ANDERSON GEOLOGICAL

REVISED CONTAMINATED MEDIA MANAGEMENT PLAN

SADRI PROPERTY AND EAST PARCELS
SOUTHERN FLOW CORRIDOR PROJECT
TILLAMOOK, OREGON

DEQ ECSI #5899

Prepared for

TILLAMOOK COUNTY, OREGON

P.O. Box 649
Wilsonville, Oregon 97070
(503) 682-2500

Project #1420.01
July 9, 2015

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1.0 INTRODUCTION

1.1 Purpose

The purpose of this Contaminated Media Management Plan (CMMP) is to assist in the proper management, handling and disposal or reuse of contaminated materials that are being removed from the Sadri Property and East Parcels as part of the Southern Flow Corridor (SFC) Project. This plan is intended to facilitate the execution of the SFC project within the project boundaries and to properly manage the contaminated media encountered during construction.

The contaminated materials that will be encountered during the construction activities will require special handling and management to comply with applicable regulatory requirements. Soil and other fill materials have been identified in the work area that contain elevated concentrations of arsenic, cadmium, lead, polynuclear aromatic hydrocarbons and total petroleum hydrocarbons (heavy oil and diesel-range hydrocarbons).

1.2 Objectives

The following objectives have been established for this CMMP:

- Provide a plan for the handling, management, reuse and disposal of contaminated media that is protective of human health and the environment.
- Minimize the cost to the SFC project by specifying those materials that can be re-used on site and those materials that must be disposed of in an approved landfill.
- Prevent exacerbation of existing environmental conditions.

At the conclusion of the SFC project, the County will seek concurrence from Oregon that the SFC project, as completed on the Sadri Property and East parcels, was completed in a manner that met these objectives.

1.3 Implementation

This CMMP will be implemented by Tillamook County with oversight from Anderson Geological, Inc. Erik Anderson, R.G. will be lead representative for ensuring that this CMMP is properly implemented.

Mr. Anderson's contact information is presented below:

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2.0 PROJECT DESCRIPTION

2.1 Background

Tillamook County is in the process of acquiring tax lot 200 as part of the Southern Flow Corridor (SFC) project. The purpose of the SFC project is to provide flood level reduction benefits by removing man-made impediments to flood flow and to permanently restore and protect tidal wetland habitats. This is accomplished by extensive removal of existing levees and fill around the Trask and Wilson rivers and the smaller sloughs. This project will provide a substantial public benefit through the reduction of life safety risk from floods, reduce flood damage to property, improve freshwater and estuarine water quality, and enhance the quality of the habitat for native fish and wildlife species including the federally-listed Oregon Coast coho salmon.

The soils will be removed from the Sadri property and East Parcels to a common elevation (approximately 8 feet above mean seal level), referred to as the "leave" surface. The reduced elevation will allow flood waters to flow unimpeded through the area. This will involve the removal of approximately 35,000 cubic yards of soil and fill from an area along Hoquarten Slough that once housed two log-peeling mills.

Some of the soils planned for removal are contaminated by petroleum hydrocarbons, polynuclear aromatic hydrocarbons, and metals, as identified in recent investigations. The physical composition of the fill material varies from mineral soils (sand, silt and clay) to wood waste (sawdust, wood chips, logs) and construction waste composed primarily of large pieces of concrete. A small, uncontrolled dumpsite is located on one area of the East Parcels that contains household waste.

2.2 Project Setting and History

The Subject Property consists of the southeast portion of tax lot 200 (Sadri Property) and the East Parcels, consisting of the northern extension of Douglas Avenue (north of Front Street), Tax Lot 190 (formerly known as the Schmidt Property) and a portion of Lot 4 located on the east side of the Schmidt Property. Tax lot 200 is in the process of being acquired by Tillamook County from Mr. Asghar Sadri under a Prospective Purchaser Agreement; the remaining three parcels, referred to as the East parcels, are owned by the City of Tillamook. The total area covered by the Subject Property is approximately seven acres, which is mostly covered with a forested wetland located along Hoquarten Slough (Fig. 3).

Two separate mills previously operated on the property and are referred to in this report as "East Mill" which operated prior to 1944, and "West Mill" which operated from 1944 through approximately 1965. The approximate locations of the mills are shown on Figures 2 and 3.

The Subject Property is currently vacant and consists of woodland and marshes. Levees and dikes around the perimeter of the property protect the site from minor flooding events. A narrow inlet off of Hoquarten Slough, referred to as the Inlet Pond, was used as a log pond when the East Mill was in operation prior to 1944.

Much of the site is overgrown with small trees and dense undergrowth. A foot trail was recently cut through the vegetation along the tops of the levees and dikes, providing access to the western margin of the site. The water levels in the former log ponds vary with tides and river flow, and.sediment and marsh grasses become exposed in all areas except in narrow channels during low tides.

2.3 Assessment of Contaminated Soil

Previous environmental sampling on the Subject Property identified areas with elevated concentrations of petroleum hydrocarbons (heavy oil), polynuclear aromatic hydrocarbons (PAHs) and metals (primarily cadmium and lead) in the soil.

The contaminants on the Sadri property are generally limited to the immediate areas around the two concrete structures associated with the two former mill buildings, and the former sawdust burner. Contaminants on the East Parcels are generally located in areas that had a history of placement of fill consisting largely of pieces of broken concrete and rough-poured concrete from truck batch excesses. Other historic dumping reportedly consisted of scrap lumber, automobile parts, and scrap plastic.

Evidence of a small garbage dump was observed in an exploratory test pit on the East Parcels. The garbage consisted of ash and scraps of plastic and metal, fabric and clothing. A soil sample collected from this layer contained heavy oil and elevated concentrations of cadmium and lead. Most of the East Parcels appear to be underlain by fill material, including large pieces of concrete.

To fulfill the flood-control requirements for the SFC project, the ground surface across the entire Subject Property will be excavated to a common elevation of approximately 8 feet above mean sea level. Soils that are planned for removal are referred to as "take" soils.

The soils that will be left exposed after the excavation are referred to as the "leave" soils. Over-excavation of contaminated soils is not planned below this surface except for locations where heavily-contaminated material is present, such as around the west mill and possibly in the area around the garbage dump on the East Parcels (Figure 7).

2.3.1 Take Soils - Human and Ecological Risk

Take soils that contain contaminants above risked-based concentrations (RBCs) for exposure to construction workers were identified around the West Mill (test pit TP-27), the East Mill (boring EM-1/test pit TP-15) and the East Parcels (test pit TP-30). The RBC for the excavation worker pathway was exceeded for lead in test pit TP-30. The areas with take soils in excess of RBCs for worker exposure are shown graphically on Figure 4.

Contaminants were detected in the take soils above one or more ecological screening levels around the West Mill (test pits TP-3, TP-5, TP-6, TP-27), the East Mill (boring EM-1, test pit TP-16, TP-17), the sawdust burner (TP-7) and the East Parcels (test pit TP-19, TP-30). Ecological screening levels were also exceeded in the samples collected on the Schmidt Property by Hart Crowser in 2011. These areas are shown graphically on Figure 5.

2.3.1 Leave Soils - Human and Ecological Risk

The only location where the proposed leave soils exceed RBCs is test pit TP-6 (West Mill) where heavy oil exceeds the RBC for the construction worker pathway at a depth of 6 feet below ground surface.

Soil samples collected from the proposed leave surface around the East Mill and West Mill exceeded ecological screening levels for aquatic receptors. These areas are shown graphically on Figure 7.

2.4 Assessment of Contaminated Groundwater

Limited groundwater sampling was completed around the East Mill and West Mill areas. Elevated lead was detected in the groundwater near the West Mill that slightly exceeded ecological screening levels. The removal of contaminated take soils is expected to significantly reduce the concentrations of lead in the groundwater in this area.

3.0 CLASSIFICATION OF CONTAMINATED SOILS

One of the goals of the Contaminated Media Management Plan is to minimize decisions required during the excavation activities. To further this goal, contaminated soil has been identified and assessed in various locations of the Subject Property. The concentrations of contaminants in the take soils were evaluated for 1) risk to excavation and construction workers and 2) identifying options for the disposal and reuse of the excavated material based on the risk to ecological receptors. In addition, the concentrations of contaminants in the leave soils were evaluated for risk to ecological receptors in the finished excavation. The specific human and ecological risks are summarized in Section 2.

3.1 Environmental Classification of Soil and Other Fill

To help minimize disposal costs, a disposal cell has been designed for the strip of land that is owned partially by the City of Tillamook and partially by Tillamook County (Sadri property) (Figure 3). The placement of soil in the cell is considered to be "on-site disposal".

Soil and other fill that contains contaminants that exceed aquatic ecological risk concentrations will be placed in the soil disposal cell. The disposal cell will be engineered with an impervious cap and armoring around the exposed edges of the cell to 1) prevent erosion and deposition of contaminated soils into nearby environments and 2) minimize leaching of contaminants from the soil in the cell and into aquatic environments.

The proposed use of some of the soils off-site as clean fill required their evaluation with respect to Oregon DEQ's Internal Management Directive entitled *Clean Fill Determinations* (http://www.oregon.gov/deq/docs/cleanfillIMD.pdf). The purpose of the directive was to address the need for determining whether waste generated during construction projects or by dredging projects qualifies as clean fill. The rules provide a definition of clean fill and allow DEQ to exempt clean fill from regulations, avoiding the need to regulate certain fill material as solid waste.

Materials that meet DEQ's clean fill criteria should not pose an unacceptable risk to human health or terrestrial ecological receptors. The clean fill criteria does not account for ecological risk to aquatic receptors since the clean fill guidance was developed for material that will be placed in upland areas.

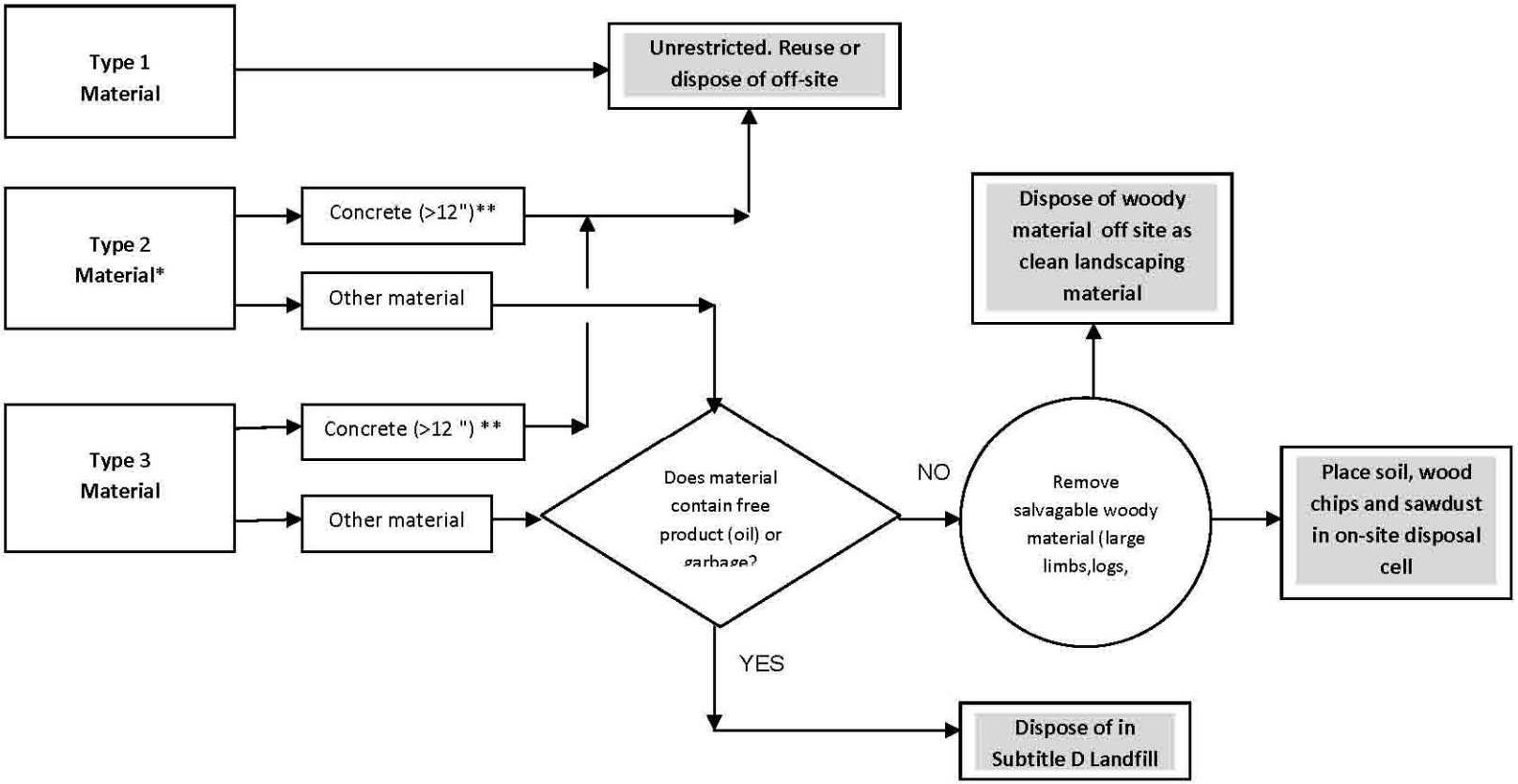
Based on DEQ's definition of clean fill and on other solid waste rules, the take soils on the Subject Property were classified into three different soil types:

Soil Type	Classification Criteria	Estimated Quantity	DEQ Allowable Uses & Notes
Type 1	Clean soil/fill in which no contaminants have been detected or are present below ecological screening levels and Clean Fill Criteria. Metals are present at or below natural background concentrations.	15,000 cy total. Includes mineral soils, organic soils, wood waste and estimated 1,500 cy yards of waste concrete	No restrictions. Handle and dispose of material as other clean soils from the SFC project. Handling and disposal of these materials are not controlled under the CMMP.
Type 2	Soil/fill in which organic contaminants have been detected above aquatic ecological screening levels but below Clean Fill Criteria. Metals are present at or below natural background concentrations.	9,600 cy mineral soil and organic soils/wood waste	Cover and cap onsite in the disposal cell. Material may be used off-site with controls (cover and cap) to limit erosion, however no suitable locations have been identified. Materials that are unsuitable for use in the on-site disposal cell and are not re-used off site must be landfilled.
Type 3	Soil/fill in which organic contaminants have been detected above terrestrial ecological screening levels and Clean Fill Criteria. Metals are present above natural background concentrations.	10,300 cy mineral soil and organic soils/wood waste	Cover and cap onsite in the disposal cell. Offsite, these materials cannot be used or disposed of except at a Subtitle D landfill. Materials that are unsuitable for use in the on- site disposal cell must be landfilled.
		900 cy oil- saturated soil and garbage	Dispose of material at a Subtitle D landfill.

The term "on site" includes the area of the soil disposal cell between the Sadri property and Front Street that is owned by the City of Tillamook.

The general locations of the three soil types on the subject property are shown on the attached site plan (Figure 1). The flowchart in Figure A shows the decision-making process in assigning disposal options for materials.

Figure A - Soil Disposal/Reuse Options



*Type 2 material may be also reused of off-site and capped if a suitable location is identified. No such location has yet been identified.

**Loose soil must be removed from the concrete pieces and disposed of appropriately.

4.0 Management of Contaminated Media During Construction

For the purpose of this report, the term "on-site" refers to all areas within the boundaries of the Sadri and East Parcels and the proposed soil disposal cell (Figure 3). The term "off-site" refers to all other locations, including other areas within the boundaries of the SFC project.

Specific guidelines for handling and managing contaminated media are included in Appendix A.

4.1 Management of Contaminated Media

All of the contaminated media identified on the Subject Property should qualify for disposal at a Subtitle D solid waste landfill. No material has been identified that would be designated as a Resource Conservation and Recovery Act (RCRA) hazardous waste requiring disposal in a RCRA facility. However, it is possible that such material may be encountered and would need to be handled in accordance with the unknown or unanticipated contaminated media guidelines specified in Appendix A.

The options for disposal and re-use of the excavated take soils will be dictated by the material's designated soil type (Type 1, 2 or 3), as discussed in section 3.0 of the CMMP. The approximate boundaries of the soil types are shown on Figure 6 and will also be marked in the field by the County before beginning removal of the soil. During excavation, soils may be re-classified, at the discretion of the County's environmental consultant, if field observations indicate possible conditions that are inconsistent with the designated soil type.

The County's engineering consultant or environmental consultant will determine which materials are suitable for placement in the disposal cell and which materials are to be re-used off site or landfilled.

Type 2 and Type 3 soils will not be over-excavated below the proposed leave surface except for the heavily-contaminated material near the west mill and the garbage dump on the East Parcels (Figure 3). The approximate extent of the over-excavation will be determined after the collection of additional soil samples by Tillamook County before work begins on the site-wide soil removal.

4.1.1 On-Site Reuse of Clean Soil and Other Fill

The use of Type 1 (clean) soils and other fill that is unrestricted can be used in any locations on-site or off-site where clean fill can be placed. However, given the limited capacity of the on-site disposal cell, Type 1 soils will not be placed in the disposal cell, but will be placed off-site, including other areas of the SFC project. This CMMP does not specify the location(s) for the disposal of Type 1 soils.

4.1.2 On-Site Reuse of Contaminated Soil and Other Fill

With the exception of soils containing anthropogenic debris (garbage) or free-product contaminants, all Type 2 and Type 3 soils will be placed in the on-site disposal cell. The specific procedures for placement and compaction of the soils is described in the engineering documents for the design of the soil disposal cell.

Concrete material greater than 12 inches in diameter will be separated from the Type 2 and Type 3 soils and disposed of off-site as clean fill. All loose soil will be knocked or brushed from the concrete surfaces prior to disposal of the concrete. Larger pieces may require breaking or crushing for removal and transport.

Except for areas of free-product contamination, large pieces of woody material (large tree limbs, trunks, stumps, logs) and will be separated from the Type 2 and Type 3 soils and used off-site on other areas of the SFC project after being chipped. All loose soil will be knocked or brushed from the surfaces of the woody material prior to removal from the site.

Specific guidelines for handling and managing contaminated media are included in Appendix A.

4.1.3 Off-Site Disposal of Contaminated Soil and Other Fill

All Type 2 and Type 3 soils and other fill containing anthropogenic debris (garbage), free-product contaminants, and other Type 2 and Type 3 materials that are deemed to be unsuitable for use in the disposal cell will be disposed of at a Subtitle D landfill. The contractor will be required to obtain a permit approving the proper disposal of the material.

Specific guidelines for handling and managing contaminated media are included in Appendix A.

4.2 Management of Contaminated Groundwater

Groundwater may be encountered during the excavation activities. Groundwater contaminated by heavy oil and lead has been identified near the West Mill, where contaminated soils were also identified. The lateral extent of the contaminated groundwater was not determined. Contaminated groundwater was not identified in any other areas.

Dewatering of excavations is not expected to be required to meet the engineering goals of the project, therefore no special dewatering practices are anticipated.

Groundwater in excavations will be visually monitored for evidence of free product, including oily sheens, film, or floating product. Free product, if encountered, will be removed using skimmers, oil absorbant pads, etc. following the removal of the contaminant source, including contaminated soils, and before placing any backfill material into the excavation.

If, in the opinion of the county's environmental consultant or the Oregon DEQ representative, the free product cannot be adequately controlled by the use skimmers and/or absorbant pads, special groundwater management considerations, including dewatering of excavations, may be required to prevent movement of contaminated waters into other areas of the site, including surface waters. Specific guidelines for handling and managing contaminated water are included in section 4.2.1 and Appendix A.

4.2.1 Dewatering in Areas of Known Contaminated Groundwater

If it is determined that contaminated groundwater must be removed from the site, the groundwater will be pumped into holding tanks for further assessment prior to discharge. If the dewatered groundwater is found to be, or is classified as, contaminated, the water will be disposed of at a facility permitted to accept the waste. The contractor will be required to obtain a permit approving dewatering discharge or disposal.

The most recent groundwater samples were collected from temporary borings in 2014 and may not represent the actual discharge water that will be generated during any potential dewatering activities. Therefore, the presented groundwater data is a preliminary indication of the potential constituents of concern associated with dewatering, and further sampling and assessment may be required to perform discharges or disposal of the water.

4.3 Management of Waste Concrete

All waste concrete and masonry, including former mill building structures, buried construction debris, and concrete batch excess placed on the East Parcels will be disposed of or recycled off-site as Type 1 material. All loose soil will be removed from the concrete surfaces before removing the concrete from the site. The loose soil that is removed from the concrete will be handled and disposed of as the other soils where the concrete was removed. Much of the concrete material may require breaking into smaller, manageable pieces. Some of the waste concrete may, at the request of the County, be used as structural fill in the soil disposal cell.

4.4 Management of Excavated Woody and Organic Matter

Except for areas of free-product contamination, excavated woody material (e.g. large tree limbs, trunks, stumps, logs) will be separated from the Type 2 and Type 3 soils and used off-site on other areas of the SFC project. Loose soil will be knocked or brushed from the material before removing the woody materials from the site.

The soil that is removed from the woody materials will be handled and disposed of as the other soils where the woody material was removed. This CMMP does not specify the specific location(s) for the disposal of woody and organic matter.

4.5 Management of Surface Woody and Organic Matter

All woody material (e.g. cut trees, dead fall trees, brush) that is removed from the surface of the Subject Property prior to excavation activities will be disposed of or recycled off-site, including other areas of the SFC project. All loose soil will be knocked or brushed from the materials, including root balls, before removing the woody materials from the site.

The soil that is removed from the woody materials will be handled and disposed of as the other soils where the woody material was removed. This CMMP does not specify the location(s) of the disposal of woody and organic matter.

5.0 Contaminated Media Handling and Monitoring During Construction

5.1 Contaminated Media Handling

Specific practices will be implemented to ensure that contaminated media are properly handled during construction. These practices address soil handling, stockpiling, loading, and hauling and groundwater pumping, handling, and discharge. Section 4 and Appendix A document the requirements for contaminated media management practices and for management of unanticipated and unknown contaminated media.

5.2 Soil Monitoring During Construction

Excavations will be monitored by the contractor and the County's representatives for the possible presence of contamination that appears to be inconsistent with that of the soil's original classification. The excavated material will be examined for visual, olfactory, or textural indications of contamination. These indications may include, but are not limited to, petroleum products, fuel or solvent odors, other unusual odors, unusual color, sheen, staining, or suspect debris.

In the case of excavation in areas of Type 1 soils, this would include materials that display any field indicators of contamination. For Type 2 and Type 3 soils, this would include materials that contain free product, display a sheen or strong odor, or contain landfill debris.

If contaminated media are observed in an area that is inconsistent with its original classification, the County or their representative will be notified immediately. Suspect materials will be segregated from other materials and placed in protected temporary stockpiles for further evaluation. The material will be stockpiled on site, preferably in an area of higher elevation such as on the East Parcels. The material will be placed on top of and completely covered with plastic sheeting to prevent exposure to rain and human contact. The plastic sheeting will be weighted with sandbags as necessary to maintain the sheeting in place.

5.3 Documentation of Contaminated Media

It is not the intent of this project to remove all soil and groundwater that exceeds cleanup levels. Only the contaminated material that must be removed to allow the completion of the SFC project, material that would result in higher exposure point concentrations than currently exist, and materials containing garbage and/or free product contaminants, will be removed.

Soil designated as contaminated that is disposed of off-site at an approved solid waste disposal facility will be logged. The documentation will include the disposal facility's weigh slips. It is the contractor's responsibility to obtain acceptance from the disposal facility for disposal of the contaminated soil.

5.4 Post-Excavation Confirmation Sampling

Sampling of the finished leave surface for the presence of contaminants is not proposed. One of the objectives of the previous sampling was to document the concentrations of contaminants on the proposed leave surface, which are shown graphically on Figure 7. Additional sampling of the leave surface may be conducted in areas where the leave surface is over-excavated. The decision to conduct additional sampling will be made at the discretion of Tillamook County and Oregon DEQ.

6.0 Property Management Plan

This Property Management Plan (PMP) describes the procedures that will be followed for the periodic inspection and maintenance of the soil disposal cell and the leave surfaces on the Subject Property. The purpose of the disposal cell is to isolate contaminated media from contact with environmental receptors and to prevent migration of environmental contaminants in the media into sensitive aquatic environments through leaching of contaminants from the media and through erosion and deposition of contaminated media.

6.1 Disposal Cell Construction

The soil disposal cell is designed with two separate zones. One zone is designed to be composed primarily of organic-rich fill covered with a flexible, impermeable membrane which is covered with topsoil and vegetation. A passive methane venting system will continually remove methane generated by the decay of the organic matter. The second zone is designed to be composed primarily of compactable mineral soil that is covered with an impermeable membrane and a gravel cap for use as a vehicle parking lot.

The disposal cell is also designed with armoring consisting of boulders around the exposed edges of the cell to prevent erosion and migration of contaminated soils into nearby environments.

The material in the disposal cell may contain contaminants that exceed Oregon risk-based concentrations that are protective of excavation workers and construction workers. Any activities that may impact the disposal cell, such as excavations or altering the armoring around the cell, must include a site-specific addendum to the Contaminated Media Management Plan that identifies potential impacts unique to that project.

6.2 Leave Surface

The leave surface will include areas of contamination that slightly exceed ecological risk concentrations. The leave surface will be left exposed, with the expectation that periodic inundation of the area from high water levels in Hoquarten Slough will result in the deposition of sediment and the establishment of wetland vegetation, further stabilizing the leave surface. Areas where the leave surface is over-excavated due to grossly-contaminated soil or landfill debris will be backfilled with clean soil and covered with burlap re-vegetation matting.

6.3 Disposal Cell Inspection and Maintenance

The disposal cell will be maintained through a program of regular inspection and maintenance. The disposal cell will be located on properties owned by both the City of Tillamook and Tillamook County. Therefore personnel performing the inspections will be assigned by the Tillamook City Manager and the Tillamook County Board of Commissioners. It is expected that the personnel may be employees of the City of Tillamook and Tillamook County public works or engineering departments, or a private engineering or environmental consultant.

The disposal cell should be inspected for evidence of cracks or breaches in the cap, damages or changes in the armoring around the edges of the cap, or evidence of erosion of the cap material. The inspection should be conducted annually, or after major (100-year) flood events or local seismic events of magnitude 4.0 or greater.

Observations made during the inspection should be recorded on the inspection form located in Appendix B. Photographs should be taken during the inspection to document the overall condition of the cap as well as details of specific areas of the cap. The completed inspection form documenting the findings and recommended maintenance should be filed with this PMP. Copies should be provided to the Oregon DEQ, referencing ECSI site #5899.

6.4 Leave Surface Inspection and Maintenance

It is expected that natural sedimentation from flood waters and natural re-vegetation will require the need for little or no ongoing maintenance of the leave surface. The leave surface, which is expected to convert to a marsh or wetland, should be inspected annually for evidence of stressed vegetation and obvious indicators of contamination (e.g. sheen on water surfaces).

6.5 Notifications and Documentation Requirements

Oregon DEQ will be notified prior to any activities that will penetrate the cap overlying the disposal cell. The DEQ will be notified within 7 days of any deviations from this PMP.

ANDERSON GEOLOGICAL, INC.

Expires 3/31/2016

Erik Anderson, R.G.
Hydrogeologist

References

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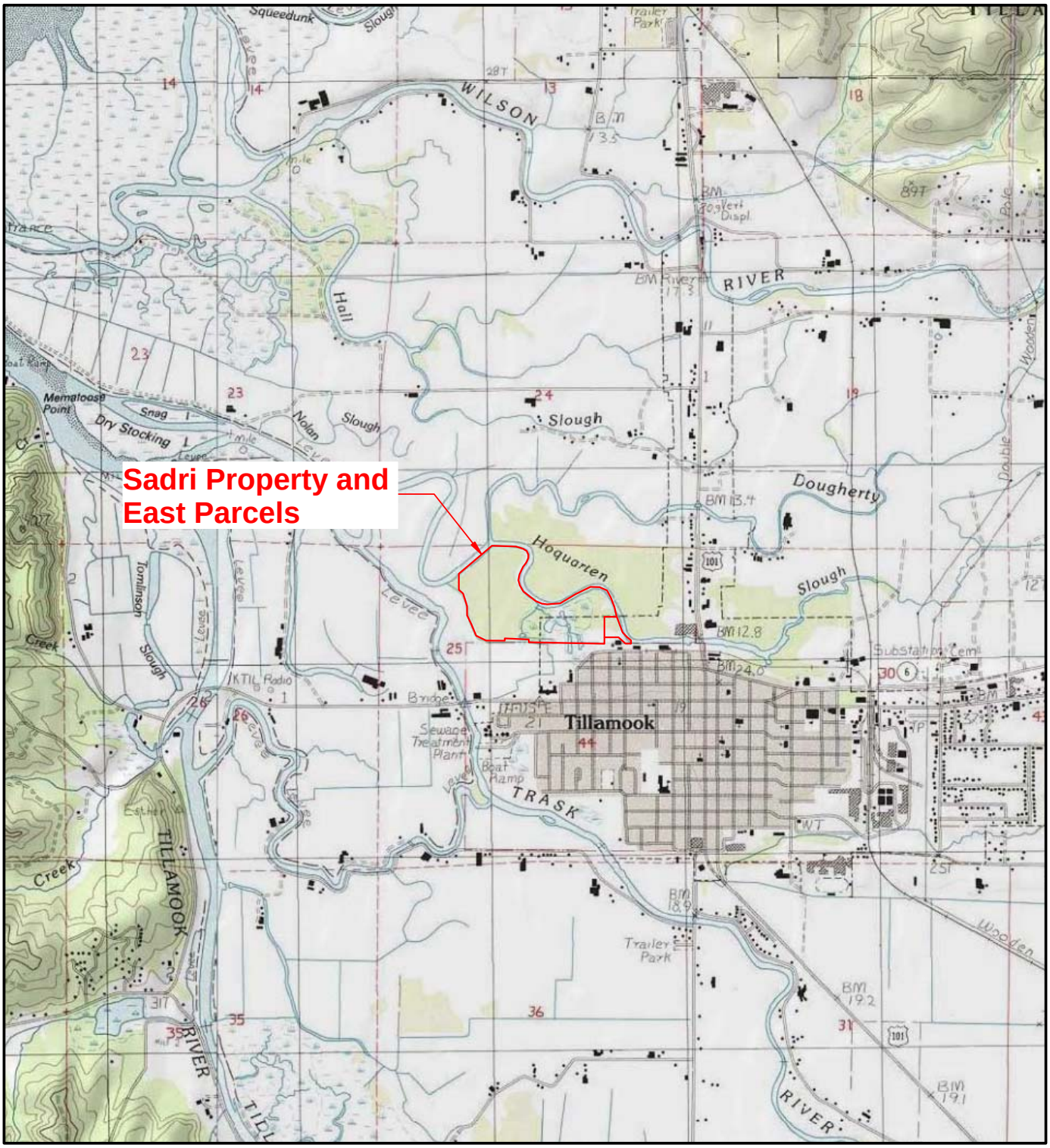
FIGURES



ANDERSON GEOLOGICAL	SITE LOCATION MAP	
	Sadri Property and East Parcels Tillamook, Oregon	
SIZE A	PROJECT NO. 1420.01	REV
	JULY 2015	FIGURE 1

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SITE AND VICINITY PLAN

Sadri Property and East Parcels
Tillamook, Oregon

SIZE		PROJECT NO.	REV
A		1420.01	
		JULY 2015	FIGURE 2

LEGEND

- Soil boring by Hart Crowser (2011)
- Soil boring by AGI (2014)
- Test pit by AGI (2014)
- Sediment sample
- Above-ground concrete structure
- General location of disposal cell for Type 2 and Type 3 soils.
- Hiking trail along top of levee
- City of Tillamook city limits
- Boundary of Sadri Property

Approximate elevation contours (ft. above mean sea level)

- 15'
- 14'
- 12'
- 8'

0 30 60 90

Scale: 1" = 90' (approx.)

Hoquarten Slough
"East Parcels"
Subject Property
GARBAGE PIT
Former Schmidt property
Former bulk oil plant
Douglas Avenue extension
FRONT ST.
Inlet log pond
East Mill
West Mill
Machine shop
Sawdust burner
ZONED: OPEN SPACE
ZONED: LIGHT INDUSTRIAL
GROSSLY-CONTAMINATED SOIL AND BURIED USED OIL FILTERS
East log pond (marsh)
East log pond (marsh)

HC-1 HC-2 HC-3 HC-5 HC-6 HC-7

IP-1 IP-3 IP-4

TP-1 TP-2 TP-3 TP-4 TP-5 TP-6 TP-7 TP-8 TP-9 TP-10 TP-11 TP-12 TP-13 TP-14 TP-15 TP-16 TP-17 TP-18 TP-19 TP-20 TP-27 TP-28 TP-29 TP-30

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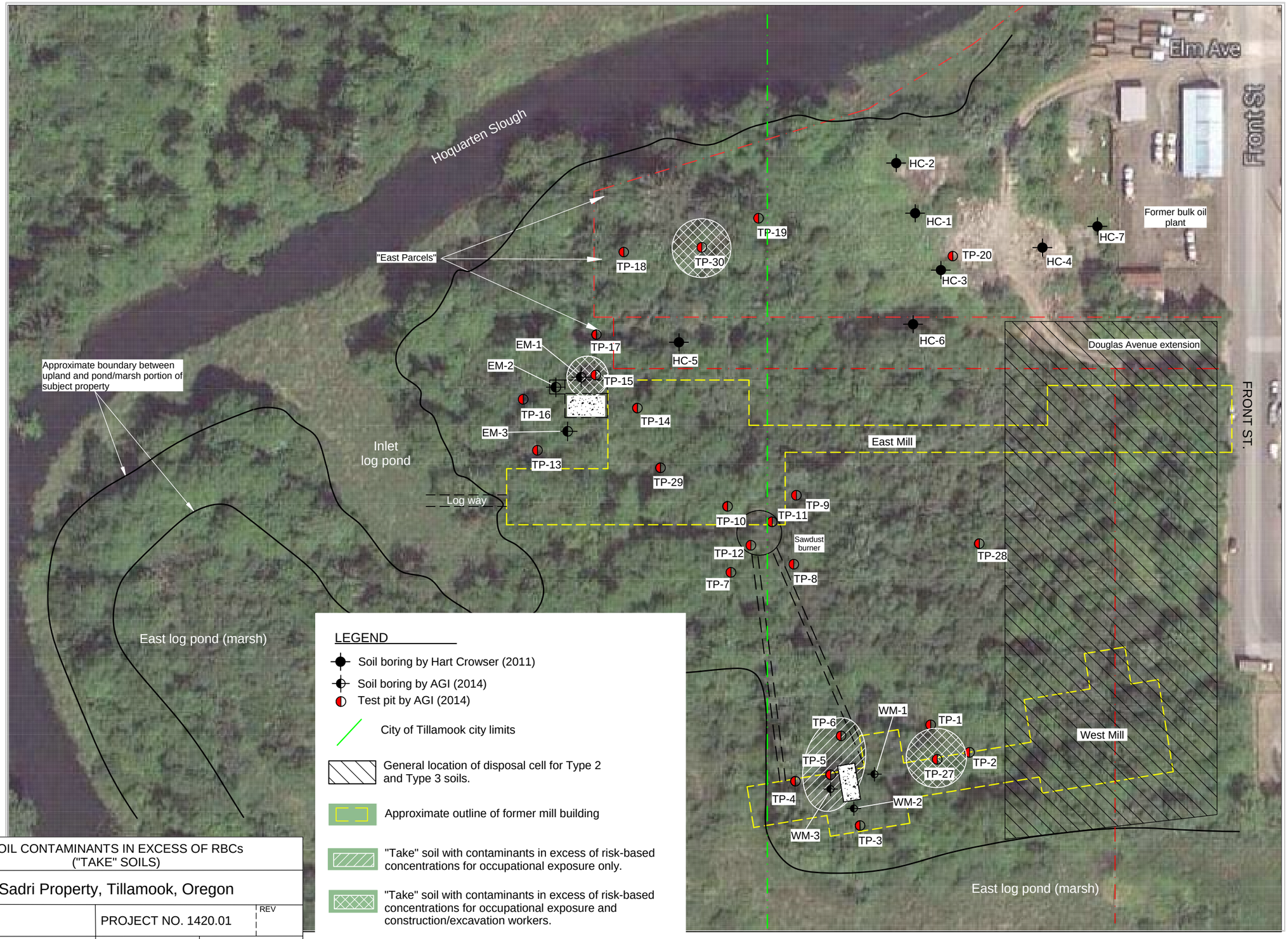
EXISTING TOPOGRAPHIC CONTOUR PLAN - MILL AREAS and EAST PARCELS

Sadri Property, Tillamook, Oregon

SIZE		PROJECT NO. 1420.01	REV
A			
		JULY 2015	FIGURE 3



LEGEND

- Soil boring by Hart Crowser (2011)
- Soil boring by AGI (2014)
- Test pit by AGI (2014)
- City of Tillamook city limits
- General location of disposal cell for Type 2 and Type 3 soils.
- Approximate outline of former mill building
- "Take" soil with contaminants in excess of risk-based concentrations for occupational exposure only.
- "Take" soil with contaminants in excess of risk-based concentrations for occupational exposure and construction/excavation workers.

0 30 60 90

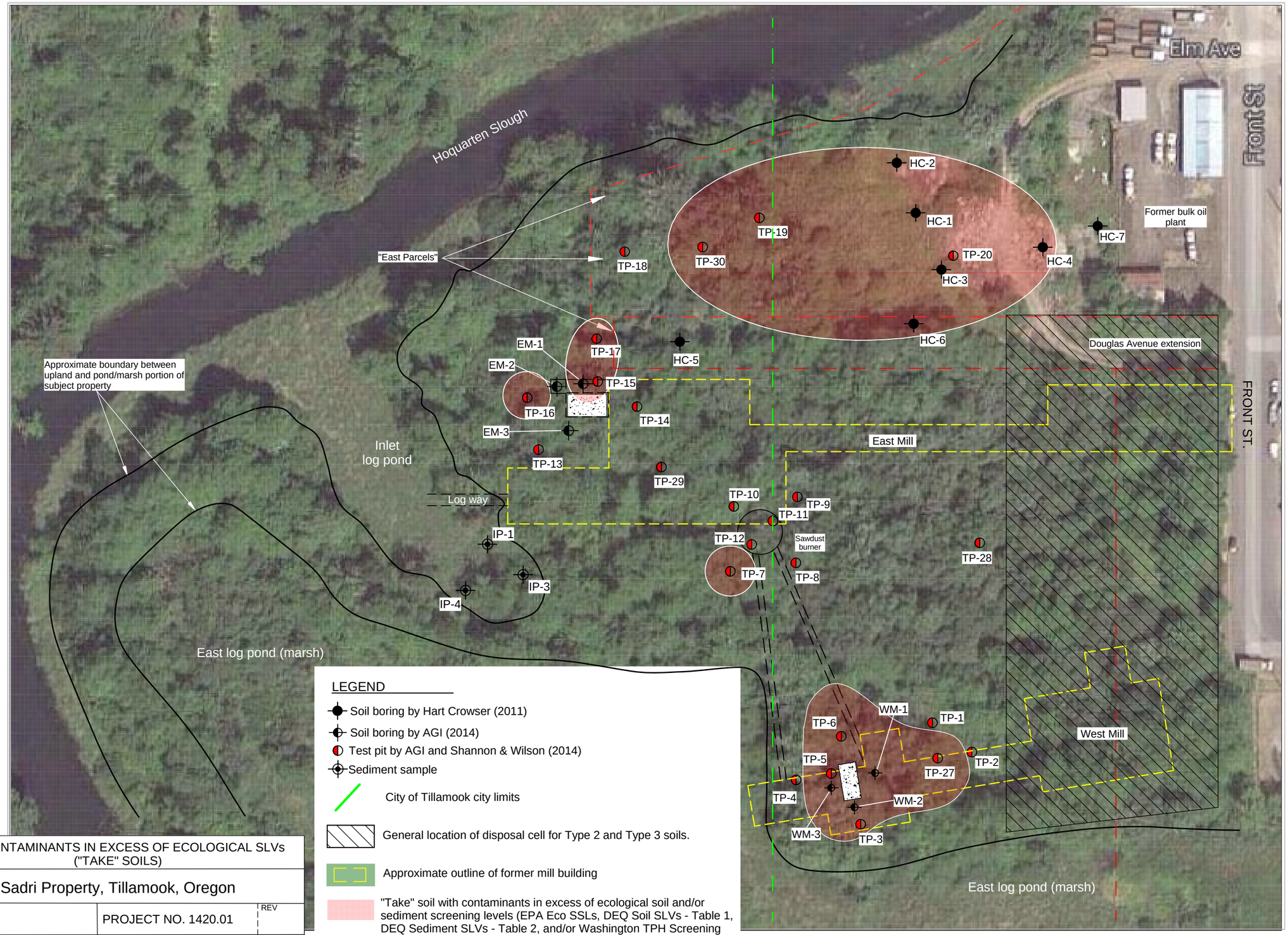
Scale: 1" = 90' (approx.)

ANDERSON GEOLOGICAL

SOIL CONTAMINANTS IN EXCESS OF RBCs ("TAKE" SOILS)

Sadri Property, Tillamook, Oregon

SIZE		PROJECT NO. 1420.01	REV
A			
		JULY 2015	FIGURE 4



LEGEND

- Soil boring by Hart Crowser (2011)
- Soil boring by AGI (2014)
- Test pit by AGI and Shannon & Wilson (2014)
- Sediment sample
- City of Tillamook city limits
- General location of disposal cell for Type 2 and Type 3 soils.
- Approximate outline of former mill building
- "Take" soil with contaminants in excess of ecological soil and/or sediment screening levels (EPA Eco SSLs, DEQ Soil SLVs - Table 1, DEQ Sediment SLVs - Table 2, and/or Washington TPH Screening Levels).

0 30 60 90

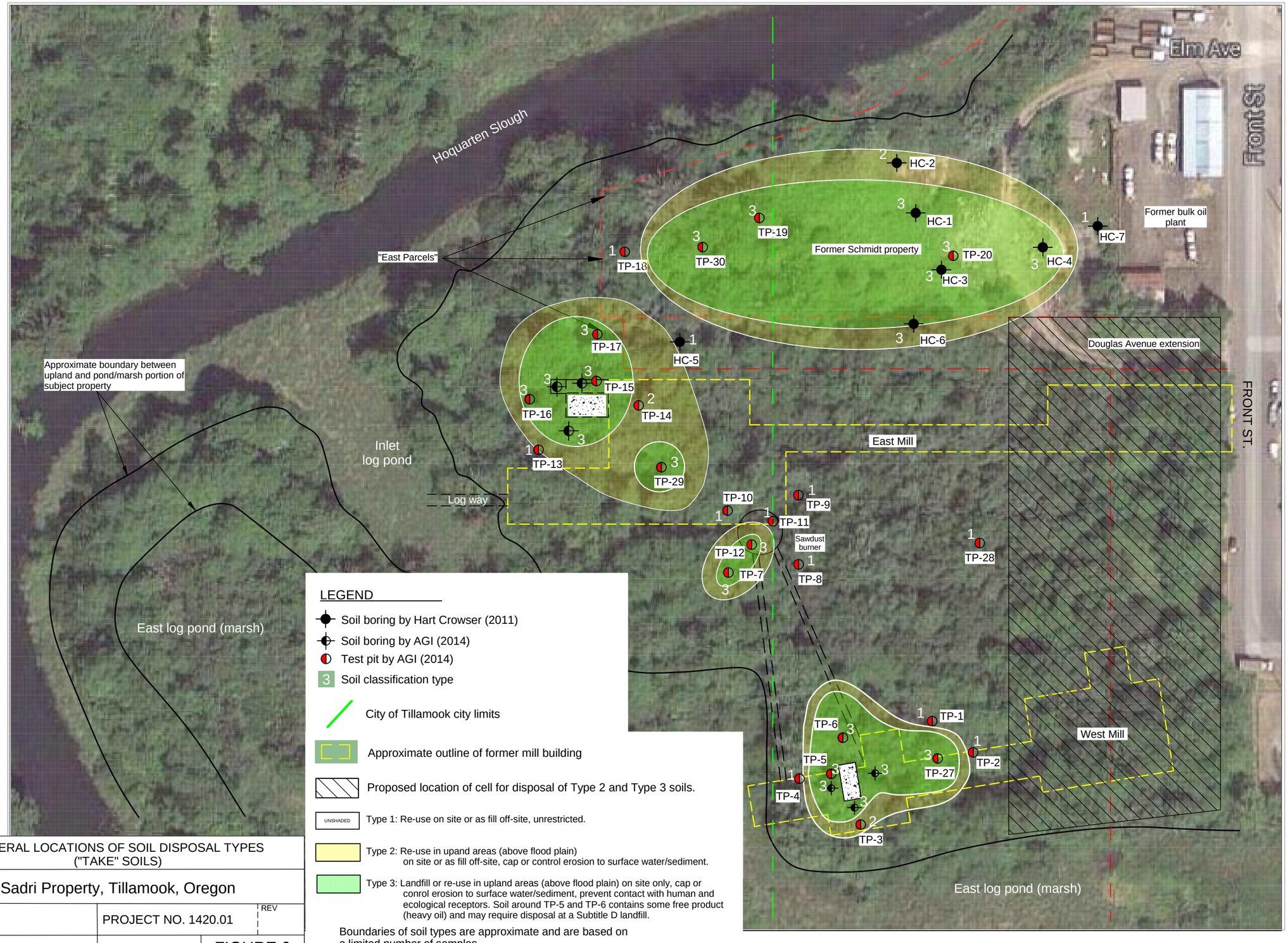
Scale: 1" = 90' (approx.)

ANDERSON GEOLOGICAL

SOIL CONTAMINANTS IN EXCESS OF ECOLOGICAL SLVs ("TAKE" SOILS)

Sadri Property, Tillamook, Oregon

SIZE		PROJECT NO. 1420.01	REV
A			
		JULY 2015	FIGURE 5



LEGEND

- Soil boring by Hart Crowser (2011)
- Soil boring by AGI (2014)
- Test pit by AGI (2014)
- 3 Soil classification type
- City of Tillamook city limits
- Approximate outline of former mill building
- Proposed location of cell for disposal of Type 2 and Type 3 soils.
- UNSHADED Type 1: Re-use on site or as fill off-site, unrestricted.
- Type 2: Re-use in upand areas (above flood plain) on site or as fill off-site, cap or control erosion to surface water/sediment.
- Type 3: Landfill or re-use in upland areas (above flood plain) on site only, cap or conrol erosion to surface water/sediment, prevent contact with human and ecological receptors. Soil around TP-5 and TP-6 contains some free product (heavy oil) and may require disposal at a Subtitle D landfill.

Boundaries of soil types are approximate and are based on a limited number of samples.

0 30 60 90

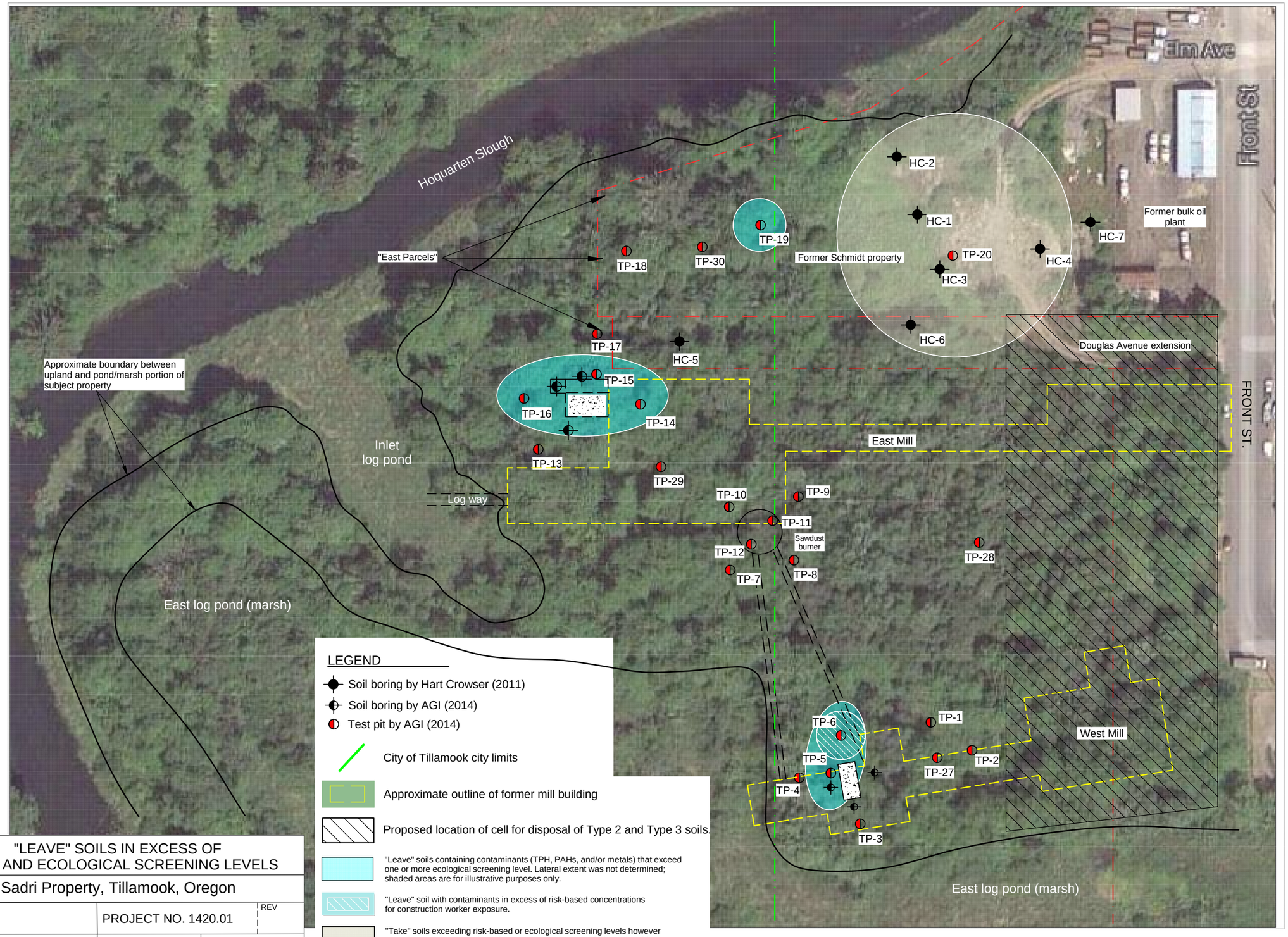
Scale: 1" = 90' (approx.)

ANDERSON GEOLOGICAL

GENERAL LOCATIONS OF SOIL DISPOSAL TYPES ("TAKE" SOILS)

Sadri Property, Tillamook, Oregon

SIZE		PROJECT NO. 1420.01	REV
A			
		JULY 2015	FIGURE 6



0 30 60 90

Scale: 1" = 90' (approx.)

LEGEND

- Soil boring by Hart Crowser (2011)
- Soil boring by AGI (2014)
- Test pit by AGI (2014)
- City of Tillamook city limits
- Approximate outline of former mill building
- Proposed location of cell for disposal of Type 2 and Type 3 soils.
- "Leave" soils containing contaminants (TPH, PAHs, and/or metals) that exceed one or more ecological screening level. Lateral extent was not determined; shaded areas are for illustrative purposes only.
- "Leave" soil with contaminants in excess of risk-based concentrations for construction worker exposure.
- "Take" soils exceeding risk-based or ecological screening levels however no soil samples were collected from "Leave" surface or below. Possible impact to" Leave" soils is not known.

ANDERSON GEOLOGICAL

"LEAVE" SOILS IN EXCESS OF RBCs AND ECOLOGICAL SCREENING LEVELS

Sadri Property, Tillamook, Oregon

SIZE		PROJECT NO. 1420.01	REV
A			
		JULY 2015	FIGURE 7

TABLES

Table 1

Soil Analysis Summary - TAKE SOILS (TPH, PAHs)

Sadri Property, Tillamook, Oregon

East Mill, West Mill

Area	Sample Number	Sample Depth (ft)	Soil Type (1)	Date Collected	Petroleum Hydrocarbons		PAHs															
					Diesel	Heavy oil	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Benzo(a)pyrene	Benzo(g,h,i)perylene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene
West Mill	TP1-0-1T	0-1	1	9/3/2014	20.7J	38.3J	<0.00316	<0.00316	<0.00316	0.0041J	0.00875J		0.00421J	0.00494J	0.00548J	<0.00316	**0.00926**	<0.00316	0.00449J	0.0098J	**0.00931**	**0.00814**
	TP2-0-4T	0-4	1	9/3/2014	<16.6	63.9J	<0.00352	0.00567J	<0.00352	**0.00743**	**0.0209**		**0.0144**	**0.0113**	**0.0122**	<0.00352	**0.0226**	0.00460J	**0.0106**	**0.0204**	**0.0234**	**0.021**
	TP3-0-5T	0-5	2	9/3/2014	**540**	**284**	<0.00376	0.00599J	0.00385J	**0.0108**	**0.0257**		**0.0103**	**0.0128**	**0.0132**	<0.00376	**0.0236**	<0.00376	**0.0130**	**0.0158**	**0.0187**	**0.021**
	TP4-0-3T	0-3	1	9/3/2014	<31.6	**135**	<0.00334	0.00484J	<0.00334	0.00603J	**0.0226**		**0.00825**	**0.0146**	**0.0136**	<0.00334	**0.0353**	<0.00334	**0.0115**	**0.0561**	**0.0369**	**0.0242**
	TP6-0-2T	0-2	1	9/3/2014	<25.0	**59.1**	<0.00212	<0.00212	<0.00212	0.00270J	0.00750J		0.00342J	0.00313J	0.00315J	<0.00212	**0.00514**	<0.00212	0.00301	<0.00425	0.00366J	**0.0048**
	WM1-2	2	3	1/21/2014	<45.4	**330**	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	WM2-1	1	3	1/21/2014	<67.8	**1,290**	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	WM3-1	1	3	1/21/2014	<956	**2,680**	<0.10	**0.547**	**0.242**	**0.763**	**2.74**		**1.23**	**0.93**	**1.34**	**0.235**	**1.92**	**0.134**	**1.05**	**0.117**	**1.62**	**1.79**
	TP27-1	1	3	5/29/2014	**2,380**	**4,830**	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	TP27-2.5	2.5	3	5/29/2014	**38,400**	**15,500**	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
East Mill	TP13-0-2T	0-2	1	9/4/2014	<16.5	**144**	<0.00359	<0.00359	<0.00359	0.00454J	0.0140J		0.00374J	**0.0163**	**0.00763**	<0.00359	**0.0127**	<0.00359	**0.0139**	**0.0202**	**0.0163**	**0.00989**
	TP14-0-2.5T	0-2	2	9/4/2014	<19.2	**203**	0.00367	0.00550J	<0.00367	0.00532J	0.0118J		0.00593J	0.00771	**0.00734**	<0.00367	**0.0193**	0.00372J	0.00704J	**0.0615**	**0.0269**	**0.0180**
	TP16-0-2.5T	0-2.5	3	9/4/2014	<42.3	**373**	<0.0205	0.0210J	0.0255J	**0.116**	**0.252**		**0.155**	**0.319**	**0.150**	0.0249J	**0.279**	<0.205	**0.235**	**0.135**	**0.144**	**0.224**
	TP17-0-3T	0-3	3	9/4/2014	<25.3	**317**	<0.0249	**0.0537**	0.0326J	**0.0874**	**0.264**		**0.125**	**0.323**	**0.144**	<0.0249	**0.361**	<0.0249	**0.240**	**0.395**	**0.343**	**0.332**
	EM1-2	2	3	1/21/2014	<207	**721**	<0.0955	**3.97**	**5.05**	**29.2**	**56.7**		**37.4**	**16.0**	**32.3**	**5.26**	**36.8**	**0.580**	**19.8**	**3.31**	**5.59**	**45.3**
	EM2-3	3	3	1/21/2014	<41.1	<82.1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	EM3-2	2	3	1/21/2014	<68.1	<136	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	EM4-1	1	2	1/21/2014	<42.8	**326**	<0.0194	**0.0209**	<0.0194	<0.0194	<0.0194		<0.0194	<0.0194	<0.0194	<0.0194	<0.0194	<0.0194	<0.0194	**0.02**	<0.0194	**0.0195**
	EM5-1	1	1	1/21/2014	<41.3	**140**	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	TP29-1	1	1	5/29/2014	<60.2	**145**	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	TP29-2.5	2.5	3	5/29/2014	<81.8	<120	<0.0331	<0.0331	<0.0331	<0.0331	<0.0331	<0.0331	<0.0331	<0.0331	<0.0331	<0.0331	<0.0331	<0.0331	<0.0331	**0.121**	<0.0331	<0.0331
Oregon Generic Risk-Based Levels (Occupational)																						
Soil Ingestion, Dermal Contact, Inhalation					14,000	14,000	61,000	ne	>Csat	2.7	2.7	27	0.27	ne	250	0.27	29,000	41,000	2.7	23	ne	21,000
Volatilization To Outdoor Air					>Max	>Max	>Max	ne	>Max	NV	NV	NV	NV	ne	>Csat	NV	NV	NV	NV	99	ne	>Csat
Leaching to Groundwater					>Max	>Max	>Csat	ne	>Csat	>Csat	>Csat	>Csat	>Csat	ne	>Csat	>Csat	>Csat	>Csat	>Csat	0.44	ne	>Csat
Construction Worker					4,600	4,600	19,000	ne	93,000	21	21	210	2.1	ne	2,100	2.1	8,900	12,000	21	580	ne	6,700
Excavation Worker					>Max	>Max	>Csat	ne	>Max	590	590	5,900	59	ne	57,000	59	>Csat	>Max	590	16,000	ne	>Csat
EPA Eco-SSLs																						
Soil Invertebrates					ne	ne	29	29	29	18	18	18	18	18	18	18	18	29	18	29	18	18
Wildlife - Avian					ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne
Wildlife - Mammalian					ne	ne	100	100	100	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	100	1.1	100	1.1	1.1
Oregon DEQ Soil SLVs (Table 1)																						
Plants					ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	10	ne	ne
Invertebrates					ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	30	ne	ne	ne	ne
Birds					ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne
Mammals					ne	ne	ne	ne	ne	ne	ne	ne	125	ne	ne	ne	ne	ne	ne	3,900	ne	ne
Oregon DEQ Sediment SLVs (Table 2)																						
Freshwater					ne	ne	0.29	160	0.057	0.032	ne	0.027	0.032	0.30	0.057	0.033	0.111	0.077	0.017	0.176	42	0.053
Bioaccumulation							ne	ne	ne	ne	ne	ne	0.10	ne	ne	ne	ne	ne	ne	ne	ne	ne
Oregon DEQ - Clean Fill Criteria					ne	ne	29	ne	29	0.15	0.15	1.1	0.015	–	14	0.015	29	29	0.15	0.087	ne	1,700
Washington State TPH Screening Level Values																						
Soil biota					200	200	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	30	ne	ne	ne	ne
Wildlife					6,000	6,000	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne

All values in milligrams per kilogram (mg/kg)

Generic Risk-Based Levels are based on *Risk-Based Decision Making for the Remediation of Petroleum-Contaminated Sites, Oregon DEQ, Sept., 2003* (revised June 7, 2012)

>Csat: The soil RBC exceeds the saturation limit of the soil

J: This is an estimated value. The value is below the method reporting limit but above the limit of detection.

>Max: The constituent RBC for this pathway is greater than 100,000 mg/kg.

ne - Not established

NV: This chemical is considered "non-volatile" for purposes of the exposure calculations

– Sample not analyzed

Concentration exceeds one or more risk-based concentration, ecological screening level or Clean Fill Criteria.

Value that is exceeded by one or more of the values shaded in yellow.

Table 1 (cont.)

Soil Analysis Summary - TAKE SOILS (TPH, PAHs)

Sadri Property, Tillamook, Oregon

East Parcel, Sawdust Burner

Area	Sample Number	Sample Depth (ft)	Soil Type (1)	Date Collected	Petroleum Hydrocarbons		PAHs															
					Diesel	Heavy oil	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Benzo(a)pyrene	Benzo(g,h,i)perylene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene
East Parcel	TP18-0-6T	0-6	1	9/4/2014	<16.4	38.3J	<0.0302	0.00302	0.00302	0.00378J	<0.00858J		0.00387J	**0.00937**	0.00320J	0.00308J	**0.00785**	<0.00302	**0.00657**	**0.0200**	**0.0101**	0.00514J
	TP19-0-7T	0-7	3	9/4/2014	<11.4	**113**	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	TP20-4-8T	0-8	3	9/4/2014	<10.5	**117**	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	TP30-1	1	3	5/29/2014	<34.6	<69.2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	TP30-3	3	3	5/29/2014	<1,100	**2,190**	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	TP30-6	6	1	5/29/2014	<41.9	<83.9	<0.0164	<0.0164	<0.0164	<0.0164	<0.0164	<0.0164	<0.0164	<0.0164	<0.0164	<0.0164	<0.0164	<0.0164	<0.0164	<0.0164	<0.0164	<0.0164
	HC-1	5-6	3	5/9/2011	**34**	**190**	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	HC-2	6.5	2	5/9/2011	**57**	**360**	<0.11	<0.011	**0.0017**	**0.0058**	**0.098**	**0.0036**	**0.012**	**0.0058**	**0.018**	<0.011	**0.019**	<0.011	<0.011	<0.011	**0.0081**	**0.018**
	HC-3	8	3	5/9/2011	**37**	**200**	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	HC-4	4.5	3	5/9/2011	**10**	**89**	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	HC-5	5-6	1	5/9/2011	<5.0	<12	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	HC-6	5-6	3	5/9/2011	**780**	**7,400**	**0.050**	**0.018**	**0.022**	**0.024**	**0.031**	**0.0081**	**0.020**	**0.0087**	**0.031**	<0.011	**0.052**	**0.035**	**0.0078**	**0.022**	**0.076**	**0.042**
	HC-7	0-1	1	5/9/2011	<5.1	**13**	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Sawdust Burner	TP7-0-3T	0-3	3	9/3/2014	42.1J	<66.9	0.00538J	**0.0215**	0.00823J	**0.0135**	**0.0273**		**0.0166**	**0.0161**	**0.0153**	<0.0051	**0.0466**	**0.0116**	**0.0134**	**0.121**	**0.0550**	**0.0459**
	TP8-0-2.5T	0-2.5	1	9/3/2014	–	–	<0.00202	<0.00202	<0.00202	<0.00202	<0.00202	<0.00202	<0.00202	<0.00202	<0.00202	<0.00202	<0.00202	<0.00202	<0.00202	<0.00807	<0.00202	<0.00202
	TP9-0-2.5T	0-2.5	1	9/3/2014	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	TP11-0-3T	0-3	1	9/3/2014	<11.6	<23.2	<0.00213	<0.00213	<0.00213	<0.00213	<0.00213	<0.00213	<0.00213	<0.00213	<0.00213	<0.00213	<0.00213	<0.00213	<0.00213	<0.00427	<0.00213	<0.00213
	TP12-0-2T	0-2	3	9/3/2014	<19.4	**106**	<0.00388	**0.00892**	0.00427J	**0.00810**	**0.0194**		**0.00858**	**0.00928**	**0.0109**	<0.00388	**0.0276**	0.00414J	**0.00881**	**0.102**	**0.0478**	**0.0257**
Oregon Generic Risk-Based Levels (Occupational)																						
Soil Ingestion, Dermal Contact, Inhalation					14,000	14,000	61,000	ne	>Csat	2.7	2.7	27	0.27	ne	250	0.27	29,000	41,000	2.7	23	ne	21,000
Volatilization To Outdoor Air					>Max	>Max	>Max	ne	>Max	NV	NV	NV	NV	ne	>Csat	NV	NV	NV	NV	99	ne	>Csat
Leaching to Groundwater					>Max	>Max	>Csat	ne	>Csat	>Csat	>Csat	>Csat	>Csat	ne	>Csat	>Csat	>Csat	>Csat	>Csat	0.44	ne	>Csat
Construction Worker					4,600	4,600	19,000	ne	93,000	21	21	210	2.1	ne	2,100	2.1	8,900	12,000	21	580	ne	6,700
Excavation Worker					>Max	>Max	>Csat	ne	>Max	590	590	5,900	59	ne	57,000	59	>Csat	>Max	590	16,000	ne	>Csat
EPA Eco-SSLs																						
Soil Invertebrates					ne	ne	29	29	29	18	18	18	18	18	18	18	18	29	18	29	18	18
Wildlife - Avian					ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne
Wildlife - Mammalian					ne	ne	100	100	100	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	100	1.1	100	1.1	1.1
Oregon DEQ Soil SLVs (Table 1)																						
Plants					ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	10	ne	ne
Invertebrates					ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	30	ne	ne	ne	ne
Birds					ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne
Mammals					ne	ne	ne	ne	ne	ne	ne	ne	125	ne	ne	ne	ne	ne	ne	3,900	ne	ne
Oregon DEQ Sediment SLVs (Table 2)																						
Freshwater					ne	ne	0.29	160	0.057	0.032	ne	0.027	0.032	0.30	0.057	0.033	0.111	0.077	0.017	0.176	42	0.053
Bioaccumulation							ne	ne	ne	ne	ne	ne	0.10	ne	ne	ne	ne	ne	ne	ne	ne	ne
Oregon DEQ - Clean Fill Criteria					ne	ne	29	ne	29	0.15	0.15	1.1	0.015	–	14	0.015	29	29	0.15	0.087	ne	1,700
Washington State TPH Screening Level Values																						
Soil biota					200	200	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	30	ne	ne	ne	ne
Wildlife					6,000	6,000	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne

All values in milligrams per kilogram (mg/kg)

Generic Risk-Based Levels are based on *Risk-Based Decision Making for the Remediation of Petroleum-Contaminated Sites, Oregon DEQ, Sept., 2003* (revised June 7, 2012)

>Csat: The soil RBC exceeds the saturation limit of the soil

J: This is an estimated value. The value is below the method reporting limit but above the limit of detection.

>Max: The constituent RBC for this pathway is greater than 100,000 mg/kg.

ne - Not established

NV: This chemical is considered "non-volatile" for purposes of the exposure calculations

– Sample not analyzed

Concentration exceeds one or more risk-based concentration, ecological screening level or Clean Fill Criteria.

Value that is exceeded by one or more of the values shaded in yellow.

Table 2

Soil Analysis Summary - TAKE SOILS (Metals)

Sadri Property, Tillamook, Oregon

East Mill, West Mill

Area	Sample Number	Sample Depth (ft)	Soil Type (1)	Date Collected	Metals							
					Arsenic	Barium	Cadmium	Chromium	Lead	Mercury	Selenium	Silver
West Mill	TP1-0-1T	0-1	1	9/3/2014	–	–	**0.366**	–	**10.5**	–	–	–
	TP2-0-4T	0-4	1	9/3/2014	–	–	0.364J	–	**9.18**	–	–	–
	TP3-0-5T	0-5	2	9/3/2014	–	–	**0.495**	–	**20.2**	–	–	–
	TP4-0-3T	0-3	1	9/3/2014	–	–	**0.448**	–	**14.8**	–	–	–
	TP6-0-2T	0-2	1	9/3/2014	–	–	**0.227**	–	**2.80**	–	–	–
	WM1-2	2	2	1/21/2014	**5.26**	**53.5**	**0.638**	**52.0**	**25.6**	<0.176	<2.20	<0.440
	WM2-1	1	1	1/21/2014	**3.90**	**112**	**0.692**	**34.5**	**62.2**	<0.252	<3.14	<0.629
	WM3-1	1	1	1/21/2014	**3.48**	**93.9**	**0.599**	**30.1**	**98.4**	<0.184	<2.30	<0.461
	TP27-1	1	3	5/29/2014	**7.61**	–	**2.39**	–	**355**	–	–	–
	TP27-2.5	2.5	3	5/29/2014	<4.50	–	<0.90	–	**19.4**	–	–	–
	TP27-6	6	3	5/29/2014	**4.61**	–	<0.504	–	**5.82**	–	–	–
East Mill	TP13-0-2T	0-2	1	9/4/2014	–	**97.1**	<0.201	–	**15.9**	–	–	–
	TP14-0-2.5T	0-2	2	9/4/2014	–	**147**	0.343J	–	**22.0**	–	–	–
	TP16-0-2.5T	0-2.5	3	9/4/2014	–	**659**	**1.01**	–	**124**	–	–	–
	TP17-0-3T	0-3	3	9/4/2014	–	**153**	**0.589**	–	**48.3**	–	–	–
	EM1-2	2	2	1/21/2014	**10.3**	**1,290**	**5.12**	**41.2**	**108**	<0.167	<2.09	**1.04**
	EM2-3	3	3	1/21/2014	**5.57**	**261**	**0.606**	**53.2**	**14.3**	<0.156	<1.96	<0.391
	EM3-2	2	2	1/21/2014	**5.98**	**239**	<0.683	**38.3**	**39.0**	<0.273	<3.42	<0.683
	EM4-1	1	1	1/21/2014	–	–	–	–	–	–	–	–
	EM5-1	1	1	1/21/2014	–	–	–	–	–	–	–	–
	TP29-1	1	1	5/29/2014	**6.25**	–	<0.510	–	**30.4**	–	–	–
	TP29-2.5	2.5	3	5/29/2014	<3.33	–	<0.665	–	**15.0**	–	–	–
Oregon Generic Risk-Based Levels (Occupational)												
Soil Ingestion, Dermal Contact,Inhalation					1.7	>Max	510	>Max	800	310	ne	5,100
Volatilization To Outdoor Air					NV	NV	NV	NV	NV	NV	ne	NV
Leaching to Groundwater					ne	ne	ne	ne	30	ne	ne	ne
Construction Worker					13	60,000	150	>Max	800	93	ne	1,500
Excavation Worker					370	>Max	4,300	>Max	800	2,600	ne	4,300
EPA Eco SSLs												
Soil Invertebrates					NA	330	140	NA	1,700	NA	4.1	NA
Wildlife - Avian					43	na	0.77	26	11	NA	1.2	4.2
Wildlife - Mammalian					46	2,000	0.36	34	56	NA	0.63	14
Oregon DEQ Soil SLVs (Table 1)												
Plants					10	500	4	1	50	0.3	1	2
Invertebrates					60	3,000	20	0.4	500	0.1	70	50
Birds					10	85	6	4	16	1.5	2	ne
Mammals					29	638	125	340,000	4,000	73	25	ne
Oregon DEQ Sediment SLVs (Table 2)												
Freshwater					6	ne	0.6	37	35	0.2	ne	4.5
Bioaccumulation					4	ne	0.003	4,200	128	ne	0.1	ne
Oregon DEQ - Clean Fill Criteria					12	840	0.54	240	34	0.11	1.5	0.41
Default background concentrations (a)												
Soil					12	840	0.54	240	34	0.11	1.5	0.41

All values in milligrams per kilogram (mg/kg)

Generic Risk-Based Levels are based on *Risk-Based Decision Making for the Remediation of Petroleum-Contaminated Sites, Oregon DEQ,* Sept., 2003 (revised June 7, 2012)

J: This is an estimated value. The value is below the method reporting limit but above the limit of detection.

>Max: The constituent RBC for this pathway is greater than 100,000 mg/kg.

ne - Not established

NV: This chemical is considered "non-volatile" for purposes of the exposure calculations

– Sample not analyzed

Highlighted cells exceed the indicated screening values **and** background concentrations.

See report for definitions of soil types.

Concentration exceeds one or more risk-based concentration, ecological screening level or Clean Fill Criteria.

Value that is exceeded by one or more of the values shaded in yellow.

Table 2 (cont.)
Soil Analysis Summary - TAKE SOILS (Metals)
Sadri Property, Tillamook, Oregon
East Parcels, Sawdust Burner

Area	Sample Number	Sample Depth (ft)	Soil Type (1)	Date Collected	Metals							
					Arsenic	Barium	Cadmium	Chromium	Lead	Mercury	Selenium	Silver
East Parcels	TP18-0-6T	0-6	1	9/4/2014	**5.29**	**57.4**	<0.201	**46.4**	**7.50**	<0.0802	<1.00	<0.201
	TP19-0-7T	0-7	3	9/4/2014	**3.00**	**93.2**	**0.621**	**24.5**	**78.1**	<0.0675J	<0.647	<0.129
	TP20-4-8T	0-8	3	9/4/2014	**3.96**	**135**	**0.362**	**56.4**	**159**	**0.227**	<0.127J	<0.139
	TP30-1	1	3	5/29/2014	**4.09**	–	**0.603**	–	**168**	–	–	–
	TP30-3	3	3	5/29/2014	6.35	–	**5.55**	–	**1,160**	–	–	–
	TP30-4	4	3	5/29/2014	9.06	–	**2.59**	–	**281**	–	–	–
	HC-1	5-6	3	5/9/2011	**6.7**	**130**	<0.39	**36**	**59**	**0.12**	–	–
	HC-2	6.5	2	5/9/2011	**7.9**	**43**	<0.47	**53**	**10**	**0.034**	–	–
	HC-3	8	3	5/9/2011	**9.8**	**240**	<0.33	**29**	**130**	**0.091**	–	–
	HC-4	4.5	3	5/9/2011	**4.2**	**210**	**0.14**	**27**	**100**	**0.24**	–	–
	HC-5	5-6	1	5/9/2011	**7.2**	**47**	<0.31	**8.6**	**15**	**0.0037**	–	–
	HC-6	5-6	3	5/9/2011	**4.4**	**94**	<0.46	**31**	**30**	**0.072**	–	–
	HC-7	0-1	1	5/9/2011	<1.3	**130**	<0.32	**38**	**18**	**0.015**	–	–
Sawdust Burner	TP7-0-3T	0-3	3	9/3/2014	–	–	–	–	–	–	–	–
	TP8-0-2.5T	0-2.5	1	9/3/2014	–	–	–	–	–	–	–	–
	TP9-0-2.5T	0-2.5	1	9/3/2014	–	–	–	–	–	–	–	–
	TP11-0-3T	0-3	1	9/3/2014	0.418J	**116**	**0.246**	**28.0**	**1.84**	<0.0492	0.713J	<0.123
	TP12-0-2T	0-2	3	9/3/2014	**2.90**	**216**	0.283J	**40.0**	**25.3**	<0.0872	1.09J	<0.218
Oregon Generic Risk-Based Levels (Occupational)												
Soil Ingestion, Dermal Contact,Inhalation					1.7	>Max	510	>Max	800	310	ne	5,100
Volatilization To Outdoor Air					NV	NV	NV	NV	NV	NV	ne	NV
Leaching to Groundwater					ne	ne	ne	ne	30	ne	ne	ne
Construction Worker					13	60,000	150	>Max	800	93	ne	1,500
Excavation Worker					370	>Max	4,300	>Max	800	2,600	ne	4,300
EPA Eco SSLs												
Soil Invertebrates					NA	330	140	NA	1,700	NA	4.1	NA
Wildlife - Avian					43	na	0.77	26	11	NA	1.2	4.2
Wildlife - Mammalian					46	2,000	0.36	34	56	NA	0.63	14
Oregon DEQ Soil SLVs (Table 1)												
Plants					10	500	4	1	50	0.3	1	2
Invertebrates					60	3,000	20	0.4	500	0.1	70	50
Birds					10	85	6	4	16	1.5	2	ne
Mammals					29	638	125	340,000	4,000	73	25	ne
Oregon DEQ Sediment SLVs (Table 2)												
Freshwater					6	ne	0.6	37	35	0.2	ne	4.5
Bioaccumulation					4	ne	0.003	4,200	128	ne	0.1	ne
Oregon DEQ - Clean Fill Criteria					12	840	0.54	240	34	0.11	1.5	0.41
Default background concentrations (a)												
Soil					12	840	0.54	240	34	0.11	1.5	0.41

All values in milligrams per kilogram (mg/kg)
Generic Risk-Based Levels are based on *Risk-Based Decision Making for the Remediation of Petroleum-Contaminated Sites, Oregon DEQ,* Sept., 2003 (revised June 7, 2012)
J: This is an estimated value. The value is below the method reporting limit but above the limit of detection.
>Max: The constituent RBC for this pathway is greater than 100,000 mg/kg.
ne - Not established
NV: This chemical is considered "non-volatile" for purposes of the exposure calculations
– Sample not analyzed
Highlighted cells exceed the indicated screening values **and** background concentrations.
See report for definitions of soil types.
Concentration exceeds one or more risk-based concentration, ecological screening level or Clean Fill Criteria.
Value that is exceeded by one or more of the values shaded in yellow.

Table 3

Soil Analysis Summary - TAKE SOILS (Dioxins/Furans)

Sadri Property, Tillamook, Oregon

Sawdust Burner

Area	Sample Number	Sample Depth (ft)	Date Collected	Dioxins/Furans																
				2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	1,2,3,6,7,8- Hexachlorodibenzo-p-dioxin (HxCDD)	1,2,3,7,8,9- Hexachlorodibenzo-p-dioxin (HxCDD)	1,2,3,4,6,7,8- Heptachlorodibenzo-p-dioxin (HpCDD)	1,2,3,4,5,6,7,8-Octachlorodibenzo-p-dioxin (OCDD)	2,3,7,8-Tetrachlorodibenzofuran (TCDF)	1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	1,2,3,4,5,6,7,8-Octachlorodibenzofuran (OCDF)
Sawdust Burner	TP11-0-3T	0-3	9/4/2014	<0.162	0.213J	0.280J	0.815J	0.745J	**16.2**	**138**	0.238J	0.162J	<0.122	0.386J	0.193J	<0.116	<0.102	3.40J	<0.268	**16.1**
	TP12-0-2T	0-2	9/4/2014	0.769J	1.33J	1.66J	4.15J	4.33J	**79.4**	**606**	**2.84**	0.758J	0.712J	1.77J	0.736J	0.116J	0.487J	**15.2**	0.950J	**65.0**
Oregon Generic Risk-Based Levels (Occupational)																				
Soil Ingestion, Dermal Contact,Inhalation				15	15	150	150	150	1,500	50,000	150	500	50	150	150	150	150	1,500	1,500	50,000
Volatilization To Outdoor Air				>Csat	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne
Leaching to Groundwater				45	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne
Construction Worker				150	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne
Excavation Worker				4,200	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne
EPA Eco SSLs																				
Soil Invertebrates				ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne
Wildlife - Avian				ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne
Wildlife - Mammalian				ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne
Oregon DEQ Soil SLVs (Table 1)																				
Plants				ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne
Invertebrates				ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne
Birds				55	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne
Mammals				120	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne
Oregon DEQ Sediment SLVs (Table 2)																				
Freshwater				9	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne
Bioaccumulation				0.85	0.85	8.5	8.5	8.5	85	2,833	8.5	28.3	2.83	8.5	8.5	8.5	8.5	85	85	2,833

All values in nanograms per kilogram (ng/kg)

Generic Risk-Based Levels are based on *Risk-Based Decision Making for the Remediation of Petroleum-Contaminated Sites, Oregon DEQ,* Sept., 2003 (revised June 7, 2012)

>Csat: The soil RBC exceeds the saturation limit of the soil

J: This is an estimated value. The value is below the method reporting limit but above the limit of detection.

>Max: The constituent RBC for this pathway is greater than 100,000 mg/kg.

ne - Not established

NV: This chemical is considered "non-volatile" for purposes of the exposure calculations

– Sample not analyzed

Table 4

Soil Analysis Summary - LEAVE SOILS (TPH, PAHs)

Sadri Property, Tillamook, Oregon

East Mill, West Mill, East Parcels, Sawdust Burner

Area	Sample Number	Sample Depth (ft)	Date Collected	Petroleum Hydrocarbons		PAHs (mg/kg)															
				Diesel	Heavy oil	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Benzo(a)pyrene	Benzo(g,h,i)perylene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene
West Mill	TP1-6L	6	9/3/2014	<29.6	<59.2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	TP3-5L	5	9/3/2014	<22.8	63.1J	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	TP4-3L	3	9/3/2014	–	–	<0.00481	**0.0151**	<0.00481	<0.00481	<0.00481	<0.00481	<0.00481	<0.00481	<0.00481	<0.00481	0.00637J	0.00712J	<0.00481	0.0109J	**0.0144**	0.00687J
	TP5-3.5L	3.5	9/4/2014	<252	**4,180**	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	TP5-5V	5	9/4/2014	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	TP6-5V	5	9/3/2014	2,860J	**13,000**	**0.0998**	<0.0639	<0.0959	<0.0639	0.118J		**0.0812**	<0.0320	<0.0799	<0.0320	**0.170**	**0.134**	<0.0320	**0.226**	**0.327**	**0.188**
	TP27-5	5	5/29/2014	<61.1	<122	<0.0264	**0.0548**	<0.0264	<0.0264	<0.0264	<0.0264	<0.0264	<0.0264	<0.0264	<0.0264	<0.0264	<0.0264	<0.0264	<0.0264	<0.0264	<0.0264
East Mill	TP13-2L	2	9/4/2014	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	TP14-2.5L	2.5	9/4/2014	58.9J	99.6J	<0.00616	0.00750J	<0.00616	0.00908J	**0.0248**		**0.0155**	**0.0226**	**0.0160**	<0.00616	**0.0288**	<0.00616	**0.0174**	**0.0388**	**0.0239**	**0.0371**
	TP15-3.5L	3.5	9/4/2014	29.9J	56.5J	<0.00431	**0.0141**	0.00565J	0.00653J	**0.0193**		**0.0108**	**0.0391**	0.00799J	<0.00431	**0.0339**	<0.00631J	**0.0254**	**0.0738**	**0.0427**	**0.0335**
	TP15-5V	5	9/4/2014	–	–	<0.00913	<0.00913	<0.00913	<0.00913	<0.00913	<0.00913	<0.00913	<0.00913	<0.00913	<0.00913	<0.00913	<0.00913	<0.00913	<0.0183	<0.00913	<0.00913
	TP16-2.5L	2.5	9/4/2014	–	–	<0.00380	**0.0114**	0.00647J	**0.0128**	**0.0298**		**0.0161**	**0.0219**	**0.016**	<0.0038	**0.0444**	<0.00743J	**0.0174**	**0.115**	**0.0534**	**0.0412**
	TP17-3L	3	9/4/2014	<28.2	<56.4	<0.00457	<0.00457	<0.00457	<0.00457	<0.00457	<0.00457	<0.00457	<0.00457	<0.00457	<0.00457	<0.00457	<0.00457	<0.00457	<0.00914	<0.00457	<0.00457
East Parcels	TP18-6L	6	9/4/2014	–	–	<0.00398	<0.00398	<0.00398	<0.00398	<0.00398	<0.00398	<0.00398	<0.00398	<0.00398	<0.00398	<0.00398	<0.00398	<0.00398	<0.00796	<0.00398	<0.00398
	TP19-7L	7	9/4/2014	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	TP30-6	6	5/29/2014	<41.9	<83.9	<0.0164	<0.0164	<0.0164	<0.0164	<0.0164	<0.0164	<0.0164	<0.0164	<0.0164	<0.0164	<0.0164	<0.0164	<0.0164	<0.0164	<0.0164	<0.0164
Sawdust Burner	TP7-3L	3	9/3/2014	–	–	0.00696J	**0.0373**	0.00774J	0.00825J	**0.0210**		0.00631J	**0.00933**	0.00802J	<0.00418	**0.0410**	**0.0118**	0.00741J	**0.120**	**0.061**	**0.0435**
	TP8-2.5L	2.5	9/3/2014	–	–	<0.00184J	<0.00184J	<0.00184J	<0.00184J	<0.00184J	<0.00184J	<0.00184J	<0.00184J	<0.00184J	<0.00184J	<0.00184J	<0.00184J	<0.00184J	<0.00184J	<0.00367	<0.00184	<0.00184
	TP9-2.5L	2.5	9/3/2014	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	TP10-6L	6	9/3/2014	–	–	<0.00506	**0.214**	0.00736L	**0.0153**	**0.0252**		**0.0134**	**0.0206**	**0.0133**	<0.00506	**0.0444**	**0.0118**	**0.0154**	**0.139**	**0.0533**	**0.0464**
	TP11-3L	3	9/3/2014	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	TP12-4L	4	9/3/2014	–	–	<0.00385	<0.00385	<0.00385	0.00436J	<0.00771		<0.00385	0.00500J	<0.00385	<0.00385	**0.00885**	0.00472J	0.00391J	**0.0200**	**0.0141**	**0.00960**
Oregon Generic Risk-Based Levels (Occupational)																					
Soil Ingestion, Dermal Contact,Inhalation				14,000	14,000	61,000	ne	>Csat	2.7	2.7	27	0.27	ne	250	0.27	29,000	41,000	2.7	23	ne	21,000
Volatilization To Outdoor Air				>Max	>Max	>Max	ne	>Max	NV	NV	NV	NV	ne	>Csat	NV	NV	NV	NV	99	ne	>Csat
Leaching to Groundwater				>Max	>Max	>Csat	ne	>Csat	>Csat	>Csat	>Csat	>Csat	ne	>Csat	>Csat	>Csat	>Csat	>Csat	0.44	ne	>Csat
Construction Worker				4,600	4,600	19,000	ne	93,000	21	21	210	2.1	ne	2,100	2.1	8,900	12,000	21	580	ne	6,700
Excavation Worker				>Max	>Max	>Csat	ne	>Max	590	590	5,900	59	ne	57,000	59	>Csat	>Max	590	16,000	ne	>Csat
EPA Eco-SSLs																					
Soil Invertebrates				ne	ne	29	29	29	18	18	18	18	18	18	18	18	29	18	29	18	18
Wildlife - Avian				ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne
Wildlife - Mammalian				ne	ne	100	100	100	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	100	1.1	100	1.1	1.1
Oregon DEQ Soil SLVs (Table 1)																					
Plants				ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	10	ne	ne
Invertebrates				ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	30	ne	ne	ne	ne
Birds				ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne
Mammals				ne	ne	ne	ne	ne	ne	ne	ne	125	ne	ne	ne	ne	ne	ne	3,900	ne	ne
Oregon DEQ Sediment SLVs (Table 2)																					
Freshwater				ne	ne	0.29	160	0.057	0.032	ne	0.027	0.032	0.30	0.057	0.033	0.111	0.077	0.017	0.176	42	0.053
Bioaccumulation				ne	ne	ne	ne	ne	ne	ne	ne	0.10	ne	ne	ne	ne	ne	ne	ne	ne	ne
Oregon DEQ - Clean Fill Criteria				ne	ne	29	ne	29	0.15	0.15	1.1	0.015	ne	14	0.015	29	29	0.15	0.087	ne	1,700
Washington State TPH Screening Level Values																					
Soil biota				200	200	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	30	ne	ne	ne	ne
Wildlife				6,000	6,000	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne

All values in milligrams per kilogram (mg/kg)

Generic Risk-Based Levels are based on *Risk-Based Decision Making for the Remediation of Petroleum-Contaminated Sites, Oregon DEQ, Sept., 2003* (revised June 7, 2012)

>Csat: The soil RBC exceeds the saturation limit of the soil

J: This is an estimated value. The value is below the method reporting limit but above the limit of detection.

>Max: The constituent RBC for this pathway is greater than 100,000 mg/kg.

ne - Not established

NV: This chemical is considered "non-volatile" for purposes of the exposure calculations

– Sample not analyzed

Concentration exceeds one or more risk-based concentration, ecological screening level or Clean Fill Criteria.

Value that is exceeded by one or more of the values shaded in yellow.

Table 5

Soil Analysis Summary - LEAVE SOILS (Metals)

Sadri Property, Tillamook, Oregon

East Mill, West Mill, East Parcels, Sawdust Burner

Area	Sample Number	Sample Depth (ft)	Date Collected	Metals							
				Arsenic	Barium	Cadmium	Chromium	Lead	Mercury	Selenium	Silver
West Mill	TP1-6L	6	9/3/2014	–	–	–	–	–	–	–	–
	TP3-5L	5	9/3/2014	–	–	–	–	–	–	–	–
	TP4-3L	3	9/3/2014	–	–	–	–	–	–	–	–
	TP5-3.5L	3.5	9/4/2014	**3.49**	**67.8**	<0.276	**38.3**	**14.8**	<0.110	<01.37	<0.275
	TP5-5V	5	9/4/2014	–	–	–	–	–	–	–	–
	TP6-5V	5	9/3/2014	–	–	0.431J	–	**75.8**	–	–	–
	TP27-5	5	9/3/2014	**4.03**	–	<0.548	–	**5.12**	–	–	–
East Mill	TP13-2L	2	9/4/2014	–	–	–	–	–	–	–	–
	TP14-2.5L	2.5	9/4/2014	–	–	–	–	–	–	–	–
	TP15-3.5L	3.5	9/4/2014	–	**65.8**	0.387J	–	**14.0**	–	–	–
	TP15-5V	5	9/4/2014	–	–	–	–	–	–	–	–
	TP16-2.5L	2.5	9/4/2014	**4.13**	**164**	**0.569**	**44.9**	**21.2**	0.109J	<4.22	<0.422
	TP17-3L	3	9/4/2014	**4.57**	**138**	**0.770**	**49.3**	**6.29**	<0.103	<1.28	<0.257
East Parcels	TP18-6L	6	9/4/2014	–	–	–	–	–	–	–	–
	TP19-7L	7	9/4/2014	**2.60**	**65.4**	**0.603**	**56.4**	**5.41**	<0.0635	<0.794	<0.159
	TP30-6	6	5/29/2014	**5.11**	**80.6**	<0.379	**50.2**	**6.84**	<0.152	<1.89	<0.379
Sawdust Burner	TP7-3L	3	9/3/2014	–	–	–	–	–	–	–	–
	TP8-2.5L	2.5	9/3/2014	–	–	–	–	–	–	–	–
	TP9-2.5L	2.5	9/3/2014	–	–	–	–	–	–	–	–
	TP10-6L	6	9/3/2014	–	–	–	–	–	–	–	–
	TP11-3L	3	9/3/2014	–	–	–	–	–	–	–	–
	TP12-4L	4	9/3/2014	–	–	–	–	–	–	–	–
Oregon Generic Risk-Based Levels (Occupational)											
Soil Ingestion, Dermal Contact,Inhalation				1.7	>Max	510	>Max	800	310	ne	5,100
Volatilization To Outdoor Air				NV	NV	NV	NV	NV	NV	ne	NV
Leaching to Groundwater				ne	ne	ne	ne	30	ne	ne	ne
Construction Worker				13	60,000	150	>Max	800	93	ne	1,500
Excavation Worker				370	>Max	4,300	>Max	800	2,600	ne	4,300
EPA Eco SSLs											
Soil Invertebrates				NA	330	140	NA	1,700	NA	4.1	NA
Wildlife - Avian				43	na	0.77	26	11	NA	1.2	4.2
Wildlife - Mammalian				46	2,000	0.36	34	56	NA	0.63	14
Oregon DEQ Soil SLVs (Table 1)											
Plants				10	500	4	1	50	0.3	1	2
Invertebrates				60	3,000	20	0.4	500	0.1	70	50
Birds				10	85	6	4	16	1.5	2	ne
Mammals				29	638	125	340,000	4,000	73	25	ne
Oregon DEQ Sediment SLVs (Table 2)											
Freshwater				6	ne	0.6	37	35	0.2	ne	4.5
Bioaccumulation				4	ne	0.003	4,200	128	ne	0.1	ne
Oregon DEQ - Clean Fill Criteria				12	840	0.54	240	34	0.11	1.5	0.41
Default background concentrations (a)											
Soil				12	840	0.54	240	34	0.11	1.5	0.41

All values in milligrams per kilogram (mg/kg)

Generic Risk-Based Levels are based on *Risk-Based Decision Making for the Remediation of Petroleum-Contaminated Sites, Oregon DEQ,* Sept., 2003 (revised June 7, 2012)

J: This is an estimated value. The value is below the method reporting limit but above the limit of detection.

>Max: The constituent RBC for this pathway is greater than 100,000 mg/kg.

ne - Not established

NV: This chemical is considered "non-volatile" for purposes of the exposure calculations

– Sample not analyzed

Highlighted cells exceed the indicated screening values **and** background concentrations.

See report for definitions of soil types.

Concentration exceeds one or more risk-based concentration, ecological screening level or Clean Fill Criteria.

Value that is exceeded by one or more of the values shaded in yellow.

Table 6
Estimated Volumes of Types 2 and 3 Soils
Sadri Property, Tillamook, Oregon

Area	Estimated Volumes of Type 2 and 3 Soil (cubic yards)			
	To Disposal Cell	To Landfill	Recycle Off-Site (organics, concrete)	TOTAL VOLUME
West Mill	1,500	600	200	2,300
East Mill	3,000	0	300	3,300
East Parcels	12,700	300	1,500	14,500
Sawdust Burner	600	0	100	700
	17,800	900	2,100	20,800

APPENDIX A

Contaminated Media Management Practice Requirements

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Contaminated Media Management Practice Requirements

Contaminated media encountered during the SFC Project on the Sadri Property and East Parcels should be managed in a manner that prevents risks to human health and the environment and does not exacerbate existing environmental conditions. The following minimum procedures will be used in the areas of the project where contaminated media are reasonably likely to be present. The SFC Project design specifications should require the following minimum contaminated media management practice requirements.

A.1 Health and Safety

The contractor will develop a health and safety plan for their employees. The contractor will be responsible for meeting applicable Occupational Safety and Health Administration (OSHA) health and safety requirements, including, but not limited to, 29 CFR 1910.120. The contractor should review all information presented in this CMMP regarding the nature and extent of contaminated media anticipated along the project alignment. The contractor will be responsible for determining what, if any, OSHA regulations are applicable to the contractor's contaminated media excavation, management, and hauling activities. The contractor should employ a certified industrial hygienist (CIH) to make this determination.

A.2 Soil Excavation and Groundwater Extraction Procedures

Contaminated soil should be excavated in a manner that prevents co-mingling of contaminated and uncontaminated soil. Movement of excavation equipment over or through contaminated soil should be minimized to prevent tracking of contaminated soil into areas of uncontaminated soil.

Excavation equipment should be maintained in good working order, and spillage of oil or hazardous substances from the equipment should be prevented. In particular, oil leaks from equipment, including excavators, loaders, dozers, conveyors, trucks, and drilling machines, should be repaired promptly and any contaminated soil immediately cleaned up. Contaminated water will be removed in a manner that prevents co-mingling of contaminated and uncontaminated water.

A.3 Stockpiles/Drop Boxes

Stockpiles of contaminated media should be covered and bermed to prevent run-on and runoff. The contaminated stockpiles should be covered during periods of precipitation, strong winds, at night, and during weekends. If dust from the contaminated stockpile is observed, they should be either covered or lightly watered to control the dust. Access to the contaminated stockpile should be controlled through the use of a fence.

Stockpiles should be located in accordance with land use compatibility requirements. Stockpiles used for unanticipated contaminated soil should meet the requirements specified in Section A.6.

A.4 Loading and Hauling

Trucks being loaded with Type 3 soils bound for the landfill should be loaded in a manner that prevents the spilling or tracking of contaminated soil into uncontaminated areas of the site. Loose material falling onto the exterior of the truck during loading should be removed before the truck leaves the loading area. Any material collected in the loading area should be placed either into the truck or into the general material management process.

The contractor will be responsible for ensuring that loaded truck weights are within acceptable limits.

A.5 Exclusion Zone and Decontamination

The contractor should establish an exclusion zone around the soil excavation areas where contaminated soil is anticipated. Specific entrance and exit locations to the exclusion zone should be established by the contractor as part of the health and safety plan.

Trucks should be swept before leaving the loading area. Vehicles leaving the exclusion zone that have driven over unpaved surfaces that have, or are suspected of having, contaminated media should pass through a wheel wash before entering the public right-of-way.

Thorough decontamination of the excavation equipment should be required before the equipment exits the exclusion zone. Personnel exiting the exclusion zone should decontaminate according to the decontamination procedures to be specified in the contractor's health and safety plan.

A.6 Contingent Soil Management Procedures

Based on the results of the sampling and analysis performed for the project, hazardous waste-designated soil is not anticipated. If, however, contaminated soil appearing to be inconsistent with that based on the previous sampling (unanticipated contaminated soil) is encountered, contingent soil management procedures will be required. This determination will be made by Tillamook County's engineering or environmental consultant.

The contingent soil management procedures are necessary to address potential RCRA hazardous waste issues and provide a higher level of protectiveness than that provided under the soil management procedures specified above.

In addition to the soil management procedures specified above, contingent soil management procedures will include the following:

- Field screening of unanticipated contaminated soil during excavation will be performed as much as practical to assess the nature of the soil. Field screening may include the use of a photoionization detector or sorbant tubes to rapidly assess the concentrations of various contaminants.
- Stockpiles, containers, or drop boxes could be used for the sampling and analysis of excavated unanticipated contaminated soils. The exact number of samples necessary to make a waste

determination is site-specific and a function of contaminant variance. Typically, waste determinations will be performed for individual stockpiles and containers (roll-off boxes).

- Unanticipated and unknown contaminated soil will not be transported on public roadways until it has been properly characterized.
- Different types of unanticipated contaminated soil should not be co-mingled.
- Contaminated media designated as hazardous waste should be removed offsite as soon as possible and no later than 30 days after such designation.

If sampling and analysis indicate that the soil is not a hazardous waste, the soil management procedures for that soil no longer need to satisfy the contingent management requirements presented in this section. If the soil is designated a hazardous waste, the soil will be managed in accordance with applicable hazardous waste regulations.

APPENDIX B

Disposal Cell and Leave Surface Inspection Form

INSPECTION RECORD
SOIL DISPOSAL CELL AND LEAVE SURFACE
SADRI PROPERTY AND EAST PARCELS
SOUTHERN FLOW CORRIDOR PROJECT

Inspection performed by :_____

Date:_____

Weather:_____

1) SOIL DISPOSAL CELL

See attached figure for area to be inspected. Inspect pavement condition and list observations below. Take photographs showing overall condition of the cell, including close-up photographs detailing the observations listed below.

_____

_____

_____

_____

List photographs taken:

_____ _____ _____

_____ _____ _____

_____ _____ _____

_____ _____ _____

Repair needed? Yes____ No_____

Location: _____

_____

Follow-up Inspection (after repair): Performed by:_____

Date:_____

Photographs:_____

1) LEAVE SURFACE

See attached figure for area to be inspected. Inspect vegetation and standing water from the nearest upland area. Take photographs showing overall condition of the leave surface.

_____

_____

_____

_____

List photographs taken:

_____ _____ _____

_____ _____ _____

_____ _____ _____

_____ _____ _____

_____ _____ _____

Potential concerns observed? Yes____ No_____

Location: _____

_____

Follow-up Inspection (after remediation): Performed by:_____

Date:_____

Photographs:_____