

# Soil Management Plan

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Abitibi Consolidated Sales Corp.  
4302 Chambers Creek Road, Steilacoom,  
Washington, Ecology Facility Site ID  
No. 57759125

*Prepared for:*

**HDG, LP**

May 23, 2024

Project No. M1882.01.009

*Prepared by:*

Maul Foster & Alongi, Inc.

2815 2nd Avenue, Suite 540, Seattle, WA 98121

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**M A U L**  
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**A L O N G I**

# Soil Management Plan

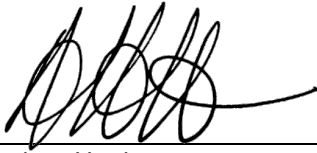
**Abitibi Consolidated Sales Corp.**

**4302 Chambers Creek Road, Steilacoom, Washington**

**Ecology Facility Site ID No. 57759125**

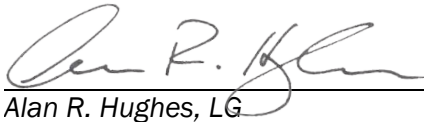
*The material and data in this report were prepared under the supervision and direction of the undersigned.*

*Maul Foster & Alongi, Inc.*



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Audrey Hackett  
Senior Environmental Scientist



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Alan R. Hughes, LG  
Principal Geologist

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# Abbreviations

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Abitibi	Abitibi Consolidated Sales Corp.
AO	Agreed Order No. DE 3154
AOI	area of interest
bgs	below ground surface
CMMP	contaminated media management plan
COC	contaminant of concern
Covenant	environmental covenant AFN 201003310170
cPAH	carcinogenic polycyclic aromatic hydrocarbons
CSWGP	Construction Stormwater General Permit
CUL	cleanup level
dioxin/furan	polychlorinated dibenzo-p-dioxins and polychlorinated dibenzofurans
Ecology	Washington State Department of Ecology
FS	feasibility study
HDG	HDG, LP
IRA	interim removal action
ISM	incremental sampling methodology
MFA	Maul Foster & Alongi, Inc.
mg/kg	milligrams per kilogram
Mill Area	former mill operational area
MTCA	Model Toxics Control Act
PAH	polycyclic aromatic hydrocarbons
the Property	4302 Chambers Creek Road, Steilacoom, Washington
RI	remedial investigation
SFIM	Sanborn Fire Insurance Map
the Site	Abitibi Consolidated Sales Corp. site
SMP	soil management plan
SWPPP	stormwater pollution prevention plan
TPH	total petroleum hydrocarbons
TSP	Tacoma Smelter Plume
TSP metals	arsenic and lead
WAC	Washington Administrative Code

# 1 Introduction

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Maul Foster & Alongi, Inc. (MFA) has prepared this soil management plan (SMP) on behalf of HDG, LP (HDG), for the former Abitibi Consolidated Sales Corp. (Abitibi) site (the Site), located at 4302 Chambers Creek Road in Steilacoom, Washington (the Property) (see Figure 1-1). The Site encompasses the known and suspected areas impacted by the release of hazardous substances associated with former mill operations, consistent with the definition provided by the Washington State Department of Ecology (Ecology) in Agreed Order No. DE 3154 (AO) (Ecology 2006) (see Figure 1-2). The scope of work described in this SMP will support cleanup of known or suspected contamination at the Site and any unexpected contamination that may be discovered during development activities on the former mill operational area (Mill Area), where future redevelopment is planned (see Figure 1-2).

## 1.1 Regulatory Framework

The Site was remediated under the AO with Ecology. However, residual concentrations of polycyclic aromatic hydrocarbons (PAHs) above Model Toxics Control Act (MTCA) Method B cleanup levels (CULs) in soil were left in place beneath railroad lines at the Site and are subject to an environmental covenant recorded under AFN 201003310170 (Covenant) (Ecology 2010). The Covenant requires assessment and removal of known or suspected PAH-contaminated soil exceeding MTCA standards upon demolition of the railroad lines. Further, the Covenant prohibits the use of shallow groundwater due to elevated arsenic concentrations. On April 10, 2013, Ecology issued a satisfaction letter to Abitibi for completing the requirements of the AO for the Site following the final cleanup action and recording of the Covenant (Ecology 2013).

In 2017, Ecology performed its first periodic review of the post-cleanup conditions at the Site (Ecology 2017). Ecology concluded that the remedial actions conducted at the Site continue to be protective of human health and environment and that the Covenant is being satisfactorily followed. Ecology also noted that the MTCA Method A and Method B CULs for contaminants at the Site had not changed between 2009 and 2017. Between 2017 and 2024, Ecology updated the MTCA Method B screening levels to adjust carcinogenic polycyclic aromatic hydrocarbons (cPAHs). Rather than assigning individual screening levels for each cPAH constituent, Ecology assigned screening levels to the most toxic individual constituent, benzo(a)pyrene, and a calculated cPAH toxicity equivalency quotient. Screening levels for the remaining PAHs were unchanged between 2017 and 2024.

## 1.2 Purpose and Objectives

Although Ecology issued a satisfaction letter following completion of the cleanup actions required by the AO, the Site is currently under the Covenant with Ecology (Ecology 2010, 2017). The purpose of the SMP is to describe the proposed actions at the Site that will be performed concurrent with, or prior to, redevelopment activities at the Mill Area to address the known or suspected residual contamination outlined in the Covenant, consistent with MTCA. The proposed actions will address residual contamination that was left in place following prior cleanup actions at the Site (CH2M Hill

2007). The objective of the SMP is to provide Ecology with written documentation of proposed activities that will address residual soil contamination at the Site for written approval from Ecology prior to redevelopment of the Mill Area, consistent with the requirements of the Covenant.

Once the known or suspected residual soil contamination is addressed, the Covenant will no longer be required for the Site.

The purpose and objective will be carried out through the following actions:

- Address residual contamination through soil excavation, assessment, transport, and off-site disposal or soil farming on site.
- Collect confirmation samples to confirm that applicable cleanup standards are achieved in excavated areas.
- Demonstrate that residual contamination does not pose a threat to human health and that therefore the current restrictions of the Covenant no longer apply to the developable Mill Area.

## 1.3 Plan Organization

The SMP is organized into the following sections:

- **Section 2** discusses the property location, site development and operational history, and previous environmental investigations.
- **Section 3** presents the proposed and preliminary redevelopment plans for the Mill Area.
- **Section 4** outlines the scope of work to address the residual contamination identified in the Covenant.
- **Section 5** identifies the applicable cleanup standards for the proposed scope of work.
- **Section 6** discusses the compliance sampling program.
- **Section 7** proposes an implementation schedule that integrates with broader redevelopment at the Mill Area.
- **Section 8** includes a request for an opinion from Ecology.

# 2 Background

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## 2.1 Property Location

The approximately 57-acre Property borders the northwest boundary of the City of Steilacoom and comprises two parcels (see Figure 1-1). Industrial operations occurred for decades on the Mill Area, encompassing approximately 16 acres on portions of Pierce County Parcels Nos. 0220294007 and 0220294025.

## 2.2 Mill Area History

The Mill Area operated as a pulp and paper mill from approximately 1919 until December 2000. Historical features used in support of former mill process and manufacturing operations include fuel and chemical storage areas, fueling areas, and several buildings and warehouses that supported paper production (see Figure 2-1). Mill products were historically produced from thermo-mechanical pulp, purchased pulp, or pulp produced from deinked recycled paper. Auxiliary manufacturing operations included unloading and repulping of purchased kraft pulp, water filtration, wastewater treatment, and steam generation using hog fuel and natural gas-fired boilers. The mill did not, however, use bleach kraft processes. In 2000, all mill operations ceased and in May 2001, the wastewater treatment plant was drained and permanently shut down. The Shipping Warehouse, North Warehouse, and several tanks and clarifiers are still present on the Mill Area. Currently, most of the Mill Area is covered with impervious surfaces constructed during mill operations, including asphalt, concrete, construction rubble, and railroad lines. During the wet season, flooding is common in the central and southwest portions of the Mill Area near the Shipping Warehouse.

The progressive expansion and development of the Mill Area is shown in Figure 2-2. Expansion and development activities included many soil-disturbing activities such as constructing new buildings, expanding existing buildings, and paving ground surfaces. The features and the former Mill Area boundary were deduced through review of a 1929 Sanborn Fire Insurance Map (SFIM) and aerial photographs from the U.S. Geological Survey, Pierce County, the Washington State Department of Natural Resources, and Google Earth (see Appendix A). Based on a review of the 1929 SFIM, the central portion of the Mill Area is developed with the Shipping Warehouse, #2 Paper Machine, and several other buildings. In 1946, the Mill Area was purchased by newspaper publishers which began making newsprint out of whole logs (CH2M Hill 2001). Though unconfirmed, it is possible that the Mill Area was at least partially redeveloped around this time.<sup>1</sup> A review of the 1961 aerial photograph confirms that several buildings and features are present on the central portion of the Mill Area. A review of aerial photographs between 1970 and 1998 shows significant expansion to the south and northeast, with the addition of the #3 Paper Machine, Paint Shop, Truck Shop, E&I Shop, Hydrapulper Building, Truck Scale Area, Chip Conveyor, Recycle Warehouse, and North Warehouse.

Further, the Mill Area is also located within a 1,000-square-mile area known as the Tacoma Smelter Plume (TSP). For over 100 years, the former Asarco copper smelter, located in Tacoma, Washington, emitted metals, predominantly arsenic and lead (TSP metals), that settled on surface soils across the Puget Sound basin. TSP metals were previously analyzed for in soil samples collected from the Mill Area and surrounding forested area, the results of which are discussed in Section 2.3.

## 2.3 Previous Investigations

### 2.3.1 Interim Removal Action

In April and May 2006, an interim removal action (IRA) was performed whereby petroleum impacted soil was excavated for off-site disposal from areas north of the Shipping Warehouse and northwest of the Hog Fuel Storage area (see Figure 2-3). The removal action intended to address areas where

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<sup>1</sup> Building names and shapes in the 1929 SFIM do not consistently align with more recent photographs of the mill site. However, redevelopment is unconfirmed because several features on the central portion of the Mill Area could not be identified through review of the low-resolution 1940s aerial photographs.

petroleum contamination in soil exceeded MTCA Method A and B CULs<sup>2</sup> for unrestricted land use, thereby mitigating human health risks to future site occupants. The IRA included asphalt cutting to access and remove impacted soil. Soil excavation proceeded until confirmation sampling indicated that gasoline- and diesel-range total petroleum hydrocarbons (TPH); benzene, toluene, ethylbenzene, and xylenes; arsenic; and polychlorinated biphenyl soil concentrations along the sidewalls and the base of the excavation were below MTCA CULs. A total of 159 tons of asphalt and concrete were recycled off site, and 3,445 tons of soil exhibiting TPH concentrations above MTCA CULs were excavated and transported off site for disposal.

### 2.3.2 Remedial Investigation/Feasibility Study

On November 29, 2006, Ecology and Abitibi entered into the AO. In 2007, Abitibi prepared a remedial investigation (RI)/feasibility study (FS) for the Site (CH2M Hill 2007). The RI/FS identified arsenic; PAHs; and gasoline-, diesel-, and heavy-oil-range TPH as soil contaminants of concern (COCs) for the Site. There are no known sources of arsenic associated with former mill operations. Nevertheless, investigators sampled for arsenic and found that concentrations in soil were below the MTCA Method A CUL of 20 mg/kg. Ecology concluded that arsenic concentrations above the CUL in groundwater are the result of naturally occurring reducing conditions at the Property. TPH and PAH impacts were limited to the main process area, with most soil and groundwater CUL exceedances near the Shipping Warehouse where the previous IRA was conducted.

The RI/FS included a conceptual site model for the Site. Petroleum use and petroleum-containing soil used as fill are the primary contamination sources at the Site. The pathways for incidental ingestion, inhalation, and dermal contact with TPH-impacted soil are incomplete because the 2006 IRA addressed petroleum contamination above the MTCA CULs for unrestricted land use north of the Shipping Warehouse and northwest of the Hog Fuel Storage area. However, limited areas with TPH and PAH concentrations above MTCA CULs remain buried beneath excavation backfill where it is possible for these compounds to infiltrate groundwater and pose an incidental exposure risk to human or aquatic receptors. Further, PAH-contaminated soil was left in place beneath railroad lines near the loading dock of the Shipping Warehouse.

Groundwater remediation alternatives identified in the RI/FS included no action, monitored natural attenuation, and accelerated in situ bioremediation. Ultimately, monitored natural attenuation was selected as the remedy for groundwater remediation at the Site because it was protective of human health and because previous remedial actions removed impacted media, thus eliminating potential ongoing sources.

### 2.3.3 Long-Term Groundwater Monitoring and Environmental Covenant

Five groundwater monitoring wells (MW-1 through MW-5) were monitored quarterly between August 2006 and March 2008 at the Site. Analytical results of the last four quarters of groundwater monitoring indicated that contaminant concentrations were below laboratory detection limits or below the established MTCA Method A or Method B CULs for the Site. Ecology approved the discontinuation of groundwater monitoring in November 2008. A final cleanup action plan for the Site was drafted in November 2008 and finalized by Ecology in May 2009, but does not appear to have been completed based on available and reviewed documents.

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<sup>2</sup> MTCA Method A CULs were selected for petroleum hydrocarbons; Method B CULs were selected for other contaminants (Ecology 2017).

Instead, on March 31, 2010, the Covenant was recorded on the Site. The Covenant prohibits use of surficial aquifer groundwater for any purposes, due to the presence of naturally occurring arsenic in the subsurface, and requires removal of residual contamination beneath existing railroad lines upon demolition.

### 2.3.4 Supplemental Characterization

In 2021, the current Property owner, HDG, applied to the City of Steilacoom to rezone the Property for nonindustrial development. At that time, Ecology commented that the unpaved areas of the Property should be investigated for polychlorinated dibenzo-p-dioxins and polychlorinated dibenzofurans (dioxins/furans), due to the historical use of a hog fuel burner on the Mill Area. Additionally, as described above, the Property is located within the TSP.

In August 2022, MFA performed a field investigation in the undisturbed forested area on the Property,<sup>3</sup> which included sampling and analyzing surface soil for dioxins/furans; and soil, forest duff, and sediment for TSP metals (MFA 2023). Samples analyzed for dioxins/furans were collected using both incremental sampling methodology (ISM) and discrete sampling techniques within two forested areas of interest (AOIs) on the Property (sample locations shown in Figure 2-4).

Dioxin/furan ISM and discrete soil sampling results are presented in Tables 2-1 and 2-2, respectively, and concentrations were screened against MTCA Method B cancer and noncancer CULs. While dioxins/furans exceeded the MTCA Method B cancer CUL in three discrete soil samples, dioxins/furans were below MTCA Method B cancer and noncancer CULs in ISM samples from both AOIs. In both AOIs, the ISM samples are more representative of overall dioxin/furan concentrations and therefore more representative of potential exposure risk. Further, the default MTCA Method B CUL for the dioxin/furan toxicity equivalence (13 picograms per gram) is based on unrestricted land use exposure assumptions that are likely not appropriate for the steep slope forested areas investigated. For example, Washington Administrative Code (WAC) 173-340-740 assumes an exposure duration of six years, a soil ingestion or dust inhalation rate of 200 milligrams per day, and an average body weight of 16 kilograms (i.e., a child) over the exposure duration.

Samples analyzed for TSP metals were collected in a manner consistent with the *TSP Model Remedies Guidance* (Ecology 2019) from two depth intervals: 0 to 6 inches below ground surface (bgs) and 6 to 12 inches bgs (sample locations shown in Figure 2-5). TSP metals concentrations in soil and forest duff samples were screened against the elevated criteria<sup>4</sup> provided in the guidance (Ecology 2019). TSP metals concentrations in sediment were screened against Ecology's sediment management standards freshwater sediment cleanup objective criteria. TSP metals concentrations did not exceed the elevated criteria in any samples.<sup>5</sup>

On the Mill Area, TSP metals were analyzed for during the historical site investigations described previously. Table 2-3 and Figure 2-3 summarize TSP metals analytical results from Mill Area sample locations. Surface and subsurface soil samples were generally collected between ground surface and 10 feet bgs near the Shipping Warehouse, beneath the railroad lines, and near the Decker Building; areas where soils were previously disturbed through paving and building construction as

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<sup>3</sup> The future use of the forested area (which includes dense vegetation and steep slopes) is being evaluated, and additional sampling or application of remedial action levels may be developed based on the selected future use.

<sup>4</sup> A discrete soil sample is elevated with a TSP metal if the concentration is greater than twice the MTCA Method A CUL. An AOI is elevated if the average concentration across all samples with each depth interval exceeds the MTCA Method A CUL (Ecology 2019).

<sup>5</sup> The data collected from this investigation were submitted to Ecology's Environmental Information Management database.

the Mill Area expanded. Arsenic concentrations in soil range from 5 to 10 mg/kg, well below the MTCA Method A CUL of 20 mg/kg.

Decades of development that included soil-disturbing activities (e.g., paving, building construction) that have altered the ground surface composition of the Mill Area. Further, as in the forested area investigation, TSP metals concentrations are well below Ecology's elevated criteria in all soil samples from any depth interval. The history of Mill Area development and available analytical data from both the Mill Area and surrounding forested area collectively indicate that the Property is not adversely impacted by the aerial deposition of TSP metals.

### 2.3.5 Investigation Summary

In April and May 2006, an IRA was performed where soil with TPH concentrations above MTCA CULs were excavated and transported off site for disposal. In 2007, the RI/FS was prepared for the Site, which outlined areas where arsenic, TPH, and PAHs in soil and groundwater exceeded MTCA CULs. In soil, arsenic is well below the MTCA Method A CUL for unrestricted land use (20 mg/kg). Arsenic CUL exceedances in groundwater are the result of naturally occurring reducing conditions at the Property. Contaminated soil was largely addressed through the 2006 IRA, though residual contamination was left in place beneath the railroad lines and near the loading dock of the Shipping Warehouse.

Between August 2006 and March 2008, groundwater monitoring indicated contaminant concentrations were below laboratory detection limits or below established MTCA Method A or Method B CULs for the Site. Groundwater monitoring was discontinued at the Site in November 2008. On March 31, 2010, the Covenant was recorded for the Site, prohibiting use of surficial aquifer groundwater, and requiring removal of residual contamination beneath the railroad lines upon demolition.

In August 2022, MFA performed sampling in the undisturbed forested area surrounding the Mill Area to investigate potential dioxin/furan and TSP metals contamination. Though dioxins/furans exceeded MTCA Method B CULs in three discrete soil samples, ISM samples from both AOIs demonstrated that dioxin/furan concentrations are below CULs. Further, analytical results from all investigations (including historical investigations from the Mill Area) showed TSP metals concentrations below Ecology's elevated criteria in all samples. All soil data, coupled with the history of mill development and expansion (see Section 2.2 and Figure 2-2), collectively indicate that the Property is not significantly impacted by aerial deposition of TSP metals. Therefore, TSP metals considerations are not discussed further in this document.

## 3 Proposed Redevelopment

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HDG is proposing to redevelop the Mill Area. The proposed redevelopment includes removal of the railroad lines, removal of some of the existing structures, import of clean fill material to raise the grade of the Mill Area, construction of roads and sidewalks, and installation of utilities (water, sewer, and stormwater) for future commercial and residential buildings. Draft redevelopment features, including roads and utilities, are shown in Figure 3-1. Buildings are not designed at this stage. Additionally, HDG intends to daylight and restore Garrison Creek in the area designated as

easement. A trench will be advanced along an existing utility easement corridor for installation of the water line south of the Mill Area. Soil excavated from the trench will be managed according to the procedures described in Appendix B.

Demolition and construction activities at the Site must be performed consistent with the requirements of the Covenant. Section 1, condition no. 2 of the Covenant (Ecology 2010) states:

Upon demolition of the rail lines any contaminated soil exceeding MTCA standards that is removed shall [be] disposed of according to regulatory requirements. The creation of a new exposure pathway creates a need for the Owner to notify Ecology of the method of soil removal, and where it is to be disposed...Owner shall not...create a new exposure pathway without prior written approval from Ecology.

The proposed redevelopment will provide an opportunity to address the residual contamination that remains at the Site, add valuable habitat through the daylighting of Garrison Creek, and result in a more permanent and protective remedy than was previously implemented.

## 4 Scope of Work

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The following actions are proposed to address known or suspected environmental issues at the Site (as part of the redevelopment of the Mill Area).

### 4.1 Excavation of Contaminated Soil

The proposed scope of work includes excavation of PAH-impacted soils beneath the railroad lines and TPH- and PAH-impacted soils near the northeast corner of the Shipping Warehouse. Historical sample locations and proposed excavation extents are shown on Figure 4-1. Per the Covenant, soil beneath the railroad lines will also be assessed for potential contamination.

Excavation activities will be performed consistent with a site-specific stormwater pollution prevention plan (SWPPP), a contaminated media management plan (CMMP) (see Appendix B), and an inadvertent discovery plan (see Appendix C). Excavated soils will be managed in one of two ways:

- **Off-site disposal.** Excavation and off-site disposal is the most protective approach for soils with hazardous substance concentrations above CULs in future residential use areas, consistent with WAC 173-340-360 (2)(d). Further, excavation and off-site disposal constitutes a permanent solution employed to the maximum extent practicable, consistent with WAC 173-340-360 (3).
- **Soil farming.** Soil farming is a potential option for reducing contaminant concentrations below CULs that are protective of human health and the environment, enabling beneficial reuse and reducing the need for transportation and off-site disposal at a permitted landfill.

Additional soil management details are provided in the CMMP (see Appendix B). As the excavation proceeds, staff will field screen for volatile compounds with a handheld photoionization detector and record any visual or olfactory indications of soil contamination. Excavated soil will be stockpiled for characterization as described in Section 6.

Previous sampling beneath the railroad lines at location RR2 identified PAH concentrations above MTCA Method B CULs at approximately 1.5 bgs.<sup>6</sup> The estimated area with confirmed PAH-contamination beneath the railroad lines near RR2 is shown on Figure 4-1. It is estimated that excavation to 2 feet bgs will address the residual contamination beneath the railroad lines in this area. PAHs were not detected above present-day MTCA Method B CULs at locations RR1,<sup>7</sup> RR3, or RR4; therefore, it is possible that soils beneath the railroad lines in this area do not need to be addressed prior to redevelopment (see area shown on Figure 4-1). Finally, soils beneath the remaining railroad lines on the Mill Area have not been previously characterized and may need to be addressed if COC concentrations exceed CULs (see areas shown on Figure 4-1). As the characterization of the railroad lines is not sufficient to determine use, all the soil from beneath the railroad lines will be stockpiled and sampled to confirm the presence or absence of COCs prior to management. The soil will be segregated as known, suspected, or no known contamination for characterization purposes.

CUL exceedances near the Shipping Warehouse (gasoline-range TPH at BDS-03 and PAHs at BDS-19) were encountered during the 2006 IRA at 4.5 feet bgs and 4 feet bgs, respectively. Once it was determined that the contamination was inaccessible, clean overburden was placed. Excavation to 5 feet bgs is estimated to remove this residual contamination, while clean overburden will be stockpiled and segregated from potentially contaminated material for reuse as fill material. Based on the extents shown in Figure 4-1, as much as 7,675 cubic yards<sup>8</sup> of soil are planned to be excavated, assessed for contamination, and characterized for disposal or beneficial reuse.

## 4.2 Stormwater and Groundwater Management

The project will apply for coverage under the Construction Stormwater General Permit (CSWGP). A site-specific SWPPP will be prepared prior to the start of construction and will detail the appropriate best management practices to be implemented during construction. Stormwater will be infiltrated where possible and excavation will be sequenced to avoid a potential flow path to surface water for stormwater in contact with potentially contaminated soils. It is assumed that treatment prior to discharge will not be required because contaminated surface soils were addressed through previous remedial actions, and groundwater monitoring data demonstrated contaminant (i.e., arsenic) concentrations are naturally occurring or are below laboratory detection limits or MTCA Method A or Method B CULs.

The RI/FS indicates that shallow groundwater was typically encountered at 5 to 8 feet bgs (CH2M Hill 2007), though groundwater was encountered between 1 and 6 feet bgs at the Mill Area during a more recent geotechnical investigation (PanGEO 2022). Therefore, groundwater may be encountered during excavation of impacted soils. Groundwater exhibits concentrations of naturally occurring arsenic, and it is anticipated that dewatered groundwater can be managed by pumping it to the

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<sup>6</sup> Sample depths were not recorded. Boring logs in the *Final Remedial Investigation/Feasibility Study Report* (CH2M Hill 2007) indicated that railroad soil borings RR1 through RR3 were advanced to 1.5 feet bgs.

<sup>7</sup> Sampling at RR1 also identified individual PAH concentrations above the relevant MTCA Method B CULs for that time (2005). Neither benzo(a)pyrene nor the carcinogenic PAH toxicity equivalence quotient concentrations exceed present-day MTCA Method B CULs.

<sup>8</sup> The total excavation area around the railroad lines and near the Shipping Warehouse is 2.41 acres. Contamination was encountered at 1.5 feet bgs beneath the railroad lines near RR2, 4.5 feet bgs at BDS-03, and at 4 feet bgs at BDS-19. Assuming over excavation, excavation of all areas beneath the railroad lines, and using stockpiled clean overburden as fill near the Shipping Warehouse, the estimated maximum excavation volume is approximately 7,675 cubic yards.

sanitary sewer on Chambers Creek Road in accordance with local treatment regulations. If discharge of dewatered groundwater to surface water is required, it will be implemented under the CSWGP.

### 4.3 Import and Mixing of Clean Fill

Excavated soil will be replaced with clean soil and graded concurrent with the overall proposed redevelopment at the Mill Area. The grading and filling at the Mill Area is anticipated to occur in mainly the developable lots and roadways shown in Figure 3-1. It is currently estimated that as much as 97,000 cubic yards of clean fill may be imported to raise the elevation of the Mill Area. A portion of the clean soil may be offset by soil beneficial reuse if soil farming is used for contaminated material.

### 4.4 Institutional Controls

Once the residual soil contamination is addressed through excavation and off-site disposal or soil farming, the Covenant will no longer be required for the Site. Though the Covenant prohibits groundwater use for any reason due to the presence of arsenic, the subsurface arsenic is naturally occurring and not associated with former mill operations.

## 5 Cleanup Standards

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Cleanup standards refer to the CULs that need to be achieved and the location(s) where these CULs must be achieved, incorporating other state and federal regulatory requirements applicable to the action and/or its location (WAC 173-340-700). Soil and groundwater cleanup standards were developed in the RI/FS and have generally<sup>9</sup> been achieved on the Site (Ecology 2017).

Soil cleanup standards apply to this proposed scope of work. The applicable CULs for the actions described in this SMP are MTCA Method A or MTCA Method B CULs for unrestricted land use, consistent with the thresholds identified in the RI/FS. The COCs and associated CULs are provided in Table 3-3 of Appendix B.

The point of compliance is the depth in the affected medium at which the CUL must be achieved. The standard point of compliance for soil protection of human health through direct contact is ground surface to 15 feet bgs (WAC 173-340-740 (6)(d)). Following the 2006 IRA, contamination is potentially present at 0 to 2 feet bgs beneath portions of the railroad lines and 4 to 5 feet bgs near the Shipping Warehouse. Upon excavation completion, cleanup standards are anticipated to be achieved for soil throughout the Site.

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<sup>9</sup> Shallow groundwater exhibits naturally occurring arsenic due to reducing conditions in the subsurface, and residual soil contamination was inaccessible during previous actions performed at the Site.

# 6 Compliance Sampling

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Compliance monitoring, including protection, performance, and confirmation monitoring, will be performed to characterize excavated material consistent with WAC 173-340-410. Additional soil management and sampling details are provided in the CMMP (see Appendix B). Compliance sampling will be performed for the soil COCs identified in the RI/FS, including PAHs and gasoline-, diesel-, and heavy-oil-range TPH.<sup>10</sup>

## 6.1 Protection Sampling

Protection monitoring promotes the preservation of human health and the environment during remedial construction activities. As described previously, field screening for volatile compounds with a handheld photoionization detector will be performed during construction to identify potentially impacted soil and protect workers from excessive exposure to volatile substances during field activities.

## 6.2 Performance Sampling

Performance monitoring ensures that remedial actions meet the accepted cleanup standards. Initial performance samples will be collected from beneath the railroad lines and near the Shipping Warehouse for the purposes of characterizing the contamination and creating a waste profile to support off-site disposal.

Excavated material beneath the railroad lines and near the Shipping Warehouse will be stockpiled on-site for sampling and analysis because the lateral and vertical extent of contamination in these areas is unknown. Soil excavated from the utility trench south of the Mill Area will be stockpiled for sampling and analysis for dioxins/furans. The number of stockpile samples required generally depends on the total volume of material excavated. Though WAC 173-340-410 does not require a specific number of stockpile samples, Ecology's *Guidance for Remediation of Petroleum Contaminated Sites* (Ecology 2016) offers details based on excavation volume. For example, MFA estimates that approximately 318 cubic yards of TPH- and PAH-impacted material beneath clean overburden near the Shipping Warehouse may be excavated, which requires five stockpile samples for laboratory analysis. Section 2.5 of the CMMP (see Appendix B) provides additional sampling information.

If stockpile samples indicate that excavated soil contains COC concentrations below MTCA CULs, the material may be reused as excavation backfill. If the excavated soil contains COC concentrations above MTCA CULs, the soil will be managed according to the procedures described in Section 4.1 and Appendix B.

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<sup>10</sup> Arsenic was also identified as a soil COC in the RI/FS. However, as described in Section 2, arsenic concentrations in soil are below the MTCA Method A CUL of 20 mg/kg. Therefore, arsenic was not retained for further evaluation.

## 6.3 Confirmation Sampling

Confirmation monitoring is performed to evaluate the long-term effectiveness of the implemented action. Following excavation near the Shipping Warehouse, sidewall and bottom confirmation samples will be collected to evaluate whether cleanup standards have been achieved, consistent with the guidance (Ecology 2016). Following excavation beneath the railroad lines, confirmation samples will be collected every 100 linear feet along the excavation path. In both areas, excavation and confirmation sampling will continue until the cleanup standards have been achieved. Further, confirmation sampling will be performed on imported fill to ensure it is suitable for placement and will not re-contaminate the excavated area. Two imported fill stockpiles are anticipated: one for backfilling excavated areas beneath the railroad lines and one for backfilling near the Shipping Warehouse.

# 7 Implementation Schedule

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The activities described in this SMP will integrate with broader construction activities at the Mill Area. Following Ecology's review and request for opinion (see Section 8), MFA will address Ecology comments and finalize the SMP. Once finalized, MFA will assist HDG with the acquisition of applicable permits; finalize construction plans; and bid, contract, and schedule the proposed work. This process is expected to take 6 to 9 months, contingent on overall redevelopment plans. During this time, soil farming may be performed according to the procedures described in the CMMP (see Appendix B).

# 8 Request for Opinion

---

MFA is requesting a written opinion from Ecology regarding the proposed actions described in this SMP and written approval to proceed with the proposed activities, as required under the Covenant.

# References

---

- CH2M Hill. 2001. *Phase I Environmental Site Assessment, West Tacoma Mill, 4302 Chambers Creek Road, Steilacoom, WA*. Prepared by CH2M Hill. January 10.
- CH2M Hill. 2007. *Final Remedial Investigation/Feasibility Study Report, Abitibi West Tacoma Mill*. Steilacoom, WA. April.
- Ecology. 2006. *Model Agreed Order No. DE 3154*. In the Matter of Remedial Action By: Abitibi Consolidated Sales Corporation. Washington State Department of Ecology. November 29.
- Ecology. 2010. *Environmental Covenant*. Abitibi Consolidated Sales Corporation. Recorded March 29.
- Ecology. 2013. Rebecca S. Lawson, P.E., LHG, Washington State Department of Ecology. *Satisfaction of Agreed Order No. DE 3154*. Letter to Jon Potter. April 10.
- Ecology. 2016. *Guidance for Remediation of Petroleum Contaminated Sites*. Publication No. 10-09-057. Washington State Department of Ecology, Toxics Cleanup Program: Olympia, WA. June.
- Ecology. 2017. *First Periodic Review Report Final, Abitibi Consolidated Sales Corp*. Washington State Department of Ecology, Toxics Cleanup Program. March.
- Ecology. 2019. *Tacoma Smelter Plume Model Remedies Guidance, Sampling and Cleanup of Arsenic and Lead Contaminated Soils*. Washington State Department of Ecology, Toxics Cleanup Program. Lacey, Washington. July.
- MFA 2023. *Supplemental Metals and Dioxins Characterization Report, Abitibi Consolidated Sales Corp*. Maul Foster & Alongi, Inc. January 26.
- PanGEO. 2022. *Preliminary Geotechnical Report, Cove at Chambers Bay, 4302 Chambers Creek Road, Steilacoom, Washington*. Prepared for HDG, LLC. Prepared by PanGEO Incorporated: Seattle, WA. June 17.

# Limitations

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The services undertaken in completing this plan 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 plan is solely for the use and information of our client unless otherwise noted. Any reliance on this plan by a third party is at such party's sole risk.

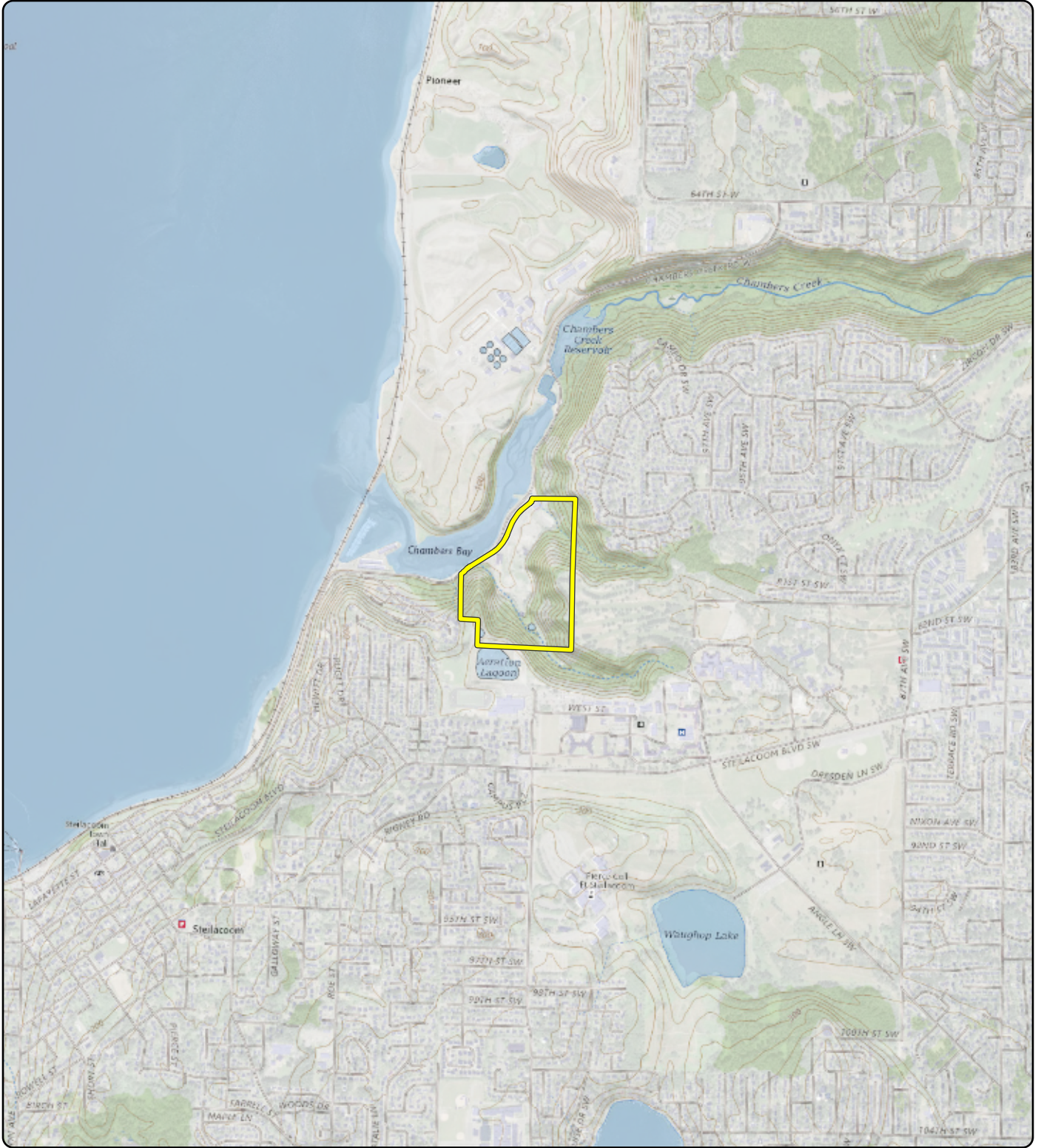
Opinions and recommendations contained in this plan apply to conditions existing when services were performed and are intended only for the client, purposes, locations, time frames, and project parameters indicated. We are not responsible for the impacts of any changes in environmental standards, practices, 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 plan.

# Figures

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**Notes**  
 U.S. Geological Survey 7.5-minute topographic quadrangle (2020): Steilacoom.  
 Township 20 north, range 2 east, section 43.

**Data Source**  
 Property boundary obtained from Pierce County Assessor.

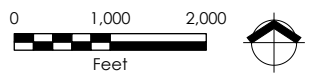
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**Legend**  
 Property Boundary

**Figure 1-1**  
**Property Location**

Soil Management Plan  
 Abitibi Consolidated Sales Corp  
 Steilacoom, WA











## Figure 1-2 Site Boundary and Mill Area

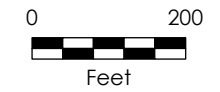
Soil Management Plan  
Abitibi Consolidated Sales Corp  
Steilacoom, WA

### Legend

-  Railroad Track
-  Stream (approximate)
-  Mill Area Boundary
-  Site Boundary
-  Parcel (2006)
-  Property Boundary (2006)

### Notes

Parcels from 2006 are shown on this figure, consistent with the parcels reflected in the environmental covenant recorded for the Site in 2010 and reflected in Ecology's periodic review for the site in 2017. On March 17, 2011, parcels 0220294002, 0220321009, and 7615000021 were merged and split to create two new parcels: 0220294025 and 7615000022. Unnamed Creek is diverted through a 24-inch pipe and manholes beneath the Property before discharging to Chambers Bay. Ecology = Washington State Department of Ecology. Site = Abitibi Consolidated Sales Corp. Site.



### Data Sources

Aerial photograph obtained from Esri; parcel data obtained from Pierce County Assessor.



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Path: C:\Workspace\1882\_01\09\Pro\_M\1882\_01\_009\_013\_Soil\_Management.aprx Fig 2-1 Property Location and Features  
Print Date: 4/2/2024  
Reviewed By: Jhansen  
Produced By: Jroberts  
Project: M1882.01.009



## Figure 2-1 Property Location and Features

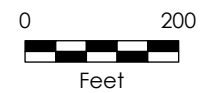
Soil Management Plan  
Abitibi Consolidated Sales Corp  
Steilacoom, WA

### Legend

- Railroad Track
- Former Structure
- Remaining Structure
- Aboveground Storage Tank
- Stream (approximate)
- Parcel (2006)
- Parcel (2024)
- Property Boundary (2006)

### Notes

Parcels from 2006 are shown on this figure, consistent with the parcels reflected in the environmental covenant recorded for the Site in 2010 and reflected in Ecology's periodic review for the site in 2017. On March 17, 2011, parcels 0220294002, 0220321009, and 7615000021 were merged and split to create two new parcels: 0220294025 and 7615000022. Unnamed Creek is diverted through a 24-inch pipe and manholes beneath the Property before discharging to Chambers Bay. Ecology = Washington State Department of Ecology.



### Data Sources

Aerial photograph obtained from Esri; parcel data obtained from Pierce County Assessor.



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**Figure 2-2  
Former Mill  
Development History**

Soil Management Plan  
 Abitibi Consolidated Sales Corp  
 Steilacoom, WA

**Legend**

**Structures (Approximate Construction Year)**

- At least 1929
- At least 1961
- 1965-1970
- 1974-1985
- 1985-1989
- At least 1990
- 1990-1998

**Mill Boundary Expansion (Approximate)**

- At least 1941
- 1941-1961
- 1961-1970
- 1970-1998

Stream (approximate)

Parcel (2006)

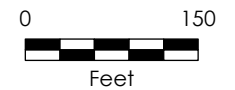
Property Boundary (2006)

**Notes**

Parcels from 2006 are shown on this figure, consistent with the parcels reflected in the environmental covenant recorded for the Site in 2010 and reflected in Ecology's periodic review for the site in 2017.

Ecology = Washington State Department of Ecology.

TMP = thermo-mechanical pulping.  
 TPU = Tacoma Public Utilities.



**Data Sources**

Aerial photograph (2002) obtained from Google Earth; parcel data obtained from Pierce County Assessor; structures and boundary expansion estimated based on aerial photographs (see Appendix A of plan).

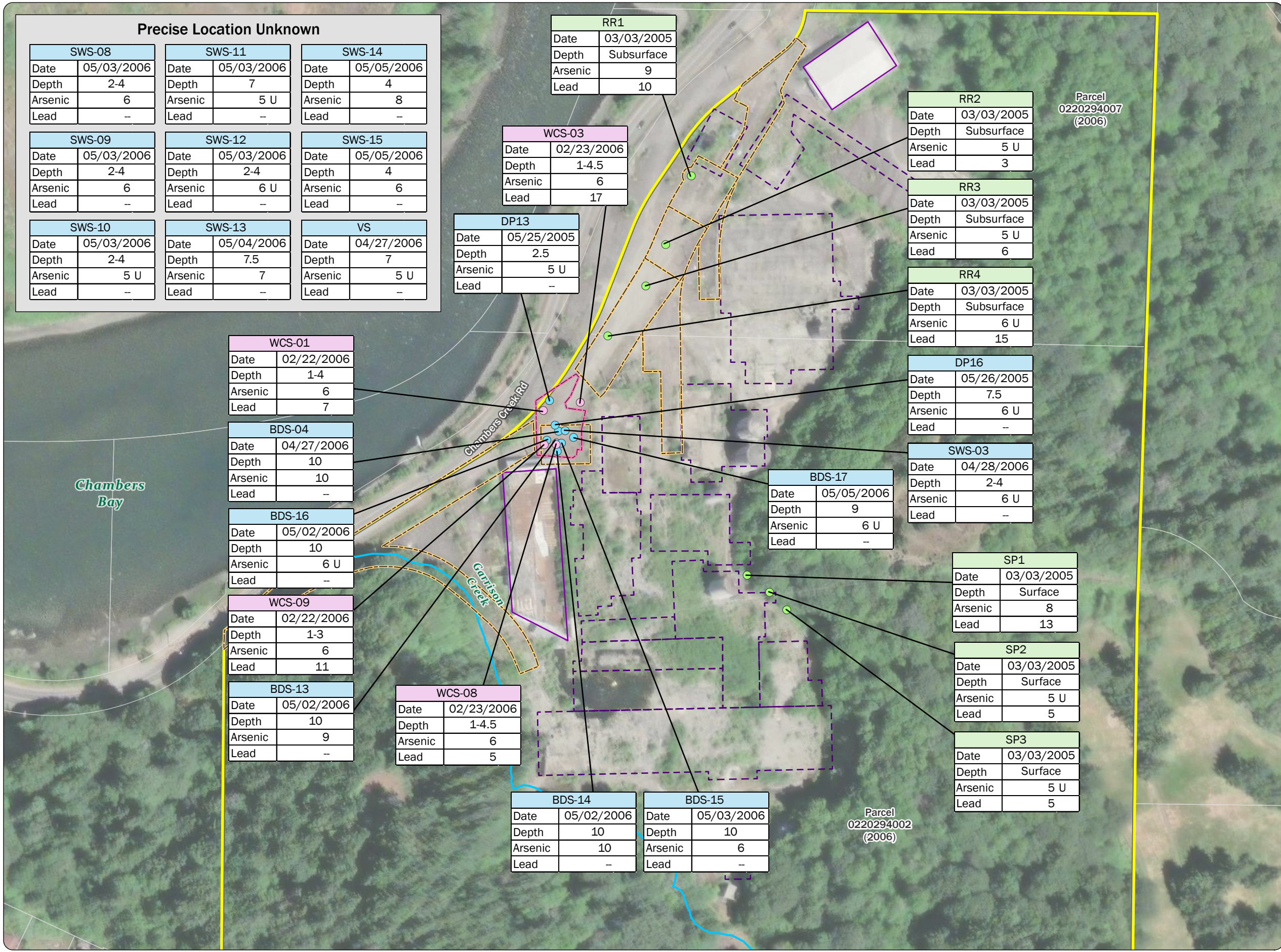


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Path: C:\Workspaces\1882\_01\09\Pro\MI1882\_01\_009\_013\_Soil\_Management.aprx Fig 2-3 Mill Area TSP Metals Analytical Soil Results  
 Print Date: 4/2/2024  
 Reviewed By: jhansen  
 Produced By: jroberts  
 Project: MI1882\_01\_009

## Figure 2-3 Mill Area TSP Metals Analytical Soil Results

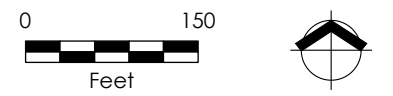
Soil Management Plan  
Abitibi Consolidated Sales Corp  
Steilacoom, WA



### Legend

- Soil Samples**
- 2005 Phase II ESA Sample
  - 2006 Excavation Confirmation Sample
  - 2006 Waste Characterization Sample
  - + 2006 Interim Removal Action Excavation Area
  - + Site Boundary
  - + Former Structure
  - + Remaining Structure
  - ~ Stream (approximate)
  - + Tax Lot (2006)
  - + Property Boundary (2006)

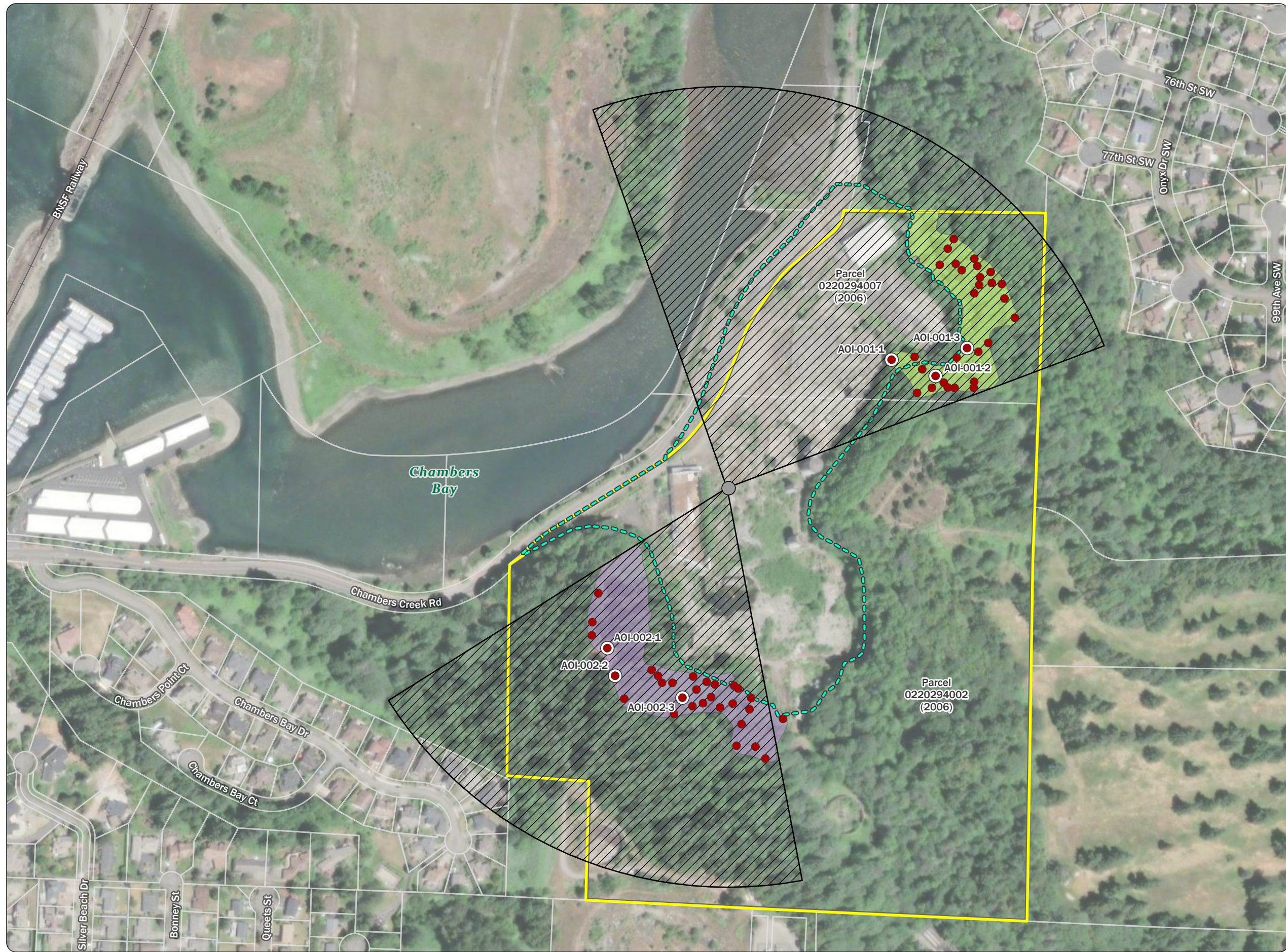
**Notes**  
 All concentrations reported in milligrams per kilogram.  
 Depths reported in feet below ground surface, when reported by investigators.  
 Parcels from 2006 are shown on this figure, consistent with the parcels reflected in the environmental covenant recorded for the Site in 2010 and reflected in Ecology's periodic review for the site in 2017.  
 Ecology = Washington State Department of Ecology.  
 Site = Abitibi Consolidated Sales Corp. Site.  
 U = result is non-detect.  
 -- = not analyzed.



**Data Sources**  
 Aerial photograph obtained from Esri; parcel data obtained from Pierce County Assessor.

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**Figure 2-4**  
**Dioxin/Furan Soil**  
**Sample Locations**

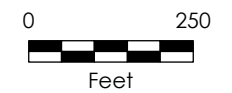
Soil Management Plan  
 Abitibi Consolidated Sales Corp  
 Steilacoom, WA

**Legend**

- ISM Sample Increment
- Dioxin/Furan Discrete Soil Sample
- AOI-001 Boundary
- AOI-002 Boundary
- Former Hog Fuel Burner Stack
- Potential Deposition Area
- Mill Area Boundary
- Parcel (2006)
- Property Boundary (2006)

**Notes**

Locations were recorded in the field using a differential global positioning device. Parcels from 2006 are shown on this figure, consistent with the parcels reflected in the environmental covenant recorded for the Site in 2010 and reflected in Ecology's periodic review for the site in 2017. Samples collected by MFA in August 2022. AOI = area of interest. ISM = incremental sampling methodology.



**Data Sources**

Aerial photograph obtained from Esri; parcel data obtained from Pierce County Assessor.



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Path: C:\Workspaces\1882\_01\09\Pro\MI1882\_01\_009\_013\_Soil\_Management.aprx Fig 2-5 TSP Soil Sediment Forest Duff Sample Locs  
Print Date: 4/2/2024  
Reviewed By: jhansen  
Produced By: jroberts  
Project: MI1882\_01\_009



### Figure 2-5 TSP Soil, Sediment, and Forest Duff Sample Locations

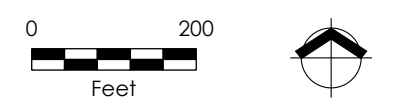
Soil Management Plan  
Abitibi Consolidated Sales Corp  
Steilacoom, WA

#### Legend

- Sediment Sample
- Forest Duff Composite Subsample
- Soil Sample
- AOI-001 Boundary
- AOI-002 Boundary
- AOI-003 Boundary
- Mill Area Boundary
- Stream (approximate)
- Parcel (2006)
- Property Boundary (2006)

#### Notes

Locations were recorded in the field using a differential global positioning device. Parcels from 2006 are shown on this figure, consistent with the parcels reflected in the environmental covenant recorded for the Site in 2010 and reflected in Ecology's periodic review for the site in 2017. Samples collected by MFA in August 2022. AOI = area of interest. TSP = Tacoma Smelter Plume.



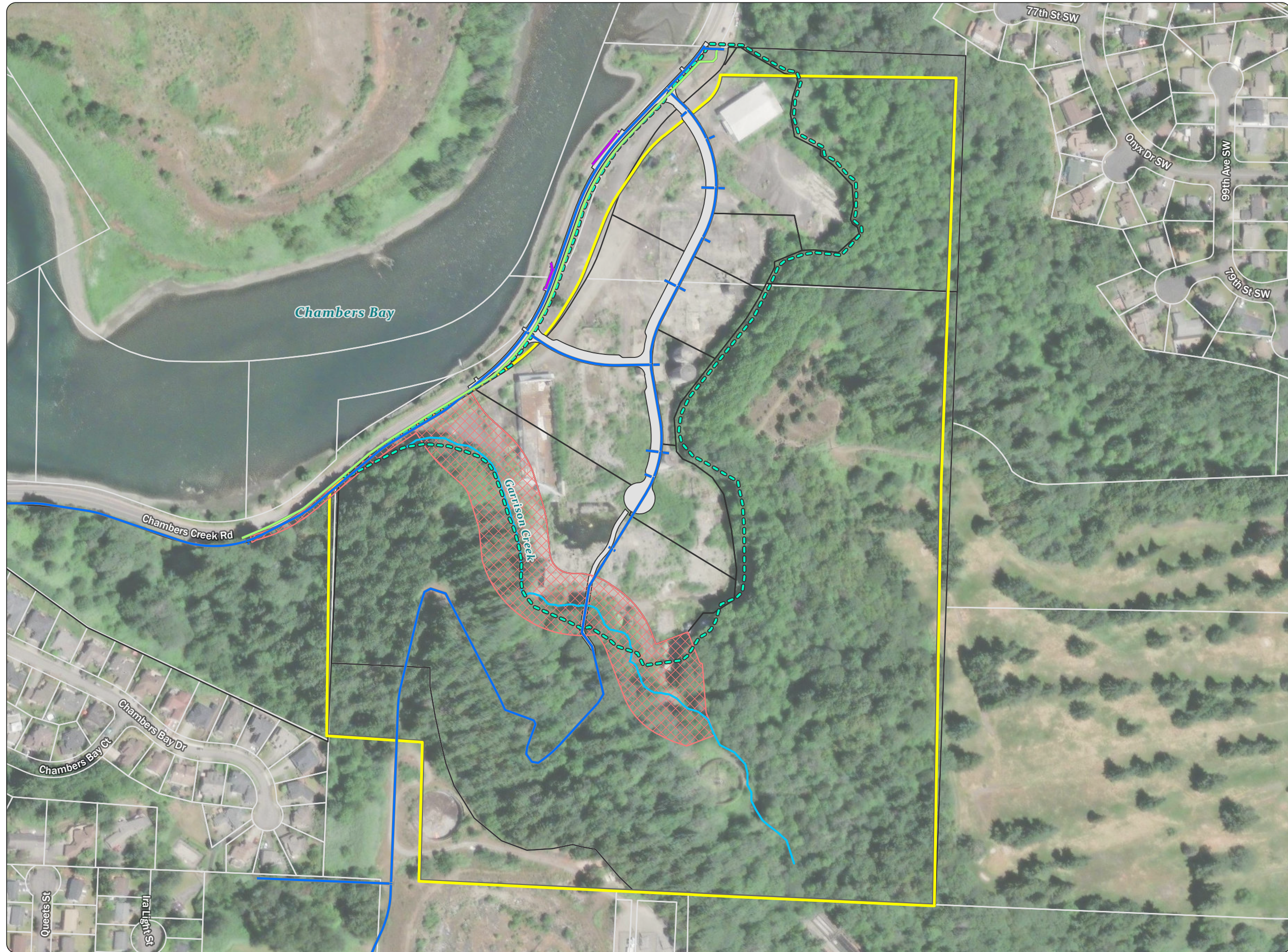
#### Data Sources

Aerial photograph obtained from Esri; parcel data obtained from Pierce County Assessor.

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Path: C:\Workspace\1882\_01\09\Pro\1882\_01\_009\_019\_Soil\_Management.aprx [Fig 3-1 Proposed Redevelopment Plan S.M.P.]  
Print Date: 4/2/2024  
Reviewed By: Hansen  
Produced By: joberts  
Project: 1882\_01\_009



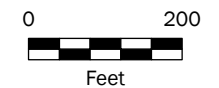
### Figure 3-1 Proposed Redevelopment

**DRAFT**

Soil Management Plan  
Abitibi Consolidated Sales Corp  
Steilacoom, WA

#### Legend

-  Sanitary Sewer Pipe
-  Stormwater Pipe
-  Water Pipe
-  Easement
-  Mill Area Boundary
-  Stream (approximate)
-  Road
-  Parcel Subdivision
-  Property Boundary (2006)
-  Parcel (2024)

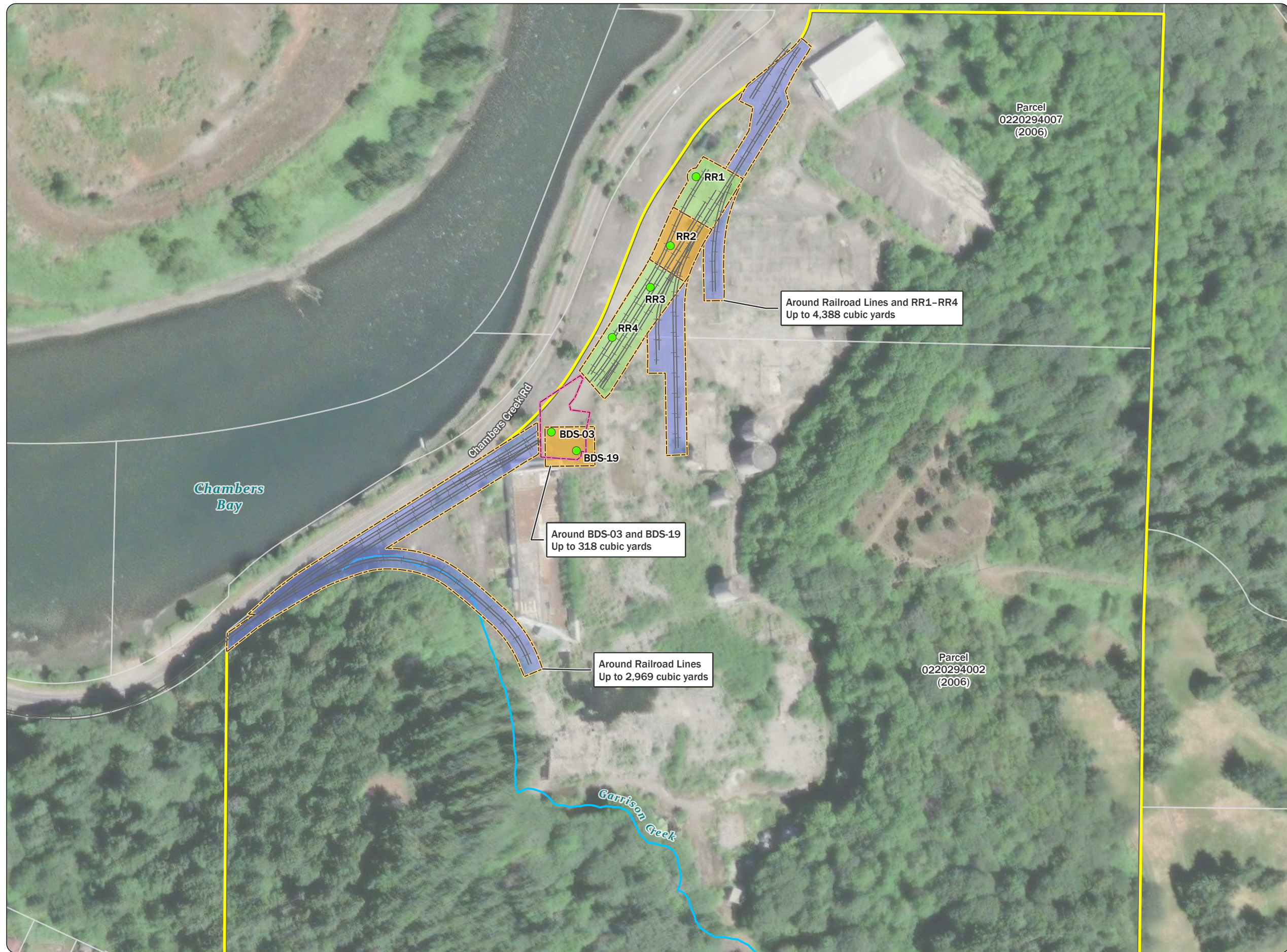


**Data Source**  
Aerial photograph obtained from Esri; parcel data obtained from Pierce County Assessor.

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Path: C:\Workspaces\1882\_01\09 Pro\MI 882\_01\_009\_013\_Soil\_Management.aprx\Fig 4-1 In-Place Contamination  
 Print Date: 4/22/2024  
 Reviewed By: Jonsten  
 Produced By: Joberts  
 Project: M1882\_01\_009



## Figure 4-1 In-Place Contamination

Soil Management Plan  
 Abitibi Consolidated Sales Corp  
 Steilacoom, WA

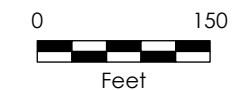
### Legend

- Previous Soil Sample above PAH CUL
- 2006 Interim Removal Action Excavation Area
- Site Boundary
- Planned Excavation Extent (approximate)**
  - Known Contamination
  - No Contamination
  - Unknown Contamination
- ~ Stream (approximate)
- + Railroad Track
- Parcel (2006)
- Property Boundary (2006)

### Notes

All excavation volumes are approximate. TPH contamination around BDS-03 was encountered at 4.5 feet bgs. PAH contamination around BDS-19 was encountered at 4 feet bgs. It is estimated that excavation to 5.5 feet bgs will address the residual contamination. Clean overburden will be replaced as fill material. Parcels from 2006 are shown on this figure, consistent with the parcels reflected in the environmental covenant recorded for the Site in 2010. When the environmental covenant was recorded for the Site in 2010, PAHs exceeded their respective CULs at location RR2. However, CULs were revised in January 2023 and PAHs at location RR2 no longer exceed CULs.

bgs = below ground surface.  
 CUL = cleanup level.  
 Ecology = Washington State Department of Ecology.  
 PAH = polycyclic aromatic hydrocarbon.  
 Site = Abitibi Consolidated Sales Corp. site.  
 TPH = total petroleum hydrocarbon.



### Data Sources

Aerial photograph obtained from Esri; parcel data obtained from Pierce County Assessor; RR1, RR2, RR3, and RR4 locations obtained from CH2M Hill 2005 Phase II Environmental Site Assessment; BDS-03 and BDS-19 locations obtained from CH2M Hill 2007 Final Remedial Investigation/ Feasibility Study Report.



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# Tables

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**Table 2-1**  
**Dioxins/Furans ISM Soil Analytical Results**  
**Former Abitibi Property, Steilacoom, Washington**  
**HDG, LP**

Area of Interest:	MTCA Method B <sup>(1)</sup>		Washington State Natural Background <sup>(2)</sup>	AOI-001			AOI-002
Location:				AOI-001-DU1			AOI-002-DU1
Sample Name:				AOI-001-ISM	AOI-001-ISM-DUP	AOI-001-ISM-TRIP	AOI-002-ISM
Sample Date:				08/25/2022	08/25/2022	08/25/2022	08/23/2022
Sample Depth (inches bgs):	Cancer	Noncancer	Upland Soils	0-2	0-2	0-2	0-2
Sample Type:				ISM-Primary	ISM-Duplicate	ISM-Triplicate	ISM-Primary
<b>Total Organic Carbon (mg/kg)</b>							
Total organic carbon	NV	NV	NV	56,000	61,000	50,000	35,000
<b>Dioxins and Furans (pg/g)</b>							
1,2,3,4,6,7,8-HpCDD	NV	NV	NV	175	122	121	33.2
1,2,3,4,6,7,8-HpCDF	NV	NV	NV	34.1 J	14.4 J	13.2 J	6.58
1,2,3,4,7,8,9-HpCDF	NV	NV	NV	2.61 J	0.956 J	1.06 J	0.522 J
1,2,3,4,7,8-HxCDD	NV	NV	NV	2.94 J	2.25 J	2.52 J	2.03 J
1,2,3,4,7,8-HxCDF	NV	NV	NV	7.14 J	2.64 J	2.59 J	1.53 J
1,2,3,6,7,8-HxCDD	NV	NV	NV	11.0	8.11	8.73	3.21 J
1,2,3,6,7,8-HxCDF	NV	NV	NV	2.70 J	1.26 J	1.30 J	1.04 J
1,2,3,7,8,9-HxCDD	NV	NV	NV	6.28	4.93	5.25	2.61 J
1,2,3,7,8,9-HxCDF	NV	NV	NV	2.87 J	0.734 J	0.697 J	0.466 J
1,2,3,7,8-PeCDD	NV	NV	NV	2.44 J	2.05 J	2.58 J	2.57 J
1,2,3,7,8-PeCDF	NV	NV	NV	4.56 J	3.90 J	3.86 J	2.18 J
2,3,4,6,7,8-HxCDF	NV	NV	NV	3.13 J	1.44 J	1.39 J	0.987 J
2,3,4,7,8-PeCDF	NV	NV	NV	3.84 J	2.04 J	2.02 J	1.80 J
2,3,7,8-TCDD	13	93	5.2	1.36	1.06	1.39	1.09
2,3,7,8-TCDF	NV	NV	NV	6.17	5.46	5.30	2.86
OCDD	NV	NV	NV	1,400	1,100	1,000	196
OCDF	NV	NV	NV	42.9	30.6	28.7	14.6
Total HpCDDs	NV	NV	NV	329	235	233	61.5
Total HpCDFs	NV	NV	NV	104 J	42.0 JK	38.5 J	17.7 JK
Total HxCDDs	160	NV	NV	113 J	89.7 J	98.8 J	75.7 J
Total HxCDFs	NV	NV	NV	85.3 JK	27.9 JK	26.8 JK	14.2 JK
Total PeCDDs	NV	NV	NV	83.7 J	73.9 J	83.5 J	105 J
Total PeCDFs	NV	NV	NV	44.7 JK	29.4 JK	27.6 JK	26.2 JK
Total TCDDs	NV	NV	NV	114 JK	101 JK	112 JK	153 JK
Total TCDFs	NV	NV	NV	54.2 JK	48.2 JK	52.6 JK	56.6 JK
Dioxin/Furan TEQ (ND=0.5) <sup>(a)(3)</sup>	13	93	5.2	11.9 J	8.23 J	9.13 J	6.2 J
Dioxin/Furan TEQ (ND=0) <sup>(b)(3)</sup>	13	93	5.2	11.9 J	8.23 J	9.13 J	6.2 J

**Notes**

Natural background values are shown for reference only and are not shaded for exceedances.

Detected results were compared with screening criteria. There were no exceedances.

bgs = below ground surface.

ISM = incremental sampling methodology.

J = result is estimated.

JK = result is estimated and an estimated maximum potential concentration.

MTCA = Model Toxics Control Act.

ND = non-detect.

NV = no value.

mg/kg = milligrams per kilogram.

pg/g = picograms per gram.

TEF = toxicity equivalence factor.

TEQ = toxicity equivalence.

<sup>(a)</sup>Dioxin/furan TEQ calculated as the sum of each detected congener concentration multiplied by the corresponding mammalian TEF value. Non-detect values are multiplied by one-half. There are no non-detect results.

<sup>(b)</sup>Dioxin/furan TEQ calculated as the sum of each detected congener concentration multiplied by the corresponding mammalian TEF value. Non-detect values are multiplied by zero. There are no non-detect results.

**References**

<sup>(1)</sup>Ecology. 2022. *Cleanup Levels and Risk Calculation (CLARC) table*. Washington State Department of Ecology, Toxics Cleanup Program. July errata.

<sup>(2)</sup>Ecology. 2010. *Natural Background for Dioxins/Furans in WA Soil*. Washington State Department of Ecology, Toxics Cleanup Program. August 9.

<sup>(3)</sup>Van den Berg et al. 2006. "The 2005 World Health Organization Reevaluation of Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-Like Compounds." *Toxicological Sciences* 93(2): 223–241.

**Table 2-2**  
**Dioxins/Furans Discrete Soil Analytical Results**  
**Former Abitibi Property, Steilacoom, Washington**  
**HDG, LP**

Area of Interest:	MTCA Method B <sup>(1)</sup>		Washington State Natural Background <sup>(2)</sup>	AOI-001			AOI-002		
				AOI-001-1	AOI-001-2	AOI-001-3	AOI-002-1	AOI-002-2	AOI-002-3
Location:				AOI-001-SS-1-0-2	AOI-001-SS-2-0-2	AOI-001-SS-3-0-2	AOI-002-SS-1-0-2	AOI-002-SS-2-0-2	AOI-002-SS-3-0-2
Sample Name:									
Sample Date:				08/25/2022	08/25/2022	08/25/2022	08/24/2022	08/24/2022	08/24/2022
Sample Depth (inches bgs):	Cancer	Noncancer	Upland Soils	0-2	0-2	0-2	0-2	0-2	0-2
Sample Type:				N	N	N	N	N	N
<b>Total Organic Carbon (mg/kg)</b>									
Total organic carbon	NV	NV	NV	87,000	83,000	21,000	19,000	70,000	61,000
<b>Dioxins and Furans (pg/g)</b>									
1,2,3,4,6,7,8-HpCDD	NV	NV	NV	317	299	56.3	5.07	21.3	50.8
1,2,3,4,6,7,8-HpCDF	NV	NV	NV	44.2	40.6	6.34	0.850 U	3.31 J	7.37
1,2,3,4,7,8,9-HpCDF	NV	NV	NV	2.56 J	2.41 J	0.611 J	0.122 J	0.369 J	0.753 J
1,2,3,4,7,8-HxCDD	NV	NV	NV	7.80	8.52	4.70	0.447 UJK	2.78 J	6.19
1,2,3,4,7,8-HxCDF	NV	NV	NV	6.48	10.8	1.60 J	0.420 U	1.26 U	3.42 J
1,2,3,6,7,8-HxCDD	NV	NV	NV	24.8	27.6	6.00	0.575 J	3.24 J	7.71
1,2,3,6,7,8-HxCDF	NV	NV	NV	3.07 J	3.94 J	1.43 J	0.235 U	0.887 J	3.08 J
1,2,3,7,8,9-HxCDD	NV	NV	NV	13.6	14.7	5.34	0.482 UJK	2.94 J	6.92
1,2,3,7,8,9-HxCDF	NV	NV	NV	1.36 J	1.43 J	0.507 J	0.108 U	0.323 J	0.847 J
1,2,3,7,8-PeCDD	NV	NV	NV	4.57 J	7.90 UK	4.97	0.479 UJK	3.20 J	7.71
1,2,3,7,8-PeCDF	NV	NV	NV	12.2	22.9	2.68 J	0.558 U	2.23 J	7.42
2,3,4,6,7,8-HxCDF	NV	NV	NV	3.75 J	3.90 J	1.51 J	0.233 J	1.00 J	3.03 J
2,3,4,7,8-PeCDF	NV	NV	NV	4.44 J	5.35	2.97 J	0.423 UJK	1.98 J	7.68
2,3,7,8-TCDD	13	93	5.2	1.51	1.50	1.34	0.222 U	0.907 J	2.51
2,3,7,8-TCDF	NV	NV	NV	9.39	10.4	4.28	0.870 J	3.83	11.00
OCDD	NV	NV	NV	2,620	1,910	325	21.9	69.3	166
OCDF	NV	NV	NV	85.4	58.0	8.87 J	1.70 J	4.02 J	7.91 J
Total HpCDDs	NV	NV	NV	573 J	523 J	110	9.20 J	39.8	93.6
Total HpCDFs	NV	NV	NV	124 J	107 J	15.0 J	1.78 U	7.37 J	15.7 J
Total HxCDDs	160	NV	NV	226 J	267 J	154 J	16.3 JK	96.8 J	246 J
Total HxCDFs	NV	NV	NV	76.0 JK	84.4 JK	18.0 JK	2.30 U	11.0 JK	32.4 JK
Total PeCDDs	NV	NV	NV	117 J	136 UJK	249 J	21.3 UJK	184 J	388 J
Total PeCDFs	NV	NV	NV	83.0 JK	144 JK	38.3 J	5.45 JK	27.3 JK	101 JK
Total TCDDs	NV	NV	NV	228 JK	171 JK	351 JK	31.2 J	307 JK	606 J
Total TCDFs	NV	NV	NV	146 JK	148 JK	92.8 JK	12.1 JK	74.1 JK	265 JK
Dioxin/Furan TEQ (ND=0.5) <sup>(a)(3)</sup>	13	93	5.2	19.3 J	19.9 J	10.6 J	0.738 J	6.60 J	17.6 J
Dioxin/Furan TEQ (ND=0) <sup>(b)(3)</sup>	13	93	5.2	19.3 J	15.9 J	10.6 J	0.227 J	6.54 J	17.6 J

**Notes**

Natural background values are shown for reference and are not shaded for exceedances.

Shading (color key below) indicates values that exceed screening criteria. Non-detects (U, UK, UJK) were not compared to screening criteria.

**MTCA Method B, cancer**

bgs = below ground surface.

J = result is estimated.

JK = result is estimated and an estimated maximum potential concentration.

mg/kg = milligrams per kilogram.

MTCA = Model Toxics Control Act.

N = normal environmental sample.

ND = non-detect.

NV = no value.

pg/g = picograms per gram.

TEF = toxicity equivalence factor.

TEQ = toxicity equivalence.

U = result is non-detect at the estimated detection limit.

UK = result is non-detect and an estimated maximum potential concentration.

UJK = result is non-detect, an estimated value, and an estimated maximum potential concentration..

<sup>(a)</sup>Dioxin/furan TEQ calculated as the sum of each detected congener concentration multiplied by the corresponding mammalian TEF value. Non-detect values are multiplied by one-half.

<sup>(b)</sup>Dioxin/furan TEQ calculated as the sum of each detected congener concentration multiplied by the corresponding mammalian TEF value. Non-detect values are multiplied by zero.

**References**

<sup>(1)</sup>Ecology. 2022. *Cleanup Levels and Risk Calculation (CLARC) table*. Washington State Department of Ecology, Toxics Cleanup Program. July errata.

<sup>(2)</sup>Ecology. 2010. *Natural Background for Dioxins/Furans in WA Soil*. Washington State Department of Ecology, Toxics Cleanup Program. August 9.

<sup>(3)</sup>Van den Berg et al. 2006. "The 2005 World Health Organization Reevaluation of Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-Like Compounds." *Toxicological Sciences* 93(2): 223–241.

**Table 2-3**  
**Historical TSP Metals Soil Results**  
**Former Abitibi Property, Steilacoom, Washington**  
**HDG, LP**



Analyte:					Total Metals (mg/kg)	
					Arsenic	Lead
TSP Maximum Value: <sup>(1)</sup>					40	500
Location	Sample Name	Sample Date	Sample Type	Sample Depth (ft bgs)		
RR1	RR1	03/03/2005	N	Subsurface	9	10
RR2	RR2	03/03/2005	N	Subsurface	5 U	3
RR3	RR3	03/03/2005	N	Subsurface	5 U	6
RR4	RR4	03/03/2005	N	Subsurface	6 U	15
SP1	SP1	03/03/2005	N	Surface	8	13
SP2	SP2	03/03/2005	N	Surface	5 U	5
SP3	SP3	03/03/2005	N	Surface	5 U	5
	SP3DUP	03/03/2005	FD	Surface	5 U	5
BDS-04	ACSI-BDS-04	04/27/2006	N	10	10	--
BDS-13	ACSI-BDS-13	05/02/2006	N	10	9	--
BDS-14	ACSI-BDS-14	05/02/2006	N	10	10	--
BDS-15	ACSI-BDS-15	05/03/2006	N	10	6	--
BDS-16	ACSI-BDS-16	05/02/2006	N	10	6 U	--
BDS-17	ACSI-BDS-17	05/05/2006	N	9	6 U	--
DP13 <sup>(a)</sup>	DP13-S	05/25/2005	N	2.5	5 U	--
DP16 <sup>(a)</sup>	DP16-S	05/26/2005	N	7.5	6 U	--
SWS-03 <sup>(a)</sup>	ACSI-SWS-03	04/28/2006	N	2-4	6 U	--
SWS-08 <sup>(a)</sup>	ACSI-SWS-08	05/03/2006	N	2-4	6	--
SWS-09 <sup>(a)</sup>	ACSI-SWS-09	05/03/2006	N	2-4	6	--
SWS-10 <sup>(a)</sup>	ACSI-SWS-10	05/03/2006	N	2-4	5 U	--
SWS-11 <sup>(a)</sup>	ACSI-SWS-11	05/03/2006	N	7	5 U	--
SWS-12 <sup>(a)</sup>	ACSI-SWS-12	05/03/2006	N	2-4	6 U	--
SWS-13 <sup>(a)</sup>	ACSI-SWS-13	05/04/2006	N	7.5	7	--
SWS-14 <sup>(a)</sup>	ACSI-SWS-14	05/05/2006	N	4	8	--
	ACSI-SWS-142	05/05/2006	FD	4	8	--
SWS-15 <sup>(a)</sup>	ACSI-SWS-15	05/05/2006	N	4	6	--
VS <sup>(a)</sup>	ACSI-VS	04/27/2006	N	7	5 U	--
WCS-01	ACSI-WCS-01-1-4	02/22/2006	N	1-4	6	7
WCS-03	ACSI-WCS-03-1-4.5	02/23/2006	N	1-4.5	6	17
WCS-8	ACSI-WCS-8-1-4.5	02/23/2006	N	1-4.5	6	5
WCS-9	ACSI-WCS-9-1-3	02/22/2006	N	1-3	6	11

**Table 2-3**  
**Historical TSP Metals Soil Results**  
**Former Abitibi Property, Steilacoom, Washington**  
**HDG, LP**



**Notes**

Detected discrete results are screened to TSP maximum values. There were no exceedances.

-- = no historical data available.

FD = field duplicate sample.

ft bgs = feet below ground surface. Qualitative depths are provided where specific depths are not available.

mg/kg = milligrams per kilogram.

N = normal environmental sample.

TSP = Tacoma Smelter Plume.

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

<sup>(a)</sup>Sample location was excavated.

**Reference**

<sup>(1)</sup>Ecology. 2019. *Tacoma Smelter Plume Model Remedies Guidance, , Sampling and Cleanup of Arsenic and Lead Contaminated Soils.* . Publication No. 19-09-101. Washington State Department of Ecology, Toxics Cleanup Program: Lacey, WA. July.

# Appendix A

---

## Aerial Photographs



MAUL  
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# Photographs

**Project Name:** Chambers Bay Environmental Conditions Assessment  
**Project Number:** M1882.01.009  
**Location:** 4302 Chambers Creek Road, Steilacoom, WA

## Photo No. 1.

### Description

Date: 1941

Source: United States Geological Survey (USGS)



## Photo No. 2.

### Description

Date: 1945

Source: Pierce County





MAUL  
FOSTER  
ALONGI

# Photographs

**Project Name:** Chambers Bay Environmental Conditions Assessment  
**Project Number:** M1882.01.009  
**Location:** 4302 Chambers Creek Road, Steilacoom, WA

## Photo No. 3.

### Description

Date: 1961

Source: Washington  
State Department of  
Natural Resources  
(DNR)

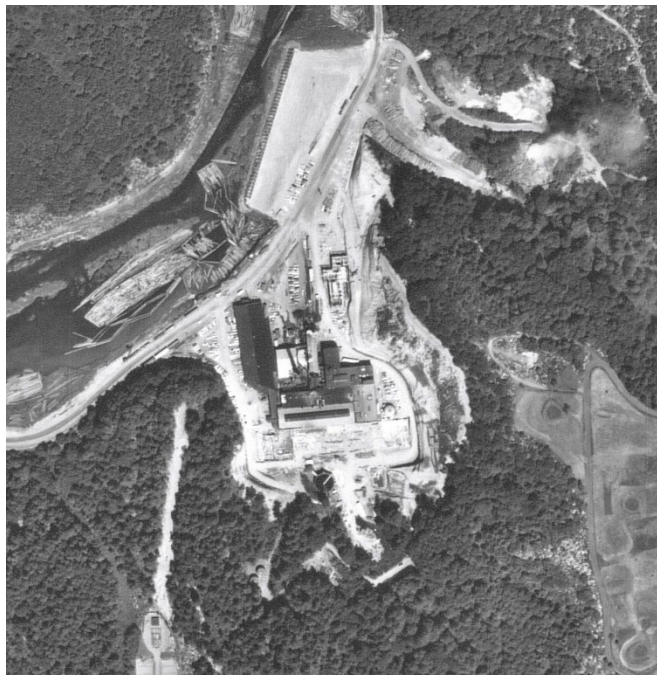


## Photo No. 4.

### Description

Date: 1965

Source: DNR





MAUL  
FOSTER  
ALONGI

# Photographs

**Project Name:** Chambers Bay Environmental Conditions Assessment  
**Project Number:** M1882.01.009  
**Location:** 4302 Chambers Creek Road, Steilacoom, WA

## Photo No. 5.

### Description

Date: 1970

Source: Pierce County



## Photo No. 6.

### Description

Date: 1974

Source: USGS





# Photographs

**Project Name:** Chambers Bay Environmental Conditions Assessment  
**Project Number:** M1882.01.009  
**Location:** 4302 Chambers Creek Road, Steilacoom, WA

**Photo No. 7.**

**Description**

Date: 1985

Source: Pierce County

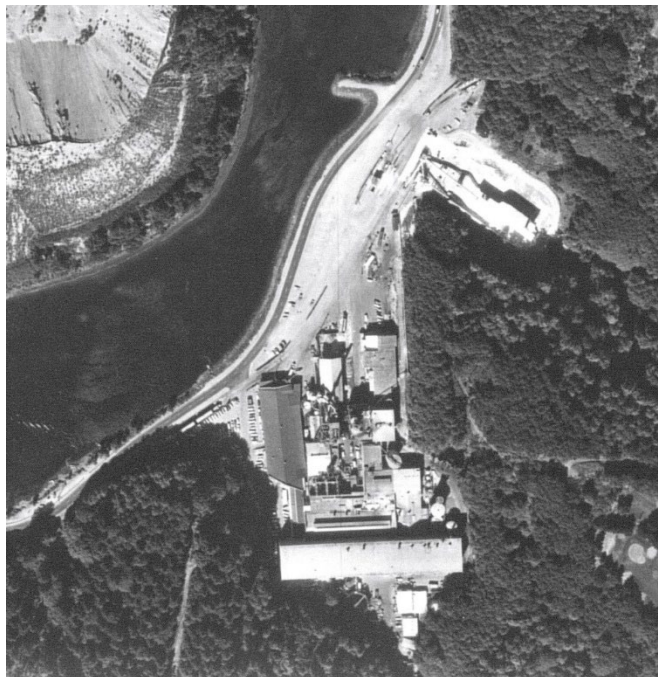


**Photo No. 8.**

**Description**

Date: 1989

Source: DNR



# Photographs

**Project Name:** Chambers Bay Environmental Conditions Assessment  
**Project Number:** M1882.01.009  
**Location:** 4302 Chambers Creek Road, Steilacoom, WA

**Photo No. 9.**

**Description**

Date: 1990

Source: Google Earth



**Photo No. 10.**

**Description**

Date: 1998

Source: Pierce County



# Photographs

**Project Name:** Chambers Bay Environmental Conditions Assessment  
**Project Number:** M1882.01.009  
**Location:** 4302 Chambers Creek Road, Steilacoom, WA

**Photo No. 11.**

**Description**

Date: 2001

Source: Pierce County



**Photo No. 12.**

**Description**

Date: 2002

Source: Google Earth



# Photographs

**Project Name:** Chambers Bay Environmental Conditions Assessment  
**Project Number:** M1882.01.009  
**Location:** 4302 Chambers Creek Road, Steilacoom, WA

**Photo No. 13.**

**Description**

Date: 2007

Source: Google Earth



**Photo No. 14.**

**Description**

Date: 2012

Source: Google Earth



# Photographs

**Project Name:** Chambers Bay Environmental Conditions Assessment  
**Project Number:** M1882.01.009  
**Location:** 4302 Chambers Creek Road, Steilacoom, WA

**Photo No. 15.**

**Description**

Date: 2018

Source: Google Earth



**Photo No. 16.**

**Description**

Date: 2023

Source: Google Earth



# Appendix B

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## Contaminated Media Management Plan



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# Contaminated Media Management Plan

---

Abitibi Consolidated Sales Corp. Site  
4302 Chambers Creek Road, Steilacoom,  
Washington  
Ecology Facility Site ID No. 57759125

*Prepared for:*

**HDG, LP**

May 23, 2024

Project No. M1882.01.009

*Prepared by:*

Maul Foster & Alongi, Inc.

2815 2nd Avenue, Suite 540, Seattle, WA 98121

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**M A U L  
F O S T E R  
A L O N G I**

# Contaminated Media Management Plan

**Abitibi Consolidated Sales Corp. Site**  
**4302 Chambers Creek Road, Steilacoom, Washington**  
**Ecology Facility Site ID No. 57759125**

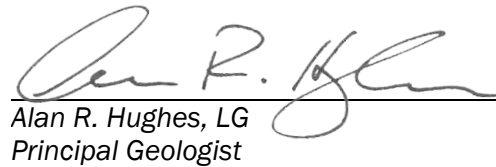
*The material and data in this report were prepared under the supervision and direction of the undersigned.*

*Maul Foster & Alongi, Inc.*



---

Justin Hansen  
Project Environmental Scientist



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Alan R. Hughes, LG  
Principal Geologist

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- 3-4 Guidelines for Reuse of Petroleum-Contaminated Soil (Partial Excerpt)

## Following the Report

- 3-2 Containers, Preservation, and Holding Times
- 3-3 Analytical Methods and Performance Criteria

# Abbreviations

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CMMP	contaminated media management plan
COC	contaminant of concern
CUL	cleanup level
dioxin/furan	polychlorinated dibenzo-p-dioxin and dibenzofuran
EPA	U.S. Environmental Protection Agency
HASP	health and safety plan
HAZWOPER	hazardous waste operations and emergency response
MFA	Maul Foster & Alongi, Inc.
mg/kg	milligrams per kilogram
Mill Area	former mill operational area
MTCA	Model Toxics Control Act
NWTPH	Northwest Total Petroleum Hydrocarbon
PAH	polycyclic aromatic hydrocarbon
the Property	4302 Chambers Creek Road, Steilacoom, Washington
the Site	Abitibi Consolidated Sales Corp. site
SMP	soil management plan
TPH	total petroleum hydrocarbons
WAC	Washington Administrative Code

# 1 Introduction

---

Maul Foster & Alongi, Inc. (MFA), has prepared this contaminated media management plan (CMMP) on behalf of HDG, LP, for the Abitibi Consolidated Sales Corp. site (the Site), located at 4302 Chambers Creek Road in Steilacoom, Washington (the Property) (see Figure 1-1). The Site encompasses the known and suspected areas impacted by the release of hazardous substances associated with former mill operations, consistent with the definition provided by the Washington State Department of Ecology in Agreed Order No. DE 3154 (Ecology 2006). This CMMP supports the activities described in the soil management plan (SMP) and will support cleanup of known or suspected contamination at the Site and any unexpected contamination that may be discovered during development activities on the former mill operational area (Mill Area). This CMMP has been prepared in accordance with the institutional controls requirements of Washington Administrative Code (WAC) 173-340-440 and related provisions of the Model Toxics Control Act (MTCA).

## 1.1 Purpose

The purpose of the CMMP is to guide management of contaminated media that may be encountered during demolition and removal of the railroad lines and soil excavation activities. Polycyclic aromatic hydrocarbon (PAH)-impacted soils are present beneath the railroad lines (at sample locations RR1 and RR2) and suspected in unassessed areas beneath the railroad lines, and are subject to an environmental covenant on the Site (Ecology 2010). PAH- and total petroleum hydrocarbon (TPH)-impacted soils were left in place near the Shipping Warehouse during previous cleanup activities. Areas with known or suspected residual contamination are shown on Figure 4-1 of the SMP. Further, soil potentially impacted by polychlorinated dibenzo-p-dioxins and dibenzofurans (dioxins/furans) in the steep slope areas where underground installation of a water line is planned needs to be managed (see Section 3 and Figure 3-1 of the SMP). Previous incremental sampling methodology sampling demonstrated that dioxin/furan concentrations are below MTCA Method B cleanup levels (CULs). Excess soils excavated from the steep slope areas will be evaluated for dioxins/furans to ensure appropriate reuse (i.e., backfill in the Mill Area) or disposal protocols are followed.

This CMMP identifies protocols, media handling procedures, waste characterization, waste disposal, erosion, dust control, and stormwater protection measures. The guidelines and procedures in this CMMP will be implemented if contaminated media is encountered prior to or during Mill Area redevelopment.

## 1.2 Property Description

The Property borders the northwest boundary of the City of Steilacoom, Washington, covers approximately 57 acres, and comprises two parcels (Pierce County Parcel Nos. 0220294007 and 0220294025). A former pulp and paper mill operated for decades on the central portion of the Property (i.e., the Mill Area), encompassing portions of the two parcels. Additional Mill Area details are provided in Section 2.2 of the SMP.

The remedial investigation and feasibility study for the Site (CH2M Hill 2007) identified arsenic; PAHs; and gasoline-, diesel-, and heavy-oil-range TPH as the soil contaminants of concern (COCs) for the Site. There are no known sources of arsenic associated with Mill Area operations; however, the Property falls in the Tacoma Smelter Plume boundary. Previous investigators sampled for arsenic and identified concentrations below the MTCA Method A CUL of 20 milligrams per kilogram (mg/kg) in soil from the Mill Area and forested area surrounding the Mill Area. Because arsenic does not exceed the MTCA Method A CUL in any soils, it is not evaluated further as a Site COC in this CMMP.

Therefore, the Site COCs for the SMP and CMMP include PAHs and gasoline-, diesel-, and heavy-oil-range TPH. Dioxins/furans will be evaluated during excavation of the water utility trench south of the Mill Area but are not considered a Site COC based on previous investigation (MFA 2023).

### 1.3 Scope of Work

The proposed SMP scope of work includes excavation of known and suspected PAH-impacted soils beneath the railroad lines, PAH- and TPH-impacted soils near the Shipping Warehouse, and soil potentially impacted by dioxins/furans in the steep sloped forested area where an underground water utility is planned. Following excavation, fill material (either imported clean fill or excavated material deemed suitable for beneficial reuse) will be placed concurrent with grading activities for Mill Area redevelopment. Beneficial reuse criteria are defined in Section 2.6.3.

## 2 Media Management Procedures

---

### 2.1 Excavation and Handling

PAH-impacted soils beneath the railroad lines and PAH- and TPH-impacted soils near the loading dock of the Shipping Warehouse are present at the Site. Dioxin/furan-impacted soil is potentially present in the steep slope areas where underground installation of a water utility line is planned. Any soil exhibiting visual or olfactory evidence of contamination that is encountered will be treated as potentially contaminated soil.

Contractors are required to comply with the following procedures:

- Before beginning excavation, the owner and/or contractor must establish an exclusion zone around the proposed work area to limit potential exposure to and spread of contamination in the work area.
- Excavation equipment must be maintained and in good working order. The excavation contractor will immediately clean up any contaminated soil resulting from spilled hydraulic oils or other hazardous materials that leak from equipment.
- Vehicles wheels will be cleared using manual methods (brushes, brooms, or equivalent) and trucks transporting soil will cover loads to prevent tracking contaminated soil beyond the work area.
- The owner/contractor will document the locations of all areas where potentially impacted soil is disturbed and soil management procedures were implemented.

- Silt fence and inlet protection will be installed and maintained downgradient of earthwork activities. All erosion-control measures will be installed before excavation activities begin and will be maintained throughout the construction effort until the Site is stabilized.

## 2.2 Stockpiling

To minimize soil volume management, the contractor shall place excavated soil onto impervious sheeting or pavement. Excavated soil may be temporarily stockpiled on heavy plastic sheeting or in a temporary storage container or bin. If stockpiled on plastic sheeting, temporary stockpiles must be constructed with a raised containment berm made of sandbags, straw wattle, cover soil, or similar material. Stockpiles should be stabilized under the following conditions:

- High winds that result in visible dust
- Significant precipitation events
- When the stockpile will remain inactive for one week during the dry season (May 1 to September 30) and two days during the wet weather season (October 1 to April 30)

Stockpile covers will be secured by rope and/or sandbags. Stockpile covers will be inspected daily and maintained to prevent exposure of soil to precipitation.

## 2.3 Import of Clean Soil

Clean soil will be imported for excavation backfilling and grading at the Site. Imported soil will be characterized prior to placement to ensure it is not contaminated with TPH or PAHs.

## 2.4 Encountering Potential Impacts in Other Areas

If unknown potential sources of contamination (e.g., underground storage tanks) or impacted material (e.g., free product, visual and/or olfactory indications of contamination such as staining or odors) are encountered, construction activities will stop. The construction contractor will immediately notify MFA and HDG, LP, regarding the nature of suspected contamination and identify next steps. Potential next steps will likely include material stockpiling (see Section 2.2) and segregation pending further analysis. Characterization sampling (see Section 3.5) will be performed to identify whether the material is impacted and may include additional analyses to assess the nature of impacts and source of the release. Assessment and reporting protocols will be followed depending on the nature of source identification and associated releases.

## 2.5 Characterization

Compliance sampling, including protection, performance, and confirmation sampling, will be performed as described in Section 6 of the SMP. Sampling will be performed consistent with WAC 173-340-410, which describes the purpose of compliance sampling as it pertains to achieving cleanup standards.

## 2.5.1 Protection Sampling

Protection monitoring promotes the protection of human health and the environment during execution of the remedial action. A project-specific health and safety plan (HASP) will be developed to ensure worker safety is maintained during construction activities. During excavation, personnel will field screen for volatile compounds with a handheld photoionization detector to identify potentially impacted soil and protect workers from excess exposure to volatile substances. Field personnel will record field screening observations in a field notebook.

## 2.5.2 Performance Sampling

Performance monitoring ensures that remedial actions meet accepted cleanup standards. Initial performance samples will be collected from beneath the railroad lines and near the Shipping Warehouse for the purposes of characterizing the contamination and creating a waste profile. Further, performance sampling will be carried out whereby excavated and stockpiled soil will be sampled to confirm that contamination was removed. The number of stockpile samples collected depends on the total amount of material excavated. While WAC 173-340-410 does not define a required number of samples, Washington State Department of Ecology's *Guidance for Remediation of Petroleum Contaminated Sites* (Ecology 2016) offers direction for stockpile sampling at petroleum-impacted properties. Table 6.9 (Ecology 2016, reproduced below) provides the number of samples needed to adequately characterize stockpiled soil.

**Table 3-1. Typical Number of Samples Needed to Adequately Characterize Stockpiled Soil**

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

**Note**

Table adapted from Table 6.9 of Ecology 2016.

The soil in each stockpile is expected to be homogenized through the excavation and placement into piles. Composite sampling combined with homogenization through handling should result in samples that are representative of each stockpile. Therefore, based on stockpile size, the appropriate number of performance samples will be collected according to the guidance (Ecology 2016) and Table 3-1, and then composited into a single sample for laboratory analysis.

Performance samples from the excavated and stockpiled soil from beneath the railroad lines and near the Shipping Warehouse will be analyzed for the Site soil COCs:

- PAHs by U.S. Environmental Protection Agency (EPA) Method 8270E or 8270E-SIM
- Gasoline-range TPH by Northwest Total Petroleum Hydrocarbons(NWTPH)-Gx Method
- Diesel- and oil-range TPH by NWTPH-Dx Method

Performance samples from the excavated and stockpiled soil from the water utility trench south of the Mill Area will be analyzed for the following:

- Dioxins/furans by EPA Method 1613B

Container requirements, preservation, and holding times are provided in Table 3-2 and preferred analytical methods and performance criteria and provided in Table 3-3.

### 2.5.3 Confirmation Sampling

Confirmation sampling ensures the long-term effectiveness of the implemented action. Following excavation near the Shipping Warehouse, sidewall and bottom confirmation samples will be collected to evaluate whether applicable cleanup standards have been achieved, consistent with the guidance (Ecology 2016). Following excavation beneath the railroad lines, confirmation samples will be collected every 100 linear feet along the excavation path. In both areas, excavation will continue until the applicable cleanup standards are met. If excavation incrementally proceeds, additional samples will be collected to characterize the point at which the cleanup standards are achieved. Confirmation samples will be collected with dedicated single-use equipment or a gloved hand directly into laboratory-supplied jars for analysis.

Confirmation soil samples from beneath the railroad lines and near the Shipping Warehouse will be analyzed for the Site soil COCs:

- PAHs by U.S. Environmental Protection Agency Method 8270E or 8270E-SIM
- Gasoline-range TPH by Northwest Total Petroleum Hydrocarbons-Gx Method
- Diesel- and oil-range TPH by Northwest Total Petroleum Hydrocarbons-Dx Method

Container requirements, preservation, and holding times are provided in Table 3-2 and preferred analytical methods and performance criteria and provided in Table 3-3.

## 2.6 Soil Management Alternatives

### 2.6.1 Backfilling

If stockpile sampling indicates that excavated soil contains concentrations below MTCA CULs, the material may be used as excavation backfill, thereby potentially reducing the volume of clean soil import at the Site.

### 2.6.2 Off-Property Disposal

If off-property disposal is the selected approach for excavated soil with concentrations above MTCA CULs, the material will be disposed off-property at a permitted landfill facility. The following disposal procedures will be implemented:

- The standard waste profiling and acceptance procedures required by the receiving facility will be followed.
- Plastic sheeting will be placed in and around the loading area to contain material that may drop from the excavator bucket during loading.
- Material will be carefully loaded and covered or tarped before leaving the Property.

- Material will be removed from tires using a brush, broom, or similar manual method, before vehicles leave the Property.
- Material will be transported with appropriate documents (e.g., manifests).

### 2.6.3 Soil Farming and Beneficial Reuse

If soil farming is the selected approach for excavated soil with contaminant concentrations above MTCA CULs,<sup>1</sup> the material will be soil farmed for future beneficial reuse during Mill Area redevelopment. Soil farming is a remedial approach to reduce TPH and related constituent concentrations through biodegradation and volatilization. Using this approach, soil is spread in a relatively thin layer across a relatively large area and then tilled to promote aeration, volatilization of lighter petroleum fractions, and aerobic microbial growth. These aerobic microbes can degrade the remaining petroleum constituents. Soil should be tilled at least twice per month to rotate more contaminated soil from the bottom of the aeration area to the top. Because this approach requires aeration and volatilization, soil farming may be less effective during higher precipitation and/or lower temperatures. Based on historical weather data for Steilacoom, soil farming for beneficial reuse will be performed during summer months, which are historically the warmest and driest months of the year.

As an example, assume that 3,000 cubic yards of excavated soil is selected for soil farming. The typically recommended depth for soil farming is 12 to 18 inches. The 3,000 cubic yards of soil require an aeration area with dimensions of approximately 230 feet by 230 feet, which is readily available on the Mill Area. For example, the area near the former Recycle Warehouse on the northeast portion of the Mill Area is unoccupied and receives little shade from the surrounding forested area.

For erosion control, berms will be placed between the aeration area and Chambers Creek Road to prevent the potential migration of contaminated soil to surface waters. The berms will be constructed using clean soil covered with plastic or similar erosion control materials. Further, silt fencing will be installed around the aeration area.

Field personnel will collect soil samples to evaluate the effectiveness of bioremediation at reducing COC concentrations. Soil farming will continue until COC concentrations are reduced such that soils are below MTCA CULs and may be reused at the Site consistent with the acceptable soil reuse categories (i.e., Category 1, 2, and 3) in the *Guidance for Remediation of Petroleum Contaminated Sites* (Ecology 2016). For example, TPH- and PAH-impacted soils may be beneficially reused as commercial fill above the water table or as paving base material during road construction, provided that COC concentrations are within the acceptable ranges provided in Table 12.1 of the guidance (Ecology 2016). An excerpt of this table for relevant site COCs and potentially applicable reuse criteria is reproduced as Table 3-4. Category 1 is not shown as there are no limitations on its reuse.

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<sup>1</sup> Soil farming is not proposed for dioxin/furan-impacted soils. If dioxins/furans are detected at concentrations above MTCA Method B CULs, the material will be profiled for off-property disposal at a permitted landfill facility.

**Table 3-4. Guidelines for Reuse of Petroleum-Contaminated Soil (Partial Excerpt)**

Parameter	Soil Category	
	2 Commercial Fill Above Water Table (mg/kg)	3 Paving Base Material & Road Construction (mg/kg)
Gasoline-range TPH	5 – 30	>30 – 100
Diesel-range TPH	25 – 200	>200 – 500
Heavy-oil-range TPH	100 – 200	>200 – 500
Carcinogenic PAHs	0.05 – 0.1	>0.1 – 2

**Notes**

Table adapted from Table 12.1 of Ecology 2016.  
 mg/kg = milligrams per kilogram.  
 PAH = polycyclic aromatic hydrocarbon.  
 TPH = total petroleum hydrocarbon.

## 2.7 Decontamination

Upon completion of construction activities, the following decontamination procedures must be implemented:

- If trucks are traveling over uncapped areas, soil will be removed from tires with brushes, brooms, or another equivalent method, as needed before vehicles leave unpaved areas of the Site to prevent tracking potentially contaminated soil off-property.
- Wash water generated during equipment decontamination may be treated off site at an approved facility.
- The decontamination area shall be managed so that all wash water is fully controlled or contained.

Personnel decontamination procedures should be defined in a project-specific HASP.

## 2.8 Dust Control

Construction activities that disturb soil require dust control measures. The contractor will apply water or otherwise treated dust-generating surfaces as often as necessary to prevent visible dust accumulation during soil-disturbing activities. The contractor will monitor dust throughout the construction process. If visible dust is observed, a contingency plan to mitigate fugitive dust should be prepared and, if necessary, implemented. Air monitoring with a real-time dust meter may be conducted during soil disturbing activities, if necessary.

Preventive dust control measures may include the following:

- Minimizing soil exposure with temporary ground cover or other temporary stabilization measures.
- Wetting soil with water to minimize dust generation while also mitigating off-site mud traction.

## 2.9 Stormwater

Stormwater should be managed and contained within the ground disturbance area. Erosion control measures and containment methods should be employed to prevent runoff from the Site to other parts of the Mill Area. Construction activities must minimize contact of potentially contaminated soil with stormwater. Prior to construction activities, the contractor should develop a stormwater management and disposal strategy, which will include coverage under a Construction Stormwater General Permit. A site-specific stormwater pollution prevention plan will be developed to define the best management practices to be employed during construction.

## 2.10 Groundwater

Shallow groundwater is encountered between 1 and 6 feet below ground surface at the Mill Area (PanGEO 2022). Assuming excavation activities occur during the dry season (i.e., June to September, when the water table is deeper), it is unlikely that groundwater will be encountered during excavation of shallow soils beneath the railroad lines. However, it is possible groundwater may be encountered during soil excavation near the Shipping Warehouse. If groundwater is encountered during construction activities, any discharge of dewatering water to surface water will also be covered under the Construction Stormwater General Permit and in accordance with local treatment regulations.

# 3 Site Controls

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## 3.1 Worker Health and Safety

Mill Area redevelopment activities that disturb soil are to be conducted according to WAC 173-340-810, the Occupational Safety and Health Act of 1970 (29 U.S. Code Dec. 651 et seq.), the Washington Industrial Safety and Health Act (Chapter 49.17 Revised Code of Washington), and relevant regulations. Before beginning work, the contractor will be required to prepare a HASP that will, at a minimum, set forth the requirements and protections for working in areas containing soil that may be chemically impacted. Further, the HASP shall address the following:

- Current hazardous waste operations and emergency response (HAZWOPER) certification for workers disturbing impacted soil.
- Site background and chemicals of interest.
- Personal protective equipment.
- Personal hygiene and decontamination protocol.
- Medical surveillance.
- Hazard communication and site control.
- Recordkeeping and reporting.

### 3.1.1 Qualified Personnel

The contractor will complete construction work in compliance with the Occupational Safety and Health Act regulations (29 Code of Federal Regulations 1910.120 and 1026.65); workers who may contact potentially contaminated material must be qualified personnel. The qualified personnel must have received the HAZWOPER standard 40-hour training, as well as refresher training in the past year. Managers and supervisors directly overseeing the working crew must have received additional specialized training in hazardous-waste management supervision.

## 3.2 Access Restriction

Fencing should be maintained to restrict public access to areas of the Site where potentially contaminated soil is exposed during construction activities.

# 4 Notification and Reporting

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## 4.1 Notification and Reporting

The contractor will maintain weekly reports of field activities during any active construction that disturbs soil. The Property owner will prepare a project completion report to document the management of impacted soil for each project in which such work is conducted. The report will document management techniques employed, approximate volumes of handled material, placement or disposal information, disposal manifests, and analytical data generated during impacted material management.

## 4.2 Recordkeeping

The contractor will prepare a report documenting soil disturbance activities for each event. The report will include at least the following:

- Location and extent of soil removal. Location coordinates will be recorded by a professional surveyor licensed by the State of Washington.
- Estimated volume of soil excavated.
- Disposition of the excavated soil.
  - If excavated soil is placed on the Mill Area, the location where it is placed will be recorded if the soil is disposed of in an area different from the excavation area.
  - If excavated soil is disposed of off-property, documentation will include soil characterization, waste profile for disposal, manifests or trip tickets, disposal certificates, and agreement with disposal facility.

Each report prepared under this section will be provided to the Property owner.

# References

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- CH2M Hill. 2007. *Final Remedial Investigation/Feasibility Study Report, Abitibi West Tacoma Mill*. Steilacoom, WA. April.
- Ecology. 2006. *Model Agreed Order No. DE 3154*. In the Matter of Remedial Action By: Abitibi Consolidated Sales Corporation. Washington State Department of Ecology. November 29.
- Ecology. 2010. *Environmental Covenant*. Abitibi Consolidated Sales Corporation. Recorded March 29.
- Ecology. 2016. *Guidance for Remediation of Petroleum Contaminated Sites*. Publication No. 10-09-057. Washington State Department of Ecology, Toxics Cleanup Program: Olympia, WA. June.
- MFA. 2023. *Supplemental Metals and Dioxins Characterization Report, Abitibi Consolidated Sales Corp, Ecology Facility Site ID No. 57759125, 4302 Chambers Creek Road, Steilacoom, Washington 98388*. Prepared by Maul Foster & Alongi, Inc.: Seattle, WA. January 26.
- PanGEO. 2022. *Preliminary Geotechnical Report, Cove at Chambers Bay, 4302 Chambers Creek Road, Steilacoom, Washington*. Prepared for HDG, LLC. Prepared by PanGEO Incorporated: Seattle, WA. June 17.

# Limitations

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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.

# Tables

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**Table 3-2**  
**Container Requirements, Preservation, and Holding Times**  
**Former Abitibi Property, Steilacoom, Washington**  
**HDG, LP**

Matrix	Method	Parameter or Parameter Group	Sample Container	Preservation (store at 4°C)	Holding Time
Soil	NWTPH-Gx	Gasoline-range hydrocarbons	EPA 5035 kit <sup>(a)</sup>	Methanol	14 days
	NWTPH-Dx	Diesel-range hydrocarbons	4-oz jar	None	14 days
		Oil-range hydrocarbons			
	EPA 8270E	Polycyclic aromatic hydrocarbons	4-oz jar	None	14 days
EPA 1613B	Dioxins and furans	4-oz jar (protected from light)	None	1 year	

**Notes**  
 Various sample analyses can be combined in same container. Field samplers will consult with laboratory prior to combining sample volumes.  
 °C = degrees Celsius.  
 EPA = U.S. Environmental Protection Agency.  
 mL = milliliter.  
 NWTPH = Northwest Total Petroleum Hydrocarbons  
 oz = ounce.  
<sup>(a)</sup>5035 sample kit includes two prepared 40-mL volatile organic analysis vials with 5 mL of methanol and one 2-oz jar for moisture content determination.

**Table 3-3**  
**Preferred Analytical Methods and Performance Criteria**  
**Former Abitibi Property, Steilacoom, Washington**  
**HDG, LP**



Analyte	Analytical Method	MTCA Method A, Soil, URLU <sup>(1)</sup>	MTCA Method B, Soil <sup>(a)(1)</sup>	MRL	LCS Accuracy (%)	MS/MSD Accuracy (%)	Precision (RPD)	Completeness (%)	
<b>TPH (mg/kg)</b>									
Gasoline-range hydrocarbons	NWTPH-Gx	30 <sup>(b)</sup> /100 <sup>(c)</sup>	NV	5	70-130	NA	20	90	
Diesel-range hydrocarbons	NWTPH-Dx	2,000	NV	50	70-130	70-130	20	90	
Oil-range hydrocarbons		2,000	NV	250	NA	NA	NA	90	
Diesel + Oil <sup>(d)</sup>		2,000	NV	NA	NA	NA	NA	NA	
<b>PAHs (mg/kg)</b>									
1-Methylnaphthalene	EPA 8270E	NV	34	0.01	66-107	10-163	20	90	
2-Methylnaphthalene		NV	320	0.01	67-109	10-192	20	90	
Acenaphthene		NV	4,800	0.01	66-112	36-125	20	90	
Acenaphthylene		NV	NV	0.01	70-130	45-128	20	90	
Anthracene		NV	24,000	0.01	70-130	50-150	20	90	
Benzo(a)anthracene		NV	NV	0.01	70-130	50-150	20	90	
Benzo(a)pyrene		0.19 <sup>(f)</sup>	0.19	0.01	68-120	50-150	20	90	
Benzo(b)fluoranthene		NV	NV	0.01	69-125	50-150	20	90	
Benzo(g,h,i)perylene		NV	NV	0.01	64-127	33-131	20	90	
Benzo(k)fluoranthene		NV	NV	0.01	70-130	50-150	20	90	
Chrysene		NV	NV	0.01	70-130	50-150	20	90	
Dibenzo(a,h)anthracene		NV	NV	0.01	67-128	44-130	20	90	
Fluoranthene		NV	3,200	0.01	70-130	50-150	20	90	
Fluorene		NV	3,200	0.01	67-117	48-121	20	90	
Indeno(1,2,3-cd)pyrene		NV	NV	0.01	67-129	41-134	20	90	
Naphthalene		5	1,600	0.01	58-108	28-125	20	90	
Phenanthrene		NV	NV	0.01	70-130	50-150	20	90	
Pyrene		NV	2,400	0.01	70-130	40-134	20	90	
cPAH TEQ <sup>(e)(2)(3)</sup>		0.19 <sup>(f)</sup>	0.19	NA	NA	NA	NA	NA	NA

**Table 3-3  
Preferred Analytical Methods and Performance Criteria  
Former Abitibi Property, Steilacoom, Washington  
HDG, LP**



Analyte	Analytical Method	MTCA Method A, Soil, URLU <sup>(1)</sup>	MTCA Method B, Soil <sup>(a)(1)</sup>	MRL	LCS Accuracy (%)	MS/MSD Accuracy (%)	Precision (RPD)	Completeness (%)	
<b>Dioxins and Furans (pg/g)</b>									
1,2,3,4,6,7,8-HpCDD	EPA 1613B	NV	NV	2.5	35-70	NA	20	90	
1,2,3,4,6,7,8-HpCDF		NV	NV	2.5	41-61	NA	20	90	
1,2,3,4,7,8,9-HpCDF		NV	NV	2.5	39-69	NA	20	90	
1,2,3,4,7,8-HxCDD		NV	NV	2.5	35-82	NA	20	90	
1,2,3,4,7,8-HxCDF		NV	NV	2.5	36-67	NA	20	90	
1,2,3,6,7,8-HxCDD		NV	NV	2.5	38-67	NA	20	90	
1,2,3,6,7,8-HxCDF		NV	NV	2.5	42-65	NA	20	90	
1,2,3,7,8,9-HxCDD		NV	NV	2.5	32-81	NA	20	90	
1,2,3,7,8,9-HxCDF		NV	NV	2.5	39-65	NA	20	90	
1,2,3,7,8-PeCDD		NV	NV	2.5	35-71	NA	20	90	
1,2,3,7,8-PeCDF		NV	NV	2.5	40-67	NA	20	90	
2,3,4,6,7,8-HxCDF		NV	NV	2.5	35-78	NA	20	90	
2,3,4,7,8-PeCDF		NV	NV	2.5	34-80	NA	20	90	
2,3,7,8-TCDD		NV	13	0.5	6.7-15.8	NA	20	90	
2,3,7,8-TCDF		NV	NV	0.5	7.5-15.8	NA	20	90	
OCDD		NV	NV	5	78-144	NA	20	90	
OCDF		NV	NV	5	63-170	NA	20	90	
Dioxin/furan TEQ <sup>(e)(4)</sup>		NV	13	NA	NA	NA	NA	NA	NA

**Table 3-3**  
**Preferred Analytical Methods and Performance Criteria**  
**Former Abitibi Property, Steilacoom, Washington**  
**HDG, LP**



**Notes**

Limits are provided by Friedman & Bruya, Inc., except EPA 1613B which is subcontracted to SGS North America Inc. Laboratories are subject to change.

cPAH = carcinogenic polycyclic aromatic hydrocarbon.

EPA = U.S. Environmental Protection Agency.

LCS = laboratory control sample.

mg/kg = milligrams per kilogram.

MRL = method reporting limit.

MS/MSD = matrix spike/matrix spike duplicate.

MTCA = Model Toxics Control Act.

NA = not applicable.

NV = no value.

NWTPH = Northwest Total Petroleum Hydrocarbons.

PAH = polycyclic aromatic hydrocarbon.

pg/g = picograms per gram.

RPD = relative percent difference.

TEQ = toxicity equivalency.

TPH = total petroleum hydrocarbons.

URLU = unrestricted land use.

<sup>(a)</sup>Lower of cancer and noncancer values are shown.

<sup>(b)</sup>Screening level for gasoline-range hydrocarbons with detectable benzene.

<sup>(c)</sup>Screening level for gasoline-range hydrocarbons with no detectable benzene.

<sup>(d)</sup>Diesel+Oil is the sum of diesel- and oil-range hydrocarbons.

<sup>(e)</sup>TEQ calculated as the sum of each constituent multiplied by its corresponding toxicity equivalency factor.

<sup>(f)</sup>MTCA Method A value for benzo(a)pyrene and cPAH TEQ is not applicable. Screening level shown is the MTCA B value.

**References**

<sup>(1)</sup>Ecology. 2024. Cleanup Levels and Risk Calculation (CLARC) table. Washington State Department of Ecology, Toxics Cleanup Program. February.

<sup>(2)</sup>Ecology. 2015. *Implementation Memorandum #10: Evaluating the Human Health Toxicity of Carcinogenic PAHs (cPAHs) Using Toxicity Equivalency Factors (TEFs)*. Publication No. 15-09-049. Washington State Department of Ecology, Toxics Cleanup Program. April 20.

<sup>(3)</sup>Ecology. 2021. *Polycyclic Aromatic Hydrocarbons and Benzo(a)pyrene: Changes to MTCA Default Cleanup Levels for 2017*. Washington State Department of Ecology, Toxics Cleanup Program. July.

<sup>(4)</sup>Van den Berg et al. 2006. "The 2005 World Health Organization Reevaluation of Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-Like Compounds." *Toxicological Sciences* 93(2): 223–241.

# Appendix C

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## Inadvertent Discovery Plan



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# INADVERTENT DISCOVERY PLAN PLAN AND PROCEDURES FOR THE DISCOVERY OF CULTURAL RESOURCES AND HUMAN SKELETAL REMAINS

To request ADA accommodation, including materials in a format for the visually impaired, call Ecology at 360-407-6000 or visit <https://ecology.wa.gov/accessibility>. People with impaired hearing may call Washington Relay Service at 711. People with a speech disability may call TTY at 877-833-6341.

Site Name(s):

Location:

Project Lead/Organization:

County:

*If this Inadvertent Discovery Plan (IDP) is for multiple (batched) projects, ensure the location information covers all project areas.*

## 1. INTRODUCTION

The IDP outlines procedures to perform in the event of a discovery of archaeological materials or human remains, in accordance with applicable state and federal laws. An IDP is required, as part of Agency Terms and Conditions for all grants and loans, for any project that creates disturbance above or below the ground. An IDP is not a substitute for a formal cultural resource review (Executive 21-02 or Section 106).

Once completed, **the IDP should always be kept at the project site** during all project activities. All staff, contractors, and volunteers should be familiar with its contents and know where to find it.

## 2. CULTURAL RESOURCE DISCOVERIES

A cultural resource discovery could be prehistoric or historic. Examples include (see images for further examples):

- An accumulation of shell, burned rocks, or other food related materials.
- Bones, intact or in small pieces.
- An area of charcoal or very dark stained soil with artifacts.
- Stone tools or waste flakes (for example, an arrowhead or stone chips).
- Modified or stripped trees, often cedar or aspen, or other modified natural features, such as rock drawings.
- Agricultural or logging materials that appear older than 50 years. These could include equipment, fencing, canals, spillways, chutes, derelict sawmills, tools, and many other items.
- Clusters of tin cans or bottles, or other debris that appear older than 50 years.
- Old munitions casings. **Always assume these are live and never touch or move.**
- Buried railroad tracks, decking, foundations, or other industrial materials.
- Remnants of homesteading. These could include bricks, nails, household items, toys, food containers, and other items associated with homes or farming sites.

The above list does not cover every possible cultural resource. When in doubt, assume the material is a cultural resource.

### 3. ON-SITE RESPONSIBILITIES

If any employee, contractor, or subcontractor believes that they have uncovered cultural resources or human remains at any point in the project, take the following steps to **Stop-Protect-Notify**. **If you suspect that the discovery includes human remains, also follow Sections 5 and 6.**

#### STEP A: Stop Work.

All work must stop immediately in the vicinity of the discovery.

#### STEP B: Protect the Discovery.

Leave the discovery and the surrounding area untouched and create a clear, identifiable, and wide boundary (30 feet or larger) with temporary fencing, flagging, stakes, or other clear markings. Provide protection and ensure integrity of the discovery until cleared by the Department of Archaeological and Historical Preservation (DAHP) or a licensed, professional archaeologist.

Do not permit vehicles, equipment, or unauthorized personnel to traverse the discovery site. Do not allow work to resume within the boundary until the requirements of this IDP are met.

#### STEP C: Notify Project Archaeologist (if applicable).

If the project has an archaeologist, notify that person. If there is a monitoring plan in place, the archaeologist will follow the outlined procedure.

#### STEP D: Notify Project and Washington Department of Ecology (Ecology) contacts.

##### Project Lead Contacts

###### Primary Contact

Name:

Organization:

Phone:

Email:

###### Alternate Contact

Name:

Organization:

Phone:

Email:

##### Ecology Contacts (completed by Ecology Project Manager)

###### Ecology Project Manager

Name:

Program:

Phone:

Email:

###### Alternate or Cultural Resource Contact

Name:

Program:

Phone:

Email:

**STEP E: Ecology will notify DAHP.**

Once notified, the Ecology Cultural Resource Contact or the Ecology Project Manager will contact DAHP to report and confirm the discovery. To avoid delay, the Project Lead/Organization will contact DAHP if they are not able to reach Ecology.

DAHP will provide the steps to assist with identification. DAHP, Ecology, and Tribal representatives may coordinate a site visit following any necessary safety protocols. DAHP may also inform the Project Lead/Organization and Ecology of additional steps to further protect the site.

**Do not continue work until DAHP has issued an approval for work to proceed in the area of, or near, the discovery.**

DAHP Contacts:

Name: Rob Whitlam, PhD  
Title: State Archaeologist  
Cell: 360-890-2615  
Email: [Rob.Whitlam@dahp.wa.gov](mailto:Rob.Whitlam@dahp.wa.gov)  
Main Office: 360-586-3065

**Human Remains/Bones:**

Name: Guy Tasa, PhD  
Title: State Anthropologist  
Cell: 360-790-1633 (24/7)  
Email: [Guy.Tasa@dahp.wa.gov](mailto:Guy.Tasa@dahp.wa.gov)

**4. TRIBAL CONTACTS**

In the event cultural resources are discovered, the following tribes will be contacted. See Section 10 for Additional Resources.

Tribe:	Tribe:
Name:	Name:
Title:	Title:
Phone:	Phone:
Email:	Email:
Tribe:	Tribe:
Name:	Name:
Title:	Title:
Phone:	Phone:
Email:	Email:

Please provide contact information for additional tribes within your project area, if needed, in Section 11.

**5. FURTHER CONTACTS (if applicable)**

If the discovery is confirmed by DAHP as a cultural or archaeological resource, or as human remains, and there is a partnering federal or state agency, Ecology or the Project Lead/Organization will ensure the partnering agency is immediately notified.

Federal Agency:

Agency:

Name:

Title:

Phone:

Email:

State Agency:

Agency:

Name:

Title:

Phone:

Email:

## 6. SPECIAL PROCEDURES FOR THE DISCOVERY OF HUMAN SKELETAL MATERIAL

Any human skeletal remains, regardless of antiquity or ethnic origin, will at all times be treated with dignity and respect. Follow the steps under **Stop-Protect-Notify**. For specific instructions on how to handle a human remains discovery, see: [RCW 68.50.645: Skeletal human remains—Duty to notify—Ground disturbing activities—Coroner determination—Definitions](#).

**Suggestion:** If you are unsure whether the discovery is human bone or not, contact Guy Tasa with DAHP, for identification and next steps. Do not pick up the discovery.

Guy Tasa, PhD State Physical Anthropologist

[Guy.Tasa@dahp.wa.gov](mailto:Guy.Tasa@dahp.wa.gov)

(360) 790-1633 (Cell/Office)

For discoveries that are confirmed or suspected human remains, follow these steps:

1. Notify law enforcement and the Medical Examiner/Coroner using the contacts below. **Do not call 911** unless it is the only number available to you.

Enter contact information below (required):

- Local Medical Examiner or Coroner name and phone:
  
  - Local Law Enforcement main name and phone:
  
  - Local Non-Emergency phone number (911 if without a non-emergency number):
2. The Medical Examiner/Coroner (with assistance of law enforcement personnel) will determine if the remains are human or if the discovery site constitutes a crime scene and will notify DAHP.
  3. **DO NOT speak with the media, allow photography or disturbance of the remains, or release any information about the discovery on social media.**
  4. If the remains are determined to be non-forensic, Cover the remains with a tarp or other materials (not soil or rocks) for temporary protection and to shield them from being photographed by others or disturbed.

Further activities:

- Per [RCW 27.44.055](#), [RCW 68.50](#), and [RCW 68.60](#), DAHP will have jurisdiction over non-forensic human remains. Ecology staff will participate in consultation. Organizations may also participate in consultation.
- Documentation of human skeletal remains and funerary objects will be agreed upon through the consultation process described in [RCW 27.44.055](#), [RCW 68.50](#), and [RCW 68.60](#).
- When consultation and documentation activities are complete, work in the discovery area may resume as described in Section 8.

If the project occurs on federal lands (such as a national forest or park or a military reservation) the provisions of the Native American Graves Protection and Repatriation Act of 1990 (NAGPRA) apply and the responsible federal agency will follow its provisions. Note that state highways that cross federal lands are on an easement and are not owned by the state.

If the project occurs on non-federal lands, the Project Lead/Organization will comply with applicable state and federal laws, and the above protocol.

## **7. DOCUMENTATION OF ARCHAEOLOGICAL MATERIALS**

Archaeological resources discovered during construction are protected by state law [RCW 27.53](#) and assumed eligible for inclusion in the National Register of Historic Places under Criterion D until a formal Determination of Eligibility is made.

The Project Lead/Organization must ensure that proper documentation and field assessment are made of all discovered cultural resources in cooperation with all parties: the federal agencies (if any), DAHP, Ecology, affected tribes, and the archaeologist.

The archaeologist will record all prehistoric and historic cultural material discovered during project construction on a standard DAHP archaeological site or isolate inventory form. They will photograph site overviews, features, and artifacts and prepare stratigraphic profiles and soil/sediment descriptions for minimal subsurface exposures. They will document discovery locations on scaled site plans and site location maps.

Cultural features, horizons, and artifacts detected in buried sediments may require the archaeologist to conduct further evaluation using hand-dug test units. They will excavate units in a controlled fashion to expose features, collect samples from undisturbed contexts, or to interpret complex stratigraphy. They may also use a test unit or trench excavation to determine if an intact occupation surface is present. They will only use test units when necessary to gather information on the nature, extent, and integrity of subsurface cultural deposits to evaluate the site's significance. They will conduct excavations using standard archaeological techniques to precisely document the location of cultural deposits, artifacts, and features.

The archaeologist will record spatial information, depth of excavation levels, natural and cultural stratigraphy, presence or absence of cultural material, and depth to sterile soil, regolith, or bedrock for each unit on a standard form. They will complete test excavation unit level forms, which will include plan maps for each excavation level and artifact counts and material types, number, and vertical provenience (depth below

surface and stratum association where applicable) for all recovered artifacts. They will draw a stratigraphic profile for at least one wall of each test excavation unit.

The archaeologist will screen sediments excavated for purposes of cultural resources investigation through 1/8-inch mesh, unless soil conditions warrant 1/4-inch mesh.

The archaeologist will analyze, catalogue, and temporarily curate all prehistoric and historic artifacts collected from the surface and from probes and excavation units. The ultimate disposition of cultural materials will be determined in consultation with the federal agencies (if any), DAHP, Ecology, and the affected tribe(s).

Within 90 days of concluding fieldwork, the archaeologist will provide a technical report describing any and all monitoring and resultant archaeological excavations to the Project Lead/Organization, who will forward the report to Ecology, the federal agencies (if any), DAHP, and the affected tribe(s) for review and comment.

If assessment activities expose human remains (burials, isolated teeth, or bones), the archaeologist and Project Lead/Organization will follow the process described in **Section 6**.

## **8. PROCEEDING WITH WORK**

The Project Lead/Organization shall work with the archaeologist, DAHP, and affected tribe(s) to determine the appropriate discovery boundary and where work can continue.

Work may continue at the discovery location only after the process outlined in this plan is followed and the Project Lead/Organization, DAHP, any affected tribe(s), Ecology, and the federal agencies (if any) determine that compliance with state and federal laws is complete.

## **9. ORGANIZATION RESPONSIBILITY**

The Project Lead/Organization is responsible for ensuring:

- This IDP has complete and accurate information.
- This IDP is immediately available to all field staff at the sites and available by request to any party.
- This IDP is implemented to address any discovery at the site.
- That all field staff, contractors, and volunteers are instructed on how to implement this IDP.

## **10. ADDITIONAL RESOURCES**

### **Informative Video**

Ecology recommends that all project staff, contractors, and volunteers view this informative video explaining the value of IDP protocol and what to do in the event of a discovery. The target audience is anyone working on the project who could unexpectedly find cultural resources or human remains while excavating or digging. The video is also posted on DAHP's inadvertent discovery language website.

[Ecology's IDP Video](https://www.youtube.com/watch?v=ioX-4cXfbDY) (<https://www.youtube.com/watch?v=ioX-4cXfbDY>)

## **Informational Resources**

[DAH P \(https://dahp.wa.gov\)](https://dahp.wa.gov)

[Washington State Archeology \(DAH P 2003\)](https://dahp.wa.gov/sites/default/files/Field%20Guide%20to%20WA%20Arch_0.pdf)

[\(https://dahp.wa.gov/sites/default/files/Field%20Guide%20to%20WA%20Arch\\_0.pdf\)](https://dahp.wa.gov/sites/default/files/Field%20Guide%20to%20WA%20Arch_0.pdf)

[Association of Washington Archaeologists \(https://www.archaeologyinwashington.com\)](https://www.archaeologyinwashington.com)

## **Potentially Interested Tribes**

[Interactive Map of Tribes by Area](https://dahp.wa.gov/archaeology/tribal-consultation-information)

[\(https://dahp.wa.gov/archaeology/tribal-consultation-information\)](https://dahp.wa.gov/archaeology/tribal-consultation-information)

[WSDOT Tribal Contact Website](https://wsdot.wa.gov/tribal/TribalContacts.htm)

[\(https://wsdot.wa.gov/tribal/TribalContacts.htm\)](https://wsdot.wa.gov/tribal/TribalContacts.htm)

## **11. ADDITIONAL INFORMATION**

Please add any additional contact information or other information needed within this IDP.

**Implement the IDP if you see...**

**Chipped stone artifacts.**

Examples are:

- Glass-like material.
- Angular material.
- “Unusual” material or shape for the area.
- Regularity of flaking.
- Variability of size.



*Stone artifacts from Oregon.*



*Stone artifacts from Washington.*



*Biface-knife, scraper, or pre-form found in NE Washington. Thought to be a well knapped object of great antiquity. Courtesy of Methow Salmon Rec. Foundation.*

## Implement the IDP if you see...

### Ground stone artifacts.

Examples are:

- Unusual or unnatural shapes or unusual stone.
- Striations or scratching.
- Etching, perforations, or pecking.
- Regularity in modifications.
- Variability of size, function, or complexity.



Above: Fishing Weight - credit [CRITFC Treaty Fishing Rights website](#).



Artifacts from unknown locations (left and right images).

**Implement the IDP if you see...**

**Bone or shell artifacts, tools, or beads.**

Examples are:

- Smooth or carved materials.
- Unusual shape.
- Pointed as if used as a tool.
- Wedge shaped like a “shoehorn”.
- Variability of size.
- Beads from shell (‘dentalium’) or tusk.



Upper Left: Bone Awls from Oregon.

Upper Center: Bone Wedge from California.

Upper Right: Plateau dentalium choker and bracelet, from Nez Perce National Historical Park, 19th century, made using Antalis pretiosa shells Credit: Nez Perce - Nez Perce National Historical Park, NEPE 8762, Public Domain.

Above: Tooth Pendants. Right: Bone Pendants. Both from Oregon and Washington.



## Implement the IDP if you see...

### Culturally modified trees, fiber, or wood artifacts.

Examples are:

- Trees with bark stripped or peeled, carvings, axe cuts, de-limbing, wood removal, and other human modifications.
- Fiber or wood artifacts in a wet environment.
- Variability of size, function, and complexity.



Left and Below: *Culturally modified tree and an old carving on an aspen (Courtesy of DAHP).*

Right, Top to Bottom: *Artifacts from Mud Bay, Olympia: Toy war club, two strand cedar rope, wet basketry.*



## Implement the IDP if you see...

### Strange, different, or interesting looking dirt, rocks, or shells.

Human activities leave traces in the ground that may or may not have artifacts associated with them. Examples are:

- “Unusual” accumulations of rock (especially fire-cracked rock).
- “Unusual” shaped accumulations of rock (such as a shape similar to a fire ring).
- Charcoal or charcoal-stained soils, burnt-looking soils, or soil that has a “layer cake” appearance.
- Accumulations of shell, bones, or artifacts. Shells may be crushed.
- Look for the “unusual” or out of place (for example, rock piles in areas with otherwise few rocks).



*Shell Midden pocket in modern fill discovered in sewer trench.*



*Underground oven. Courtesy of DAHP.*

*Shell midden with fire cracked rock.*



*Hearth excavated near Hamilton, WA.*

**Implement the IDP if you see...**

**Historic period artifacts (historic archaeology considered older than 50 years).**

Examples are:

- Agricultural or logging equipment. May include equipment, fencing, canals, spillways, chutes, derelict sawmills, tools, etc.
- Domestic items including square or wire nails, amethyst colored glass, or painted stoneware.



Left: Top to Bottom: *Willow pattern serving bowl and slip joint pocket knife discovered during Seattle Smith Cove shantytown (45-KI-1200) excavation.*



Right: *Collections of historic artifacts discovered during excavations in eastern Washington cities.*



## Implement the IDP if you see...

Historic period artifacts (historic archaeology considered older than 50 years).

Examples are:

- Railway tokens, coins, and buttons.
- Spectacles, toys, clothing, and personal items.
- Items helping to understand a culture or identity.
- Food containers and dishware.



Main Image: *Dishes, bottles, workboot found at the North Shore Japanese bath house (ofuro) site, Courtesy Bob Muckle, Archaeologist, Capilano University, B.C. This is an example of an above ground resource.*



Right, from Top to Bottom:  
*Coins, token, spectacles and Montgomery Ward pitchfork toy discovered during Seattle Smith Cove shantytown (45-KI-1200) excavation.*



**Implement the IDP if you see...**

- Old munition casings – if you see ammunition of any type – ***always assume they are live and never touch or move!***
- Tin cans or glass bottles with an older manufacturer's technique – maker's mark, distinct colors such as turquoise, or an older method of opening the container.



Far Left: .303 British cartridge found by a WCC planting crew on Skagit River. Don't ever touch something like this!  
Left: Maker's mark on bottom of old bottle.



Right: Old beer can found in Oregon. ACME was owned by Olympia Brewery. Courtesy of Heather Simmons.



Logo employed by Whithall Tatum & Co. between 1924 to 1938 (Lockhart et al. 2016).



Can opening dates, courtesy of W.M. Schroeder.

Implement the IDP if you see...

You see historic foundations or buried structures.

Examples are:

- Foundations.
- Railroad and trolley tracks.
- Remnants of structures.



Counter Clockwise, Left to Right: *Historic structure 45KI924, in WSDOT right of way for SR99 tunnel. Remnants of Smith Cove shantytown (45-KI-1200) discovered during Ecology CSO excavation, City of Spokane historic trolley tracks uncovered during stormwater project, intact foundation of historic home that survived the Great Ellensburg Fire of July 4, 1889, uncovered beneath parking lot in Ellensburg.*

**Implement the IDP if you see...**

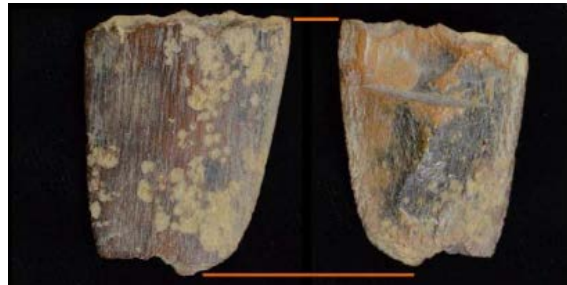
**Potential human remains.**

Examples are:

- Grave headstones that appear to be older than 50 years.
- Bones or bone tools--intact or in small pieces. It can be difficult to differentiate animal from human so they must be identified by an expert.
- These are all examples of animal bones and are not human.

Center: *Bone wedge tool, courtesy of Smith Cove Shantytown excavation (45KI1200).*

*Other images (Top Right, Bottom Left, and Bottom) Center: Courtesy of DAHP.*



Directly Above: This is a real discovery at an Ecology sewer project site.

*What would you do if you found these items at a site? Who would be the first person you would call?*

*Hint: Read the plan!*