *Pakonen Boatyard*
- *Seaport Authority*

- Inner Harbor Line
- Outer Harbor Line

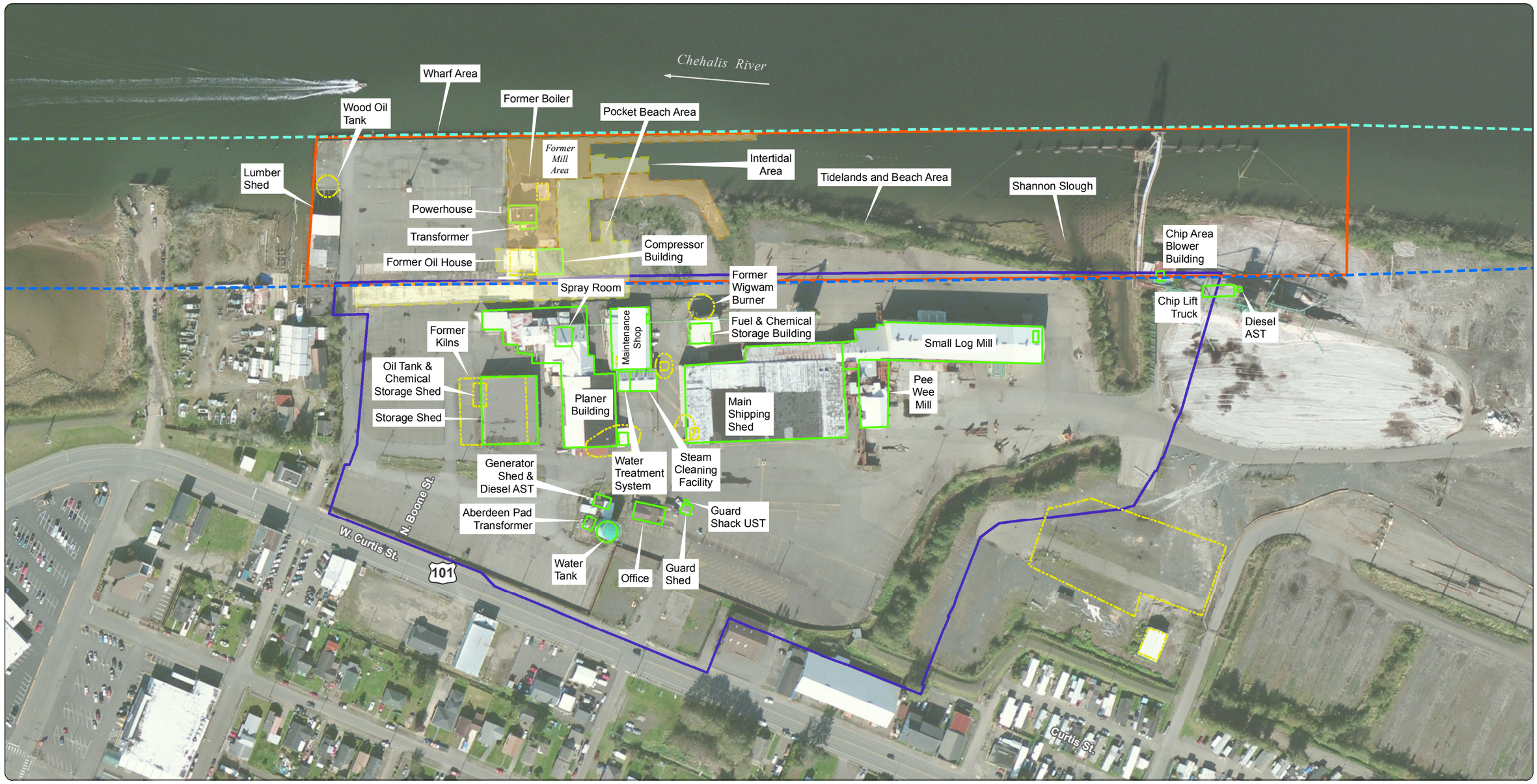
Notes:

1. Areas of property ownership have been generalized based on taxlot information obtained from the County and a purchase sale agreement for the Seaport Authority property, and should be considered approximate.
2. Aquatic lease areas were digitized from print maps of the Aberdeen tidelands dated Mar. 22, 2001 and Jan. 15, 1907 on file with the Office of the Commissioner of Public Lands in Olympia, Washington, and should be considered approximate.

Figure 1-2
Property Vicinity

Aberdeen, Washington

0 100 200
Feet



Source:
Aerial photograph obtained from Esri ArcGIS Online.
Parcels and roads obtained from Grays Harbor County.
Harbor lines obtained from Washington Dept. of Natural Resources.
Former features from Level I Environmental Site Assessment,
PES Environmental; August 13, 2010.

Legend

- Former Mill
- Former Wharf Extension
- Existing Buildings/Features
- Former Buildings/Features
- Inner Harbor Line
- Outer Harbor Line
- Seaport Authority Property
- Leased Property Area

Figure 1-3
Historical and Current Property Features
Aberdeen, Washington

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GRAYS HARBOR HISTORICAL SEAPORT

0 100 200
Feet

Source: Aerial photograph obtained from Esri ArcGIS Online; parcels and roads obtained from Grays Harbor County; harbor lines obtained from Washington Dept. of Natural Resources.

- Approximate Aquatic Lease Area
- Seaport Authority Property
- Former Mill
- Former Wharf Extension
- Catch Basin
- Oil/Water Separator
- Outfall
- Drain Pipe (with flow direction)

Study

- 1998 Sediment Samples
- 2011 Sediment Samples
- 2013 Sediment Samples
- 2015 Upland Samples
- 2015 Sediment Samples

Notes:
1. GHHSA = Grays Harbor Historical Seaport Authority.
2. Aquatic lease areas were digitized from print maps of Aberdeen tidelands dated Mar. 22, 2001 and Jan. 15, 1907 on file with the Office of the Commissioner of Public Lands in Olympia, Washington, and should be considered approximate.

Figure 2-1
Sample Locations

Aberdeen, Washington

GRAYS HARBOR HISTORICAL SEAPORT

0 100 200
Feet

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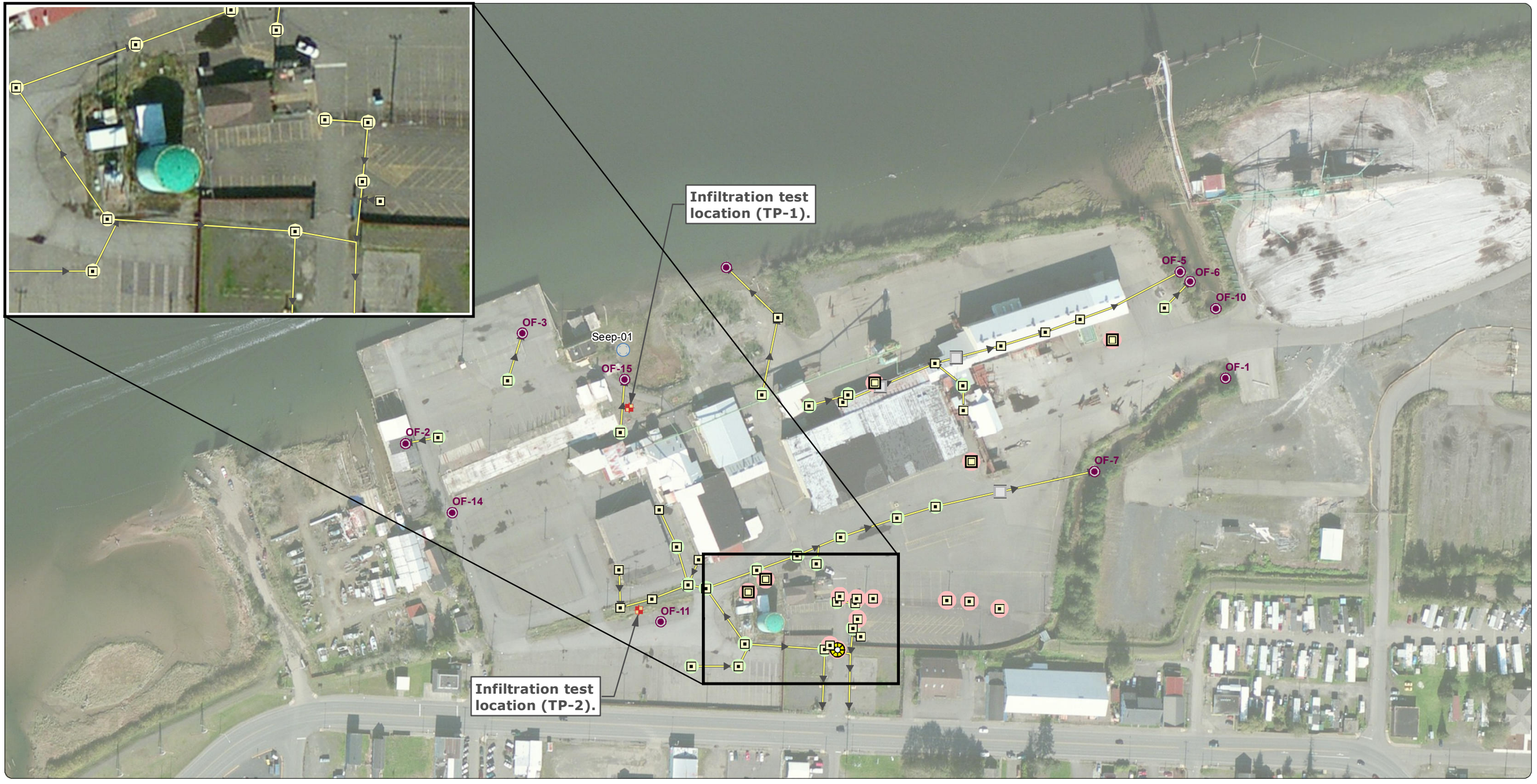
Path: X:\1044.02.01-02 Grays Harbor Seaport Authority\Projects\Seaport_Landing_RI_FS\Fig2-1_SampleLocationsLabeled_02.mxd
Print Date: 5/22/2019
Approved By: mstringer
Produced By: aguse
Project: 0863.01.01-02



Source: Aerial photograph obtained from Esri ArcGIS Online; 1993 stormwater features digitized from Level I Environmental Site Assessment report, Appendix A-2 (PES Environmental, Inc., 2010); 2000 stormwater features digitized from plan set of existing storm drainage system and grading and drainage plan prepared by Berglund, Schmidt, and Assoc., Inc.

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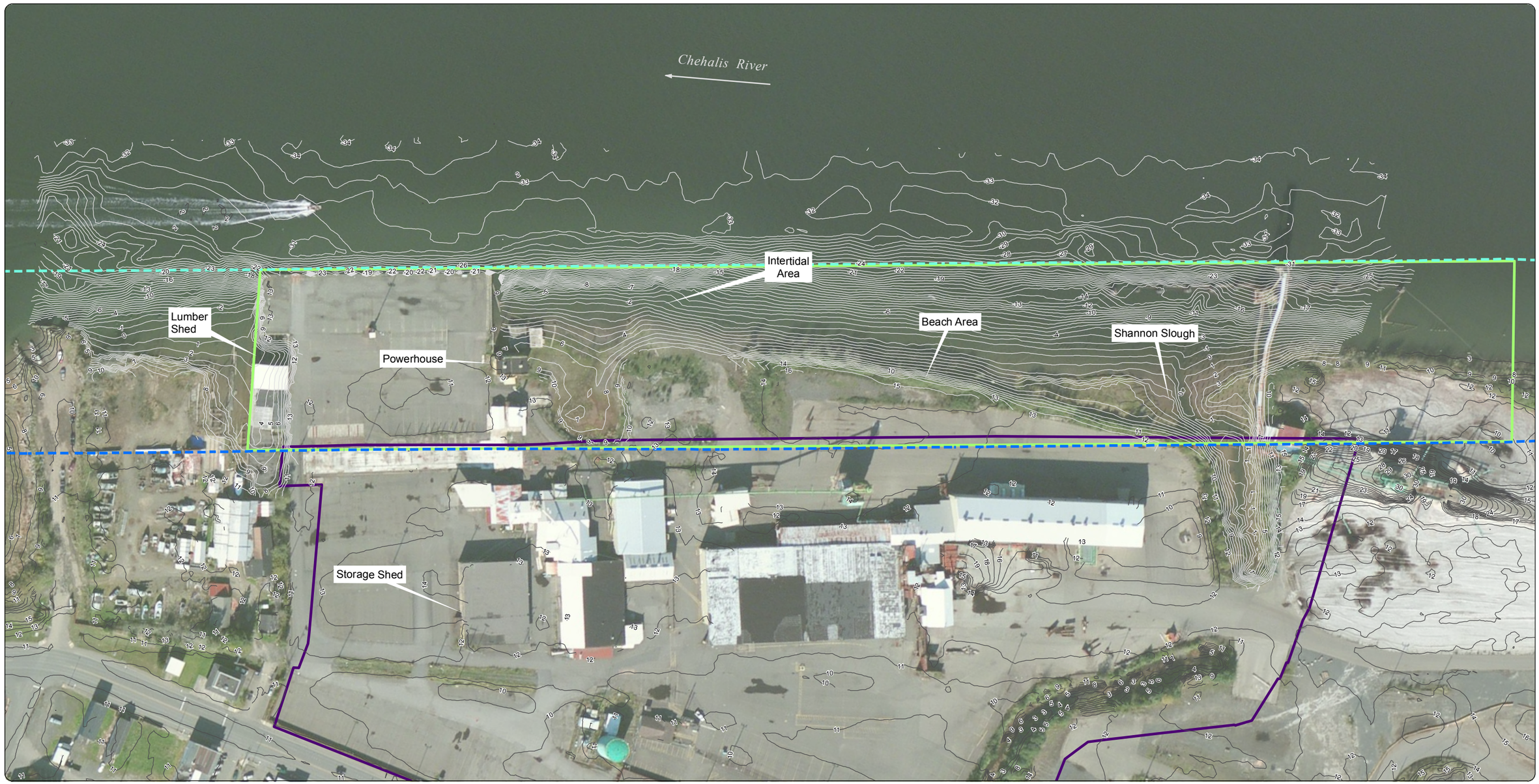
Legend

- Catch Basin
- Electrical Vault
- Sanitary Manhole
- Drain Pipe (with flow direction)
- Infiltration Test Location (10/27/15)
- Oil/Water Separator
- Outfall (field verified)
- Verified
- GPS located

Note: All features are approximate.

0 100 200
Feet

Figure 2-2
Surface Drainage Features
Aberdeen, Washington



Source:
Bathymetric survey performed in 2016.
LiDAR survey performed in 2009.
Aerial photograph obtained from Esri ArcGIS Online.
Parcels and roads obtained from Grays Harbor County.
Shorelines boundaries are approximate and derived from Sanborn maps.
Harbor lines obtained from Washington Dept. of Natural Resources.
Former features from Level I Environmental Site Assessment,
PES Environmental; August 13, 2010.

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Legend

- Inner Harbor Line
- Outer Harbor Line
- Approximate Aquatic Lease Area
- One Foot Contour Bathymetry (NAVD88)
- One Foot Contour LiDAR (NAVD88)

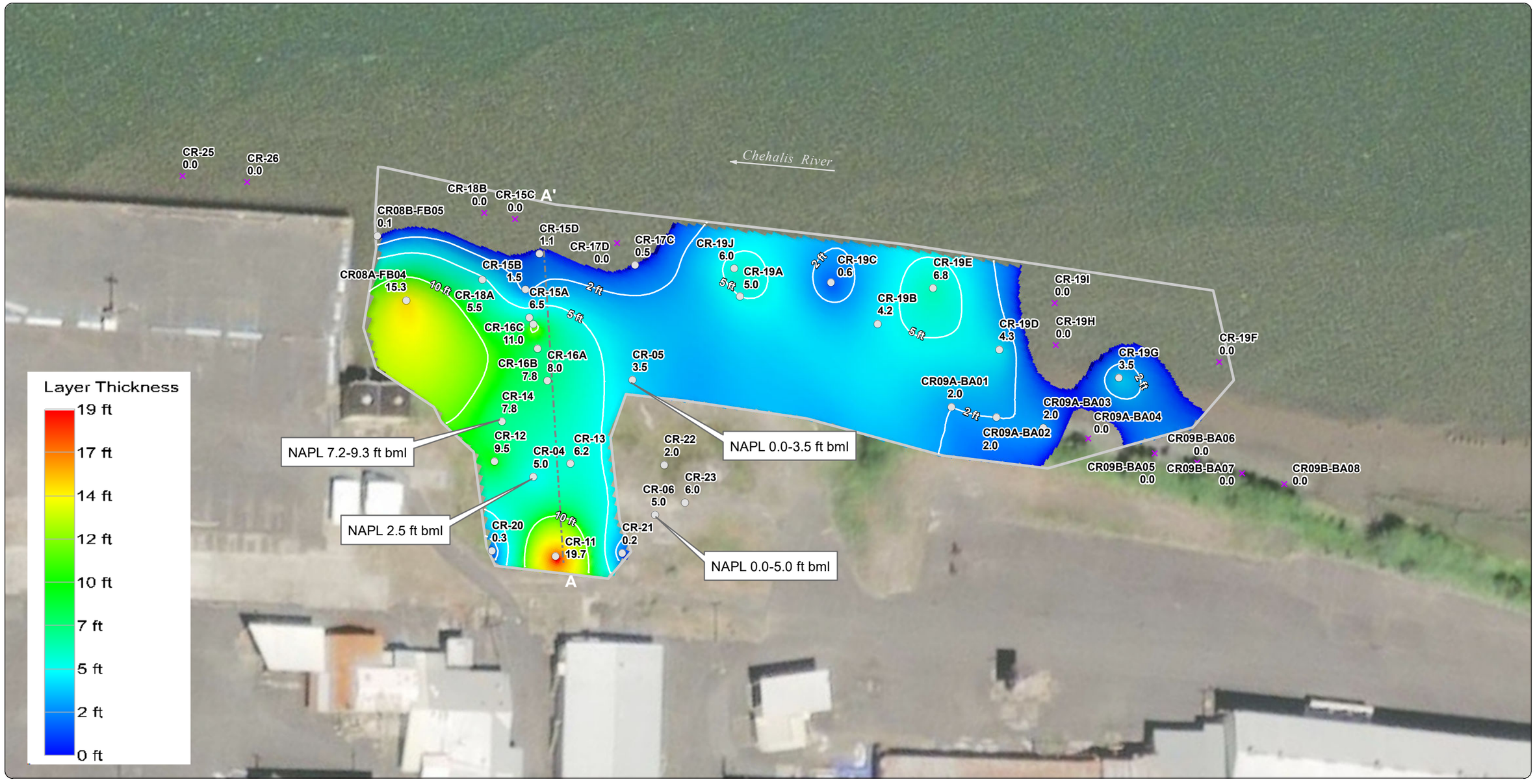
Figure 4-1
Bathymetry and Topography

Aberdeen, Washington

GRAYS HARBOR HISTORICAL SEAPORT

0 100 200
Feet

Project: 0863.01.01-02 Produced By: estrandhagen Approved By: mstringer Print Date: 4/5/2017



Source: Aerial photograph obtained from Esri ArcGIS Online; parcels and roads obtained from Grays Harbor County; harbor lines obtained from Washington Dept. of Natural Resources.

Sample Location

- Woodwaste Thickness (Feet)
- Cross Section Profile (Figure 4-4)
- No significant woodwaste accumulation observed
- Model Domain

Notes:
1. GHHSA = Grays Harbor Historical Seaport Authority.
2. Aquatic lease areas were digitized from print maps of Aberdeen tidelands dated Mar. 22, 2001 and Jan. 15, 1907 on file with the Office of the Commissioner of Public Lands in Olympia, Washington, and should be considered approximate.
3. Signficant is defined as greater than 25% woodwaste by volume.
4. Intervals of no recovery in the first core drilled at a location were assumed to be sediment.

Figure 4-2
Estimated Woodwaste Thickness

Aberdeen, Washington

0 75 150
Feet

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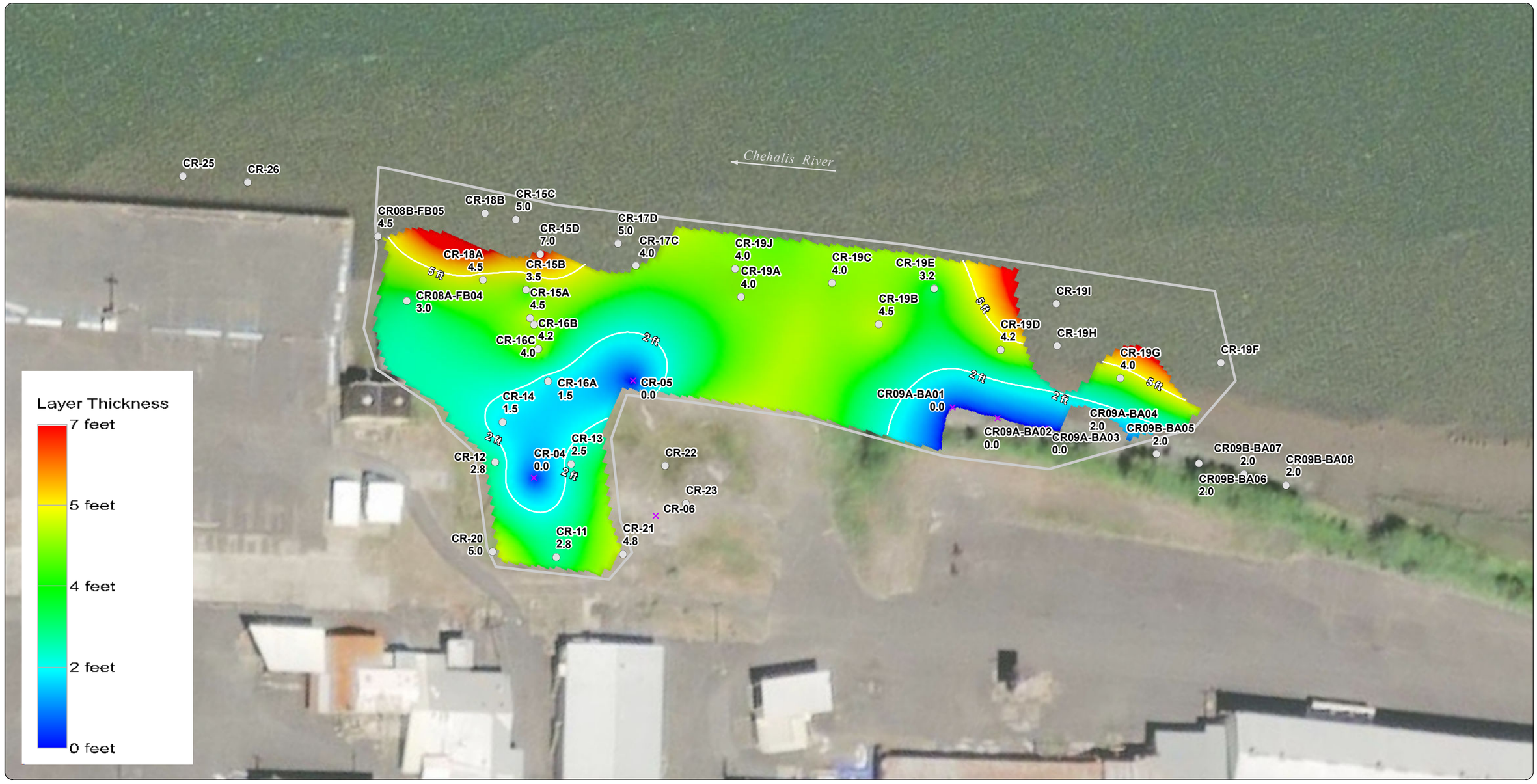

Source: Aerial photograph obtained from Esri ArcGIS Online; parcels and roads obtained from Grays Harbor County; harbor lines obtained from Washington Dept. of Natural Resources.

Sample Location

- Sediment Thickness (Feet)
- Model Domain
- × No Sediment Accumulation Observed

Figure 4-3
Estimated Sediment Thickness Overlying Woodwaste

Aberdeen, Washington

Notes:
1. GHHSA = Grays Harbor Historical Seaport Authority.
2. Aquatic lease areas were digitized from print maps of Aberdeen tidelands dated Mar. 22, 2001 and Jan. 15, 1907 on file with the Office of the Commissioner of Public Lands in Olympia, Washington, and should be considered approximate.
3. Signficant is defined as greater than 25% woodwaste by volume.
4. Intervals of no recovery in the first core drilled at a location were assumed to be sediment.
5. See Figure 4-2 for extent of woodwaste.

GRAYS HARBOR HISTORICAL SEAPORT

0 75 150
Feet

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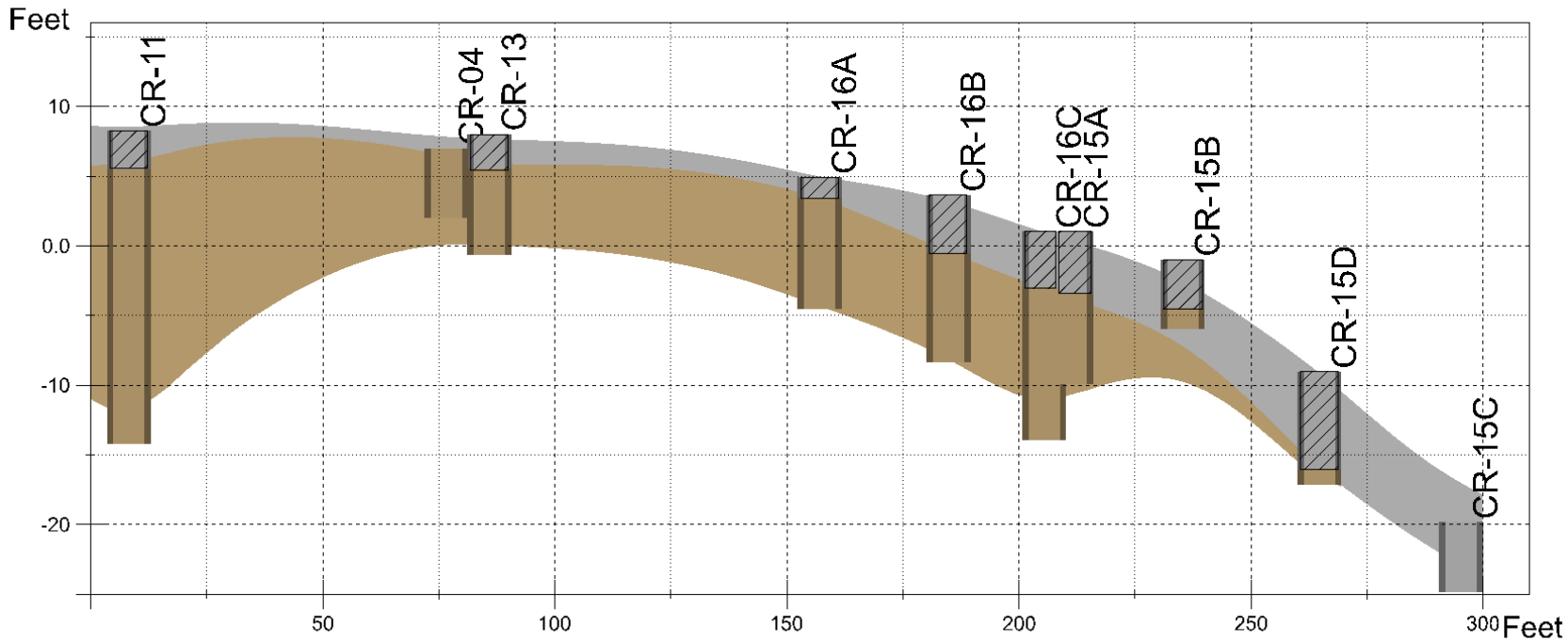
Project: 0863.01.01-02 Produced By: estrandhagen Approved By: mstringer Print Date: 5/7/2019



Legend

- Wood Debris
- Sediment
- No Recovery

Figure 4-4
Woodwaste and Overlying Sediment Cross-Section

Aberdeen, Washington

0 225 450
Feet

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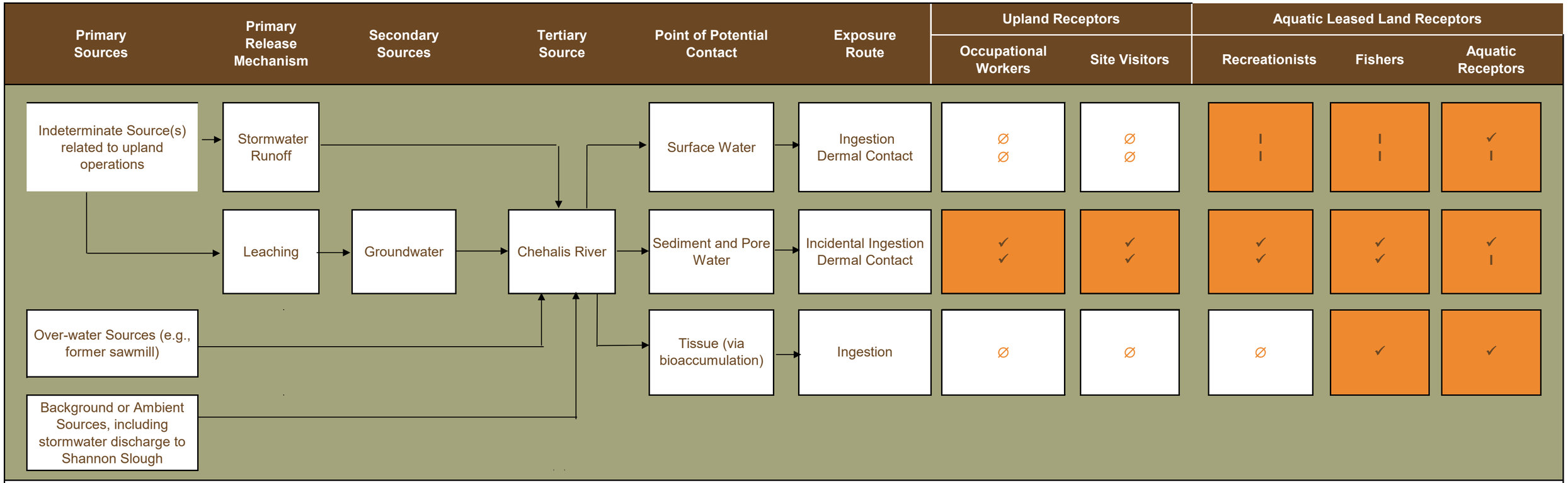
Project: 1044.01 Produced By: estrandhagen Approved By: mnovak Print Date: 4/4/2017 Path: X:\1044.02.01-02 Grays Harbor Seaport Authority\Projects\EVS_Model\Fig4-4_Woodwaste and Overlying Sediment Cross-Section.ai

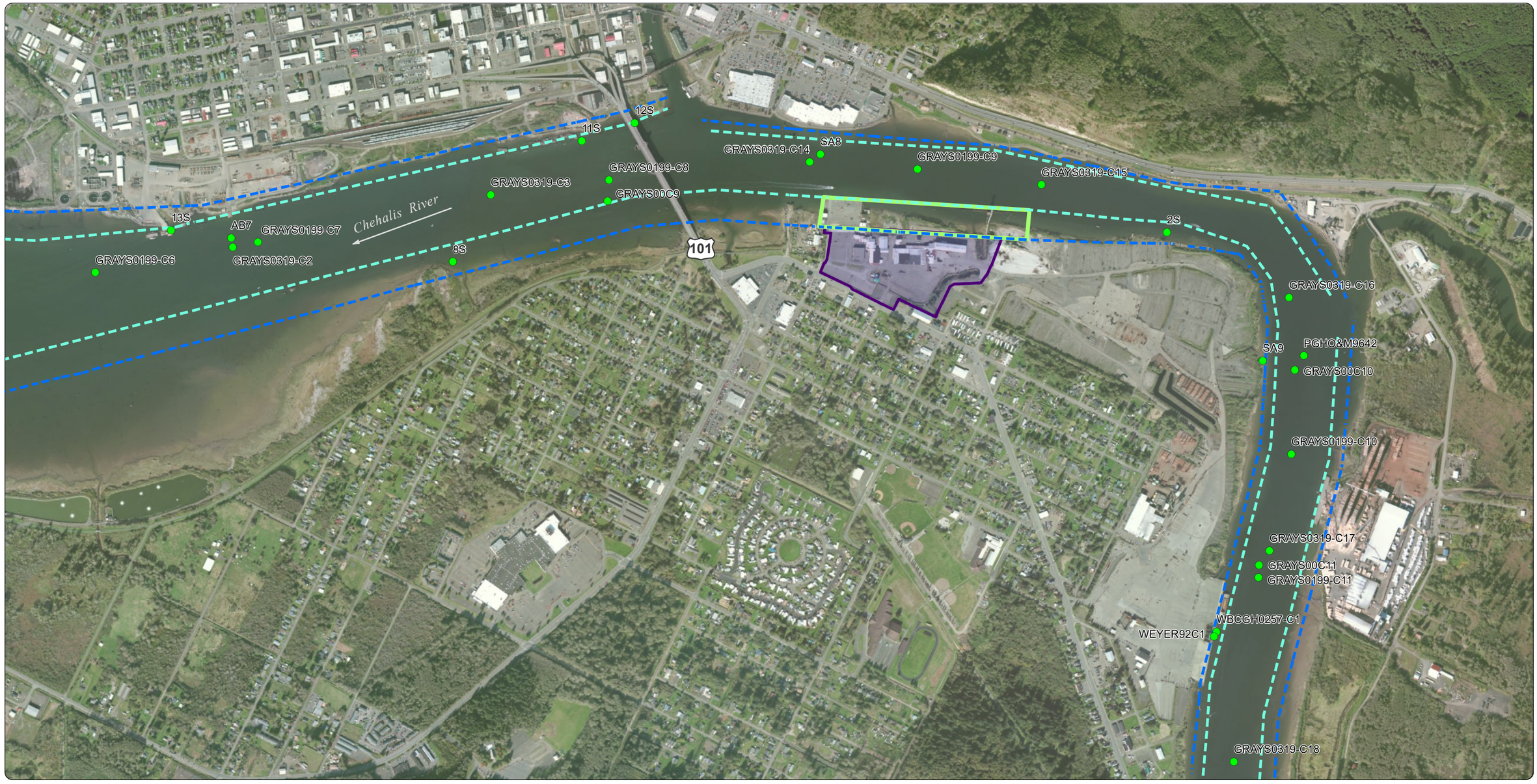
Figure 5-1
Conceptual Site Model
Seaport Landing Aquatic Land Lease
Aberdeen, Washington



Notes:

Primary pathway →
Potentially Complete exposure route ✓
Incomplete exposure route ∅
Insignificant exposure route I

Aquatic receptors include aquatic plants, benthic invertebrates, fish, and piscivorous birds and mammals.



Source: Aerial photograph obtained from Esri ArcGIS Online; parcels and roads obtained from Grays Harbor County; harbor lines obtained from Washington Dept. of Natural Resources.

Approximate Aquatic Lease Area
Background Sediment Samples
Seaport Authority
Inner Harbor Line
Outer Harbor Line

Figure 6-1
Background Sample Locations

Aberdeen, Washington

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Notes:
1. GHHSA = Grays Harbor Historical Seaport Authority.
2. Aquatic lease areas were digitized from print maps of Aberdeen tidelands dated Mar. 22, 2001 and Jan. 15, 1907 on file with the Office of the Commissioner of Public Lands in Olympia, Washington, and should be considered approximate.

GRAYS HARBOR HISTORICAL SEAPORT

0 500 1,000
Feet

Path: X:\1044.02.01-02 Grays Harbor Seaport Authority\Projects\Seaport_Landing_RI_FS\Fig6-1_BackgroundLocationsLabeled_01.mxd
Print Date: 5/22/2019
Approved By: mstringer
Produced By: aguse
Project: 0863.01.01-02

Notes:
1. GHHSA = Grays Harbor Historical Seaport Authority.
2. Aquatic lease areas were digitized from print maps of Aberdeen tidelands dated Mar. 22, 2001 and Jan. 15, 1907 on file with the Office of the Commissioner of Public Lands in Olympia, Washington, and should be considered approximate.
3. TPH exceedance is of Model Toxics Control Act Method A Cleanup Level.
4. Surface is sediment collected in the top 10 centimeters (0 to 0.33 feet below the mudeline).
5. TEQ = toxicity equivalence quotient
6. pg/g-dw = picograms per gram - dry weight

Source: Aerial photograph obtained from Esri ArcGIS Online; parcels and roads obtained from Grays Harbor County; harbor lines obtained from Washington Dept. of Natural Resources.

- Appoximate Aquatic Lease Area
- Seaport Authority Property
- Former Mill
- Former Wharf Extension
- Historical Surface Sample Location (PES Phase II, April 2011)
- Composite Surface Sample

Surface Sediment Sample Locations

- No Exceedances
- No Exceedances - Not Analyzed for TPH
- SCO Exceedance
- SCO and CSL Exceedance

Composite Surface Sediment Sample Locations

- No Exceedances - Not Analyzed for TPH
- No Exceedances - Not Analyzed for Dioxin TEQ
- No Exceedances - Not Analyzed for Dioxin TEQ or TPH
- SCO Exceedance

Figure 7-1
Sediment Management Standard Exceedances

Aberdeen, Washington

0 75 150
Feet

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Path: X:\1044.02.01-02 Grays Harbor Seaport Authority\Projects\Seaport_Landing_RI_FS\Fig7-1 Sediment Management Standard Exceedances_v4.mxd
Print Date: 5/22/2019
Approved By: mstringer
Produced By: aguse
Project: 1044.02.01-05

APPENDIX A

SANBORN MAPS

1906 Certified Sanborn Map

1906 Certified Sanborn Map

CHEHALIS RIVER

Aberdeen Lumber & Shingle Co's

Pacific Power & Light Co

Boundary

Scale of Feet

FRONT

LAWRENCE

COLUMBUS

SLOUGH

WOOD

LEWIS

CUSTER

CLARK

CURTIS

BOONE

WEST BOULEVARD

31

32

720

721

722

736

738

739

740

742

743

745

746

747

748

749

760

502

505

Certification # 574D-4CE3-AD14

Site Name: Weyerhaeuser Aberdeen Sawmill
Address: 500 North Custer Street
City, ST, ZIP: Aberdeen WA 98520
Client: PES Environmental, Inc.
EDR Inquiry: 2805106.3
Order Date: 7/16/2010 5:17:03 PM
Certification # 574D-4CE3-AD14
Copyright: 1906

This Certified Sanborn Map combines the following sheets.
The number of map sheets within the collection.

Volume 1, Sheet 31
Volume 1, Sheet 32

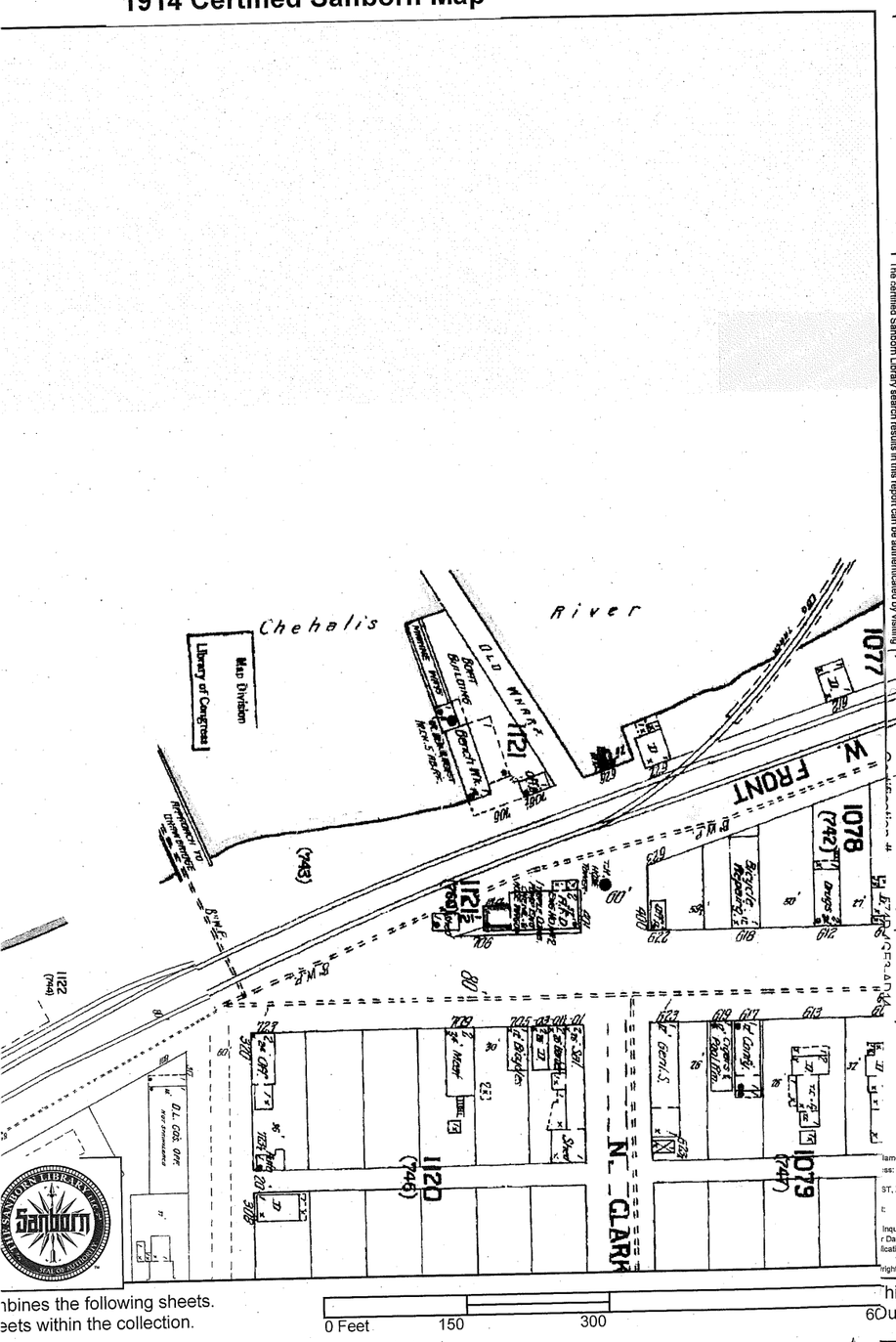
0 Feet 150 300

the following sheets.
thin the collection.

0 Feet

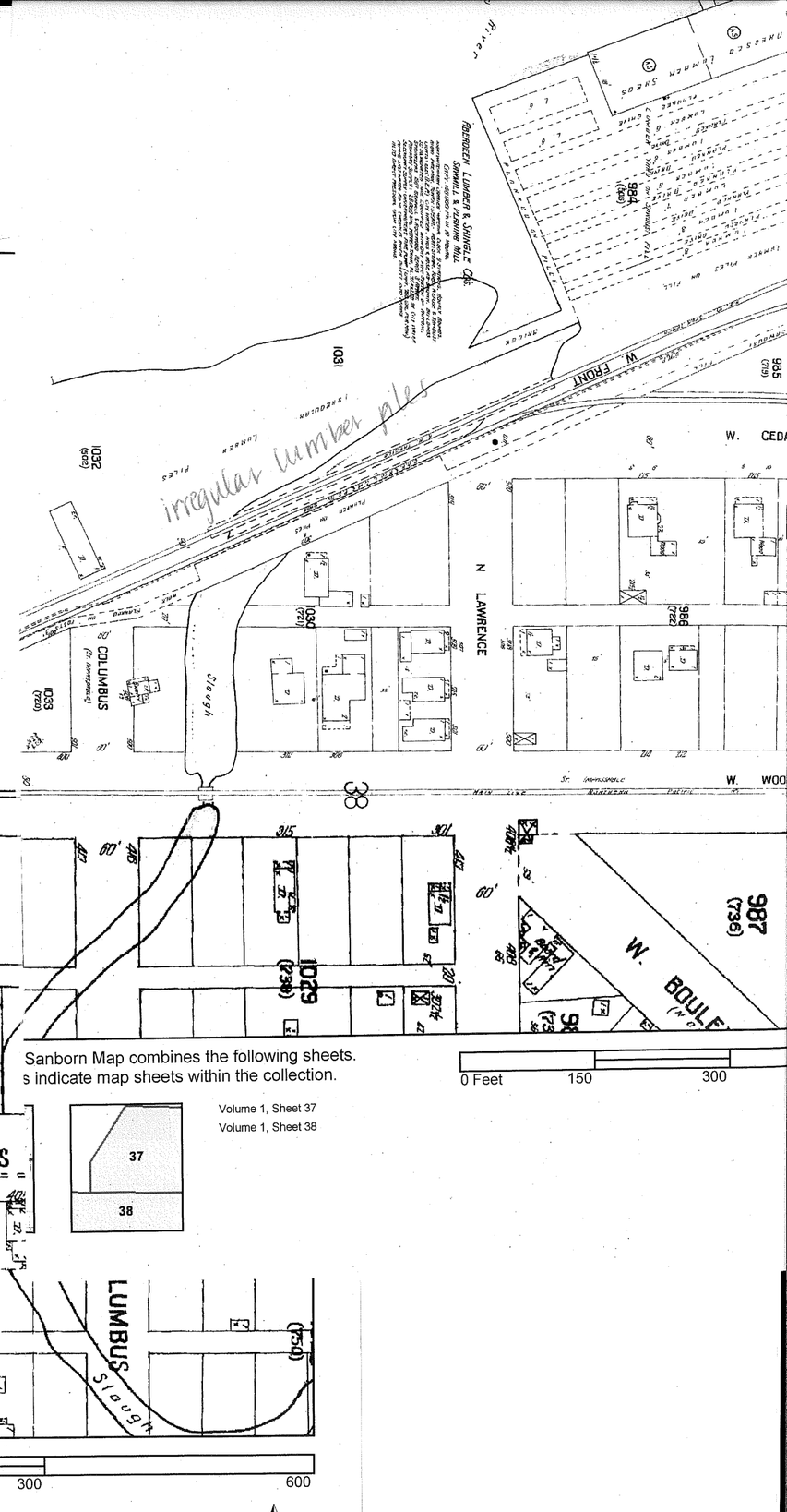
1914 Certified Sanborn Map

1914 Certified Sanborn Map



0 Feet 150 300

Volume 1, Sheet 37
Volume 1, Sheet 38



0 Feet 150 300 600

Volume 1, Sheet 37
Volume 1, Sheet 38

Volume 1, Sheet 38

1928 Certified Sanborn Map

Site Name:	Aquatic Lands Lease
Address:	500 North Custer Street
City, ST, ZIP:	Aberdeen WA 98520
Client:	PES Environmental, Inc.
EDR Inquiry:	2798202.3
Order Date:	6/22/2010 11:57:39 AM
Certification #	0D28-4C72-80D8
Copyright:	1928

SCHAEFER BROS. LUMBER-DOOR CO.
MILL No 4
ENDRESEN SPAR & TIMBER CO.
LUMBER & SHINGLE CO'S SHINGLE MILL
W. FRONT
N. LEVEE
PLANNED WHARF
PLANNED PLATFORM
W. CUP
1075
1076
1077
1031
1032
1030
1033
1034
1035
1029
1028
986
984
983
W. WOOD 80 ft. wide
N. COLUMBIA
Old Wharf
Spur Shed
Dunham Lumber Co. Office
Fire Hy. No 2
Fire Hy. No 3
Fire Hy. No 4
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Volume 1, Sheet 181
Volume 1, Sheet 198
Volume 1, Sheet 199

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Sanborn Map combines the following sheets.
s indicate map sheets within the collection.

Volume 1, Sheet 181
Volume 1, Sheet 183
Volume 1, Sheet 199

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183

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1948 Certified Sanborn Map

1948 Certified Sanborn Map

1948 Certified Sanborn Map

Site Name: Aquatic Lands Lease
Address: 500 North Custer Street
City, ST, ZIP: Aberdeen WA 98520
Client: PES Environmental, Inc.
EDR Inquiry: 2798202.3
Order Date: 6/22/2010 11:57:39 AM
Certification #: 0D28-4C72-80D8
Copyright: 1948

Site Name: Aquatic Lands Lease
Address: 500 North Custer Street
City, ST, ZIP: Aberdeen WA 98520
Client: PES Environmental, Inc.
EDR Inquiry: 2798202.3
Order Date: 6/22/2010 11:57:39 AM
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This Certified Sanborn Map combines the following sheets.
Outlined areas indicate map sheets within the collection.

Volume 1, Sheet 181
Volume 1, Sheet 183
Volume 1, Sheet 199

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

Volume 1, Sheet 181
Volume 1, Sheet 198

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0 Feet 150 300

1989 Certified Sanborn Map

1989 Certified Sanborn Map

WEYERHAEUSER 1031

CO.

W FRONT

1032

199

LBR STGE

WOOD BEAMS & POSTS

CONC FL

30'

1030

1033

W. WOOD 80 ft. wide

NOT OPENED

LOG YARD

1034

1029

198

1075

1078

1077

1079

1181

1183

1199

WEYERHAEUSER CO. TWIN HARBORS BRANCH

ABERDEEN SAW MILL

PLANER

SORT'G

CHIPPER

SHAKER

LBR IN TRANSIT

WOOD BEAMS & POSTS

SPRAY PAINTING

EARTH & ROCK FILLED GRRUND

PLANK WHARF ON PILING

ROCK & GRAVEL FILLED

FRAME BRIDGE APPROACH 555'

12" W. PIPE

8" W. PIPE

6" W. PIPE

FIRE STA.-EMS HQ. #2

BOAT SHOP

SPAR SHED

WOOD PIER ON PILING

MARINE RAILWAY

STACKER

SORTER (NEW)

LBR IN TRANSIT

N. LEWIS

CLOSED

W. CURTIS

N. BOO

N. COLUMBUS

CUSTER

W. CU

PARK'G.

Certification # 574D-4CE3-AD14

Site Name: Weyerhaeuser Aberdeen Sawmill
Address: 500 North Custer Street
City, ST, ZIP: Aberdeen WA 98520
Client: PES Environmental, Inc.
EDR Inquiry: 2805106.3
Order Date: 7/16/2010 5:17:03 PM
Certification #: 574D-4CE3-AD14
Copyright: 1989

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

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APPENDIX B
FIELD METHODS

SEAPORT LANDING LEASED PROPERTY RI/FS FIELD METHODS

This document describes the methods employed for soil, groundwater, sediment, and seep sampling during the leased in-water property of the Seaport Landing site field effort in October 2015.

All sampling procedures and quality assurance and quality control protocols were conducted consistent with the sampling and analysis plan, and were consistent with the Model Toxics Control Act stipulated in Washington Administrative Code (WAC) 173-340 and with Sediment Management Standards in WAC 173-204-550.

1 SOIL SAMPLING

Public and private utility-location services were used to identify locatable utilities in the subsurface sampling area before initiation of field-sampling activities. Upland borings were advanced with a GeoProbe® 7822DT Heavy Duty drilling rig operated by Cascade Drilling, LP, using industry-standard drilling techniques.

Soil samples were field screened, collected, and documented at each boring location, as described in the subsections below.

1.1 Field Screening

Soil was field-screened through visual observation and a photoionization detector (PID). Small amounts of soil from selected depths were placed in individual food-grade ziplock bags. The bags were labeled according to their boring location and depth, sealed, and were left in the sun for at least ten minutes to release potential volatile constituents into the sealed bag. The tip of the PID was then placed in each bag to take a reading. All PID readings were recorded in the field notebook.

Soil that had noticeable staining and/or a PID reading above the background level was considered contaminated. Selected soil samples with elevated field-screening results were submitted to the laboratory to be analyzed for contaminants of interest.

1.2 Soil Sampling

Soil samples were collected for lithologic description, field screening, and chemical analyses, as described below. Selected soil samples were containerized and submitted for laboratory analysis. Samples were prepared, handled, and documented as follows:

- All non-disposable equipment used for soil sampling was made of stainless steel and was decontaminated before its use at each sampling location.

- At each boring location, continutous soil cores were collected and observed in the field to document soil lithology, color, moisture content, and sensory evidence of impairment.
- Freshly exposed soil for volatile organic compound (VOC) analysis was transferred directly into laboratory-supplied containers, using the appropriate U.S. Environmental Protection Agency 5035A sampling procedures, preservatives, and containers.
- Soil that was analyzed for nonvolatile constituents was transferred directly from the sampling device into the appropriate laboratory-supplied glass jars, using new, uncontaminated-gloved hands or decontaminated, stainless steel spoons, trowels, or knives.
- Large particles (i.e., larger than 0.25 inch) were removed before the samples were placed in their appropriate laboratory-supplied containers, which were then placed into coolers filled with ice.

Soil sampling information was documented in field notes and is integrated in boring logs.

2 GROUNDWATER SAMPLING

Reconnaissance groundwater samples were collected from four exploratory borings. Water level measurements included measuring the depth to water to the nearest 0.01 foot below ground surface using an electronic water level meter.

At each of the four soil boring locations, temporary wells were installed using the GeoProbe® direct-push drill rig described above. This consisted of placing a five foot long 0.010-inch machine slot polyvinyl chloride screen and riser into the boring. Screened intervals for each temporary well depended on the depth to water observed during drilling in each particular boring. The system was allowed to rest until the water level stabilized. Groundwater samples were collected from each temporary well, using a peristaltic pump with new, disposable, polyethylene tubing. Prior to sampling, one set of groundwater parameters were collected at each well using a multiparameter handheld meter including temperature, pH, specific conductance, and turbidity. Groundwater was pumped directly into laboratory-supplied containers specific to the analysis required, and placed into coolers filled with ice.

For samples that were analyzed for dissolved metals, single-use disposable 0.47 micron filters were used to field filter groundwater directly into laboratory-supplied sample containers containing a nitric acid preservative. All groundwater field parameters and field observations were logged in the field notebook.

3 SEDIMENT SAMPLING

3.1 Surface Sediment Samples

Surface sediment sampling methodology depended on whether the sampling locations were exposed during low tide, or if they were in portions of the Chehalis River which were constantly underwater.

Low Tide-Exposed Surface Sediment Sampling Locations

Surface sediment samples in locations exposed at low tide were collected manually using decontaminated equipment including stainless steel scoops, trowels, or knives. Sample stations were field located using a Trimble GeoXH differential global positioning unit (DGPS). In sample locations where only the top 10 cm of sediment was sampled, surface sediment to 10 cm bml was recovered with a decontaminated stainless steel spoon. Sediments that were composited were placed into a decontaminated stainless steel bowl, the samples were homogenized, placed into laboratory-supplied sampling containers, and placed into coolers filled with ice.

Sample stations exposed at low tide that included sediment collection for depths to two feet (such as CR-09B and CR-09A) were collected from holes dug out using decontaminated stainless steel shovels and measured with a tape measure to ensure proper depth. Sediment from the proper depths were collected from within the holes using a decontaminated stainless steel spoon.

Underwater Surface Sediment Sampling

Surface sediments were collected in underwater areas using a Ponar (a surface-deployed grab sampler), or from the appropriate depth in the sediment cores advanced by the GeoProbe® drill rig referenced above. Sampling methodology involving the drill rig is described in Section 3.2.

Surface sediment samples retrieved using a Ponar were deployed without the use of winches from a support vessel. The Ponar device was equipped with self-releasing pinch-pins with heavy duty hinges to scoop up surficial sediment when the device contacts the surface. The speed of the grab sampler's descent was controlled to minimize disturbing the sediment. The speed of ascent was also controlled to minimize loss of sediment from washout. Sediment samples were inspected upon retrieval to ensure that the grab sampler was completely closed and that it retained all sediment, including surficial fines.

Upon retrieval of an acceptable sediment sample, excess water was decanted from the Ponar, and the upper 0 to 10 centimeters of sediment below mudline was collected, placed in a decontaminated stainless steel bowl, and composited using a decontaminated stainless steel spoon. Sediment that was in contact with the sides of the sampler was not collected. Once composited, sediment was placed in the laboratory-provided containers, and placed into coolers filled with ice. Equipment was decontaminated between sampling locations.

Sediment samples were described in the field notebook following sample collection.

3.2 Subsurface Sediment Sampling

Subsurface sediment sampling was conducted using a GeoProbe® direct-push drill rig, which allowed for recovery of a continuous sediment profile, using the GeoProbe® Macro Core sampling system containing a 2.25 inch diameter acetate liner. Drive depths and recovery depths were recorded in the field notebook.

The direct-push rig was placed on a work barge to allow positioning over submerged sediment sample locations. The barge was maneuvered to the proposed sample stations using a tug boat. Spuds were used as necessary to hold the barge in place temporarily during drilling. A new acetate liner was secured to the drill rig tooling and deployed from the vessel for each boring location. A lead line was used to confirm water depth at each location, and the GeoProbe® rig advanced tooling up to 20 feet bml (or to refusal). Once back on the support vessel, the acetate liner was separated from the tooling.

In some cases, wood or other debris would clog up the acetate core liner and the boring would be rejected. The barge was shifted slightly and a replacement boring was advanced nearby (typically within five to ten feet). Following retrieval of an acceptable core, excess water was removed from the top of the acetate core liner and the core was placed horizontally on a flat work table. The acetate liner was then cut open longitudinally with a utility knife exposing the continuous sediment core. The cores were divided longitudinally and described, noting features such as sheen, percentage and type of woody debris, and biological features, and then photographed. Sediment was sampled from the appropriate depth, with care being taken not to sample material in contact with the acetate liner.

Laboratory-supplied sampling containers were filled at each sample location, and placed into coolers filled with ice. The size and quantity of sampling containers were specified by the analytical laboratory.

4 SEEP SAMPLING

One opportunistic seep sample was collected in the pocket beach area during low tide. The sample was taken from a location close to an observed emergence point i.e., a pool. Photos, written descriptions, and GPS coordinates of the identified seep were collected. Water was decanted directly into laboratory supplied sampling containers by placing the container in a depression directly downstream of the seep outlet. The sample containers were then placed into coolers filled with ice.

APPENDIX C
BORING LOGS

Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number	Well Number	Sheet
1044.02.01	**CR-08A**	**1 of 1**

Project Name	**Seaport Landing**	TOC Elevation (feet)	**Mudline**
Project Location	**500 North Custer Street, Aberdeen, WA**	Surface Elevation (feet)	
Start/End Date	**10/14/2015 to 10/15/2015**	Northing	
Driller/Equipment	**Cascade Drilling, LP/GeoProbe Track rig**	Easting	
Geologist/Engineer	**M. Murray**	Hole Depth	**20.0-feet**
Sample Method	**GeoProbe**	Outer Hole Diam	**2.25-inch**

Depth (feet, BGS)	Well Details	Sample Data: Interval	Percent Recovery	Collection Method	Number	Name (Type)	Blows/6"	Lithologic Column	Soil Description
1									0.0 to 3.0 feet: No recovery.
2									
3									
4									3.0 to 5.0 feet: Woodwaste; reddish brownish black; 80% woodwaste; 20% sand, medium to coarse.
5									
6									5.0 to 9.5 feet: No recovery.
7									
8									
9									
10									9.5 to 15.0 feet: Woodwaste; reddish brownish black; 80% woodwaste; 20% sand, medium to coarse.
11									
12									
13									
14									
15									15.0 to 17.0 feet: No recovery.
16									
17									17.0 to 18.3 feet: Woodwaste; reddish brownish black; 80% woodwaste; 20% sand, medium to coarse.
18									@ 17.1 feet: brick.
19				**GP**		**CR08A-SBSD**			18.3 to 20.0 feet: SILTY SAND (SM); gray; 40% fines, medium plasticity; 60% sand, fine to medium.
20									

NOTES:

Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number	Well Number	Sheet
1044.02.01	**CR-08B**	**1 of 1**

Project Name	**Seaport Landing**	TOC Elevation (feet)	**Mudline**
Project Location	**500 North Custer Street, Aberdeen, WA**	Surface Elevation (feet)	
Start/End Date	**10/14/2015 to 10/15/2015**	Northing	
Driller/Equipment	**Cascade Drilling, LP/GeoProbe Track rig**	Easting	
Geologist/Engineer	**M. Murray**	Hole Depth	**10.0-feet**
Sample Method	**GeoProbe**	Outer Hole Diam	**2.25-inch**

Depth (feet, BGS)	Well Details	Sample Data: Interval	Percent Recovery	Collection Method	Number	Name (Type)	Blows/6"	Lithologic Column	Soil Description
1									0.0 to 3.5: No recovery.
2									
3									
4									3.5 to 7.0 feet: SANDY SILT (MLS); gray; 50% fines; 30% sand, fine; 20% woodwaste.
5									@ 4.5 to 4.6 feet: Woodwaste; 80% woodwaste; 20% sandy silt.
6									
7									7.0 to 10.0 feet: SANDY SILT (MLS); gray; 60% fines; 40% sand, fine.
8				**GP**		**CR08B-SBSD**			
9									
10									

NOTES:

Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number	Well Number	Sheet
1044.02.01	**CR-11**	**1 of 2**

Project Name	**Seaport Landing**	TOC Elevation (feet)	**Mudline**
Project Location	**500 North Custer Street, Aberdeen, WA**	Surface Elevation (feet)	
Start/End Date	**10/13/2015 to 10/13/2015**	Northing	
Driller/Equipment	**Cascade Drilling, LP/GeoProbe Track rig**	Easting	
Geologist/Engineer	**M. Murray**	Hole Depth	**25.0-feet**
Sample Method	**GeoProbe**	Outer Hole Diam	**2.25-inch**

Depth (feet, BGS)	Well Details	Sample Data: Interval	Percent Recovery	Collection Method	Number	Name (Type)	Blows/6"	Lithologic Column	Soil Description
1									0.0 to 2.8 feet: No recovery.
2									
3									2.8 to 5.0 feet: Woodwaste; tan to black; hydrocarbon-like odor.
4									
5									5.0 to 5.8 feet: No recovery.
6									5.8 to 6.4 feet: SAND (SP); gray; 100% sand, medium.
7									6.4 to 9.4 feet: SANDY SILT (MLS); gray; 50% fines, plastic; 30% sand; 20% woodwaste.
8									
9									@ 8.8 feet: Sand lens.
10									9.4 to 10.0 feet: Woodwaste; 80% woodwaste; 20% sandy silt, gray.
11									10.0 to 11.2 feet: No recovery.
12									11.2 to 22.5 feet: Woodwaste; 80% woodwaste; 20% sandy silt, gray.
13									**PID = 17.2 ppm** @ 12.0 feet: Sheen.
14									
15									
16									
17									
18									
19									
20									

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Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number	Well Number	Sheet
1044.02.01	**CR-11**	**2 of 2**

Depth (feet, BGS)	Well Details	Sample Data: Interval	Sample Data: Percent Recovery	Sample Data: Collection Method	Sample Data: Number	Sample Data: Name (Type)	Sample Data: Blows/6"	Lithologic Column	Soil Description
21									
22									
23				GRAB		CR11-SBSD-23			22.5 to 25.0 feet: SANDY SILT (MLS); plastic.
24									
25						PID = 6.4 ppm			

NOTES:

Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number	Well Number	Sheet
1044.02.01	**CR-12**	**1 of 1**

Project Name	**Seaport Landing**	TOC Elevation (feet)	**Mudline**
Project Location	**500 North Custer Street, Aberdeen, WA**	Surface Elevation (feet)	
Start/End Date	**10/13/2015 to 10/13/2015**	Northing	
Driller/Equipment	**Cascade Drilling, LP/GeoProbe Track rig**	Easting	
Geologist/Engineer	**M. Murray**	Hole Depth	**15.0-feet**
Sample Method	**GeoProbe**	Outer Hole Diam	**2.25-inch**

Depth (feet, BGS)	Well Details	Sample Data: Interval	Percent Recovery	Collection Method	Number	Name (Type)	Blows/6"	Lithologic Column	Soil Description
1									0.0 to 2.8 feet: No recovery.
2									
3									2.8 to 5.0 feet: Woodwaste; trace silt; wet.
4									
5									5.0 to 7.0 feet: No recovery.
6									
7									7.0 to 10.0 feet: Woodwaste; trace silt; sulfer odor; wet.
8									
9									
10									10.0 to 11.9 feet: No recovery.
11									
12						**PID = 98.7 ppm**			11.9 to 12.3 feet: Woodwaste; trace silt; sulfur odor; wet.
13									12.3 to 13.8; SILTY SAND (SM); 80% silty sand; 20% woodwaste.
14						**PID = 10.1 ppm**			13.8 to 15.0 feet: SANDY SILT (MLS); gray; 60% fines, plastic; 40% sand, fine, micaceous.
15				**GP**		**CR12-SBSD-15**			

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Geologic Borehole Log/Well Construction

Maul Foster & Alongi, Inc.

Project Number	Well Number	Sheet
1044.02.01	**CR-13**	**1 of 1**

Project Name	**Seaport Landing**	TOC Elevation (feet)	**Mudline**
Project Location	**500 North Custer Street, Aberdeen, WA**	Surface Elevation (feet)	
Start/End Date	**10/13/2015 to 10/13/2015**	Northing	
Driller/Equipment	**Cascade Drilling, LP/GeoProbe Track rig**	Easting	
Geologist/Engineer	**M. Murray**	Hole Depth	**15.0-feet**
Sample Method	**GeoProbe**	Outer Hole Diam	**2.25-inch**

Depth (feet, BGS)	Well Details	Sample Data: Interval	Percent Recovery	Collection Method	Number	Name (Type)	Blows/6"	Lithologic Column	Soil Description
1									0.0 to 2.5 feet: No recovery.
2									
3									2.5 to 5.0 feet: Woodwaste; slight sulfur odor; wet.
4									
5									5.0 to 6.8 feet: No recovery.
6									
7									6.8 to 8.7 feet: Woodwaste; slight sulfur odor; wet.
8					**PID = 2.0 ppm**				
9									8.7 to 10.0 feet: SANDY SILT (MLS)
10									10.0 to 11.1 feet: No recovery.
11					**PID = 1.7 ppm**				11.1 to 15.0 feet: SANDY SILT (MLS); gray; 60% fines, plastic; 40% sand, fine, micaceous.
12				**GP**	**CR13-SBSD-11**				
13									
14									
15									

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Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number	Well Number	Sheet
1044.02.01	**CR-14**	**1 of 1**

Project Name	**Seaport Landing**	TOC Elevation (feet)	**Mudline**
Project Location	**500 North Custer Street, Aberdeen, WA**	Surface Elevation (feet)	
Start/End Date	**10/13/2015 to 10/13/2015**	Northing	
Driller/Equipment	**Cascade Drilling, LP/GeoProbe Track rig**	Easting	
Geologist/Engineer	**M. Murray**	Hole Depth	**15.0-feet**
Sample Method	**GeoProbe**	Outer Hole Diam	**2.25-inch**

Depth (feet, BGS)	Well Details	Sample Data: Interval	Percent Recovery	Collection Method	Number	Name (Type)	Blows/6"	Lithologic Column	Soil Description
1									0.0 to 1.5 feet: No recovery.
2									1.5 to 5.0 feet: Woodwaste; sulfur odor; wet.
3									
4									
5									
6									5.0 to 7.2 feet: No recovery.
7									
8						**PID = 102 ppm**			7.2 to 9.3 feet: Woodwaste; tan; sulfur odor; sheen; hydrocarbon product; wet.
9									
10									9.3 to 10.0 feet: SANDY SILT (MLS); gray; 70% fines, plastic; 30% sand, fine; slight sulfur odor; micaceous.
11									10.0 to 12.0 feet: No recovery.
12				**GP**		**CR14-SBSD-12**			12.0 to 15.0 feet: SANDY SILT (MLS); gray; 70% fines, plastic; 30% sand, fine, micaceous.
13									
14						**PID = 0.0 ppm**			
15									

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Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number	Well Number	Sheet
1044.02.01	**CR-15A**	**1 of 1**

Project Name	**Seaport Landing**	TOC Elevation (feet)	**Mudline**
Project Location	**500 North Custer Street, Aberdeen, WA**	Surface Elevation (feet)	
Start/End Date	**10/14/2015 to 10/14/2015**	Northing	
Driller/Equipment	**Cascade Drilling, LP/GeoProbe Track rig**	Easting	
Geologist/Engineer	**M. Murray**	Hole Depth	**11.0-feet**
Sample Method	**GeoProbe**	Outer Hole Diam	**2.25-inch**

Depth (feet, BGS)	Well Details	Sample Data: Interval	Percent Recovery	Collection Method	Number	Name (Type)	Blows/6"	Lithologic Column	Soil Description
1									0.0 to 4.5 feet: No recovery.
2									
3									
4									
5									4.5 to 5.0 feet: Woodwaste.
				GP		CR15A-5			5.0 to 7.0 feet: No recovery.
6									
7									7.0 to 9.2 feet: Woodwaste; 70% woodwaste; 30% sandy silt, blackish brown.
8									
9									
10									9.2 to 9.5 feet: SANDY SILT (MLS)
									9.5 to 11.0 feet: Woodwaste; 70% woodwaste; 30% sandy silt, blackish brown.
11				GP		CR15A-11			

NOTES:

Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number	Well Number	Sheet
1044.02.01	**CR-15B**	**1 of 1**

Project Name	**Seaport Landing**	TOC Elevation (feet)	**Mudline**
Project Location	**500 North Custer Street, Aberdeen, WA**	Surface Elevation (feet)	
Start/End Date	**10/14/2015 to 10/14/2015**	Northing	
Driller/Equipment	**Cascade Drilling, LP/GeoProbe Track rig**	Easting	
Geologist/Engineer	**M. Murray**	Hole Depth	**5.0-feet**
Sample Method	**GeoProbe**	Outer Hole Diam	**2.25-inch**

Depth (feet, BGS)	Well Details	Sample Data: Interval	Percent Recovery	Collection Method	Number	Name (Type)	Blows/6"	Lithologic Column	Soil Description
1				**GP**		**CR15B-0-10cm**			*0.0 to 3.5 feet: No recovery.*
2									
3									
4									*3.5 to 5.0 feet: Woodwaste; 70% woodwaste; 30% sandy silt, blackish brown.*
5				**GP**		**CR15B-5**			

NOTES:

Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number	Well Number	Sheet
1044.02.01	**CR-15C**	**1 of 1**

Project Name	**Seaport Landing**	TOC Elevation (feet)	**Mudline**
Project Location	**500 North Custer Street, Aberdeen, WA**	Surface Elevation (feet)	
Start/End Date	**10/14/2015 to 10/14/2015**	Northing	
Driller/Equipment	**Cascade Drilling, LP/GeoProbe Track rig**	Easting	
Geologist/Engineer	**M. Murray**	Hole Depth	**5.0-feet**
Sample Method	**GeoProbe**	Outer Hole Diam	**2.25-inch**

Depth (feet, BGS)	Well Details	Sample Data: Interval	Percent Recovery	Collection Method	Number	Name (Type)	Blows/6"	Lithologic Column	Soil Description
1				GP		CR15C-SSD			0.0 to 0.3 feet: No recovery.
				GP		CR15C-SBSD			0.3 to 5.0 feet: SILTY SAND (MLS); blackish gray; 30% fines, fine, medium plasticity; 70% sand, fine.
2									
3									
4									
5				GP		CR15C-5.0			

NOTES:

Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number	Well Number	Sheet
1044.02.01	**CR-15D**	**1 of 1**

Project Name	**Seaport Landing**	TOC Elevation (feet)	**Mudline**
Project Location	**500 North Custer Street, Aberdeen, WA**	Surface Elevation (feet)	
Start/End Date	**10/15/2015 to 10/15/2015**	Northing	
Driller/Equipment	**Cascade Drilling, LP/GeoProbe Track rig**	Easting	
Geologist/Engineer	**M. Murray**	Hole Depth	**10.0-feet**
Sample Method	**GeoProbe**	Outer Hole Diam	**2.25-inch**

Depth (feet, BGS)	Well Details	Sample Data: Interval	Percent Recovery	Collection Method	Number	Name (Type)	Blows/6"	Lithologic Column	Soil Description
1									0.0 to 7.0 feet: No recovery.
2									
3									
4									
5									
6									
7									
8									7.0 to 8.1 feet: Woodwaste; 80% woodwaste; 20% sandy silt, gray.
9									8.1 to 10.0 feet: SANDY SILT (MLS); grayish brown; 70% fines, medium to high plasticity; 30% sand, fine; trace woodwaste; trace organic material.
10									

NOTES:

Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number	Well Number	Sheet
1044.02.01	**CR-16A**	**1 of 1**

Project Name	**Seaport Landing**	TOC Elevation (feet)	**Mudline**
Project Location	**500 North Custer Street, Aberdeen, WA**	Surface Elevation (feet)	
Start/End Date	**10/15/2015 to 10/15/2015**	Northing	
Driller/Equipment	**Cascade Drilling, LP/GeoProbe Track rig**	Easting	
Geologist/Engineer	**M. Murray**	Hole Depth	**15.0-feet**
Sample Method	**GeoProbe**	Outer Hole Diam	**2.25-inch**

Depth (feet, BGS)	Well Details	Sample Data: Interval	Sample Data: Percent Recovery	Sample Data: Collection Method	Sample Data: Number	Sample Data: Name (Type)	Sample Data: Blows/6"	Lithologic Column	Soil Description
1				**CS**		**CR16A-0-10cm**			*0.0 to 1.5 feet: No recovery.*
2									*1.5 to 5.0 feet: Woodwaste; 80% woodwaste, reddish brown; 20% sandy silt.*
3									
4									
5				**GP**		**CR16A-5**			*5.0 to 8.5 feet: No Recovery.*
6									
7									
8									
9									*8.5 to 9.5 feet: Woodwaste; 80% woodwaste, reddish brown; 20% sandy silt.*
10									*9.5 to 10.0 feet: SANDY SILT (MLS); dark gray; 50% fines, high plasticity; 35% sand, poorly graded, fine; 15% woodwaste and organic debris.*
11									*10.0 to 12.0 feet: No recovery.*
12									*12.0 to 15.0 feet: SANDY SILT (MLS); gray; 70% fines, plastic; 30% sand, fine.*
13									
14				**GP**		**CR16A-14**			
15									

NOTES:

Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number	Well Number	Sheet
1044.02.01	**CR-16B**	**1 of 1**

Project Name	**Seaport Landing**	TOC Elevation (feet)	**Mudline**
Project Location	**500 North Custer Street, Aberdeen, WA**	Surface Elevation (feet)	
Start/End Date	**10/15/2015 to 10/15/2015**	Northing	
Driller/Equipment	**Cascade Drilling, LP/GeoProbe Track rig**	Easting	
Geologist/Engineer	**M. Murray**	Hole Depth	**15.0-feet**
Sample Method	**GeoProbe**	Outer Hole Diam	**2.25-inch**

Depth (feet, BGS)	Well Details	Sample Data: Interval	Percent Recovery	Collection Method	Number	Name (Type)	Blows/6"	Lithologic Column	Soil Description
1				**CS**		**CR16B-0-10cm**			*0.0 to 4.2 feet: No recovery.*
2									
3									
4									
5									*4.2 to 5.0 feet: Woodwaste; reddish brown; 70% woodwaste; 30% sandy silt.*
6									*5.0 to 6.5 feet: No recovery.*
7									*6.5 to 10.0 feet: Woodwaste; reddish brown; 80% woodwaste; 20% sandy silt; slight sheen.*
8									
9									
10				**GP**		**CR16B-10.0**			*10.0 to 11.0 feet: No recovery.*
11									*11.0 to 12.0 feet: Woodwaste; reddish brown; 80% woodwaste; 20% sandy silt; slight sheen.*
12									*12.0 to 15.0 feet: SILTY SAND (SM); gray; 20% fines, medium to high plasticity; 80% sand, fine to medium.*
13				**GP**		**CR16B-13.0**			
14									
15									

NOTES:

Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number	Well Number	Sheet
1044.02.01	**CR-16C**	**1 of 1**

Project Name	**Seaport Landing**	TOC Elevation (feet)	**Mudline**
Project Location	**500 North Custer Street, Aberdeen, WA**	Surface Elevation (feet)	
Start/End Date	**10/15/2015 to 10/15/2015**	Northing	
Driller/Equipment	**Cascade Drilling, LP/GeoProbe Track rig**	Easting	
Geologist/Engineer	**M. Murray**	Hole Depth	**15.0-feet**
Sample Method	**GeoProbe**	Outer Hole Diam	**2.25-inch**

Depth (feet, BGS)	Well Details	Sample Data: Interval	Percent Recovery	Collection Method	Number	Name (Type)	Blows/6"	Lithologic Column	Soil Description
1									0.0 to 4.0 feet: No recovery.
2									
3									
4									
5									4.0 to 5.0 feet: Woodwaste; 80% woodwaste; 20% sandy silt, gray.
6									5.0 to 8.5 feet: No recovery.
7									
8									
9									8.5 to 9.8 feet: Woodwaste; 80% woodwaste; 20% sandy silt, gray.
10									9.8 to 10.0 feet: SILTY SAND (SM); gray; 20% fines, medium to high plasticity; 80% sand, fine to medium.
11									10.0 to 13.0 feet: No recovery.
12									
13									
14									13.0 to 15.0 feet: Woodwaste; 80% woodwaste; 20% sandy silt, gray.
15									

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Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number	Well Number	Sheet
1044.02.01	**CR-17C**	**1 of 1**

Project Name	**Seaport Landing**	TOC Elevation (feet)	**Mudline**
Project Location	**500 North Custer Street, Aberdeen, WA**	Surface Elevation (feet)	
Start/End Date	**10/15/2015 to 10/15/2015**	Northing	
Driller/Equipment	**Cascade Drilling, LP/GeoProbe Track rig**	Easting	
Geologist/Engineer	**M. Murray**	Hole Depth	**10.0-feet**
Sample Method	**GeoProbe**	Outer Hole Diam	**2.25-inch**

Depth (feet, BGS)	Well Details	Sample Data: Interval	Percent Recovery	Collection Method	Number	Name (Type)	Blows/6"	Lithologic Column	Soil Description
1				**CS**		**CR17C-0-10cm**			*0.0 to 2.5 feet: No recovery.*
2									
3									*2.5 to 4.0 feet: SANDY SILT (MLS); grayish brown; 60% fines; 40% sand, fine.*
4									*4.0 to 4.5 feet: Woodwaste.*
5									*4.5 to 5.0 feet: SILTY SAND (SM); grayish brown; 40% fines, high plasticity; 60% sand; fine, trace woodwaste.*
6									*5.0 to 8.0 feet: No recovery.*
7									
8									*8.0 to 10.0 feet: SILTY SAND (SM); grayish brown; 40% fines, high plasticity; 60% sand; fine, trace woodwaste.*
9									
10				**GP**		**CR17C-9.5**			

NOTES:

Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number	Well Number	Sheet
1044.02.01	**CR-17D**	**1 of 1**

Project Name	**Seaport Landing**	TOC Elevation (feet)	**Mudline**
Project Location	**500 North Custer Street, Aberdeen, WA**	Surface Elevation (feet)	
Start/End Date	**10/15/2015 to 10/15/2015**	Northing	
Driller/Equipment	**Cascade Drilling, LP/GeoProbe Track rig**	Easting	
Geologist/Engineer	**M. Murray**	Hole Depth	**5.0-feet**
Sample Method	**GeoProbe**	Outer Hole Diam	**2.25-inch**

Depth (feet, BGS)	Well Details	Sample Data: Interval	Percent Recovery	Collection Method	Number	Name (Type)	Blows/6"	Lithologic Column	Soil Description
1				**CS**		**CR17D-SSD**			*0.0 to 2.0 feet: No recovery.*
				CS		**CR17D-SBSD**			
2									*2.0 to 5.0 feet: SILTY SAND (SM); grayish brown; 40% fines, high plasticity; 60% sand, fine.*
3									
4									
5									

NOTES:

Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number	Well Number	Sheet
1044.02.01	**CR-18A**	**1 of 1**

Project Name	**Seaport Landing**	TOC Elevation (feet)	**Mudline**
Project Location	**500 North Custer Street, Aberdeen, WA**	Surface Elevation (feet)	
Start/End Date	**10/16/2015 to 10/16/2015**	Northing	
Driller/Equipment	**Cascade Drilling, LP/GeoProbe Track rig**	Easting	
Geologist/Engineer	**M. Murray**	Hole Depth	**10.0-feet**
Sample Method	**GeoProbe**	Outer Hole Diam	**2.25-inch**

Depth (feet, BGS)	Well Details	Sample Data: Interval	Percent Recovery	Collection Method	Number	Name (Type)	Blows/6"	Lithologic Column	Soil Description
1									0.0 to 4.5 feet: No recovery.
2									
3									
4									
5									4.5 to 5.0 feet: Woodwaste; 100% woodwaste.
									5.0 to 7.8 feet: No recovery.
6									
7									
8									7.8 to 8.7 feet: Woodwaste; 80% woodwaste; 20% silty sand.
9				**GP**		**CR18A-9.0**			8.7 to 9.5 feet: SANDY SILT (MLS); grayish black; 60% fines, plastic; 40% sand, fine.
10									9.5 to 10.0 feet: Woodwaste; 80% woodwaste; 20% silty sand.

NOTES:

Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number	Well Number	Sheet
1044.02.01	**CR-18B**	**1 of 1**

Project Name	**Seaport Landing**	TOC Elevation (feet)	**Mudline**
Project Location	**500 North Custer Street, Aberdeen, WA**	Surface Elevation (feet)	
Start/End Date	**10/16/2015 to 10/16/2015**	Northing	
Driller/Equipment	**Cascade Drilling, LP/GeoProbe Track rig**	Easting	
Geologist/Engineer	**M. Murray**	Hole Depth	**12.0-feet**
Sample Method	**GeoProbe**	Outer Hole Diam	**2.25-inch**

Depth (feet, BGS)	Well Details	Sample Data: Interval	Percent Recovery	Collection Method	Number	Name (Type)	Blows/6"	Lithologic Column	Soil Description
1				CS		CR18B-SSD			0.0 to 3.0 feet: No recovery.
				CS		CR18B-SBSD			
2									
3									
4									3.0 to 12.0 feet: SILTY SAND (SM); blackish brownish gray; 40% fines; 60% sand, fine.
5									
6									
7									
8									
9									
10									
11									
12									

NOTES:

Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number	Well Number	Sheet
1044.02.01	**CR-19A**	**1 of 1**

Project Name	**Seaport Landing**	TOC Elevation (feet)	**Mudline**
Project Location	**500 North Custer Street, Aberdeen, WA**	Surface Elevation (feet)	
Start/End Date	**10/16/2015 to 10/16/2015**	Northing	
Driller/Equipment	**Cascade Drilling, LP/GeoProbe Track rig**	Easting	
Geologist/Engineer	**M. Murray**	Hole Depth	**10.0-feet**
Sample Method	**GeoProbe**	Outer Hole Diam	**2.25-inch**

Depth (feet, BGS)	Well Details	Sample Data: Interval	Percent Recovery	Collection Method	Number	Name (Type)	Blows/6"	Lithologic Column	Soil Description
1									0.0 to 3.0 feet: No recovery.
2									
3									
4									3.0 to 3.7 feet: SANDY SILT with woodwaste (MLS); gray; 40% fine, loose; 30% sand; 30% woodwaste.
5									3.7 to 4.0 feet: SANDY SILT (MLS); grayish brown; 60% fines; 40% sand, fine.
6									4.0 to 5.0 feet: Woodwaste; 80% woodwaste; 20% sandy silt.
7									5.0 to 8.0 feet: No recovery.
8									
9									8.0 to 9.0 feet: Woodwaste; 70% woodwaste; 30% sandy silt, gray.
10									9.0 to 10.0 feet: SILTY SAND with woodwaste (SM); gray; 80% silty sand; 20% woodwaste.

NOTES:

Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number	Well Number	Sheet
1044.02.01	**CR-19B**	**1 of 1**

Project Name	**Seaport Landing**	TOC Elevation (feet)	**Mudline**
Project Location	**500 North Custer Street, Aberdeen, WA**	Surface Elevation (feet)	
Start/End Date	**10/16/2015 to 10/16/2015**	Northing	
Driller/Equipment	**Cascade Drilling, LP/GeoProbe Track rig**	Easting	
Geologist/Engineer	**M. Murray**	Hole Depth	**10.0-feet**
Sample Method	**GeoProbe**	Outer Hole Diam	**2.25-inch**

Depth (feet, BGS)	Well Details	Sample Data: Interval	Percent Recovery	Collection Method	Number	Name (Type)	Blows/6"	Lithologic Column	Soil Description
1				**CS**		**CR19B-0-10cm**			*0.0 to 2.0 feet: No recovery.*
2									
3									*2.0 to 4.5 feet: SILTY SAND (SM); grayish brown; 40% fines, high plasticity; 60% sand; fine, loose from 2.0 to 3.0 feet; trace woodwaste.*
4									
5									*4.5 to 5.0 feet: Woodwaste; 80% woodwaste; 20% silty sand.*
6									*5.0 to 7.5 feet: No recovery.*
7									
8									*7.5 to 8.7 feet: Woodwaste; 80% woodwaste; 20% silty sand.*
9									*8.7 to 10.0 feet: SANDY SILT (MLS); grayish black; 50% fines, plastic; 35% sand, fine; 15% woodwaste, coarse chucks.*
10				**GP**		**CR19B-10**			

NOTES:

Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number	Well Number	Sheet
1044.02.01	**CR-19C**	**1 of 1**

Project Name	**Seaport Landing**	TOC Elevation (feet)	**Mudline**
Project Location	**500 North Custer Street, Aberdeen, WA**	Surface Elevation (feet)	
Start/End Date	**10/16/2015 to 10/16/2015**	Northing	
Driller/Equipment	**Cascade Drilling, LP/GeoProbe Track rig**	Easting	
Geologist/Engineer	**M. Murray**	Hole Depth	**5.0-feet**
Sample Method	**GeoProbe**	Outer Hole Diam	**2.25-inch**

Depth (feet, BGS)	Well Details	Sample Data: Interval	Percent Recovery	Collection Method	Number	Name (Type)	Blows/6"	Lithologic Column	Soil Description
1									0.0 to 2.4 feet: No recovery.
2									
3									2.4 to 5.0 feet: SILTY SAND (SM); blackish brown; 40% fines, high plasticity; 60% sand, fine; trace woodwaste.
4									@ 4.0 to 4.1 feet: Woodwaste.
5									@ 4.5 to 4.6 feet: Woodwaste.

NOTES:

Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number	Well Number	Sheet
1044.02.01	**CR-19D**	**1 of 1**

Project Name	**Seaport Landing**	TOC Elevation (feet)	**Mudline**
Project Location	**500 North Custer Street, Aberdeen, WA**	Surface Elevation (feet)	
Start/End Date	**10/16/2015 to 10/16/2015**	Northing	
Driller/Equipment	**Cascade Drilling, LP/GeoProbe Track rig**	Easting	
Geologist/Engineer	**M. Murray**	Hole Depth	**10.0-feet**
Sample Method	**GeoProbe**	Outer Hole Diam	**2.25-inch**

Depth (feet, BGS)	Well Details	Sample Data: Interval	Percent Recovery	Collection Method	Number	Name (Type)	Blows/6"	Lithologic Column	Soil Description
1					**CR19D-0-10cm and CR19D-SSD-CONV**				*0.0 to 1.0 feet: No recovery.*
2									*1.0 to 4.2 feet: SILTY SAND (SM); blackish gray; 40% fines, high plasticity; 60% sand, fine; loose from 1.0 to 2.0 feet.*
3									
4									
5									*4.2 to 5.0 feet: Woodwaste; tannish brown; 80% woodwaste; 20% sandy silt.*
6									*5.0 to 7.5 feet: No recovery.*
7									
8									*7.5 to 8.5 feet: Woodwaste; tannish brown; 80% woodwaste; 20% sandy silt.*
9				**GP**		**CR19D-9.0**			*8.5 to 10.0 feet: SILT SAND (SM); grayish black; 40% fines, high plasticity;*
10									

NOTES:

Geologic Borehole Log/Well Construction

Maul Foster & Alongi, Inc.

Project Number	Well Number	Sheet
1044.02.01	**CR-19E**	**1 of 1**

Project Name	**Seaport Landing**	TOC Elevation (feet)	**Mudline**
Project Location	**500 North Custer Street, Aberdeen, WA**	Surface Elevation (feet)	
Start/End Date	**10/16/2015 to 10/16/2015**	Northing	
Driller/Equipment	**Cascade Drilling, LP/GeoProbe Track rig**	Easting	
Geologist/Engineer	**M. Murray**	Hole Depth	**10.0-feet**
Sample Method	**GeoProbe**	Outer Hole Diam	**2.25-inch**

Depth (feet, BGS)	Well Details	Sample Data: Interval	Percent Recovery	Collection Method	Number	Name (Type)	Blows/6"	Lithologic Column	Soil Description
1									0.0 to 3.2 feet: No recovery.
2									
3									
4									3.2 to 5.0 feet: Woodwaste with SILTY SAND; 60% woodwaste; 40% silty sand.
5									5.0 to 7.7 feet: No recovery.
6									
7									
8									7.7 to 8.5 feet: Woodwaste with SILTY SAND; brownish black; 60% woodwaste; 40% silty sand.
9									8.5 to 9.5 feet: Woodwaste; 80% woodwaste; 20% silty sand.
10									9.5 to 10.0 feet: Woodwaste with SILTY SAND; brownish black; 60% woodwaste; 40% silty sand.

NOTES:

Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number	Well Number	Sheet
1044.02.01	**CR-19F**	**1 of 1**

Project Name	**Seaport Landing**	TOC Elevation (feet)	**Mudline**
Project Location	**500 North Custer Street, Aberdeen, WA**	Surface Elevation (feet)	
Start/End Date	**10/16/2015 to 10/16/2015**	Northing	
Driller/Equipment	**Cascade Drilling, LP/GeoProbe Track rig**	Easting	
Geologist/Engineer	**M. Murray**	Hole Depth	**10.0-feet**
Sample Method	**GeoProbe**	Outer Hole Diam	**2.25-inch**

Depth (feet, BGS)	Well Details	Sample Data: Interval	Percent Recovery	Collection Method	Number	Name (Type)	Blows/6"	Lithologic Column	Soil Description
1				CS		CR19F-SSD			0.0 to 2.5 feet: No recovery.
				CS		CR19F-SBSD			
						CR19F-SBSD-DUP			
2									
3									2.5 feet: to 10.0 feet: SILTY SAND (SM); grayish brown; 40% fines; 60% sand, loose from 2.5 to 3.5 feet then becomes dense.
4									
5				GP		CR19F-5			
6									
7									
8									
9				GP		CR19F-9.0			
10									

NOTES:

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Geologic Borehole Log/Well Construction

Project Number	Well Number	Sheet
1044.02.01	**CR-19G**	**1 of 1**

Project Name	**Seaport Landing**	TOC Elevation (feet)	**Mudline**
Project Location	**500 North Custer Street, Aberdeen, WA**	Surface Elevation (feet)	
Start/End Date	**10/16/2015 to 10/16/2015**	Northing	
Driller/Equipment	**Cascade Drilling, LP/GeoProbe Track rig**	Easting	
Geologist/Engineer	**M. Murray**	Hole Depth	**10.0-feet**
Sample Method	**GeoProbe**	Outer Hole Diam	**2.25-inch**

Depth (feet, BGS)	Well Details	Sample Data: Interval	Percent Recovery	Collection Method	Number	Name (Type)	Blows/6"	Lithologic Column	Soil Description
1				**CS**		**CR19G-0-10cm**			*0.0 to 2.5 feet: No recovery.*
2									
3									*2.5 to 4.5 feet: SILTY SAND (SM); grayish brown; 35% fines; 50% sand; 15% woodwaste.*
4									
5									*4.5 to 7.5 feet: SILTY SAND with Woodwaste (SM); grayish brown; 60% silty sand; 40% woodwaste.*
6									
7									
8									*7.5 to 10.0 feet: SILTY SAND (SM); grayish brown; 40% fines; 60% sand, dense.*
9									
10									

NOTES:

Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number	Well Number	Sheet
1044.02.01	**CR-19I**	**1 of 1**

Project Name	**Seaport Landing**	TOC Elevation (feet)	**Mudline**
Project Location	**500 North Custer Street, Aberdeen, WA**	Surface Elevation (feet)	
Start/End Date	**10/16/2015 to 10/16/2015**	Northing	
Driller/Equipment	**Cascade Drilling, LP/GeoProbe Track rig**	Easting	
Geologist/Engineer	**M. Murray**	Hole Depth	**10.0-feet**
Sample Method	**GeoProbe**	Outer Hole Diam	**2.25-inch**

Depth (feet, BGS)	Well Details	Sample Data: Interval	Percent Recovery	Collection Method	Number	Name (Type)	Blows/6"	Lithologic Column	Soil Description
1									0.0 to 1.0 feet: No recovery.
2									1.0 to 10.0 feet: SILTY SAND (SM); grayish brown; 40% fines, medium plasticity; 60% sand, fine; dense. @ 1.0 to 3.0 feet: loose.
3									
4									
5									
6									
7									
8									
9									
10									

NOTES:

Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number	Well Number	Sheet
1044.02.01	**CR-19J**	**1 of 1**

Project Name	**Seaport Landing**	TOC Elevation (feet)	**Mudline**
Project Location	**500 North Custer Street, Aberdeen, WA**	Surface Elevation (feet)	
Start/End Date	**10/16/2015 to 10/16/2015**	Northing	
Driller/Equipment	**Cascade Drilling, LP/GeoProbe Track rig**	Easting	
Geologist/Engineer	**M. Murray**	Hole Depth	**10.0-feet**
Sample Method	**GeoProbe**	Outer Hole Diam	**2.25-inch**

Depth (feet, BGS)	Well Details	Sample Data: Interval	Percent Recovery	Collection Method	Number	Name (Type)	Blows/6"	Lithologic Column	Soil Description
1									0.0 to 4.0 feet: No recovery.
2									
3									
4									
5									4.0 to 5.0 feet: SILTY SAND with Woodwaste (SM); 60% silty sand; 40% woodwaste.
6									5.0 to 8.7 feet: No recovery.
7									
8									
9									8.7 to 10.0 feet: Woodwaste; 30% silty sand, borwnish black; 70% woodwaste.
10									

NOTES:

Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number	Well Number	Sheet
1044.02.01	**CR-20**	**1 of 1**

Project Name	**Seaport Landing**	TOC Elevation (feet)	**Mudline**
Project Location	**500 North Custer Street, Aberdeen, WA**	Surface Elevation (feet)	
Start/End Date	**10/12/2015 to 10/12/2015**	Northing	
Driller/Equipment	**Cascade Drilling, LP/GeoProbe Track rig**	Easting	
Geologist/Engineer	**M. Murray**	Hole Depth	**10.0-feet**
Sample Method	**GeoProbe**	Outer Hole Diam	**2.25-inch**

Depth (feet, BGS)	Well Details	Sample Data: Interval	Percent Recovery	Collection Method	Number	Name (Type)	Blows/6"	Lithologic Column	Soil Description
1									0.0 to 3.0 feet: No recovery.
2									
3									
4				GP		CR20-S-5.0			3.0 to 3.3 feet: CLAYEY SAND (SC); dark brown; 40% fines, high plasticity; 40% sand; 20% gravel; trace organic material; moist. 3.3 to 7.0 feet: SANDY GRAVEL (GWS); brownish gray; 30% sand, fine to coarse; 70% gravel, medium to coarse, subangular. @ 4.0 feet: Clay lens; reddish brown.
5				GP		CR20-GW-5.0			@ 5.0 to 5.3 feet: Woodwaste; 80% woodwaste, primarily large woodchips; 20% black silty sand.
6									
7									7.0 to 7.5 feret: CONCRETE.
8									7.5 to 10.0 feet: No recovery.
9									
10									

NOTES:

Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number	Well Number	Sheet
1044.02.01	**CR-21**	**1 of 1**

Project Name	**Seaport Landing**	TOC Elevation (feet)	**Mudline**
Project Location	**500 North Custer Street, Aberdeen, WA**	Surface Elevation (feet)	
Start/End Date	**10/12/2015 to 10/12/2015**	Northing	
Driller/Equipment	**Cascade Drilling, LP/GeoProbe Track rig**	Easting	
Geologist/Engineer	**M. Murray**	Hole Depth	**10.0-feet**
Sample Method	**GeoProbe**	Outer Hole Diam	**2.25-inch**

Depth (feet, BGS)	Well Details	Sample Data: Interval	Percent Recovery	Collection Method	Number	Name (Type)	Blows/6"	Lithologic Column	Soil Description
1									0.0 to 3.0 feet: No recovery.
2									
3									
4				GP		CR21-S-5.0 PID = 102.9 ppm			3.0 to 4.8 feet: GRAVELLY SAND (SPG); brown; 10% fines, nonplastic; 40% sand, fine to medium; 50% gravel, subangular (rock fragments), medium to large; moist.
5									@ 4.8 to 5.0 feet: Woodwaste; 80% woodwaste, primarily large woodchips; 20% black silty sand.
6									5.0 to 8.5 feet: No recovery.
7									
8									
9						PID = 53.5 ppm			8.5 to 10.0 feet: SILTY SAND (SM); blackish brown; 30% fines, nonplastic to medium plasticity; 50% sand, fine to medium; 20% gravel, medium, subrounded; wet.
10				GP		CR21-GW-10.0			

NOTES:

Geologic Borehole Log/Well Construction

Maul Foster & Alongi, Inc.

Project Number	Well Number	Sheet
1044.02.01	**CR-22**	**1 of 1**

Project Name	**Seaport Landing**	TOC Elevation (feet)	**Mudline**
Project Location	**500 North Custer Street, Aberdeen, WA**	Surface Elevation (feet)	
Start/End Date	**10/13/2015 to 10/13/2015**	Northing	
Driller/Equipment	**Cascade Drilling, LP/GeoProbe Track rig**	Easting	
Geologist/Engineer	**M. Murray**	Hole Depth	**10.0-feet**
Sample Method	**GeoProbe**	Outer Hole Diam	**2.25-inch**

Depth (feet, BGS)	Well Details	Sample Data: Interval	Percent Recovery	Collection Method	Number	Name (Type)	Blows/6"	Lithologic Column	Soil Description
1									0.0 to 2.0 feet: No recovery.
2									
3				GP		CR22-S-3.0 PID = 2.0 ppm			2.0 to 3.0 feet: WELL GRADED SAND (SW); brown; 20% fines, nonplastic; 60% sand, fine to coarse; 20% gravel, subangular; rock shards, some organic material.
4									3.0 to 4.5 feet: SILTY SAND (SM); reddish brown, 40% fines, medium plasticity; 60% sand, coarse; trace gravel.
5									@ 4.5 to 4.8 feet: Woodwaste lens, primarily bark chips and large wood chips.
6									4.8 to 5.0 feet: POORLY GRADED SAND (SP); gray; 10% fines, 90% sand, medium, poorly graded; saturated. (FILL) 5.0 to 7.0 feet: No recovery.
7									
8									7.0 to 8.0 feet: POORLY GRADED SAND (SP); gray; 10% fines, 90% sand, medium, poorly graded; saturated. (FILL)
9									8.0 to 9.0 feet: Woodwaste.
10				GP		PID = 8.8 ppm			9.0 to 10.0 feet: SILT w/ WOODWASTE (ML); grayish brown; 70% fines, nonplastic; 30% woodwaste, primarily bark chips .

NOTES:

Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number	Well Number	Sheet
1044.02.01	**CR-23**	**1 of 1**

Project Name	**Seaport Landing**	TOC Elevation (feet)	**Mudline**
Project Location	**500 North Custer Street, Aberdeen, WA**	Surface Elevation (feet)	
Start/End Date	**10/13/2015 to 10/13/2015**	Northing	
Driller/Equipment	**Cascade Drilling, LP/GeoProbe Track rig**	Easting	
Geologist/Engineer	**M. Murray**	Hole Depth	**10.0-feet**
Sample Method	**GeoProbe**	Outer Hole Diam	**2.25-inch**

Depth (feet, BGS)	Well Details	Sample Data: Interval	Percent Recovery	Collection Method	Number	Name (Type)	Blows/6"	Lithologic Column	Soil Description
1									0.0 to 1.0 feet: No recovery.
2				GP		CR23-S-3.0 PID = 30.8 ppm			1.0 to 1.5 feet: GRAVELLY SILT (MLG); brown; 40% fines, high plasticity; 10% sand; 25% gravel, subrounded, large; 25% woodwaste, primarily large woodchips and bark pieces.
3									1.5 to 2.5 feet: GRAVELLY SAND (SPG); grayish brown; 20% fines; 50% sand; 30% gravel, fine to medium, subrounded to subangular.
4						PID = 57.7 ppm			2.5 to 3.0 feet: GRAVEL w/ SAND (GW); 10% fines, 20% sand; 70% gravel, fine to large. 3.0 to 4.0 feet: POORLY GRADED SAND (SP); gray; 20% fines; 70% sand, poorly graded, medium; 10% gravel. (FILL)
5									4.0 to 5.0 feet: Woodwaste; 80% woodwaste; 20% gray sandy silt.
6									5.0 to 7.5 feet: No recovery.
7									
8									7.5 to 9.0 feet: Woodwaste; 80% woodwaste; 20% gray sandy silt.
9									
10									9.0 to 10.0 feet: SILT w/ WOODWASTE (ML); dark brown; 70% fines, medium plasticity; 30% woodwaste, primarily bark chips.

NOTES:

Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number	Well Number	Sheet
1044.02.01	**CR-25**	**1 of 1**

Project Name	**Seaport Landing**	TOC Elevation (feet)	**Mudline**
Project Location	**500 North Custer Street, Aberdeen, WA**	Surface Elevation (feet)	
Start/End Date	**10/15/2015 to 10/15/2015**	Northing	
Driller/Equipment	**Cascade Drilling, LP/GeoProbe Track rig**	Easting	
Geologist/Engineer	**M. Murray**	Hole Depth	**5.0-feet**
Sample Method	**GeoProbe**	Outer Hole Diam	**2.25-inch**

Depth (feet, BGS)	Well Details	Sample Data: Interval	Percent Recovery	Collection Method	Number	Name (Type)	Blows/6"	Lithologic Column	Soil Description
1				**CS**		**CR25-0-10cm**			*0.0 to 1.0 feet: No recovery.*
2									*1.0 to 5.0 feet: SILTY SAND (SM): blackish gray; 20% fines; 80% sand, fine.*
3									
4									
5				**GP**		**CR25-5**			

NOTES:

Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number	Well Number	Sheet
1044.02.01	**CR-26**	**1 of 1**

Project Name	**Seaport Landing**	TOC Elevation (feet)	**Mudline**
Project Location	**500 North Custer Street, Aberdeen, WA**	Surface Elevation (feet)	
Start/End Date	**10/15/2015 to 10/15/2015**	Northing	
Driller/Equipment	**Cascade Drilling, LP/GeoProbe Track rig**	Easting	
Geologist/Engineer	**M. Murray**	Hole Depth	**5.0-feet**
Sample Method	**GeoProbe**	Outer Hole Diam	**2.25-inch**

Depth (feet, BGS)	Well Details	Sample Data: Interval	Percent Recovery	Collection Method	Number	Name (Type)	Blows/6"	Lithologic Column	Soil Description
1				**CS**		**CR26-SSD**			*0.0 to 1.0 feet: No recovery.*
				CS		**CR26-SBSD**			
2									*1.0 to 5.0 feet: SILTY SAND (SM); blackish gray; 30% fines, high plasticity; 70% sand, fine.*
3									
4									
5									

NOTES:

APPENDIX D

TERRESTRIAL ECOLOGICAL EVALUATION

TERRESTRIAL ECOLOGICAL EVALUATION

The terrestrial ecological evaluation (TEE) process is required at all Model Toxics Control Act sites where there has been a release or threatened release of a hazardous substance that may pose a threat to human health or the environment. The TEE procedure is structured with the intent to protect terrestrial wildlife at industrial and commercial sites, and terrestrial plants, soil biota, and terrestrial wildlife at other sites, as provided under Washington Administrative Code (WAC) 173-340-7490(3)(b).

A TEE for the upland portion of the Seaport Landing site's approximately 16.9 acre leased property (the Property) was conducted following the procedures outlined in WAC 173-340-7490 through 173-340-7493. The purpose of this TEE is to (1) present sufficient information to characterize risks to terrestrial ecological receptors, and (2) evaluate the ecological protectiveness of the remedial alternatives being assessed for the leased Property (see WAC 173-340-7490(1)(b)).

UPLAND SITE DESCRIPTION

The Seaport Landing site is located in the alluvial meander plain of the Chehalis River in the northwestern margins of the Willapa Hills of southwest Washington. Located at 500 North Custer Street in Aberdeen, the site is approximately 2 miles upriver from Grays Harbor. The City of Aberdeen is situated in southwestern Washington, approximately 15 miles from the Pacific Ocean and approximately 70 air miles west-southwest of Tacoma, Washington. US Highway 101 and US Highway 105 are located less than 0.25 mile south of the site.

The upland portion of the Property is being leased from the Washington State Department of Natural Resources by Weyerhaeuser under Lease No. 22-092275. The Grays Harbor Historical Seaport Authority (GHHSA) has entered into a sublease agreement with Weyerhaeuser for the state-owned aquatic lands. Historically, the Seaport Landing site was used by Weyerhaeuser and other wood products companies. The Property is proposed for future use as the homeport for the Lady Washington and Hawaiian Chieftain tall ships as part of a new maritime heritage facility called Seaport Landing.

The upland portion of the Property consists of former tidal flats that historically were filled with unknown types and quantities of debris, including construction debris and woodwaste. The area is a highly disturbed, low-quality habitat and is immediately surrounded by industrial and commercial developments and roads. However, the uplands likely provide some habitat functions for terrestrial receptors that also utilize the adjacent Chehalis River. Following removal of the mill, pilings, and debris in the former mill area, the pocket beach near the river has been colonized by vegetation characteristic of wetland environments, such as cattails and rushes. This section of the river has been observed to be a depositional area with debris including loose pilings and household appliances floating downstream and becoming lodged against the wharf. The river supports threatened bull trout, waterbirds such as the great blue heron, and aquatic mammals such as the river otter.

Based on Washington State Department of Fish and Wildlife information,[1] threatened or endangered and priority species and habitats are not present at the Property. Priority fish (salmonids and bull trout) species are identified for the adjacent Chehalis River, and priority forested/shrub wetlands are present in surrounding areas more than 500 feet south of the leased the Property (see the attached Species of Concern Report).

TEE APPROACH

An initial step in the TEE process is to determine whether a site qualifies for a TEE exclusion. If a site meets at least one of the four exclusionary criteria described in WAC 173-340-7491, then no further evaluation of ecological risk is necessary. The four exclusionary criteria are: (1) contamination is present only below the point of compliance (i.e., more than 15 feet below ground surface [bgs], provided institutional controls to limit exposure to zero to 6 feet bgs are not in place or planned), (2) incomplete exposure pathway (i.e., all soil will be covered by physical barriers), (3) type of contamination and proximity to ecological receptors (i.e., the site is located on or near a limited amount of undeveloped land), and (4) all concentrations are below background levels.

The leased Property does not meet exclusionary criterias 2 and 3, as the Property may be redeveloped into a heritage maritime facility with public access areas along the shore line and, as such, may leave potential areas of exposure uncovered and/or undeveloped. Hazardous substances in soil at the point of compliance were identified during evaluation of potential human health exposure (see the main text), and exclusionary criteria 1 and 4 are not definitively met. Since the Property cannot be definitively excluded from the TEE process, a simplified or site-specific TEE is required.

The simplified TEE applies to sites that do not have substantial potential for posing a threat of significant adverse effects to terrestrial ecological receptors and may be removed from further ecological consideration during the remedial investigation and cleanup process (WAC 173-340-7492). A simplified TEE is appropriate for a site, provided (1) it is not known to be located on or directly adjacent to an area where land use plans maintain or restore native or semi-native vegetation; (2) it is not utilized by vulnerable species; (3) less than 10 acres of native vegetation are present; and (4) there is no risk to significant wildlife populations, as determined by the Washington State Department of Ecology (Ecology) (WAC 173-340-7491). A simplified TEE is appropriate because the Property is immediately surrounded by industrial/commercial developments and roads, and no species of concern are identified in the Property's uplands (see the attached Species of Concern Report).

WAC 173-340-7492(2) provides the steps necessary for conducting the simplified TEE. The simplified TEE can be ended if any of three analyses (exposure analysis, pathway analysis, or contaminant analysis) meet their criteria. As further described below, the contaminant analysis was conducted to determine if chemical concentrations meet or will meet (following remediation conducted to protect human health) WAC Table 749-2 TEE criteria protective of ecological receptors for industrial or commercial sites (current conditions). In addition,

[1] The WDFW PHS system was accessed to assess priority species and habitat occurrence. Priority species include endangered, threatened, sensitive, and candidate species as well as animal aggregations (e.g., heron colonies, bat colonies) considered vulnerable; priority habitats are habitat types or elements with unique or significant value to a diverse assemblage of species.

the Table 749-2 TEE criteria for unrestricted land use was evaluated to account for the potential future conditions.

TEE CONTAMINANT ANALYSIS

An ecological screening evaluation was performed to identify whether any chemicals evaluated in the soil are found at concentrations greater than the TEE criteria. The attached table provides the results of the screening evaluation.

All soil samples were collected at depths of up to five feet below ground surface i.e. within the point of compliance. All concentrations in soils are below TEE criteria for commercial/industrial use, with the exception of total PCBs, dioxin toxicity equivalent (TEQ), and furan TEQ.[2] The same analytes, as well as chromium and diesel-range TPH, exceed the TEE criteria for unrestricted land use in one or more sample locations. Consistent with Model Toxics Control Act procedures, these analytes are further discussed in the context of statistical evaluations to evaluate both the area-wide conditions to which receptors may be exposed and the natural background concentrations:

- **Chromium.** The maximum detected value (71 mg/kg; see the attached table) is below the natural background concentration of 78.46 mg/kg. Chromium is therefore not considered further.
- **Total PCBs.** Because the sample size is less than eight samples, a 95th UCL cannot be calculated. All but one location (CR-20) are well below the TEE criterion, and the average concentration (590 ug/kg) is well below the TEE criterion of 2,000 ug/kg. However, total PCBs are carried forward for further evaluation.
- **Diesel-range TPH.** Because the sample size is less than eight samples, a 95th UCL cannot be calculated. CR-20 and CR-21 marginally exceed the TEE criterion for unrestricted land use, and all samples are below the criteria for commercial/industrial properties. The average concentration (310 mg/kg) is well below the lowest TEE criterion of 480 mg/kg. However, diesel-range TPH is carried forward for further evaluation.
- **Dioxin and Furan TEQ.** Because the sample size was less than eight samples, a 95th UCL could not be calculated. The dioxin TEQ criterion of 5 pg/g is exceeded at CR-20 through CR-22. The furan TEQ of 3 pg/g is exceeded at CR-20 and CR-22. Dioxin/Furan TEQ (measured as dioxins and furans) soil concentrations are well above typical background levels detected in rural Washington state parks (0.15 to 9.4 pg/g) at CR-20 and CR-22. Dioxins are therefore carried forward for further evaluation.

REMEDY EVALUATION AND CONCLUSIONS

In summary, multiple analytes exceed TEE criteria and should be further evaluated in the context of the upland soil remedy proposed for protection of human health (see the main

[2] Note that Ecology has developed separate TEE criteria for chlorinated dibenzo-p-dioxins (dioxin TEQ) and chlorinated dibenzofurans (furan TEQ); sample concentration dioxin and furan TEQs were therefore calculated separately for comparison, consistent with procedures described in the 2013 Ecology Dioxin/Furan/PCB Ecological Risk Calculation Methodology.

text). The exceedances occur within the footprint of the Former Mill area and are observed at the following locations: CR-20 (3.3 to 5.0 feet bgs), CR-21 (3.3 to 5.0 feet bgs), and CR-22 (3.0 to 4.5 feet bgs). When a remedial action is selected, the TEE should be revisited to evaluate how well the remedy protects ecological receptors.

Attachments: Table
Species of Concern Report

TABLE

Table
Terrestrial Ecological Screening Summary

			Location:	CR-20	CR-21	CR-22	CR-23
			Sample Name:	CR20-S-5.0	CR21-S-5.0	CR22-S-3.0	CR23-S-3.0
			Collection Date:	10/12/2015	10/12/2015	10/13/2015	10/13/2015
			Collection Depth (ft bgs):	3.3 - 5.0	3.5 - 5.0	3.0 - 4.5	1.5 - 3.0
	MTCA TEE Table 749-2, Unrestricted Land Use	MTCA TEE Table 749-2, Commercial/ Industrial Properties	Natural Background (Group "W")				
Total Metals (mg/kg)							
Arsenic	20[a]	20[a]	8.47	10 U	10 U	10 U	6 U
Cadmium	25	36	0.1	0.6 U	0.5 U	0.6 U	0.2 U
Chromium	42	135	78.46	**71 J**	**32 J**	**37**	**35.5**
Lead	220	220	10.67	6 U	5 U	6 U	**3**
Mercury	0.7[b]	0.7[b]	0.13	0.03 U	**0.02**	**0.09**	0.02 U
PCBs (ug/kg)							
Aroclor 1016	NV	NV	NV	19 U	17 U	19 U	17 U
Aroclor 1221	NV	NV	NV	19 U	17 U	19 U	17 U
Aroclor 1232	NV	NV	NV	19 U	17 U	19 U	17 U
Aroclor 1242	NV	NV	NV	19 U	17 U	19 U	17 U
Aroclor 1248	NV	NV	NV	**530**	**34**	19 U	17 U
Aroclor 1254	NV	NV	NV	**710 J**	**73 J**	19 U	17 U
Aroclor 1260	NV	NV	NV	**930**	**56**	19 U	17 U
Aroclor 1268	NV	NV	NV	19 U	17 U	19 U	17 U
Total PCBs	2000	2000	NV	**2170 J**	**163 J**	19 U	17 U
SVOCs (ug/kg)							
1,2,4-Trichlorobenzene	NV	NV	NV	280 U	92 U	38 U	19 U
1,2-Dichlorobenzene	NV	NV	NV	280 U	92 U	38 U	19 U
1,3-Dichlorobenzene	NV	NV	NV	280 U	92 U	38 U	19 U
1,4-Dichlorobenzene	NV	NV	NV	280 U	92 U	38 U	19 U
1-Methylnaphthalene	NV	NV	NV	280 U	92 U	38 U	19 U
2,4,5-Trichlorophenol	NV	NV	NV	1400 U	460 U	190 U	93 U
2,4,6-Trichlorophenol	NV	NV	NV	1400 U	460 U	190 U	93 U
2,4-Dichlorophenol	NV	NV	NV	1400 U	460 U	190 U	93 U
2,4-Dimethylphenol	NV	NV	NV	1400 U	460 U	190 U	93 U

Table
Terrestrial Ecological Screening Summary

			Location:	CR-20	CR-21	CR-22	CR-23
			Sample Name:	CR20-S-5.0	CR21-S-5.0	CR22-S-3.0	CR23-S-3.0
			Collection Date:	10/12/2015	10/12/2015	10/13/2015	10/13/2015
			Collection Depth (ft bgs):	3.3 - 5.0	3.5 - 5.0	3.0 - 4.5	1.5 - 3.0
	MTCA TEE Table 749-2, Unrestricted Land Use	MTCA TEE Table 749-2, Commercial/ Industrial Properties	Natural Background (Group "W")				
2,4-Dinitrophenol	NV	NV	NV	2800 U	920 U	380 U	190 U
2,4-Dinitrotoluene	NV	NV	NV	1400 U	460 U	190 U	93 U
2,6-Dinitrotoluene	NV	NV	NV	1400 U	460 U	190 U	93 U
2-Chloronaphthalene	NV	NV	NV	280 U	92 U	38 U	19 U
2-Chlorophenol	NV	NV	NV	280 U	92 U	38 U	19 U
2-Methylnaphthalene	NV	NV	NV	280 U	**46 J**	**26 J**	19 U
2-Methylphenol	NV	NV	NV	280 U	92 U	38 U	19 U
2-Nitroaniline	NV	NV	NV	1400 U	460 U	190 U	93 U
2-Nitrophenol	NV	NV	NV	280 U	92 U	38 U	19 U
3,3-Dichlorobenzidine	NV	NV	NV	1400 R	460 R	190 R	93 R
3-Nitroaniline	NV	NV	NV	1400 R	460 R	190 R	93 R
4,6-Dinitro-2-methylphenol	NV	NV	NV	2800 U	920 U	380 U	190 U
4-Bromophenylphenyl ether	NV	NV	NV	280 U	92 U	38 U	19 U
4-Chloro-3-methylphenol	NV	NV	NV	1400 U	460 U	190 U	93 U
4-Chloroaniline	NV	NV	NV	1400 R	460 R	190 R	93 R
4-Chlorophenylphenyl ether	NV	NV	NV	280 U	92 U	38 U	19 U
4-Methylphenol	NV	NV	NV	280 U	**92**	38 U	19 U
4-Nitroaniline	NV	NV	NV	1400 U	460 U	190 U	93 U
4-Nitrophenol	NV	NV	NV	1400 U	460 U	190 U	93 U
Acenaphthene	NV	NV	NV	**140 J**	**420**	38 U	19 U
Acenaphthylene	NV	NV	NV	280 U	92 U	38 U	19 U
Anthracene	NV	NV	NV	280 U	**150**	38 U	19 U
Benzo(a)anthracene	NV	NV	NV	**140 J**	**210**	**21 J**	19 U
Benzo(a)pyrene	30000	300000	NV	**160 J**	**180**	**28 J**	19 U
Benzo(ghi)perylene	NV	NV	NV	280 U	92 U	**32 J**	19 U
Benzoic acid	NV	NV	NV	2800 U	920 U	380 U	190 U

Table
Terrestrial Ecological Screening Summary

			Location:	CR-20	CR-21	CR-22	CR-23
			Sample Name:	CR20-S-5.0	CR21-S-5.0	CR22-S-3.0	CR23-S-3.0
			Collection Date:	10/12/2015	10/12/2015	10/13/2015	10/13/2015
			Collection Depth (ft bgs):	3.3 - 5.0	3.5 - 5.0	3.0 - 4.5	1.5 - 3.0
	MTCA TEE Table 749-2, Unrestricted Land Use	MTCA TEE Table 749-2, Commercial/ Industrial Properties	Natural Background (Group "W")				
Benzyl alcohol	NV	NV	NV	280 U	92 U	38 U	19 U
Bis(2-chloro-1-methylethyl)ether	NV	NV	NV	280 U	92 U	38 U	19 U
Bis(2-chloroethoxy)methane	NV	NV	NV	280 U	92 U	38 U	19 U
Bis(2-chloroethyl)ether	NV	NV	NV	280 U	92 U	38 U	19 U
Bis(2-ethylhexyl)phthalate	NV	NV	NV	**570 J**	230 U	**3100**	47 U
Butylbenzylphthalate	NV	NV	NV	280 U	92 U	38 U	19 U
Carbazole	NV	NV	NV	280 UJ	92 UJ	38 UJ	19 UJ
Chrysene	NV	NV	NV	**470**	**480**	**75**	19 U
Dibenzo(a,h)anthracene	NV	NV	NV	280 U	92 U	38 U	19 U
Dibenzofuran	NV	NV	NV	280 U	**100**	38 U	19 U
Diethyl phthalate	NV	NV	NV	280 U	92 U	38 U	19 U
Dimethyl phthalate	NV	NV	NV	280 U	92 U	38 U	19 U
Di-n-butyl phthalate	NV	NV	NV	280 U	92 U	38 U	19 U
Di-n-octyl phthalate	NV	NV	NV	280 U	92 U	38 U	19 U
Fluoranthene	NV	NV	NV	**600**	**640**	**28 J**	**11 J**
Fluorene	NV	NV	NV	**160 J**	**300**	38 U	19 U
Hexachlorobenzene	NV	NV	NV	280 U	92 U	38 U	19 U
Hexachlorobutadiene	NV	NV	NV	280 U	92 U	38 U	19 U
Hexachlorocyclopentadiene	NV	NV	NV	1400 U	460 U	190 U	93 U
Hexachloroethane	NV	NV	NV	280 U	92 U	38 U	19 U
Indeno(1,2,3-cd)pyrene	NV	NV	NV	280 U	92 U	38 U	19 U
Isophorone	NV	NV	NV	280 U	92 U	38 U	19 U
Naphthalene	NV	NV	NV	280 U	**65 J**	**270**	19 U
Nitrobenzene	NV	NV	NV	280 U	92 U	38 U	19 U
N-Nitrosodiphenylamine	NV	NV	NV	280 U	92 U	38 U	19 U
N-Nitrosodipropylamine	NV	NV	NV	280 U	92 U	38 U	19 U

Table
Terrestrial Ecological Screening Summary

			Location:	CR-20	CR-21	CR-22	CR-23
			Sample Name:	CR20-S-5.0	CR21-S-5.0	CR22-S-3.0	CR23-S-3.0
			Collection Date:	10/12/2015	10/12/2015	10/13/2015	10/13/2015
			Collection Depth (ft bgs):	3.3 - 5.0	3.5 - 5.0	3.0 - 4.5	1.5 - 3.0
	MTCA TEE Table 749-2, Unrestricted Land Use	MTCA TEE Table 749-2, Commercial/ Industrial Properties	Natural Background (Group "W")				
Pentachlorophenol	11000	11000	NV	1400 U	460 U	190 U	93 U
Phenanthrene	NV	NV	NV	**510**	**920**	**23 J**	**11 J**
Phenol	NV	NV	NV	280 UJ	92 UJ	38 UJ	19 UJ
Pyrene	NV	NV	NV	**530**	**610**	**30 J**	**11 J**
Total Benzofluoranthenes	NV	NV	NV	**300 J**	**320**	**62 J**	37 U
Dioxins and Furans (pg/g)							
1,2,3,4,6,7,8-HpCDD	NV	NV	NV	**2650**	**373**	**1260**	**26**
1,2,3,4,6,7,8-HpCDF	NV	NV	NV	**653**	**37.9**	**188**	**2.97**
1,2,3,4,7,8,9-HpCDF	NV	NV	NV	**32**	**1.48**	12.5 U	0.221 U
1,2,3,4,7,8-HxCDD	NV	NV	NV	**36.1**	**3.49**	**8.65**	0.193 U
1,2,3,4,7,8-HxCDF	NV	NV	NV	**17**	**2.11**	**4.09 J**	**0.114 J**
1,2,3,6,7,8-HxCDD	NV	NV	NV	**184**	**23.6**	**38.2**	**1.54**
1,2,3,6,7,8-HxCDF	NV	NV	NV	**9.97**	**1.55**	**4.2 J**	0.153 U
1,2,3,7,8,9-HxCDD	NV	NV	NV	**16.7**	**8.09**	**12.1**	**2.35**
1,2,3,7,8,9-HxCDF	NV	NV	NV	**8.52**	**1.3**	**1.82 J**	0.155 U
1,2,3,7,8-PeCDD	NV	NV	NV	**10.8**	**1.97**	**3.14 J**	**1.31**
1,2,3,7,8-PeCDF	NV	NV	NV	4.85 U	**0.859 J**	**1.08 J**	0.0558 U
2,3,4,6,7,8-HxCDF	NV	NV	NV	**40**	**1.58**	**7.81**	0.133 U
2,3,4,7,8-PeCDF	NV	NV	NV	**5.51**	0.727 U	**0.807 J**	0.0598 U
2,3,7,8-TCDD	NV	NV	NV	**6.42**	0.467 U	1.41 U	**1.68**
2,3,7,8-TCDF	NV	NV	NV	**5.07**	0.657 U	**0.552 J**	0.0538 U
OCDD	NV	NV	NV	**18400**	**2480**	**30800 J**	**298**

Table
Terrestrial Ecological Screening Summary

			Location:	CR-20	CR-21	CR-22	CR-23
			Sample Name:	CR20-S-5.0	CR21-S-5.0	CR22-S-3.0	CR23-S-3.0
			Collection Date:	10/12/2015	10/12/2015	10/13/2015	10/13/2015
			Collection Depth (ft bgs):	3.3 - 5.0	3.5 - 5.0	3.0 - 4.5	1.5 - 3.0
	MTCA TEE Table 749-2, Unrestricted Land Use	MTCA TEE Table 749-2, Commercial/ Industrial Properties	Natural Background (Group "W")				
OCDF	NV	NV	NV	**1490**	**42.8**	**412**	**4.82**
Total HpCDDs	NV	NV	NV	**4760**	**708**	**2900**	**52.5**
Total HpCDFs	NV	NV	NV	3080 U	**114**	695 U	10.2 U
Total HxCDDs	NV	NV	NV	843 U	**117**	**205**	27.3 U
Total HxCDFs	NV	NV	NV	1340 U	95.5 U	**243**	5.78 U
Total PeCDDs	NV	NV	NV	**140**	14.9 U	**18.2**	**13.3**
Total PeCDFs	NV	NV	NV	316 U	36.3 U	48.6 U	**0.846**
Total TCDDs	NV	NV	NV	79.6 U	4.89 U	13.6 U	11.4 U
Total TCDFs	NV	NV	NV	50.9 U	7.08 U	5.25 U	0.103 U
Dioxin/Furan TEQ	NV	NV	NV	**90.0**	**11.4 J**	**35.8 J**	**3.82 J**
Dioxin TEQ[c]	5	5	NV	**72.9**	**10.2**	**31.6 J**	**3.74**
Furan TEQ[c]	3	3	NV	**25.4**	**1.83 J**	**5.24 J**	**0.124 J**
TPH (mg/kg)							
Diesel	460	15000	NV	**480**	**620**	**120**	**21**
Lube Oil	NV	NV	NV	**2600**	**3600**	**980**	**51**
Diesel + Lube Oil	NV	NV	NV	**3080**	**4220**	**1100**	**72**

Table
Terrestrial Ecological Screening Summary

NOTES:

Calculated sums use the highest non-detect value when all constituents are non-detect. When detect and non-detect values are summed, one-half the non-detect value is used.

Detected results are indicated by bold font.

Results that exceed screening criteria are shaded except where metals concentrations are below natural background conditions. Non-detect results are not evaluated against screening criteria. Results are shaded according to exceedance of highest evaluated screening criteria.

-- = not analyzed.

Ecology = Washington State Department of Ecology.

ft bgs = feet below ground surface.

J = Result is an estimated value.

mg/kg = milligrams per kilogram.

MTCA = Model Toxics Control Act.

NV = no value.

PAH = polycyclic aromatic hydrocarbon.

PCB = polychlorinated biphenyl.

pg/g = picograms per gram.

SVOC = semivolatile organic compound.

TEE = terrestrial ecological evaluation.

TEQ = toxicity equivalent.

U = Result is non-detect.

UJ = Result is non-detect and an estimated value.

VOC = volatile organic compound.

[a]Value is for arsenic III.

[b]Value is for organic mercury.

[c]Dioxin TEQ mammal values are used. Furan TEQ avian values are used.

SPECIES OF CONCERN REPORT

WASHINGTON DEPARTMENT OF FISH AND WILDLIFE
PRIORITY HABITATS AND SPECIES REPORT

SOURCE DATASET: PHSPlusPublic
REPORT DATE: 12/23/2015 8.42

Query ID: P151223084141

Common Name	Site Name	Priority Area	Accuracy	Federal Status	Sensitive Data	Source Entity
Scientific Name	Source Dataset	Occurrence Type		State Status	Resolution	Geometry Type
	Source Record	More Information (URL)		PHS Listing Status		
Notes	Source Date	Mgmt Recommendations				

WDFW Test Map

December 23, 2015

1:19,842

0 0.15 0.3 0.6 mi

0 0.275 0.55 1.1 km

- PHS Report Clip Area
- PT
- LN
- AS MAPPED
- SECTION
- QTR-TWP
- TOWNSHIP

Washington Fish and Wildlife
WDFW

APPENDIX E

SEDIMENT SCREENING LEVEL DEVELOPMENT FOR HUMAN HEALTH—DIRECT CONTACT

Table
Sediment Screening Level Development For Human Health - Direct Contact

Model Parameter	Description	Total PCBs (ug/kg)	cPAH TEQ (ug/kg)	Dioxin TEQ (pg/g)
SC_C[a]	Risk-based sediment concentration	3.1E+03	8.5E+02	1.0E+02
RISK	Acceptable cancer risk (unitless)	1E-06	1E-06	1E-06
BW	Average body weight over the exposure duration (kg)	16	16	16
AT	Averaging time (day)	27375	27375	27375
EF	Exposure frequency (day/year)	41	41	41
ED	Exposure duration (years)	6	6	6
SIR	Soil ingestion rate (mg/day)	200	200	200
AB	Gastrointestinal absorption fraction (unitless)	1	1	0.6
SFo[b]	Oral cancer potency factor (mg/kg/day)	2.0E+00	7.3E+00	1.3E+05
SFd[c]	Dermal cancer potency factor (mg/kg/day) derived by SFo/GI	4.0E+00	1.5E+01	1.6E+05
GI	Gastrointestinal absorption conversion factor (unitless)	0.5	0.5	0.8
SA	Dermal surface area (cm^2)	2200	2200	2200
AF	Adherence factor (mg/cm^2/day)	0.2	0.2	0.2
ABS	Dermal absorption fraction (unitless)	0.1	0.1	0.03

NOTES:

Model parameters based on recommended exposure factors in Ecology (2017), Table 9-1.

cm^2 = square centimeter.

kg = kilogram(s).

mg/cm^2/day = milligrams per square centimeter per day.

mg/day = milligrams per day.

mg/kg = milligrams per kilogram.

mg/kg/day = milligrams per kilogram per day.

PCB = polychlorinated biphenyl.

pg/g = picograms per gram.

TEQ = toxicity equivalent.

[a]SC_C derived using Equation 9-1 from Ecology (2017).

[b]Obtained from Ecology CLARC database.

[a]Derived using Equation 9-3 from Ecology (2017).

APPENDIX F

LABORATORY REPORTS
(PROVIDED ON CD;
AVAILABLE UNDER
SEPARATE COVER BY
REQUEST FROM
ECOLOGY)

APPENDIX G

DATA VALIDATION MEMORANDA

DATA QUALITY ASSURANCE/QUALITY CONTROL REVIEW

PROJECT NO. 0863.01.03 | APRIL 10, 2017 | GRAYS HARBOR HISTORICAL SEAPORT AUTHORITY

This report reviews the analytical results for sediment samples collected by the Maul Foster & Alongi, Inc. (MFA) project team on the property located at 500 North Custer Street in Aberdeen, Washington. The samples were collected in November 2013.

Analytical Resources, Incorporated (ARI) performed the analyses. ARI report XN64_XO00_GHHSA_rpt, which contains reports XN64 and XO00, and report XQ70_MFA_GHHSA_rpt, which contains XQ70, were reviewed. Three of the sediment samples were processed by ARI to obtain pore water and were reported in XO00. Follow-up analyses were performed on XN64 samples and reported in XQ70. The analyses performed and samples analyzed are listed below. Some analyses may not have been performed on all samples.

Analysis	Reference
Ammonia Nitrogen	USEPA 350.1 Modified
Diesel and Motor Oil	NWTPH-Dx
Dioxins/Furans	USEPA 1613B
Gasoline	NWTPH-G
Grain Size	PSEP 1986
Polychlorinated Biphenyls	USEPA 8082A
Pore Water Conductivity	USEPA 120.1
Pore Water Salinity	SM 2520B
Preserved and Total Solids	SM 2540G
Semivolatile Organic Compounds	USEPA 8270D/8270D SIM
Total Mercury	USEPA 7471A
Total Metals	USEPA 6010C
TOC	Plumb
Total Sulfides	USEPA 376.2
Total Volatile Solids	SM 2540E

NWTPH = Northwest Total Petroleum Hydrocarbons.
Plumb = Procedures for handling and chemical analysis of sediment and water samples (Plumb, 1981).
PSEP = Puget Sound Estuary Protocols.
SIM = selective ion monitoring.
SM = Standard Methods for the Examination of Water and Wastewater.
TOC = total organic carbon.
USEPA = U.S. Environmental Protection Agency.

Samples Analyzed		
SDG XN64	**SDG XO00**	**SDG XQ70**
CR01-10cm	CR01-10cm (pore water)	CR04-10cm
CR02-10cm	CR02-10cm (pore water)	CR05-10cm
CR03-10cm	CR03-10cm (pore water)	CR05-2.5
CR04-10cm	-	CR04-2.5
CR05-10cm	-	-
CR06-10cm	-	-
CR04-5	-	-
CR06-2.5	-	-

SDG = sample delivery group.

DATA QUALIFICATIONS

Analytical results were evaluated according to applicable sections of USEPA procedures (USEPA, 2008, 2010, 2011), appropriate laboratory and method-specific guidelines (ARI, 2013; USEPA, 1986), and the dioxin rules memorandum developed by MFA and approved by the Washington State Department of Ecology (MFA, 2012).

Data validation procedures were modified, as appropriate, to accommodate quality control (QC) requirements for methods not specifically addressed by the functional guidelines (e.g., total volatile solids).

Any result reported as exceeding the calibration range of the instrument was qualified as an estimate and assigned a "J" flag.

USEPA Method 1613B results reported as estimated maximum potential concentrations (EMPCs) were qualified by the reviewer with "U" (non-detect) at the reported EMPC value.

In report XQ70, the USEPA Method 1613B OCDD results for samples CR05-2.5 and CR04-2.5 exceeded the instrument calibration range. National Functional Guidelines for dioxin/furan data review state that laboratories are not required to take action when OCDD exceeds instrument calibration range (USEPA, 2011) The OCDD results were qualified "J" as estimated.

All data are considered acceptable for their intended use with the appropriate data qualifiers assigned.

HOLDING TIMES, PRESERVATION, AND SAMPLE STORAGE

Holding Times

In report XN64, the USEPA Method 8270D results for phenol, pentachlorophenol, and butylbenzylphthalate from samples CR04-10cm, CR04-5, CR05-10cm, and CR06-10cm were extracted and analyzed six days after the recommended 14-day holding time. All detected results have been qualified "J" as estimated, and all non-detect results have been qualified "UJ" as estimated.

In report XQ70, samples CR04-10cm, CR05-10cm, CR05-2.5, and CR04-2.5 were extracted for analysis by NWTPH-Dx, USEPA Method 8082A, and USEPA Method 8270D/8270D SIM after the recommended 14-day holding time. Samples CR05-2.5 and CR04-2.5 were prepared and analyzed for USEPA Method 7471A total mercury after the recommended 28-day holding time. All detected results have been qualified "J" as estimated, and all non-detect results have been qualified "UJ" as estimated.

The remaining extractions and analyses were performed within the recommended holding time criteria.

Preservation and Sample Storage

The samples were preserved and stored appropriately.

BLANKS

Method Blanks

Laboratory method blank analyses were performed at the required frequencies. For purposes of data qualification, the method blanks were associated with all samples prepared in the analytical batch.

If an analyte was detected in a sample and in the associated method blank at less than ten times the method blank concentration, the sample result was qualified. USEPA Method 1613B sample results were qualified if sample concentrations were less than five times the associated method blank concentration. Reporting limits were elevated to the concentrations detected in the samples, and results were qualified as not detected "U" at the elevated method reporting limit (MRL).

For USEPA Method 1613B, if an analyte was detected in a sample and in the associated method blank below the reporting limit but above the estimated detection limit, sample detections below the level found in the method blank were qualified as "U" at the reporting limit.

In report XN64 and XQ70, the USEPA Method 1613B method blanks had detections for some analytes below the MRL and some detections for 1,2,3,4,6,7,8-HpCDD and OCDD above the MRL. All associated sample results were greater than five times the method blank concentrations; thus, no results were qualified.

In report XN64, the USEPA Method 376.2 sulfide method blank prepared on November 12, 2013, had a total sulfide detection of 0.17 milligram per kilogram (mg/kg). All associated sample detections were greater than ten times the method blank detection; thus, no results were qualified.

All remaining laboratory method blanks were non-detect.

Trip Blanks

Trip blanks were not submitted for this sampling event, as volatile organic compounds were not analyzed.

Equipment Rinsate Blanks

Equipment rinsate blanks were not collected for this sampling event. Equipment was decontaminated after each sample was collected in accordance with the sediment sampling and analysis plan (MFA, 2013).

SURROGATE RECOVERY RESULTS

When appropriate, individual samples were spiked with surrogate compounds to evaluate laboratory performance.

In report XN64, NWTPH-Gx surrogate recoveries for sample CR06-2.5 exceeded the lower percent recovery limits for both trifluorotoluene and bromobenzene. The associated result was qualified by the reviewer as follows:

Sample	Component	Original Result (mg/kg)	Qualified Result (mg/kg)
CR06-2.5	Gasoline	54 U	54 UJ

The reviewer took no action based on minor surrogate outliers or surrogate percent recoveries that were outside acceptance limits because of dilutions necessary to quantify high concentrations of target analytes present in the samples. The laboratory appropriately documented and qualified surrogate outliers. Associated batch quality assurance and QC for samples with surrogate outliers were within acceptance limits.

All remaining surrogate recoveries were within acceptance limits.

LABELED ANALOG STANDARD RECOVERY RESULTS

All USEPA Method 1613B Modified samples were spiked with C13 labeled analog standards to quantify the recovery of individual target compounds. All C13 labeled analog standard recoveries were within acceptance limits.

MATRIX SPIKE/MATRIX SPIKE DUPLICATE RESULTS

Matrix spike/matrix spike duplicate (MS/MSD) results are used to evaluate laboratory precision and accuracy. All MS/MSD samples were extracted and analyzed at the required frequency.

In report XN64, the USEPA Method 7471A MS exceeded the upper percent recovery acceptance limit for total mercury. The exceedance was minor and the laboratory control sample (LCS) had acceptable recovery; thus, no results were qualified.

In report XN64, the case narrative states that the USEPA 376.2 sulfide matrix duplicate exceeded relative percent difference (RPD) acceptance criteria. The matrix duplicate RPD results were not included in the QC report. The remaining batch QC had acceptable recoveries, and the laboratory stated that sample heterogeneity likely was the cause of the RPD exceedance. No results were qualified.

In report XN64, the case narrative states that the Method Plumb (1981) MS had low percent recovery for TOC and that a re-prepared MS also had low recovery. The LCS had acceptable recovery, which indicates matrix interference. The following results were qualified "J" as estimated:

Report	Sample	Component	Original Result (%)	Qualified Result (%)
XN64	CR06-10cm	TOC	35.6	35.6 J
XN64	CR04-10cm	TOC	31.4	31.4 J
XN64	CR05-10cm	TOC	13.6	13.6 J
XN64	CR06-2.5	TOC	49.5	49.5 J
XN64	CR04-5	TOC	16.5	16.5 J
XN64	CR01-10cm	TOC	2.06	2.06 J
XN64	CR02-10cm	TOC	3.21	3.21 J
XN64	CR03-10cm	TOC	2.91	2.91 J

All recoveries were within acceptance limits for percent recovery and RPDs.

LABORATORY DUPLICATE RESULTS

Duplicate results are used to evaluate laboratory precision. All duplicate samples were extracted and analyzed at the required frequency. Laboratory duplicate RPDs for USEPA Method 6010C were assessed against the RPD acceptance limit of 35 percent for soil laboratory duplicates, as presented in the National Functional Guidelines for inorganic data review (USEPA, 2010). Minor laboratory duplicate RPD exceedances and exceedances for results near the reporting limit were not qualified by the reviewer.

In report XN64, the USEPA Method 6010C laboratory duplicate exceeded RPD acceptance criteria for total chromium, total copper, and total mercury. The exceedance for total mercury was minor and the associated results were not qualified. The associated batch QC had acceptable recoveries; however, the total chromium and total copper RPD exceedances were significant. The following results were qualified:

Report	Sample	Component	Original Result (mg/kg)	Qualified Result (mg/kg)
XN64	CR06-2.5	Total Chromium	26	26 J
XN64	CR06-2.5	Total Copper	96	96 J
XN64	CR01-10cm	Total Chromium	40	40 J

Report	Sample	Component	Original Result (mg/kg)	Qualified Result (mg/kg)
XN64	CR01-10cm	Total Copper	58	58 J
XN64	CR02-10cm	Total Chromium	38.5	38.5 J
XN64	CR02-10cm	Total Copper	56.3	56.3 J
XN64	CR03-10cm	Total Chromium	48	48 J
XN64	CR03-10cm	Total Copper	65.4	65.4 J

All remaining laboratory duplicate RPDs were within acceptance limits.

LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RESULTS

An LCS/laboratory control sample duplicate (LCSD) is spiked with target analytes to provide information on laboratory precision and accuracy. The LCS/LCSD samples were extracted and analyzed at the required frequency.

In report XN64, the USEPA Method 8270D SIM LCS exceeded the instrument calibration range for pentachlorophenol. The LCS percent recovery was within acceptance limits, and the associated sample detections were already qualified as estimated because they were below the MRL; thus, no results were qualified by the reviewer.

All remaining LCS/LCSD analytes were within acceptance limits for percent recovery and RPD.

FIELD DUPLICATE RESULTS

Field duplicate samples measure both field and laboratory precision. No field duplicate samples were submitted for analysis.

CONTINUING CALIBRATION VERIFICATION RESULTS

Continuing calibration verification (CCV) results are used to demonstrate instrument precision and accuracy through the end of the sample batch.

National Functional Guidelines for low/medium volatile and semivolatile data review (USEPA, 2008) state that results associated with closing CCV percent drift exceedances between 50 percent and -50 percent do not require qualification. However USEPA Method 8270D states that when CCV percent drift acceptance criteria are met for at least 80 percent of the compounds, non-detects may be reported for compounds that exceed acceptance limits if the laboratory demonstrates that quantitation limit sensitivity can still be achieved. Detected compounds associated with CCV percent drift exceedances may be reported as estimated values.

In report XN64, the USEPA Method 8270D SIM CCV exceeded percent drift criteria for benzyl alcohol and butylbenzylphthalate. In report XQ70, the USEPA Method 8270D and

8270D SIM CCVs also exceeded percent drift criteria for several compounds. Associated sample detections above the MRL were qualified with "J" as estimated. USPEA Method 8270D results associated with report XQ70 were already qualified "J" due to holding time exceedances, as noted above.

Report	Sample	Component	Original Result (µg/kg)	Qualified Result (µg/kg)
XN64	CR02-10cm	Benzyl Alcohol	43 Q	43 J
XN64	CR03-10cm	Benzyl Alcohol	43 Q	43 J

µg/kg = micrograms per kilogram.

Based on available information, all other CCVs were within acceptance limits for percent recovery.

REPORTING LIMITS

ARI used routine reporting limits for non-detect results, except when samples required dilutions because of limited sample or extract volume, high analyte concentrations, and/or matrix interferences.

Detections below the MRL were reported for some analyses: results for USEPA Method 1613B were reported to estimated detection limits, and results for USEPA Methods 8082A, 8270D, and 8270D SIM were reported to method detection limits. Some NWTPH-Gx, USEPA Method 8082A, and USEPA Method 8270D reporting limits were raised because of chromatographic interference or matrix interference. All samples in report XQ70 were diluted 1:5 for USEPA Method 8270D/8270D SIM analyses due to matrix interference.

DATA PACKAGE

The data packages were reviewed for transcription errors, omissions, and anomalies.

In report XN64, the case narrative states that the USEPA Method 7471A MS exceeded the lower acceptance limit for total mercury; however, the MS exceeded the upper acceptance limit.

In report XO00, conductivity was not indicated on the chain of custody but was analyzed for pore water extracts of samples CR01-10cm, CR02-10cm, and CR03-10cm.

All samples submitted for pore water extraction (CR01-10cm, CR02-10cm, CR03-10cm, and CR04-5) produced insufficient volume for USEPA Method 376.2 sulfides analysis. The volume of extracted pore water was sufficient to perform the remaining analyses.

No additional issues were found.

REFERENCES

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MFA. 2012. Dioxin and furan analysis, data validation, and TEQ calculation rules. Maul Foster & Alongi, Inc. December.

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USEPA. 1986. Test methods for evaluating solid waste: physical/chemical methods. EPA-530/SW-846. U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response. September (revision 6, February 2007).

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USEPA. 2011. USEPA contract laboratory program, national functional guidelines for chlorinated dibenzo-p-dioxins (CDDs) and chlorinated dibenzofurans (CDFs) data review. EPA-540-R-11-016. U.S. Environmental Protection Agency, Office of Superfund Remediation and Technology Innovation. September.

DATA QUALITY ASSURANCE/QUALITY CONTROL REVIEW

PROJECT NO. 1044.02.01 | APRIL 10, 2017 | GRAYS HARBOR HISTORICAL SEAPORT AUTHORITY

Maul Foster & Alongi, Inc. (MFA) conducted an independent review of the quality of analytical results for groundwater, sediment, soil, and stormwater samples collected at the leased tideland and in-water portion of the Seaport Landing site, located adjacent to the Chehalis River at 500 North Custer Street in Aberdeen, Washington. The samples were collected on October 12 through 16, 2015, and January 12, 2016.

Analytical Resources, Inc. (ARI) in Tukwila, Washington, and NVL Laboratories (NVL) in Seattle, Washington, performed the analyses. ARI report numbers AON0, AON1, AON2, AON3, AOT3, AOV8, AOV9, AOW1, AOW2, ART5, ASF7, and AUD1 were reviewed. The analyses performed and samples analyzed are listed below. Additional samples were submitted to ARI on hold and were archived at -18 degrees Celsius (°C). Portions of samples reported in AOV8, AOV9, and AOW2 were subcontracted to NVL for asbestos analysis and results are appended to AOV8, AOV9, and AOW2, respectively. Report ART5 is a follow-up to report AOW1 and contains results originally requested, but not reported in AOW1. Report ASF7 is a follow-up to report AOV9 and contains results for tests requested in addition to those reported in AOV9.

Analysis	Reference
Ammonia Nitrogen	USEPA 350.1 Modified
Asbestos	EPA 600/M4-82-020 and 600R-93/116
Diesel and Motor Oil	NWTPH-Dx
Dioxins and Furans	USEPA 1613B*
Grain Size	PSEP
Polychlorinated Biphenyls (PCBs)	USEPA 8082A
Semivolatile Organic Compounds (SVOCs)	USEPA 8270D / 8270D-SIM
Sulfide	SM 4500-S2D
Total and Dissolved Mercury	USEPA 7470A/7471A
Total and Dissolved Metals	USEPA 200.8/6010C
Total Organic Carbon (TOC)	Plumb, 1981
Total Solids/Preserved Total Solids/Total Volatile Solids	SM 2540G

NWTPH = Northwest Total Petroleum Hydrocarbons.
PSEP = Puget Sound Estuary Protocols (PSEP, 1997).
SIM = selective ion monitoring.
SM = Standard Methods for the Examination of Water and Wastewater.
USEPA = U.S. Environmental Protection Agency.

* The following acronyms are used to report USEPA Method 1613B congener results:

TCDD = Tetrachlorodibenzo-p-dioxin
TCDF = Tetrachlorodibenzofuran
PeCDD = Pentachlorodibenzo-p-dioxin
PeCDF = Pentachlorodibenzofuran
HxCDD = Hexachlorodibenzo-p-dioxin
HxCDF = Hexachlorodibenzofuran
HpCDD = Heptachlorodibenzo-p-dioxin
HpCDF = Heptachlorodibenzofuran
OCDD = Octachlorodibenzo-p-dioxin
OCDF = Octachlorodibenzofuran

Samples Analyzed				
Report AON0	**Report AON1**	**Report AON2**	**Report AON3**	**Report AOV8**
CR-07-SSD-COMP	CR11-14-SBSD-COMP	CR09a-SSD-COMP	CR20-S-5.0	CR17-D-SSD
CR23-S-3.0	CR-24-SSD-COMP	CR09b-SSD-COMP	CR21-S-5.0	CR17-D-SBSD
CR22-S-3.0	CR11-SBSD-23	-	CR21-GW-10	CR08A-SBSD
CR23-GW-6.0	CR12-SBSD-15	-	CR20-GW-5.0	CR10-SSD-COMP
CR22-GW-9.0	CR13-SBSD-11	-	Seep-01	CR08a-SSD-COMP
-	CR14-SBSD-12	-	-	-
Report AOT3	**Report AOV9**	**Report AOW1**	**Report AOW2**	**Report ART5**
CR19D-SSD-CONV	CR08b-SBSD	CR19F-SBSD	CR15C-SSD	CR18B-SBSD
-	CR26-SBSD	CR19F-SBSD-DUP	CR15C-SBSD	CR18B-SSD
-	-	CR19F-SSD	CR08b-SSD-COMP	-
-	-	SR18B-SBSD	-	-
-	-	SR18B-SSD	-	-
Report ASF7	**Report AUD1**	-	-	--
CR08b-SBSD	Storm-01	-	-	-
CR26-SBSD	-	-	-	-

DATA QUALIFICATIONS

Analytical results were evaluated according to applicable sections of USEPA procedures (USEPA, 2014a,b,c) and appropriate laboratory and method-specific guidelines (ARI, 2014; USEPA, 1986).

Data validation procedures were modified, as appropriate, to accommodate quality control requirements for methods not specifically addressed by the functional guidelines (e.g., NWTPH-Dx).

Where appropriate, the data were qualified using the following qualifiers:

J The analyte was positively identified but the associated numerical value is an approximate concentration because either there was an issue with the quality of the data generated or the concentration of the analyte was between the reporting limit (RL) and half the RL or the estimated detection limit (EDL).

J+ The result is an estimated value but may be biased high.

U Analysis was conducted, but the analyte was not detected at or above the selected RL. The value may represent an adjusted RL or the sample-specific EDL.

UJ The analyte was not detected (see definition of "U" and "J" qualifiers above). The reported value should be considered approximate.

R The sample results are unusable because certain quality control criteria were not met. The analyte may or may not be present in the sample.

GENERAL ASSESSMENT

Results for total and dissolved metals in water were reviewed to identify inconsistencies in any one sample. All total metals results were greater than dissolved metals results or within a reasonable relative percent difference (RPD).

ARI did not use second column confirmation for 2,3,7,8-TCDF. The reviewer confirmed that the analytical column used for USEPA Method 1613B analysis met requirements for 2,3,7,8-TCDD and 2,3,7,8-TCDF isomer specificity, therefore not requiring second column confirmation.

In reports AON1, AON2, AON3, AOV8, AOV9, AOW1, AOW2, and AUD1, USEPA Method 1613B detected results that were reported as estimated maximum potential concentrations (EMPC) were assigned by the reviewer a "U" qualifier (non-detect) at the reported EMPC value. Results detected below the RL were flagged by ARI with "J EMPC" and were also assigned by the reviewer a "U" qualifier at the reported EMPC value. In reports AON2 and AOW1, the 1,2,3,7,8-PeCDF results for samples CR09a-SSD-COMP and CR19F-SSD were flagged by ARI with "X" in addition to "EMPC," due to polychlorinated diphenyl ether interference. Qualified results are summarized below.

Report	Sample	Component	Laboratory-Reported Result (pg/g)	Result of Record (pg/g)
AON0	CR23-S-3.0	2,3,7,8-TCDF	0.0538 J EMPC	0.0538 U
AON0	CR23-S-3.0	1,2,3,6,7,8-HxCDF	0.153 J EMPC	0.153 U
AON0	CR23-S-3.0	1,2,3,7,8,9-HxCDF	0.155 J EMPC	0.155 U
AON0	CR23-S-3.0	1,2,3,4,7,8-HxCDD	0.193 J EMPC	0.193 U
AON0	CR23-S-3.0	1,2,3,4,7,8,9-HpCDF	0.221 J EMPC	0.221 U
AON0	CR23-S-3.0	Total TCDF	0.103 EMPC	0.103 U
AON0	CR23-S-3.0	Total TCDD	11.4 EMPC	11.4 U

Report	Sample	Component	Laboratory-Reported Result (pg/g)	Result of Record (pg/g)
AON0	CR23-S-3.0	Total HxCDF	5.78 EMPC	5.78 U
AON0	CR23-S-3.0	Total HxCDD	27.3 EMPC	27.3 U
AON0	CR23-S-3.0	Total HpCDF	10.2 EMPC	10.2 U
AON0	CR22-S-3.0	2,3,7,8-TCDD	1.41 J EMPC	1.41 U
AON0	CR22-S-3.0	1,2,3,4,7,8,9-HpCDF	12.5 EMPC	12.5 U
AON0	CR22-S-3.0	Total TCDF	5.25 EMPC	5.25 U
AON0	CR22-S-3.0	Total TCDD	13.6 EMPC	13.6 U
AON0	CR22-S-3.0	Total PeCDF	48.6 EMPC	48.6 U
AON0	CR22-S-3.0	Total HpCDF	695 EMPC	695 U
AON1	CR11-SBSD-23	1,2,3,6,7,8-HxCDF	0.0339 J EMPC	0.0339 U
AON1	CR11-SBSD-23	1,2,3,7,8,9-HxCDF	0.112 J EMPC	0.112 U
AON1	CR11-SBSD-23	1,2,3,4,7,8-HxCDD	0.255 J EMPC	0.255 U
AON1	CR11-SBSD-23	1,2,3,6,7,8-HxCDD	0.631 J EMPC	0.631 U
AON1	CR11-SBSD-23	1,2,3,4,6,7,8-HpCDF	0.317 J EMPC	0.317 U
AON1	CR11-SBSD-23	Total TCDF	0.303 EMPC	0.303 U
AON1	CR11-SBSD-23	Total TCDD	7.61 EMPC	7.61 U
AON1	CR11-SBSD-23	Total PeCDF	0.111 EMPC	0.111 U
AON1	CR11-SBSD-23	Total HxCDF	0.599 EMPC	0.599 U
AON1	CR11-SBSD-23	Total HxCDD	18.1 EMPC	18.1 U
AON1	CR11-SBSD-23	Total HpCDF	1.28 EMPC	1.28 U
AON2	CR09a-SSD-COMP	1.2.37.8-PeCDF	0.383 JX EMPC	0.383 U
AON2	CR09a-SSD-COMP	2,3,4,7,8-PeCDF	0.379 J EMPC	0.379 U
AON2	CR09a-SSD-COMP	1,2,3,4,7,8-HxCDF	0.991 EMPC	0.991 U
AON2	CR09a-SSD-COMP	Total TCDF	6.42 EMPC	6.42 U
AON2	CR09a-SSD-COMP	Total TCDD	8.55 EMPC	8.55 U
AON2	CR09a-SSD-COMP	Total PeCDF	10.6 EMPC	10.6 U
AON2	CR09a-SSD-COMP	Total PeCDD	12.4 EMPC	12.4 U
AON2	CR09a-SSD-COMP	Total HxCDF	22.2 EMPC	22.2 U
AON2	CR09a-SSD-COMP	Total HxCDD	48.3 EMPC	48.3 U
AON2	CR09b-SSD-COMP	2,3,7,8-TCDD	2.06 EMPC	2.06 U
AON2	CR09b-SSD-COMP	2,3,4,7,8-PeCDF	0.528 EMPC	0.528 U
AON2	CR09b-SSD-COMP	1,2,3,4,7,8-HxCDF	1.16 EMPC	1.16 U
AON2	CR09b-SSD-COMP	Total TCDF	12.5 EMPC	12.5 U
AON2	CR09b-SSD-COMP	Total TCDD	15.4 EMPC	15.4 U
AON2	CR09b-SSD-COMP	Total PeCDF	16.5 EMPC	16.5 U
AON2	CR09b-SSD-COMP	Total PeCDD	21.0 EMPC	21.0 U
AON2	CR09b-SSD-COMP	Total HxCDF	30.8 EMPC	30.8 U
AON2	CR09b-SSD-COMP	Total HxCDD	72.3 EMPC	72.3 U
AON2	CR09b-SSD-COMP	Total HpCDF	58.9 EMPC	58.9 U
AON3	CR20-S-5.0	1,2,3,7,8-PeCDF	4.85 EMPC	4.85 U
AON3	CR20-S-5.0	Total TCDF	50.9 EMPC	50.9 U
AON3	CR20-S-5.0	Total TCDD	79.6 EMPC	79.6 U

Report	Sample	Component	Laboratory-Reported Result (pg/g)	Result of Record (pg/g)
AON3	CR20-S-5.0	Total PeCDF	316 EMPC	316 U
AON3	CR20-S-5.0	Total HxCDF	1340 EMPC	1340 U
AON3	CR20-S-5.0	Total HxCDD	843 EMPC	843 U
AON3	CR20-S-5.0	Total HpCDF	3080 EMPC	3080 U
AON3	CR21-S-5.0	2,3,7,8-TCDF	0.657 J EMPC	0.657 U
AON3	CR21-S-5.0	2,3,7,8-TCDD	0.467 J EMPC	0.467 U
AON3	CR21-S-5.0	2,3,4,7,8-PeCDF	0.727 J EMPC	0.727 U
AON3	CR21-S-5.0	Total TCDF	7.08 EMPC	7.08 U
AON3	CR21-S-5.0	Total TCDD	4.89 EMPC	4.89 U
AON3	CR21-S-5.0	Total PeCDF	36.3 EMPC	36.3 U
AON3	CR21-S-5.0	Total PeCDD	14.9 EMPC	14.9 U
AON3	CR21-S-5.0	Total HxCDF	95.5 EMPC	95.5 U
AOV8	CR17-D-SSD	2,3,7,8-TCDF	0.406 J EMPC	0.406 U
AOV8	CR17-D-SSD	1,2,3,7,8-PeCDF	0.213 J EMPC	0.213 U
AOV8	CR17-D-SSD	2,3,4,7,8-PeCDF	0.239 J EMPC	0.239 U
AOV8	CR17-D-SSD	2,3,4,6,7,8-HxCDF	0.443 J EMPC	0.443 U
AOV8	CR17-D-SSD	1,2,3,7,8,9-HxCDF	0.324 J EMPC	0.324 U
AOV8	CR17-D-SSD	1,2,3,4,7,8-HxCDD	0.736 J EMPC	0.736 U
AOV8	CR17-D-SSD	1,2,3,4,7,8,9-HpCDF	0.483 J EMPC	0.483 U
AOV8	CR17-D-SSD	Total TCDF	4.27 EMPC	4.27 U
AOV8	CR17-D-SSD	Total TCDD	12.4 EMPC	12.4 U
AOV8	CR17-D-SSD	Total PeCDF	4.66 EMPC	4.66 U
AOV8	CR17-D-SSD	Total PeCDD	16.7 EMPC	16.7 U
AOV8	CR17-D-SSD	Total HxCDF	10.8 EMPC	10.8 U
AOV8	CR17-D-SSD	Total HxCDD	45.8 EMPC	45.8 U
AOV8	CR17-D-SSD	Total HpCDF	21.2 EMPC	21.2 U
AOV8	CR08A-SBSD	1,2,3,7,8,9-HxCDF	0.258 J EMPC	0.258 U
AOV8	CR08A-SBSD	1,2,3,4,7,8-HxCDD	0.583 J EMPC	0.583 U
AOV8	CR08A-SBSD	1,2,3,4,7,8,9-HpCDF	0.250 J EMPC	0.250 U
AOV8	CR08A-SBSD	Total TCDF	0.656 EMPC	0.656 U
AOV8	CR08A-SBSD	Total TCDD	12.0 EMPC	12.0 U
AOV8	CR08A-SBSD	Total PeCDF	0.428 EMPC	0.428 U
AOV8	CR08A-SBSD	Total PeCDD	12.7 EMPC	12.7 U
AOV8	CR08A-SBSD	Total HxCDF	1.27 EMPC	1.27 U
AOV8	CR08A-SBSD	Total HxCDD	33.2 EMPC	33.2 U
AOV8	CR08A-SBSD	Total HpCDF	3.43 EMPC	3.43 U
AOV8	CR08a-SSD-COMP	1,2,3,7,8-PeCDF	0.483 J EMPC	0.483 U
AOV8	CR08a-SSD-COMP	1,2,3,4,7,8,9-HpCDF	2.10 EMPC	2.10 U
AOV8	CR08a-SSD-COMP	Total TCDF	10.9 EMPC	10.9 U
AOV8	CR08a-SSD-COMP	Total TCDD	23.9 EMPC	23.9 U
AOV8	CR08a-SSD-COMP	Total PeCDF	12.8 EMPC	12.8 U
AOV8	CR08a-SSD-COMP	Total PeCDD	25.9 EMPC	25.9 U

Report	Sample	Component	Laboratory-Reported Result (pg/g)	Result of Record (pg/g)
AOV8	CR08a-SSD-COMP	Total HxCDF	44.0 EMPC	44.0 U
AOV8	CR08a-SSD-COMP	Total HxCDD	147 EMPC	147 U
AOV8	CR08a-SSD-COMP	Total HpCDF	126 EMPC	126 U
AOV9	CR08b-SBSD	1,2,3,7,8-PeCDF	0.288 J EMPC	0.288 U
AOV9	CR08b-SBSD	1,2,3,4,6,7,8-HpCDF	0.295 J EMPC	0.295 U
AOV9	CR08b-SBSD	OCDF	0.802 J EMPC	0.802 U
AOV9	CR08b-SBSD	Total TCDF	10.7 EMPC	10.7 U
AOV9	CR08b-SBSD	Total TCDD	21.4 EMPC	21.4 U
AOV9	CR08b-SBSD	Total PeCDF	2.08 EMPC	2.08 U
AOV9	CR08b-SBSD	Total PeCDD	21.9 EMPC	21.9 U
AOV9	CR08b-SBSD	Total HxCDF	0.888 EMPC	0.888 U
AOV9	CR08b-SBSD	Total HxCDD	45.4 EMPC	45.4 U
AOV9	CR08b-SBSD	Total HpCDF	0.643 EMPC	0.643 U
AOW1	CR19F-SSD	1,2,3,7,8-PeCDF	0.613 JX EMPC	0.613 U
AOW1	CR19F-SSD	1,2,3,7,8,9-HxCDF	0.571 J EMPC	0.571 U
AOW1	CR19F-SSD	Total TCDF	25.6 EMPC	25.6 U
AOW1	CR19F-SSD	Total TCDD	20.6 EMPC	20.6 U
AOW1	CR19F-SSD	Total PeCDF	23.6 EMPC	23.6 U
AOW1	CR19F-SSD	Total PeCDD	26.4 EMPC	26.4 U
AOW1	CR19F-SSD	Total HxCDF	40.2 EMPC	40.2 U
AOW1	CR19F-SSD	Total HxCDD	93.0 EMPC	93.0 U
AOW1	CR19F-SSD	Total HpCDF	62.7 EMPC	62.7 U
AOW1	CR18B-SSD	2,3,7,8-TCDF	0.381 J EMPC	0.381 U
AOW1	CR18B-SSD	1,2,3,7,8-PeCDF	0.157 J EMPC	0.157 U
AOW1	CR18B-SSD	2,3,4,7,8-PeCDF	0.183 J EMPC	0.183 U
AOW1	CR18B-SSD	1,2,3,4,7,8-HxCDF	0.424 J EMPC	0.424 U
AOW1	CR18B-SSD	1,2,3,6,7,8-HxCDF	0.294 J EMPC	0.294 U
AOW1	CR18B-SSD	Total TCDF	4.57 EMPC	4.57 U
AOW1	CR18B-SSD	Total TCDD	15.9 EMPC	15.9 U
AOW1	CR18B-SSD	Total PeCDF	4.65 EMPC	4.65 U
AOW1	CR18B-SSD	Total PeCDD	20.5 EMPC	20.5 U
AOW1	CR18B-SSD	Total HxCDF	8.92 EMPC	8.92 U
AOW1	CR18B-SSD	Total HxCDD	46.9 EMPC	46.9 U
AOW2	CR15C-SSD	2,3,4,7,8-PeCDF	0.505 J EMPC	0.505 U
AOW2	CR15C-SSD	1,2,3,4,7,8-HxCDF	1.25 EMPC	1.25 U
AOW2	CR15C-SSD	2,3,4,6,7,8-HxCDF	1.21 EMPC	1.21 U
AOW2	CR15C-SSD	1,2,3,4,7,8,9-HpCDF	0.959 J EMPC	0.959 U
AOW2	CR15C-SSD	Total TCDF	13.7 EMPC	13.7 U
AOW2	CR15C-SSD	Total TCDD	20.3 EMPC	20.3 U
AOW2	CR15C-SSD	Total PeCDF	12.6 EMPC	12.6 U
AOW2	CR15C-SSD	Total HxCDF	28.1 EMPC	28.1 U
AOW2	CR15C-SSD	Total HxCDD	76.1 EMPC	76.1 U

Report	Sample	Component	Laboratory-Reported Result (pg/g)	Result of Record (pg/g)
AOW2	CR15C-SSD	Total HpCDF	60.7 EMPC	60.7 U
AOW2	CR08b-SSD-COMP	Total TCDF	21.7 EMPC	21.7 U
AOW2	CR08b-SSD-COMP	Total TCDD	25.0 EMPC	25.0 U
AOW2	CR08b-SSD-COMP	Total PeCDF	35.9 EMPC	35.9 U
AOW2	CR08b-SSD-COMP	Total HxCDF	119 EMPC	119 U
AOW2	CR08b-SSD-COMP	Total HpCDF	243 EMPC	243 U

EMPC = estimated maximum potential concentration.
J = the result is an estimated value.
pg/g = picograms per gram.
U = the result is non-detect.

Report	Sample	Component	Laboratory-Reported Result (pg/L)	Result of Record (pg/L)
AUD1	Storm-01	2,3,7,8-TCDF	0.872 J EMPC	0.872 U
AUD1	Storm-01	1,2,3,7,8-PeCDF	1.13 J EMPC	1.13 U
AUD1	Storm-01	1,2,3,6,7,8-HxCDF	1.38 J EMPC	1.38 U
AUD1	Storm-01	2,3,4,6,7,8-HxCDF	2.26 J EMPC	2.26 U
AUD1	Storm-01	1,2,3,7,8,9-HxCDF	0.949 J EMPC	0.949 U
AUD1	Storm-01	1,2,3,4,7,8-HxCDD	0.795 J EMPC	0.795 U
AUD1	Storm-01	1,2,3,4,7,8,9-HpCDF	2.67 J EMPC	2.67 U
AUD1	Storm-01	Total TCDF	9.23 EMPC	9.23 U
AUD1	Storm-01	Total TCDD	39.8 EMPC	39.8 U
AUD1	Storm-01	Total PeCDF	30.1 EMPC	30.1 U
AUD1	Storm-01	Total PeCDD	18.6 EMPC	18.6 U
AUD1	Storm-01	Total HxCDF	88.0 EMPC	88.0 U
AUD1	Storm-01	Total HxCDD	100 EMPC	100 U
AUD1	Storm-01	Total HpCDF	130 EMPC	130 U

EMPC = estimated maximum potential concentration.
J = the result is an estimated value.
pg/L = picograms per liter.
U = the result is non-detect.

In reports AON0, AOV8, and AOW2, the USEPA Method 1613B OCDD result for samples CR22-S-3.0 and CR08a-SSD-COMP exceeded the instrument calibration range. The results have been qualified as estimated by the reviewer as follows:

Report	Sample	Component	Laboratory-Reported Result (pg/g)	Result of Record (ug/kg)
AON0	CR22-S-3.0	OCDD	30800	30800 J
AOV8	CR08a-SSD-COMP	OCDD	13700	13700 J
AOW2	CR0b-SSD-COMP	OCDD	22200	22200 J

J = the result is an estimated value.
ug/kg = micrograms per kilogram.

In report AON3, the laboratory flagged USEPA Method 8082A Aroclor 1254 results for sample CR20-S-5.0 due to primary and confirmation column relative percent differences (RPDs) greater than or equal to 40 percent. The laboratory did not detect chromatographic interference. The results were qualified "J", as estimated, by the reviewer. Qualifications are as follows:

Report	Sample	Component	Laboratory-Reported Result (ug/kg)	Result of Record (ug/kg)
AON3	CR20-S-5.0	Aroclor 1254	710	710 J
AON3	CR21-S-5.0	Aroclor 1254	73	73 J

J = the result is an estimated value.
ug/kg = micrograms per kilogram.

In report AOT3, the preserved (fixed) total solids result was greater than the total solids result. The preserved total solids value was within 20 percent of the total solids value; thus, no results were qualified.

The data are considered acceptable for their intended use, with the appropriate data qualifiers assigned.

HOLDING TIMES, PRESERVATION, AND SAMPLE STORAGE

Holding Times

All TOC analysis dates exceeded the recommended 14-day holding time; however, samples from reports AON1, AON2, AOV8, AOW1, and AOW2 were prepared for analysis within 14 days of sample collection. Samples from report ASF7 were prepared from containers frozen at the time of receipt. No data required qualification.

USEPA Method 8270D and 8270D SIM extractions were conducted one to two days past the 14-day recommended holding times for sediment samples associated with reports AOV9 and AOW2. The reviewer confirmed with ARI that the affected samples were extracted from containers stored at -18°C from the time of login. Sediment sample storage at -18°C

extends USEPA Method 8270D and 8270D-SIM holding time to one year. No qualification was required.

Remaining extractions and analyses were performed within the recommended holding time criteria.

Preservation and Sample Storage

The samples were preserved and stored appropriately.

BLANKS

Method Blanks

Laboratory method blank analyses were performed at the required frequencies. For purposes of data qualification, the method blanks were associated with all samples prepared in the analytical batch.

If an analyte was detected in a sample and in the associated method blank, the sample result was qualified if the concentration was less than five times the method blank concentration for USEPA Method 1613B results and less than ten times the method blank concentration for remaining analysis results. Method reporting limits (MRLs) were elevated to the concentration detected in the samples and results were qualified as not detected "U" at the elevated MRL. The reviewer did not qualify remaining results.

Sample results less than five times the MRL were qualified by the reviewer with "J+", as estimated with a positive bias, if sample results were also within ten times a method blank concentration that was below the MRL.

For USEPA Method 1613B results, analytes detected in a sample and in the associated method blank below the MRL but above the EDL were qualified as "U" at the reporting limit. Method blank detections flagged as EMPCs did not result in qualification.

In report AON3, the USEPA Method 1613B method blank had detections for some analytes below the MRL and a detection of OCDD above the MRL. All associated sample results were above the MRL and greater than five times the method blank concentrations; thus, no results were qualified.

In reports AON0, AON1, and AON2, the soil and sediment matrix USEPA Method 1613B method blank (MB-102315) had several detections below the MRL and a detection for OCDD above the MRL. The following results were qualified

Report	Sample	Component	Laboratory-Reported Result (pg/g)	Result of Record (pg/g)
AON0	CR23-S-3.0	2,3,4,6,7,8-HxCDF	0.133 J	0.133 U

J = the result is an estimated value.
pg/g = pictograms per gram.
U = the result is non-detect.

In report AOV8, the sediment matrix USEPA Method 1613B method blank (MB-102615) had detections of some analytes below the MRL and detections of 1,2,3,4,6,7,8-HpCDD and OCDD above the MRL. All associated sample results were either qualified based on EMPC, were non-detect, or were greater than five times the method blank concentration; thus, no results were qualified.

In reports AOV9, AOW1, and AOW2, the sediment matrix USEPA Method 8270D method blank (MB-103015) had a detection of diethylphthalate above the reporting limit, at 21 ug/kg. Associated samples were qualified by the reviewer as follows:

Report	Sample	Component	Laboratory-Reported Result (ug/kg)	Result of Record (ug/kg)
AOV9	CR26-SBSD	Diethylphthalate	20	20 U
AOW1	CR19F-SBSD	Diethylphthalate	24	24 U
AOW1	CR19F-SBSD-DUP	Diethylphthalate	38	38 U
AOW1	CR19F-SSD	Diethylphthalate	22	22 U
AOW1	SR18B-SBSD	Diethylphthalate	20	20 U
AOW1	SR18B-SSD	Diethylphthalate	40	40 U
AOW2	CR15C-SSD	Diethylphthalate	21	21 U
AOW2	CR15C-SBSD	Diethylphthalate	26	26 U
AOW2	CR08b-SSD-COMP	Diethylphthalate	36	36 U

J = the result is an estimated value.
U = the result is non-detect.
ug/kg = micrograms per kilogram.

In reports AOV9, AOW1, and AOW2, the sediment matrix USEPA Method 1613B method blank (MB-102615) had a detection of 1,2,3,7,8,9-HxCDF below the MRL and detections of 1,2,3,4,6,7,8-HpCDD and OCDD above the MRL. The following results were qualified:

Report	Sample	Component	Laboratory-Reported Result (pg/g)	Result of Record (pg/g)
AOV9	CR08b-SBSD	1,2,3,7,8,9-HxCDF	0.146 J	0.146 U
AOV9	CR08b-SBSD	OCDD	45.4	45.4 U
AOW1	CR18B-SSD	1,2,3,7,8,9-HxCDF	0.226 J	0.226 U

Report	Sample	Component	Laboratory-Reported Result (pg/g)	Result of Record (pg/g)
AOW2	CR15C-SSD	1,2,3,7,8,9-HxCDF	0.338 J	0.338 U

J = the result is an estimated value.
pg/g = pictograms per gram.
U = the result is non-detect.

In report AOT3, the USEPA Method 8270D sediment matrix method blank (MB-102815) had a detection for phenol below the reporting limit, at 17 ug/kg. The associated sample, CR19D-SSD-CONV, had a phenol detection above the reporting limit, at 93 ug/kg. The reviewer qualified the result as estimated with a positive bias (J+) as follows:

Report	Sample	Component	Laboratory-Reported Result (ug/kg)	Result of Record (ug/kg)
AOT3	CR19D-SSD-CONV	Phenol	93	93 J+

J+ = the result is an estimated value with a positive bias.
U = the result is non-detect.
ug/kg = micrograms per kilogram.

All remaining method blanks were non-detect.

Trip Blanks

Trip blanks were not submitted for analysis.

Equipment Rinsate Blanks

Equipment rinsate blanks were not submitted for analysis.

SURROGATE RECOVERY RESULTS

The samples were spiked with surrogate compounds to evaluate laboratory performance on individual samples. The laboratory appropriately documented and qualified surrogate outliers. Associated batch quality assurance/quality control for samples with surrogate outliers were within acceptance limits, except where otherwise noted. Sample results associated with surrogate percent recovery exceedances caused by dilutions were not qualified by the reviewer.

In report AON0, the USEPA Method 8270D surrogate p-terphenyl-d14 result was below the lower percent recovery acceptance limit of 28 percent, at 24.9 percent for sample CR23-GW-6.0. The surrogate p-terphenyl-d14 is a base/neutral surrogate, and the remaining base/neutral surrogates for sample CR23-GW-6.0 were within percent recovery acceptance limits. No results were qualified.

In report AON0, the NWTPH-Dx surrogate o-terphenyl result was below the lower percent recovery acceptance limit of 50 percent, at 47.6 percent for sample CR23-GW-6.0. Associated sample results were qualified "J" as estimated by the reviewer as follows:

Report	Sample	Component	Laboratory-Reported Result (mg/L)	Result of Record (mg/L)
AON0	CR23-GW-6.0	Diesel	3.4	3.4 J
AON0	CR23-GW-6.0	Motor Oil	3.2	3.2 J

J = the result is an estimated value.
mg/L = milligrams per liter.

In report AON3, the USEPA Method 8082A surrogate decachlorobiphenyl exceeded the upper percent recovery acceptance limit of 120 percent, at 126 percent due to co-elution with some Aroclors compounds. The exceedance was minor, and the remaining surrogate had acceptable percent recovery; thus, no results were qualified.

All remaining surrogate recoveries were within acceptance limits.

LABELED ANALOG RECOVERY RESULTS

In reports AON0, AON2, AON3, AOV8, AOV9, AOW1, and AOW2, USEPA Method 1613B samples were spiked with carbon-13 (C13) labeled analog standards to quantify the relative response of analytes in each sample. All C13 labeled analog standard recoveries were within acceptance limits.

MATRIX SPIKE/MATRIX SPIKE DUPLICATE RESULTS

Matrix spike/matrix spike duplicate (MS/MSD) results are used to evaluate laboratory precision and accuracy. All MS/MSD samples were extracted and analyzed at the required frequency. Control limits were not included with most MS/MSD results. The reviewer confirmed that MS/MSDs met percent recovery and RPD acceptance criteria, with the following exceptions:

In reports AON1, sediment matrix USEPA Method 8270D MS/MSD results for 4-methylphenol were above the upper percent recovery acceptance limit, with percent recoveries of 162 percent and 139 percent, respectively. The MS/MSD results for N-nitrosodiphenylamine were below lower percent recovery acceptance limits, at 24.5 percent and 12.2 percent, respectively. The RPD for N-nitrosodiphenylamine exceeded the control limit, at 67 percent. The associated laboratory control sample (LCS) had acceptable percent recoveries for both compounds. The sample used to prepare the MS/MSD was qualified by the reviewer as follows:

Report	Sample	Component	Laboratory-Reported Result (ug/kg)	Result of Record (ug/kg)
AON1	CR12-SBSD-15	4-Methylphenol	870	870 J
AON1	CR12-SBSD-15	N-Nitrosodiphenylamine	20 U	20 UJ

J = the result is an estimated value.
ug/kg = micrograms per kilogram.
UJ = the result is non-detect and an estimated value.

In report AON1, sediment matrix USEPA Method 8270D-SIM MS/MSD results for N-nitrosodiphenylamine were below lower percent recovery acceptance limits, at 28.4 percent and 14.5 percent, respectively. The RPD for N-nitrosodiphenylamine exceeded the control limit, at 64.6 percent. The associated LCS had acceptable percent recovery. The sample used to prepare the MS/MSD was qualified as follows:

Report	Sample	Component	Laboratory-Reported Result (ug/kg)	Result of Record (ug/kg)
AON1	CR12-SBSD-15	N-Nitrosodiphenylamine	4.9 U	4.9 UJ

ug/kg = micrograms per kilogram.
UJ = the result is non-detect and an estimated value.

In report AON3, the soil matrix USEPA Method 6010C MS result for total chromium was below the lower percent recovery acceptance limit of 75 percent, at -5.4 percent. The associated LCS met percent recovery acceptance limits for total chromium. The associated laboratory duplicate exceeded RPD acceptance limits for total chromium. Associated samples are qualified in the laboratory duplicate section below.

In report AOV8, the sediment matrix USEPA Method 8270D-SIM MS/MSD results for pentachlorophenol and the MS result for 2,4-dimethylphenol were flagged with "E" by ARI due to concentrations exceeding the instrument calibration range. The reviewer confirmed that the same MS/MSD extract was analyzed by both 8270D dual scan and 8270D-SIM. The MS/MSD met percent recovery acceptance limits for pentachlorophenol and 2,4-dimethylphenol by both USEPA Method 8270D and 8270D-SIM, and analytical results for the same samples reported by both methods were consistent; thus, no results were qualified.

All remaining MS/MSD results were within acceptance limits for percent recovery and RPDs.

LABORATORY DUPLICATE RESULTS

Duplicate results are used to evaluate laboratory precision. All duplicate samples were extracted and analyzed at the required frequency. Laboratory duplicate results that had concentrations less than five times the reporting limit were not evaluated.

In report AON3, the soil matrix USEPA Method 6010C laboratory duplicate prepared with sample CR20-S-5.0 exceeded the RPD control limit of 20 percent for total chromium, at 119 percent. The associated LCS met percent recovery acceptance limits. The MS prepared with the same sample also exceeded total chromium control limits. The sample used to prepare the laboratory duplicate is likely heterogeneous. Since the matrix of sample CR20-S-5.0 is expected to be similar to the matrix of site soils, both sample results were qualified "J" as estimated by the reviewer as follows:

Report	Sample	Component	Laboratory-Reported Result (mg/kg)	Result of Record (mg/kg)
AON3	CR20-S-5.0	Total Chromium	71	71 J
AON3	CR21-S-5.0	Total Chromium	32	32 J

Report	Sample	Component	Laboratory-Reported Result (mg/kg)	Result of Record (mg/kg)

J = the result is an estimated value.
mg/kg = milligrams per kilogram.

The laboratory duplicates for solid matrix USEPA Method 6010C and 7471A batches prepared on November 2, 2015 were associated with results reported in AOV8, AOV9, AOW1, and AOW2. The laboratory duplicate results were reported only in AOW1 and met RPD control limits.

All remaining laboratory duplicate RPDs were within acceptance limits.

LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RESULTS

Laboratory control sample/laboratory control sample duplicates (LCS/LCSD) are spiked with target analytes to provide information on laboratory precision and accuracy. The LCS/LCSD samples were extracted and analyzed at the required frequency. Control limits were not included with most LCS/LCSD results. The reviewer confirmed that LCS/LCSDs met percent recovery and RPD acceptance criteria, with the following exceptions:

In reports AON0 and AON3, the soil and sediment matrix USEPA Method 8270D LCS result for 4-chloroaniline was below the lower percent recovery acceptance limit of 11 percent, at 3.8 percent; the result for 3-nitroaniline was below the lower percent recovery acceptance limit of 22 percent, at 5.7 percent; and the LCS result for 3,3'-dichlorobenzidine was 0 percent. All associated sample results were non-detect. Due to the low LCS percent recoveries, the results have been qualified with "R" as rejected by the reviewer as shown in the table below. Qualifications are as follows:

Report	Sample	Component	Laboratory-Reported Result (ug/kg)	Result of Record (ug/kg)
AON0	CR07-SSD-COMP	4-Chloroaniline	97 U	97 R
AON0	CR07-SSD-COMP	3-Nitroaniline	97 U	97 R
AON0	CR07-SSD-COMP	3,3'-Dichlorobenzidine	97 U	97 R
AON0	CR23-S-3.0	4-Chloroaniline	93 U	93 R
AON0	CR23-S-3.0	3-Nitroaniline	93 U	93 R
AON0	CR23-S-3.0	3,3'-Dichlorobenzidine	93 U	93 R
AON0	CR22-S-3.0	4-Chloroaniline	190 U	190 R
AON0	CR22-S-3.0	3-Nitroaniline	190 U	190 R
AON0	CR22-S-3.0	3,3'-Dichlorobenzidine	190 U	190 R
AON3	CR20-S-5.0	4-Chloroaniline	1400 U	1400 R
AON3	CR20-S-5.0	3-Nitroaniline	1400 U	1400 R
AON3	CR20-S-5.0	3,3'-Dichlorobenzidine	1400 U	1400 R
AON3	CR21-S-5.0	4-Chloroaniline	460 U	460 R
AON3	CR21-S-5.0	3-Nitroaniline	460 U	460 R
AON3	CR21-S-5.0	3,3'-Dichlorobenzidine	460 U	460 R

Report	Sample	Component	Laboratory-Reported Result (ug/kg)	Result of Record (ug/kg)

ug/kg = micrograms per kilogram.
R = the result is rejected.

In reports AON0 and AON3, the groundwater and surface water matrix USEPA Method 8270D LCSD result for 2,2'-oxybis (1-chloropropane) was below the lower percent recovery acceptance limit of 47 percent, at 44.4 percent. The LCS result was within the percent recovery acceptance limit; thus, no results were qualified. The LCS/LCSD exceeded RPD acceptance limits of 30 percent for phenol, bis(2-chloroethyl)ether, and 2-chlorophenol. Associated samples were non-detect; thus, no results were qualified.

In reports AON1, AOV8, AOV9, AOW1, and AOW2, the USEPA Method 8270D-SIM LCS results for pentachlorophenol were flagged with "E" by ARI due to concentrations exceeding the instrument calibration range. The reviewer confirmed that the same LCS extract was analyzed by both 8270D dual scan and 8270D-SIM. The LCS met percent pentachlorophenol percent recovery acceptance limits for both methods. The pentachlorophenol results reported by both methods for the same samples were consistent; thus, no results were qualified.

All remaining LCS/LCSD results were within acceptance limits for percent recovery and RPD.

FIELD DUPLICATE RESULTS

One field duplicate was submitted for analysis with report AOW1 (CRF19F-SBSD/CRF19F-SBSD-DUP). MFA uses acceptance criteria of 100 percent RPD for results that are less than five times the MRL or 50 percent RPD for results that are greater than five times the MRL. Non-detect data are not used in the evaluation of field duplicate results. All field duplicate analytes were within the acceptance criteria.

CONTINUING CALIBRATION VERIFICATION RESULTS

Continuing calibration verification (CCV) results are used to demonstrate instrument precision and accuracy throughout the sample batch. ARI reported CCV-qualified results. CCV exceedances associated with quality control samples and surrogate results that met percent recovery acceptance limits were not qualified by the reviewer.

In reports AON1 and AON2, the solid matrix USEPA Method 8270D-SIM CCV analyzed on November 5, 2015 exceeded percent drift acceptance limits for pentachlorophenol. All associated results were qualified as estimated by the reviewer with "UJ" for non-detect results and "J" for detected results, as follows:

Report	Sample	Component	Laboratory-Reported Result (ug/kg)	Result of Record (ug/kg)
AON1	CR-24-SSD-COMP	Pentachlorophenol	86 Q	86 J

Report	Sample	Component	Laboratory-Reported Result (ug/kg)	Result of Record (ug/kg)
AON1	CR11-SBSD-23	Pentachlorophenol	19 U	19 UJ
AON1	CR12-SBSD-15	Pentachlorophenol	20 U	20 UJ
AON1	CR13-SBSD-11	Pentachlorophenol	20 U	20 UJ
AON1	CR14-SBSD-12	Pentachlorophenol	20 U	20 UJ
AON2	CR09a-SSD-COMP	Pentachlorophenol	19 U	19 UJ
AON2	CR09b-SSD-COMP	Pentachlorophenol	19 U	19 UJ

In reports AON0 and AON3, the solid matrix USEPA Method 8270D CCV analyzed on October 28, 2015 exceeded percent drift acceptance limits for phenol, carbazole, and 3,3'-dichlorobenzidine. Associated sample results have been qualified as estimated by the reviewer with "J," except for 3,3'-dichlorobenzidine results, which were already qualified in the LCS/LCSD section. Results detected below the reporting limit were already flagged by the laboratory as estimated; no additional qualification was required. Qualified results are as follows:

Report	Sample	Component	Laboratory-Reported Result (ug/kg)	Result of Record (ug/kg)
AON0	CR-07-SSD-COMP	Carbazole	24	24 J
AON0	CR23-S-3.0	Phenol	19 U	19 UJ
AON0	CR23-S-3.0	Carbazole	19 U	19 UJ
AON0	CR22-S-3.0	Phenol	38 U	38 UJ
AON0	CR22-S-3.0	Carbazole	38 U	38 UJ
AON3	CR20-S-5.0	Phenol	280 U	280 UJ
AON3	CR20-S-5.0	Carbazole	280 U	280 UJ
AON3	CR21-S-5.0	Phenol	92 U	92 UJ
AON3	CR21-S-5.0	Carbazole	92 U	92 UJ

J = the result is an estimated value.
U = the result is non-detect.
ug/kg = micrograms per kilogram.
UJ = the result is non-detect and an estimated value.

In reports AON0 and AON3, the aqueous matrix USEPA Method 8270D CCV analyzed on October 23, 2015 exceeded percent drift acceptance limits for benzoic acid, hexachlorocyclopentadiene, 2,4-dinitrophenol, 4-nitrophenol, and pentachlorophenol. Associated sample results that were non-detect have been qualified as estimated by the reviewer with "UJ." Sample results reported between one-half of the MRL and the MRL are estimated values and were not additionally qualified by the reviewer. Qualified results are summarized as follows:

Report	Sample	Component	Laboratory-Reported Result (ug/L)	Result of Record (ug/L)
AON0	CR23-GW-6.0	Hexachlorocyclopentadiene	5.0 U	5.0 UJ
AON0	CR23-GW-6.0	2,4-Dinitrophenol	20 U	20 UJ
AON0	CR23-GW-6.0	4-Nitrophenol	10 U	10 UJ

Report	Sample	Component	Laboratory-Reported Result (ug/L)	Result of Record (ug/L)
AON0	CR23-GW-6.0	Pentachlorophenol	10 U	10 UJ
AON0	CR22-GW-9.0	Benzoic acid	20 U	20 UJ
AON0	CR22-GW-9.0	Hexachlorocyclopentadiene	5.0 U	5.0 UJ
AON0	CR22-GW-9.0	2,4-Dinitrophenol	20 U	20 UJ
AON0	CR22-GW-9.0	4-Nitrophenol	10 U	10 UJ
AON0	CR22-GW-9.0	Pentachlorophenol	10 U	10 UJ
AON3	CR21-GW-10	Benzoic acid	20 U	20 UJ
AON3	CR21-GW-10	Hexachlorocyclopentadiene	5.0 U	5.0 UJ
AON3	CR21-GW-10	2,4-Dinitrophenol	20 U	20 UJ
AON3	CR21-GW-10	4-Nitrophenol	10 U	10 UJ
AON3	CR21-GW-10	Pentachlorophenol	10 U	10 UJ
AON3	CR20-GW-5.0	Benzoic acid	20 U	20 UJ
AON3	CR20-GW-5.0	Hexachlorocyclopentadiene	5.0 U	5.0 UJ
AON3	CR20-GW-5.0	2,4-Dinitrophenol	20 U	20 UJ
AON3	CR20-GW-5.0	4-Nitrophenol	10 U	10 UJ
AON3	CR20-GW-5.0	Pentachlorophenol	10 U	10 UJ
AON3	Seep-01	Benzoic acid	20 U	20 UJ
AON3	Seep-01	Hexachlorocyclopentadiene	5.0 U	5.0 UJ
AON3	Seep-01	2,4-Dinitrophenol	20 U	20 UJ
AON3	Seep-01	4-Nitrophenol	10 U	10 UJ
AON3	Seep-01	Pentachlorophenol	10 U	10 UJ

UJ = the result is non-detect and an estimated value.
ug/L = micrograms per liter.

In reports AON0 and AON3, ARI reported in the case narrative that a USEPA Method 8082A CCV exceeded the percent drift acceptance limit for Aroclor 1242. The reviewer confirmed that the CCV was associated with aqueous matrix samples. The CCVs analyzed on the secondary column met percent drift acceptance criteria, and ARI quantified results from the secondary column; thus, no qualification was required.

In reports AOV8 and AOV9, the solid matrix USEPA Method 8270D CCV analyzed on October 30, 2015 exceeded percent drift acceptance limits for 4-methylphenol and benzoic acid. Associated sample results detected below the reporting limit were already flagged by the laboratory as estimated; no additional qualification was required. Remaining qualified results are summarized below. The CCV also exceeded percent drift acceptance limits for some compounds that were not reported, and no action was required by the reviewer for these exceedances. Qualifications are as follows:

Report	Sample	Component	Laboratory-Reported Result (ug/kg)	Result of Record (ug/kg)
AOV8	CR17-D-SSD	4-Methylphenol	19 U	19 UJ
AOV8	CR17-D-SBSD	4-Methylphenol	120	120 J
AOV8	CR17-D-SSD	Benzoic Acid	230	230 J

Report	Sample	Component	Laboratory-Reported Result (ug/kg)	Result of Record (ug/kg)
AOV8	CR08A-SBSD	4-Methylphenol	190	190 J
AOV8	CR10-SSD-COMP	4-Methylphenol	160	160 J
AOV8	CR10-SSD-COMP	Benzoic Acid	210	210 J
AOV8	CR08a-SSD-COMP	4-Methylphenol	28	28 J
AOV9	CR08b-SBSD	4-Methylphenol	560	560 J
AOV9	CR08b-SBSD	Benzoic Acid	290	290 J

J = the result is an estimated value.
ug/kg = micrograms per kilogram.
UJ = the result is non-detect and an estimated value.

In reports AOV9, AOW1, and AOW2, the solid matrix USEPA Method 8270D-SIM CCV analyzed on November 5, 2015 exceeded percent drift acceptance limits for pentachlorophenol. Associated sample results that were non-detect have been qualified as estimated by the reviewer with "UJ." Associated sample results detected below the reporting limit were already flagged by the laboratory as estimated; no additional qualification was required. Qualified results are summarized below.

Report	Sample	Component	Laboratory-Reported Result (ug/kg)	Result of Record (ug/kg)
AOV9	CR26-SBSD	Pentachlorophenol	20 U	20 UJ
AOW1	CR19F-SBSD	Pentachlorophenol	20 U	20 UJ
AOW1	CR19F-SBSD-DUP	Pentachlorophenol	20 U	20 UJ
AOW2	CR15C-SSD	Pentachlorophenol	20 U	20 UJ
AOW2	CR15C-SBSD	Pentachlorophenol	20 U	20 UJ

ug/kg = micrograms per kilogram.
UJ = the result is non-detect and an estimated value.

In reports AOW1 and AOW2, the solid matrix USEPA Method 8270D CCV analyzed on November 14, 2015 exceeded percent drift acceptance limits for benzoic acid, diethylphthalate, and pentachlorophenol. Associated sample results detected below the MRL were already flagged by the laboratory as estimated; no additional qualification was required. Diethylphthalate results were already qualified by the reviewer in the method blank section above. Remaining qualified results are summarized below:

Report	Sample	Component	Laboratory-Reported Result (ug/kg)	Result of Record (ug/kg)
AOW1	CR18B-SBSD	Benzoic Acid	210	210 J
AOW1	CR18B-SBSD	Pentachlorophenol	99 U	99 UJ
AOW1	CR18B-SSD	Pentachlorophenol	99 U	99 UJ
AOW2	CR15C-SSD	Benzoic Acid	250	250 J
AOW2	CR15C-SSD	Pentachlorophenol	98 U	98 UJ
AOW2	CR15C-SBSD	Pentachlorophenol	98 U	98 UJ
AOW2	CR08b-SSD-COMP	Benzoic Acid	330	330 J

Report	Sample	Component	Laboratory-Reported Result (ug/kg)	Result of Record (ug/kg)
AOW2	CR08b-SSD-COMP	Pentachlorophenol	96 U	96 UJ

J = the result is an estimated value.
ug/kg = micrograms per kilogram.
UJ = the result is non-detect and an estimated value.

In report AUD1, ARI noted in the cover letter that USEPA Method 8270D CCV results for benzoic acid were above the acceptance limit for percent difference. The non-detect sample result has been qualified with "J" as estimated by the reviewer:

Report	Sample	Component	Laboratory-Reported Result (ug/L)	Result of Record (ug/L)
AUD1	Storm-01	Benzoic Acid	22 U	22 UJ

ug/L = micrograms per liter.
U = the result is non-detect.
UJ = the result is non-detect; RL posted is an estimated value.

The reviewer confirmed with ARI that remaining CCVs not reported by the laboratory were within acceptance limits for percent recovery.

REPORTING LIMITS

ARI evaluated USEPA Methods 6010C, 7470A, 7471A, 8082A, 8270D, and 8270D-SIM results to one-half the MRL. Non-detect results were reported at the MRL. ARI evaluated USEPA Method 1613B results to EDLs. Remaining results, including NWTPH-Dx, were evaluated and reported to MRLs. Results reported between MRL and one-half of the MRL or between the EDL and MRL were qualified by the laboratory with "J" as estimated. Some reporting limits were additionally raised due to matrix interference. NVL evaluated asbestos results to the 1 percent visual estimation detection limit.

Samples requiring dilutions because of high analyte concentrations and/or matrix interferences had elevated EDLs and/or RLs.

DATA PACKAGE

The data packages were reviewed for transcription errors, omissions, and anomalies.

In report AON2, sample CR09b-SSD-COMP was incorrectly transcribed by ARI during login as CRO96-SSD-COMP.T The sample name was corrected for the final report; however, USEPA Method 8270D and 8270D-SIM, and 8082A surrogate recovery summary pages in report AON2 display the incorrect sample name.

In report AON3, sample Seep-01 was not recorded on the chain of custody. The sample name, collection date and time, and analyses were provided by MFA after samples were received by ARI. A record of the request is included with the report.

USEPA Method 8270D analysis was added to samples in report AOW1 after samples were received by the laboratory. A record of the added analysis was not included with the final report.

In report AOW1, USEPA Method 8082A analysis was requested but not performed for samples CR18B-SBSD and CR18B-SSD. The results are reported in report ART5.

In report AUD1, total suspended solids analysis requested on the chain of custody was canceled due to insufficient sample volume. No additional action was required.

No additional issues were found.

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