APPENDIX C

Materials Management Plan

Materials Management Plan
Port of Tacoma Former Kaiser Aluminum Property
Tacoma, Washington

July 15, 2015

Prepared for

Port of Tacoma
Tacoma, Washington

LANDAU ASSOCIATES
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1.0 INTRODUCTION

The purpose of this Materials Management Plan (Plan) is to outline the approach and procedures for managing potentially contaminated soil, waste material, or groundwater encountered during construction activities at the Port of Tacoma (Port) former Kaiser Aluminum property (Site), which is approximately 96 acres of the Blair Hylebos Peninsula in Tacoma, Washington (Figure 1).

Kaiser Aluminum operated an aluminum smelter and manufacturing plant at the Site for over 60 years. Between 2003 and 2010, the Port demolished the smelter complex and placed a 2- to 6-foot (ft)-thick layer of structural fill on approximately 80 of the 96 acres. Areas of likely contamination have been investigated and known contamination has been cleaned up. These areas include the Wet Scrubber Sludge Area (WSSA); the Spent Potlining (SPL) Area; the Rod Mill Area Closed Landfill; the Former Rectifier Yard Area; the Former Log Yard Area; the Rod Mill Former Demister Oil Area; and the Rod Mill Former Stormwater Ditch, South and East Sides. The investigations and cleanup actions are documented in previous reports (e.g., Ecology 2015, Landau Associates 2012, 2013, 2014a,b).

The Site Cleanup Action Plan (Ecology 2015) and Environmental Covenant (Appendix A) restrict activities on the Site, such as activities that will compromise the integrity of the Former Log Yard Area and WSSA caps, and restrict land use to industrial. If construction or development activities are proposed in the Former Log Yard Area or WSSA, the Port must be notified and requirements of the Environmental Covenant must be followed. The Port will coordinate with Ecology regarding required notifications, approvals, and reporting.

This Plan was developed by Landau Associates for use by the Port, Port tenants, and their contractors for routine activities involving limited subsurface disturbance (e.g., utility trenching), and will be provided to all contractors and subcontractors. For larger, non-routine construction projects at the Site involving subsurface disturbance, the Port shall submit for the Washington State Department of Ecology's (Ecology's) review and approval a plan for the management of contaminated material that may be generated in the course of the project. Ecology's approval of such a plan shall not constitute a significant change to the Site Cleanup Action Plan (Ecology 2015).

For the purposes of this document, the organization conducting the work (i.e., the Port or Port tenant) will be termed the "Developer." This document addresses recognition of potential contamination and characterization of potential contamination, as well as issues related to material handling and disposal.

2.0 RECOGNIZING POTENTIALLY CONTAMINATED MATERIALS IN THE FIELD

Contaminated soil and groundwater have been identified at the Site. Although identified contamination has been cleaned up or contained beneath a cap, it is possible that future redevelopment or construction activities at the Site could result in discovery of unanticipated contamination. In the event that potentially contaminated materials are encountered during construction, this Plan should be followed to properly manage those materials.

It is important that field personnel understand how to recognize potentially contaminated material at the Site. For the purposes of this plan, clean material can be distinguished from potentially contaminated material using physical observations. Physical observations include visual and olfactory indications. Previous Site investigations have identified carcinogenic polycyclic aromatic hydrocarbons (cPAHs), diesel- and oil-range total petroleum hydrocarbons, cyanide, and metals at concentrations exceeding the cleanup criteria at the Site. Field personnel should be familiar with the physical appearance of the common soil types present throughout the Site so that potentially contaminated materials can be recognized. The following soil types are common at the Site:

- **Unit A, Fill:** consisting of hydraulically dredged sand and silt; silt, sand, and gravel materials imported from off site; and Blair Waterway dredged silt and sand, and generally located from 0 to at least 15 ft below ground surface (BGS). Groundwater is present in this fill material across most of the Site (Landau Associates 2011). The base of Unit A is at or slightly below the mean high water level in the Hylebos and Blair Waterways (Landau Associates 1987).
- **Unit B, Mudflat Deposit:** consisting of sandy to clayey silt with minor amounts of peat, woody debris, and shell fragments, located throughout the Site, generally below Unit A.

Contamination has previously been associated with the following materials and conditions at the Site:

- **Black Carbon Waste:** includes anode and cathode fragments, petroleum coke fragments, coal, coal tar pitch, duct dust, and wet scrubber sludge. These materials are dark gray to black and range from sand-sized to cobble- or boulder-sized. These materials have elevated concentrations of cPAHs. Known areas where spent pot lining was present have been cleaned up and spent pot lining is not expected to be present in other areas of the Site; however, because it is difficult to differentiate between spent pot lining and other black carbon waste based on field observations, cyanide should be considered as potentially present in black carbon waste. Black carbon waste is typically found within the fill layer. If materials that appear to be black carbon waste are encountered, the materials should be analyzed for cyanide and the steps outlined in Section 3.0 followed.
- **Aluminum Refining Waste:** soil-like material that exhibits unnatural or bright colors (e.g., greenish-gray, white). Greenish-gray to white material that is silt- to sand-sized and has a moderate chemical odor is likely synthetic cryolite and may contain elevated levels of fluoride. White silt- to sand-sized material may also be aluminum oxide (alumina) which is

non-hazardous and inert. If greenish-gray to white materials are encountered, the materials should be analyzed for fluoride and the steps outlined in Section 3.0 followed.

- **Concrete and Other Demolition Waste:** includes concrete, refractory brick, and metal fragments. Size ranges from gravel-sized fragments to cobble- and boulder-sized rubble. It may be found in conjunction with aluminum refining waste and black carbon waste. In some areas, concrete foundations for former buildings and structures may be present within or under fill soil; unless visually stained, concrete foundations may be considered inert waste.
- **Petroleum Hydrocarbons:** petroleum hydrocarbon products, such as gasoline, diesel, and motor oil. Contamination may be present in soil or groundwater and typically exhibits one or more of the following characteristics: iridescent sheen, black and greasy appearance, petroleum odor, and dark staining in soil. Creosote-treated railroad ties have been found in areas where rail spurs were covered with fill soil. Polychlorinated biphenyls (PCBs) have previously been found in soil in the Former Rectifier Yard Area.
- **Wood Waste and Slag:** located beneath 4 to 8 ft of a clean soil cap in the Former Log Yard Area. The Asarco slag is a waste byproduct of smelting copper from arsenic- and lead-bearing ores. The slag is generally dark brown in color, can vary in size from sand- to gravel-sized material to a large mass, and is similar in appearance to volcanic rock (EPA 2000). The slag and associated wood waste and soil may contain elevated concentrations of arsenic, copper, zinc, and lead.
- **Underground storage tanks (USTs):** undocumented USTs may be present in the vicinity of former buildings, and may contain heating oil or other petroleum products.

If these materials or comparable conditions are observed during construction activities, the Developer representative shall be notified and this plan implemented.

3.0 SUMMARY OF MANAGING UNANTICIPATED CONTAMINATED MATERIAL

Areas of contamination have been investigated and known contamination has been addressed. However, if potentially contaminated materials are encountered, the following sequence will be implemented:

1. Potentially contaminated materials will be identified by the construction contractor through physical observations (see Section 2.0).
2. The construction contractor will notify the appropriate Developer personnel.
3. The affected material may be stockpiled and tested to determine waste profiling at the direction of the Developer.
4. Samples will be collected for laboratory testing. Results will be compared to the soil and groundwater screening levels presented in Table 1 and Table 2. All results will be reported to the Developer in a timely manner.
5. Soil may be left in place or reused on site if analytical results do not exceed soil screening levels (Table 1).
6. Soil, waste material, and/or water that are determined to be contaminated will be profiled by a Developer representative for disposal at an appropriate waste disposal/treatment facility.
7. Once the waste profile is accepted by the selected waste disposal/treatment facility, the soil, waste material, and/or groundwater will be transported to the selected facility for treatment or disposal. The facility will be notified in advance of the approximate quantity and type of material being transported.
8. Once the unanticipated contaminated material is removed, the area will be re-inspected for potentially contaminated materials.
9. If work is being conducted by a tenant rather than the Port, the tenant will notify the Port when contaminated soil, waste material, and/or water with concentrations above the Site cleanup levels are discovered (Table 1 and Table 2). The tenant will also notify the Port when the unanticipated contaminated material has been removed.

All excavation and associated activities that place workers in contact with unanticipated contaminated material will be conducted by workers that have proper Occupational Safety and Health Administration (OSHA) and Washington Industrial Safety and Health Act (WISHA) training and certification for working at a hazardous waste site. All work conducted by the contractor related to the excavation and handling of unanticipated contaminated materials will be conducted under a contractor-prepared health and safety plan.

4.0 MATERIAL SCREENING AND CHARACTERIZATION

This section describes the procedures that will be used to field screen potentially contaminated materials and characterize unanticipated contaminated materials for disposal purposes.

4.1 FIELD SCREENING OF UNANTICIPATED CONTAMINATED MATERIALS

The following field screening methods will generally be used to evaluate potentially contaminated materials:

- Petroleum sheen testing
- Chemical vapor screening with a photoionization detector (PID) or similar equipment
- Comparison of material to documented contaminated materials previously encountered at the Site, as listed in Section 2.0.

Sheen testing will be conducted on soil that exhibits evidence of petroleum hydrocarbons. The sheen test is conducted by placing a representative sample of the soil in a clear glass jar with tap water. The jar will be agitated and amount of sheen (light, medium, or heavy) will be observed and recorded. Materials exhibiting petroleum sheen will be considered potentially contaminated.

Screening with the PID (or equivalent) will be conducted on materials exhibiting a petroleum or chemical odor to determine if volatile organic compounds (VOCs) are present. PID screening is conducted by placing a representative sample of the soil in a sealed plastic bag. The bag and soil will be agitated, allowed to stand for 5 minutes, and then a headspace reading will be taken of vapor in the bag using the PID. A sustained reading above background or ambient conditions will be used as a general indication of the presence of VOCs. The PID will be capable of detecting most common aromatic and aliphatic hydrocarbon compounds.

Materials exhibiting potential contamination characteristics (as presented in Section 2.0), such as unnatural colored soil or debris, will be considered potentially contaminated material. The material will be considered unanticipated contaminated material if the results of laboratory testing exceed the screening criteria on Table 1 or Table 2.

Soil screening will typically be conducted in areas of potential contamination and will generally guide the collection of samples for analytical testing. Should potentially contaminated soil be excavated, the screening will generally be conducted for approximately every 20 loose cubic yards of excavated soil from the area. The frequency of field screening may be more or less, as needed, depending on the conditions encountered and whether there are varying soil types and levels of impact.

4.2 WASTE CHARACTERIZATION

Soil and water samples will be collected, as necessary, to determine the disposition of unanticipated contaminated material.

Characterization samples will be tested consistent with the type of potential contamination observed in the field (e.g., motor oil-range hydrocarbons, cPAHs, cyanide, fluoride, metals) and potentially associated contaminants identified in Section 2.0. The testing protocol will be consistent with the requirements of the destination waste disposal/treatment facility.

4.2.1 SOIL SAMPLE COLLECTION PROCEDURES

Soil samples will be collected from potentially contaminated material. A shallow hole will be hand-dug at each sample location using decontaminated hand implements, including stainless-steel spoons and steel shovels, picks, and similar equipment. The sidewall surface of the hand-dug hole sidewalls will be scraped to expose a fresh surface for sample collection. Soil will be collected using a decontaminated stainless-steel spoon, placed in a decontaminated stainless-steel bowl, homogenized, and transferred to the appropriate sample container. Material greater than about ¼ inch will be removed from the sample prior to placing the soil in the sample container.

4.2.2 WATER SAMPLE COLLECTION PROCEDURES

Water samples will be collected, as needed, to characterize potentially contaminated water encountered during construction activities (e.g., surface water or groundwater within an excavation). Water samples will be collected into the appropriate laboratory-supplied sample containers. Samples collected for metals analyses will be field filtered. Samples will be chilled to 4°C immediately after collecting the sample. Clean gloves will be worn when collecting each sample.

4.2.3 SAMPLE TRANSPORTATION AND HANDLING

The transportation and handling of samples will be accomplished in a manner that protects the integrity of the sample. Samples will be kept in coolers on ice until delivery to the analytical laboratory. Samples will be logged on a chain-of-custody (COC) form. The COC form will accompany each shipment of samples to the laboratory.

5.0 DECONTAMINATION PROCEDURES

The following sections describe decontamination procedures for reusable sampling utensils and heavy construction equipment.

5.1 SAMPLING EQUIPMENT DECONTAMINATION

Reusable sampling utensils will be decontaminated before collecting each sample to avoid cross-contamination between samples. Decontaminated sampling utensils will be handled in a manner that minimizes contact with potentially contaminated surfaces. Between sampling events, all nondedicated equipment will be stored in a manner (e.g., in a plastic bag) that protects them from inadvertent contamination.

Decontamination of sampling equipment will consist of the following steps:

- Spray or scrub soiled equipment
- Wash with an Alconox (or equivalent) soap-water solution
- Rinse with tap water
- Rinse with de-ionized or distilled water.

If sampling equipment becomes coated (e.g., with oil), the equipment may require application of a cleaning solvent (typically hexane, sprayed from a bottle) and subsequent wipe-down as an additional decontamination step.

5.2 HEAVY EQUIPMENT DECONTAMINATION

Heavy equipment used for sampling, excavating, or hauling contaminated soil will be decontaminated by the contractor, using dry decontamination procedures. Dry decontamination procedures consist of using a shovel or brush to wipe equipment to remove soil, and ensuring that soil removed is disposed with contaminated soil. If heavy equipment becomes coated (e.g., with oil), the contractor will establish a decontamination area and use a high-pressure water washer, or suitable equivalent methodology, to complete decontamination. The decontamination area will consist of a designated area large enough for equipment (e.g., dump trucks, excavators, etc.) to drive on. The decontamination area will be bermed and lined to prevent runoff. Use of a tire wash to prevent track-out of solids is a stormwater best management practice for construction and earthmoving work; heavy equipment will pass through a tire wash station prior to leaving the Site. The condition and usability of the decontamination area will be monitored as needed. The contractor will be responsible for keeping the decontamination area intact and functioning. Water from the decontamination process will be collected

and managed as required by the Specifications applicable to a specific future construction and/or development project.

6.0 WASTE MANAGEMENT

This section provides information about how unanticipated contaminated soil and waste materials will be handled.

6.1 PLAN FOR INSTRUCTING WORKERS

Excavation supervisors and workers will be provided with training and other information from this Plan about the nature of hazardous substances that are potentially present in the soil they are excavating, and how to identify potentially contaminated soil (Section 2.0). These personnel will have the authority to stop excavation operations and request direction and assistance in evaluating materials that appear to be potentially contaminated.

6.2 EXCAVATION, LOADING, HAULING, AND TRANSPORT METHODS

Guidelines and general information about the handling of excavated materials are provided in this section.

6.2.1 EXCAVATION

Excavation will be conducted with the appropriate excavating equipment. Dewatering, draining, or absorption of any free water may become necessary. Dewatering methods include varying types of site groundwater handling that lower the groundwater table and remove water from the excavation (e.g., dewatering by excavation sump pump).

6.2.2 LOADING

Soil will be directly loaded into trucks for transport to export destination sites to the extent practicable. The moisture and consistency of soil will be monitored to ensure that materials loaded are in a condition suitable to prevent spills during transit to stockpile locations or other destination areas. Whether the soil is contaminated or not, the truck will pass through a tire-wash station prior to leaving the Site to prevent track-out of solids.

6.2.3 TRANSPORT

Soil transport to offsite locations will be monitored to ensure that the cargo is fully contained and protected in transit, and in compliance with local, state, and federal transportation requirements. In general, truck and trailer combinations will be used.

6.3 SOIL STOCKPILES

Contaminated soil may be stockpiled for temporary storage prior to loading for disposal. Stockpile locations and layouts will be determined when contaminated soil is identified. The stockpile area will be lined to prevent infiltration of water to the underlying soil, and bermed to prevent surface water runon/runoff. Unanticipated contaminated soil stockpiles will be kept separate from any other stockpiled soil or debris. The contractor will maintain the stockpile area(s) and will cover stockpile(s) to protect the soil from precipitation on an as-needed basis. Lists and inventory of stockpile materials will be documented by the contractor. Soil stockpiles will be removed and disposed or reused based on the results of analytical testing. Stockpiles of unanticipated contaminated soil will be removed from the Site within 90 days of receipt of analytical results.

6.4 DISPOSAL FACILITIES

Specific disposal facilities will be identified by the Developer for the acceptance of contaminated soil and water potentially generated by a project. Soil can either be disposed at a solid waste landfill or at an inert waste landfill, depending on the nature of contamination and chemical concentrations. Disposal of solid waste in a Pierce County facility is regulated by Tacoma-Pierce County Health Department; their Waste Disposal Authorization Process must be completed prior to disposal of materials. Black carbon material that contains cyanide will be disposed as spent pot liner at a hazardous waste landfill. Criteria for disposal of affected Site soil should be determined for the specific disposal facilities identified to receive contaminated Site materials.

Profiling, manifesting, and testing requirements are generally similar for all solid waste facilities. Sufficient generator information and representative sample analytical data are needed to properly characterize and profile the material. Each facility's permit has site-specific restrictions on the types of waste that can be accepted, which is addressed in the profiling process. Bills of lading are used to document non-dangerous waste disposal. Hazardous waste manifests are used to transport and document dangerous waste disposal.

7.0 REPORTING

If unanticipated contamination is encountered during construction activities, the findings, resulting actions implemented, and remaining Site conditions will be reported to Ecology. If the Port is conducting the project, the Port will determine the appropriate method of reporting in consultation with Ecology. If the project is being conducted by a tenant, the tenant and the Port will consult with Ecology to determine the appropriate reporting method.

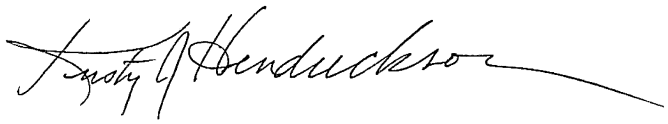
8.0 USE OF THIS PLAN

This Materials Management Plan has been prepared for the exclusive use of the Port of Tacoma and applicable regulatory agencies for specific application to the Port of Tacoma former Kaiser Aluminum property. This Plan was developed for the Port as a general plan for potential future development; third party use of information, conclusions, and recommendations provided herein shall be at the user's sole risk. Landau Associates warrants that within the limitations of scope, schedule, and budget, our services have been provided in a manner consistent with that level of care and skill ordinarily exercised by members of the profession currently practicing in the same locality under similar conditions as this project. We make no other warranty, either express or implied.

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

LANDAU ASSOCIATES, INC.

Rachel Morgan, E.I.T.
Senior Staff Engineer



Kristy Hendrickson, P.E.
Principal

RMM/KJH/kes

9.0 REFERENCES

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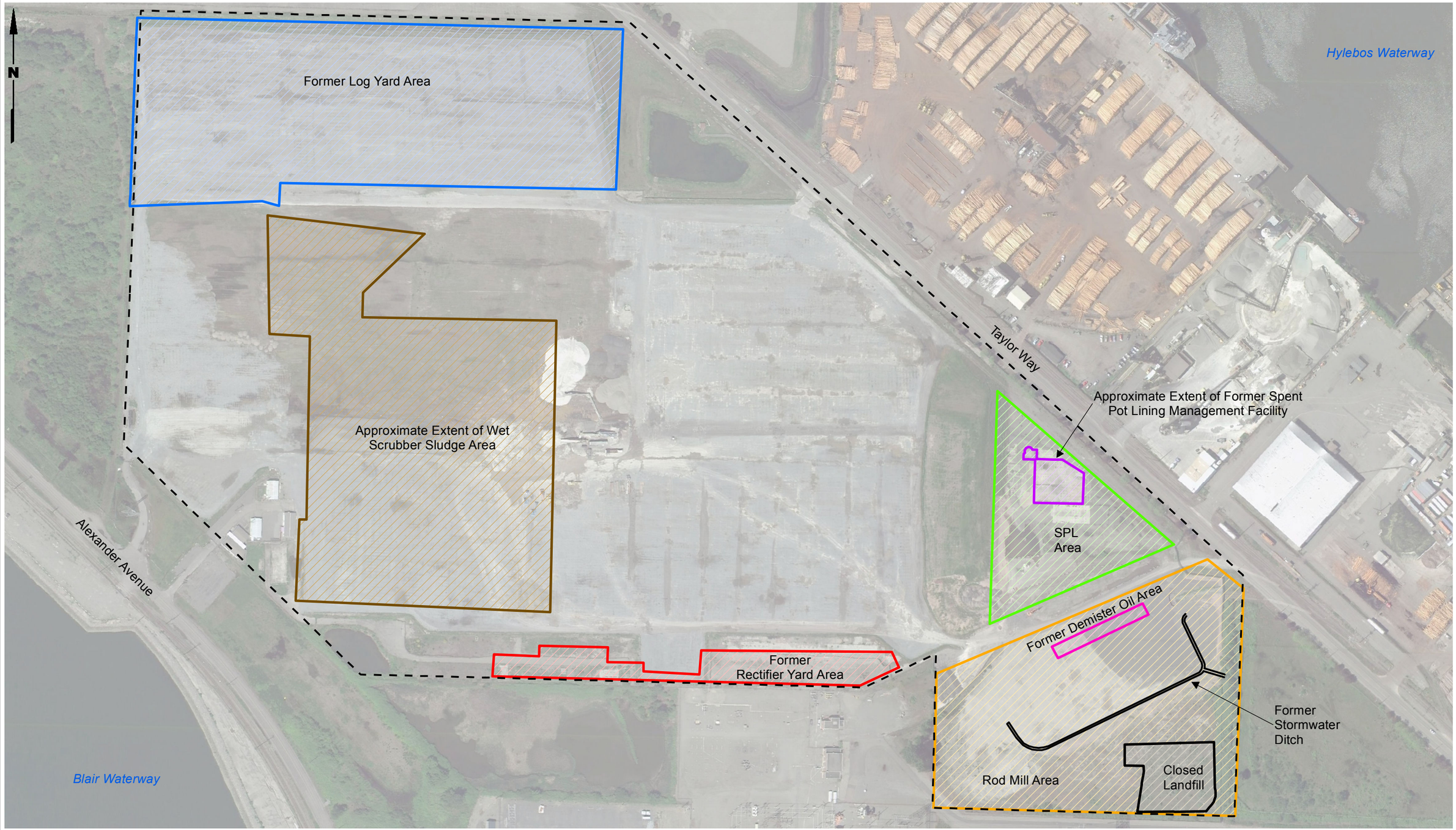

G:\Projects\118\0034\010\011\Figure 1 Kaiser Site Plan 2010.mxd 6/22/2015 NAD 1983 StatePlane Washington South FIPS 4602 Feet

Legend

Site Boundary

0 240 480

Scale in Feet

Note

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

Data Source: Jacobs Engineering; Pierce County Assessor; Google Earth Pro 2010

LANDAU ASSOCIATES

Port of Tacoma Tacoma, Washington	**Kaiser Site Plan**	Figure 1

TABLE 1
SOIL SCREENING LEVELS FOR DETECTED CONSTITUENTS
KAISER MATERIALS MANAGEMENT PLAN
TACOMA, WASHINGTON

Constituent	MTCA Method C Screening Level
METALS (mg/kg)	
Arsenic	20
Copper	36
Chromium (a)	1,000,000
Lead	1,000
Zinc	100
PAHs (µg/kg)	
Benzo(a)pyrene	350
Benzo(a)anthracene	130
Benzo(b)fluoranthene	440
Benzo(k)fluoranthene	440
Chrysene	140
Dibenzo(a,h)anthracene	640
Indeno(1,2,3-cd)pyrene	1,200
Total cPAH - benzo(a)pyrene TEQ (b)	2,000
PCBs (mg/kg)	
Total PCBs	2.0
PETROLEUM HYDROCARBONS (mg/kg)	
Diesel-Range Organics	2,000
Oil-Range Organics	2,000
Mineral Oil-Range Organics	4,000
CONVENTIONALS (mg/kg)	
Cyanide	3,200

mg/kg = milligrams per kilogram
PAH = polycyclic aromatic hydrocarbon
PCB = polychlorinated biphenyls
TEQ = toxicity equivalency quotient
MTCA = Model Toxics Control Act

(a) Cleanup levels are for Chromium III.
(b) A TEQ will be calculated for each sample containing carcinogenic PAHs above reporting limits and compared to the benzo(a)pyrene screening level in accordance with 173-340-708(8)(e).

TABLE 2
GROUNDWATER WATER SCREENING LEVELS FOR DETECTED CONSTITUENTS
KAISER MATERIALS MANAGEMENT PLAN
TACOMA, WASHINGTON

Constituent	MTCA Method B Screening Level
VOLATILES (µg/L)	
1,1-Dichloroethane	--
1,2,4-Trimethylbenzene	--
1,3,5-Trimethylbenzene	--
2-Butanone	--
4-Isopropyltoluene	--
4-Methyl-2-Pentanone (MIBK)	--
Acetone	--
Benzene	23
Carbon Disulfide	--
Chloroform	283
Ethylbenzene	2,100
Isopropylbenzene	--
m,p-Xylene	--
Methylene Chloride	590
Naphthalene	4,900
n-Butylbenzene	--
n-Propylbenzene	--
o-Xylene	--
sec-Butylbenzene	--
Toluene	15,000
Total xylene	--
Vinyl Chloride	2.4
PAHs (µg/L)	
1-Methylnaphthalene	--
2-Methylnaphthalene	--
Acenaphthene	640
Acenaphthylene	--
Anthracene	26,000
Benzo(g,h,i)perylene	--
Dibenzofuran	--
Fluoranthene	90
Fluorene	3,500
Naphthalene	4,900
Phenanthrene	--
Pyrene	2,600
cPAHs (µg/L)	
Benzo(a)pyrene	0.018
Benzo(a)anthracene	0.020
Benzo(b)fluoranthene	0.018
Benzo(k)fluoranthene	0.036
Chrysene	0.019
Dibenzo(a,h)anthracene	0.018
Indeno(1,2,3-cd)pyrene	0.018
TEQ (a)	0.030

TABLE 2
GROUNDWATER WATER SCREENING LEVELS FOR DETECTED CONSTITUENTS
KAISER MATERIALS MANAGEMENT PLAN
TACOMA, WASHINGTON

Constituent	MTCA Method B Screening Level
PCBs (µg/L)	
Aroclor 1016	0.020
Aroclor 1242	--
Aroclor 1248	--
Aroclor 1254	0.020
Aroclor 1260	--
Aroclor 1221	--
Aroclor 1232	--
Total PCBs	0.020
TOTAL METALS (µg/L)	
Arsenic	8.0
Cadmium	8.8
Chromium (total)	50
Chromium III	240,000
Chromium VI	50
Copper	20
Lead	10
Mercury	0.15
Zinc	160
PETROLEUM HYDROCARBONS (mg/L)	
Diesel Range	0.5
Motor Oil Range	0.5
CONVENTIONALS (mg/L)	
Total Cyanide	16
WAD Cyanide (b)	0.01

µg/L = micrograms per liter
mg/L = milligrams per liter
-- Indicates no screening level criteria available.
PAH = polycyclic aromatic hydrocarbons
cPAH = carcinogenic PAH
PCB = polychlorinated biphenyl
TEQ = toxiccity equivalency quotient
MTCA = Model Toxics Control Act

(a) A TEQ would be completed for each sample containing carcinogenic PAHs above reporting limits and compared to the benzo(a)pyrene screening level in accordance with WAC 173-340-708(8)(e). However, federal criteria are established for individual cPAHs.
(b) National Recommended Water Quality Criteria is expressed as free cyanide.

APPENDIX A

Environmental Covenant

After Recording Return
Original Signed Covenant to:
Marv Coleman
Toxics Cleanup Program
Department of Ecology
300 Desmond Drive
Lacey, WA 98503-1274

Environmental Covenant

Grantor: Port of Tacoma
Grantee: State of Washington, Department of Ecology
Brief Legal Description: Southwest quarter and west half of southwest quarter of southeast quarter, Section 36, Township 21 North, Range 3 East of Willamette Meridian
Tax Parcel Nos.: 03-21-36-3-013; 03-21-36-3-033; 03-21-36-3-034; 03-21-36-3-037
Cross Reference: None

RECITALS

a. This document is an environmental (restrictive) covenant (hereafter "Covenant") executed pursuant to the Model Toxics Control Act ("MTCA"), chapter 70.105D RCW and Uniform Environmental Covenants Act ("UECA"), chapter 64.70 RCW.

b. This Restrictive Covenant applies to (i) a portion of Pierce County tax parcel number 03-21-36-3-013; (ii) a portion of Pierce County tax parcel number 03-21-36-3-033; (iii) a portion of Pierce County tax parcel number 03-21-36-3-034; and (iv) a portion of Pierce County tax parcel number 03-21-36-3-037. All tax parcels are part of a site commonly known as the Kaiser site, WAD No. 001882984; the Kaiser site is legally described in Exhibit "A" and has Ecology Facility Site I.D # 38. The portions of each parcel to which this Restrictive Covenant attaches are depicted in Exhibit "B" and are collectively referred to hereinafter as the "Property".

c. The Property is the subject of remedial action under MTCA. This Covenant is required because residual contamination remains on the Property after completion of remedial actions. Specifically, the following principle contaminants remain on the Property:

Medium	Principle Contaminants Present
Soil and/or Groundwater	Diesel- and oil-range petroleum hydrocarbons, cyanide, fluoride, metals, and/or carcinogenic polycyclic aromatic hydrocarbons (cPAHs)

d. It is the purpose of this Covenant to restrict certain activities and uses of the Property to protect human health and the environment and the integrity of remedial actions conducted at the

site. Records describing the extent of residual contamination and remedial actions conducted are available through the Washington State Department of Ecology. This includes the following documents: Remedial Investigation and Feasibility Study and Cleanup Action Plan.

e. This Covenant grants the Washington State Department of Ecology, as holder of this Covenant, certain rights specified in this Covenant. The right of the Washington State Department of Ecology as a holder is not an ownership interest under MTCA, Chapter 70.105D RCW or the Comprehensive Environmental Response, Compensation, and Liability Act ("CERCLA") 42 USC Chapter 103.

COVENANT

Port of Tacoma, as Grantor and fee simple owner of the Property hereby grants to the Washington State Department of Ecology, and its successors and assignees (hereafter "Ecology"), the following covenants. Furthermore, it is the intent of the Grantor that such covenants shall run with the land and be binding on all current and future owners of any portion of, or interest in, the Property.

Section 1. General Restrictions and Requirements.

The following general restrictions and requirements shall apply to the Property:

a. Interference with Remedial Action. The Grantor shall not engage in any activity on the Property that may impact or interfere with the remedial action and any operation, maintenance, inspection or monitoring of that remedial action without prior written approval from Ecology.

b. Protection of Human Health and the Environment. The Grantor shall not engage in any activity on the Property that may threaten continued protection of human health or the environment without prior written approval from Ecology. This includes, but is not limited to, any activity that results in the release of residual contamination that was contained as a part of the remedial action or that exacerbates or creates a new exposure to residual contamination remaining on the Property.

c. Continued Compliance Required. Grantor shall not convey any interest in any portion of the Property without providing for the continued adequate and complete operation, maintenance and monitoring of remedial actions and continued compliance with this Covenant.

d. Leases. Grantor shall restrict any lease for any portion of the Property to uses and activities consistent with this Covenant and notify all lessees of the restrictions on the use of the Property.

e. Amendment to the Covenant. Grantor must notify and obtain approval from Ecology at least sixty (60) days in advance of any proposed activity or use of the Property in a manner that is inconsistent with this Covenant.[1] Before approving any proposal, Ecology must issue a public notice and provide an opportunity for the public to comment on the proposal. If Ecology approves the proposal, the Covenant will be amended to reflect the change.

[1] Examples of inconsistent uses are: using the Property for a use not allowed under the covenant (for example, mixed residential and commercial use on a property that is restricted to industrial uses); OR drilling a water supply well when use of the groundwater for water supply is prohibited by the Covenant.

Section 2. Specific Prohibitions and Requirements.

In addition to the general restrictions in Section 1 of this Covenant, the following additional specific restrictions and requirements shall apply to the Property.

a. Land use.

Industrial Land Use: The remedial action for the Property is based on a cleanup designed for industrial land use. As such, the Property shall be used in perpetuity only for industrial land uses as that term is defined in the rules promulgated under Chapter 70.105D RCW. All non-industrial land use is prohibited on the Property.

b. Containment of soil.

The remedial action for the Property is based on removal of waste and contaminated soil, containing contaminated soil in two areas, and monitoring groundwater until it is demonstrated that contaminated groundwater is not migrating off of the Property. The Former Log Yard Area and the Wet Scrubber Sludge Area are capped with clean soil. Exhibit B shows the approximate locations of these two capped areas. The primary purpose of the caps is to contain contamination and mitigate risk of direct human contact with contaminated soils. As such, the following restrictions shall apply within the area illustrated in Exhibit B:

i) With the exception of activities carried out consistent with Section 2 (b)(ii), any activity on the Property that will compromise the integrity of the caps including: drilling; digging; piercing the cap with sampling device, post, stake or similar device; grading; excavation; installation of underground utilities; removal of the cap; or, application of loads in excess of the cap load bearing capacity, is prohibited without prior written approval by Ecology. The Grantor shall report to Ecology within forty-eight (48) hours of the discovery of any damage to the cap. Unless an alternative plan has been approved by Ecology in writing, the Grantor shall promptly repair the damage and submit a report documenting this work to Ecology within thirty (30) days of completing the repairs.

ii) Activities that temporarily disturb the capped areas, such as utility trenching or other maintenance actions and construction activities, shall restore the protective cap upon conclusion of the activity. Intrusive activities in the capped areas that involve worker contact with contaminated soil and/or groundwater shall be conducted by individuals that have the appropriate training and certifications for working on hazardous waste sites and in conformance with a Site-specific health and safety plan. Prior to conducting any activities that will disturb the capped areas; the Grantor shall provide written notice to Ecology.

c. Cap inspection

The Former Log Yard Area cap shall be inspected on a periodic basis and repairs completed as necessary if the cap is damaged due to site industrial activity or natural events.

d. Five year review

The Property is subject to five year reviews by Ecology to evaluate whether human health and the environment are being protected, including review of groundwater use and groundwater and cap monitoring results. Monitoring will be conducted in accordance with the Cleanup Action Plan and may be discontinued or adjusted with approval of Ecology.

Section 3. Access.

a. The Grantor shall maintain clear access to all remedial action components necessary to construct, operate, inspect, monitor and maintain the remedial action.

b. The Grantor freely and voluntarily grants Ecology and its authorized representatives, upon reasonable notice, the right to enter the Property at reasonable times to evaluate the effectiveness of this Covenant and associated remedial actions, and enforce compliance with this Covenant and those actions, including the right to take samples, inspect any remedial actions conducted on the Property, and to inspect records related to the remedial action.

c. No right of access or use by a third party to any portion of the Property is conveyed by this instrument.

Section 4. Notice Requirements.

a. Conveyance of Any Interest. The Grantor, when conveying any interest in any part of the Property, including but not limited to title, easement, leases, and security or other interests, must:

i. Notify Ecology at least thirty (30) days in advance of the conveyance.

ii. Include in the conveying document a notice in substantially the following form, as well as a complete copy of this Covenant:

NOTICE: THIS PROPERTY IS SUBJECT TO AN ENVIRONMENTAL COVENANT GRANTED TO THE WASHINGTON STATE DEPARTMENT OF ECOLOGY ON [_____] AND RECORDED WITH THE PIERCE COUNTY AUDITOR UNDER RECORDING NUMBER [_____]. USES AND ACTIVITIES ON THIS PROPERTY MUST COMPLY WITH THAT COVENANT, A COMPLETE COPY OF WHICH IS ATTACHED TO THIS DOCUMENT.

iii. Unless otherwise agreed to in writing by Ecology, provide Ecology with a complete copy of the executed document within thirty (30) days of the date of execution of such document.

b. Reporting Violations. Should the Grantor become aware of any violation of this Covenant, Grantor shall promptly report such violation to Ecology.

c. Emergencies. For any emergency or significant change in site conditions due to Acts of Nature (for example, flood, fire) resulting in a violation of this Covenant, the Grantor is authorized to respond to such an event in accordance with state and federal law. The Grantor must notify Ecology of the event and response actions planned or taken as soon as practical but no later than within 24 hours of the discovery of the event.

d. Any required written notice, approval, or communication shall be personally delivered or sent by first class mail to the following persons. Any change in this contact information shall be submitted in writing to all parties to this Covenant.

Scott Hooton Port of Tacoma PO Box 1837 Tacoma, WA 98401-1837 (253) 383-9428	Environmental Covenants Coordinator Washington State Department of Ecology Toxics Cleanup Program P.O. Box 47600 Olympia, WA 98504 – 7600 (360) 407-6000

As an alternative to providing written notice and change in contact information by mail, these documents may be provided electronically in an agreed upon format at the time of submittal.

Section 5. Modification or Termination.

a. If the conditions at the Property requiring a Covenant have changed or no longer exist, then the Grantor may submit a request to Ecology that this Covenant be amended or terminated. Any amendment or termination of this Covenant must follow the procedures in Chapter 64.70 RCW and Chapter 70.105D RCW and any rules promulgated under these chapters.

Section 6. Enforcement and Construction.

a. This Covenant is being freely and voluntarily granted by the Grantor.

b. Grantor shall provide Ecology with an original signed Covenant and proof of recording within ten (10) days of execution of this Covenant.

c. Ecology shall be entitled to enforce the terms of this Covenant by resort to specific performance or legal process. All remedies available in this Covenant shall be in addition to any and all remedies at law or in equity, including Chapter 70.105D RCW and Chapter 64.70 RCW. Enforcement of the terms of this Covenant shall be at the discretion of Ecology, and any forbearance, delay or omission to exercise its rights under this Covenant in the event of a breach of any term of this Covenant is not a waiver by Ecology of that term or of any subsequent breach of that term, or any other term in this Covenant, or of any rights of Ecology under this Covenant.

d. The Grantor, upon request by Ecology, shall be obligated to pay for Ecology's costs to process a request for any modification or termination of this Covenant and any approval required by this Covenant.

e. This Covenant shall be liberally construed to meet the intent of the Model Toxics Control Act, chapter 70.105D RCW and Uniform Environmental Covenants Act, chapter 64.70 RCW.

f. The provisions of this Covenant shall be severable. If any provision in this Covenant or its application to any person or circumstance is held invalid, the remainder of this Covenant or its application to any person or circumstance is not affected and shall continue in full force and effect as though such void provision had not been contained herein.

g. A heading used at the beginning of any section or paragraph or exhibit of this Covenant may be used to aid in the interpretation of that section or paragraph or exhibit but does not override the specific requirements in that section or paragraph.

The undersigned Grantor warrants he/she holds the title to the Property and has authority to execute this Covenant.

EXECUTED this _____ day of _____, 20___.

PORT OF TACOMA

_____
John Wolfe, Chief Executive Officer

Program Manager

Dated: _____

STATE OF WASHINGTON

_____
James Pendowski
Program Manager, Toxics Cleanup Program,

DEPARTMENT OF ECOLOGY

Dated: _____

GRANTOR INDIVIDUAL ACKNOWLEDGMENT

STATE OF _____
COUNTY OF _____

On this _____ day of _____, 20__, I certify that _____ personally appeared before me, and acknowledged that **he/she** is the individual described herein and who executed the within and foregoing instrument and signed the same at **his/her** free and voluntary act and deed for the uses and purposes therein mentioned.

_____
Notary Public in and for the State of
Washington, residing at _____.
My appointment expires_____.

GRANTOR CORPORATE ACKNOWLEDGMENT

STATE OF _____
COUNTY OF _____

On this _____ day of _____, 20__, I certify that _____ personally appeared before me, acknowledged that **he/she** is the _____ of the corporation that executed the within and foregoing instrument, and signed said instrument by free and voluntary act and deed of said corporation, for the uses and purposes therein mentioned, and on oath stated that **he/she** was authorized to execute said instrument for said corporation.

_____
Notary Public in and for the State of
Washington, residing at _____.
My appointment expires_____.

Exhibit A

LEGAL DESCRIPTION

Tax Parcel A

That certain property situated in the southwest quarter of the southeast quarter and the southwest quarter of Section 36, Township 21 North, Range 3 East of the W.M., as shown on a certain Pierce County Record of Survey drawing recorded under Auditor's No. 8512030273 in Pierce County, Washington, lying southwesterly of the southerly right of way line of Taylor Way, more particularly described as follows:

Beginning at a point on the south line of said Section 36, being the southeast corner of the southwest quarter (the south quarter corner) of said Section 36; thence north 89°00'20" west, 163.91 feet along the south line of said Section 36; thence north 00°02'09" east, 416.30 feet along the east line of Bonneville Power Administration Substation Site (BPA) property recorded under Auditor's No. 1378605; thence south 63°32'10" west 211.50 feet along the northeasterly line of said BPA's property; thence continuing north 89°57'51" west, 1172.22 feet along the north line of said BPA's property to the northwest corner of said BPA property, said point being the northeast corner of a tract of land conveyed to the Port of Tacoma, recorded under Auditor's No. 1919462; thence continuing north 89°57'51" west 189.18 feet along the north line of Port of Tacoma property; thence north 47°16'01" west 829.39 feet along the northeasterly property line of the Port of Tacoma, recorded under Auditor's No. 1919462 to the east line of a tract of land conveyed to the Port of Tacoma, recorded under Auditor's No. 8110260223; thence north 01°14'50" east, 757.30 feet parallel with the west line of the northwest quarter of the southwest quarter of said Section 36, to the southwest corner of a tract of land conveyed to Kaiser Aluminum and Chemical Corporation recorded under Auditor's Nos. 8110260224 and 1440041; thence north 00°0'0" east 411.54 feet along the west line of said Kaiser Aluminum's property, Auditor's No. 8110260224 to the northwest corner of said tract of land; thence north 90°00'00" east, 1319.70 feet along the north line of said property, to the southerly right of way line of Taylor Way; thence south 49°19'39" east, 678.23 feet along the southerly right of way line of said Taylor Way, to a brass plug monument at the intersection of the southerly right of way line of Taylor Way with the northerly line of the south half of the south half of the northeast quarter of the southwest quarter of said Section 36, as described in auditor's no. 8110260224; thence continuing south 49°19'39" east, 1549.37 feet along the southerly right of way line of said Taylor Way to the east line of the west half of the southwest quarter of the southeast quarter of said Section 36; thence south 00°43'04" west, 651.47 feet along the east line of the west half of said subdivision to the south line of Section 36; thence north 89°42'41" west, 647.71 feet along the south line of said Section 36 to the south quarter corner of said Section 36, Township 21 North, Range 3 East of the W.M., and the point of beginning.

Tax Parcel B

A non-exclusive easement for the purpose of placement, operation and maintenance of a drainage pipe as granted by instrument recorded under recording number 9309220180.

Situate in the City of Tacoma, County of Pierce, State of Washington.

Exhibit B

PROPERTY MAP

Note
1. This area is capped with clean soil. Activities that may disturb the cap are subject to the restrictions described in Section 2 of the Environmental Covenant.
2. The Former Log Yard Area cap shall be inspected and repaired as described in Section 2 of the Environmental Covenant.
3. Groundwater monitoring shall be conducted in this area as described in the Cleanup Action Plan.
4. The Kaiser Property is restricted to industrial land use. Property groundwater use is restricted as described in the Environmental Covenant.
5. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

Legend
Site Boundary

0 240 480
Scale in Feet

Data Source: Jacobs Engineering; Pierce County Assessor; Google Earth Pro 2010

LANDAU ASSOCIATES

Port of Tacoma Tacoma, Washington	**Kaiser Site Plan**	Exhibit B

G:\Projects\118\034\010\011\Exhibit B Kaiser Site Plan Modified.mxd 8/4/2015 NAD 1983 StatePlane Washington South FIPS 4602 Feet

APPENDIX D

Stormwater Pollution Prevention Plan

(SWPPP)

Construction Stormwater General Permit

Stormwater Pollution Prevention Plan (SWPPP)

for

Parcel 77 Auto Import Terminal Project

Prepared for:

The Washington State Department of Ecology

Southwest Region

Permittee / Owner	Developer	Operator / Contractor
Port of Tacoma	Port of Tacoma	TBD

3400 Taylor Way, Tacoma WA 98421

Certified Erosion and Sediment Control Lead (CESCL)

Name	Organization	Contact Phone Number
TBD	Contractor	TBD

SWPPP Prepared By

Name	Organization	Contact Phone Number
Anita Fichthorn	NWSA	253.830.5379

SWPPP Preparation Date

March 1, 2018

Project Construction Dates

Activity / Phase	Start Date	End Date
Construction	June 2018	September 2018

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List of Acronyms and Abbreviations

Acronym / Abbreviation	Explanation
303(d)	Section of the Clean Water Act pertaining to Impaired Waterbodies
BFO	Bellingham Field Office of the Department of Ecology
BMP(s)	Best Management Practice(s)
CESCL	Certified Erosion and Sediment Control Lead
CO_2	Carbon Dioxide
CRO	Central Regional Office of the Department of Ecology
CSWGP	Construction Stormwater General Permit
CWA	Clean Water Act
DMR	Discharge Monitoring Report
DO	Dissolved Oxygen
Ecology	Washington State Department of Ecology
EPA	United States Environmental Protection Agency
ERO	Eastern Regional Office of the Department of Ecology
ERTS	Environmental Report Tracking System
ESC	Erosion and Sediment Control
GULD	General Use Level Designation
NPDES	National Pollutant Discharge Elimination System
NTU	Nephelometric Turbidity Units
NWRO	Northwest Regional Office of the Department of Ecology
pH	Power of Hydrogen
RCW	Revised Code of Washington
SPCC	Spill Prevention, Control, and Countermeasure
su	Standard Units
SWMMEW	Stormwater Management Manual for Eastern Washington
SWMMWW	Stormwater Management Manual for Western Washington
SWPPP	Stormwater Pollution Prevention Plan
TESC	Temporary Erosion and Sediment Control
SWRO	Southwest Regional Office of the Department of Ecology
TMDL	Total Maximum Daily Load
VFO	Vancouver Field Office of the Department of Ecology
WAC	Washington Administrative Code
WSDOT	Washington Department of Transportation
WWHM	Western Washington Hydrology Model

1 Project Information

Project/Site Name: Parcel 77 Auto Import Terminal Project
Street/Location: 3400 Taylor Way
City: Tacoma State: WA Zip code: 98421

Receiving waterbody: Hylebos Waterway and Blair Waterway

1.1 Existing Conditions

Total acreage (including support activities such as off-site equipment staging yards, material storage areas, borrow areas).

Total acreage:	96 Acres
Disturbed acreage:	89 acres
Existing structures:	Two buildings and four catch basins to be demolished
Landscape topography:	The upland Project property is generally flat with less than 1% slope. Perimeter areas where fill has been placed typically have 2:1 to 3:1 (H to V) side slopes, up to about 5 feet high.
Drainage patterns:	Current drainage consists of infiltration for the majority of the site. There are also two existing stormwater/detention ponds located at the southwest and northeast corners of the Project property. Stormwater currently drains to these ponds, municipal drainage systems along Taylor Way and Alexander Avenue, State Route 509/Taylor Way intersection via a series of ditches, or infiltrates on site. The northeast stormwater/detention pond currently drains to the Hylebos Waterway via stormwater outfall.
Existing Vegetation:	Currently the site is covered in grass, gravel and recycled asphalt
Critical Areas (wetlands, streams, high erosion risk, steep or difficult to stabilize slopes):	No wetland conditions are present on the project property, based on a field investigation conducted by a professional wetland biologist and Port of Tacoma staff biologist on November 28, 2017. There are four existing wetland features located on parcels adjacent to the south side of the Project property

Table 1 includes a list of suspected and/or known contaminants associated with the construction activity.

Table 1 – Summary of Site Pollutant Constituents

Constituent (Pollutant)	Location	Depth	Average Concentration
NWTPH-Dx	Logyard Cap -See map	4 to 8 feet	76 mg/Kg
Motor Oil	Logyard Cap -See map	4 to 8 feet	277 mg/Kg
Arsenic	Logyard Cap -See map	4 to 8 feet	50 mg/Kg
Copper	Logyard Cap -See map	4 to 8 feet	88 mg/Kg
Lead	Logyard Cap -See map	4 to 8 feet	47 mg/Kg
Zinc	Logyard Cap -See map	4 to 8 feet	120 mg/Kg
PAH	Wet scrubber sludge area cap – see map	11 to 13.5 feet	7.33 mg/Kg

1.2 Proposed Construction Activities

Description of site development (example: subdivision): The Project includes redeveloping the Project property into an automobile import terminal. The auto import terminal development activities will include installing new rail spurs, constructing new structures, installing a new fueling island, installing a security fence and entrance gates, and striping vehicle inventory areas. Six new rail spurs, rail loadlines, and unloading pads will be installed at the south end of the Project property. The rail spurs will include five loading tracks and one run-around track.

Description of construction activities (example: site preparation, demolition, excavation):

- Demolishing two existing buildings and remnant foundations
- Grading the Project property with a graded aggregate base and asphalt of varying thickness to accommodate light- and medium-duty vehicle storage and haulaway loading areas
- Installing new rail spurs and rail loadlines along the south end of the Project property, as well as offsite rail improvements including rail spurs and upgrades on Alexander Avenue and Taylor Way
- Constructing a new processing/administration building, car wash and body shop building, rail support maintenance building, and guard houses
- Installing a fueling island and multiple-compartment aboveground fuel storage tank
- Installing a security fence around the Project property and entrance gates
- Providing approximately 200 employee parking spaces and landscaping
- Installing utilities (water, gas, sanitary sewer, fiber optics) and stormwater infrastructure, including enhanced stormwater treatment consisting of treatment vaults and bioretention systems
- Installing an interim pump station and connecting stormwater infrastructure at the southwest corner of the Project property to pump stormwater to the existing EB1 Terminal outfall

Description of site drainage including flow from and onto adjacent properties. Must be consistent with Site Map in Appendix A:
Current drainage consists of infiltration for the majority of the site. There are also two existing stormwater/detention ponds located at the southwest and northeast corners of the Project property. Stormwater currently drains to these ponds, municipal drainage systems along Taylor Way and Alexander Avenue, State Route 509/Taylor Way intersection via a series of ditches, or infiltrates on site. The northeast stormwater/detention pond currently drains to the Hylebos Waterway via stormwater outfall. There is no flow from or onto adjacent properties.

Description of final stabilization (example: extent of revegetation, paving, landscaping):
Overall, approximately 85% of the Project property will be covered with impervious surfaces after construction, including asphalt and buildings. Rail area will be ballasted track. There are two biofiltration systems designed for post-construction stormwater treatment that will be planted.

Contaminated Site Information:
Proposed activities regarding contaminated soils or groundwater (example: on-site treatment system, authorized sanitary sewer discharge):
This site is the Former Kaiser smelter facility and has had several remediated activities over the last decade or so. Attached is a map showing areas of potential contamination, concentrations and an overlay of the site development that will be happening in those areas. This project is required to follow the Material Management Plan, (citation) incorporated here for reference. The City of Tacoma is the issuing authority for the Special Approved Discharge permit associated with this project. Construction is scheduled in the dry season. Stormwater will be infiltrated on-site during construction. Any excess stormwater run-off from unseasonal events will be collected and discharged to the City of Tacoma sanitary system. There are existing sanitary discharge locations on the northeast corner at Taylor Way and the southwest corner of Alexander Ave.

The Contingency Plan for any new contaminated materials discovered includes the following:

- Stop work in the area and notify Ecology and other agencies as appropriate.
- Ecology, Engineer and Environmental Project Managers will determine the path forward to manage the materials.
- All stormwater and groundwater will be collected in tanks and tested prior to disposal either into sanitary sewer (if results meet discharge criteria set by City of Tacoma) or disposal off-site to a permitted Treatment and Disposal Facility.

2 Construction Stormwater Best Management Practices (BMPs)

2.1 The 13 Elements

2.1.1 Element 1: Preserve Vegetation / Mark Clearing Limits

Project site is fully fenced. High visibility fending will be used to identify the construction areas. Signs will be posted at ingress and egress gates. Adjacent wetlands and buffers are clearly delineated and marked with signs and fenced.

List and describe BMPs: C101; C102; C103; and C233

Installation Schedules: Prior to the start of site development activities

Inspection and Maintenance plan: Weekly inspection and maintenance when necessary

Responsible Staff: Contractor CESCL

2.1.2 Element 2: Establish Construction Access

Construction access will be established on Taylor Way and Alexander Ave at existing entrances. Two entrances on Taylor Way and one on Alexander Ave. See SWPPP map for details. Ingress and egress points will be stabilized per BMP C105. Wheel wash, if deemed necessary, will be installed in the northeast corner of the site along haul road area.

List and describe BMPs: C105; C106

Installation Schedules: Prior to site development activities

Inspection and Maintenance plan: Weekly inspections; maintenance when necessary to maintain entrance and prevent track-out

Responsible Staff: Contractor CESCL

2.1.3 Element 3: Control Flow Rates

Majority of site will infiltrate stormwater. Any excess stormwater or dewatering water will be collected in tanks and discharged to City of Tacoma sanitary sewer. Project site is in the flow-control exempt area.

Will you construct stormwater retention and/or detention facilities?
☐ Yes ☒ No

Will you use permanent infiltration ponds or other low impact development (example: rain gardens, bio-retention, porous pavement) to control flow during construction?
☐ Yes ☒ No

List and describe BMPs: Not applicable

Installation Schedules: N/A

Inspection and Maintenance plan: N/A

Responsible Staff: N/A

2.1.4 Element 4: Install Sediment Controls

Project site will infiltrate stormwater on-site. Any excess stormwater flows, if necessary, will be collected in tanks on-site and discharged to City of Tacoma sanitary sewer. Sediment will be controlled from entering sanitary sewer using appropriate best management practices. Perimeter erosion and sediment control will include silt fence installation around the entire site and catch basin filters will be installed in roadways leading to and from project site. Street sweeping will be implemented as necessary. All major site development and grading will occur during the summer months. All BMPs will implemented prior to site development activities.

List and describe BMPs: C233; C235;

Installation Schedules: Prior to site development activities

Inspection and Maintenance plan: Weekly inspection and maintenance when necessary

Responsible Staff: Contractor CESCL

2.1.5 Element 5: Stabilize Soils

Stockpiles of material will be covered when not being worked. Project will be constructed in the summer months. Early application of gravel and pavement once underground utilities have been installed. Dust will be minimized be sprinkling with a water truck and reduced speed limits during construction.

Select your region's table and delete the others.

West of the Cascade Mountains Crest

Season	Dates	Number of Days Soils Can be Left Exposed
During the Dry Season	May 1 – September 30	7 days
During the Wet Season	October 1 – April 30	2 days

East of the Cascade Mountains Crest, except the Central Basin*

Season	Dates	Number of Days Soils Can be Left Exposed
During the Dry Season	July 1 – September 30	10 days
During the Wet Season	October 1 – June 30	5 days

The Central Basin*, East of the Cascade Mountain Crest

Season	Dates	Number of Days Soils Can be Left Exposed

During the Dry Season	July 1 – September 30	30 days
During the Wet Season	October 1 – June 30	15 days

*Note: The Central Basin is defined as the portions of Eastern Washington with mean annual precipitation of less than 12 inches.

Soils must be stabilized at the end of the shift before a holiday or weekend if needed based on the weather forecast.

Anticipated project dates: Start date: June 2018 End date: September 2018

Will you construct during the wet season?
☒ Yes ☐ No

List and describe BMPs: C123; C140; C162; C235

Installation Schedules: Prior to and during site development activities, as appropriate

Inspection and Maintenance plan: Weekly inspection and maintenance as necessary

Responsible Staff: Contractor CESCL

2.1.6 Element 6: Protect Slopes

Will steep slopes be present at the site during construction?
☐ Yes ☒ No

List and describe BMPs: N/A

Installation Schedules: N/A

Inspection and Maintenance plan: N/A

Responsible Staff: N/A

2.1.7 Element 7: Protect Drain Inlets

All existing stormwater infrastructure is to be demolished. Project site will infiltrate stormwater. Excess stormwater generated from unseasonal weather will be collected and discharged to the City of Tacoma. Catch basin inserts to be installed on the perimeter of the site along Taylor Way and Alexander Ave.

List and describe BMPs: C220

Installation Schedules: Prior to site development activities

Inspection and Maintenance plan: Weekly inspection and maintenance as necessary

Responsible Staff: Contractor CESCL

2.1.8 Element 8: Stabilize Channels and Outlets

There are no channels associated with this project. Outlet for the pond is at an established outfall well downstream of the project site.

List and describe BMPs: N/A

Installation Schedules: N/A

Inspection and Maintenance plan: N/A

Responsible Staff: N/A

2.1.9 Element 9: Control Pollutants

The following pollutants are anticipated to be present on-site:

Table 2 – Pollutants

Pollutant (List pollutants and source, if applicable)
Mobile fueling for construction equipment
Demolition debris (concrete)

Mobile fueling of construction equipment will be conducted in a designated area. Secondary containment will be installed and spill kits located within 25 feet of fueling area at all times. Demolition debris will be stockpiled on-site and disposed of off-site as soon as possible. Stockpiles will be protected from erosion using appropriate best management practices.

List and describe BMPs: C123; C150; C151; C152; C153

Installation Schedules: Prior to and during site development activities

Inspection and Maintenance plan: Weekly inspection and maintenance as necessary

Responsible Staff: Contractor CESCL

Will maintenance, fueling, and/or repair of heavy equipment and vehicles occur on-site?
☒ Yes ☐ No

Mobile fueling of construction equipment will be conducted in a designated area. Secondary containment will be installed and spill kits located within 25 feet of fueling area at all times.

List and describe BMPs: C150; C153

Installation Schedules: During all on-site mobile fueling events

Inspection and Maintenance plan: Inspection during fueling activities and maintenance as needed

Responsible Staff: Contractor CESCL

Will wheel wash or tire bath system BMPs be used during construction?
☒ Yes ☐ No

Wheel wash water will be characterized and either discharged to sanitary sewer or disposed of off-site.

List and describe BMPs: C106

Installation Schedules: As needed

Inspection and Maintenance plan: Daily inspection when in use and maintenance as needed.

Responsible Staff: Contractor CESCL

Will pH-modifying sources be present on-site?
☒ Yes ☐ No If yes, check the source(s).

Table 3 – pH-Modifying Sources

☐	None
☐	Bulk cement
☐	Cement kiln dust
☐	Fly ash
☐	Other cementitious materials
☐	New concrete washing or curing waters
☐	Waste streams generated from concrete grinding and sawing
☐	Exposed aggregate processes
☐	Dewatering concrete vaults
☐	Concrete pumping and mixer washout waters
☐	Recycled concrete
☒	Recycled concrete stockpiles
☐	Other (i.e., calcium lignosulfate) [please describe:]

Demolition debris will be stockpiled on-site and disposed of off-site as soon as possible. Stockpiles will be protected from erosion using appropriate best management practices.

List and describe BMPs: C123; C233; C235; C151; C152

Installation Schedules: Prior to and during site demolition activities

Inspection and Maintenance plan: Weekly inspection and maintenance as needed

Responsible Staff: Contractor CESCL

Will uncontaminated water from water-only based shaft drilling for construction of building, road, and bridge foundations be infiltrated provided the wastewater is managed in a way that prohibits discharge to surface waters?
☐ Yes ☒ No

2.1.10 Element 10: Control Dewatering

Dewatering water will be from utility trenching will be re-infiltrated on-site. Excess dewatering water due to unseasonal weather will be collected, tested and discharged to City of Tacoma sanitary sewer or disposed of off-site depending on analysis results.

Table 4 – Dewatering BMPs

☒	Infiltration
☒	Transport off-site in a vehicle (vacuum truck for legal disposal)
☐	Ecology-approved on-site chemical treatment or other suitable treatment technologies
☒	Sanitary or combined sewer discharge with local sewer district approval (last resort)
☐	Use of sedimentation bag with discharge to ditch or swale (small volumes of localized dewatering)

List and describe BMPs: Infiltration, discharge to sanitary sewer or off-site disposal

Installation Schedules: As necessary

Inspection and Maintenance plan: Weekly inspection and maintenance as needed

Responsible Staff: Contractor CESCL

2.1.11 Element 11: Maintain BMPs

All temporary and permanent Erosion and Sediment Control (ESC) BMPs shall be maintained and repaired as needed to ensure continued performance of their intended function.

Maintenance and repair shall be conducted in accordance with each particular BMP specification (see *Volume II of the SWMMWW or Chapter 7 of the SWMMEW*).

Visual monitoring of all BMPs installed at the site will be conducted at least once every calendar week and within 24 hours of any stormwater or non-stormwater discharge from the site. If the site becomes inactive and is temporarily stabilized, the inspection frequency may be reduced to once every calendar month.

All temporary ESC BMPs shall be removed within 30 days after final site stabilization is achieved or after the temporary BMPs are no longer needed.

Trapped sediment shall be stabilized on-site or removed. Disturbed soil resulting from removal of either BMPs or vegetation shall be permanently stabilized.

Additionally, protection must be provided for all BMPs installed for the permanent control of stormwater from sediment and compaction. BMPs that are to remain in place following completion of construction shall be examined and restored to full operating condition. If sediment enters these BMPs during construction, the sediment shall be removed and the facility shall be returned to conditions specified in the construction documents.

2.1.12 Element 12: Manage the Project

The project will be managed based on the following principles:

- Projects will be phased to the maximum extent practicable and seasonal work limitations will be taken into account.
- Inspection and monitoring:
    - Inspection, maintenance and repair of all BMPs will occur as needed to ensure performance of their intended function.
    - Site inspections and monitoring will be conducted in accordance with Special Condition S4 of the CSWGP. Sampling locations are indicated on the Site Map. Sampling station(s) are located in accordance with applicable requirements of the CSWGP.
- Maintain an updated SWPPP.
    - The SWPPP will be updated, maintained, and implemented in accordance with Special Conditions S3, S4, and S9 of the CSWGP.

As site work progresses the SWPPP will be modified routinely to reflect changing site conditions. The SWPPP will be reviewed monthly to ensure the content is current.

Table 5 – Management

☒	Design the project to fit the existing topography, soils, and drainage patterns
☒	Emphasize erosion control rather than sediment control
☒	Minimize the extent and duration of the area exposed
☒	Keep runoff velocities low
☒	Retain sediment on-site
☒	Thoroughly monitor site and maintain all ESC measures
☒	Schedule major earthwork during the dry season
☐	Other (please describe)

2.1.13 Element 13: Protect Low Impact Development (LID) BMPs

There are no LID BMPs associated with this project.

3 Pollution Prevention Team

Table 7 – Team Information

Title	Name(s)	Phone Number
Certified Erosion and Sediment Control Lead (CESCL)	Rob Zinkevich (Port of Tacoma) Contractor CESCL	253.383.9451 TBD
Resident Engineer	Carol Rhodes	253.592.6703
Emergency Ecology Contact	Carol Serdar	360.407.6269
Emergency Permittee/ Owner Contact	TBD/Port Security	253.383.9472
Non-Emergency Owner Contact	Carol Rhodes	253.592.6703
Monitoring Personnel	Rob Zinkevich/Contractor CESCL	253.383.9451
Ecology Regional Office	Southwest	360.407.6300

4 Monitoring and Sampling Requirements

Monitoring includes visual inspection, sampling for water quality parameters of concern, and documentation of the inspection and sampling findings in a site log book. A site log book will be maintained for all on-site construction activities and will include:

- A record of the implementation of the SWPPP and other permit requirements
- Site inspections
- Stormwater sampling data

File a blank form under Appendix D.

The site log book must be maintained on-site within reasonable access to the site and be made available upon request to Ecology or the local jurisdiction.

4.1 Site Inspection

Site inspections will be conducted at least once every calendar week and within 24 hours following any discharge from the site. For sites that are temporarily stabilized and inactive, the required frequency is reduced to once per calendar month.

The discharge point(s) are indicated on the Site Map (see Appendix A) and in accordance with the applicable requirements of the CSWGP.

4.2 Stormwater Quality Sampling

Water quality sampling and analysis is required to discharge excess stormwater and dewatering water to sanitary sewer. City of Tacoma will determine parameters and permit limits. SWPPP will be updated, once the permit has been received, with monitoring and analysis frequency, parameters and effluent limits.

4.2.1 Turbidity Sampling

To be determined by City of Tacoma SAD permit

4.2.2 pH Sampling

To be determined by City of Tacoma SAD permit

5 Discharges to 303(d) or Total Maximum Daily Load (TMDL) Waterbodies

5.1 303(d) Listed Waterbodies

N/A

5.2 TMDL Waterbodies

N/A

6 Reporting and Record Keeping

6.1 Record Keeping

6.1.1 Site Log Book

A site log book will be maintained for all on-site construction activities and will include:

- A record of the implementation of the SWPPP and other permit requirements
- Site inspections
- Sample logs

6.1.2 Records Retention

Records will be retained during the life of the project and for a minimum of three (3) years following the termination of permit coverage in accordance with Special Condition S5.C of the CSWGP.

Permit documentation to be retained on-site:

- CSWGP
- Permit Coverage Letter

- SWPPP
- Site Log Book

Permit documentation will be provided within 14 days of receipt of a written request from Ecology. A copy of the SWPPP or access to the SWPPP will be provided to the public when requested in writing in accordance with Special Condition S5.G.2.b of the CSWGP.

6.1.3 Updating the SWPPP

The SWPPP will be modified if:

- Found ineffective in eliminating or significantly minimizing pollutants in stormwater discharges from the site.
- There is a change in design, construction, operation, or maintenance at the construction site that has, or could have, a significant effect on the discharge of pollutants to waters of the State.

The SWPPP will be modified within seven (7) days if inspection(s) or investigation(s) determine additional or modified BMPs are necessary for compliance. An updated timeline for BMP implementation will be prepared.

6.2 Reporting

6.2.1 Discharge Monitoring Reports

Cumulative soil disturbance is one (1) acre or larger; therefore, Discharge Monitoring Reports (DMRs) will be submitted to Ecology monthly. If there was no discharge during a given monitoring period the DMR will be submitted as required, reporting “No Discharge”. The DMR due date is fifteen (15) days following the end of each calendar month.

DMRs will be reported online through Ecology’s WQWebDMR System.

6.2.2 Notification of Noncompliance

If any of the terms and conditions of the permit is not met, and the resulting noncompliance may cause a threat to human health or the environment, the following actions will be taken:

1. Ecology will be notified within 24-hours of the failure to comply by calling the applicable Regional office ERTS phone number (Regional office numbers listed below).
2. Immediate action will be taken to prevent the discharge/pollution or otherwise stop or correct the noncompliance. If applicable, sampling and analysis of any noncompliance will be repeated immediately and the results submitted to Ecology within five (5) days of becoming aware of the violation.
3. A detailed written report describing the noncompliance will be submitted to Ecology within five (5) days, unless requested earlier by Ecology.

A. Site Map

The site map must meet the requirements of Special Condition S9.E of the CSWGP

B. BMP Detail

Insert BMPs specification sheets here.
Download BMPs from the Ecology Construction Stormwater website at:
http://www.ecy.wa.gov/programs/wq/stormwater/construction/index.html
Select Resources and Guidance to find the links to the Stormwater Manuals.

C. Correspondence

Ecology
EPA
Local Government

D. Site Inspection Form

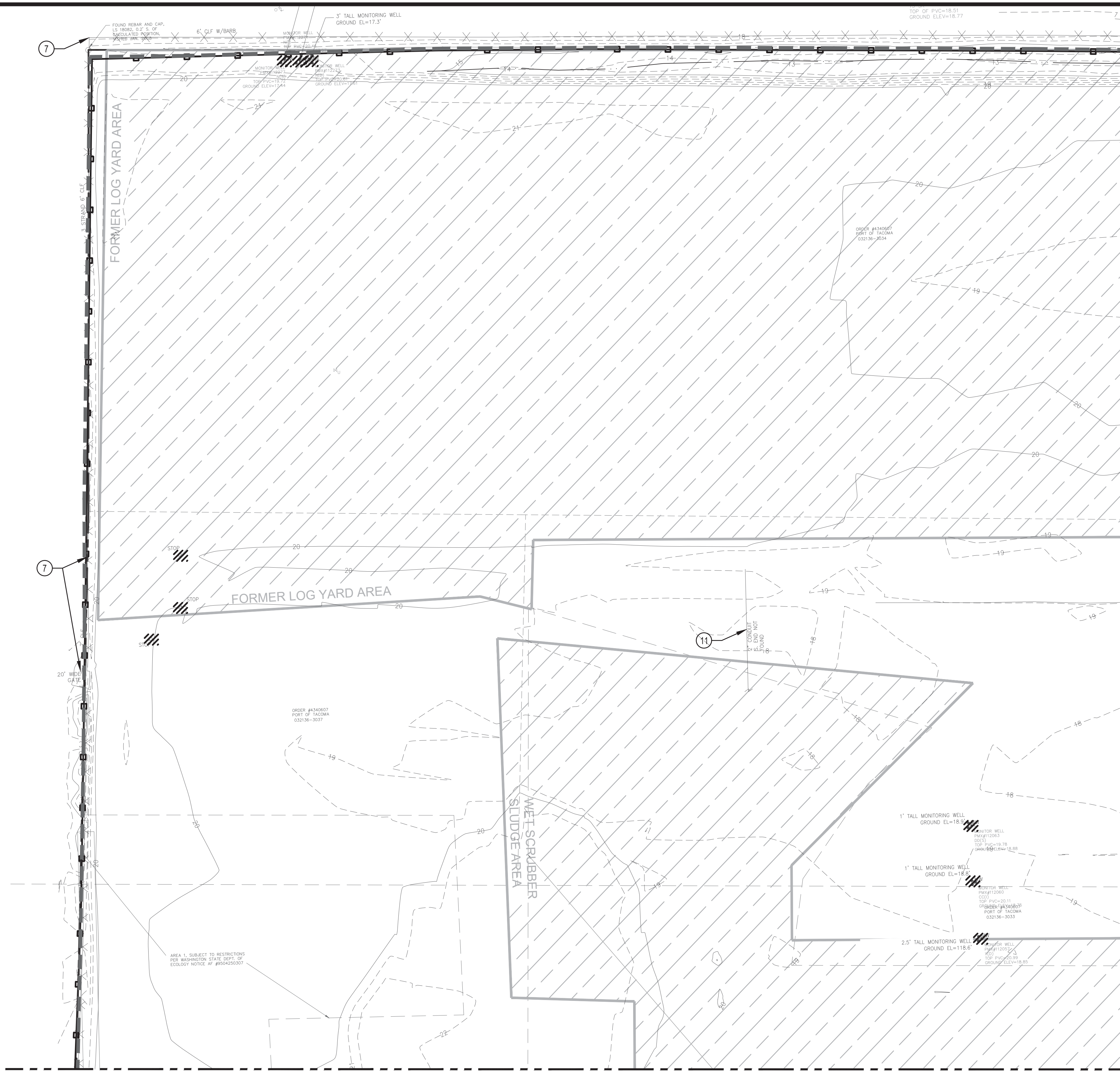
Create your own or download Ecology's template:
http://www.ecy.wa.gov/programs/wq/stormwater/construction/index.html
Select Permit, Forms and Application to find the link to the Construction Stormwater Site Inspection Form.

E. Construction Stormwater General Permit (CSWGP)

Download the CSWGP:
http://www.ecy.wa.gov/programs/wq/stormwater/construction/index.html

F. Contaminated Site Information

Administrative Order
Sanitary Discharge Permit
Soil Management Plan
Soil and Groundwater Reports
Maps and Figures Depicting Contamination



MATCH LINE SEE SHEET DM3

0 50 100 150
SCALE IN FEET

LEGEND

EXISTING MAJOR CONTOUR
PROPERTY LINE
LIMITS OF WORK
EX FENCE TO BE USED AS TEMPORARY CONSTRUCTION FENCE
SILT FENCE
INTERCEPTOR DITCH
INLET PROTECTION
MONITORING WELL PROTECTION
DEMO STORMDRAIN PIPE AND/OR UTILITY STRUCTURE AND/OR MONITORING WELL
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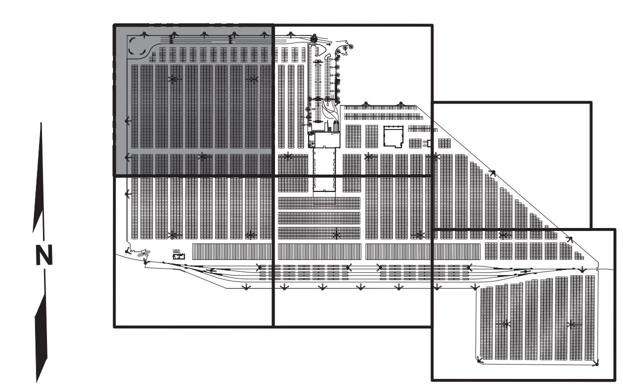

KEY PLAN
NTS

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Port of Tacoma
kpff 2407 North 31st Street, Suite 100, Tacoma, Washington 98407, (253) 396-0150 Fax (253) 396-0162

PARCEL 77 AUTO IMPORT TERMINAL
TESC, DEMOLITION, AND REMEDIATION PLAN
AREA 1

DM1
5 OF 106

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DAT-HRZ: W83-SF VERT: PORT OF TACOMA BM#
PARCEL: MULTIPLE DRAWING SCALE: AS SHOWN
CONT/CONS: 070770
M. ID: 201020.01
PHASE: PRELIMINARY
MARK: REVISION: BY: APPR: DATE:

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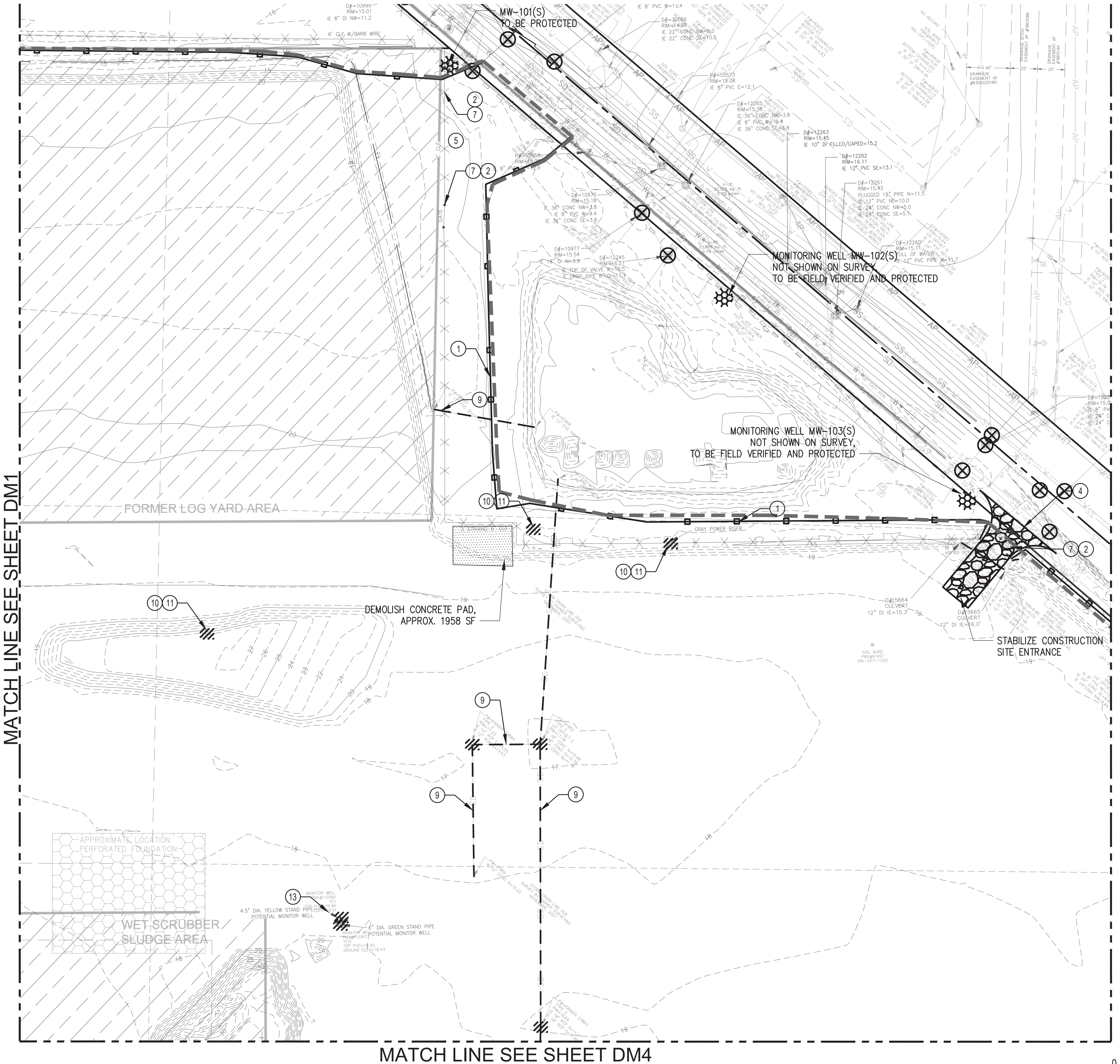

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SCALE IN FEET

LEGEND

- EXISTING MAJOR CONTOUR
- PROPERTY LINE
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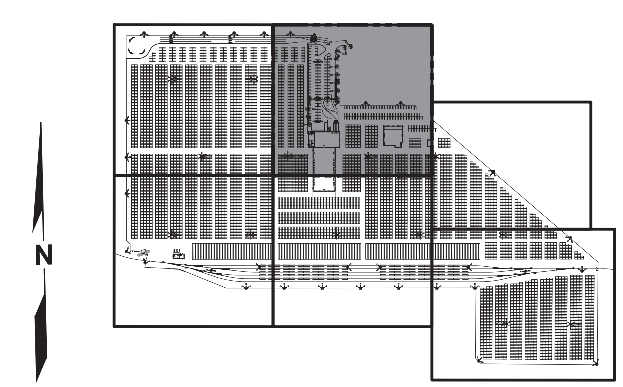

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PARCEL 77 AUTO IMPORT TERMINAL

TESC, DEMOLITION, AND REMEDIATION PLAN AREA 2

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DM2
6 OF 106

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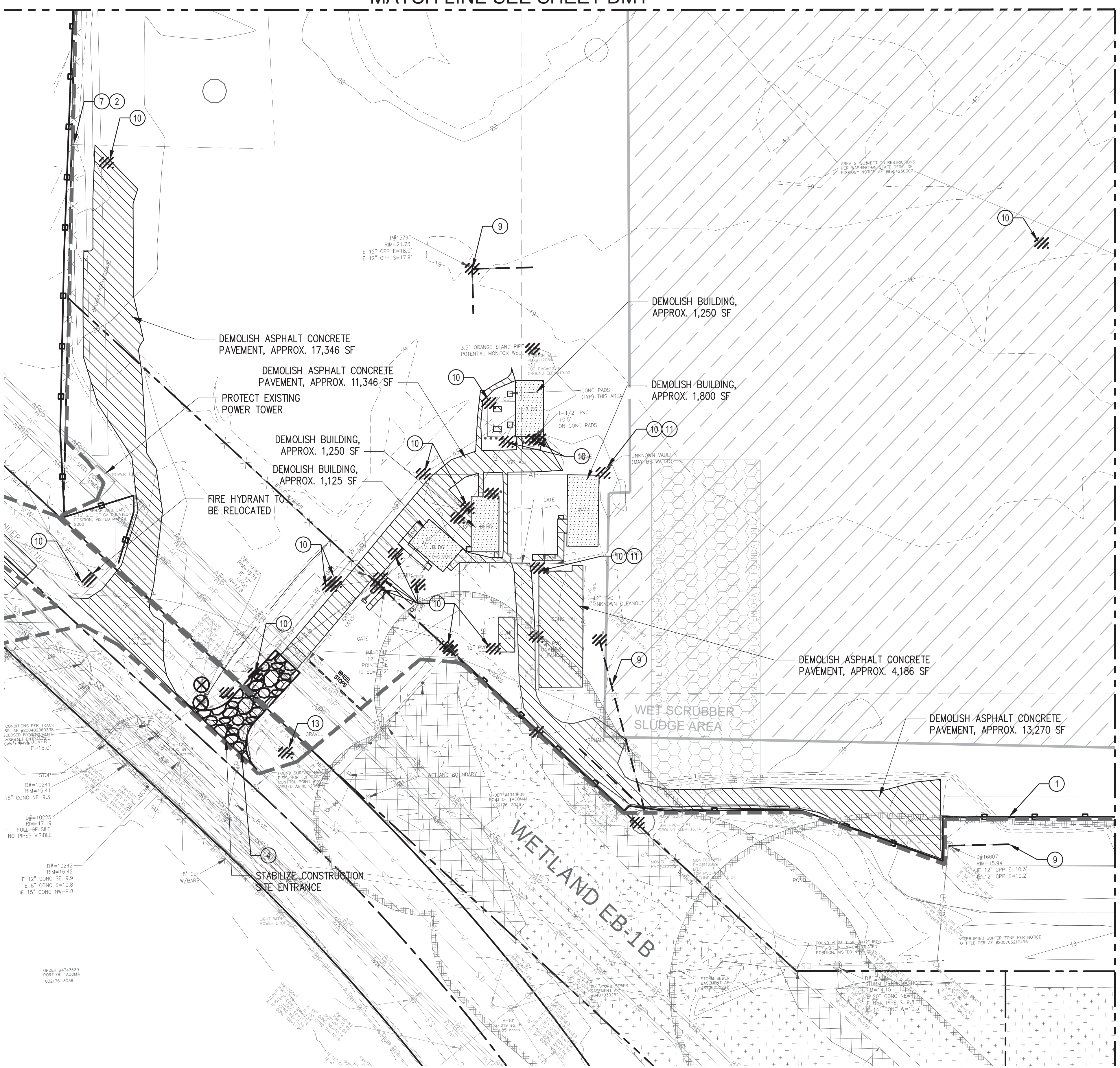

MATCH LINE SEE SHEET DM4

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SCALE IN FEET

LEGEND

- EXISTING MAJOR CONTOUR
- PROPERTY LINE
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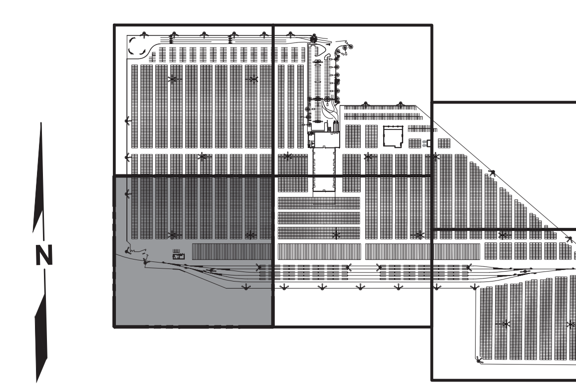

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PARCEL 77 AUTO IMPORT TERMINAL

TESC, DEMOLITION, AND REMEDIATION PLAN AREA 3

TOWNSHIP: 21N	RANGE: 3E	SECTION: 36
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DM3

7 OF 106

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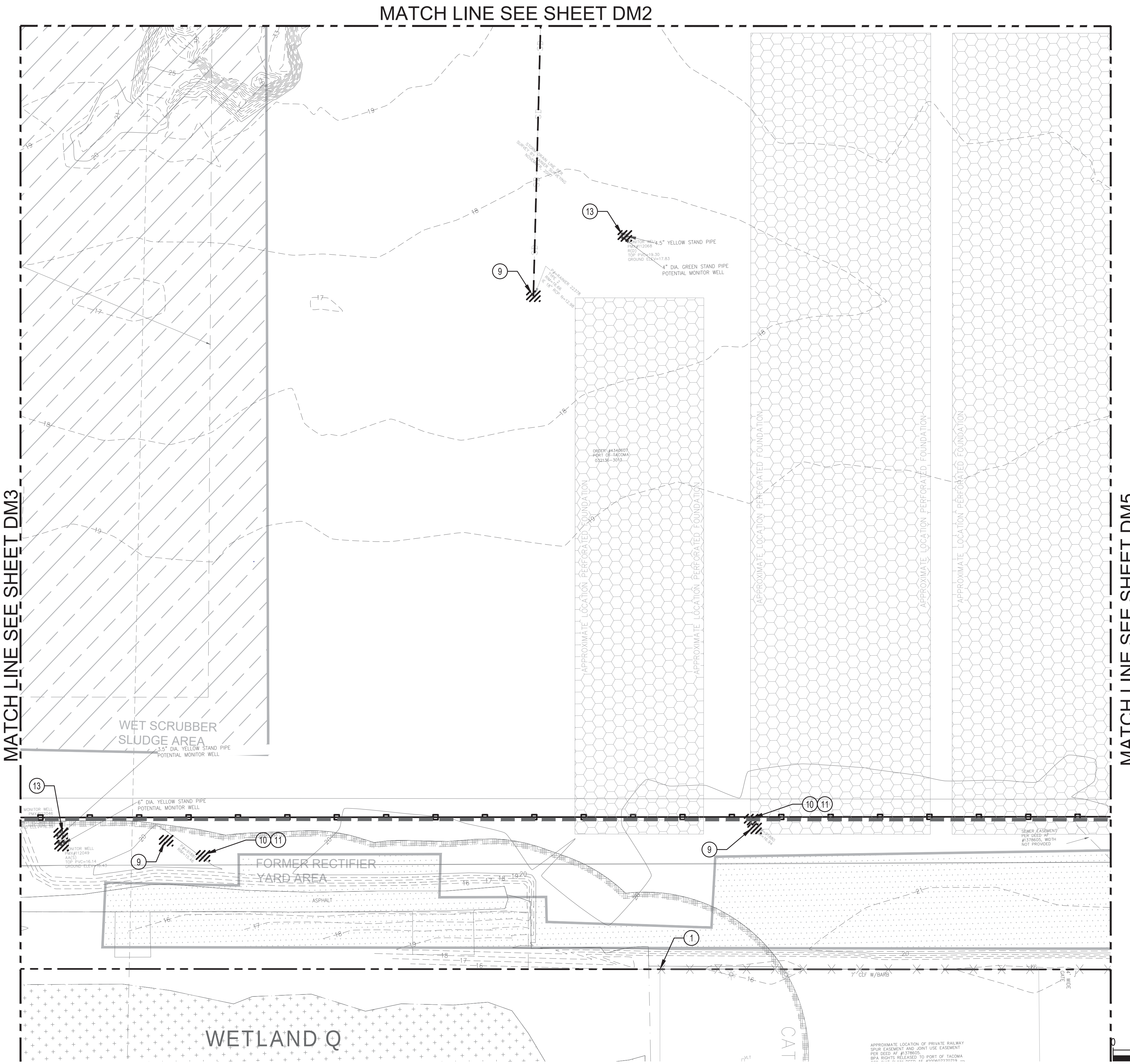

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SCALE IN FEET

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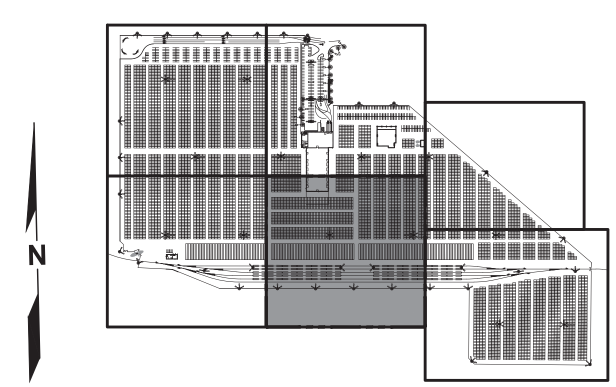

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TESC, DEMOLITION, AND REMEDIATION PLAN AREA 4

TOWNSHIP: 21N	RANGE: 3E	SECTION: 36
DAT-HRZ: W83-SF	VERT: PORT OF TACOMA BM#	
PARCEL: MULTIPLE	DRAWING SCALE: AS SHOWN	

DM4

8 OF 106

CONT/CONS: 070770

M. ID: 201020.01

PHASE: PRELIMINARY

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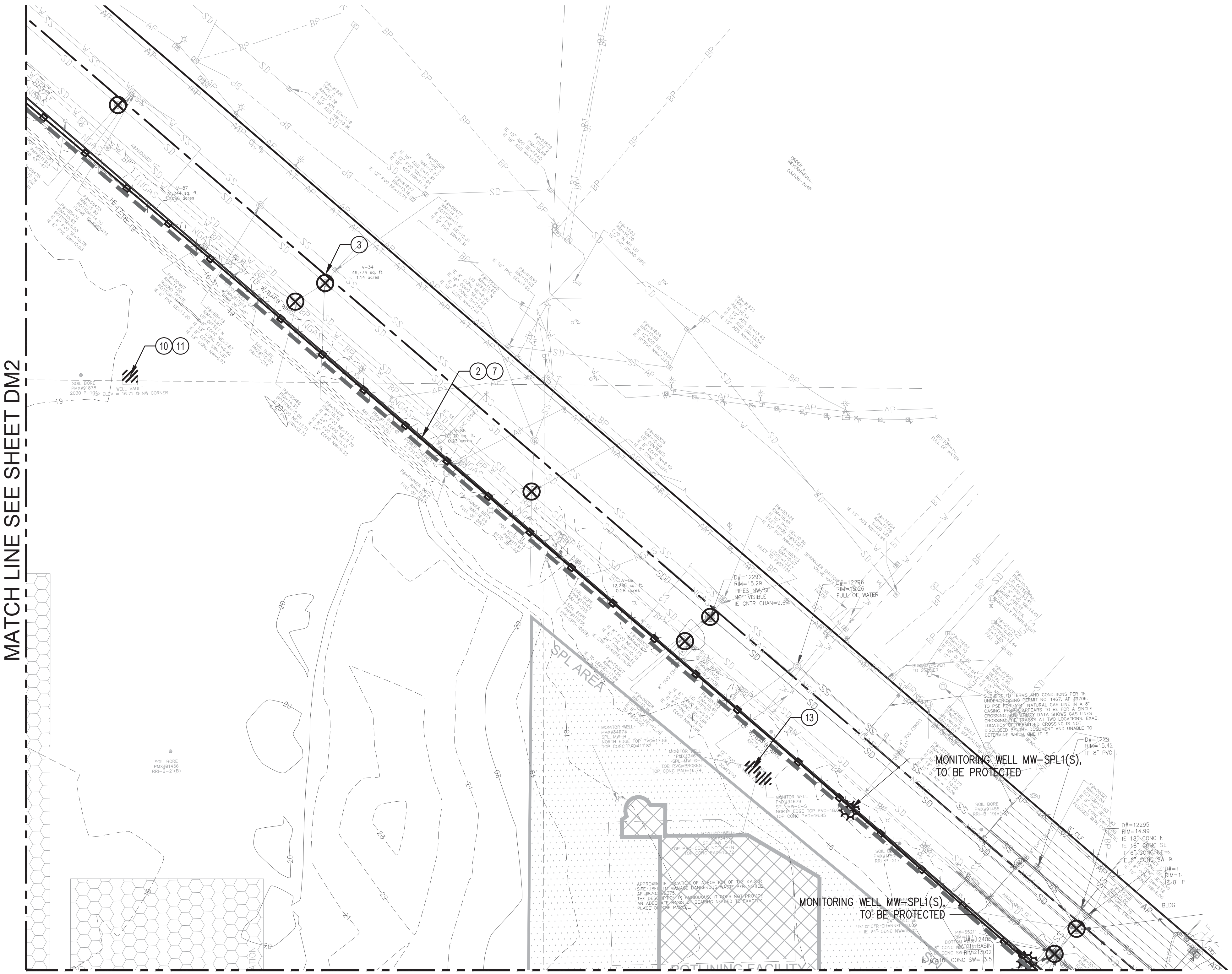

LEGEND

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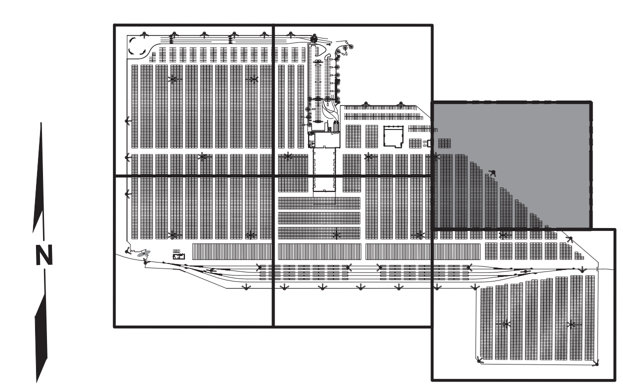

KEY PLAN
NTS

0 50 100 150
SCALE IN FEET

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Tacoma, Washington 98407
(253) 396-0150 Fax (253) 396-0162

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PARCEL 77 AUTO IMPORT TERMINAL

TESC, DEMOLITION, AND REMEDIATION PLAN AREA 5

TOWNSHIP: 21N	RANGE: 3E	SECTION: 36
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PARCEL: MULTIPLE		DRAWING SCALE: AS SHOWN

DM5
9 OF 106

CONT/CONS: 070770
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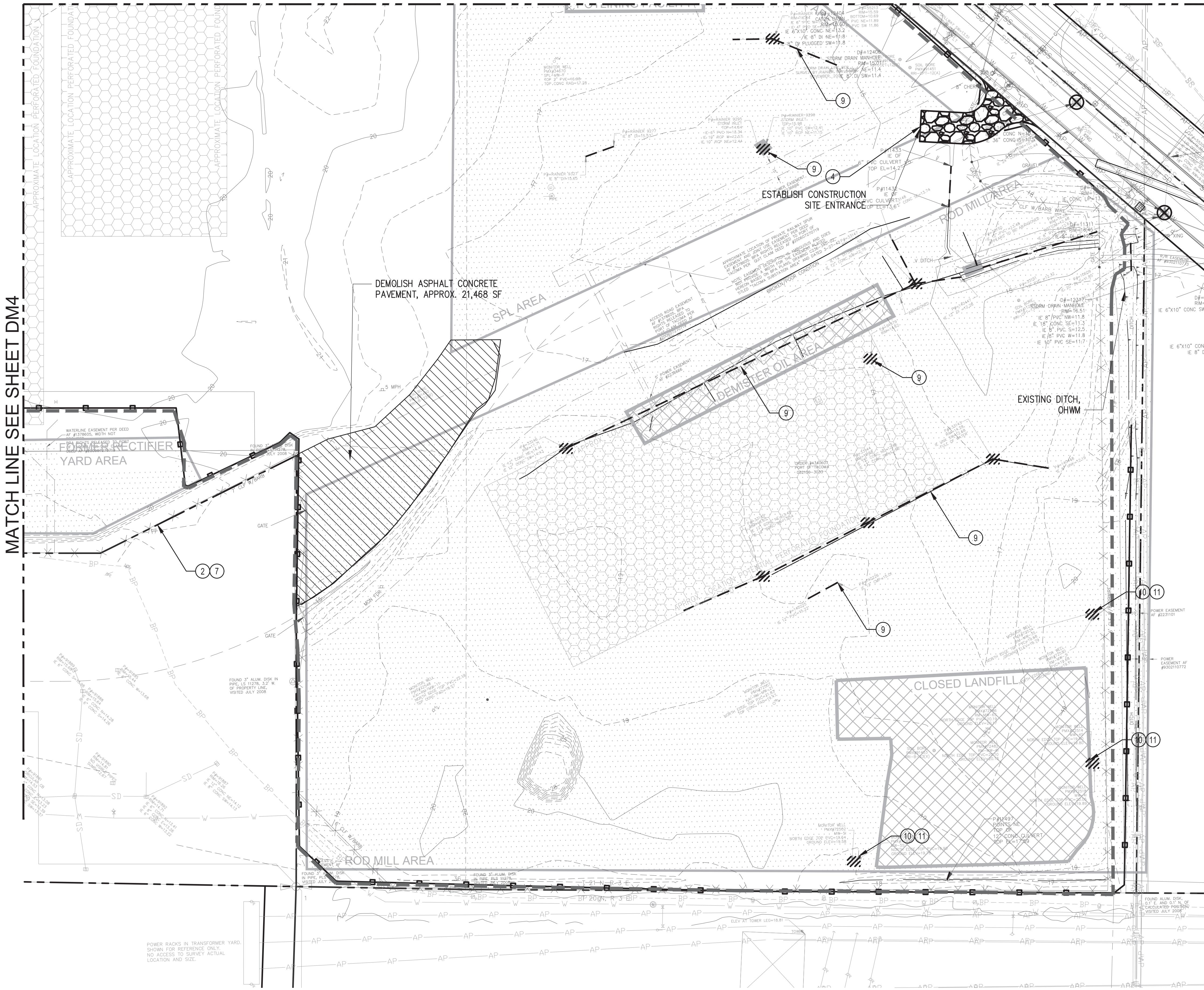

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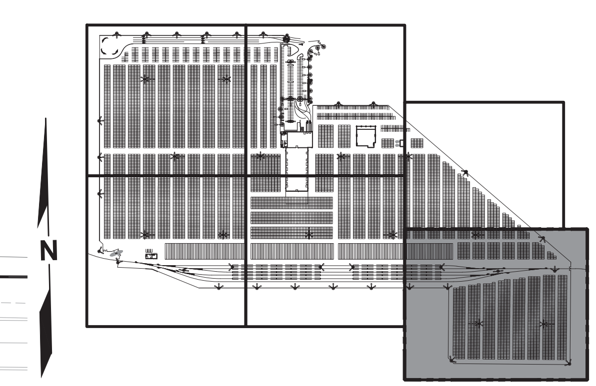
- DEMO BUILDING/CONCRETE
- CAPPED REMNANT CONTAMINATION
- AREAS OF REMEDIATED CONTAMINATION
- CONCRETE FEATURES / IMPOUNDMENT

GENERAL NOTES

1. REFER TO SHEET DM7 FOR DEMOLITION NOTES AND TEMPORARY EROSION AND SEDIMENTATION CONTROL NOTES.
2. INSTALL TESC MEASURES PRIOR TO DEMOLITION AND EXCAVATION.
3. CONTRACTOR SHALL CALL FOR UTILITY LOCATES AND LOCATE EXISTING UTILITIES IN THE ROADWAY AND ON-SITE BEFORE DEMOLITION OR EXCAVATION. UNDERGROUND PIPES ASSOCIATED MONITORING WELLS ARE NOT SHOWN.
4. EXISTENCE OF PERFORATED FOUNDATION ARE UNKNOWN. THE CONTRACTOR SHALL DEMOLISH AS NECESSARY TO CONSTRUCT UTILITIES.

TESC AND DEMO NOTES

1. INSTALL SILT FENCE PER DETAIL 4 ON SHEET DM8
2. ESTABLISH TEMPORARY CONSTRUCTION FENCE, SEE FENCING PLAN ON C1–C6
3. INSTALL INLET PROTECTION PER DETAIL 1 ON SHEET DM8
4. STABILIZE CONSTRUCTION ENTRANCE PER DETAIL 3 ON DM8
5. ESTABLISH TIRE WASH
6. CONSTRUCT INTERCEPTOR DITCHES AND SEDIMENT TRAPS
7. REMOVE EXISTING FENCE AND GATE
8. CLEAR AND GRUB EXISTING VEGETATION
9. REMOVE EXISTING SW STRUCTURE AND PIPE
10. REMOVE EXISTING UTILITY STRUCTURE
11. CUT AND CAP EXISTING UTILITY
12. DECOMMISSION EXISTING MONITORING WELL



KEY PLAN

NTS

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CMB 2/13/2018 CHECKED BY DATE

SWK 2/15/2018 PROJ. ENGR DATE

DIRECTOR ENG. DATE

PRINTED BY: thelbig Feb 15, 2018

PORT ADDRESS: ONE SITCUM PLAZA TACOMA WA, 98401-1837

PARCEL 77 AUTO IMPORT TERMINAL

TESC, DEMOLITION, AND REMEDIATION PLAN AREA 6

TOWNSHIP: 21N | RANGE: 3E | SECTION: 36

DAT–HRZ: W83-SF | VERT: PORT OF TACOMA BM#

PARCEL: MULTIPLE | DRAWING SCALE: AS SHOWN

DM6

10 OF 106

CONT/CONS: 070770

M. ID: 201020.01

PHASE: PRELIMINARY

PORT OF TACOMA FILE: N:\2017\1700082 Automobile Import Terminal Planning\Part 3 - KPFF Design\3.13 Drawings\Current\30pc Design\DM1-DM6 DEMO REMEDIATION PLANS

BINDING EDGE

EROSION CONTROL GENERAL NOTES:

1. MINIMUM EROSION CONTROL MEASURES SHALL INCLUDE:
   A. STABILIZED CONSTRUCTION ENTRANCE.
   B. PERIMETER EROSION/SEDIMENTATION CONTROL.
   C. PROTECTION OF CATCH BASINS.
   D. STABILIZATION OF EXPOSED SOILS.
2. ALL EROSION CONTROL SHALL BE IN PLACE PRIOR TO CLEARING AND GRUBBING.
3. EROSION CONTROL MEASURES SHALL BE MAINTAINED AT ALL TIMES TO THE APPROVAL OF THE CONSTRUCTION INSPECTOR, ENGINEER, AND/OR PORT REPRESENTATIVE.
4. SHOULD TEMPORARY EROSION AND SEDIMENT CONTROL MEASURE, AS SHOWN ON THE PLANS BECOME INADEQUATE, THE CONTRACTOR SHALL INSTALL BMP'S AND/OR FACILITIES AS NECESSARY TO PROTECT ADJACENT PROPERTIES, CITY OF TACOMA DRAINAGE SYSTEM, AND EXISTING PORT DRAINAGE SYSTEMS MEETING THE APPROVAL OF THE INSPECTOR, ENGINEER, AND/OR PORT REPRESENTATIVE.
5. CONTRACTOR SHALL CALL THE CONSTRUCTION INSPECTOR FOR INSPECTIONS UPON COMPLETION OF:
   A. STAKING OF CLEARING LIMITS.
   B. INSTALLATION OF EROSION CONTROL AND PRIOR TO SITE GRADING.
   C. PRIOR TO REMOVAL OF EROSION CONTROL DEVICES.
6. ALL NON-SALVAGED MATERIAL REMOVED FROM THE SITE SHALL BE PLACED OR DISPOSED OF AT A PERMITTED SITE. CONTRACTOR SHALL OBTAIN CHARACTERIZATION DOCUMENTATION FROM THE PORT FOR ALL MATERIAL PRIOR TO HAUL AND DISPOSAL.
7. THE IMPLEMENTATION OF THESE PLANS AND THE CONSTRUCTION, REGULAR REVIEW, MAINTENANCE, REPLACEMENT, AND CONSTRUCTION SURFACE WATER POLLUTION PREVENTION PLAN (CSWPPP), AND UPGRADING THESE FACILITIES IS THE RESPONSIBILITY OF THE CONTRACTOR IN ACCORDANCE WITH PROJECT SPECIFICATIONS AND PLANS UNTIL ALL CONSTRUCTION IS APPROVED AND ACCEPTED BY THE PORT AND CITY OF TACOMA.
8. THE BOUNDARIES OF THE CLEARING LIMITS ARE THE FENCE LINE AS INDICATED IN THE PLANS. ADDITIONAL SILT FENCING AND HIGH VISIBILITY FENCING MAY BE CONSTRUCTED AT THE PROPERTY LINE ALONG EAST 11TH STREET AND MILWAUKEE WAY WHICH IS OUTSIDE OF THE FENCE LINE AND SHALL NOT BE CONSIDERED PART OF THE CLEARING LIMITS.
9. CLEARING LIMITS SHALL BE CLEARLY STAKED AND/OR FLAGGED. NO-DISTURBANCE AREA LIMITS SHALL BE MAINTAINED BY THE TESC SUPERVISOR AND/OR CESCL FOR THE DURATION OF THE CONSTRUCTION UNLESS OTHERWISE NOTED OR AS DIRECTED BY THE ENGINEER. THE CLEARING LIMITS SHALL COINCIDE WITH GRADING LIMITS AT THE TOE OR TOP OF SLOPE UNLESS OTHERWISE INDICATED IN THE PLANS.
10. THE TESC FACILITIES SHOWN ON THIS PLAN SHALL BE CONSTRUCTED PRIOR TO ALL CLEARING AND GRADING SO AS TO ENSURE THAT TRANSPORT OF SEDIMENT TO SURFACE WATERS, DRAINAGE SYSTEMS, AND ADJACENT PROPERTIES IS MINIMIZED. THE TYPICAL WET SEASON RUNS FROM OCTOBER 1 THROUGH APRIL 30, AND THE DRY SEASON FROM MAY 1 THROUGH SEPTEMBER 30.
11. THE TESC FACILITIES SHOWN ON THE PLANS ARE MINIMUM REQUIREMENTS FOR ANTICIPATED SITE CONDITIONS. TESC MEASURES SHALL BE UPGRADED, MODIFIED, RELOCATED, AND/OR EXPANDED AS NECESSARY TO ADDRESS ACTUAL CONSTRUCTION CONDITIONS.
12. THE TESC FACILITIES SHALL BE INSPECTED DAILY BY THE TESC SUPERVISOR AND MAINTAINED TO ENSURE CONTINUED PROPER FUNCTIONING IN ACCORDANCE WITH THE SPECIFICATIONS. WRITTEN RECORDS SHALL BE KEPT OF TESC REVIEWS DAILY DURING THE WET SEASON AND WEEKLY DURING THE DRY SEASON.
13. AS A GENERAL RULE, ANY AREAS OF EXPOSED SOILS, INCLUDING EMBANKMENTS, THAT WILL NOT BE DISTURBED FOR TWO DAYS DURING THE WET SEASON OR SEVEN DAYS DURING THE DRY SEASON SHALL BE IMMEDIATELY STABILIZED WITH THE APPROVED TESC BMP METHODS.
14. THE TESC FACILITIES OF INACTIVE SITES SHALL BE INSPECTED AND MAINTAINED A MINIMUM OF ONCE PER MONTH AND/OR IMMEDIATELY FOLLOWING A STORM EVENT.
15. AT NO TIME SHALL MORE THAN 6 INCHES OF SEDIMENT BE ALLOWED TO ACCUMULATE WITHIN A CATCH BASIN. ALL CATCH BASINS AND CONVEYANCE LINES SHALL BE CLEANED, TESTED, AND ADJUSTED PRIOR TO FINAL INSPECTION AND APPROVAL. THE CLEANING OPERATION SHALL NOT FLUSH SEDIMENT LADEN WATER INTO THE DOWNSTREAM SYSTEM.
16. STABILIZED CONSTRUCTION ENTRANCES AND ROADS SHALL BE INSTALLED AT ALL ENTRANCES USED BY CONSTRUCTION EQUIPMENT AT THE BEGINNING OF CONSTRUCTION AND MAINTAINED FOR THE DURATION OF THE PROJECT. IF MORE THAN ONE ACCESS LOCATION IS USED, ADDITIONAL STABILIZED CONSTRUCTION ENTRANCES SHALL BE PROVIDED. ADDITIONAL MEASURES, SUCH AS WHEEL WASHES SHALL BE PROVIDED BY CONTRACTOR TO ENSURE THAT ALL PAVED AREAS ARE KEPT CLEAN FOR THE DURATION OF THE PROJECT.
17. PLASTIC COVERING SHALL BE APPLIED IN ACCORDANCE WITH TESC PLANS, SPECIFICATIONS, AND AS DIRECTED (WITH APPROPRIATE ANCHORING SUCH AS ROPE AND SAND BAGS) BY THE ENGINEER ON DISTURBED AREAS THAT REQUIRE COVER MEASURES LESS THAN 30 DAYS OR AS A COVER FOR SEED (OPAQUE PLASTIC ONLY) DURING THE COLD WINTER MONTHS FOR CREATING A GREENHOUSE EFFECT TO ENCOURAGE GRASS GROWTH. PLASTIC COVERINGS SHALL NOT BE USED UPSLOPE OF AREAS ADVERSELY IMPACTED BY ITS CONCENTRATED RUNOFF, UNLESS DIVERSION OR RETENTION AND DISSIPATION MEASURES ARE IN PLACE AND FUNCTIONING.

EROSION CONTROL GENERAL NOTES (CONTINUED):

18. INLET PROTECTION SHALL BE USED ON ALL EXISTING AND CONSTRUCTED DRAINS WITHIN 30 FEET OF A DISTURBED AREA. THEY SHALL BE CHECKED AND CLEANED WEEKLY AND AFTER EACH STORM EVENT.
19. PREVENTATIVE MEASURES TO MINIMIZE THE WIND TRANSPORT OF SOIL SHALL BE TAKEN WHEN A PORT OR TRAFFIC HAZARD MAY BE CREATED OR WHEN SEDIMENT TRANSPORTED BY THE WIND IS LIKELY TO BE DEPOSITED IN DRAINAGE WAYS, WATER RESOURCES, OR NON-PORT PROPERTY. WHEN USING WATER FOR DUST CONTROL, SPRAY UNTIL THE SOIL IS WET BUT RUNOFF IS NOT INITIATED.
20. PAVED STREETS AND OTHER PAVED AREAS SHALL BE SWEPT DAILY TO PREVENT SEDIMENT AND DUST TRACKING ONTO THE PAVED AREAS.
21. THE CONTRACTOR SHALL USE THE PROVIDED SWPPP AND MAY MODIFY IT FOR SPECIFIC CONSTRUCTION ACTIVITIES. THE CONTRACTOR SHALL DEVELOP A SPILL PREVENTION AND COUNTER MEASURES CONTROL PLAN AND IDENTIFY PERSONS RESPONSIBLE FOR IMPLEMENTING THE PLAN IF A SPILL OF A DANGEROUS OR HAZARDOUS WASTE SHOULD OCCUR. ANY SPILL THAT OCCURS, REGARDLESS OF SIZE AND/OR TYPE OF SPILL, SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE PORT AND WASHINGTON STATE DEPARTMENT OF ECOLOGY SPILL RESPONSE UNIT IN REDMOND AT THEIR 24-HOUR TELEPHONE (425) 649-7000. IN THE CASE OF A SMALL ISOLATED SPILL THAT IS CONTAINED, COVER WITH AN ABSORBENT MATERIAL AND CONTACT THE ENGINEER IMMEDIATELY. THE PLAN SHALL BE SUBMITTED FOR APPROVAL PRIOR TO BEGINNING CONSTRUCTION.
22. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FULL COMPLIANCE WITH THE WASHINGTON STATE DROPPING LOAD OR OTHER MATERIALS COVERING LAWS (RCW 46.51.655.3/4).
23. CONTRACTOR SHALL CONSTRUCT AND STABILIZE TEMPORARY SUMPS/SEDIMENT TRAPS/PONDS AND/OR SWALES/DITCHES AS SHOWN IN THE TESC PLANS AS A FIRST ORDER OF WORK. ALL SURFACE FLOWS FROM DISTURBED AREAS SHALL BE CONVEYED THROUGH THESE TRAPPING DEVICES BEFORE BEING ALLOWED TO DISCHARGE OFFSITE. SEE RECOMMENDED TESC CONSTRUCTION SEQUENCE BELOW.
24. ONSITE MATERIALS, IN ADDITION TO THOSE INSTALLED, SHALL CONSIST OF (PER ACRE OF PROJECT AREA) 100 LF OF SILT FENCE, 20 SAND BAGS, 100 SY OF CLEAR PLASTIC COVER, 1 CY OF QUARRY SPALLS, AND 1 CY OF PEA GRAVEL FOR ROCK CHECK DAMS AND OTHER MATERIAL AS DIRECTED BY THE ENGINEER.

RECOMMENDED TESC CONSTRUCTION SEQUENCE:

1. INSTALL TRAFFIC CONTROL SIGNING.
2. FLAG AND FENCE CLEARING LIMITS AND INSTALL PERIMETER PROTECTION FOR INSPECTION.
3. POST CONSTRUCTION SIGN WITH NAME AND PHONE NUMBER OF THE TESC CONTRACTOR.
4. INSTALL INLET PROTECTION AND SILT FENCE WHERE REQUIRED.
5. INSTALL TEMPORARY CURBS WHERE REQUIRED.
6. GRADE AND STABILIZE CONSTRUCTION ACCESS AND CONSTRUCTION ROADS.
7. CONTROL FLOW RATES WITH INTERCEPTOR DITCHES AND SEDIMENT TRAPS/SUMPS.
8. INSTALL SEDIMENT CONTROLS INCLUDING SAND ENHANCED FILTRATION AND SUPPLEMENTAL STORAGE TANKS.
9. STABILIZE SOILS AND SLOPES, PROTECT SLOPES, PROTECT DRAIN INLETS, STABILIZE CHANNELS AND OUTLETS, CONTROL POLLUTANTS, CONTROL DEWATERING, MAINTAIN BMP'S, AND MANAGE THE PROJECT.
10. UPON COMPLETION OF THE PROJECT, ALL DISTURBED AREAS SHALL BE STABILIZED AND BMP'S AND TEMPORARY TRAFFIC CONTROL AND SIGNING SHALL BE REMOVED AS DIRECTED BY THE ENGINEER, CITY, AND THE PORT.

REGULATED MATERIALS:

1. SUSPECT SOIL WITH AN ODOR, SHEEN, OR COLOR INDICATING PRESENCE OF REGULATED MATERIALS SHALL BE STOCKPILED ON-SITE IN A DESIGNATED CONTAINED AREA AND WILL BE CLASSIFIED ACCORDING TO MODCA CLEANUP LEVELS AS REGULATED OR NON-REGULATED.
2. AFTER CHARACTERIZATION, THE NON-REGULATED SOIL SHALL BE REUSED ONSITE FOR FILL MATERIAL PROVIDED IT MEETS GRADING REQUIREMENTS ASSOCIATED WITH ITS USE OR EXPORTED.
3. SOILS FOUND TO CONTAIN REGULATED MATERIALS ABOVE MODCA LEVEL A THRESHOLDS SHALL BE LOADED INTO TRUCKS FOR HAUL AND DISPOSAL. HAUL AND DISPOSAL SHALL BE PERFORMED BY OTHERS.
4. GROUNDWATER AND/OR WATER LEACHING OUT OF TRENCHES OR STOCKPILED SOILS AND HAS A SHEEN, COLOR, OR ODOR INDICATING THE PRESENCE OF SUSPECT MATERIALS SHALL BE TREATED WITH A GRANULATED ACTIVATED CARBON FILTER SYSTEM. SUCH WATER MAY BE DISPOSED OF AT AN APPROVED DISPOSAL SITE OR TREATED TO PERMIT THRESHOLD LIMITS FOR DISCHARGE.
5. ALL OPEN EXCAVATIONS SHALL BE BACKFILLED THE SAME WORK DAY.
6. THE CONTRACTOR SHALL HAVE SPILL KITS ON SITE AND ABSORBENT PADS FOR OILS.

DEMOLITION NOTES

1. CONTRACTOR SHALL CALL FOR UTILITY LOCATES AND LOCATE EXISTING UTILITIES IN THE ROADWAY AND ON-SITE PRIOR TO DEMOLITION OR EXCAVATION.
2. CONTRACTOR SHALL COORDINATE POWER AND WATER SERVICE RELOCATION WITH TPU.
3. ALL MONITORING WELLS FOUND SHALL BE FLAGGED AND PROTECTED. MONITORING WELLS SHOWN REFLECT ALL AVAILABLE RECORDS. FIELD INVESTIGATION TO CONFIRM LOCATION NOT YET COMPLETE AS OF 12/8/17.

PERMIT SUBMITTAL

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APPROVED:
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CMB 2/13/2018
CHECKED BY DATE

SWK 2/15/2018
PROJ. ENGR DATE

PRINTED BY: thelbig Feb 15, 2018
PORT ADDRESS: ONE SITCUM PLAZA TACOMA WA, 98401-1837

PARCEL 77 AUTO IMPORT TERMINAL

DEMOLITION AND TESC NOTES

TOWNSHIP: 21N | RANGE: 3E | SECTION: 36
DAT-HRZ: W83-SF | VERT: PORT OF TACOMA BM#
PARCEL: MULTIPLE | DRAWING SCALE: AS SHOWN

DM7
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CONT/CONS: 070770
M. ID: 201020.01
PHASE: PRELIMINARY

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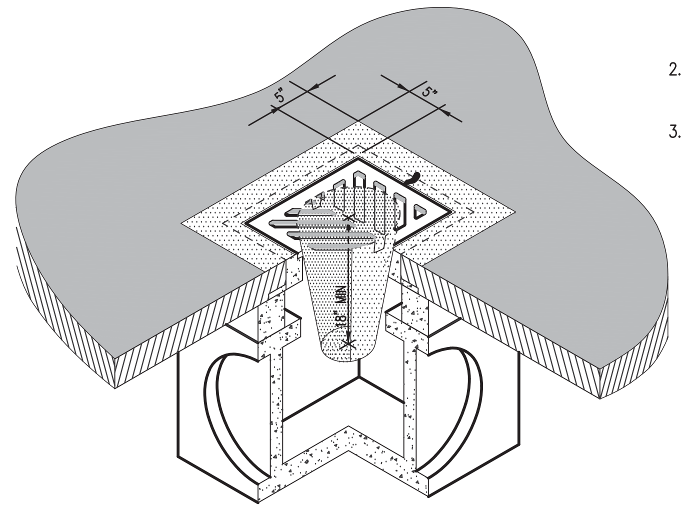
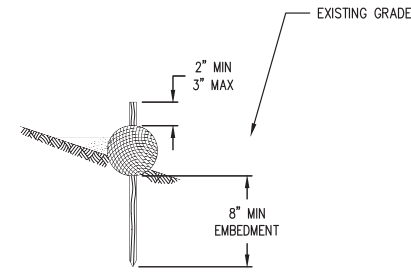
GENERAL NOTES:

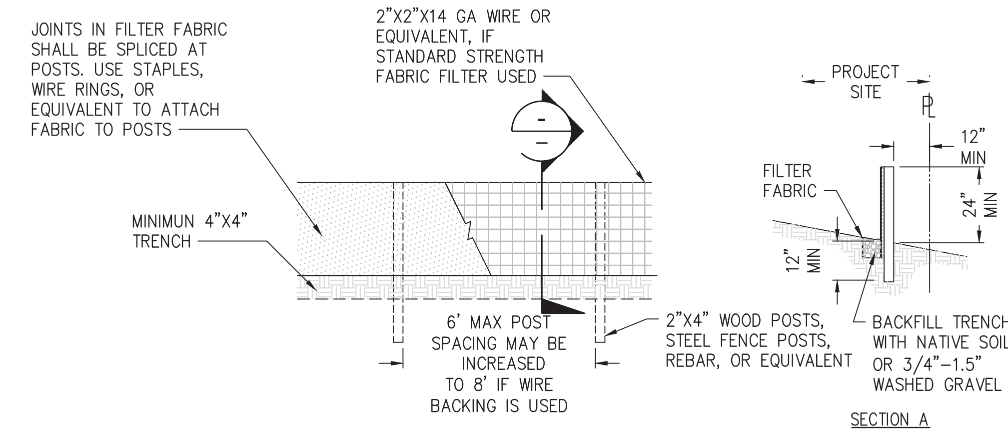
1. INSERT SHALL BE INSTALLED IN ALL OPERATIONAL CATCH BASINS WITHIN 500 FEET OF WORK LIMITS PRIOR TO CLEARING AND GRADING ACTIVITY, OR UPON PLACEMENT OF A NEW CATCH BASIN.
2. FILTERS SHALL BE INSPECTED AFTER EACH STORM EVENT AND CLEANED OR REPLACED WHEN IT IS 1/3 FULL.
3. SEDIMENT REMOVAL SHALL BE ACCOMPLISHED BY REMOVING THE INSERT, EMPTYING INTO APPROPRIATE DISPOSAL LOCATION, AND REINSERTING IT INTO THE CATCH BASIN.



1 INLET PROTECTION DETAIL
DM1 TO DM6 SCALE: NTS



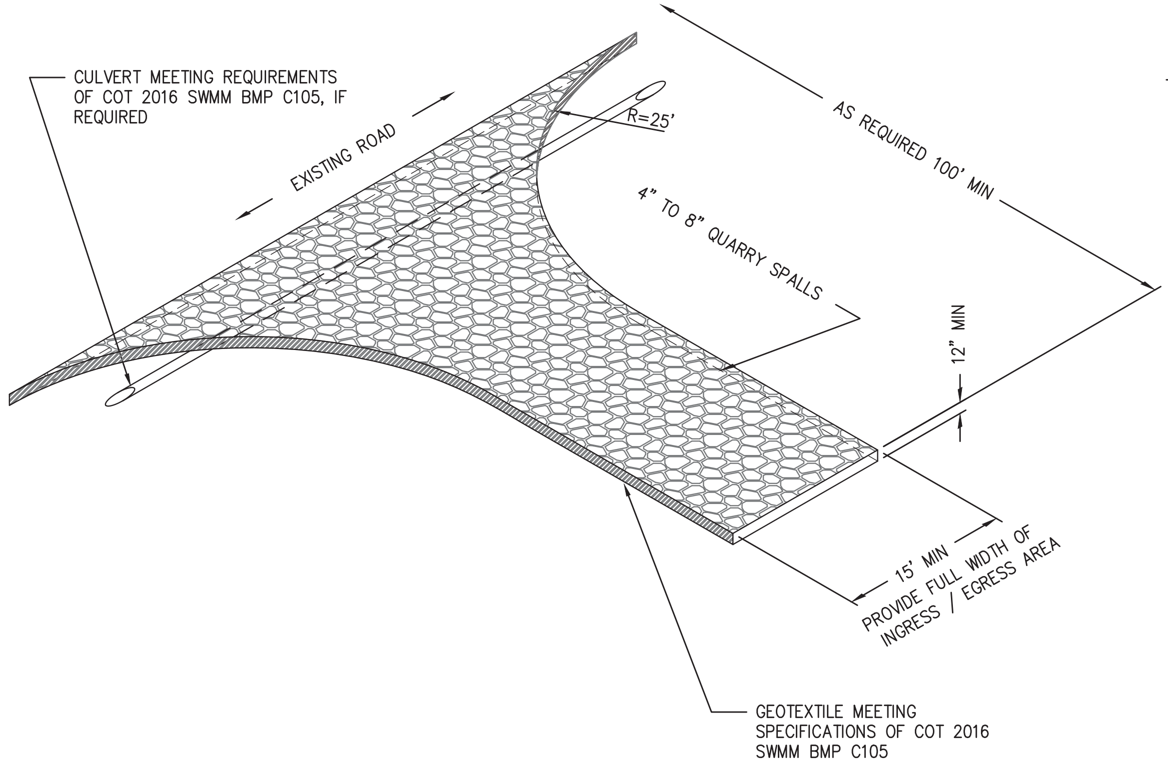
2 STRAW WATTLE DETAIL
DM1 TO DM6 SCALE: NTS



4 SILT FENCE
DM1 TO DM6 SCALE: NTS

MAINTENANCE NOTES:

1. REPAIR ANY DAMAGE IMMEDIATELY.
2. IF CONCENTRATED FLOWS ARE EVIDENT UPHILL OF THE FENCE, INTERCEPT AND CONVEY THEM TO A SEDIMENT POND.
3. IT IS IMPORTANT TO CHECK THE UPHILL SIDE OF THE FENCE FOR SIGNS OF THE FENCE CLOGGING, ACTING AS A BARRIER TO FLOW, AND THEN CAUSING CHANNELIZATION OF FLOWS PARALLEL TO THE FENCE. IF THIS OCCURS, REPLACE THE FENCE OR REMOVE THE TRAPPED SEDIMENT.
4. REMOVE SEDIMENT DEPOSITS WHEN THE DEPOSIT REACHES APPROXIMATELY ONE–THIRD THE HEIGHT OF THE SILT FENCE, OR INSTALL A SECOND SILT FENCE.
5. IF THE FILTER FABRIC (GEOTEXTILE) HAS DETERIORATED DUE TO ULTRAVIOLET BREAKDOWN, REPLACE IT.



MAINTENANCE STANDARDS

1. QUARRY SPALLS SHALL BE ADDED IF THE PAD IS NO LONGER IN ACCORDANCE WITH THE SPECIFICATIONS.
2. IF THE ENTRANCE IS NOT PREVENTING SEDIMENT FROM BEING TRACKED ONTO PAVEMENT, THEN ALTERNATIVE MEASURES TO KEEP THE STREETS FREE OF SEDIMENT SHALL BE USED. THIS MAY INCLUDE STREET SWEEPING, AN INCREASE IN THE DIMENSIONS OF THE ENTRANCE, OR THE INSTALLATION OF A WHEEL WASH. IF WASHING IS USED, IT SHALL BE DONE ON AN AREA COVERED WITH CRUSHED ROCK, AND WASH WATER SHALL DRAIN TO A SEDIMENT TRAP OR POND.
3. ANY SEDIMENT THAT IS TRACKED ONTO PAVEMENT SHALL BE REMOVED IMMEDIATELY BY SWEEPING. THE SEDIMENT COLLECTED BY SWEEPING SHALL BE REMOVED OR STABILIZED ON–SITE. THE PAVEMENT SHALL NOT BE CLEANED BY WASHING DOWN THE STREET, EXCEPT WHEN SWEEPING IS INEFFECTIVE AND THERE IS A THREAT TO PUBLIC SAFETY. IF IT IS NECESSARY TO WASH THE STREETS, THE CONSTRUCTION OF A SMALL SUMP SHALL BE CONSIDERED. THE SEDIMENT WOULD THEN BE WASHED INTO THE SUMP.
4. ANY QUARRY SPALLS THAT ARE LOOSENED FROM THE PAD AND END UP ON THE ROADWAY SHALL BE REMOVED IMMEDIATELY.
5. IF VEHICLES ARE ENTERING OR EXITING THE SITE AT POINTS OTHER THAN THE CONSTRUCTION ENTRANCE(S), FENCING SHALL BE INSTALLED TO CONTROL TRAFFIC.

3 CONSTRUCTION ENTRANCE DETAIL
DM1 TO DM6 SCALE: NTS

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PARCEL 77 AUTO IMPORT TERMINAL

EROSION CONTROL DETAILS

DM8
12 OF 106

APPROVED:		CMB 2/13/2018	CHECKED BY DATE
DIRECTOR ENG. DATE		SWK 2/15/2018	PROJ. ENGR DATE
CONT/CONS: 070770	TOWNSHIP: 21N	RANGE: 3E	SECTION: 36
PRINTED BY: thelbig Feb 15, 2018			
M. ID: 201020.01	DAT–HRZ: W83–SF	VERT: PORT OF TACOMA BM#	
PORT ADDRESS: ONE SITCUM PLAZA TACOMA WA, 98401–1837			
PHASE: PRELIMINARY	PARCEL: MULTIPLE	DRAWING SCALE: AS SHOWN	

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BMP C101: Preserving Natural Vegetation

Purpose

The purpose of preserving natural vegetation is to reduce erosion wherever practicable. Limiting site disturbance is the single most effective method for reducing erosion. For example, conifers can hold up to about 50 percent of all rain that falls during a storm. Up to 20-30 percent of this rain may never reach the ground but is taken up by the tree or evaporates. Another benefit is that the rain held in the tree can be released slowly to the ground after the storm.

Conditions of Use

Natural vegetation should be preserved on steep slopes, near perennial and intermittent watercourses or swales, and on building sites in wooded areas.

- As required by local governments.
- Phase construction to preserve natural vegetation on the project site for as long as possible during the construction period.

Design and Installation Specifications

Natural vegetation can be preserved in natural clumps or as individual trees, shrubs and vines.

The preservation of individual plants is more difficult because heavy equipment is generally used to remove unwanted vegetation. The points to remember when attempting to save individual plants are:

- Is the plant worth saving? Consider the location, species, size, age, vigor, and the work involved. Local governments may also have ordinances to save natural vegetation and trees.
- Fence or clearly mark areas around trees that are to be saved. It is preferable to keep ground disturbance away from the trees at least as far out as the dripline.

Plants need protection from three kinds of injuries:

- *Construction Equipment* - This injury can be above or below the ground level. Damage results from scarring, cutting of roots, and compaction of the soil. Placing a fenced buffer zone around plants to be saved prior to construction can prevent construction equipment injuries.
- *Grade Changes* - Changing the natural ground level will alter grades, which affects the plant's ability to obtain the necessary air, water, and minerals. Minor fills usually do not cause problems although sensitivity between species does vary and should be checked. Trees can typically tolerate fill of 6 inches or less. For shrubs

and other plants, the fill should be less.

When there are major changes in grade, it may become necessary to supply air to the roots of plants. This can be done by placing a layer of gravel and a tile system over the roots before the fill is made. A tile system protects a tree from a raised grade. The tile system should be laid out on the original grade leading from a dry well around the tree trunk. The system should then be covered with small stones to allow air to circulate over the root area.

Lowering the natural ground level can seriously damage trees and shrubs. The highest percentage of the plant roots are in the upper 12 inches of the soil and cuts of only 2-3 inches can cause serious injury. To protect the roots it may be necessary to terrace the immediate area around the plants to be saved. If roots are exposed, construction of retaining walls may be needed to keep the soil in place. Plants can also be preserved by leaving them on an undisturbed, gently sloping mound. To increase the chances for survival, it is best to limit grade changes and other soil disturbances to areas outside the dripline of the plant.

- *Excavations* - Protect trees and other plants when excavating for drainfields, power, water, and sewer lines. Where possible, the trenches should be routed around trees and large shrubs. When this is not possible, it is best to tunnel under them. This can be done with hand tools or with power augers. If it is not possible to route the trench around plants to be saved, then the following should be observed:
    - Cut as few roots as possible. When you have to cut, cut clean. Paint cut root ends with a wood dressing like asphalt base paint if roots will be exposed for more than 24-hours.
    - Backfill the trench as soon as possible.
    - Tunnel beneath root systems as close to the center of the main trunk to preserve most of the important feeder roots.

Some problems that can be encountered with a few specific trees are:

- Maple, Dogwood, Red alder, Western hemlock, Western red cedar, and Douglas fir do not readily adjust to changes in environment and special care should be taken to protect these trees.
- The windthrow hazard of Pacific silver fir and madrona is high, while that of Western hemlock is moderate. The danger of windthrow increases where dense stands have been thinned. Other species (unless they are on shallow, wet soils less than 20 inches deep) have a low windthrow hazard.
- Cottonwoods, maples, and willows have water-seeking roots. These can cause trouble in sewer lines and infiltration fields. On the other hand, they thrive in high moisture conditions that other trees would not.
- Thinning operations in pure or mixed stands of Grand fir, Pacific silver fir, Noble fir,

Sitka spruce, Western red cedar, Western hemlock, Pacific dogwood, and Red alder can cause serious disease problems. Disease can become established through damaged limbs, trunks, roots, and freshly cut stumps. Diseased and weakened trees are also susceptible to insect attack.

Maintenance Standards

Inspect flagged and/or fenced areas regularly to make sure flagging or fencing has not been removed or damaged. If the flagging or fencing has been damaged or visibility reduced, it shall be repaired or replaced immediately and visibility restored.

- If tree roots have been exposed or injured, “prune” cleanly with an appropriate pruning saw or loppers directly above the damaged roots and recover with native soils. Treatment of sap flowing trees (fir, hemlock, pine, soft maples) is not advised as sap forms a natural healing barrier.

BMP C102: Buffer Zones

Purpose

Creation of an undisturbed area or strip of natural vegetation or an established suitable planting that will provide a living filter to reduce soil erosion and runoff velocities.

Conditions of Use

Natural buffer zones are used along streams, wetlands and other bodies of water that need protection from erosion and sedimentation. Vegetative buffer zones can be used to protect natural swales and can be incorporated into the natural landscaping of an area.

Critical-areas buffer zones should not be used as sediment treatment areas. These areas shall remain completely undisturbed. The local permitting authority may expand the buffer widths temporarily to allow the use of the expanded area for removal of sediment.

Design and Installation Specifications

- Preserving natural vegetation or plantings in clumps, blocks, or strips is generally the easiest and most successful method.
- Leave all unstable steep slopes in natural vegetation.
- Mark clearing limits and keep all equipment and construction debris out of the natural areas and buffer zones. Steel construction fencing is the most effective method in protecting sensitive areas and buffers. Alternatively, wire-backed silt fence on steel posts is marginally effective. Flagging alone is typically not effective.
- Keep all excavations outside the dripline of trees and shrubs.
- Do not push debris or extra soil into the buffer zone area because it will cause

damage from burying and smothering.

- Vegetative buffer zones for streams, lakes or other waterways shall be established by the local permitting authority or other state or federal permits or approvals.

Maintenance Standards

Inspect the area frequently to make sure flagging remains in place and the area remains undisturbed. Replace all damaged flagging immediately.

BMP C103: High Visibility Fence

Purpose

Fencing is intended to:

1. Restrict clearing to approved limits.
2. Prevent disturbance of sensitive areas, their buffers, and other areas required to be left undisturbed.
3. Limit construction traffic to designated construction entrances, exits, or internal roads.
4. Protect areas where marking with survey tape may not provide adequate protection.

Conditions of Use

To establish clearing limits plastic, fabric, or metal fence may be used:

- At the boundary of sensitive areas, their buffers, and other areas required to be left uncleared.
- As necessary to control vehicle access to and on the site.

Design and Installation Specifications

High visibility plastic fence shall be composed of a high-density polyethylene material and shall be at least four feet in height. Posts for the fencing shall be steel or wood and placed every 6 feet on center (maximum) or as needed to ensure rigidity. The fencing shall be fastened to the post every six inches with a polyethylene tie. On long continuous lengths of fencing, a tension wire or rope shall be used as a top stringer to prevent sagging between posts. The fence color shall be high visibility orange. The fence tensile strength shall be 360 lbs./ft. using the ASTM D4595 testing method.

If appropriate install fabric silt fence in accordance with BMP C233: Silt Fence (p.367) to act as high visibility fence. Silt fence shall be at least 3 feet high and must be highly visible to meet the requirements of this BMP.

Metal fences shall be designed and installed according to the manufacturer's specifications.

Metal fences shall be at least 3 feet high and must be highly visible.

Fences shall not be wired or stapled to trees.

Maintenance Standards

If the fence has been damaged or visibility reduced, it shall be repaired or replaced immediately and visibility restored.

BMP C105: Stabilized Construction Entrance / Exit

Purpose

Stabilized Construction entrances are established to reduce the amount of sediment transported onto paved roads by vehicles or equipment. This is done by constructing a stabilized pad of quarry spalls at entrances and exits for construction sites.

Conditions of Use

Construction entrances shall be stabilized wherever traffic will be entering or leaving a construction site if paved roads or other paved areas are within 1,000 feet of the site.

For residential construction provide stabilized construction entrances for each residence, rather than only at the main subdivision entrance. Stabilized surfaces shall be of sufficient length/width to provide vehicle access/parking, based on lot size/configuration.

On large commercial, highway, and road projects, the designer should include enough extra materials in the contract to allow for additional stabilized entrances not shown in the initial Construction SWPPP. It is difficult to determine exactly where access to these projects will take place; additional materials will enable the contractor to install them where needed.

Design and Installation Specifications

See Figure II-4.1.1 Stabilized Construction Entrance (p.273) for details. Note: the 100’ minimum length of the entrance shall be reduced to the maximum practicable size when the size or configuration of the site does not allow the full length (100’).

Construct stabilized construction entrances with a 12-inch thick pad of 4-inch to 8-inch quarry spalls, a 4-inch course of asphalt treated base (ATB), or use existing pavement. Do not use crushed concrete, cement, or calcium chloride for construction entrance stabilization because these products raise pH levels in stormwater and concrete discharge to surface waters of the State is prohibited.

A separation geotextile shall be placed under the spalls to prevent fine sediment from pumping up into the rock pad. The geotextile shall meet the following standards:

Grab Tensile Strength (ASTM D4751)	200 psi min.
Grab Tensile Elongation (ASTM D4632)	30% max.
Mullen Burst Strength (ASTM D3786-80a)	400 psi min.
AOS (ASTM D4751)	20-45 (U.S. standard sieve size)

- Consider early installation of the first lift of asphalt in areas that will paved; this can be used as a stabilized entrance. Also consider the installation of excess concrete as a stabilized entrance. During large concrete pours, excess concrete is often available for this purpose.
- Fencing (see BMP C103: High Visibility Fence (p.269)) shall be installed as necessary to restrict traffic to the construction entrance.
- Whenever possible, the entrance shall be constructed on a firm, compacted subgrade. This can substantially increase the effectiveness of the pad and reduce the need for maintenance.
- Construction entrances should avoid crossing existing sidewalks and back of walk drains if at all possible. If a construction entrance must cross a sidewalk or back of walk drain, the full length of the sidewalk and back of walk drain must be covered and protected from sediment leaving the site.

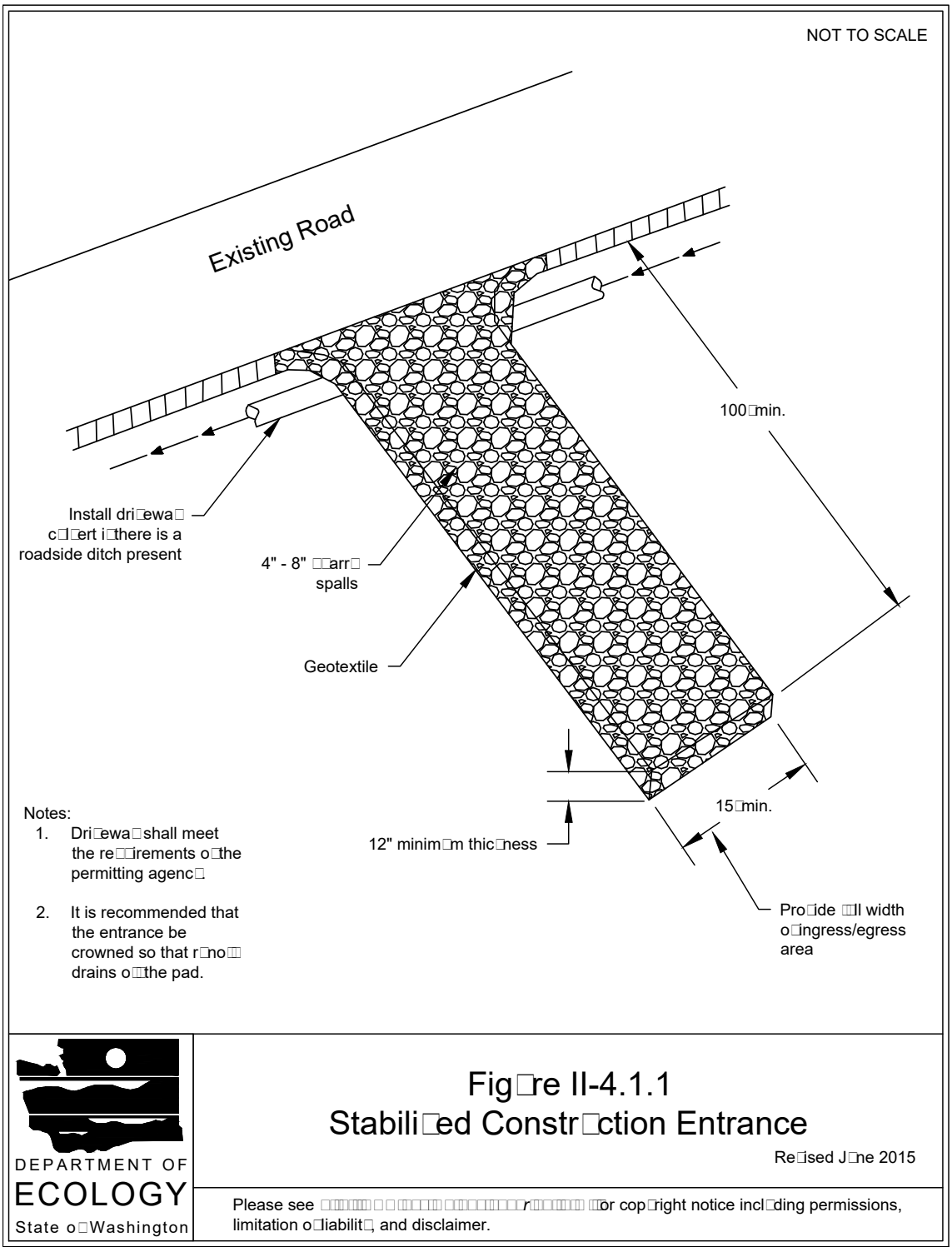
Maintenance Standards

Quarry spalls shall be added if the pad is no longer in accordance with the specifications.

- If the entrance is not preventing sediment from being tracked onto pavement, then alternative measures to keep the streets free of sediment shall be used. This may include replacement/cleaning of the existing quarry spalls, street sweeping, an increase in the dimensions of the entrance, or the installation of a wheel wash.
- Any sediment that is tracked onto pavement shall be removed by shoveling or street sweeping. The sediment collected by sweeping shall be removed or stabilized on site. The pavement shall not be cleaned by washing down the street, except when high efficiency sweeping is ineffective and there is a threat to public safety. If it is necessary to wash the streets, the construction of a small sump to contain the wash water shall be considered. The sediment would then be washed into the sump where it can be controlled.
- Perform street sweeping by hand or with a high efficiency sweeper. Do not use a non-high efficiency mechanical sweeper because this creates dust and throws soils into storm systems or conveyance ditches.

- Any quarry spalls that are loosened from the pad, which end up on the roadway shall be removed immediately.
- If vehicles are entering or exiting the site at points other than the construction entrance(s), fencing (see BMP C103) shall be installed to control traffic.
- Upon project completion and site stabilization, all construction accesses intended as permanent access for maintenance shall be permanently stabilized.

Figure II-4.1.1 Stabilized Construction Entrance



Approved as Equivalent

Ecology has approved products as able to meet the requirements of BMP C105: Stabilized Construction Entrance / Exit. The products did not pass through the Technology Assessment Protocol – Ecology (TAPE) process. Local jurisdictions may choose not to accept this product approved as equivalent, or may require additional testing prior to consideration for local use. The products are available for review on Ecology's website at http://www.ecy.wa.gov/programs/wq/stormwater/newtech/equivalent.html

BMP C106: Wheel Wash

Purpose

Wheel washes reduce the amount of sediment transported onto paved roads by motor vehicles.

Conditions of Use

When a stabilized construction entrance (see BMP C105: Stabilized Construction Entrance / Exit (p.270)) is not preventing sediment from being tracked onto pavement.

- Wheel washing is generally an effective BMP when installed with careful attention to topography. For example, a wheel wash can be detrimental if installed at the top of a slope abutting a right-of-way where the water from the dripping truck can run unimpeded into the street.
- Pressure washing combined with an adequately sized and surfaced pad with direct drainage to a large 10-foot x 10-foot sump can be very effective.
- Discharge wheel wash or tire bath wastewater to a separate on-site treatment system that prevents discharge to surface water, such as closed-loop recirculation or upland land application, or to the sanitary sewer with local sewer district approval.
- Wheel wash or tire bath wastewater should not include wastewater from concrete washout areas.

Design and Installation Specifications

Suggested details are shown in Figure II-4.1.2 Wheel Wash (p.276). The Local Permitting Authority may allow other designs. A minimum of 6 inches of asphalt treated base (ATB) over crushed base material or 8 inches over a good subgrade is recommended to pave the wheel wash.

Use a low clearance truck to test the wheel wash before paving. Either a belly dump or lowboy will work well to test clearance.

Keep the water level from 12 to 14 inches deep to avoid damage to truck hubs and filling the truck tongues with water.

Midpoint spray nozzles are only needed in extremely muddy conditions.

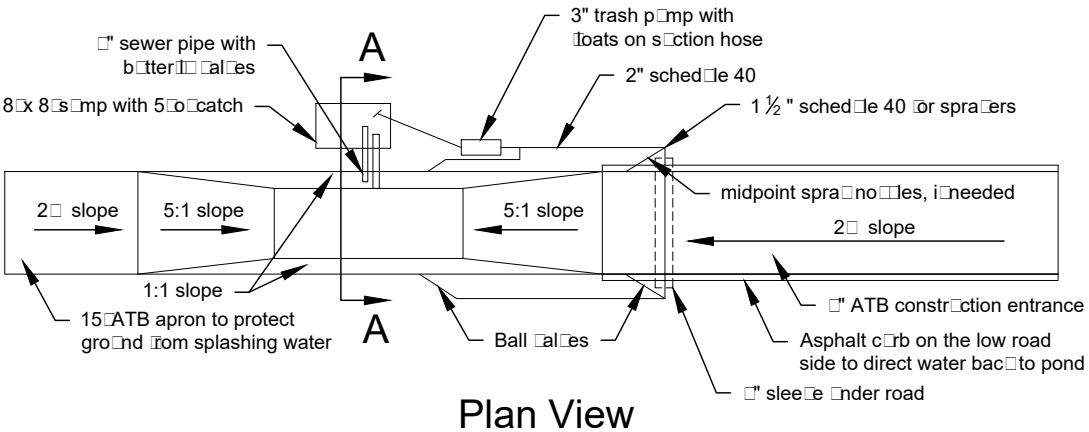
Wheel wash systems should be designed with a small grade change, 6- to 12-inches for a 10-foot-wide pond, to allow sediment to flow to the low side of pond to help prevent re-suspension of sediment. A drainpipe with a 2- to 3-foot riser should be installed on the low side of the pond to allow for easy cleaning and refilling. Polymers may be used to promote coagulation and flocculation in a closed-loop system. Polyacrylamide (PAM) added to the wheel wash water at a rate of 0.25 - 0.5 pounds per 1,000 gallons of water increases effectiveness and reduces cleanup time. If PAM is already being used for dust or erosion control and is being applied by a water truck, the same truck can be used to change the wash water.

Maintenance Standards

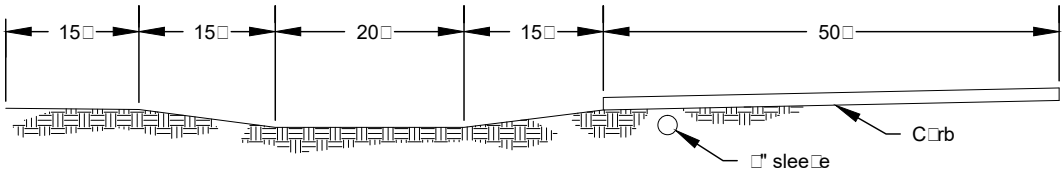
The wheel wash should start out the day with fresh water.

The wash water should be changed a minimum of once per day. On large earthwork jobs where more than 10-20 trucks per hour are expected, the wash water will need to be changed more often.

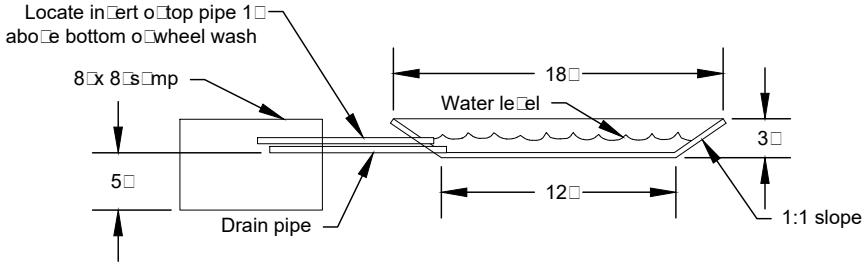
Figure II-4.1.2 Wheel Wash



Plan View



Ele ation View



Section A-A

Notes:
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DEPARTMENT OF ECOLOGY
State o Washington

Fig re II-4.1.2
Wheel Wash

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BMP C123: Plastic Covering

Purpose

Plastic covering provides immediate, short-term erosion protection to slopes and disturbed areas.

Conditions of Use

Plastic covering may be used on disturbed areas that require cover measures for less than 30 days, except as stated below.

- Plastic is particularly useful for protecting cut and fill slopes and stockpiles. Note: The relatively rapid breakdown of most polyethylene sheeting makes it unsuitable for long-term (greater than six months) applications.
- Due to rapid runoff caused by plastic covering, do not use this method upslope of areas that might be adversely impacted by concentrated runoff. Such areas include steep and/or unstable slopes.
- Plastic sheeting may result in increased runoff volumes and velocities, requiring additional on-site measures to counteract the increases. Creating a trough with wattles or other material can convey clean water away from these areas.
- To prevent undercutting, trench and backfill rolled plastic covering products.
- While plastic is inexpensive to purchase, the added cost of installation, maintenance, removal, and disposal make this an expensive material, up to $1.50-2.00 per square yard.
- Whenever plastic is used to protect slopes install water collection measures at the base of the slope. These measures include plastic-covered berms, channels, and pipes used to covey clean rainwater away from bare soil and disturbed areas. Do not mix clean runoff from a plastic covered slope with dirty runoff from a project.
- Other uses for plastic include:
    1. Temporary ditch liner.
    2. Pond liner in temporary sediment pond.
    3. Liner for bermed temporary fuel storage area if plastic is not reactive to the type of fuel being stored.
    4. Emergency slope protection during heavy rains.
    5. Temporary drainpipe (“elephant trunk”) used to direct water.

Design and Installation Specifications

- Plastic slope cover must be installed as follows:
    1. Run plastic up and down slope, not across slope.
    2. Plastic may be installed perpendicular to a slope if the slope length is less than 10 feet.
    3. Minimum of 8-inch overlap at seams.
    4. On long or wide slopes, or slopes subject to wind, tape all seams.
    5. Place plastic into a small (12-inch wide by 6-inch deep) slot trench at the top of the slope and backfill with soil to keep water from flowing underneath.
    6. Place sand filled burlap or geotextile bags every 3 to 6 feet along seams and tie them together with twine to hold them in place.
    7. Inspect plastic for rips, tears, and open seams regularly and repair immediately. This prevents high velocity runoff from contacting bare soil which causes extreme erosion.
    8. Sandbags may be lowered into place tied to ropes. However, all sandbags must be staked in place.
- Plastic sheeting shall have a minimum thickness of 0.06 millimeters.
- If erosion at the toe of a slope is likely, a gravel berm, riprap, or other suitable protection shall be installed at the toe of the slope in order to reduce the velocity of runoff.

Maintenance Standards

- Torn sheets must be replaced and open seams repaired.
- Completely remove and replace the plastic if it begins to deteriorate due to ultraviolet radiation.
- Completely remove plastic when no longer needed.
- Dispose of old tires used to weight down plastic sheeting appropriately.

Approved as Equivalent

Ecology has approved products as able to meet the requirements of BMP C123: Plastic Covering. The products did not pass through the Technology Assessment Protocol – Ecology (TAPE) process. Local jurisdictions may choose not to accept this product approved as equivalent, or may require additional testing prior to consideration for local use. The products are available for review on Ecology's website at http://www.ecy.wa.gov/programs/wq/stormwater/newtech/equivalent.html

BMP C140: Dust Control

Purpose

Dust control prevents wind transport of dust from disturbed soil surfaces onto roadways, drainage ways, and surface waters.

Conditions of Use

- In areas (including roadways) subject to surface and air movement of dust where on-site and off-site impacts to roadways, drainage ways, or surface waters are likely.

Design and Installation Specifications

- Vegetate or mulch areas that will not receive vehicle traffic. In areas where planting, mulching, or paving is impractical, apply gravel or landscaping rock.
- Limit dust generation by clearing only those areas where immediate activity will take place, leaving the remaining area(s) in the original condition. Maintain the original ground cover as long as practical.
- Construct natural or artificial windbreaks or windscreens. These may be designed as enclosures for small dust sources.
- Sprinkle the site with water until surface is wet. Repeat as needed. To prevent carryout of mud onto street, refer to BMP C105: Stabilized Construction Entrance / Exit (p.270).
- Irrigation water can be used for dust control. Irrigation systems should be installed as a first step on sites where dust control is a concern.
- Spray exposed soil areas with a dust palliative, following the manufacturer's instructions and cautions regarding handling and application. Used oil is prohibited from use as a dust suppressant. Local governments may approve other dust palliatives such as calcium chloride or PAM.
- PAM (BMP C126: Polyacrylamide (PAM) for Soil Erosion Protection (p.300)) added to water at a rate of 0.5 lbs. per 1,000 gallons of water per acre and applied from a water truck is more effective than water alone. This is due to increased infiltration of water into the soil and reduced evaporation. In addition, small soil particles are bonded together and are not as easily transported by wind. Adding PAM may actually reduce the quantity of water needed for dust control. Use of PAM could be a cost-effective dust control method.

Techniques that can be used for unpaved roads and lots include:

- Lower speed limits. High vehicle speed increases the amount of dust stirred up from unpaved roads and lots.
- Upgrade the road surface strength by improving particle size, shape, and mineral types that make up the surface and base materials.
- Add surface gravel to reduce the source of dust emission. Limit the amount of fine particles (those smaller than .075 mm) to 10 to 20 percent.
- Use geotextile fabrics to increase the strength of new roads or roads undergoing reconstruction.
- Encourage the use of alternate, paved routes, if available.
- Restrict use of paved roadways by tracked vehicles and heavy trucks to prevent damage to road surface and base.
- Apply chemical dust suppressants using the admix method, blending the product with the top few inches of surface material. Suppressants may also be applied as surface treatments.
- Pave unpaved permanent roads and other trafficked areas.
- Use vacuum street sweepers.
- Remove mud and other dirt promptly so it does not dry and then turn into dust.
- Limit dust-causing work on windy days.
- Contact your local Air Pollution Control Authority for guidance and training on other dust control measures. Compliance with the local Air Pollution Control Authority constitutes compliance with this BMP.

Maintenance Standards

Respray area as necessary to keep dust to a minimum.

BMP C150: Materials on Hand

Purpose

Keep quantities of erosion prevention and sediment control materials on the project site at all times to be used for regular maintenance and emergency situations such as unexpected heavy summer rains. Having these materials on-site reduces the time needed to implement BMPs when inspections indicate that existing BMPs are not meeting the Construction SWPPP requirements. In addition, contractors can save money by buying some materials in bulk and storing them at their office or yard.

Conditions of Use

- Construction projects of any size or type can benefit from having materials on hand. A small commercial development project could have a roll of plastic and some gravel available for immediate protection of bare soil and temporary berm construction. A large earthwork project, such as highway construction, might have several tons of straw, several rolls of plastic, flexible pipe, sandbags, geotextile fabric and steel “T” posts.
- Materials are stockpiled and readily available before any site clearing, grubbing, or earthwork begins. A large contractor or developer could keep a stockpile of materials that are available for use on several projects.
- If storage space at the project site is at a premium, the contractor could maintain the materials at their office or yard. The office or yard must be less than an hour from the project site.

Design and Installation Specifications

Depending on project type, size, complexity, and length, materials and quantities will vary. A good minimum list of items that will cover numerous situations includes:

Material
Clear Plastic, 6 mil
Drainpipe, 6 or 8 inch diameter
Sandbags, filled
Straw Bales for mulching,
Quarry Spalls
Washed Gravel
Geotextile Fabric
Catch Basin Inserts
Steel "T" Posts
Silt fence material
Straw Wattles

Maintenance Standards

- All materials with the exception of the quarry spalls, steel “T” posts, and gravel should be kept covered and out of both sun and rain.
- Re-stock materials used as needed.

BMP C151: Concrete Handling

Purpose

Concrete work can generate process water and slurry that contain fine particles and high pH, both of which can violate water quality standards in the receiving water. Concrete spillage or concrete discharge to surface waters of the State is prohibited. Use this BMP to minimize and eliminate concrete, concrete process water, and concrete slurry from entering waters of the state.

Conditions of Use

Any time concrete is used, utilize these management practices. Concrete construction projects include, but are not limited to, the following:

- Curbs
- Sidewalks
- Roads
- Bridges
- Foundations
- Floors
- Runways

Design and Installation Specifications

- Assure that washout of concrete trucks, chutes, pumps, and internals is performed at an approved off-site location or in designated concrete washout areas. Do not wash out concrete trucks onto the ground, or into storm drains, open ditches, streets, or streams. Refer to BMP C154: Concrete Washout Area (p.317) for information on concrete washout areas.
- Return unused concrete remaining in the truck and pump to the originating batch plant for recycling. Do not dump excess concrete on site, except in designated concrete washout areas.
- Wash off hand tools including, but not limited to, screeds, shovels, rakes, floats, and trowels into formed areas only.
- Wash equipment difficult to move, such as concrete pavers in areas that do not directly drain to natural or constructed stormwater conveyances.
- Do not allow washdown from areas, such as concrete aggregate driveways, to drain directly to natural or constructed stormwater conveyances.
- Contain washwater and leftover product in a lined container when no formed areas

are available. Dispose of contained concrete in a manner that does not violate ground water or surface water quality standards.

- Always use forms or solid barriers for concrete pours, such as pilings, within 15-feet of surface waters.
- Refer to BMP C252: High pH Neutralization Using CO2 (p.409) and BMP C253: pH Control for High pH Water (p.412) for pH adjustment requirements.
- Refer to the Construction Stormwater General Permit for pH monitoring requirements if the project involves one of the following activities:
  - Significant concrete work (greater than 1,000 cubic yards poured concrete or recycled concrete used over the life of a project).
  - The use of engineered soils amended with (but not limited to) Portland cement-treated base, cement kiln dust or fly ash.
  - Discharging stormwater to segments of water bodies on the 303(d) list (Category 5) for high pH.

Maintenance Standards

Check containers for holes in the liner daily during concrete pours and repair the same day.

BMP C152: Sawcutting and Surfacing Pollution Prevention

Purpose

Sawcutting and surfacing operations generate slurry and process water that contains fine particles and high pH (concrete cutting), both of which can violate the water quality standards in the receiving water. Concrete spillage or concrete discharge to surface waters of the State is prohibited. Use this BMP to minimize and eliminate process water and slurry created through sawcutting or surfacing from entering waters of the State.

Conditions of Use

Utilize these management practices anytime sawcutting or surfacing operations take place. Sawcutting and surfacing operations include, but are not limited to, the following:

- Sawing
- Coring
- Grinding
- Roughening

- Hydro-demolition
- Bridge and road surfacing

Design and Installation Specifications

- Vacuum slurry and cuttings during cutting and surfacing operations.
- Slurry and cuttings shall not remain on permanent concrete or asphalt pavement overnight.
- Slurry and cuttings shall not drain to any natural or constructed drainage conveyance including stormwater systems. This may require temporarily blocking catch basins.
- Dispose of collected slurry and cuttings in a manner that does not violate ground water or surface water quality standards.
- Do not allow process water generated during hydro-demolition, surface roughening or similar operations to drain to any natural or constructed drainage conveyance including stormwater systems. Dispose process water in a manner that does not violate ground water or surface water quality standards.
- Handle and dispose cleaning waste material and demolition debris in a manner that does not cause contamination of water. Dispose of sweeping material from a pick-up sweeper at an appropriate disposal site.

Maintenance Standards

Continually monitor operations to determine whether slurry, cuttings, or process water could enter waters of the state. If inspections show that a violation of water quality standards could occur, stop operations and immediately implement preventive measures such as berms, barriers, secondary containment, and vacuum trucks.

BMP C153: Material Delivery, Storage and Containment

Purpose

Prevent, reduce, or eliminate the discharge of pollutants to the stormwater system or watercourses from material delivery and storage. Minimize the storage of hazardous materials on-site, store materials in a designated area, and install secondary containment.

Conditions of Use

These procedures are suitable for use at all construction sites with delivery and storage of the following materials:

- Petroleum products such as fuel, oil and grease
- Soil stabilizers and binders (e.g., Polyacrylamide)
- Fertilizers, pesticides and herbicides
- Detergents
- Asphalt and concrete compounds
- Hazardous chemicals such as acids, lime, adhesives, paints, solvents, and curing compounds
- Any other material that may be detrimental if released to the environment

Design and Installation Specifications

The following steps should be taken to minimize risk:

- Temporary storage area should be located away from vehicular traffic, near the construction entrance(s), and away from waterways or storm drains.
- Material Safety Data Sheets (MSDS) should be supplied for all materials stored. Chemicals should be kept in their original labeled containers.
- Hazardous material storage on-site should be minimized.
- Hazardous materials should be handled as infrequently as possible.
- During the wet weather season (Oct 1 – April 30), consider storing materials in a covered area.
- Materials should be stored in secondary containments, such as earthen dike, horse trough, or even a children's wading pool for non-reactive materials such as detergents, oil, grease, and paints. Small amounts of material may be secondarily contained in "bus boy" trays or concrete mixing trays.
- Do not store chemicals, drums, or bagged materials directly on the ground. Place these items on a pallet and, when possible, and within secondary containment.
- If drums must be kept uncovered, store them at a slight angle to reduce ponding of rainwater on the lids to reduce corrosion. Domed plastic covers are inexpensive and snap to the top of drums, preventing water from collecting.

Material Storage Areas and Secondary Containment Practices:

- Liquids, petroleum products, and substances listed in 40 CFR Parts 110, 117, or 302 shall be stored in approved containers and drums and shall not be overfilled. Containers and drums shall be stored in temporary secondary containment facilities.
- Temporary secondary containment facilities shall provide for a spill containment

volume able to contain 10% of the total enclosed container volume of all containers, or 110% of the capacity of the largest container within its boundary, whichever is greater.

- Secondary containment facilities shall be impervious to the materials stored therein for a minimum contact time of 72 hours.
- Secondary containment facilities shall be maintained free of accumulated rainwater and spills. In the event of spills or leaks, accumulated rainwater and spills shall be collected and placed into drums. These liquids shall be handled as hazardous waste unless testing determines them to be non-hazardous.
- Sufficient separation should be provided between stored containers to allow for spill cleanup and emergency response access.
- During the wet weather season (Oct 1 – April 30), each secondary containment facility shall be covered during non-working days, prior to and during rain events.
- Keep material storage areas clean, organized and equipped with an ample supply of appropriate spill clean-up material (spill kit).
- The spill kit should include, at a minimum:
    - 1-Water Resistant Nylon Bag
    - 3-Oil Absorbent Socks 3”x 4’
    - 2-Oil Absorbent Socks 3”x 10’
    - 12-Oil Absorbent Pads 17”x19”
    - 1-Pair Splash Resistant Goggles
    - 3-Pair Nitrile Gloves
    - 10-Disposable Bags with Ties
    - Instructions

BMP C154: Concrete Washout Area

Purpose

Prevent or reduce the discharge of pollutants to stormwater from concrete waste by conducting washout off-site, or performing on-site washout in a designated area to prevent pollutants from entering surface waters or ground water.

Conditions of Use

Concrete washout area best management practices are implemented on construction projects where:

- Concrete is used as a construction material
- It is not possible to dispose of all concrete wastewater and washout off-site (ready mix plant, etc.).
- Concrete trucks, pumpers, or other concrete coated equipment are washed on-site.
- Note: If less than 10 concrete trucks or pumpers need to be washed out on-site, the washwater may be disposed of in a formed area awaiting concrete or an upland disposal site where it will not contaminate surface or ground water. The upland disposal site shall be at least 50 feet from sensitive areas such as storm drains, open ditches, or water bodies, including wetlands.

Design and Installation Specifications

Implementation

The following steps will help reduce stormwater pollution from concrete wastes:

- Perform washout of concrete trucks at an approved off-site location or in designated concrete washout areas only.
- Do not wash out concrete trucks onto the ground, or into storm drains, open ditches, streets, or streams.
- Do not allow excess concrete to be dumped on-site, except in designated concrete washout areas.
- Concrete washout areas may be prefabricated concrete washout containers, or self-installed structures (above-grade or below-grade).
- Prefabricated containers are most resistant to damage and protect against spills and leaks. Companies may offer delivery service and provide regular maintenance and disposal of solid and liquid waste.
- If self-installed concrete washout areas are used, below-grade structures are preferred over above-grade structures because they are less prone to spills and leaks.
- Self-installed above-grade structures should only be used if excavation is not practical.

Education

- Discuss the concrete management techniques described in this BMP with the ready-mix concrete supplier before any deliveries are made.
- Educate employees and subcontractors on the concrete waste management techniques described in this BMP.
- Arrange for contractor's superintendent or Certified Erosion and Sediment Control

Lead (CESCL) to oversee and enforce concrete waste management procedures.

- A sign should be installed adjacent to each temporary concrete washout facility to inform concrete equipment operators to utilize the proper facilities.

Contracts

Incorporate requirements for concrete waste management into concrete supplier and sub-contractor agreements.

Location and Placement

- Locate washout area at least 50 feet from sensitive areas such as storm drains, open ditches, or water bodies, including wetlands.
- Allow convenient access for concrete trucks, preferably near the area where the concrete is being poured.
- If trucks need to leave a paved area to access washout, prevent track-out with a pad of rock or quarry spalls (see BMP C105: Stabilized Construction Entrance / Exit (p.270)). These areas should be far enough away from other construction traffic to reduce the likelihood of accidental damage and spills.
- The number of facilities you install should depend on the expected demand for storage capacity.
- On large sites with extensive concrete work, washouts should be placed in multiple locations for ease of use by concrete truck drivers.

On-site Temporary Concrete Washout Facility, Transit Truck Washout Procedures:

- Temporary concrete washout facilities shall be located a minimum of 50 ft from sensitive areas including storm drain inlets, open drainage facilities, and watercourses. See Figure II-4.1.7a Concrete Washout Area (p.322), Figure II-4.1.7b Concrete Washout Area (p.323), and Figure II-4.1.8 Prefabricated Concrete Washout Container w/Ramp (p.324).
- Concrete washout facilities shall be constructed and maintained in sufficient quantity and size to contain all liquid and concrete waste generated by washout operations.
- Washout of concrete trucks shall be performed in designated areas only.
- Concrete washout from concrete pumper bins can be washed into concrete pumper trucks and discharged into designated washout area or properly disposed of off-site.
- Once concrete wastes are washed into the designated area and allowed to

harden, the concrete should be broken up, removed, and disposed of per applicable solid waste regulations. Dispose of hardened concrete on a regular basis.

- Temporary Above-Grade Concrete Washout Facility
  - Temporary concrete washout facility (type above grade) should be constructed as shown on the details below, with a recommended minimum length and minimum width of 10 ft, but with sufficient quantity and volume to contain all liquid and concrete waste generated by washout operations.
  - Plastic lining material should be a minimum of 10 mil polyethylene sheeting and should be free of holes, tears, or other defects that compromise the impermeability of the material.
- Temporary Below-Grade Concrete Washout Facility
  - Temporary concrete washout facilities (type below grade) should be constructed as shown on the details below, with a recommended minimum length and minimum width of 10 ft. The quantity and volume should be sufficient to contain all liquid and concrete waste generated by washout operations.
  - Lath and flagging should be commercial type.
  - Plastic lining material shall be a minimum of 10 mil polyethylene sheeting and should be free of holes, tears, or other defects that compromise the impermeability of the material.
  - Liner seams shall be installed in accordance with manufacturers' recommendations.
  - Soil base shall be prepared free of rocks or other debris that may cause tears or holes in the plastic lining material.

Maintenance Standards

Inspection and Maintenance

- Inspect and verify that concrete washout BMPs are in place prior to the commencement of concrete work.
- During periods of concrete work, inspect daily to verify continued performance.
  - Check overall condition and performance.
  - Check remaining capacity (% full).
  - If using self-installed washout facilities, verify plastic liners are intact and sidewalls are not damaged.
  - If using prefabricated containers, check for leaks.

- Washout facilities shall be maintained to provide adequate holding capacity with a minimum freeboard of 12 inches.
- Washout facilities must be cleaned, or new facilities must be constructed and ready for use once the washout is 75% full.
- If the washout is nearing capacity, vacuum and dispose of the waste material in an approved manner.
    - Do not discharge liquid or slurry to waterways, storm drains or directly onto ground.
    - Do not use sanitary sewer without local approval.
    - Place a secure, non-collapsing, non-water collecting cover over the concrete washout facility prior to predicted wet weather to prevent accumulation and overflow of precipitation.
    - Remove and dispose of hardened concrete and return the structure to a functional condition. Concrete may be reused on-site or hauled away for disposal or recycling.
- When you remove materials from the self-installed concrete washout, build a new structure; or, if the previous structure is still intact, inspect for signs of weakening or damage, and make any necessary repairs. Re-line the structure with new plastic after each cleaning.

Removal of Temporary Concrete Washout Facilities

- When temporary concrete washout facilities are no longer required for the work, the hardened concrete, slurries and liquids shall be removed and properly disposed of.
- Materials used to construct temporary concrete washout facilities shall be removed from the site of the work and disposed of or recycled.
- Holes, depressions or other ground disturbance caused by the removal of the temporary concrete washout facilities shall be backfilled, repaired, and stabilized to prevent erosion.

Figure II-4.1.7a Concrete Washout Area

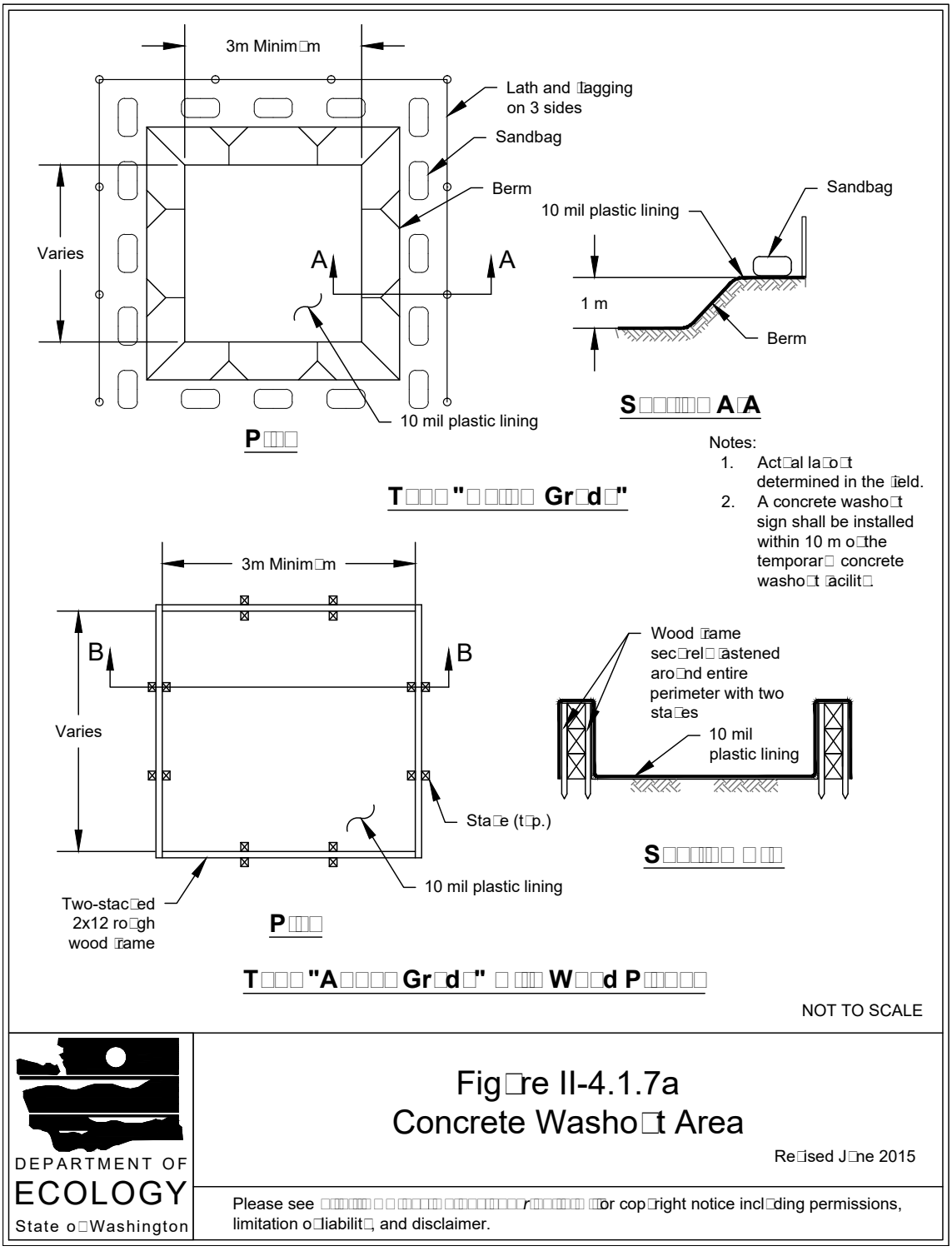
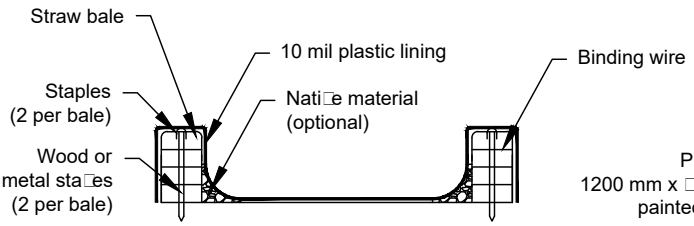
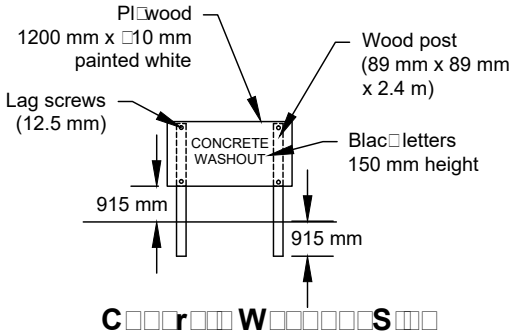


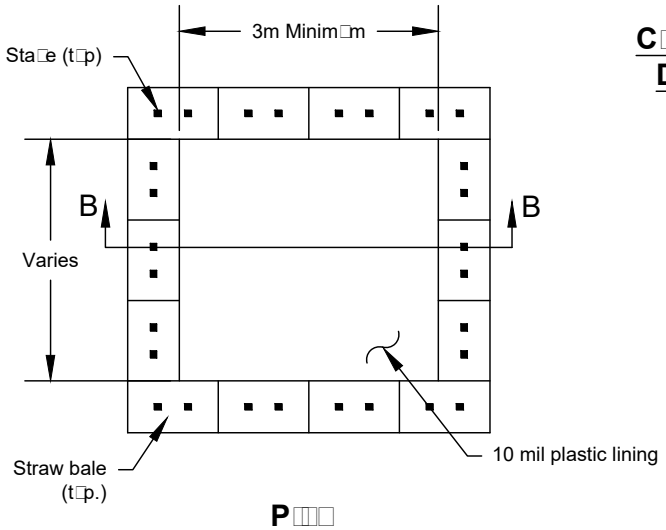
Figure II-4.1.7b Concrete Washout Area



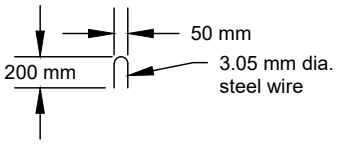
Silt Fence



Concrete Washout Sign
Detail



Plan



Sign Detail

Notes:
1. Actual layout determined in the field.
2. The concrete washout sign shall be installed within 10 m of the temporary concrete washout facility.

Temporary "Above Grade" Straw Bale Barrier

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Figure II-4.1.7b
Concrete Washout Area

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Figure II-4.1.8 Prefabricated Concrete Washout Container w/Ramp

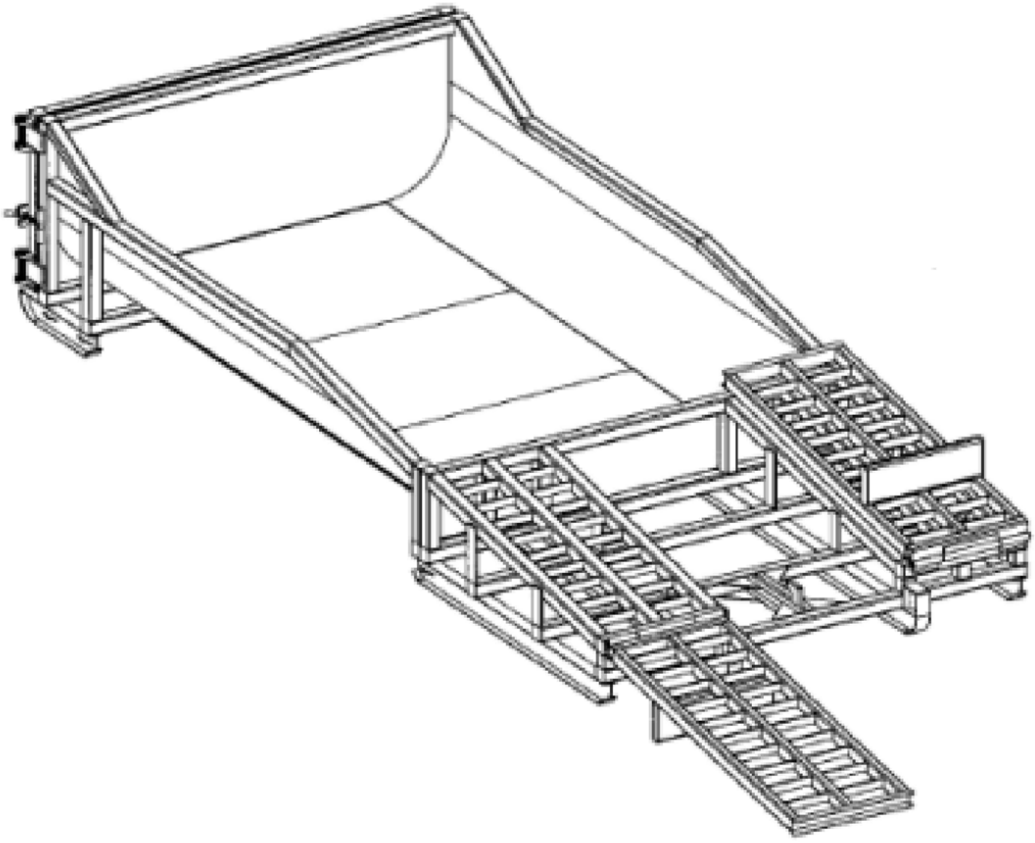

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Figure II-4.1.8
Prefabricated Concrete Washout Container w/Ramp

Revised June 2015

BMP C160: Certified Erosion and Sediment Control Lead

Purpose

The project proponent designates at least one person as the responsible representative in charge of erosion and sediment control (ESC), and water quality protection. The designated person shall be the Certified Erosion and Sediment Control Lead (CESCL) who is responsible for ensuring compliance with all local, state, and federal erosion and sediment control and water quality requirements.

Conditions of Use

A CESCL shall be made available on projects one acre or larger that discharge stormwater to surface waters of the state. Sites less than one acre may have a person without CESCL certification conduct inspections; sampling is not required on sites that disturb less than an acre.

- The CESCL shall:
    - Have a current certificate proving attendance in an erosion and sediment control training course that meets the minimum ESC training and certification requirements established by Ecology (see details below).

      Ecology will maintain a list of ESC training and certification providers at: http://www.ecy.wa.gov/programs/wq/stormwater/cescl.html

      OR
    - Be a Certified Professional in Erosion and Sediment Control (CPESC); for additional information go to: http://www.envirocertintl.org/cpesc/

Specifications

- Certification shall remain valid for three years.
- The CESCL shall have authority to act on behalf of the contractor or developer and shall be available, or on-call, 24 hours per day throughout the period of construction.
- The Construction SWPPP shall include the name, telephone number, fax number, and address of the designated CESCL.
- A CESCL may provide inspection and compliance services for multiple construction projects in the same geographic region.

Duties and responsibilities of the CESCL shall include, but are not limited to the following:

- Maintaining permit file on site at all times which includes the Construction SWPPP and any associated permits and plans.
- Directing BMP installation, inspection, maintenance, modification, and removal.
- Updating all project drawings and the Construction SWPPP with changes made.
- Completing any sampling requirements including reporting results using WebDMR.
- Keeping daily logs, and inspection reports. Inspection reports should include:
    - Inspection date/time.
    - Weather information; general conditions during inspection and approximate amount of precipitation since the last inspection.
    - A summary or list of all BMPs implemented, including observations of all erosion/sediment control structures or practices. The following shall be noted:
        1. Locations of BMPs inspected.
        2. Locations of BMPs that need maintenance.
        3. Locations of BMPs that failed to operate as designed or intended.
        4. Locations of where additional or different BMPs are required.
    - Visual monitoring results, including a description of discharged stormwater. The presence of suspended sediment, turbid water, discoloration, and oil sheen shall be noted, as applicable.
    - Any water quality monitoring performed during inspection.
    - General comments and notes, including a brief description of any BMP repairs, maintenance or installations made as a result of the inspection.
- Facilitate, participate in, and take corrective actions resulting from inspections performed by outside agencies or the owner.

BMP C162: Scheduling

Purpose

Sequencing a construction project reduces the amount and duration of soil exposed to erosion by wind, rain, runoff, and vehicle tracking.

Conditions of Use

The construction sequence schedule is an orderly listing of all major land-disturbing activities together with the necessary erosion and sedimentation control measures

planned for the project. This type of schedule guides the contractor on work to be done before other work is started so that serious erosion and sedimentation problems can be avoided.

Following a specified work schedule that coordinates the timing of land-disturbing activities and the installation of control measures is perhaps the most cost-effective way of controlling erosion during construction. The removal of surface ground cover leaves a site vulnerable to accelerated erosion. Construction procedures that limit land clearing provide timely installation of erosion and sedimentation controls, and restore protective cover quickly can significantly reduce the erosion potential of a site.

Design Considerations

- Minimize construction during rainy periods.
- Schedule projects to disturb only small portions of the site at any one time. Complete grading as soon as possible. Immediately stabilize the disturbed portion before grading the next portion. Practice staged seeding in order to revegetate cut and fill slopes as the work progresses.

BMP C220: Storm Drain Inlet Protection

Purpose

Storm drain inlet protection prevents coarse sediment from entering drainage systems prior to permanent stabilization of the disturbed area.

Conditions of Use

Use storm drain inlet protection at inlets that are operational before permanent stabilization of the disturbed drainage area. Provide protection for all storm drain inlets downslope and within 500 feet of a disturbed or construction area, unless conveying runoff entering catch basins to a sediment pond or trap.

Also consider inlet protection for lawn and yard drains on new home construction. These small and numerous drains coupled with lack of gutters in new home construction can add significant amounts of sediment into the roof drain system. If possible delay installing lawn and yard drains until just before landscaping or cap these drains to pre-

vent sediment from entering the system until completion of landscaping. Provide 18-inches of sod around each finished lawn and yard drain.

Table II-4.2.2 Storm Drain Inlet Protection (p.358) lists several options for inlet protection. All of the methods for storm drain inlet protection tend to plug and require a high frequency of maintenance. Limit drainage areas to one acre or less. Possibly provide emergency overflows with additional end-of-pipe treatment where stormwater ponding would cause a hazard.

Table II-4.2.2 Storm Drain Inlet Protection

Type of Inlet Protection	Emergency Overflow	Applicable for Paved/ Earthen Surfaces	Conditions of Use
Drop Inlet Protection			
Excavated drop inlet protection	Yes, temporary flooding will occur	Earthen	Applicable for heavy flows. Easy to maintain. Large area Requirement: 30'x30'/acre
Block and gravel drop inlet protection	Yes	Paved or Earthen	Applicable for heavy concentrated flows. Will not pond.
Gravel and wire drop inlet protection	No		Applicable for heavy concentrated flows. Will pond. Can withstand traffic.
Catch basin filters	Yes	Paved or Earthen	Frequent Maintenance required.
Curb Inlet Protection			
Curb inlet protection with wooden weir	Small capacity overflow	Paved	Used for sturdy, more compact installation.
Block and gravel curb inlet protection	Yes	Paved	Sturdy, but limited filtration.
Culvert Inlet Protection			
Culvert inlet Sediment trap			18 month expected life.

Design and Installation Specifications

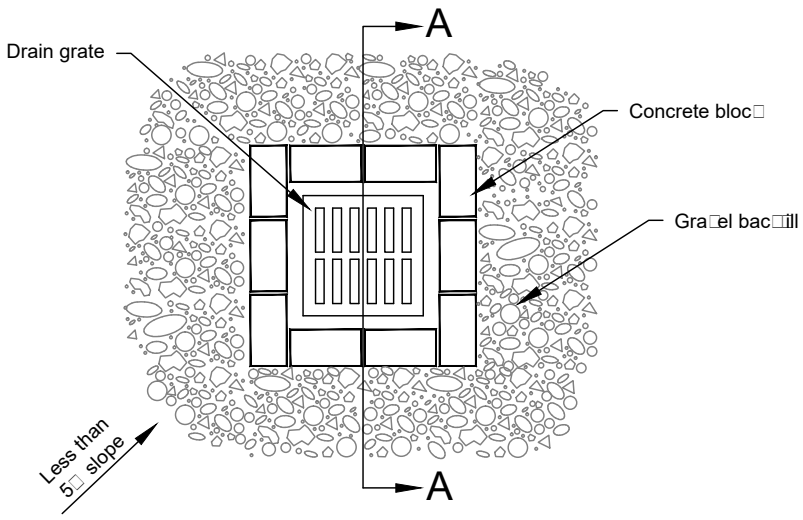
Excavated Drop Inlet Protection - An excavated impoundment around the storm drain. Sediment settles out of the stormwater prior to entering the storm drain.

- Provide a depth of 1-2 ft as measured from the crest of the inlet structure.
- Slope sides of excavation no steeper than 2H:1V.
- Minimum volume of excavation 35 cubic yards.
- Shape basin to fit site with longest dimension oriented toward the longest inflow area.
- Install provisions for draining to prevent standing water problems.
- Clear the area of all debris.
- Grade the approach to the inlet uniformly.
- Drill weep holes into the side of the inlet.
- Protect weep holes with screen wire and washed aggregate.
- Seal weep holes when removing structure and stabilizing area.
- Build a temporary dike, if necessary, to the down slope side of the structure to prevent bypass flow.

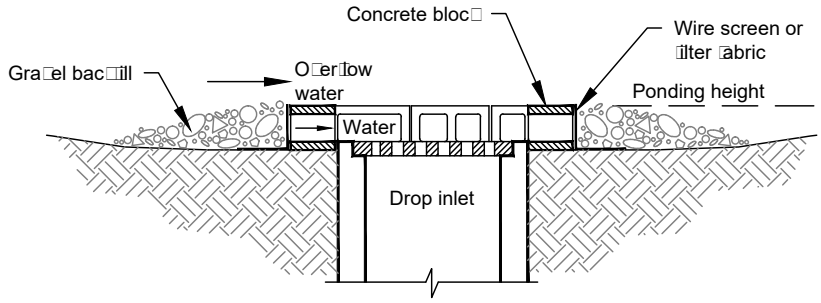
Block and Gravel Filter - A barrier formed around the storm drain inlet with standard concrete blocks and gravel. See Figure II-4.2.8 Block and Gravel Filter (p.360).

- Provide a height of 1 to 2 feet above inlet.
- Recess the first row 2-inches into the ground for stability.
- Support subsequent courses by placing a 2x4 through the block opening.
- Do not use mortar.
- Lay some blocks in the bottom row on their side for dewatering the pool.
- Place hardware cloth or comparable wire mesh with ½-inch openings over all block openings.
- Place gravel just below the top of blocks on slopes of 2H:1V or flatter.
- An alternative design is a gravel donut.
- Provide an inlet slope of 3H:1V.
- Provide an outlet slope of 2H:1V.
- Provide a1-foot wide level stone area between the structure and the inlet.
- Use inlet slope stones 3 inches in diameter or larger.
- Use gravel ½- to ¾-inch at a minimum thickness of 1-foot for the outlet slope.

Figure II-4.2.8 Block and Gravel Filter



Plan View



Section A-A

Notes:

1. Drop inlet sediment barriers are to be sed or small, nearl le el drainage areas. (less than 5)
2. Exca ate a basin o s icient si e adjacent to the drop inlet.
3. The top o the str ct re (ponding height) m st be well below the gro nd ele ation downslope to pre ent r no rom b passing the inlet. A temporar di e ma be necessar on the downslope side o the str ct re.

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Fig re II-4.2.8
Bloc and Gra el Filter

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Gravel and Wire Mesh Filter - A gravel barrier placed over the top of the inlet. This structure does not provide an overflow.

- Use a hardware cloth or comparable wire mesh with ½-inch openings.
- Use coarse aggregate.
- Provide a height 1-foot or more, 18-inches wider than inlet on all sides.
- Place wire mesh over the drop inlet so that the wire extends a minimum of 1-foot beyond each side of the inlet structure.
- Overlap the strips if more than one strip of mesh is necessary.
- Place coarse aggregate over the wire mesh.
- Provide at least a 12-inch depth of gravel over the entire inlet opening and extend at least 18-inches on all sides.

Catchbasin Filters – Use inserts designed by manufacturers for construction sites. The limited sediment storage capacity increases the amount of inspection and maintenance required, which may be daily for heavy sediment loads. To reduce maintenance requirements combine a catchbasin filter with another type of inlet protection. This type of inlet protection provides flow bypass without overflow and therefore may be a better method for inlets located along active rights-of-way.

- Provides 5 cubic feet of storage.
- Requires dewatering provisions.
- Provides a high-flow bypass that will not clog under normal use at a construction site.
- Insert the catchbasin filter in the catchbasin just below the grating.

Curb Inlet Protection with Wooden Weir – Barrier formed around a curb inlet with a wooden frame and gravel.

- Use wire mesh with ½-inch openings.
- Use extra strength filter cloth.
- Construct a frame.
- Attach the wire and filter fabric to the frame.
- Pile coarse washed aggregate against wire/fabric.
- Place weight on frame anchors.

Block and Gravel Curb Inlet Protection – Barrier formed around a curb inlet with concrete blocks and gravel. See Figure II-4.2.9 Block and Gravel Curb Inlet Protection (p.363).

- Use wire mesh with ½-inch openings.
- Place two concrete blocks on their sides abutting the curb at either side of the inlet opening. These are spacer blocks.
- Place a 2x4 stud through the outer holes of each spacer block to align the front blocks.
- Place blocks on their sides across the front of the inlet and abutting the spacer blocks.
- Place wire mesh over the outside vertical face.
- Pile coarse aggregate against the wire to the top of the barrier.

Curb and Gutter Sediment Barrier – Sandbag or rock berm (riprap and aggregate) 3 feet high and 3 feet wide in a horseshoe shape. See Figure II-4.2.10 Curb and Gutter Barrier (p.364).

- Construct a horseshoe shaped berm, faced with coarse aggregate if using riprap, 3 feet high and 3 feet wide, at least 2 feet from the inlet.
- Construct a horseshoe shaped sedimentation trap on the outside of the berm sized to sediment trap standards for protecting a culvert inlet.

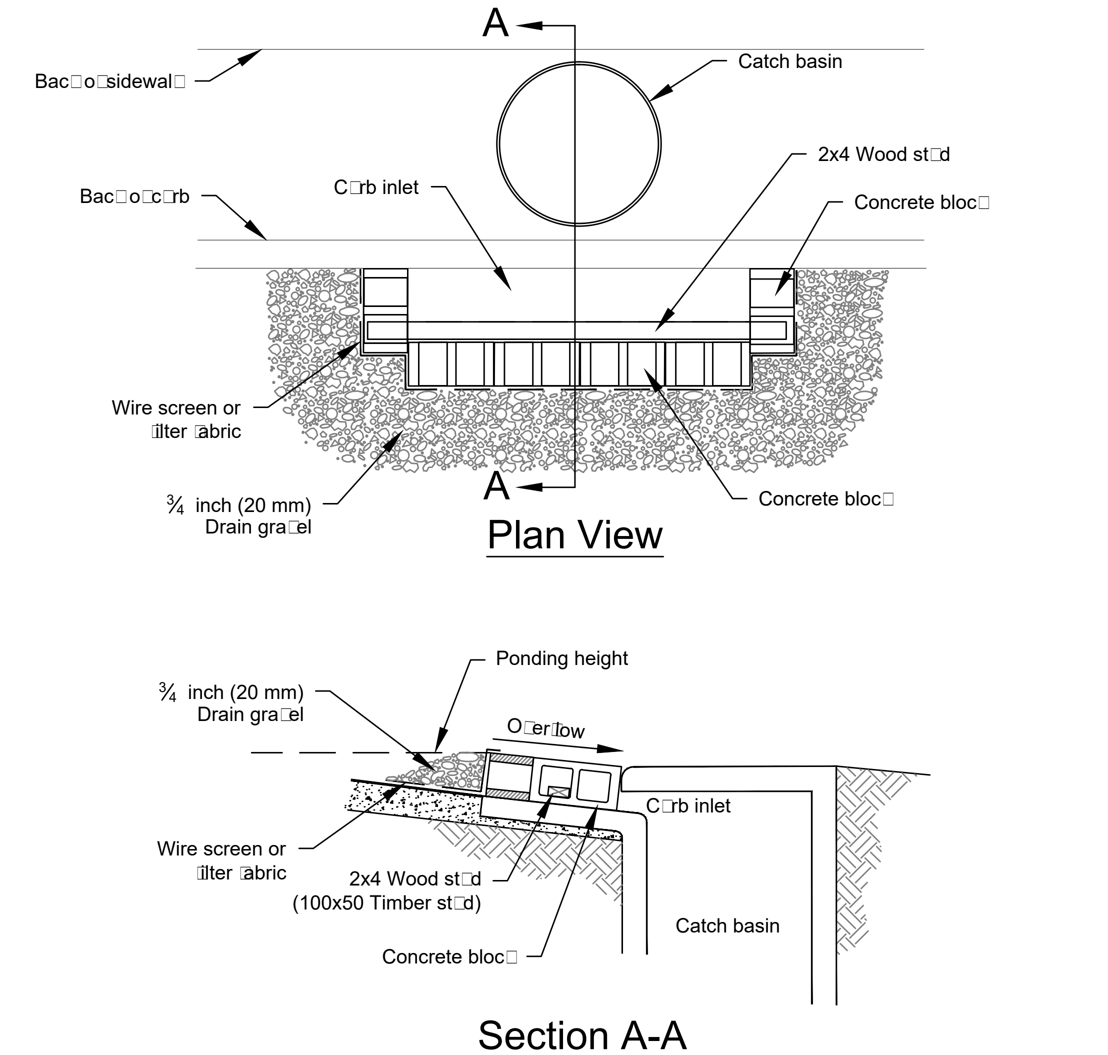
Maintenance Standards

- Inspect catch basin filters frequently, especially after storm events. Clean and replace clogged inserts. For systems with clogged stone filters: pull away the stones from the inlet and clean or replace. An alternative approach would be to use the clogged stone as fill and put fresh stone around the inlet.
- Do not wash sediment into storm drains while cleaning. Spread all excavated material evenly over the surrounding land area or stockpile and stabilize as appropriate.

Approved as Equivalent

Ecology has approved products as able to meet the requirements of BMP C220: Storm Drain Inlet Protection. The products did not pass through the Technology Assessment Protocol – Ecology (TAPE) process. Local jurisdictions may choose not to accept this product approved as equivalent, or may require additional testing prior to consideration for local use. The products are available for review on Ecology's website at http://www.ecy.wa.gov/programs/wq/stormwater/newtech/equivalent.html

Figure II-4.2.9 Block and Gravel Curb Inlet Protection



Notes:

1. Use block and gravel type sediment barrier when curb inlet is located in gently sloping street segment, where water can pond and allow sediment to separate from runoff.
2. Barrier shall allow for overflow from severe storm event.
3. Inspect barriers and remove sediment after each storm event. Sediment and gravel must be removed from the traveled way immediately.

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Figure II-4.2.9
Block and Gravel Curb Inlet Protection

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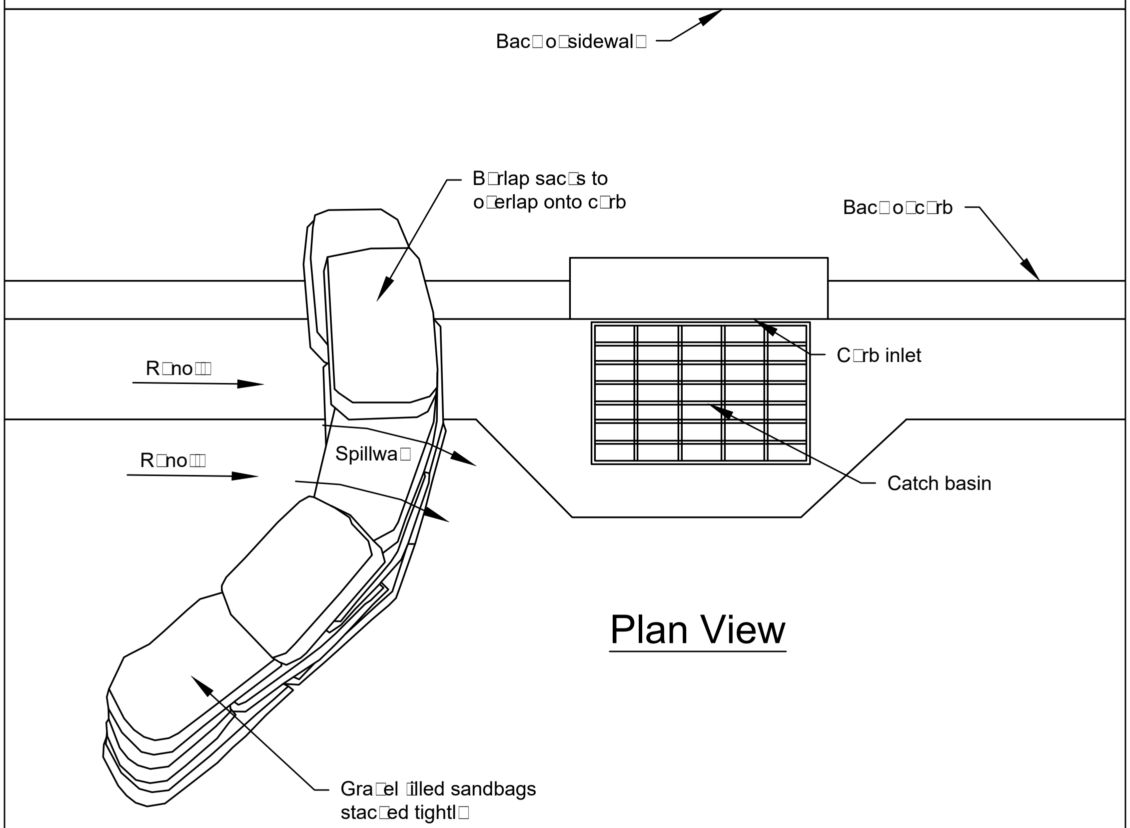
Figure II-4.2.10 Curb and Gutter Barrier



Notes:

1. Place curb type sediment barriers on gently sloping street segments, where water can pond and allow sediment to separate from runoff.
2. Sandbags of either burlap or woven 'geotextile' fabric, are filled with gravel, layered and packed tightly.
3. Leave a one sandbag gap in the top row to provide a spillway for overflow.
4. Inspect barriers and remove sediment after each storm event. Sediment and gravel must be removed from the traveled way immediately.

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Figure II-4.2.10
Curb and Gutter Barrier

Revised September 2015

BMP C233: Silt Fence

Purpose

Use of a silt fence reduces the transport of coarse sediment from a construction site by providing a temporary physical barrier to sediment and reducing the runoff velocities of overland flow. See Figure II-4.2.12 Silt Fence (p.369) for details on silt fence construction.

Conditions of Use

Silt fence may be used downslope of all disturbed areas.

- Silt fence shall prevent soil carried by runoff water from going beneath, through, or over the top of the silt fence, but shall allow the water to pass through the fence.
- Silt fence is not intended to treat concentrated flows, nor is it intended to treat substantial amounts of overland flow. Convey any concentrated flows through the drainage system to a sediment pond.
- Do not construct silt fences in streams or use in V-shaped ditches. Silt fences do not provide an adequate method of silt control for anything deeper than sheet or overland flow.

Figure II-4.2.12 Silt Fence

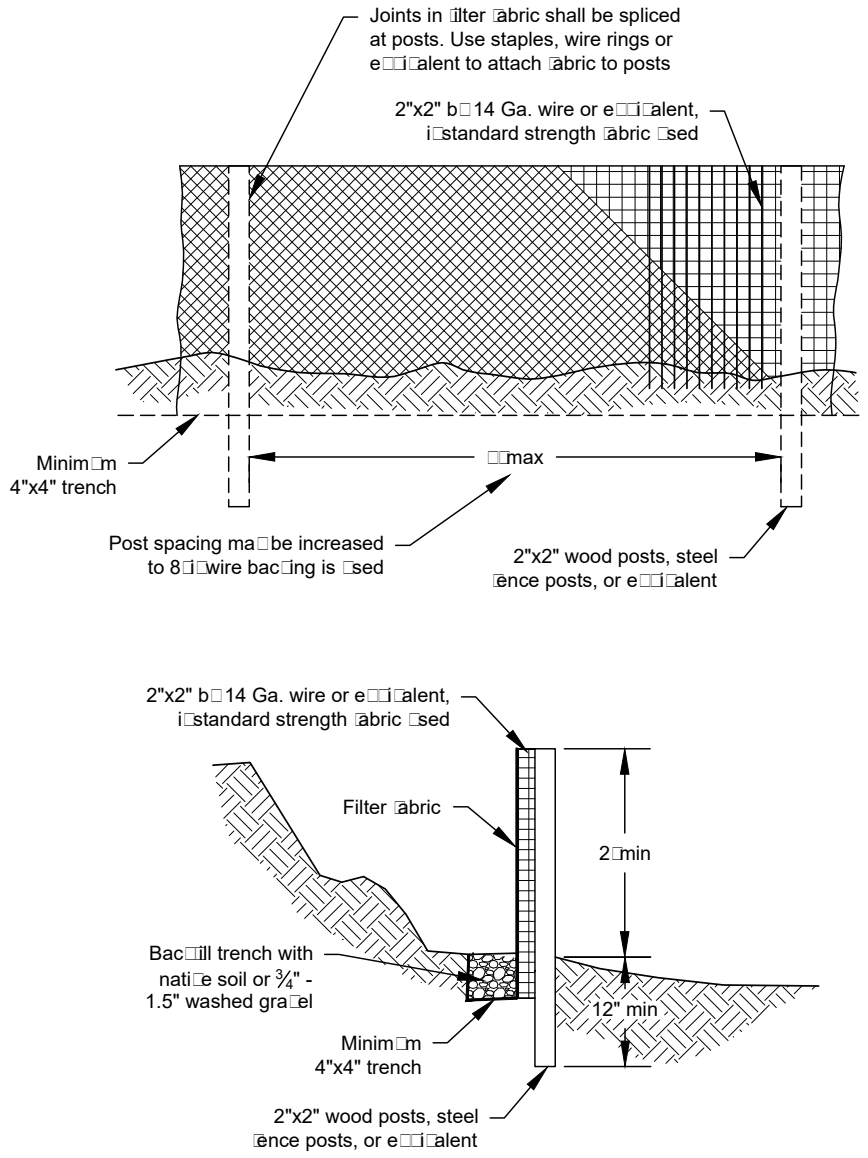

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Figure II-4.2.12
Silt Fence

Revised October 2014

Design and Installation Specifications

- Use in combination with sediment basins or other BMPs.
- Maximum slope steepness (normal (perpendicular) to fence line) 1H:1V.
- Maximum sheet or overland flow path length to the fence of 100 feet.
- Do not allow flows greater than 0.5 cfs.
- The geotextile used shall meet the following standards. All geotextile properties listed below are minimum average roll values (i.e., the test result for any sampled roll in a lot shall meet or exceed the values shown in Table II-4.2.3 Geotextile Standards (p.370)):

Table II-4.2.3 Geotextile Standards

Polymeric Mesh AOS (ASTM D4751)	0.60 mm maximum for slit film woven (#30 sieve). 0.30 mm maximum for all other geotextile types (#50 sieve). 0.15 mm minimum for all fabric types (#100 sieve).
Water Permittivity (ASTM D4491)	0.02 sec^{-1} minimum
Grab Tensile Strength (ASTM D4632)	180 lbs. Minimum for extra strength fabric. 100 lbs minimum for standard strength fabric.
Grab Tensile Strength (ASTM D4632)	30% maximum
Ultraviolet Resistance (ASTM D4355)	70% minimum

- Support standard strength fabrics with wire mesh, chicken wire, 2-inch x 2-inch wire, safety fence, or jute mesh to increase the strength of the fabric. Silt fence materials are available that have synthetic mesh backing attached.
- Filter fabric material shall contain ultraviolet ray inhibitors and stabilizers to provide a minimum of six months of expected usable construction life at a temperature range of 0°F. to 120°F.
- One-hundred percent biodegradable silt fence is available that is strong, long lasting, and can be left in place after the project is completed, if permitted by local regulations.
- Refer to Figure II-4.2.12 Silt Fence (p.369) for standard silt fence details. Include the following standard Notes for silt fence on construction plans and specifications:

1. The contractor shall install and maintain temporary silt fences at the locations shown in the Plans.
2. Construct silt fences in areas of clearing, grading, or drainage prior to starting those activities.
3. The silt fence shall have a 2-feet min. and a 2½-feet max. height above the original ground surface.
4. The filter fabric shall be sewn together at the point of manufacture to form filter fabric lengths as required. Locate all sewn seams at support posts. Alternatively, two sections of silt fence can be overlapped, provided the Contractor can demonstrate, to the satisfaction of the Engineer, that the overlap is long enough and that the adjacent fence sections are close enough together to prevent silt laden water from escaping through the fence at the overlap.
5. Attach the filter fabric on the up-slope side of the posts and secure with staples, wire, or in accordance with the manufacturer's recommendations. Attach the filter fabric to the posts in a manner that reduces the potential for tearing.
6. Support the filter fabric with wire or plastic mesh, dependent on the properties of the geotextile selected for use. If wire or plastic mesh is used, fasten the mesh securely to the up-slope side of the posts with the filter fabric up-slope of the mesh.
7. Mesh support, if used, shall consist of steel wire with a maximum mesh spacing of 2-inches, or a prefabricated polymeric mesh. The strength of the wire or polymeric mesh shall be equivalent to or greater than 180 lbs. grab tensile strength. The polymeric mesh must be as resistant to the same level of ultraviolet radiation as the filter fabric it supports.
8. Bury the bottom of the filter fabric 4-inches min. below the ground surface. Backfill and tamp soil in place over the buried portion of the filter fabric, so that no flow can pass beneath the fence and scouring cannot occur. When wire or polymeric back-up support mesh is used, the wire or polymeric mesh shall extend into the ground 3-inches min.
9. Drive or place the fence posts into the ground 18-inches min. A 12–inch min. depth is allowed if topsoil or other soft subgrade soil is not present and 18-inches cannot be reached. Increase fence post min. depths by 6 inches if the fence is located on slopes of 3H:1V or steeper and the slope is perpendicular to the fence. If required post depths cannot be obtained, the posts shall be adequately secured by bracing or guying to prevent overturning of the fence due to sediment loading.
10. Use wood, steel or equivalent posts. The spacing of the support posts shall

be a maximum of 6-feet. Posts shall consist of either:

- Wood with dimensions of 2-inches by 2-inches wide min. and a 3-feet min. length. Wood posts shall be free of defects such as knots, splits, or gouges.
- No. 6 steel rebar or larger.
- ASTM A 120 steel pipe with a minimum diameter of 1-inch.
- U, T, L, or C shape steel posts with a minimum weight of 1.35 lbs./ft.
- Other steel posts having equivalent strength and bending resistance to the post sizes listed above.

11. Locate silt fences on contour as much as possible, except at the ends of the fence, where the fence shall be turned uphill such that the silt fence captures the runoff water and prevents water from flowing around the end of the fence.
12. If the fence must cross contours, with the exception of the ends of the fence, place gravel check dams perpendicular to the back of the fence to minimize concentrated flow and erosion. The slope of the fence line where contours must be crossed shall not be steeper than 3H:1V.
    - Gravel check dams shall be approximately 1-foot deep at the back of the fence. Gravel check dams shall be continued perpendicular to the fence at the same elevation until the top of the check dam intercepts the ground surface behind the fence.
    - Gravel check dams shall consist of crushed surfacing base course, gravel backfill for walls, or shoulder ballast. Gravel check dams shall be located every 10 feet along the fence where the fence must cross contours.

- Refer to Figure II-4.2.13 Silt Fence Installation by Slicing Method (p.374) for slicing method details. Silt fence installation using the slicing method specifications:
    1. The base of both end posts must be at least 2- to 4-inches above the top of the filter fabric on the middle posts for ditch checks to drain properly. Use a hand level or string level, if necessary, to mark base points before installation.
    2. Install posts 3- to 4-feet apart in critical retention areas and 6- to 7-feet apart in standard applications.
    3. Install posts 24-inches deep on the downstream side of the silt fence, and as close as possible to the filter fabric, enabling posts to support the filter fabric from upstream water pressure.
    4. Install posts with the nipples facing away from the filter fabric.

5. Attach the filter fabric to each post with three ties, all spaced within the top 8-inches of the filter fabric. Attach each tie diagonally 45 degrees through the filter fabric, with each puncture at least 1-inch vertically apart. Each tie should be positioned to hang on a post nipple when tightening to prevent sagging.
6. Wrap approximately 6-inches of fabric around the end posts and secure with 3 ties.
7. No more than 24-inches of a 36-inch filter fabric is allowed above ground level.

   Compact the soil immediately next to the filter fabric with the front wheel of the tractor, skid steer, or roller exerting at least 60 pounds per square inch. Compact the upstream side first and then each side twice for a total of four trips. Check and correct the silt fence installation for any deviation before compaction. Use a flat-bladed shovel to tuck fabric deeper into the ground if necessary.

Figure II-4.2.13 Silt Fence Installation by Slicing Method

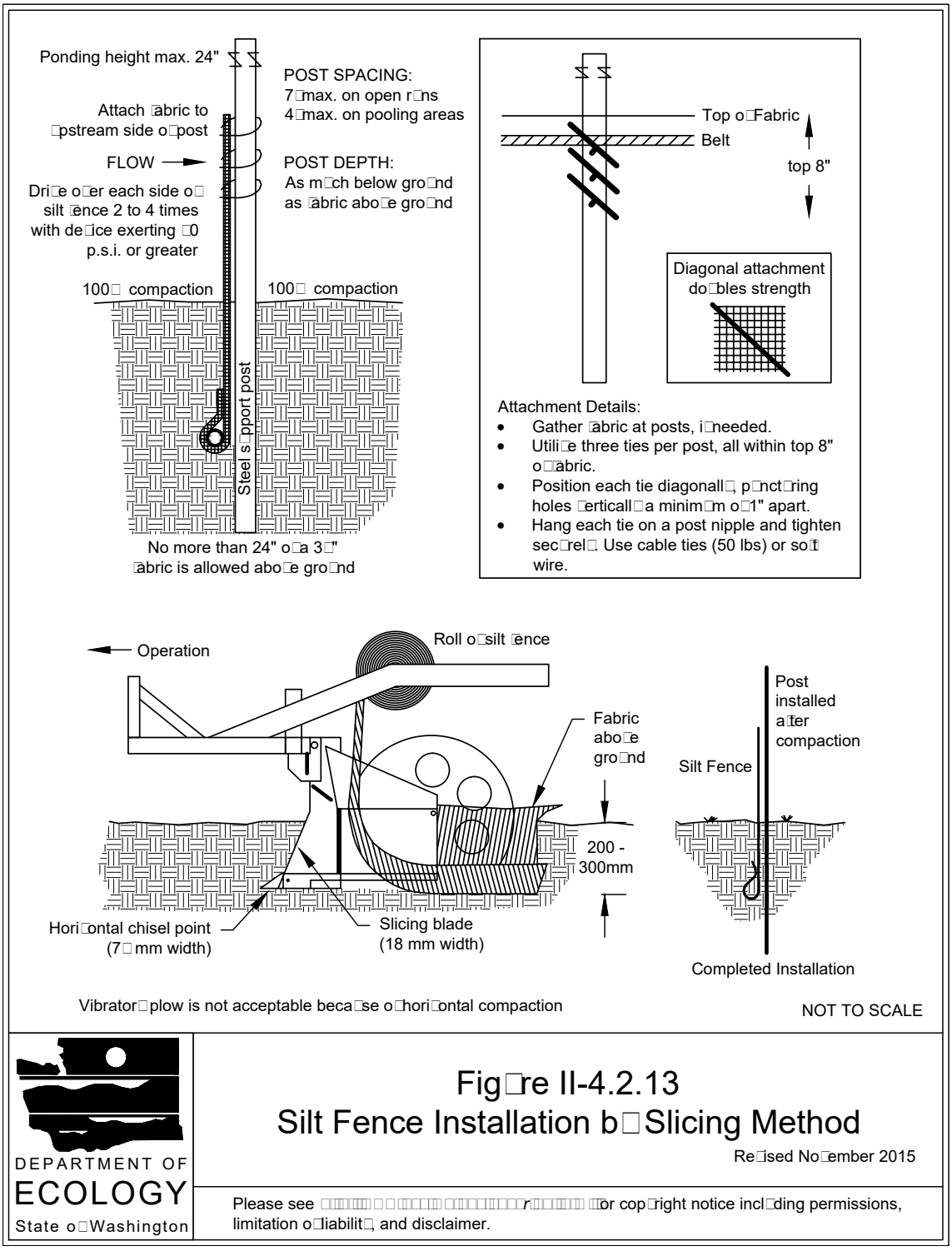

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Figure II-4.2.13
Silt Fence Installation by Slicing Method

Revised November 2015

Maintenance Standards

- Repair any damage immediately.
- Intercept and convey all evident concentrated flows uphill of the silt fence to a sediment pond.
- Check the uphill side of the fence for signs of the fence clogging and acting as a barrier to flow and then causing channelization of flows parallel to the fence. If this occurs, replace the fence or remove the trapped sediment.
- Remove sediment deposits when the deposit reaches approximately one-third the height of the silt fence, or install a second silt fence.
- Replace filter fabric that has deteriorated due to ultraviolet breakdown.

BMP C235: Wattles

Purpose

Wattles are temporary erosion and sediment control barriers consisting of straw, compost, or other material that is wrapped in biodegradable tubular plastic or similar encasing material. They reduce the velocity and can spread the flow of rill and sheet runoff, and can capture and retain sediment. Wattles are typically 8 to 10 inches in diameter and 25 to 30 feet in length. Wattles are placed in shallow trenches and staked along the contour of disturbed or newly constructed slopes. See Figure II-4.2.14 Wattles (p.378) for typical construction details. WSDOT Standard Plan I-30.30-00 also provides information on Wattles (http://www.wsdot.wa.gov/Design/Standards/Plans.htm#SectionI)

Conditions of Use

- Use wattles:
    - In disturbed areas that require immediate erosion protection.
    - On exposed soils during the period of short construction delays, or over winter months.
    - On slopes requiring stabilization until permanent vegetation can be established.

- The material used dictates the effectiveness period of the wattle. Generally, Wattles are typically effective for one to two seasons.
- Prevent rilling beneath wattles by properly entrenching and abutting wattles together to prevent water from passing between them.

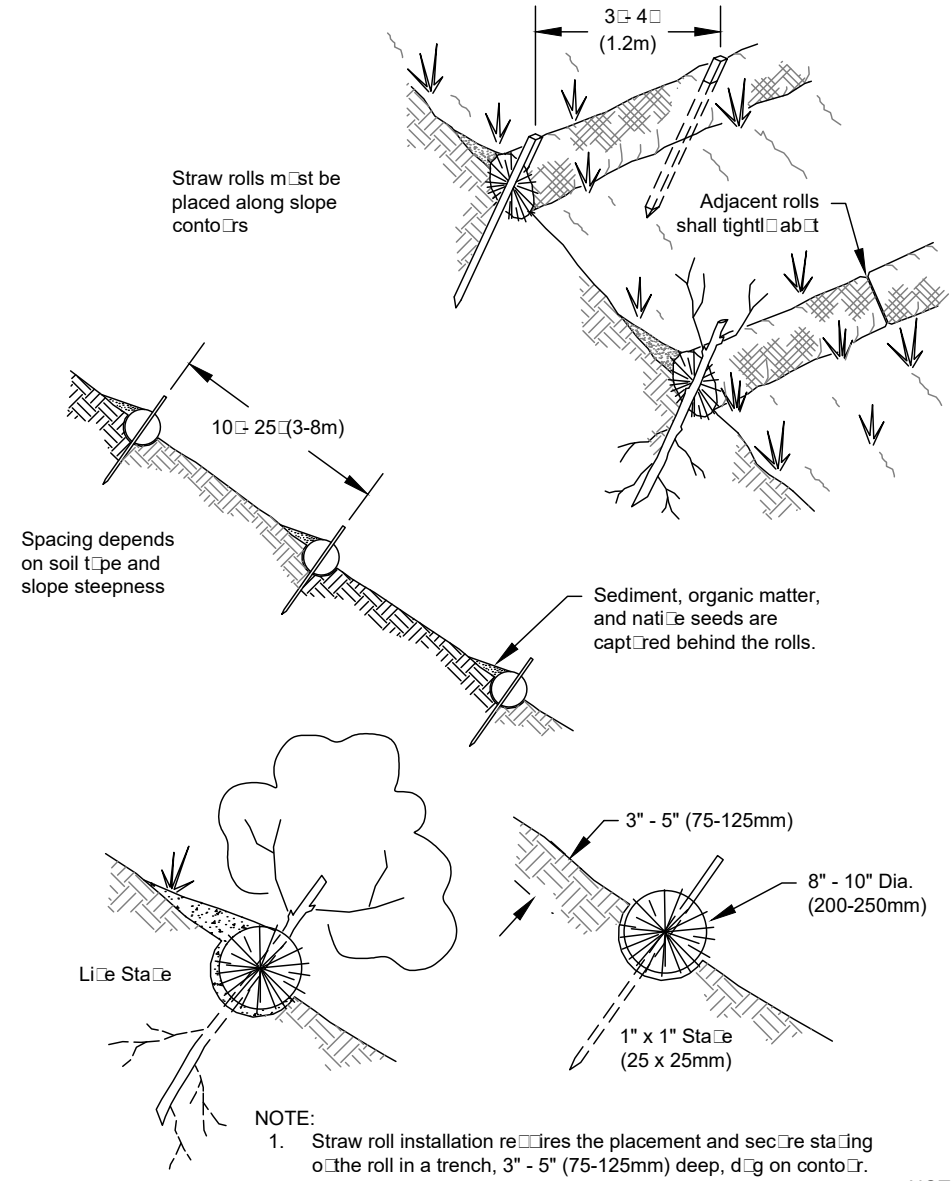
Design Criteria

- Install wattles perpendicular to the flow direction and parallel to the slope contour.
- Narrow trenches should be dug across the slope on contour to a depth of 3- to 5-inches on clay soils and soils with gradual slopes. On loose soils, steep slopes, and areas with high rainfall, the trenches should be dug to a depth of 5- to 7-inches, or 1/2 to 2/3 of the thickness of the wattle.
- Start building trenches and installing wattles from the base of the slope and work up. Spread excavated material evenly along the uphill slope and compacted using hand tamping or other methods.
- Construct trenches at intervals of 10- to 25-feet depending on the steepness of the slope, soil type, and rainfall. The steeper the slope the closer together the trenches.
- Install the wattles snugly into the trenches and abut tightly end to end. Do not overlap the ends.
- Install stakes at each end of the wattle, and at 4-foot centers along entire length of wattle.
- If required, install pilot holes for the stakes using a straight bar to drive holes through the wattle and into the soil.
- Wooden stakes should be approximately 3/4 x 3/4 x 24 inches min. Willow cuttings or 3/8-inch rebar can also be used for stakes.
- Stakes should be driven through the middle of the wattle, leaving 2 to 3 inches of the stake protruding above the wattle.

Maintenance Standards

- Wattles may require maintenance to ensure they are in contact with soil and thoroughly entrenched, especially after significant rainfall on steep sandy soils.

Figure II-4.2.14 Wattles



NOTE:
1. Straw roll installation re□□ires the placement and sec□re sta□ing o□the roll in a trench, 3" - 5" (75-125mm) deep, d□g on conto□r. R□no□□m□st not be allowed to r□n □nder or aro□nd roll.

NOT TO SCALE

DEPARTMENT OF ECOLOGY
State o□Washington

Fig□re II-4.2.14
Wattles

Re□ised No□ember 2015

- Inspect the slope after significant storms and repair any areas where wattles are not tightly abutted or water has scoured beneath the wattles.

Approved as Equivalent

Ecology has approved products as able to meet the requirements of BMP C235: Wattles. The products did not pass through the Technology Assessment Protocol – Ecology (TAPE) process. Local jurisdictions may choose not to accept this product approved as equivalent, or may require additional testing prior to consideration for local use. The products are available for review on Ecology's website at http://www.ecy.wa.gov-/programs/wq/stormwater/newtech/equivalent.html

Construction Stormwater Site Inspection Form

Project Name _____ Permit # _____ Inspection Date _____ Time _____

Name of Certified Erosion Sediment Control Lead (CESCL) or qualified inspector if *less than one acre*
Print Name: _____

Approximate rainfall amount since the last inspection (in inches): _____

Approximate rainfall amount in the last 24 hours (in inches): _____

Current Weather Clear ☐ Cloudy ☐ Mist ☐ Rain ☐ Wind ☐ Fog ☐

A. Type of inspection: Weekly ☐ Post Storm Event ☐ Other ☐

B. Phase of Active Construction (*check all that apply*):

Pre Construction/installation of erosion/sediment controls	☐	Clearing/Demo/Grading	☐	Infrastructure/storm/roads	☐
Concrete pours	☐	Vertical Construction/buildings	☐	Utilities	☐
Offsite improvements	☐	Site temporary stabilized	☐	Final stabilization	☐

C. Questions:

1. Were all areas of construction and discharge points inspected? Yes ___ No ___
2. Did you observe the presence of suspended sediment, turbidity, discoloration, or oil sheen Yes ___ No ___
3. Was a water quality sample taken during inspection? (*refer to permit conditions S4 & S5*) Yes ___ No ___
4. Was there a turbid discharge 250 NTU or greater, or Transparency 6 cm or less?* Yes ___ No ___
5. If yes to #4 was it reported to Ecology? Yes ___ No ___
6. Is pH sampling required? pH range required is 6.5 to 8.5. Yes ___ No ___

If answering yes to a discharge, describe the event. Include when, where, and why it happened; what action was taken, and when.

_____

_____

_____

_____

*If answering yes to # 4 record NTU/Transparency with continual sampling daily until turbidity is 25 NTU or less/ transparency is 33 cm or greater.

Sampling Results: Date: _____

Parameter	Method (circle one)	Result			Other/Note
		NTU	cm	pH	
Turbidity	tube, meter, laboratory				
pH	Paper, kit, meter				

Construction Stormwater Site Inspection Form

D. Check the observed status of all items. Provide "Action Required "details and dates.

Element #	Inspection	BMPs Inspected			BMP needs maintenance	BMP failed	Action required (describe in section F)
		yes	no	n/a			
1 Clearing Limits	Before beginning land disturbing activities are all clearing limits, natural resource areas (streams, wetlands, buffers, trees) protected with barriers or similar BMPs? (high visibility recommended)						
2 Construction Access	Construction access is stabilized with quarry spalls or equivalent BMP to prevent sediment from being tracked onto roads?						
	Sediment tracked onto the road way was cleaned thoroughly at the end of the day or more frequent as necessary.						
3 Control Flow Rates	Are flow control measures installed to control stormwater volumes and velocity during construction and do they protect downstream properties and waterways from erosion?						
	If permanent infiltration ponds are used for flow control during construction, are they protected from siltation?						
4 Sediment Controls	All perimeter sediment controls (e.g. silt fence, wattles, compost socks, berms, etc.) installed, and maintained in accordance with the Stormwater Pollution Prevention Plan (SWPPP).						
	Sediment control BMPs (sediment ponds, traps, filters etc.) have been constructed and functional as the first step of grading.						
	Stormwater runoff from disturbed areas is directed to sediment removal BMP.						
5 Stabilize Soils	Have exposed un-worked soils been stabilized with effective BMP to prevent erosion and sediment deposition?						

Construction Stormwater Site Inspection Form

Element #	Inspection	BMPs Inspected			BMP needs maintenance	BMP failed	Action required (describe in section F)
		yes	no	n/a			
5 Stabilize Soils Cont.	Are stockpiles stabilized from erosion, protected with sediment trapping measures and located away from drain inlet, waterways, and drainage channels?						
	Have soils been stabilized at the end of the shift, before a holiday or weekend if needed based on the weather forecast?						
6 Protect Slopes	Has stormwater and ground water been diverted away from slopes and disturbed areas with interceptor dikes, pipes and or swales?						
	Is off-site storm water managed separately from stormwater generated on the site?						
	Is excavated material placed on uphill side of trenches consistent with safety and space considerations?						
	Have check dams been placed at regular intervals within constructed channels that are cut down a slope?						
7 Drain Inlets	Storm drain inlets made operable during construction are protected.						
	Are existing storm drains within the influence of the project protected?						
8 Stabilize Channel and Outlets	Have all on-site conveyance channels been designed, constructed and stabilized to prevent erosion from expected peak flows?						
	Is stabilization, including armoring material, adequate to prevent erosion of outlets, adjacent stream banks, slopes and downstream conveyance systems?						
9 Control Pollutants	Are waste materials and demolition debris handled and disposed of to prevent contamination of stormwater?						
	Has cover been provided for all chemicals, liquid products, petroleum products, and other material?						
	Has secondary containment been provided capable of containing 110% of the volume?						
	Were contaminated surfaces cleaned immediately after a spill incident?						
	Were BMPs used to prevent contamination of stormwater by a pH modifying sources?						

Construction Stormwater Site Inspection Form

Element #	Inspection	BMPs Inspected			BMP needs maintenance	BMP failed	Action required (describe in section F)
		yes	no	n/a			
9 Cont.	Wheel wash wastewater is handled and disposed of properly.						
10 Control Dewatering	Concrete washout in designated areas. No washout or excess concrete on the ground.						
	Dewatering has been done to an approved source and in compliance with the SWPPP.						
	Were there any clean non turbid dewatering discharges?						
11 Maintain BMP	Are all temporary and permanent erosion and sediment control BMPs maintained to perform as intended?						
12 Manage the Project	Has the project been phased to the maximum degree practicable?						
	Has regular inspection, monitoring and maintenance been performed as required by the permit?						
	Has the SWPPP been updated, implemented and records maintained?						
13 Protect LID	Is all Bioretention and Rain Garden Facilities protected from sedimentation with appropriate BMPs?						
	Is the Bioretention and Rain Garden protected against over compaction of construction equipment and foot traffic to retain its infiltration capabilities?						
	Permeable pavements are clean and free of sediment and sediment laden-water runoff. Muddy construction equipment has not been on the base material or pavement.						
	Have soiled permeable pavements been cleaned of sediments and pass infiltration test as required by stormwater manual methodology?						
	Heavy equipment has been kept off existing soils under LID facilities to retain infiltration rate.						

E. Check all areas that have been inspected. ✔

All in place BMPs ☐ All disturbed soils ☐ All concrete wash out area ☐ All material storage areas ☐
All discharge locations ☐ All equipment storage areas ☐ All construction entrances/exits ☐

F. Elements checked "Action Required" (section D) describe corrective action to be taken. List the element number; be specific on location and work needed. Document, initial, and date when the corrective action has been completed and inspected.

Element #	Description and Location	Action Required	Completion Date	Initials

Attach additional page if needed

Sign the following certification:

"I certify that this report is true, accurate, and complete, to the best of my knowledge and belief"

Inspected by: (print) _____ (Signature) _____ Date: _____

Title/Qualification of Inspector: _____

0 75 150 300 450 600
FEET

LOG YARD AREA CAP
4 FOOT TO 8 FOOT THICK CAP

WET SCRUBBER SLUDGE AREA CAP
10 FOOT TO 13.5+ FOOT THICK CAP

PROPOSED BAKER TANK

TAYLOR WAY

ALEXANDER AVENUE

HYLEBOS WATERWAY

BLAIR WATERWAY

LOG YARD AREA CAP	CONTAMINANT (MG/KG)					
	NWTPH-DX DIESEL RANGE TPH	MOTOR OIL RANGE TPH	ARSENIC	COPPER	LEAD	ZINC
MAXIMUM CONCENTRATION	1720	1030	332	531	211	462
AVERAGE CONCENTRATION	76	277	50	88	47	120
NUMBER OF ANALYSES	48	48	54	54	54	54

NOTES:
ALL ON-SITE STORMWATER COLLECTION MUST REMAIN ON SITE. NO OFFSITE DISCHARGE OF STORMWATER SHALL OCCUR.

STORMWATER COLLECTED IN BAKER TANKS SHALL BE RE-INFILTRATED AT THE SITE OF COLLECTION OR DISCHARGED TO THE SANITARY SEWER UNDER CITY OF TACOMA PERMIT.

WET SCRUPPER SLUDGE AREA CAP	TOTAL CARCINOGENIC POLYCYCLIC AROMATIC HYDROCARBON (MG/KG)
MAXIMUM CONCENTRATION	11
AVERAGE CONCENTRATION	7.33
NUMBER OF ANALYSES	15

LEGEND (ALL DEPTHS ARE BELOW EXISTING GRADE)

XX" DIAMETER (INCHES) / X.X' TRENCH DEPTH (FEET)	STORM SEWER
XX" DIAMETER (INCHES) / X.X' TRENCH DEPTH (FEET)	FIRE/WATER MAIN
XX" TRENCH WIDTH (INCHES) / X.X' TRENCH DEPTH (FEET)	ELECTRIC/COMM LINE
LP X.X'	24" DIA. LIGHTPOLE FOUNDATION FOUNDATION DEPTH (FEET)
HM X.X'	48" DIA. HIGH MAST FOUNDATION FOUNDATION DEPTH (FEET)
CB	EXISTING CATCH BASIN
TV X.X'	16'x8' TREATMENT VAULT VAULT DEPTH (FEET)

VERSION		
NO.	DATE	NOTES
2	05 Mar 18	REVISION
1	01 Mar 18	ORIGINAL

THE NORTHWEST SEAPORT ALLIANCE
WALLENIUS WILHELMSEN
TRANSDEVELOPMENT GROUP

PROJECT	945
FILE	945 Kaise
CTB	tdg-lw.ctb
DESIGNER	METCA
EDIT DATE	3/4/2018
SAVE TIME	2:17:24 PM
PLOT DATE	3/5/2018
PLOT TIME	9:35:35 AM

CSWGP SITE PLAN
PROPOSED AUTOMOTIVE FACILITY
PORT OF TACOMA, WASHINGTON

Materials Management Plan
Port of Tacoma Former Kaiser Aluminum Property
Tacoma, Washington

July 15, 2015

Prepared for

Port of Tacoma
Tacoma, Washington

LANDAU ASSOCIATES
130 2nd Avenue South
Edmonds, WA 98020
(425) 778-0907

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FIGURES

TABLES

APPENDIX

1.0 INTRODUCTION

The purpose of this Materials Management Plan (Plan) is to outline the approach and procedures for managing potentially contaminated soil, waste material, or groundwater encountered during construction activities at the Port of Tacoma (Port) former Kaiser Aluminum property (Site), which is approximately 96 acres of the Blair Hylebos Peninsula in Tacoma, Washington (Figure 1).

Kaiser Aluminum operated an aluminum smelter and manufacturing plant at the Site for over 60 years. Between 2003 and 2010, the Port demolished the smelter complex and placed a 2- to 6-foot (ft)-thick layer of structural fill on approximately 80 of the 96 acres. Areas of likely contamination have been investigated and known contamination has been cleaned up. These areas include the Wet Scrubber Sludge Area (WSSA); the Spent Potlining (SPL) Area; the Rod Mill Area Closed Landfill; the Former Rectifier Yard Area; the Former Log Yard Area; the Rod Mill Former Demister Oil Area; and the Rod Mill Former Stormwater Ditch, South and East Sides. The investigations and cleanup actions are documented in previous reports (e.g., Ecology 2015, Landau Associates 2012, 2013, 2014a,b).

The Site Cleanup Action Plan (Ecology 2015) and Environmental Covenant (Appendix A) restrict activities on the Site, such as activities that will compromise the integrity of the Former Log Yard Area and WSSA caps, and restrict land use to industrial. If construction or development activities are proposed in the Former Log Yard Area or WSSA, the Port must be notified and requirements of the Environmental Covenant must be followed. The Port will coordinate with Ecology regarding required notifications, approvals, and reporting.

This Plan was developed by Landau Associates for use by the Port, Port tenants, and their contractors for routine activities involving limited subsurface disturbance (e.g., utility trenching), and will be provided to all contractors and subcontractors. For larger, non-routine construction projects at the Site involving subsurface disturbance, the Port shall submit for the Washington State Department of Ecology's (Ecology's) review and approval a plan for the management of contaminated material that may be generated in the course of the project. Ecology's approval of such a plan shall not constitute a significant change to the Site Cleanup Action Plan (Ecology 2015).

For the purposes of this document, the organization conducting the work (i.e., the Port or Port tenant) will be termed the "Developer." This document addresses recognition of potential contamination and characterization of potential contamination, as well as issues related to material handling and disposal.

2.0 RECOGNIZING POTENTIALLY CONTAMINATED MATERIALS IN THE FIELD

Contaminated soil and groundwater have been identified at the Site. Although identified contamination has been cleaned up or contained beneath a cap, it is possible that future redevelopment or construction activities at the Site could result in discovery of unanticipated contamination. In the event that potentially contaminated materials are encountered during construction, this Plan should be followed to properly manage those materials.

It is important that field personnel understand how to recognize potentially contaminated material at the Site. For the purposes of this plan, clean material can be distinguished from potentially contaminated material using physical observations. Physical observations include visual and olfactory indications. Previous Site investigations have identified carcinogenic polycyclic aromatic hydrocarbons (cPAHs), diesel- and oil-range total petroleum hydrocarbons, cyanide, and metals at concentrations exceeding the cleanup criteria at the Site. Field personnel should be familiar with the physical appearance of the common soil types present throughout the Site so that potentially contaminated materials can be recognized. The following soil types are common at the Site:

- **Unit A, Fill:** consisting of hydraulically dredged sand and silt; silt, sand, and gravel materials imported from off site; and Blair Waterway dredged silt and sand, and generally located from 0 to at least 15 ft below ground surface (BGS). Groundwater is present in this fill material across most of the Site (Landau Associates 2011). The base of Unit A is at or slightly below the mean high water level in the Hylebos and Blair Waterways (Landau Associates 1987).
- **Unit B, Mudflat Deposit:** consisting of sandy to clayey silt with minor amounts of peat, woody debris, and shell fragments, located throughout the Site, generally below Unit A.

Contamination has previously been associated with the following materials and conditions at the Site:

- **Black Carbon Waste:** includes anode and cathode fragments, petroleum coke fragments, coal, coal tar pitch, duct dust, and wet scrubber sludge. These materials are dark gray to black and range from sand-sized to cobble- or boulder-sized. These materials have elevated concentrations of cPAHs. Known areas where spent pot lining was present have been cleaned up and spent pot lining is not expected to be present in other areas of the Site; however, because it is difficult to differentiate between spent pot lining and other black carbon waste based on field observations, cyanide should be considered as potentially present in black carbon waste. Black carbon waste is typically found within the fill layer. If materials that appear to be black carbon waste are encountered, the materials should be analyzed for cyanide and the steps outlined in Section 3.0 followed.
- **Aluminum Refining Waste:** soil-like material that exhibits unnatural or bright colors (e.g., greenish-gray, white). Greenish-gray to white material that is silt- to sand-sized and has a moderate chemical odor is likely synthetic cryolite and may contain elevated levels of fluoride. White silt- to sand-sized material may also be aluminum oxide (alumina) which is

non-hazardous and inert. If greenish-gray to white materials are encountered, the materials should be analyzed for fluoride and the steps outlined in Section 3.0 followed.

- **Concrete and Other Demolition Waste:** includes concrete, refractory brick, and metal fragments. Size ranges from gravel-sized fragments to cobble- and boulder-sized rubble. It may be found in conjunction with aluminum refining waste and black carbon waste. In some areas, concrete foundations for former buildings and structures may be present within or under fill soil; unless visually stained, concrete foundations may be considered inert waste.
- **Petroleum Hydrocarbons:** petroleum hydrocarbon products, such as gasoline, diesel, and motor oil. Contamination may be present in soil or groundwater and typically exhibits one or more of the following characteristics: iridescent sheen, black and greasy appearance, petroleum odor, and dark staining in soil. Creosote-treated railroad ties have been found in areas where rail spurs were covered with fill soil. Polychlorinated biphenyls (PCBs) have previously been found in soil in the Former Rectifier Yard Area.
- **Wood Waste and Slag:** located beneath 4 to 8 ft of a clean soil cap in the Former Log Yard Area. The Asarco slag is a waste byproduct of smelting copper from arsenic- and lead-bearing ores. The slag is generally dark brown in color, can vary in size from sand- to gravel-sized material to a large mass, and is similar in appearance to volcanic rock (EPA 2000). The slag and associated wood waste and soil may contain elevated concentrations of arsenic, copper, zinc, and lead.
- **Underground storage tanks (USTs):** undocumented USTs may be present in the vicinity of former buildings, and may contain heating oil or other petroleum products.

If these materials or comparable conditions are observed during construction activities, the Developer representative shall be notified and this plan implemented.

3.0 SUMMARY OF MANAGING UNANTICIPATED CONTAMINATED MATERIAL

Areas of contamination have been investigated and known contamination has been addressed. However, if potentially contaminated materials are encountered, the following sequence will be implemented:

1. Potentially contaminated materials will be identified by the construction contractor through physical observations (see Section 2.0).
2. The construction contractor will notify the appropriate Developer personnel.
3. The affected material may be stockpiled and tested to determine waste profiling at the direction of the Developer.
4. Samples will be collected for laboratory testing. Results will be compared to the soil and groundwater screening levels presented in Table 1 and Table 2. All results will be reported to the Developer in a timely manner.
5. Soil may be left in place or reused on site if analytical results do not exceed soil screening levels (Table 1).
6. Soil, waste material, and/or water that are determined to be contaminated will be profiled by a Developer representative for disposal at an appropriate waste disposal/treatment facility.
7. Once the waste profile is accepted by the selected waste disposal/treatment facility, the soil, waste material, and/or groundwater will be transported to the selected facility for treatment or disposal. The facility will be notified in advance of the approximate quantity and type of material being transported.
8. Once the unanticipated contaminated material is removed, the area will be re-inspected for potentially contaminated materials.
9. If work is being conducted by a tenant rather than the Port, the tenant will notify the Port when contaminated soil, waste material, and/or water with concentrations above the Site cleanup levels are discovered (Table 1 and Table 2). The tenant will also notify the Port when the unanticipated contaminated material has been removed.

All excavation and associated activities that place workers in contact with unanticipated contaminated material will be conducted by workers that have proper Occupational Safety and Health Administration (OSHA) and Washington Industrial Safety and Health Act (WISHA) training and certification for working at a hazardous waste site. All work conducted by the contractor related to the excavation and handling of unanticipated contaminated materials will be conducted under a contractor-prepared health and safety plan.

4.0 MATERIAL SCREENING AND CHARACTERIZATION

This section describes the procedures that will be used to field screen potentially contaminated materials and characterize unanticipated contaminated materials for disposal purposes.

4.1 FIELD SCREENING OF UNANTICIPATED CONTAMINATED MATERIALS

The following field screening methods will generally be used to evaluate potentially contaminated materials:

- Petroleum sheen testing
- Chemical vapor screening with a photoionization detector (PID) or similar equipment
- Comparison of material to documented contaminated materials previously encountered at the Site, as listed in Section 2.0.

Sheen testing will be conducted on soil that exhibits evidence of petroleum hydrocarbons. The sheen test is conducted by placing a representative sample of the soil in a clear glass jar with tap water. The jar will be agitated and amount of sheen (light, medium, or heavy) will be observed and recorded. Materials exhibiting petroleum sheen will be considered potentially contaminated.

Screening with the PID (or equivalent) will be conducted on materials exhibiting a petroleum or chemical odor to determine if volatile organic compounds (VOCs) are present. PID screening is conducted by placing a representative sample of the soil in a sealed plastic bag. The bag and soil will be agitated, allowed to stand for 5 minutes, and then a headspace reading will be taken of vapor in the bag using the PID. A sustained reading above background or ambient conditions will be used as a general indication of the presence of VOCs. The PID will be capable of detecting most common aromatic and aliphatic hydrocarbon compounds.

Materials exhibiting potential contamination characteristics (as presented in Section 2.0), such as unnatural colored soil or debris, will be considered potentially contaminated material. The material will be considered unanticipated contaminated material if the results of laboratory testing exceed the screening criteria on Table 1 or Table 2.

Soil screening will typically be conducted in areas of potential contamination and will generally guide the collection of samples for analytical testing. Should potentially contaminated soil be excavated, the screening will generally be conducted for approximately every 20 loose cubic yards of excavated soil from the area. The frequency of field screening may be more or less, as needed, depending on the conditions encountered and whether there are varying soil types and levels of impact.

4.2 WASTE CHARACTERIZATION

Soil and water samples will be collected, as necessary, to determine the disposition of unanticipated contaminated material.

Characterization samples will be tested consistent with the type of potential contamination observed in the field (e.g., motor oil-range hydrocarbons, cPAHs, cyanide, fluoride, metals) and potentially associated contaminants identified in Section 2.0. The testing protocol will be consistent with the requirements of the destination waste disposal/treatment facility.

4.2.1 SOIL SAMPLE COLLECTION PROCEDURES

Soil samples will be collected from potentially contaminated material. A shallow hole will be hand-dug at each sample location using decontaminated hand implements, including stainless-steel spoons and steel shovels, picks, and similar equipment. The sidewall surface of the hand-dug hole sidewalls will be scraped to expose a fresh surface for sample collection. Soil will be collected using a decontaminated stainless-steel spoon, placed in a decontaminated stainless-steel bowl, homogenized, and transferred to the appropriate sample container. Material greater than about ¼ inch will be removed from the sample prior to placing the soil in the sample container.

4.2.2 WATER SAMPLE COLLECTION PROCEDURES

Water samples will be collected, as needed, to characterize potentially contaminated water encountered during construction activities (e.g., surface water or groundwater within an excavation). Water samples will be collected into the appropriate laboratory-supplied sample containers. Samples collected for metals analyses will be field filtered. Samples will be chilled to 4°C immediately after collecting the sample. Clean gloves will be worn when collecting each sample.

4.2.3 SAMPLE TRANSPORTATION AND HANDLING

The transportation and handling of samples will be accomplished in a manner that protects the integrity of the sample. Samples will be kept in coolers on ice until delivery to the analytical laboratory. Samples will be logged on a chain-of-custody (COC) form. The COC form will accompany each shipment of samples to the laboratory.

5.0 DECONTAMINATION PROCEDURES

The following sections describe decontamination procedures for reusable sampling utensils and heavy construction equipment.

5.1 SAMPLING EQUIPMENT DECONTAMINATION

Reusable sampling utensils will be decontaminated before collecting each sample to avoid cross-contamination between samples. Decontaminated sampling utensils will be handled in a manner that minimizes contact with potentially contaminated surfaces. Between sampling events, all nondedicated equipment will be stored in a manner (e.g., in a plastic bag) that protects them from inadvertent contamination.

Decontamination of sampling equipment will consist of the following steps:

- Spray or scrub soiled equipment
- Wash with an Alconox (or equivalent) soap-water solution
- Rinse with tap water
- Rinse with de-ionized or distilled water.

If sampling equipment becomes coated (e.g., with oil), the equipment may require application of a cleaning solvent (typically hexane, sprayed from a bottle) and subsequent wipe-down as an additional decontamination step.

5.2 HEAVY EQUIPMENT DECONTAMINATION

Heavy equipment used for sampling, excavating, or hauling contaminated soil will be decontaminated by the contractor, using dry decontamination procedures. Dry decontamination procedures consist of using a shovel or brush to wipe equipment to remove soil, and ensuring that soil removed is disposed with contaminated soil. If heavy equipment becomes coated (e.g., with oil), the contractor will establish a decontamination area and use a high-pressure water washer, or suitable equivalent methodology, to complete decontamination. The decontamination area will consist of a designated area large enough for equipment (e.g., dump trucks, excavators, etc.) to drive on. The decontamination area will be bermed and lined to prevent runoff. Use of a tire wash to prevent track-out of solids is a stormwater best management practice for construction and earthmoving work; heavy equipment will pass through a tire wash station prior to leaving the Site. The condition and usability of the decontamination area will be monitored as needed. The contractor will be responsible for keeping the decontamination area intact and functioning. Water from the decontamination process will be collected

and managed as required by the Specifications applicable to a specific future construction and/or development project.

6.0 WASTE MANAGEMENT

This section provides information about how unanticipated contaminated soil and waste materials will be handled.

6.1 PLAN FOR INSTRUCTING WORKERS

Excavation supervisors and workers will be provided with training and other information from this Plan about the nature of hazardous substances that are potentially present in the soil they are excavating, and how to identify potentially contaminated soil (Section 2.0). These personnel will have the authority to stop excavation operations and request direction and assistance in evaluating materials that appear to be potentially contaminated.

6.2 EXCAVATION, LOADING, HAULING, AND TRANSPORT METHODS

Guidelines and general information about the handling of excavated materials are provided in this section.

6.2.1 EXCAVATION

Excavation will be conducted with the appropriate excavating equipment. Dewatering, draining, or absorption of any free water may become necessary. Dewatering methods include varying types of site groundwater handling that lower the groundwater table and remove water from the excavation (e.g., dewatering by excavation sump pump).

6.2.2 LOADING

Soil will be directly loaded into trucks for transport to export destination sites to the extent practicable. The moisture and consistency of soil will be monitored to ensure that materials loaded are in a condition suitable to prevent spills during transit to stockpile locations or other destination areas. Whether the soil is contaminated or not, the truck will pass through a tire-wash station prior to leaving the Site to prevent track-out of solids.

6.2.3 TRANSPORT

Soil transport to offsite locations will be monitored to ensure that the cargo is fully contained and protected in transit, and in compliance with local, state, and federal transportation requirements. In general, truck and trailer combinations will be used.

6.3 SOIL STOCKPILES

Contaminated soil may be stockpiled for temporary storage prior to loading for disposal. Stockpile locations and layouts will be determined when contaminated soil is identified. The stockpile area will be lined to prevent infiltration of water to the underlying soil, and bermed to prevent surface water runon/runoff. Unanticipated contaminated soil stockpiles will be kept separate from any other stockpiled soil or debris. The contractor will maintain the stockpile area(s) and will cover stockpile(s) to protect the soil from precipitation on an as-needed basis. Lists and inventory of stockpile materials will be documented by the contractor. Soil stockpiles will be removed and disposed or reused based on the results of analytical testing. Stockpiles of unanticipated contaminated soil will be removed from the Site within 90 days of receipt of analytical results.

6.4 DISPOSAL FACILITIES

Specific disposal facilities will be identified by the Developer for the acceptance of contaminated soil and water potentially generated by a project. Soil can either be disposed at a solid waste landfill or at an inert waste landfill, depending on the nature of contamination and chemical concentrations. Disposal of solid waste in a Pierce County facility is regulated by Tacoma-Pierce County Health Department; their Waste Disposal Authorization Process must be completed prior to disposal of materials. Black carbon material that contains cyanide will be disposed as spent pot liner at a hazardous waste landfill. Criteria for disposal of affected Site soil should be determined for the specific disposal facilities identified to receive contaminated Site materials.

Profiling, manifesting, and testing requirements are generally similar for all solid waste facilities. Sufficient generator information and representative sample analytical data are needed to properly characterize and profile the material. Each facility's permit has site-specific restrictions on the types of waste that can be accepted, which is addressed in the profiling process. Bills of lading are used to document non-dangerous waste disposal. Hazardous waste manifests are used to transport and document dangerous waste disposal.

7.0 REPORTING

If unanticipated contamination is encountered during construction activities, the findings, resulting actions implemented, and remaining Site conditions will be reported to Ecology. If the Port is conducting the project, the Port will determine the appropriate method of reporting in consultation with Ecology. If the project is being conducted by a tenant, the tenant and the Port will consult with Ecology to determine the appropriate reporting method.

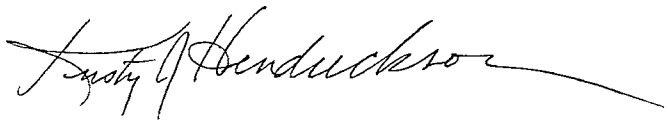
8.0 USE OF THIS PLAN

This Materials Management Plan has been prepared for the exclusive use of the Port of Tacoma and applicable regulatory agencies for specific application to the Port of Tacoma former Kaiser Aluminum property. This Plan was developed for the Port as a general plan for potential future development; third party use of information, conclusions, and recommendations provided herein shall be at the user's sole risk. Landau Associates warrants that within the limitations of scope, schedule, and budget, our services have been provided in a manner consistent with that level of care and skill ordinarily exercised by members of the profession currently practicing in the same locality under similar conditions as this project. We make no other warranty, either express or implied.

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

LANDAU ASSOCIATES, INC.

Rachel Morgan, E.I.T.
Senior Staff Engineer



Kristy Hendrickson, P.E.
Principal

RMM/KJH/kes

9.0 REFERENCES

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Landau Associates. 2014a. *Interim Action Completion Report, Spent Pot Lining Area, Former Kaiser Aluminum Property, 3400 Taylor Way, Tacoma, Washington.* Prepared for the Port of Tacoma. April 14.

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Landau Associates. 2012. *Final Remedial Investigation/Feasibility Study, Former Kaiser Aluminum Property, 3400 Taylor Way, Tacoma, Washington.* Prepared for the Port of Tacoma. August 23.

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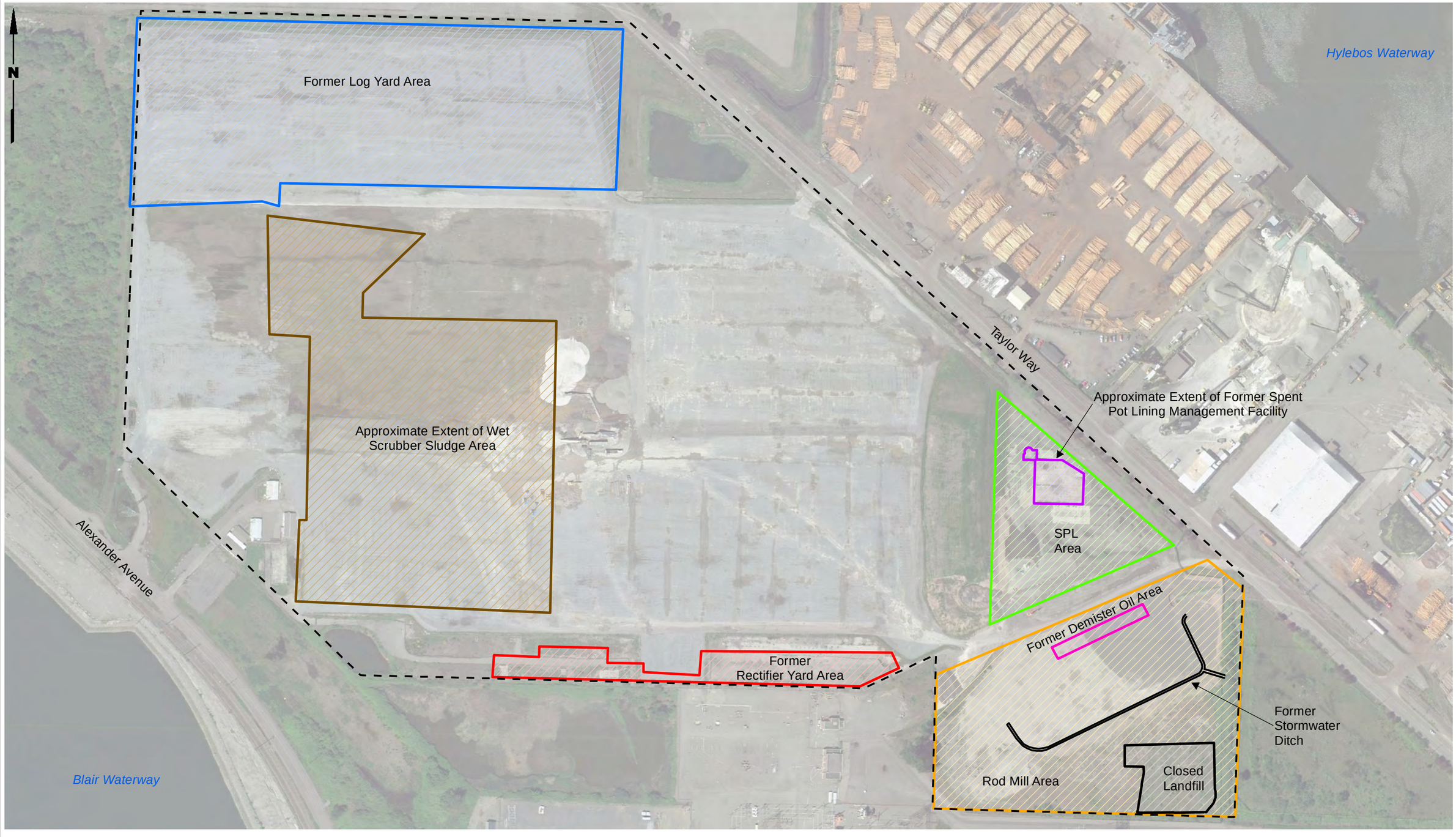
Landau Associates. 1987. *Final Ground Water Monitoring Report, Kaiser Wet Scrubber Sludge, Management Area, Kaiser Tacoma Works, Tacoma, Washington.* July.



G:\Projects\118\03410\011\Figure 1 Kaiser Site Plan 2010.mxd 6/22/2015 NAD 1983 StatePlane Washington South FIPS 4602 Feet

Legend

Site Boundary

0 240 480

Scale in Feet

Note

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

Data Source: Jacobs Engineering; Pierce County Assessor; Google Earth Pro 2010

LANDAU ASSOCIATES

Port of Tacoma Tacoma, Washington	**Kaiser Site Plan**	Figure 1

TABLE 1
SOIL SCREENING LEVELS FOR DETECTED CONSTITUENTS
KAISER MATERIALS MANAGEMENT PLAN
TACOMA, WASHINGTON

Constituent	MTCA Method C Screening Level
METALS (mg/kg)	
Arsenic	20
Copper	36
Chromium (a)	1,000,000
Lead	1,000
Zinc	100
PAHs (µg/kg)	
Benzo(a)pyrene	350
Benzo(a)anthracene	130
Benzo(b)fluoranthene	440
Benzo(k)fluoranthene	440
Chrysene	140
Dibenzo(a,h)anthracene	640
Indeno(1,2,3-cd)pyrene	1,200
Total cPAH - benzo(a)pyrene TEQ (b)	2,000
PCBs (mg/kg)	
Total PCBs	2.0
PETROLEUM HYDROCARBONS (mg/kg)	
Diesel-Range Organics	2,000
Oil-Range Organics	2,000
Mineral Oil-Range Organics	4,000
CONVENTIONALS (mg/kg)	
Cyanide	3,200

mg/kg = milligrams per kilogram
PAH = polycyclic aromatic hydrocarbon
PCB = polychlorinated biphenyls
TEQ = toxicity equivalency quotient
MTCA = Model Toxics Control Act

(a) Cleanup levels are for Chromium III.
(b) A TEQ will be calculated for each sample containing carcinogenic PAHs above reporting limits and compared to the benzo(a)pyrene screening level in accordance with 173-340-708(8)(e).

TABLE 2
GROUNDWATER WATER SCREENING LEVELS FOR DETECTED CONSTITUENTS
KAISER MATERIALS MANAGEMENT PLAN
TACOMA, WASHINGTON

Constituent	MTCA Method B Screening Level
VOLATILES (µg/L)	
1,1-Dichloroethane	--
1,2,4-Trimethylbenzene	--
1,3,5-Trimethylbenzene	--
2-Butanone	--
4-Isopropyltoluene	--
4-Methyl-2-Pentanone (MIBK)	--
Acetone	--
Benzene	23
Carbon Disulfide	--
Chloroform	283
Ethylbenzene	2,100
Isopropylbenzene	--
m,p-Xylene	--
Methylene Chloride	590
Naphthalene	4,900
n-Butylbenzene	--
n-Propylbenzene	--
o-Xylene	--
sec-Butylbenzene	--
Toluene	15,000
Total xylene	--
Vinyl Chloride	2.4
PAHs (µg/L)	
1-Methylnaphthalene	--
2-Methylnaphthalene	--
Acenaphthene	640
Acenaphthylene	--
Anthracene	26,000
Benzo(g,h,i)perylene	--
Dibenzofuran	--
Fluoranthene	90
Fluorene	3,500
Naphthalene	4,900
Phenanthrene	--
Pyrene	2,600
cPAHs (µg/L)	
Benzo(a)pyrene	0.018
Benzo(a)anthracene	0.020
Benzo(b)fluoranthene	0.018
Benzo(k)fluoranthene	0.036
Chrysene	0.019
Dibenzo(a,h)anthracene	0.018
Indeno(1,2,3-cd)pyrene	0.018
TEQ (a)	0.030

TABLE 2
GROUNDWATER WATER SCREENING LEVELS FOR DETECTED CONSTITUENTS
KAISER MATERIALS MANAGEMENT PLAN
TACOMA, WASHINGTON

Constituent	MTCA Method B Screening Level
PCBs (µg/L)	
Aroclor 1016	0.020
Aroclor 1242	--
Aroclor 1248	--
Aroclor 1254	0.020
Aroclor 1260	--
Aroclor 1221	--
Aroclor 1232	--
Total PCBs	0.020
TOTAL METALS (µg/L)	
Arsenic	8.0
Cadmium	8.8
Chromium (total)	50
Chromium III	240,000
Chromium VI	50
Copper	20
Lead	10
Mercury	0.15
Zinc	160
PETROLEUM HYDROCARBONS (mg/L)	
Diesel Range	0.5
Motor Oil Range	0.5
CONVENTIONALS (mg/L)	
Total Cyanide	16
WAD Cyanide (b)	0.01

µg/L = micrograms per liter
mg/L = milligrams per liter
-- Indicates no screening level criteria available.
PAH = polycyclic aromatic hydrocarbons
cPAH = carcinogenic PAH
PCB = polychlorinated biphenyl
TEQ = toxiccity equivalency quotient
MTCA = Model Toxics Control Act

(a) A TEQ would be completed for each sample containing carcinogenic PAHs above reporting limits and compared to the benzo(a)pyrene screening level in accordance with WAC 173-340-708(8)(e). However, federal criteria are established for individual cPAHs.
(b) National Recommended Water Quality Criteria is expressed as free cyanide.

APPENDIX A

Environmental Covenant

After Recording Return
Original Signed Covenant to:
Marv Coleman
Toxics Cleanup Program
Department of Ecology
300 Desmond Drive
Lacey, WA 98503-1274

Environmental Covenant

Grantor: Port of Tacoma
Grantee: State of Washington, Department of Ecology
Brief Legal Description: Southwest quarter and west half of southwest quarter of southeast quarter, Section 36, Township 21 North, Range 3 East of Willamette Meridian
Tax Parcel Nos.: 03-21-36-3-013; 03-21-36-3-033; 03-21-36-3-034; 03-21-36-3-037
Cross Reference: None

RECITALS

a. This document is an environmental (restrictive) covenant (hereafter "Covenant") executed pursuant to the Model Toxics Control Act ("MTCA"), chapter 70.105D RCW and Uniform Environmental Covenants Act ("UECA"), chapter 64.70 RCW.

b. This Restrictive Covenant applies to (i) a portion of Pierce County tax parcel number 03-21-36-3-013; (ii) a portion of Pierce County tax parcel number 03-21-36-3-033; (iii) a portion of Pierce County tax parcel number 03-21-36-3-034; and (iv) a portion of Pierce County tax parcel number 03-21-36-3-037. All tax parcels are part of a site commonly known as the Kaiser site, WAD No. 001882984; the Kaiser site is legally described in Exhibit "A" and has Ecology Facility Site I.D # 38. The portions of each parcel to which this Restrictive Covenant attaches are depicted in Exhibit "B" and are collectively referred to hereinafter as the "Property".

c. The Property is the subject of remedial action under MTCA. This Covenant is required because residual contamination remains on the Property after completion of remedial actions. Specifically, the following principle contaminants remain on the Property:

Medium	Principle Contaminants Present
Soil and/or Groundwater	Diesel- and oil-range petroleum hydrocarbons, cyanide, fluoride, metals, and/or carcinogenic polycyclic aromatic hydrocarbons (cPAHs)

d. It is the purpose of this Covenant to restrict certain activities and uses of the Property to protect human health and the environment and the integrity of remedial actions conducted at the

site. Records describing the extent of residual contamination and remedial actions conducted are available through the Washington State Department of Ecology. This includes the following documents: Remedial Investigation and Feasibility Study and Cleanup Action Plan.

e. This Covenant grants the Washington State Department of Ecology, as holder of this Covenant, certain rights specified in this Covenant. The right of the Washington State Department of Ecology as a holder is not an ownership interest under MTCA, Chapter 70.105D RCW or the Comprehensive Environmental Response, Compensation, and Liability Act ("CERCLA") 42 USC Chapter 103.

COVENANT

Port of Tacoma, as Grantor and fee simple owner of the Property hereby grants to the Washington State Department of Ecology, and its successors and assignees (hereafter "Ecology"), the following covenants. Furthermore, it is the intent of the Grantor that such covenants shall run with the land and be binding on all current and future owners of any portion of, or interest in, the Property.

Section 1. General Restrictions and Requirements.

The following general restrictions and requirements shall apply to the Property:

a. Interference with Remedial Action. The Grantor shall not engage in any activity on the Property that may impact or interfere with the remedial action and any operation, maintenance, inspection or monitoring of that remedial action without prior written approval from Ecology.

b. Protection of Human Health and the Environment. The Grantor shall not engage in any activity on the Property that may threaten continued protection of human health or the environment without prior written approval from Ecology. This includes, but is not limited to, any activity that results in the release of residual contamination that was contained as a part of the remedial action or that exacerbates or creates a new exposure to residual contamination remaining on the Property.

c. Continued Compliance Required. Grantor shall not convey any interest in any portion of the Property without providing for the continued adequate and complete operation, maintenance and monitoring of remedial actions and continued compliance with this Covenant.

d. Leases. Grantor shall restrict any lease for any portion of the Property to uses and activities consistent with this Covenant and notify all lessees of the restrictions on the use of the Property.

e. Amendment to the Covenant. Grantor must notify and obtain approval from Ecology at least sixty (60) days in advance of any proposed activity or use of the Property in a manner that is inconsistent with this Covenant.[1] Before approving any proposal, Ecology must issue a public notice and provide an opportunity for the public to comment on the proposal. If Ecology approves the proposal, the Covenant will be amended to reflect the change.

[1] Examples of inconsistent uses are: using the Property for a use not allowed under the covenant (for example, mixed residential and commercial use on a property that is restricted to industrial uses); OR drilling a water supply well when use of the groundwater for water supply is prohibited by the Covenant.

Section 2. Specific Prohibitions and Requirements.

In addition to the general restrictions in Section 1 of this Covenant, the following additional specific restrictions and requirements shall apply to the Property.

a. Land use.

Industrial Land Use: The remedial action for the Property is based on a cleanup designed for industrial land use. As such, the Property shall be used in perpetuity only for industrial land uses as that term is defined in the rules promulgated under Chapter 70.105D RCW. All non-industrial land use is prohibited on the Property.

b. Containment of soil.

The remedial action for the Property is based on removal of waste and contaminated soil, containing contaminated soil in two areas, and monitoring groundwater until it is demonstrated that contaminated groundwater is not migrating off of the Property. The Former Log Yard Area and the Wet Scrubber Sludge Area are capped with clean soil. Exhibit B shows the approximate locations of these two capped areas. The primary purpose of the caps is to contain contamination and mitigate risk of direct human contact with contaminated soils. As such, the following restrictions shall apply within the area illustrated in Exhibit B:

i) With the exception of activities carried out consistent with Section 2 (b)(ii), any activity on the Property that will compromise the integrity of the caps including: drilling; digging; piercing the cap with sampling device, post, stake or similar device; grading; excavation; installation of underground utilities; removal of the cap; or, application of loads in excess of the cap load bearing capacity, is prohibited without prior written approval by Ecology. The Grantor shall report to Ecology within forty-eight (48) hours of the discovery of any damage to the cap. Unless an alternative plan has been approved by Ecology in writing, the Grantor shall promptly repair the damage and submit a report documenting this work to Ecology within thirty (30) days of completing the repairs.

ii) Activities that temporarily disturb the capped areas, such as utility trenching or other maintenance actions and construction activities, shall restore the protective cap upon conclusion of the activity. Intrusive activities in the capped areas that involve worker contact with contaminated soil and/or groundwater shall be conducted by individuals that have the appropriate training and certifications for working on hazardous waste sites and in conformance with a Site-specific health and safety plan. Prior to conducting any activities that will disturb the capped areas; the Grantor shall provide written notice to Ecology.

c. Cap inspection

The Former Log Yard Area cap shall be inspected on a periodic basis and repairs completed as necessary if the cap is damaged due to site industrial activity or natural events.

d. Five year review

The Property is subject to five year reviews by Ecology to evaluate whether human health and the environment are being protected, including review of groundwater use and groundwater and cap monitoring results. Monitoring will be conducted in accordance with the Cleanup Action Plan and may be discontinued or adjusted with approval of Ecology.

Section 3. Access.

a. The Grantor shall maintain clear access to all remedial action components necessary to construct, operate, inspect, monitor and maintain the remedial action.

b. The Grantor freely and voluntarily grants Ecology and its authorized representatives, upon reasonable notice, the right to enter the Property at reasonable times to evaluate the effectiveness of this Covenant and associated remedial actions, and enforce compliance with this Covenant and those actions, including the right to take samples, inspect any remedial actions conducted on the Property, and to inspect records related to the remedial action.

c. No right of access or use by a third party to any portion of the Property is conveyed by this instrument.

Section 4. Notice Requirements.

a. Conveyance of Any Interest. The Grantor, when conveying any interest in any part of the Property, including but not limited to title, easement, leases, and security or other interests, must:

i. Notify Ecology at least thirty (30) days in advance of the conveyance.

ii. Include in the conveying document a notice in substantially the following form, as well as a complete copy of this Covenant:

NOTICE: THIS PROPERTY IS SUBJECT TO AN ENVIRONMENTAL COVENANT GRANTED TO THE WASHINGTON STATE DEPARTMENT OF ECOLOGY ON [_____] AND RECORDED WITH THE PIERCE COUNTY AUDITOR UNDER RECORDING NUMBER [_____]. USES AND ACTIVITIES ON THIS PROPERTY MUST COMPLY WITH THAT COVENANT, A COMPLETE COPY OF WHICH IS ATTACHED TO THIS DOCUMENT.

iii. Unless otherwise agreed to in writing by Ecology, provide Ecology with a complete copy of the executed document within thirty (30) days of the date of execution of such document.

b. Reporting Violations. Should the Grantor become aware of any violation of this Covenant, Grantor shall promptly report such violation to Ecology.

c. Emergencies. For any emergency or significant change in site conditions due to Acts of Nature (for example, flood, fire) resulting in a violation of this Covenant, the Grantor is authorized to respond to such an event in accordance with state and federal law. The Grantor must notify Ecology of the event and response actions planned or taken as soon as practical but no later than within 24 hours of the discovery of the event.

d. Any required written notice, approval, or communication shall be personally delivered or sent by first class mail to the following persons. Any change in this contact information shall be submitted in writing to all parties to this Covenant.

Scott Hooton Port of Tacoma PO Box 1837 Tacoma, WA 98401-1837 (253) 383-9428	Environmental Covenants Coordinator Washington State Department of Ecology Toxics Cleanup Program P.O. Box 47600 Olympia, WA 98504 – 7600 (360) 407-6000

As an alternative to providing written notice and change in contact information by mail, these documents may be provided electronically in an agreed upon format at the time of submittal.

Section 5. Modification or Termination.

a. If the conditions at the Property requiring a Covenant have changed or no longer exist, then the Grantor may submit a request to Ecology that this Covenant be amended or terminated. Any amendment or termination of this Covenant must follow the procedures in Chapter 64.70 RCW and Chapter 70.105D RCW and any rules promulgated under these chapters.

Section 6. Enforcement and Construction.

a. This Covenant is being freely and voluntarily granted by the Grantor.

b. Grantor shall provide Ecology with an original signed Covenant and proof of recording within ten (10) days of execution of this Covenant.

c. Ecology shall be entitled to enforce the terms of this Covenant by resort to specific performance or legal process. All remedies available in this Covenant shall be in addition to any and all remedies at law or in equity, including Chapter 70.105D RCW and Chapter 64.70 RCW. Enforcement of the terms of this Covenant shall be at the discretion of Ecology, and any forbearance, delay or omission to exercise its rights under this Covenant in the event of a breach of any term of this Covenant is not a waiver by Ecology of that term or of any subsequent breach of that term, or any other term in this Covenant, or of any rights of Ecology under this Covenant.

d. The Grantor, upon request by Ecology, shall be obligated to pay for Ecology's costs to process a request for any modification or termination of this Covenant and any approval required by this Covenant.

e. This Covenant shall be liberally construed to meet the intent of the Model Toxics Control Act, chapter 70.105D RCW and Uniform Environmental Covenants Act, chapter 64.70 RCW.

f. The provisions of this Covenant shall be severable. If any provision in this Covenant or its application to any person or circumstance is held invalid, the remainder of this Covenant or its application to any person or circumstance is not affected and shall continue in full force and effect as though such void provision had not been contained herein.

g. A heading used at the beginning of any section or paragraph or exhibit of this Covenant may be used to aid in the interpretation of that section or paragraph or exhibit but does not override the specific requirements in that section or paragraph.

The undersigned Grantor warrants he/she holds the title to the Property and has authority to execute this Covenant.

EXECUTED this _____ day of _____, 20___.

PORT OF TACOMA

_____
John Wolfe, Chief Executive Officer

Program Manager

Dated: _____

STATE OF WASHINGTON

_____
James Pendowski
Program Manager, Toxics Cleanup Program,

DEPARTMENT OF ECOLOGY

Dated: _____

GRANTOR INDIVIDUAL ACKNOWLEDGMENT

STATE OF _____
COUNTY OF _____

On this _____ day of _____, 20__, I certify that _____ personally appeared before me, and acknowledged that **he/she** is the individual described herein and who executed the within and foregoing instrument and signed the same at **his/her** free and voluntary act and deed for the uses and purposes therein mentioned.

_____
Notary Public in and for the State of
Washington, residing at _____.
My appointment expires_____.

GRANTOR CORPORATE ACKNOWLEDGMENT

STATE OF _____
COUNTY OF _____

On this _____ day of _____, 20__, I certify that _____ personally appeared before me, acknowledged that **he/she** is the _____ of the corporation that executed the within and foregoing instrument, and signed said instrument by free and voluntary act and deed of said corporation, for the uses and purposes therein mentioned, and on oath stated that **he/she** was authorized to execute said instrument for said corporation.

_____
Notary Public in and for the State of
Washington, residing at _____.
My appointment expires_____.

Exhibit A

LEGAL DESCRIPTION

Tax Parcel A

That certain property situated in the southwest quarter of the southeast quarter and the southwest quarter of Section 36, Township 21 North, Range 3 East of the W.M., as shown on a certain Pierce County Record of Survey drawing recorded under Auditor's No. 8512030273 in Pierce County, Washington, lying southwesterly of the southerly right of way line of Taylor Way, more particularly described as follows:

Beginning at a point on the south line of said Section 36, being the southeast corner of the southwest quarter (the south quarter corner) of said Section 36; thence north 89°00'20" west, 163.91 feet along the south line of said Section 36; thence north 00°02'09" east, 416.30 feet along the east line of Bonneville Power Administration Substation Site (BPA) property recorded under Auditor's No. 1378605; thence south 63°32'10" west 211.50 feet along the northeasterly line of said BPA's property; thence continuing north 89°57'51" west, 1172.22 feet along the north line of said BPA's property to the northwest corner of said BPA property, said point being the northeast corner of a tract of land conveyed to the Port of Tacoma, recorded under Auditor's No. 1919462; thence continuing north 89°57'51" west 189.18 feet along the north line of Port of Tacoma property; thence north 47°16'01" west 829.39 feet along the northeasterly property line of the Port of Tacoma, recorded under Auditor's No. 1919462 to the east line of a tract of land conveyed to the Port of Tacoma, recorded under Auditor's No. 8110260223; thence north 01°14'50" east, 757.30 feet parallel with the west line of the northwest quarter of the southwest quarter of said Section 36, to the southwest corner of a tract of land conveyed to Kaiser Aluminum and Chemical Corporation recorded under Auditor's Nos. 8110260224 and 1440041; thence north 00°0'0" east 411.54 feet along the west line of said Kaiser Aluminum's property, Auditor's No. 8110260224 to the northwest corner of said tract of land; thence north 90°00'00" east, 1319.70 feet along the north line of said property, to the southerly right of way line of Taylor Way; thence south 49°19'39" east, 678.23 feet along the southerly right of way line of said Taylor Way, to a brass plug monument at the intersection of the southerly right of way line of Taylor Way with the northerly line of the south half of the south half of the northeast quarter of the southwest quarter of said Section 36, as described in auditor's no. 8110260224; thence continuing south 49°19'39" east, 1549.37 feet along the southerly right of way line of said Taylor Way to the east line of the west half of the southwest quarter of the southeast quarter of said Section 36; thence south 00°43'04" west, 651.47 feet along the east line of the west half of said subdivision to the south line of Section 36; thence north 89°42'41" west, 647.71 feet along the south line of said Section 36 to the south quarter corner of said Section 36, Township 21 North, Range 3 East of the W.M., and the point of beginning.

Tax Parcel B

A non-exclusive easement for the purpose of placement, operation and maintenance of a drainage pipe as granted by instrument recorded under recording number 9309220180.

Situate in the City of Tacoma, County of Pierce, State of Washington.

Exhibit B

PROPERTY MAP

Note
1. This area is capped with clean soil. Activities that may disturb the cap are subject to the restrictions described in Section 2 of the Environmental Covenant.
2. The Former Log Yard Area cap shall be inspected and repaired as described in Section 2 of the Environmental Covenant.
3. Groundwater monitoring shall be conducted in this area as described in the Cleanup Action Plan.
4. The Kaiser Property is restricted to industrial land use. Property groundwater use is restricted as described in the Environmental Covenant.
5. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

Legend

Site Boundary

0 240 480

Scale in Feet

Data Source: Jacobs Engineering; Pierce County Assessor; Google Earth Pro 2010

LANDAU ASSOCIATES

Port of Tacoma Tacoma, Washington	**Kaiser Site Plan**	Exhibit B

G:\Projects\1180340100\011\Exhibit B Kaiser Site Plan Modified.mxd 8/4/2015 NAD 1983 StatePlane Washington South FIPS 4602 Feet

APPENDIX E

Permits

SPECIAL AUTHORIZATION
TO
DISCHARGE TO THE CITY OF TACOMA'S
SANITARY SEWER SYSTEM

In accordance with Tacoma Municipal Code section 12.08.365 and subject to the conditions contained in Chapter 12.08 and in this Authorization, the entity specified herein is authorized to discharge to the City of Tacoma's (City) *sanitary sewer system*:

18-008 5/7/18
SAD No. Received by Date

Port of Tacoma Carol Rhodes, 253-592-6703
Name of Responsible Company, Authorized Representative, Phone No.

P.O. Box 1837, Tacoma, WA 98401
Address of Company, Street, City, State, ZIP

Port of Tacoma
Name of Property Owner, Phone number

P.O. Box 1837, Tacoma, WA 98401
Address of Property Owner, Street, City, State, ZIP

3400 Taylor Way, Tacoma 98421
Address of Discharge Location, Street, City

A. PURPOSE OF DISCHARGE:

This Special Approved Discharge Authorization (SAD or Authorization) regulates the disposal of contaminated ground and/or surface water, from construction activities of the new Auto Import Terminal Project. All captured water must be kept in tanks and held for analytical testing. Port of Tacoma (Authorized Discharger) must provide enough tankage to accommodate the length of time necessary for a contract laboratory to analyze the sample and provide preliminary analyses. Discharging will be on a **batch** basis after permission has been granted by the City. This is a for-fee authorization.

B. DISCHARGE CONDITIONS:

1. Flow Limitations and Monitoring Requirements:

   Based on the sanitary systems, the Authorized Discharger is limited to a flow rate based on specific manholes (MH); please see **Discharge Location**, for requirements.

   The Authorized Discharger must visually observe the discharge to prevent an overburden condition. If an overburden condition does arise, the discharge must be immediately discontinued and the City notified at (253) 591-5595 and 253-502-2222.

2. Quality Limitations and Monitoring Requirements:

The Authorized Discharger must meet the following limitations in order to discharge to the City's municipal sanitary sewer system:

City of Tacoma Municipal Code – Chapter 12.08.020; Chapter 12.08.040; and 40 CFR Part 136.3

POLLUTANT	DISCHARGE LIMIT		APPROVED ANALYTICAL METHOD		
			EPA Method	*Standard Method*	*ASTM*
Total Arsenic	0.1	mg/L	200.5; 200.7; 200.8; 200.9		
Total Cadmium	0.25	mg/L	200.5; 200.7; 200.8		
Total Chromium	1.0	mg/L	200.5; 200.7; 200.8; 200.9		
Hexavalent Chromium	0.25	mg/L			
Total Copper	1.0	mg/L	200.5; 200.7; 200.8; 200.9		
Total Cyanide	0.64	mg/L		4500B; 4500C	
Free Cyanide	0.2	mg/L			D7237-10; D4282-02
Total Lead	0.4	mg/L	200.5; 200.7; 200.8; 200.9		
Total Mercury	0.05	mg/L	245.1; 245.2; 245.7; 1631E		
Total Molybdenum	1.0	mg/L	200.5; 200.7; 200.8		
Total Nickel	1.0	mg/L	200.5; 200.7; 200.8; 200.9		
Total Selenium	0.1	mg/L	200.5; 200.7; 200.8; 200.9		
Total Silver	0.2	mg/L	200.5; 200.7; 200.8; 200.9		
Total Zinc	2.0	mg/L	200.5; 200.7; 200.8; 282.2		
Total Petroleum Hydrocarbons	50	mg/L	1664A; 1664B *(measured as silica gel treated, hexane extractable materials (SGT-HEM)*		
pH	5.5 - 11.0		150.2	4500H^{+}B-2000	
Total Suspended Solids	225*	mg/L		2540 D – 1997	
Total Toxic Organics**	2.13	mg/L	624; 625		
BETX***	10	mg/L	624		

*The Total Suspended Solids value of 225 mg/L is a benchmark. Any amount over and above may be used for billing purposes. **The Sum of all Total toxic organics with 0.1 mg/L or greater cannot exceed 2.13 mg/L. ***Benzene may not exceed 0.5 mg/L.

The Authorized Discharger must make visual checks of the discharge for unusual color, odor, and/or sheen. If any of these conditions are found, the discharge must be immediately discontinued and the City notified at (253) 591-5595 and 253-502-2222. Discharging must be on a "**batch**" basis. The Authorized Discharger will be responsible to obtain samples prior to requesting permission to discharge. After the sample analysis has been completed and the results indicate no violations of the parameters above, permission to discharge may be requested from Environmental Compliance Support at SAD@cityoftacoma.org. **Discharging without prior permission from Environmental Compliance is prohibited.**

C. DISCHARGE LOCATION:

MH 6773589 has a max of **100 gpm** discharge

MH 6773619 has a max of **60 gpm** discharge

D. OTHER CONDITIONS:

1. The Authorized Discharger must possess a valid NPDES permit from the Department of Ecology and/or the Environmental Protection Agency, if applicable, and operate in compliance with that permit as determined by the issuing agency.
2. The City of Tacoma reserves all of the powers set forth in Chapter 12.08 TMC, as well as any other applicable powers granted by the Tacoma Municipal Code, state and/or federal law, to enforce the terms of the Authorization, and to regulate the use of its municipal sewer system including, but not limited to, seeking supplemental charges under TMC 12.08.610.
3. The Authorized Discharger must pay the applicable fees and maintain payments as provided for in Tacoma Municipal Code Chapter 12.08.
4. The Authorized Discharger must cease discharge upon either of the following conditions:

   a. Violation, either suspected or detected, of any of the discharge conditions specified in B. above; or

   b. When directed to by the City.
5. The Authorized Discharger may be required to reduce the flow rate of the discharge, or cease discharging during heavy rainfall events which may over-burden the sanitary sewer system.
6. The Authorized Discharger must deliver a letter to the City at the office of Environmental Compliance Support, 2201 Portland Avenue, Tacoma, 98421, (FAX (253) 502-2295) within five (5) calendar days of any exceedance of the discharge conditions specified in B above, explaining the limitations exceeded, the cause, the measures taken to mitigate it, and the measures that will prevent reoccurrence.
7. The Authorized Discharger must submit a new application and pay an application fee for discharges that exceed twelve (12) months in duration.
8. This Special Approved Discharge (SAD) Authorization is issued solely to the Authorized Discharger named in section one above. Authorization to discharge to the City's sanitary sewer system is not transferrable without the City's written consent.

E. BILLING & REPORTING:

The Authorized Discharger must keep records of each batch discharge showing monitoring results, volume, date, and time in a log book kept on site for inspector review.

The discharge records must also be submitted to the City of Tacoma for billing purposes on a monthly basis. Monthly reporting is due by the 15th of each following month. If no discharge occurred then a report stating that there was no discharge must be submitted. The Authorized Discharger must notify this office, in writing, upon project completion for final billing.

Environmental Services, Business Operations
City of Tacoma
2201 Portland Avenue
Tacoma, WA 98421
Fax (253) 502-2295

F. ENFORCEMENT:

Violations of this Authorization or of Tacoma Municipal Code Chapter 12.08 may be subject to Notices of Violation w/Civil penalties of up to $5000.00 per violation per day.

G. TERM OF AUTHORIZATION:

This Special Approved Discharge Authorization expires one year from the date of issuance. To extend this SAD, please submit an application at least one month prior to expiration.

ON BEHALF OF THE CITY OF TACOMA

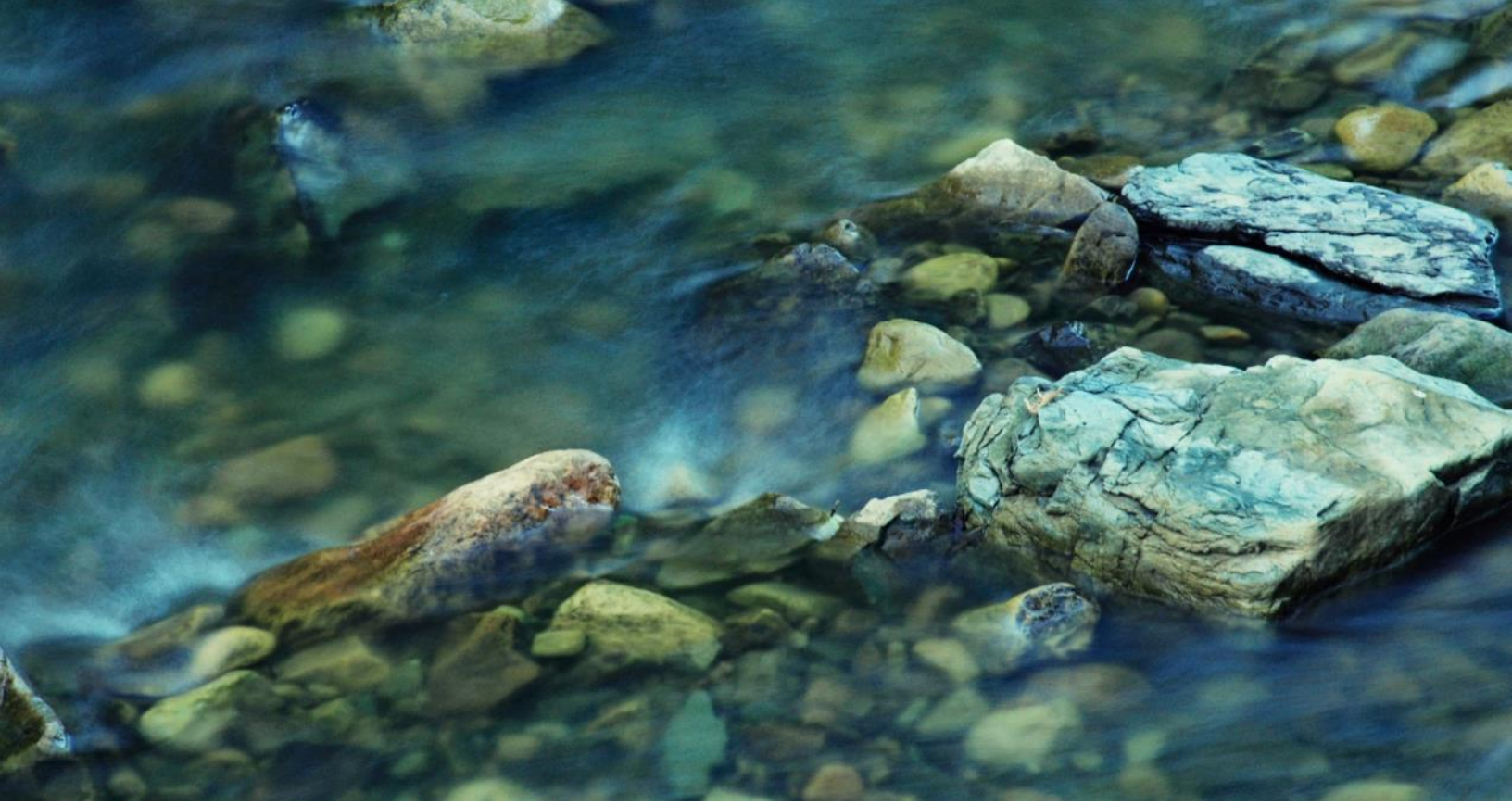
May 4, 2018
Dated

Dan C. Thompson
Dan C. Thompson, Ph.D.
Business Operations Division Manager
Environmental Services

The 24-hour emergency telephone number for City of Tacoma Sewer Transmission Operation and Maintenance is (253) 591-5595. The regular business hours (Mon-Fri 8:00 A.M. to 4:30 P.M.) number is (253) 591-5588. FAX (253) 502-2295

APPENDIX F

Water Quality Monitoring and Protection Plan



May 2018
Parcel 77 Auto Import Terminal Project

ANCHOR QEA

Water Quality Monitoring and Protection Plan

Prepared for Port of Tacoma

May 2018
Parcel 77 Auto Import Terminal Project

Water Quality Monitoring and Protection Plan

Prepared for
Port of Tacoma
One Sitcum Plaza
Tacoma, Washington 98421

Prepared by
Anchor QEA, LLC
720 Olive Way, Suite 1900
Seattle, Washington 98101

Project Number: 170092-05.01
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ABBREVIATIONS

BMP	best management practice
Ecology	Washington State Department of Ecology
MLLW	mean lower low water
NTU	nephelometric turbidity units
OHWM	ordinary high water mark
Port	Port of Tacoma
Project	Parcel 77 Auto Import Terminal Project
WAC	Washington Administrative Code
WDFW	Washington Department of Fish and Wildlife
WQMPP	Water Quality Monitoring and Protection Plan

1 Introduction

This Water Quality Monitoring and Protection Plan (WQMPP) has been prepared on behalf of the Port of Tacoma (the Port) and identifies monitoring and best management practices (BMPs) for construction activities associated with the Port's Parcel 77 Auto Import Terminal Project (Project) at their property located between the Blair and Hylebos Waterways at 3400 Taylor Way in Tacoma, Washington (Pierce County Parcel Nos. 0321354035, 0321363013, 0321363033, 0321363034, 0321363036, and 0321363037; right-of-way; and 5000350110 (Port of Tacoma easement)). The WQMPP has been prepared to monitor compliance with Section 401 of the Clean Water Act, Washington State Water Quality Standards, Chapter 173-201A of the Washington Administrative Code (WAC). This plan describes water quality protection measures; monitoring parameters, methods and evaluation criteria; and contingency response and notification procedures in the event a water quality criterion is exceeded during construction activities. The Project contractor selected to perform the construction activities will be subject to the requirements and procedures specified in this plan, as well as the contract specifications and other regulatory permits.

1.1 Project Description

The Project is to redevelop property that was previously developed as the former Kaiser Aluminum Site, which has undergone multiple remedial actions by the Port in coordination with the Washington State Department of Ecology (Ecology). The Project includes redeveloping the Project property into an automobile import terminal. Automobiles will be received from the Port's nearby Blair Waterway East Blair One Terminal and transferred to the Project property via Alexander Avenue for processing and shipping. Automobiles will primarily be transported inland from the Project property via rail. Trucks will also transport automobiles from the Project property, but at a lesser frequency. It is currently projected that between 80% and 90% of the imported automobiles will be transported inland by rail. A vicinity map is presented on Figure 1 and an aerial photograph of the Project site is presented on Figure 2.

The Project will be constructed in two phases as permits and approvals are obtained for each: 1) upland site development and 2) the new outfall installation. This WQMPP addresses the new outfall installation phase of the Project as the upland site development phase does not include any in-water work or shoreline construction activities.

1.1.1 New Outfall

The shoreline where the new outfall will be located abuts the Blair Waterway south of the East Blair One Terminal. The new outfall work will occur within 200 feet of the ordinary high water mark (OHWM), within the Shoreline Master Program-designated "S-10 Port Industrial Area" and "S-13 Marine Waters of the State." Underground piping will be installed, connecting the underground stormwater vault installed for the interim pump station structure to the new 48-inch outfall. Once the connection is made, the interim pumping equipment will be removed from the vault and stormwater

from the Project property will be discharged entirely by gravity flow. Stormwater will be treated on site prior to discharging to the Blair and Hylebos Waterways. The proposed outfall invert elevation will be approximately 2.2 feet mean lower low water (MLLW), or approximately 9.6 feet below the OHWM. The outfall will be installed from the interim pump station structure to the Blair Waterway using trenching. Any excavated material will be returned to the ground after the piping is installed.

The underground piping from the treatment vault will be approximately 48-inch diameter PVC, or similar, pipe that is routed approximately 300 linear feet under Alexander Avenue and the Tacoma Rail railroad track. Approximately 5,120 cubic yards of material will be excavated to install the underground piping from the Project property to the new outfall within the 200-foot S-10 Shoreline District.

The new outfall will be installed within a cast-in-place concrete headwall and anchor block, with the lowest elevation of the headwall at an elevation of approximately 17 feet below the OHWM at -4 feet MLLW. Approximately 608 cubic yards of existing riprap and underlying fill will be excavated to install the new outfall. The new outfall will be installed from the same stormwater vault that is installed for the interim pump station to the Blair Waterway using directional drilling and trenching. Any excavated material will be retained on site after the piping and outfall is installed.

Construction activity will occur below OHWM; however, in-water work will be minimized to the greatest extent possible, with work along the shoreline occurring during low tide to minimize water quality effects. Other BMPs will be employed during outfall construction to minimize aquatic impacts, including employing a debris boom during in-water work and minimizing the amount of disturbed soils in the work area below OHWM that could be inundated during tide cycles.

Detailed descriptions of both the in-water and upland construction activities are provided in the Joint Aquatic Resources Permit Application for both phases of the Project that was submitted to Ecology in February 2018 and as revised in the Parcel 77 Auto Import Terminal Project Update Memorandum dated April 3, 2018.

This WQMPP applies to work conducted below the Project-specific OHWM. The OHWM of the marine shoreline of the site could not be determined for this Project due to the absence of any definitive OHWM indicators. Therefore, the mapped mean higher high water line is used instead of a delineated OHWM, and the term OHWM is used in this WQMPP to represent both the OHWM and the mean higher high water line.

Work performed above and landward of the Project-specific OHWM will be regulated by the Project's National Pollutant Discharge Elimination System construction stormwater permit, which will be secured under a separate permitting action.

In-water work, as defined throughout this plan, will be conducted during the in-water work window for waters of Commencement Bay, July 16 through February 14, including proposed work elements

that will occur waterward and below the Project-specific OHWM but above the tidal/physical water level, in the dry.

The WQMPP focuses on the following activities:

- Slope excavation (slope armor/riprap and fill removal)
- Concrete placement
- Cofferdam construction and removal
- Backfill and slope armoring

1.2 Water Quality Standards

Water quality data collected during sample collection activities will include temperature, dissolved, oxygen, and turbidity. During concrete placement activities, pH will also be monitored. The water quality monitoring turbidity standards applicable to this site per WAC 173-201A-210(1)(e) are as follows:

- Turbidity shall not exceed 10 nephelometric turbidity units (NTUs) over the background turbidity when the background turbidity is 50 NTUs or less
- Turbidity shall not exceed a 20-percent increase in turbidity when the background turbidity is more than 50 NTUs

The water quality standard for turbidity will need to be met at the compliance boundary at the edge of the authorized mixing zone for construction activities. The turbidity water quality standard includes an allowed 150-foot mixing zone that extends out from the in-water activity. The water quality monitoring for turbidity will be conducted at the 150-foot-radius point of compliance per the aquatic use criteria (WAC 173-201A-210(1)(e)(i)). In addition, visible turbidity greater than the background turbidity at or beyond the 150-foot-radius point of compliance is considered an exceedance of the water quality standard.

If wet concrete is observed to come into contact with receiving water in the waterway, pH will be measured as described in Section 3.1. The water quality standard for pH is that pH must be between 7.0 and 8.5, with a variation of no more than 0.5 pH units within this range (WAC 173-201A-210(1)(f)).

In addition to the numerical standards for turbidity and pH described above, the Project will also comply with narrative water quality standards, which include the following:

- No visible petroleum sheen on water observed at the construction site
- No distressed or dying fish observed at the construction site that can be attributed to activities at the construction site

These narrative criteria are not subject to the requirement for a mixing zone and, therefore, must be met throughout the Project area.

2 Water Quality Protection Measures

This section describes the protection measures that will be implemented during all in-water work and near-water work to minimize impacts on water quality.

2.1 General Water Quality Protection Measures

The Project elements have been designed to avoid and minimize adverse impacts on the environment due to Project activities, specifically, in-water work (e.g., slope construction and armor removal, stormwater outfall construction, cofferdam construction and removal, slope armoring).

The following general water quality protection measures will be implemented on a Project-wide basis to reduce, eliminate, or minimize the effects of the proposed action on water quality:

- Construction stormwater, sediment, and erosion control BMPs suitable to preventing exceedances of state water quality standards will be in place prior to starting construction activities.
- All work will comply with the conditions of the National Pollutant Discharge Elimination System Construction Stormwater Permit that will be issued for the Project.
- All work in and near the water will be done so as to minimize turbidity, erosion, and other water quality impacts.
- Sediment and erosion control measures will be inspected and maintained throughout Project construction.
- No materials will be stockpiled below the Project-specific OHWM in any water body.
- Fueling and servicing of all equipment will be confined to an established upland staging area.
- Equipment and vehicles will be stored in established staging areas when not in use (excluding cranes, which cannot be moved easily). Staging areas will be located above the riprap slope in previously disturbed areas, to the extent practicable.
- A written spill prevention, control, and countermeasures plan will be prepared for activities that include the use of heavy equipment. The plan will describe measures to prevent or reduce impacts due to accidental leaks or spills, as well as all hazardous materials that will be used, their proper storage and handling, and the methods that will be used to monitor their use. A spill kit will be available on site during construction and stored in a location that facilitates its immediate deployment if needed.
- The Contractor shall implement this WQMPP, or Port-approved equivalent.
- Upon advanced notice, the Port will provide access to the construction site for representatives of the U.S. Army Corps of Engineers, the U.S. Fish and Wildlife Service, the National Marine Fisheries Services, Ecology, and the Washington State Department of Fish and Wildlife (WDFW) during all hours when the proposed action is being conducted.
- No new access roads, routes, or trails will be constructed as part of the proposed action.

2.2 Near-Water Specific Protection Measures

The Project will implement the following BMPs for construction of the stormwater outfall:

- All equipment that will operate below the Project-specific OHWM will be free of accumulated grease, oil, or mud. All leaks will be repaired prior to arriving on site. Equipment will be inspected daily for leaks, accumulations of grease, oil, or mud. Any identified problems will be fixed before the equipment is operated below the Project-specific OHWM. Any equipment working in water will utilize vegetable-grade hydraulic fluid whenever possible.
- An emergency spill kit will be available on-site during construction whenever work is being performed in or near the water. It will be stored in a location that facilitates its immediate deployment if needed.
- BMPs will be used to ensure no work materials or debris enter the water.
- Any buoyant materials dropped into the water will be picked up immediately by the contractor. The contractor will have a boat available and on site during in-water activities for floating debris retrieval. Materials that sink to the bottom are to be noted and removed.
- All saw cut water and debris generated from cutting activities that occur overwater will be contained and disposed of properly.
- A containment boom will be placed around the perimeter of the construction site during construction activities to contain floating debris and materials in the event that materials or debris do enter the water despite BMP implementation during Project activities. The captured material will be removed upon completion each day.

2.3 Slope Armoring

The slope will be reconstructed of armoring material removed from the slope for construction. The material will consist of 3 feet of light riprap from the top of slope at 17 feet MLLW down to the toe of the slope at -5 feet MLLW. The existing slope and armoring will remain predominantly unchanged. Slope construction activities will be below the Project-specific OHWM.

2.3.1 Mitigation Measures

To minimize the potential for any water quality impacts during slope armoring activities, the following BMPs will be implemented:

- Slope armoring will be conducted during the WDFW-approved in-water work window for Commencement Bay (July 16 to February 14).
- The riprap will be of sufficient durability and size to prevent it from being broken up or washed away by high water or wave action
- The riprap will be placed in a controlled manner (i.e., gradually lowered into place), with the use of a skip box, clamshell bucket, or excavator at the appropriate elevation above the sediment surface to minimize sediment disturbance.

2.4 General Concrete Work

Work elements that are located waterward and below the Project-specific OHWM and conducted above the tidal/physical water level or in the dry that involve concrete pouring are described below, along with the appropriate BMPs. The mitigation measures to be implemented during concrete work and the inspection requirements are described in the following subsections.

2.4.1 Mitigation Measures

To minimize the potential for any water quality impacts during concrete work in or near the water, the following BMPs will be implemented:

- The contractor will be required to limit the placement of wet concrete to periods of low tide with the use of a cofferdam for dewatering as necessary to facilitate placement of wet concrete in a dry condition; or
- Concrete forms may be constructed to be mortar-tight to prevent leaching of wet concrete to the water.
- BMPs will be implemented to prevent construction debris from entering the water.

2.4.1.1 Concrete Truck/Pumper

The following BMPS will be implemented for concrete trucks/pumpers:

- Trucks will be inspected and chutes cleaned, as necessary, before leaving the batch plant.
- Drip pans or absorbent material will be used, when needed, to catch drips from equipment. Collected material and absorbents will be disposed of properly.
- All stormwater/surface water access around the concrete pour area will have pollution control in place (refer to BMPs in Section 2.1).
- Any upland spills or drips will be cleaned up immediately.
- No uncontained wash down will occur near the shoreline.
- No concrete residue and/or wash down will be allowed to enter stormwater or waterways.
- Excess concrete will be disposed of at an upland site.

2.4.1.2 Concrete Placer/Finisher

The following BMPs will be implemented for concrete placers/finishers:

- Forms will be constructed to prevent wet concrete from entering waters of the state.
- Impervious materials shall be placed over any exposed wet concrete/grout.
- Observation for leaks will be made from the bank, a float, or vessel.
- BMPs will be employed to exclude fish from the false work and forms, such as plywood, mesh, or screen that meets Revised Code of Washington 77.57 requirements.
- Boom(s) will be placed around Project site when pouring concrete.

- Only freshwater will be used as a release agent on the forms. Freshwater will be sprayed on the inside of the forms prior to placing concrete.
- A thick (low slump) concrete mix will be used for placement into the forms.
- Vacuums and absorbent material will be available to clean possible small spills.
- Concrete will be placed during an outgoing tide (above the tide water level) to allow the concrete to set and further seal the forms.
- Forms will be left on until cured to sufficient strength (i.e., 3 to 7 days).
- No uncontained washdown of tools or equipment will occur near the shoreline.
- Concrete process water will not enter the waterway. Any concrete process/contact water discharged from a confined area with curing concrete will be routed to upland areas to be treated and disposed of properly.

2.4.1.3 Concrete Inspections

The inspection requirements related to concrete work are as follows:

- The Port will inspect and approve formwork prior to placement of wet concrete.
- Trained and dedicated contractor personnel will conduct the placement of concrete.
- The Port/contractor will provide inspectors/biologists during active concrete pours.
- The Port's construction inspector will observe all placements of wet concrete, provide additional formwork observation, and direct the contractor to implement additional BMPs, correct potential issues related to the formwork, or stop work, as necessary.
- If concrete enters waters of the state, work will be stopped immediately and the situation will be reported to Ecology's Permit Manager (Lori Kingsbury), and the WDFW Area Habitat Biologist (Liz Bockstiegel), among other applicable agencies, to communicate the incident and determine the next steps. Also, pH will be measured as described in Section 3.1.

2.5 Stormwater Outfall Cofferdam Construction and Removal

One stormwater outfall will be installed. The new outfall will be installed below the Project-specific OHWM at the approximate elevation of 2.21 feet. The outfall will consist of pipe with a concrete anchor block and reinforced concrete headwall that will project through the slope. If cofferdams are utilized, they will be installed and removed below the OHWM during the in-water work window.

2.6 Mitigation Measures

To minimize the potential for any water quality impacts during construction and removal of the stormwater outfall cofferdam, the following BMPs will be implemented:

- Stormwater outfall cofferdam construction will be conducted during the WDFW-approved in-water work window for Commencement Bay (July 16 to February 14).
- All dewatering water will be handled according to the Project-specific Temporary Erosion and Sedimentation Control requirements and the Stormwater Pollution Prevention Plan.

3 Water Quality Monitoring Plan

The objective of water quality monitoring is to ensure that near-water and in-water activities do not result in exceedances of the applicable water quality standards at the point(s) of compliance. The Project will utilize a combination of instrumented and visual monitoring.

3.1 Instrumented Monitoring

Turbidity will be monitored with a water quality meter during the following construction activities below MHHW/OHWM:

- Slope excavation (slope armor/riprap and fill removal)
- Concrete placement
- Cofferdam construction and removal
- Backfill and slope armoring

Instrumented monitoring for turbidity will also be implemented in response to visual observation of a significant turbidity plume, as described in Section 3.2, to better assess compliance with the water quality criteria and the effectiveness of any supplemental BMPs that may be implemented to control turbidity.

As described in Section 1.2, instrumented monitoring for pH will be implemented if wet concrete is observed to come into contact with water in the waterway. If this occurs, pH will be measured at the monitoring locations until it is confirmed that the pH is in compliance with the pH water quality standard.

3.1.1 Monitoring Parameters

Real-time field measurements of turbidity water quality parameters (in NTUs) will be collected during instrumented monitoring, as appropriate to the activity.

3.2 Visual Monitoring

Throughout all in-water work, the contractor will conduct visual monitoring of turbidity. A turbidity plume is considered significant when it is above background and extends out the entire length of the mixing zone to 150 feet and is visible from the area of construction activity. Visual monitoring will be performed during all construction activities below or waterward of MHHW/OHWM.

3.2.1 Monitoring Parameters

The following parameters will be observed during visual monitoring:

- Turbidity (visual indication of plume)
- Sheen, or oil

- Construction debris in water
- Distressed or dying fish
- Operation and effectiveness of BMPs

3.3 Monitoring Schedule

For each construction activity for which instrumented turbidity monitoring will be performed, it will occur twice a day for the first 2 days for each construction activity described in Section 3.1 to establish baseline conditions and verify compliance with the water quality criteria. If no exceedance of the turbidity criteria is noted during the initial 2-day monitoring period for a given activity, the contractor, with the Port's approval, may continue to monitor visually during the remainder of the respective construction activity, unless a visible turbidity plume triggers the return to instrumented monitoring, as described in Section 3.1 and 4.1.2.

3.4 Monitoring Locations

Monitoring locations will be measured directly from the point of construction activity. The monitoring locations will be identified in the field with the use of a range finder or other measuring device. Monitoring will be conducted typically from the bank at the following locations (Figure 3), which are described in more detail in Sections 3.4.1 through 3.4.3:

- Background monitoring location (200 feet upstream/upgradient prior to work)
- Compliance monitoring locations (150 feet downstream/downgradient during work)
- Early detection monitoring locations (100 feet downstream/downgradient during work)

In addition, visual monitoring will be performed within the entire mixing zone.

3.4.1 Background Monitoring Location

The background location will be positioned approximately 200 feet upstream of the point of construction and beyond the influence of construction activities, typically from the bank. The monitoring location will typically be directly upstream/upgradient of the point of construction, although tidal reversals are possible during flood tide conditions, which will require the monitoring location to be shifted farther upstream. The background location will be in an area with similar physical characteristics similar to those of the main area of construction activity (i.e., water depth and slope). Background water quality monitoring will be conducted before in-water or near water activity begins and during each monitoring event that turbidity is measured.

3.4.2 Early Detection Monitoring Location

The early detection location will be positioned approximately 100 feet downstream/downgradient of the point of construction, typically from the bank. The monitoring location will typically be directly downstream of the point of construction.

The objective of monitoring in the early detection location at 100 feet is to have an early indication of whether exceedances of the water quality standards may occur at the point of compliance (i.e., 150 feet) if construction activities continue without modification to the BMPs being implemented. It provides an adaptive management process to adjust the construction activities or BMPs prior to a water quality standard exceedance at the point of compliance.

3.4.3 Compliance Monitoring Location

The compliance location is at the edge of the mixing zone, 150 feet downstream of the point of the construction activity, typically from the bank. The monitoring location will typically be directly downstream of the point of construction.

3.5 Monitoring Equipment

Equipment to be used for the water quality monitoring will include the following:

- Water quality meter: HACG 2100Q, Troll 9500, YSI 6920 Sonde (or other suitable equipment)
- Field logbook or field form
- Deionized water for rinsing water quality monitoring equipment
- Personal protective equipment
- Camera
- Cellular phone and Project contact phone numbers
- Water Quality Monitoring and Protection Plan

The water quality meter will be properly operated, calibrated, and maintained by qualified personnel before each use according to the manufacturer's guidelines and recommendations. All field analyses will be recorded in a logbook or directly to the field form and the specific person who conducted the calibration and monitoring will be recorded.

3.6 Documentation and Reporting

The contractor will prepare daily water quality monitoring reports detailing the monitoring data collection activities and results and submit to the Port by email. The template for the water quality monitoring form is included in Appendix A. These reports or forms will include the following information:

- Date and time of the monitoring at each location
- Monitoring results at each monitored location (i.e., background, early detection, and compliance)
- Incoming or out-going tide, tide level, etc.
- Name of monitoring personnel
- Monitoring notes that may include:
  - Field conditions (weather, temperature, any prior disturbance of the water body, etc.)
  - Monitoring equipment calibration information
  - Description of construction activity taking place and duration of activity

4 Contingency Response and Notification Plan

4.1 Contingency Measures

If exceedances are measured, the background turbidity levels will be verified by collecting another sample, and the exceedance confirmed. If an exceedance of a water quality standard occurs during either visual and/or instrumented monitoring, field personnel will stop work, contact the Port immediately, and assess the source of the exceedance or impact, and corrective actions will be evaluated. Once the source has been identified, field personnel will implement operational modifications or other supplemental control measures or BMPs to bring the water quality measurements back into compliance with the criteria.

Once the control measures have been deemed effective, monitoring will continue every 4 hours during working hours until the water quality exceedances have been brought into compliance.

4.1.1 Instrumental Monitoring

As described in Section 1.2, the numerical water quality standard for turbidity must be met at the point of compliance, which is 150 feet downstream/downgradient of the construction activity (or is shifted depending on the tides, as described in Section 3.4). Turbidity outside this established mixing zone that is greater than 10 NTUs over the background turbidity when turbidity in the background sample is 50 NTUs or less, or a 20 percent increase in turbidity when the background turbidity is more than 50 NTUs, is a violation of the turbidity water quality standard.

The water quality standard for pH is that pH must be between 7.0 and 8.5, with a variation of no more than 0.5 pH units within this range.

4.1.2 Visual Monitoring

As described in Section 1.2, visible turbidity greater than the background turbidity at or beyond the 150-foot point of compliance is considered an exceedance, or violation of, the turbidity water quality standard. If a visible turbidity plume is evident at the compliance boundary, it will be photo-documented, corrective actions will be taken to eliminate the source of the turbidity, and follow-up instrumented turbidity monitoring will be implemented to confirm the turbidity exceedance and will continue every 4 hours during working hours until the turbidity complies with the water quality standard.

If construction debris is observed in the waterway, effort will be made to retrieve the debris. If sheen or oil, or concrete is observed in the waterway, the contractor will immediately cease operations. Corrective actions will be implemented to make repairs to equipment, address the spill, or modify construction activities or BMPs, and conduct appropriate notifications with the Port, Washington Military Department's Emergency Management Division at 1-800-258-5990, and permitting agencies,

as appropriate. Work may resume after the corrective actions have been deemed effective, the turbidity complies with the water quality standard, and as directed by the Port or permitting agencies.

If distressed or dying fish are observed at the construction site that can be attributed to construction activities, work will stop immediately and the Port and Ecology will be notified as described in Section 4.2, as well as notifying other permitting agencies, as appropriate.

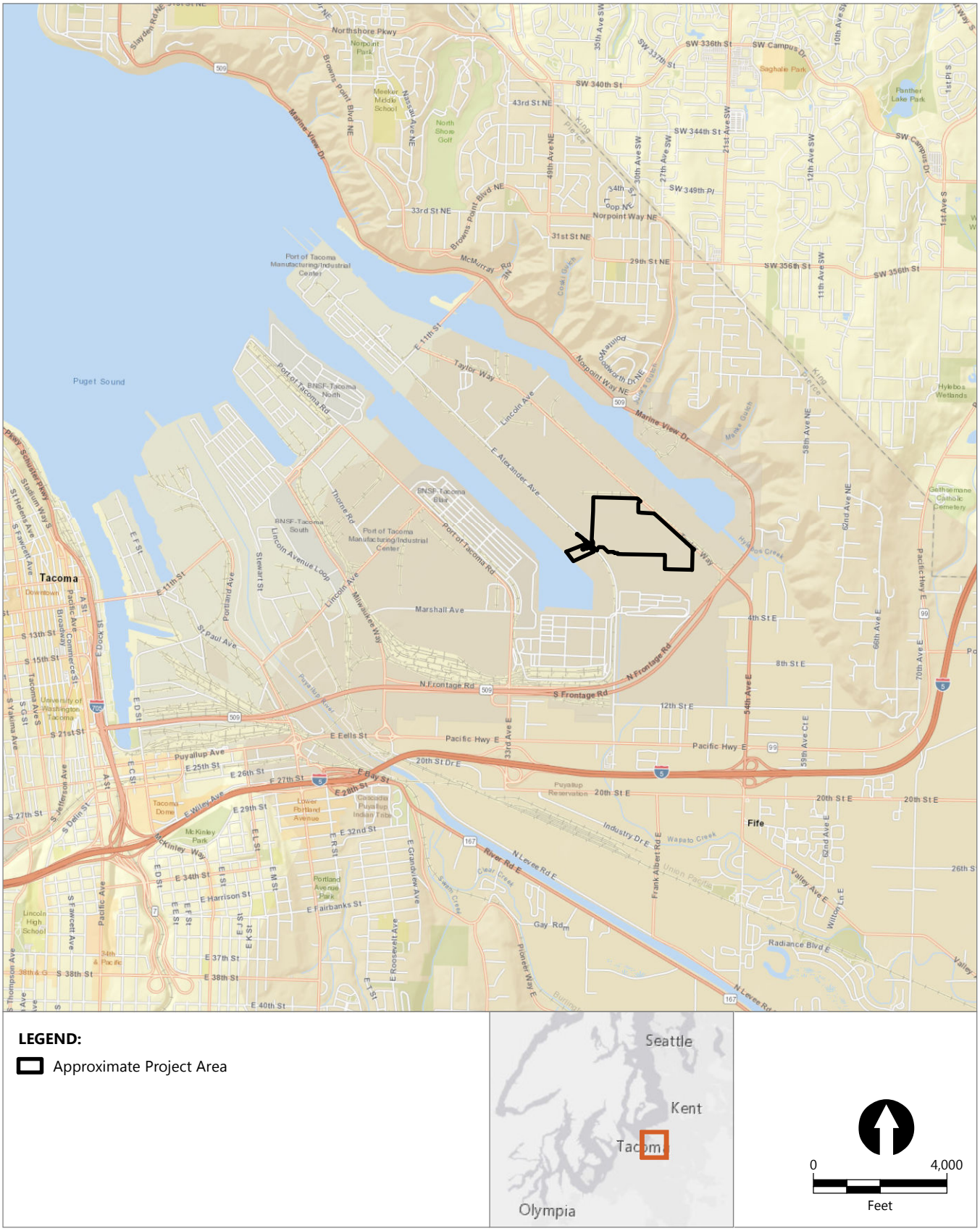
4.2 Notification

If compliance monitoring data indicate an exceedance of the water quality standard for turbidity or evidence of noncompliance, such as distressed or dying fish or a discharge of oil, is noted at the compliance monitoring location (i.e., 150 feet downstream), the Port will be notified by the contractor immediately. The Port will immediately notify Ecology's 24-hour Spill Response Team at 1 (800) 258-5990 and, within 24 hours of the observed noncompliance, notify Ecology for all noncompliance conditions or spills. If at any time during work a buried drum is found or any unusual conditions are present, the Port will notify Ecology using the above number.

The notification should include the following:

1. A description of the nature, extent, and cause of noncompliance.
2. The period of noncompliance, including the date, time, and anticipated time when the activity will return to compliance.
3. The steps taken to minimize, eliminate, and prevent a reoccurrence of the noncompliance action.
4. A written report to Ecology within 5 days of the noncompliance that provides a description of the nature of the violation, the sampling results and location, photographs, a description of the BMPs that were or will be implemented to prevent further violations, and any other pertinent information.

Figures



LEGEND:

Approximate Project Area

Publish Date: 2018/03/14, 12:59 PM | User: ckiblinger
Filepath: \\orcas\gis\Jobs\Port_of_Tacoma_0092\Parcel_77_AutoImportTerminal\Maps\WQMPP\AQ_Parcel77_VicinityMap_WQMPP.mxd

ANCHOR QEA

Figure 1
Vicinity Map
Water Quality Monitoring and Protection Plan
Port of Tacoma

LEGEND:

- Approximate Project Area
- 50-foot Fish and Wildlife Habitat Conservation Area (FWHCA)
- OHWM
- 1-foot Contours (MLLW)

0 550

Feet

Publish Date: 2018/03/14, 12:59 PM | User: ckiblinger
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ANCHOR QEA

Figure 2
Project Area
Water Quality Monitoring and Protection Plan
Port of Tacoma

LEGEND:

- Stormwater Outfall Construction
- 100 feet, Early detection monitoring
- 150 feet, Compliance monitoring
- 200 feet, Background monitoring
- Approximate Project Area
- 50-foot Fish and Wildlife Habitat Conservation Area (FWHCA)
- OHWM
- 1-foot Contours (MLLW)

0 550

Feet

Publish Date: 2018/05/11, 9:22 AM | User: ckiblinger
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ANCHOR QEA

Figure 3
Water Quality Monitoring Locations
Water Quality Monitoring and Protection Plan
Port of Tacoma

Appendix A
Water Quality Monitoring Form

Water Quality Monitoring Turbidity Data Sheet

Project Name: : _____ **Corps Reference No.:** _____

Personnel Collecting Sample: _____

Date	Background 200' Upstream		Early Detection 100' Turbidity		Compliance Point 150' Turbidity		Calculated Water Quality Standards		Activity	Notes (Weather, calibration, NVT, etc.)
	Time	Reading	Time	Reading	Time	Reading	Number	Exceedance (Y/N)		

Notes:

The water quality monitoring turbidity standards applicable to this site per WAC 173-201A-210(1)(e) are as follows:

1 Turbidity shall not exceed 10 NTUs over the background turbidity when the background turbidity is less than 50 NTUs.

2 Turbidity shall not exceed a 20 percent increase in turbidity when the background turbidity is more than 50 NTUs.

Abbreviations:

NTU Nephelometric turbidity units

NVT No visual turbidity (for visual monitoring)

WAC Washington Administrative Code