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Vancouver Energy Terminal

PART 2 PROPOSAL

Section 2.1 – Site Description

WAC 463-60-135
Proposal – Site description.

The application shall contain a description of the proposed site indicating its location, prominent geographic features, typical geological and climatological characteristics, and other information necessary to provide a general understanding of all sites involved, including county or regional land use plans and zoning ordinances.

(Statutory Authority: RCW 80.50.040 (1) and (12). 04-21-013, recodified as § 463-60-125, filed 10/11/04, effective 11/11/04. Statutory Authority: RCW 80.50.040(1) and Chapter 80.50 RCW. 81-21-006 (Order 81-5), § 463-42-125, filed 10/8/81. Formerly WAC 463-42-180.)

Section 2.1 Site Description

2.1.1 Location of Vancouver Energy Terminal

Vancouver Energy Terminal (the "Facility") will be constructed at the Port of Vancouver (Port) within the City of Vancouver (City) in Clark County, Washington. The Facility includes construction and operations in different "Areas" on the overall facility, each area serving different functions. The site is located on the north (Washington) shore of the Columbia River. State Route 501 (SR 501) (NW Lower River Road) is located immediately to the north of the site. Interstate 5 (I-5) is located approximately 2.5 miles east. Rail access to the site is available from the east. Figure 2.1-1 presents a general vicinity map of the location; Figure 2.1-2 provides an aerial view and identifies existing adjacent uses. Each Facility area is described in further detail below. The entire Facility will be constructed on approximately 47.4 acres.

The Port is located from approximately 103 to 106 river miles (RM) from the Pacific Ocean on the Columbia River at the head of the deep-water navigation channel. The total land area of the Port is approximately 2,127 acres, including approximately 800 developed acres and 500 acres planned for future development. Marine operations include five terminals and 13 berths. The Port handles 400 to 500 vessel calls per year and approximately 5 million metric tons of cargo yearly, including grain, scrap steel, bulk minerals, pulp, automobiles, refined petroleum products, and other bulk liquids. More than 3,200 people are directly employed by businesses at the Port (Port of Vancouver 2016).

Most of the site will be leased from the Port and will be used exclusively by the Applicant for the construction and operation of the Facility. The Transfer Pipelines will be located on non-exclusive easements within the Port.

The site is located in the SE 1/4 of Section 18, NW 1/4 of Section 19, and the NW and NE 1/4 of Section 20, Township 2 North, Range 1 East WM. Berths 13 and 14 are located at approximately Columbia RM 103.5. Table 2.1-1 summarizes the project site areas discussed in detail below.

Table 2.1-1. Project Development Summary

Project Element	Site Location	Area (acres)
Area 200 – Unloading and Office	5501 NW Lower River Road NE 1/4 Section 19 & S 1/2 Section 18, T2N, R1E WM Parcels: 152799-000, 152903-000	7.8
Area 300 – Storage	No site address N 1/2 Section 20, T2N, R1E WM Parcel: 152173-000	20.8
Area 400 – Marine Terminal	No site address NW 1/4 Section 20, T2N, R1E WM Parcels: 152166-000, 503030-000, 503030-003	7.7
Area 500 – Transfer Pipelines	No site address NE 1/4 Section 19 & NW 1/4 Section 20, T2N, R1E WM Parcels: 152184-000, 152177-000, 152179-000, 986027-146, 986027-027, 50303-001, 152166-000	4.9

Project Element	Site Location	Area (acres)
Area 600 – Boiler	No site address SW 1/4 Section 19, T2N R1E WM Parcel: 152799-000	0.8
Rail Infrastructure	5501 NW Lower River Road N 1/2 Section 19 & S 1/2 Section 18, T2N, R1E WM Parcels: 152799-000, 152903-000, 152905-000, 152798-000	5.4

The final Facility design will take into account actual Site Certification Agreement conditions that are not available at the time of preparation of this ASC; such conditions may result in further adjustments to the final site boundary and resulting Facility footprint acreage.

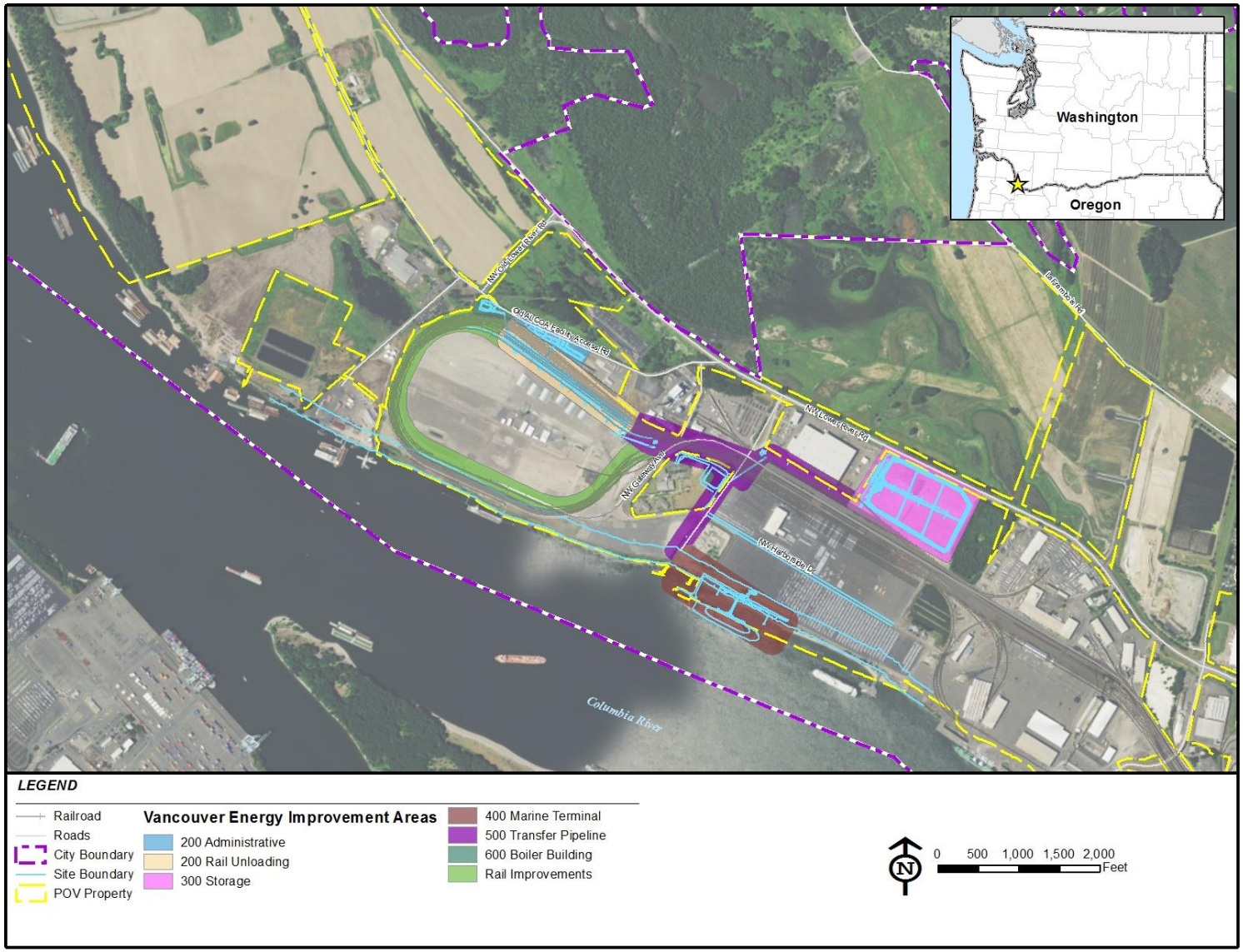
2.1.1.1 Area 200 – Administrative/Support and Rail Unloading

Area 200 is located at 5501 NW Lower River Road in Vancouver. The following Facility elements will be located in Area 200: administrative and support buildings, parking, rail access to the rail unloading facility, and the rail unloading facility. Area 200 will be accessible from an unnamed private road owned and maintained by the Port. Area 200 facilities will be constructed on approximately 7.8 acres.

Area 200 is in the northern portion of the area of the Port that is generally defined as Terminal 5. Terminal 5 is the former location of aluminum processing facilities owned and operated by Evergreen Aluminum LLC (Evergreen) and the Aluminum Company of America (Alcoa). The site has been the location of intensive historic industrial use, dating back to the 1940s when Alcoa first developed the site for aluminum smelting operations, through the early 2000s, when aluminum processing activities on the property ended. The Port completed the purchase of the Evergreen and Alcoa properties in 2009 and, with the exception of the onsite water tower and the dock structure in the Columbia River, all structures of the former aluminum processing plants have been removed and remediation has been conducted at the site in accordance with Washington State Department of Ecology (Ecology) approvals.

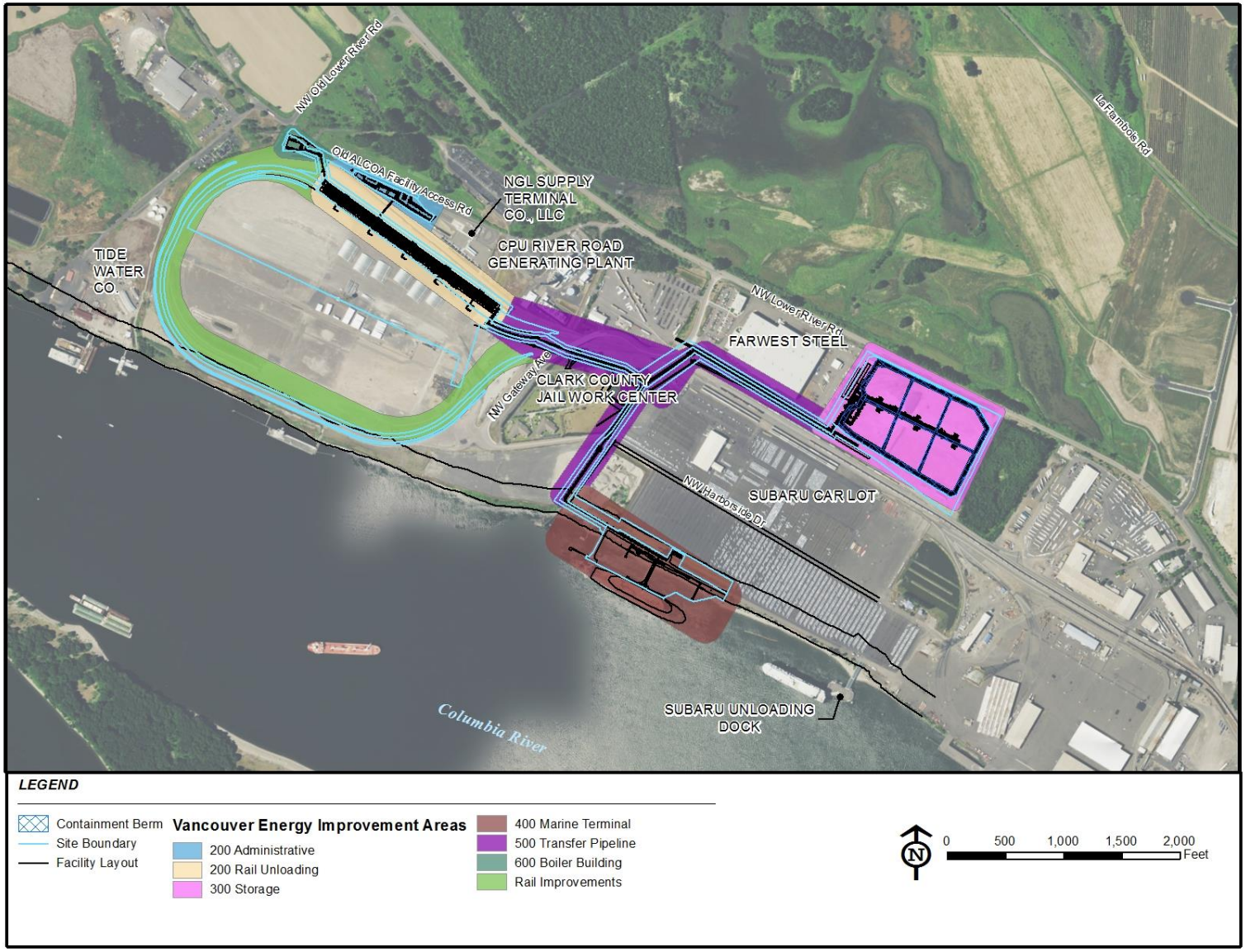
The southwest portion of the Terminal 5 site is currently developed and used for the outdoor storage of wind turbine components and other cargoes and contains multiple rail lines for Port operations. The rail on the site represents the westernmost segment of the West Vancouver Freight Access (WVFA) project, a rail improvement project that is under construction at the Port. In addition, BHP Billiton has proposed to construct a potash export facility on portions of Terminal 5.[1] The approvals, received in 2012, for this facility included an additional rail loop track, a 301,400-square-foot storage building, an administrative and maintenance building, fuel station, conveyors, surge bin, shiploaders, and marine berthing facilities (City of Vancouver 2011). Initial grading and ground improvements have been completed. See Figure 2.1-2 for existing conditions at Terminal 5.

[1] The BHP Billiton proposal is currently not being pursued; however, several permits are still actively in place and the improvements could be pursued if the proposal status changes.



BergerABAM

Figure 2.1-1. General Vicinity Map (Revised)



BergerABAM

Figure 2.1-2. Aerial View (Revised)

2.1.1.2 Area 300 – Storage

Area 300 is located at the Port's Parcel 1A on the south side of NW Lower River Road just east of the existing Farwest Steel facility. The following Facility elements will be located in Area 300: product storage tanks and associated secondary containment, the Area 300 Storage Building, and associated control and ancillary systems. Area 300 will be accessible from NW Gateway Avenue and NW Lower River Road via a shared private drive. Area 300 elements will be constructed on approximately 20.8 acres.

This site was developed by the Port for laydown and industrial development and is currently not in use[2]. See Figure 2.1-2 for existing conditions at Parcel 1A.

2.1.1.3 Area 400 – Marine Terminal

Area 400 is located at existing Port berths 13 and 14 on the Columbia River south of the current Subaru facility. The following Facility elements will be located in Area 400: product conveyance and loading facilities located on the dock, the MVCUs, emergency containment and response equipment, and control and ancillary facilities associated with vessel loading. This area will be accessed from NW Gateway Avenue and Harborside Drive by a driveway to be constructed with the project. Area 400 will be constructed on approximately 7.7 acres.

Berths 13 and 14 were developed by the port in the early 1990s for a short- and/or long-term moorage of oceangoing governmental and commercial vessels. The dock consists of two access trestles and T docks with associated mooring elements. The access trestles and T docks consist of steel pile-supported concrete decks with a steel pile fenders system. Four steel pile-supported concrete breasting dolphins are connected to the T docks by steel-grated walkways. Three steel pile-supported concrete mooring dolphins are located between the shoreline and the T docks. The navigation channel of the Columbia River in this area is maintained artificially at a depth of -43 feet +2 feet (zero Columbia River datum [CRD]) and the Port is permitted to deepen and maintain the berths to the same depth (USACE Permit No. Nationwide Permit (NWP)-2007-916, City of Vancouver Permit No. SHL2012-0017, Washington Department of Fish and Wildlife (WDFW) Hydraulic Project Approval Control No. 129626-1). The nearshore habitat drops off rapidly and, as a result, there is little shallow water habitat or transition zone. Columbia River water volumes are managed by upstream dams, and there is no functioning floodplain within the project site. Sediments in the area of the project are predominantly silts, sands, and clays, with very little gravel or cobble present. There is no in-stream large woody debris or any backwater or side channel habitat at the project site. See Figure 2.1-2 for existing conditions at berths 13 and 14.

2.1.1.4 Area 500 – Transfer Pipelines

Area 500 consists of a non-exclusive easement located within Terminal 5, Parcel 1A, Terminal 4, and corridors adjacent to existing private port roads. Area 500 includes the corridors for the approximately 38,500 lineal feet of transfer pipelines that will connect the Unloading (Area 200),

---

[2] In August 2013 at the time of original submittal of the ASC, the site was occupied by a temporary steel scrap yard. Keyera Energy Inc., which was acquired by NGL Supply Terminal Co., LLC, in December 2013 (NGL Energy Partners 2013), then used this site to support rail unloading operations. Use of the site by NGL supply ended in June 2014 (Holtby 2016).

Storage (Area 300), and Marine Terminal (Area 400) portions of the project. See Figure 2.1-2 for existing conditions along the transfer pipeline corridor. Area 500 will be constructed on approximately 4.9 acres.

2.1.1.5 Area 600 –Boiler Building

Area 600 is located at the northwest corner of Terminal 5. The Area 600 Boiler Building, associated parking, and an E-house will be constructed at this location. This area also includes the piping facilities to carry generated steam to Area 200. Area 600 will be accessed from Old Lower River Road and a private road owned and maintained by the Port. See Figure 2.1-2 for existing conditions at Area 600. Area 600 facilities will be constructed on approximately 0.8 acre.

2.1.1.6 Rail Infrastructure

The Facility will take advantage of dual Class 1[3] (BNSF and Union Pacific Railroad) unit train access at the Port's Terminal 5. The Terminal 5 site represents the westernmost extension of the WVFA project and is designed to accommodate unit trains. The Port has permitted, has begun construction, and will continue to construct the WVFA project elements at Terminal 5 (see section 4.2.1.1). The existing rail infrastructure at Terminal 5 is illustrated in Figure 2.3-4.

Vancouver Energy Terminal will use up to two loop tracks constructed as part of the WVFA project, and will construct a third loop at Terminal 5. As explained in section 2.3.2 below, Vancouver Energy and the Port will exchange the use of this new loop for an existing loop at Terminal 5. As part of Facility construction, the Applicant will also relocate approximately 1,500 feet of existing tracks to allow for track tie-ins into the Area 200 unloading structure (see section 2.3.2).

2.1.2 Prominent Geographic Features

2.1.2.1 Terminal 5

Terminal 5 is the location of the Unloading and Office elements (Area 200) and the rail infrastructure. This area is bounded on the south by the Columbia River. With the exception of the riprapped shoreline, the site is flat and is composed of developed rail facilities, gravel surfacing, and paving.

2.1.2.2 Parcel 1A

Parcel 1A is the location of Storage (Area 300). There are no prominent geographic features on Parcel 1A. The site is flat and consists of gravel or dirt with scattered grasses and weeds and is currently unoccupied.

2.1.2.3 Terminal 4 Berths 13 and 14

Berths 13 and 14 are the location of the Marine Terminal (Area 400) and include the Columbia River and shoreline. At this location, the river is approximately 2,800 feet wide, with a maintained depth of -43 feet CRD. The bank consists of steeply sloping riprap with parking and

[3] Class 1 railroads are defined as those carriers having operating revenues of $433.2 million or more.

storage at the top of the bank. The existing pile-supported dock consists of two access trestles, four breasting dolphins connected to the trestles by catwalks, and three mooring dolphins.

2.1.2.4 General Area

Within the general vicinity of the Facility location, there are several other geographic features. Vancouver Lake is an approximately 2,287 acre shallow lake located in the Columbia River floodplain is located northeast of the project site (Clark County 2010). There is an associated wetland complex located south of Vancouver Lake. The Columbia River Wetland Mitigation Bank (CRWMB), an approximately 154-acre wetland mitigation bank established in 2010, is located at the southern extent of this wetland complex.

There are also two wetland mitigation sites in the vicinity of the project site. The Parcel 1A wetland mitigation site, located immediately east of Parcel 1A, was created in 1994. The Parcel 2 wetland mitigation site is an approximately 16.4-acre mitigation site, situated on an approximately 31.3-acre parcel north of the existing Terminal 5 site.

2.1.3 Typical Geological and Climatological Characteristics

The information below summarizes the more detailed information regarding geology and climate that is included as sections 3.1, Earth, and 3.2, Air.

2.1.3.1 Geology

The Facility is located in the Vancouver Lake Lowlands. The natural geological features of the site have been modified over time through the development of Port facilities to today's existing conditions. Artificial fill material was used to modify historical topographic relief and typically consists of sand and silt. Much of this material was derived from suction dredging techniques where Columbia River channel sand was piped on shore for dewatering and grading. This fill material mantles the project site and is common in the historically industrial developed areas in the vicinity.

The Facility is situated in the Portland Basin, a northwest-elongated structural basin bordered to the east by the Cascade Mountain foothills, to the west by the Tualatin Mountains, to the south by the Clackamas River, and to the north by the Lewis River (Evarts et al., 2009). The Portland Basin began to form about 20 million years ago with folding and uplift of Tertiary basement marine and volcanic rocks, and was subsequently filled with volcanic and sedimentary rocks. Approximately 15 to 16 million years ago, flood-basalt flows of the entered the basin through a broad Columbia River valley transecting the Cascade Range and emptying into the Pacific Ocean (Beeson et al. 1989). By 14 million years ago, the uplift of the Tualatin Mountains diverted the Columbia River northward (Evarts et al. 2009).

The Columbia River deposited up to 600 feet of fine-grained river and lake sediments into the subsiding Portland Basin (Trimble 1963). The deposits are poorly cemented siltstone, sandstone, and claystone. Overlaying this deposit is 600 feet of consolidated and cemented sandstone and conglomerate of the Troutdale Formation (Tolan and Beeson 1984). The Troutdale Formation resulted from a high-energy braided river system (Evarts et al. 2009) that was eroded during the last ice age by the ancestral Columbia and Willamette rivers and by catastrophic glacial outburst floods (Allen et al. 2009). Glacial outburst floodwaters from Montana washed across eastern Washington and through the Columbia River Gorge to spread out in the Portland Basin and pool to elevations of about 400 feet, depositing boulders, cobbles, and gravel sediment grading to thick blankets of micaceous sand. The sea level rose by about 300 feet after the last of the glacial

outburst floods about 15,000 years ago, forming an estuarine environment that extends far upstream in the Columbia River. This low energy environment rapidly filled with more recent sandy alluvium and broad floodplains developed along the primary Columbia River channel, including the Vancouver Lake Lowlands (Peterson et al. 2011).

2.1.3.2 Climate

The climate of the City is predominately temperate, characterized by wet, mild winters and dry, warm summers. The climate is influenced by the relative proximity of the Pacific Ocean and the Cascade and Coast ranges of Oregon and Washington. Temperature and precipitation measurement records from the "Vancouver 4 NNE" agricultural meteorological station were accessed to analyze the climate at the project site. This station is located about 4 miles northeast of the project site and has been collecting measurements since 1856. The monthly climate summary is included in Table 3.2-4. The maximum temperature ever recorded at the site was 106°F on July 30, 2009 and minimum temperature recorded was -8.0°F in 1909. The site averages about 40 inches of rainfall and 6.5 inches of snow a year, with most of the precipitation occurring during the winter months. Prevailing winds are from the west-northwest. See section 3.2 for additional climate information.

2.1.4 Land Use Plans and Zoning Ordinances

A full description of the applicable comprehensive plans, zoning and development ordinances, and other land use programs applicable to the Facility is included in section 4.2, Land and Shoreline Use.

The project is located completely within the corporate limits of the City. The land is designated as Industrial (IND) in the City of Vancouver Comprehensive Plan and is zoned as Heavy Industrial (IH). The IH zoning of the site allows a variety of industrial uses, including the proposed Facility, which is classified as a "warehouse/freight movement" as defined in Section 20.160.020 of the VMC. The VMC also permits "railroad yards" within the IH zone.

The ship loading elements located in Area 400 and Rail Infrastructure on Terminal 5 include features located within 200 feet of the Columbia River, a shoreline of statewide significance. Lands within 200 feet of the ordinary high water mark (OHWM) of the Columbia River are subject to regulation under the City of Vancouver Shoreline Master Program (SMP). The SMP designates the shoreline environment of the upland areas on the site as High Intensity and the areas of the site below the OHWM of the river as Aquatic. Within the High Intensity and Aquatic designations, water-dependent industrial uses are permitted activities. The SMP defines a water-dependent use as follows: "a use or a portion of a use which requires direct contact with the water and cannot exist at a non-water location due to the intrinsic nature of its operations." The purpose of the proposed project is to transfer crude oil from rail cars to ships, consistent with the definition of water dependent use. Furthermore, within the High Intensity designation Railroads are a permitted activity. A shoreline substantial development permit would be required for the proposed activities within the shoreline jurisdiction.

Section 2.2 – Legal Descriptions and Ownership Interests

WAC 463-60-135
Proposal – Legal descriptions and ownership interests.

(1) Principal facility. The application shall contain a legal description of the site to be certified and shall identify the applicants and all nonprivate ownership interests in such land.

(2) Associated and transmission facilities. For those facilities described in RCW 80.50.020 (6) and (7) the application shall contain the legal metes and bounds description of the preferred centerline of the corridor necessary to construct and operate the facility contained therein, the width of the corridor, or variations in width between survey stations if appropriate, and shall identify the applicant's and others' ownership interests in lands over which the preferred centerline is described and of those lands lying equidistant for 1/4 mile either side of such center line.

(Statutory Authority: RCW 80.50.040 (1) and (12). 04-21-013, amended and recodified as § 463-60-135, filed 10/11/04, effective 11/11/04. Statutory Authority: RCW 80.50.040(1). 83-01-128 (Order 82-6), § 463-42-135, filed 12/22/82. Statutory Authority: RCW 80.50.040(1) and Chapter 80.50 RCW. 81-21-006 (Order 81-5), § 463-42-135, filed 10/8/81. Formerly WAC 463-42-190.)

Section 2.2 Legal Descriptions and Ownership Interests

The Facility will be constructed on an approximately 47.4-acre site within portions of the SE 1/4 of Section 18, NW 1/4 of Section 19, and the NW and NE 1/4 of Section 20, Township 2 North, Range 1 East WM. Berths 13 and 14 are located at approximately RM 103.5.

2.2.1 Legal Description of Property

The legal description is presented in Appendix E.1.

This legal description is a preliminary description of the lease areas and non-exclusive easements. The lease agreement between the Applicant and the Port contemplates refinements to the precise boundaries of the lease areas based on final facility design. A final legal description will be provided to EFSEC prior to the beginning of Facility construction.

2.2.2 Ownership Interests

The parcels upon which the Facility is proposed are owned by the Port. The Applicant entered into a lease with the Port for the exclusive use of the property located within the site boundary and non-exclusive easements for the transfer pipeline corridor. A complete copy of the lease has been provided to EFSEC under separate cover. Appendix E.2 presents the main substantive requirements of the lease.

Section 2.3 – Construction on Site

WAC 463-60-145
Proposal – Construction on site.

The applicant shall describe the characteristics of the construction to occur at the proposed site including the type, size, and cost of the facility; description of major components and such information as will acquaint the council with the significant features of the proposed project.

(Statutory Authority: RCW 80.50.040 (1) and (12). 04-21-013, recodified as § 463-60-145, filed 10/11/04, effective 11/11/04. Statutory Authority: RCW 80.50.040(1) and Chapter 80.50 RCW. 81-21-006 (Order 81-5), § 463-42-145, filed 10/8/81. Formerly WAC 463-42-210.)

Section 2.3 Construction On Site

2.3.1 Project Overview

The Applicant is proposing to construct a facility to receive crude oil by rail, store it on site, and load it on marine vessels primarily for delivery to refineries located on the West Coast of North America. A simplified view of the crude oil flow through the Facility is shown in Figure 2.3-1. Unit trains will arrive at the project site and will be stationed on the Facility rail loops. The trains will be "indexed" through the unloading area (Area 200), where the crude oil will be gravity-drained into the transfer pipeline system (Area 500). The crude oil will be pumped through the transfer pipelines to the crude oil storage tanks (Area 300) where it will be held until the marine vessel loading operation. The storage tanks are also designed to allow blending the various types of crude oil at the Facility to meet customer demands for specific qualities. Marine vessels will arrive and moor at the dock (Area 400) where they will be pre-boomed. Crude oil will be pumped from the storage tanks to the loading area, and loaded to the marine vessels. Crude oil may also be pumped directly from the rail unloading area to the vessels at the marine terminal. An overall site plan of the Facility is shown in Figure 2.3-2.

The Facility will receive, handle, store and load pipeline quality light, medium, and heavy crude oils with an American Petroleum Institute (API) gravity ranging from 15 to 45 degrees. The lease with the Port allows the handling of other petroleum products, including refined products, as well as the ability to unload products at the Marine Terminal. Although allowed by the lease, this request for Site Certification does not include the ability to handle materials other than crude oil or to receive any crude oil or petroleum products at the dock. Should the Applicant decide to undertake these activities, an amendment to the Site Certification Agreement will be pursued with EFSEC.

The Applicant will neither own nor source the crude oil shipped through the Facility. The Applicant will receive its customer's crude oil by rail, unload and stage that crude oil in the on-site tanks, and load the crude oil onto vessels provided by those customers.

In addition to the primary components described above, the Facility will include ancillary elements that will support the offloading, storage, and loading operations. The primary and ancillary elements are described in detail below. Table 2.3-1 summarizes the primary and ancillary project elements by Facility area.

Table 2.3-1. Summary of Primary and Ancillary Project Elements

Facility Area	Primary and Ancillary Project Elements
Rail Infrastructure	• Rail facility loops
200 – Unloading and Office	• Rail unloading area • Control rooms\E-houses • Fire Pump and Foam Building • Administrative and Support Buildings
300 – Storage	• Crude Oil Storage Tanks • Secondary Containment Berm • Storage Building • Pump Basin • E-houses • Fire Pump and Foam Building
400 – Marine Terminal	• Marine Vessel Loading Hoses and Equipment • Control Room/E-house • Dock Safety Unit • MVCUs • Hydrogen Sulfide Treatment System • Vapor Blower Skid • Spill Prevention, Response and Containment Equipment • Dock Improvements • Fire Pumps and Foam Supply • Piping from Vessel Loading to MVCUs
500 – Transfer Pipelines	• Transfer Piping from Area 200 to Area 300 • Transfer Piping to/from Area 300 to Area 400
600 – Boiler Building	• Boiler Building • Piping to carry steam to Area 200

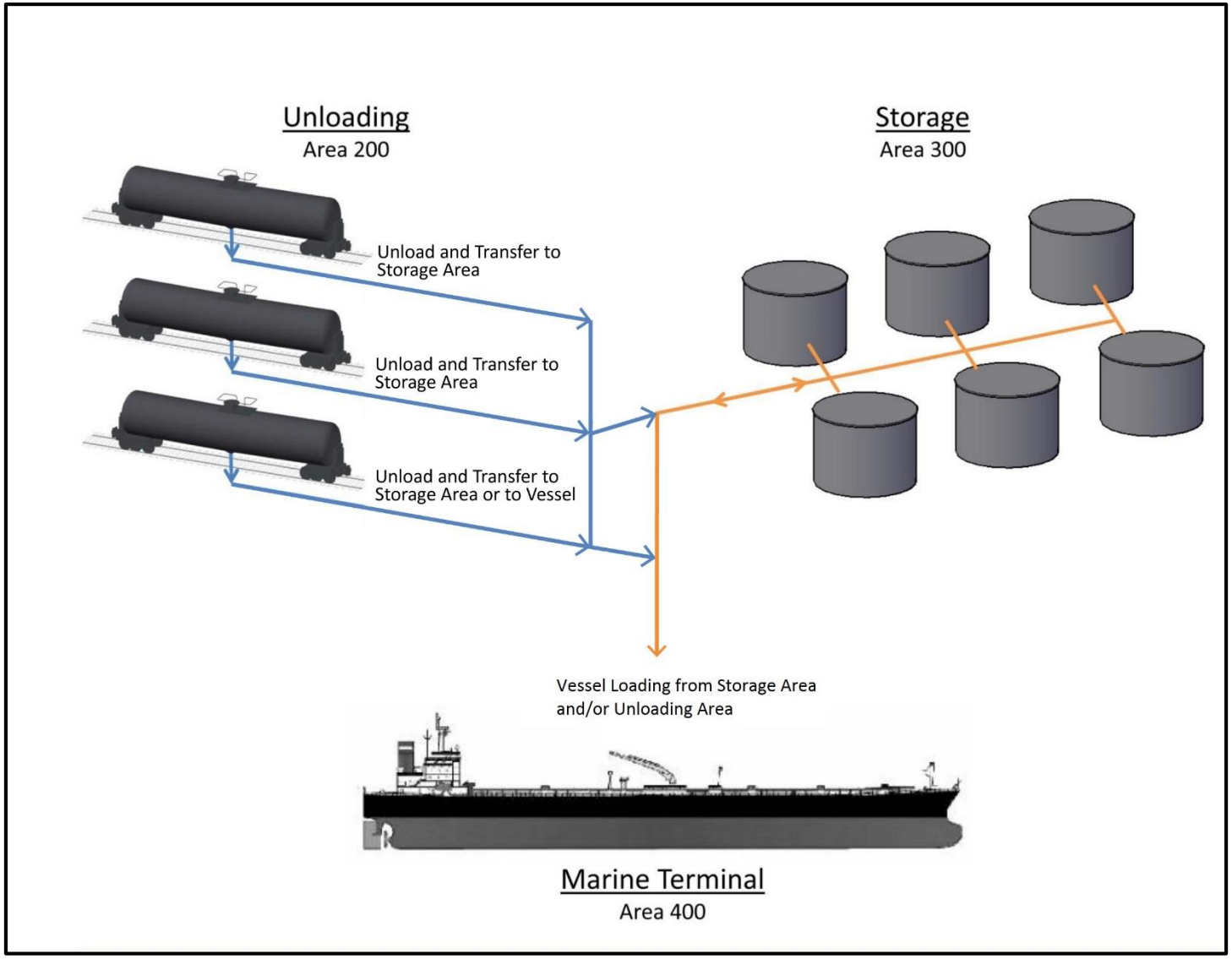


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Figure 2.3-1. Product Flow Diagram (Revised)

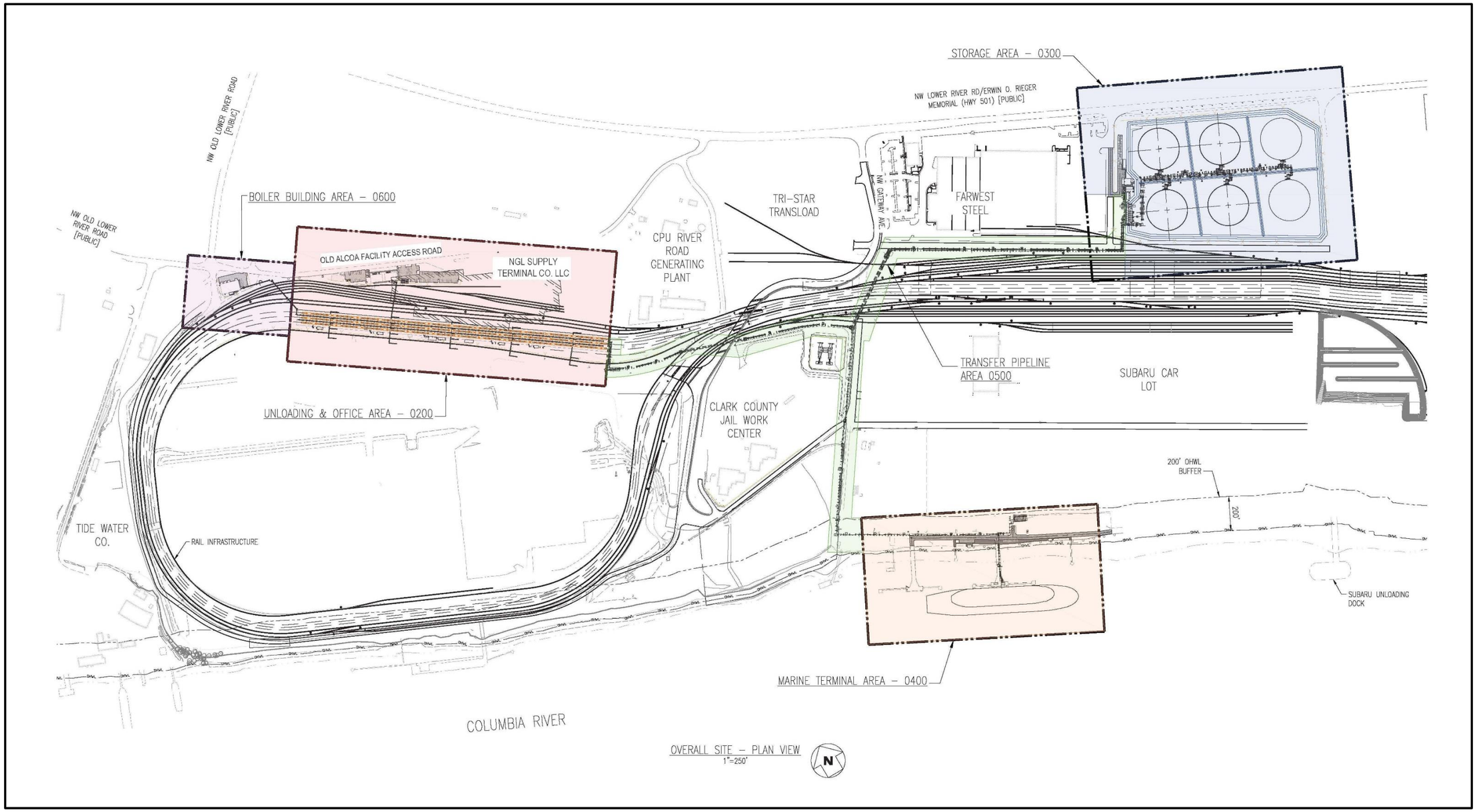

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Figure 2.3-2. Overall Site Plan (Revised)

Primary vehicular access to the proposed project will be to the Administration Building accessible from NW Lower River Road (SR 501) via the public access to Old Lower River Road, and then the Old Alcoa Facility Access Road[4]. Parking will be provided for Facility employees to park their personal vehicles during the workday. The Storage Area will be accessed from a private drive shared with Farwest Steel from NW Lower River Road. The Storage Area is not anticipated to require full-time staffing and parking will be provided only for routine maintenance. The marine terminal will be accessed by NW Gateway Avenue and Harborside Drive via a newly constructed driveway. No modifications are proposed to existing public roads accessing this area of the Port. Parking will be provided for vehicles at the Marine Terminal. A reconstructed asphalt and gravel area at the berths will be used for parking and storage of spill response equipment. Although the Area 600 Boiler Building will not be occupied full-time, parking for maintenance vehicles will be provided.

2.3.1.1 Facility Elements Included in the Application for Site Certification

Project Elements under EFSEC Jurisdiction

The Applicant is seeking site certification for the Facility configuration at full capacity. Based on market demand for subscriptions by potential clients to use the Facility to deliver crude oil, the Applicant may choose to construct either all elements of the Facility upon receiving site certification, or may choose to defer construction of some of the Facility elements to a later date. From the beginning of operations, regardless of whether the deferred elements are constructed or not, the Facility will have the capability to receive an average of 360,000 barrels per day of crude oil. Construction of the potentially deferred elements will not add receipt capacity on a daily basis; construction of the potentially deferred elements will allow the Facility to receive and handle different crude qualities (i.e., heavier pipeline quality crudes that require heating for transfer operations), and additional capability to segregate crudes for different clients.

Upon receiving site certification from EFSEC and all federal approvals, the Applicant expects to construct the following facilities ("Phase I"), at a minimum:

- All ground improvements necessary for the Facility
- Shifting of a portion of existing Port rail infrastructure to allow arrival, switching and departure of trains (see section 2.3.2)
- The Area 200 unloading building[5]
  - The entire unloading building structure and foundations
  - Two of the unloading tracks, including rail tracks, trenches, pump basins, catwalks/gangways and all piping necessary to support operations
  - One unloading track including only the concrete trench, but no rail or associated piping, gangways or mezzanines

[4] This road is currently unnamed by the Port; for purposes of this ASC it is being referred to as the "Old Alcoa Facility Access Road".

[5] The rail unloading "building" is likely to be considered more properly a "structure/weather enclosure" with minimal siding for fire-protection purposes, and not a "building" under the definition of the National Fire Protection Code. However, in the remainder of this application, it will be referred to as a "building."

- Area 200 administrative and support buildings
  - The administrative building
  - One of the two support buildings
  - The Area 200 containment tanks
- Area 300 storage area, including
  - The entire exterior containment berm sized and designed for 110 percent of the API 650 maximum capacity of the largest storage tank and the rainfall from a 24-hour, 100-year storm event for the entire berm area
  - The four storage tanks designed to handle non-heated pipeline quality crude
  - The intermediate berms sized to contain 10 percent of the contents of a tank
  - Stormwater facilities to capture, treat, and convey stormwater associated with all six tanks
- Area 500 transfer pipelines serving the concurrent unloading of unit trains staged at the two unloading tracks described above, and the conveyance to the storage area
- Area 500 transfer pipelines serving the conveyance of crude oil from the storage area to the marine terminal and the associated return line (described in section 2.3.5)
- Area 400 Marine Terminal facilities designed to handle the conveyance of crude oil to a marine vessel at full vessel loading capacity rates, including
  - All of the berth improvements necessary to support vessel berthing
  - The entire dockside safety unit, and hydrogen sulfide treatment and MVCU systems
  - All dockside and shoreside spill prevention and control equipment
- Fire-suppression facilities sufficient to meet the suppression needs of the facilities installed
- Wastewater collection, treatment, and discharge facilities to meet the needs of the facilities installed
- Stormwater collection, treatment, and discharge facilities to meet the needs of the facilities installed

Contingent on evolving market conditions, the Applicant may choose to defer construction of the following additional elements ("Phase II") (see Figure 2.3-3) to a later date:

- Rail unloading structure in Area 200
  - The catwalks/gangways and all piping necessary to support operations of the third unloading track, which may include the ability to handle heated crude
- Area 200 administrative and support buildings
  - The second of the support buildings
- Area 300 storage including:
  - The two tanks that may have the capability to accept heated crude
- Transfer pipelines serving the concurrent unloading of unit trains staged at the third unloading track in Area 500
- The Boiler Building (Area 600) and the storage building in Area 300
- Fire-suppression facilities sufficient to meet the suppression needs of the additional facilities installed
- Wastewater collection, treatment, and discharge facilities to meet the needs of the facilities installed
- Stormwater collection, treatment, and discharge facilities to meet the needs of the facilities installed

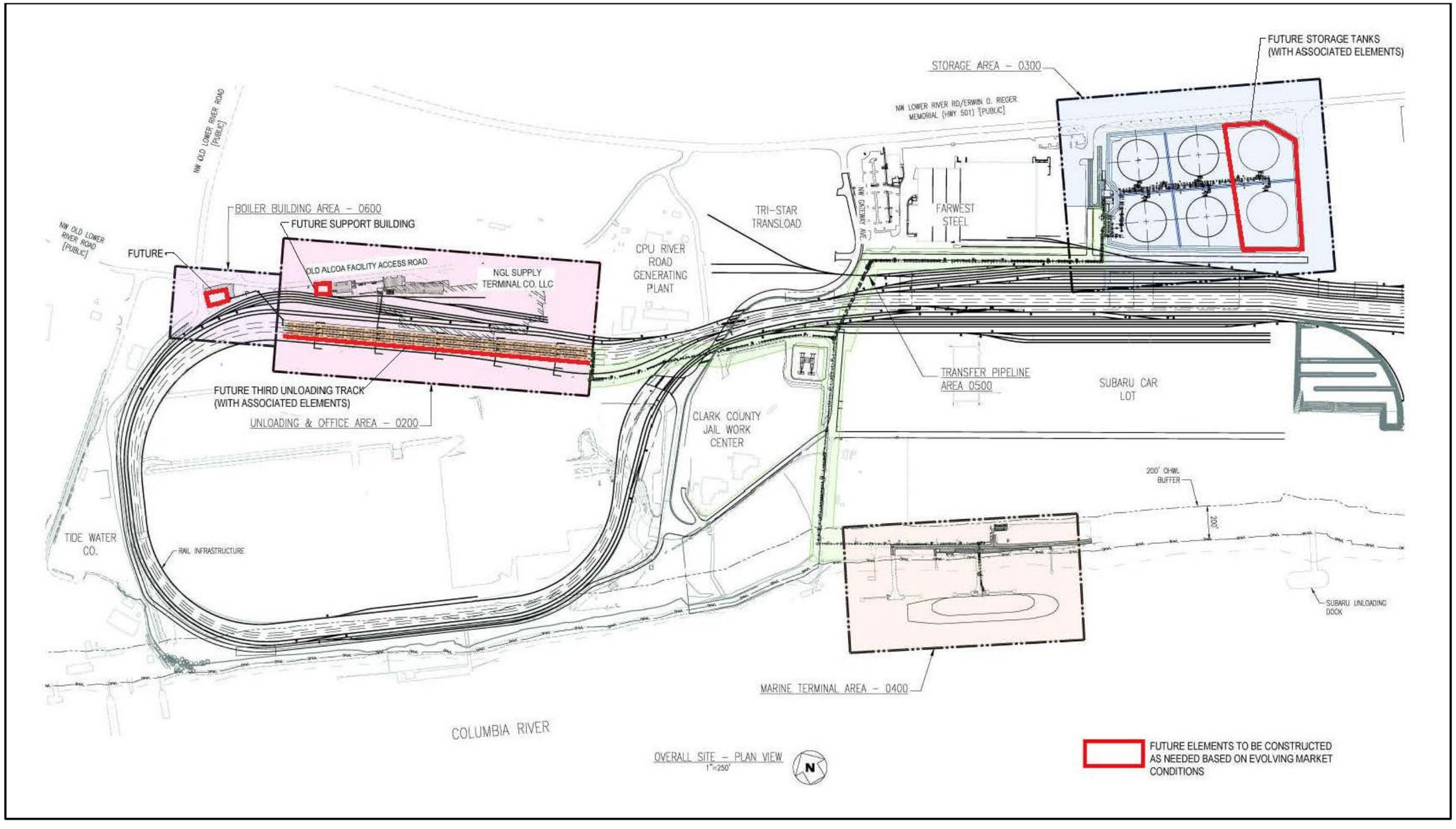

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Figure 2.3-3. Overall Site Plan – Facility Elements Potentially Deferred (Revised)

As described in section 2.3.2, in the future, the Applicant will construct a rail loop. The Applicant will receive in exchange the exclusive use of an existing Port loop.

The Applicant expects a 20-year lifetime for the Facility. The Port lease provides for an initial 10-year term with two 5-year extension options. During the 20-year expected lifetime provided in the lease, the Applicant requests that site certification be granted for operation and maintenance of all of the above facilities. Maintenance dredging at berths 13 and 14 are part of the Marine Terminal (Area 400) but are a separate operation to be conducted by the Port of Vancouver under its existing and future approvals granted by local, state and federal agencies to which such dredging is subject. The most recent approvals for dredging within these areas were received in 2013 and include appropriate handling details for dredged materials (USACE Permit No. NWP-2007-916, Water Quality Certification Order #5984). For this reason, Port maintenance dredging is not included in the site certification.

Facilities Not Under EFSEC Jurisdiction

The Applicant discloses that the following elements will be approved and constructed by others in support of the Facility, and they are not part of this request for site certification:

- Utility connections to the Facility site boundaries, e.g., natural gas supply from Northwest Natural Gas, electricity supply line from Clark Public Utilities, water supply from the City of Vancouver.
- Terminal 5 loop tracks constructed by the Port as part of the WVFA project, and operation and maintenance of loop tracks that revert to Port control subsequent to loop track exchanges with Vancouver Energy Terminal (see section 2.3.2).
- As noted above, maintenance dredging of berths 13 and 14 by the Port.

2.3.2 Rail Infrastructure

The project site has been selected to take full advantage of dual Class 1 (BNSF and Union Pacific) unit train access at the Port's Terminal 5. The existing rail infrastructure at Terminal 5 is illustrated in Figure 2.3-4.

Typically an average of four unit trains per day will be delivered onto the Port's rail network via Class I railroad lines for staging on the rail infrastructure serving the Facility. However, on occasion, a fifth train may arrive within a daily 24-hour period, and begin unloading in the following 24-hour period. On other days (or subsequent days), only three trains may arrive within certain 24-hour periods, thus equating to an overall average of four train arrivals per day. Trains will arrive at Terminal 5 from the east where they will exit the Class 1 mainlines and enter the Port's industrial rail network and travel westward to the Terminal 5 rail loop. The trains will travel counterclockwise on Terminal 5 rail loop tracks, and will then be indexed through the rail unloading building located on the north side of the Terminal 5 rail loop. Following unloading, the trains would leave Terminal 5 and travel eastward on the Port's industrial rail network until they re-enter the Class 1 rail system. The design of the rail infrastructure will accommodate complete unit trains, eliminating the need to break trains into smaller segments requiring multiple switching movements during the unloading process.

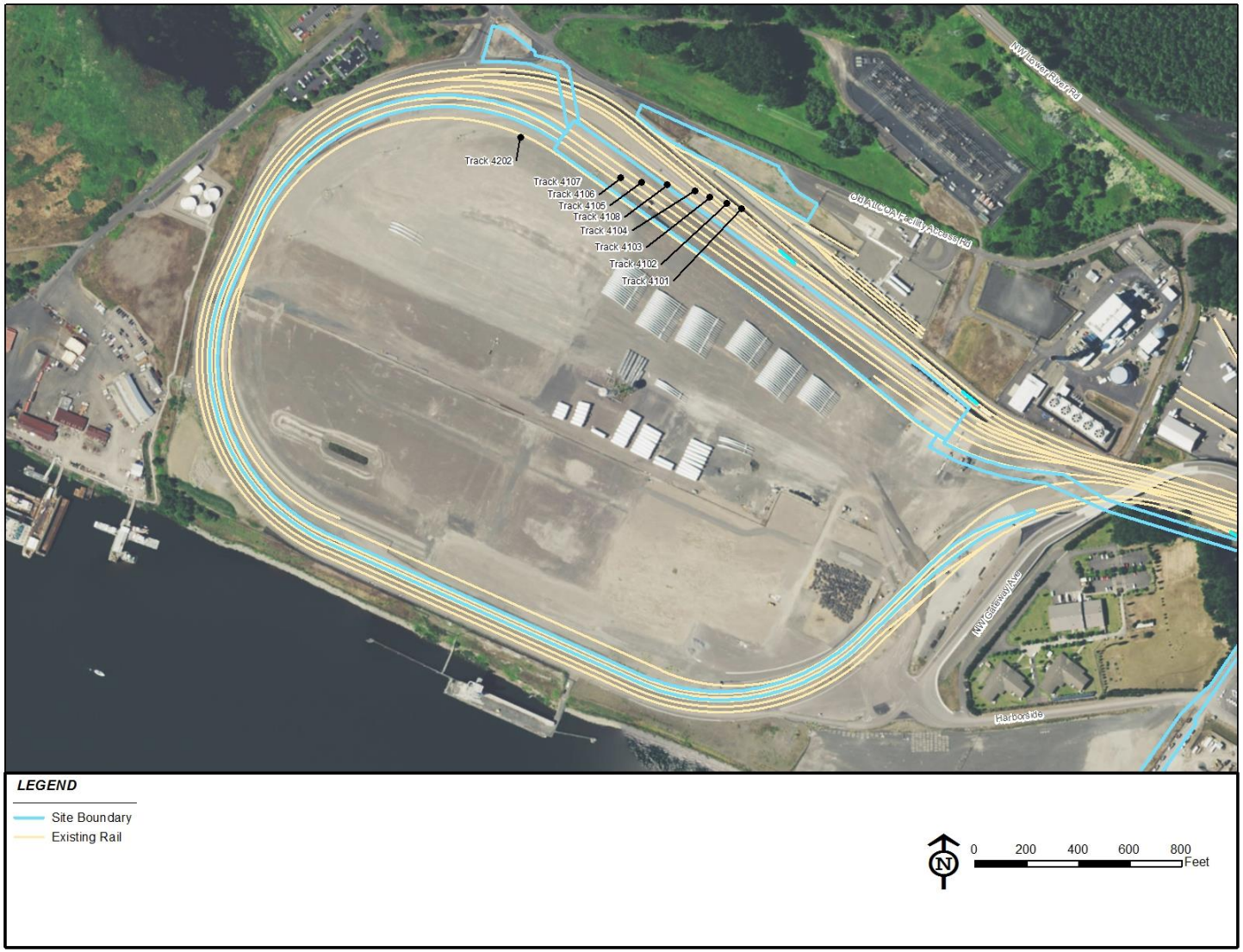

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Figure 2.3-4. Existing Rail Infrastructure (Revised)

The Port has permitted, has begun construction, and will continue to construct the WVFA project elements at Terminal 5. At completion, WVFA project elements at Terminal 5 will consist of five loop tracks. For purposes of the discussion below, these tracks are identified by numbers[6]. Table 2.3-2 summarizes the status of the loop tracks and their relationship to Vancouver Energy Terminal operations[7]. For illustrative purposes, these tracks are identified on Figure 2.3-5.

Table 2.3-2. Summary of Terminal 5 Loop Tracks and Respective Use by Port and Vancouver Energy Terminal

Track Number	Activity	Permitted as Part of WVFA Project	Constructed as Part of Vancouver Energy Terminal	Used by Vancouver Energy Terminal
4102	Shift existing track (WVFA Project 11A)	Yes	No	No
4105	Shift existing track (WVFA Project 11A)	Yes	No	Yes (when triggered[a])
4106	Construct new track (WVFA Project 11A)	Yes	Northern portion relocated[b]	Yes
4107	Existing rail line	Yes	Northern Portion Relocated	Yes
4101	New rail line[c]	No	Yes[d]	No
4202	New rail line	Yes	No	No

Notes:
a When unloading volumes reach and exceed 120,000 bpd, the Port would grant exclusive use of track 4105 to the Applicant.
b The northern portions of tracks 4106 and 4107 will be realigned by the Applicant to allow train entry into the unloading structure.
c Installation of track 4101 also requires reduction of inspection road width from 24 feet to 13 feet and the installation of pullouts to allow passing of vehicles.
d When unloading volumes reach and exceed 120,000 bpd, the Applicant will transfer use of track 4101 to the Port.
WVFA = West Vancouver Freight Access

Three loop tracks have been constructed to-date: tracks 4102, 4105, and 4107. All of these tracks have been permitted and constructed under existing WVFA permits. In June 2015, the Port began completion of WVFA Project 11A, which consists of shifting the two outermost existing Terminal 5 rail loop tracks outward (4105 and 4102) and constructing an additional loop track (4106) between tracks 4105 and 4107. This will result in the presence of four loop tracks (4102, 4105, 4106, and 4107) at the time Vancouver Energy Terminal is expected to begin construction. These four tracks comprise four of five of the WVFA permitted tracks. In the future, the Port will also construct a fifth loop track at Terminal 5 (4202). This track will be located on the inside of the Terminal 5 loop and is not related to Vancouver Energy Terminal. The current numbering on those tracks is (from outermost to innermost) 4102, 4105, 4106, 4107, and 4202.

[6] These numbers are provided for illustrative purposes, and as various WVFA project elements are completed, numbers may be changed or reassigned by the Port.
[7] The status is described as of June 2015 (Harding 2015).

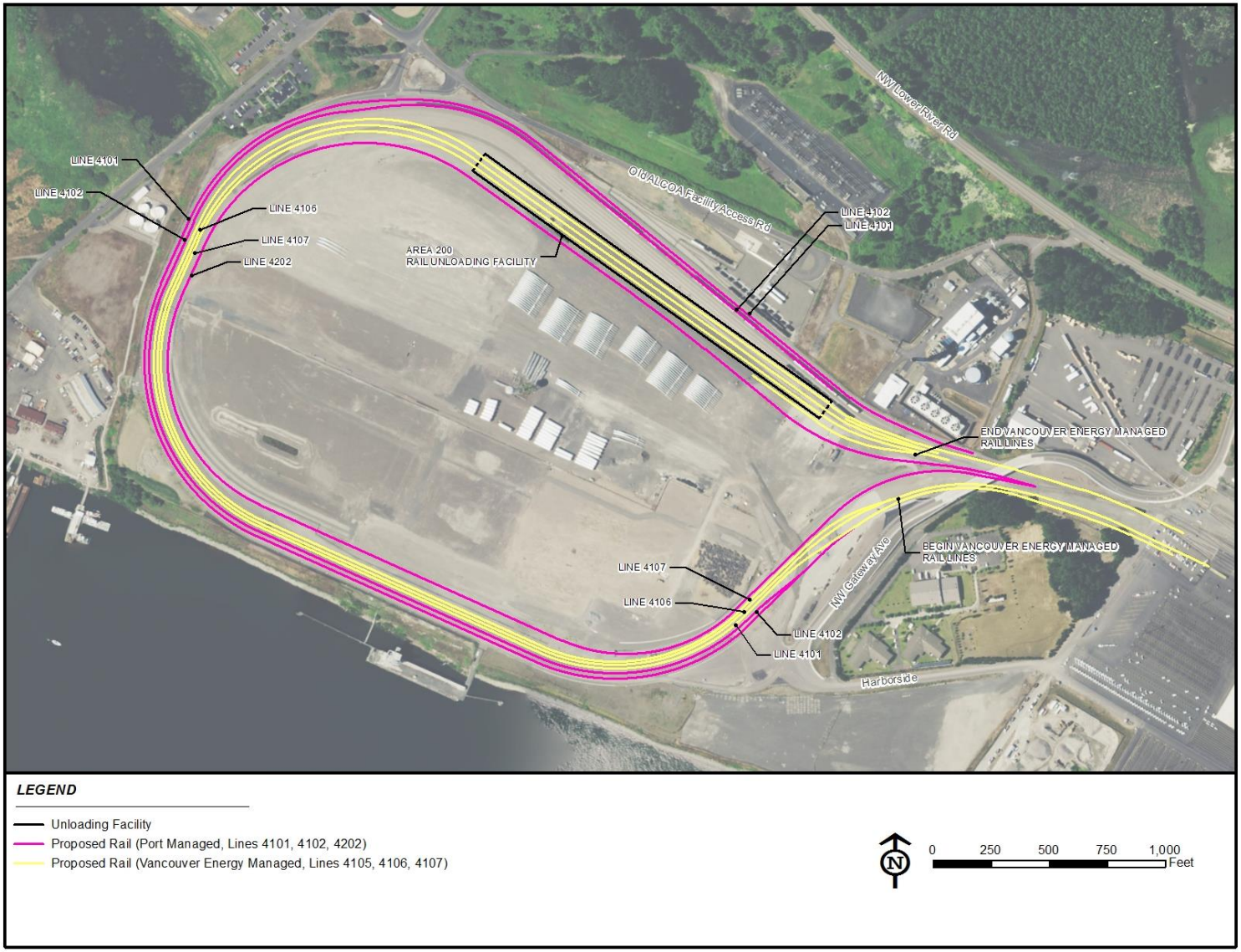

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Figure 2.3-5. Rail Improvements (Revised)

As part of Facility construction, the Applicant will relocate approximately 1,500 feet of tracks 4106 and 4107 to allow for track tie-ins into the Area 200 unloading structure, for release of tank cars back into the main track from the rail car unloading facility, and to separate tank cars in need of repair or further inspection. Upon beginning of operations, Vancouver Energy Terminal will exclusively use these two tracks.

In the future, the Applicant will construct an approximately 4,900-foot-long additional track (Track 4101). This track will be located on the outside of the Terminal 5 loop. The track will consist of railroad ballast (rock), 115-pound hardened steel rails that are continuously welded and mounted on either 8-foot by 6-inch or 8-foot by 3-inch crossties, and other miscellaneous materials. Crossties will be concrete for the most part, except at crossings where timber would be used. The rails will be continuously welded to reduce noise and increase safety. The rail loops will be designed to comply with railroad and federal requirements.

The corridor that will be used for the additional rail loop will overlap with a portion of the footprint of the existing gravel inspection road located on the periphery of the Terminal 5 rail loop infrastructure. As part of installation of Track 4101, the road width will be reduced to 13 feet from 24 feet without modification to the southern extents of the inspection road. Pullouts will be added along the road to allow passing of vehicles along the corridor. The Applicant will make these modifications in association with the construction of Track 4101.

When Facility unloading volumes reach and exceed 120,000 bpd, Vancouver Energy Terminal will take over Track 4105 from the Port for exclusive use. The newly constructed Track 4101 will then be transferred to Port general use and will not be used by the Applicant. Upon this transferal, Vancouver Energy Terminal will have exclusive use of tracks 4105, 4106, and 4107. Shifting of the northern portions of tracks 4106 and 4107 will be under EFSEC jurisdiction. Construction of Track 4101 and the associated narrowing of the inspection road and addition of turnouts will also be under EFSEC jurisdiction. The Applicant's use of tracks 4106 and 4107 will be under EFSEC jurisdiction.

When loops are exchanged between the Applicant and the Port, loops relinquished to the Port will no longer be subject to EFSEC jurisdiction; however, loops under Vancouver Energy Terminal control would fall under EFSEC jurisdiction. The Applicant will maintain the third loop over which it obtains exclusive control for the life of the Facility.

Because rail operations are dynamic, as each of the new loops becomes operational, the Port and Vancouver Energy Terminal may reallocate amongst themselves which loops are for exclusive use by the Applicant, and which are general Port use.

The Applicant will operate two SW1500 switching locomotives in support of Facility operations. These locomotives will be used to remove and temporarily stage tank cars that have been identified as having potential deficiencies that prevent them from being released back to the rail carrier. These tank cars will be emptied of contents using the unloading process described below, disconnected from the unit train, and repositioned for temporary storage until they are

maintained on site, or removed from the site for repair at a separate location[8]. It is anticipated the switching locomotives would be leased or purchased from one of the major locomotive manufacturers, such as Trinity, Unity, Greenbriar, or Utlx.

2.3.3 Area 200 – Unloading and Office

2.3.3.1 Rail Car Unloading

General Configuration

The rail unloading elements (Area 200) will be located south of the Administrative and Support Buildings. The rail unloading building will span tracks 4105, 4106, and 4107. Existing rail lines will separate the unloading elements from the Administrative/Support Buildings. These existing rail lines are not part of the Facility. A pedestrian bridge will provide access from the Administrative/Support Buildings to the rail unloading building. Figure 2.3-6 provides a plan view of the arrangement of the rail unloading building with respect to existing rail lines and the Administrative/Support Buildings.

The rail car unloading elements will be designed to receive and unload crude oil unit trains. Two of the unloading tracks (4106 and 4107) will accommodate trains carrying crude oil that can be unloaded and conveyed without being heated; the third unloading track (4105) will accommodate trains carrying crude oil that can be unloaded and conveyed without being heated as well as crude oil that may need to be heated (to approximately 150°F) prior to unloading and conveyance to storage[9].

Each unit train will include approximately 100 to 120 tank cars, 2 buffer[10] cars, and 3 locomotives. Typical unit train length will be approximately 7,800 feet. Tank cars typically hold between 650 and 750 barrels of crude oil.[11] A typical unit train will deliver between 65,000 and 90,000 barrels of crude oil.

Vancouver Energy will only accept tank cars for crude oil shipment into the Facility that meet or exceed the U.S. DOT-117 standards specified in 49 CFR 179.202 (including any related federal agency or congressional modifications to those standards). All Facility customers will be required to ship crude oil using tank cars that meet or exceed these standards. Vancouver Energy is committed to making this requirement for all customers concurrent with startup of the Facility and in advance of the phase-out schedule allowed by the U.S. DOT.

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[8] Maintenance of railcars and locomotives necessary for rail transportation are described in detail in Section 6.1.6.1 of the NPDES Engineering Report attached to section 5.3 of this Application. Such activities will be conducted on the rail spur located at the southeast corner of the rail unloading building. Rail containment pans and a concrete surfacing will be provided around the rail spur. Stormwater from the rail spur will be collected in catch basins and containment pans for treatment and monitoring. Any maintenance activities related to rail cars and locomotives will only be completed for cars already on site being processed by the Facility. The Facility will not be used as a maintenance facility receiving rail cars from other parties and transporters for maintenance activities.

[9] Application of heat reduces the viscosity of crude oil. In the case of more viscous crude oils received at the Facility, application of heat will allow such oils to be gravity unloaded within typical Facility operating timeframes, and more easily pumped through the Facility transfer pipelines.

[10] Buffer cars, which are empty rail cars that serve to separate the locomotives from cars carrying crude oil, are required by federal regulations.

[11] A barrel of crude oil contains 42 gallons.

The unloading of a train would take approximately 12 to 14 hours. Unit trains staged concurrently on each of the unloading tracks can be unloaded at the same time.

The rail car unloading facility is composed of a covered structure through which the trains will be pulled and safely secured where the unloading will occur. The building that houses the rail car unloading functions will be approximately 1,850 feet long by 91 feet wide, with a maximum height of approximately 50 feet. Figure 2.3-8 illustrates cross-sections of the unloading building at the location of the walkway to the Administrative/Support Buildings, and at a typical internal walkway. The structure will consist of a steel frame with sheet metal walls painted a neutral color. The structure will be open on both ends and have sides that stop short of the roofline to allow continuous venting. The structure will also have translucent panels for natural lighting as well as interior lighting. The building and its components will be built to applicable building and safety codes as outlined in section 4.1. The foundation for the structure will use pile supports under the trenches and spread footings elsewhere. Piling will be driven to a depth of 75 feet and spread footings will be installed up to 4.5 feet deep.

Unloading Piping

The unloading area is designed to accommodate three parallel tracks. Each track will include 30 unloading stations for a total of 90 stations, 30 stations per track. Track 4105 will be equipped with steam piping allowing rail cars unloaded on this track to be heated with steam, as described in more detail below.

The 30 unloading stations for each track are subdivided into five groups of six unloading stations. Figure 2.3-7 illustrates the typical configuration of rail car unloading. Each unloading station will accommodate one rail car. Each unloading station will include the following:

- Hoses equipped with dry fit connectors used to gravity drain the crude oil from the tank car to a collection header pipe
- Walkway (gangway) grating to serve as the unloading work platform
- Mezzanine catwalks to access the top of the tank cars
- Collection pans between rails that are piped to a separate line that conveys stormwater and inadvertent releases to the rail unloading facility containment tanks
- Concrete ground surfaces between the unloading rail tracks
- A vent line to the top of the cars to allow vapor in the manifold to return to the rail car during unloading to prevent vapor from leaving the system during the unloading process
- A vacuum breaker that allows the tank car to maintain negative 0.5 psi to atmospheric pressure while the car is connected and unloading

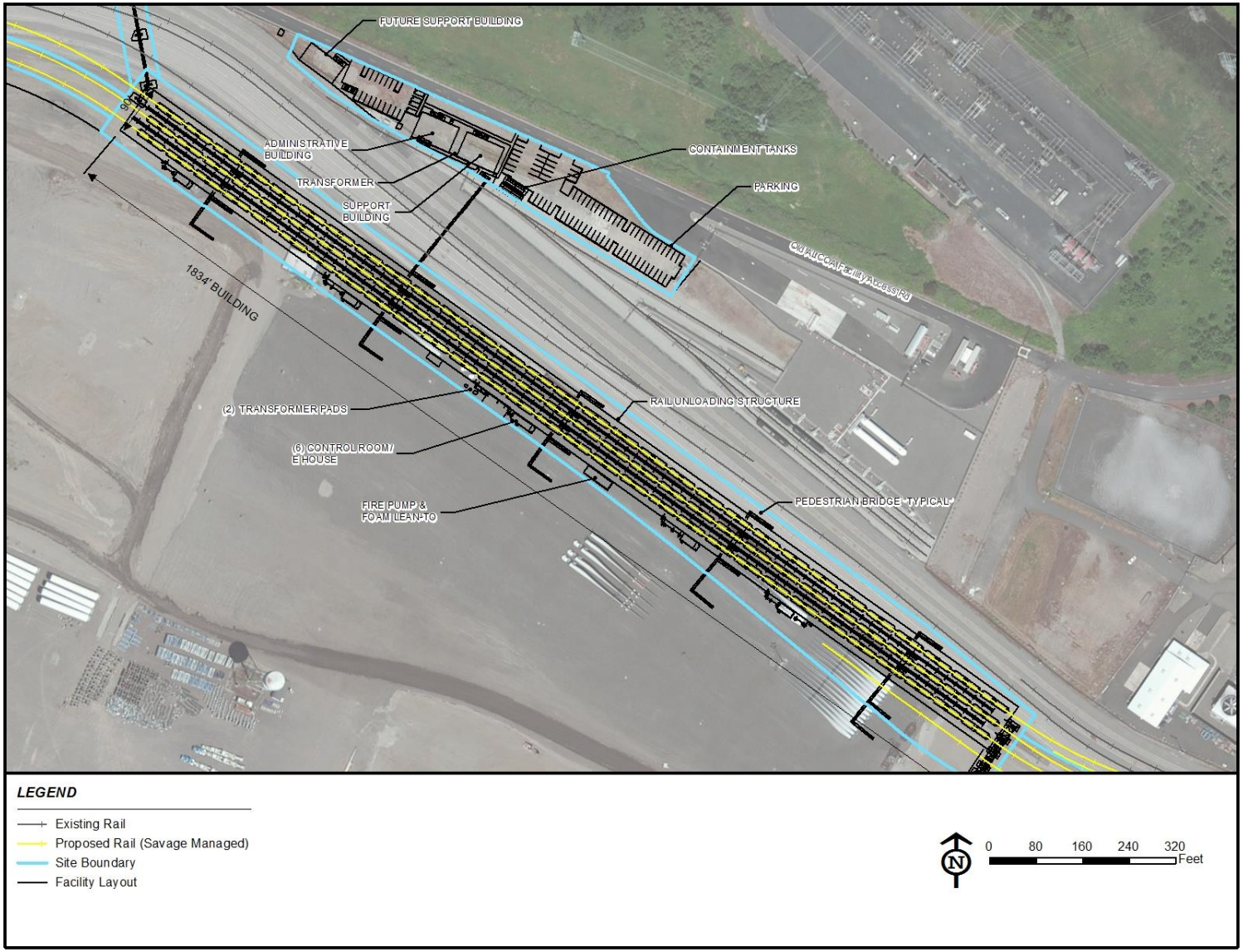

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Figure 2.3-6. Rail Car Unloading Facility (Revised)

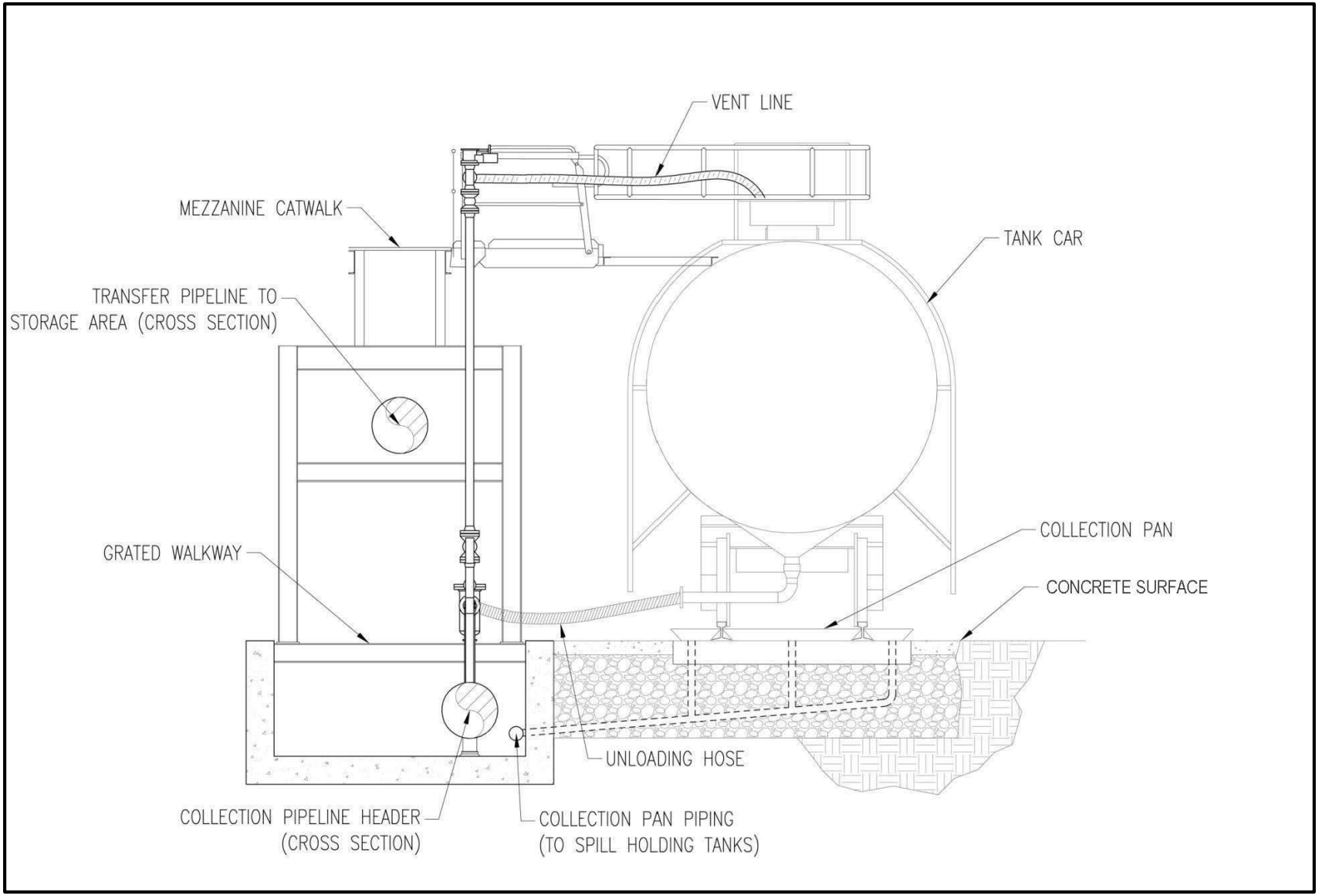

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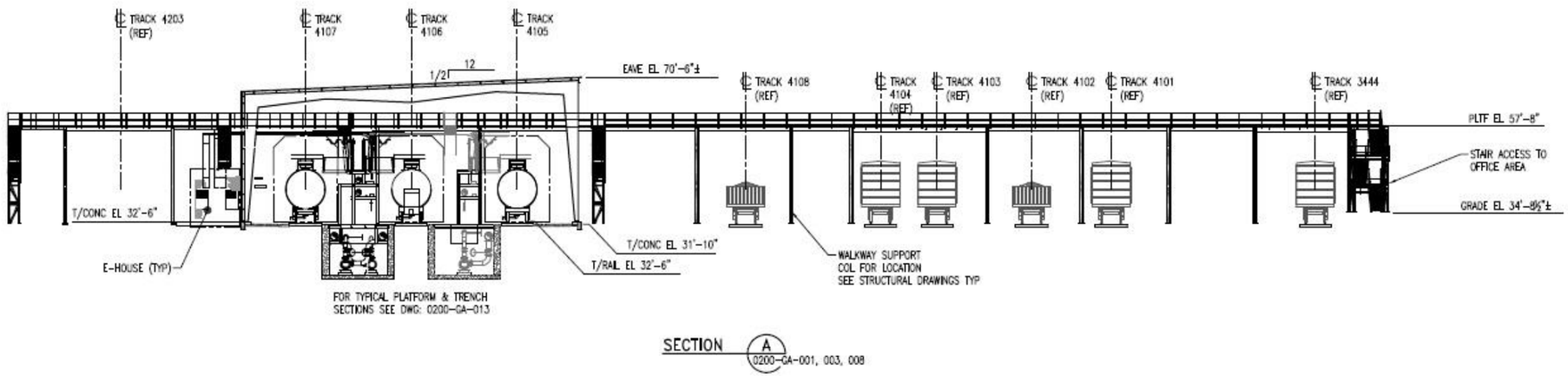
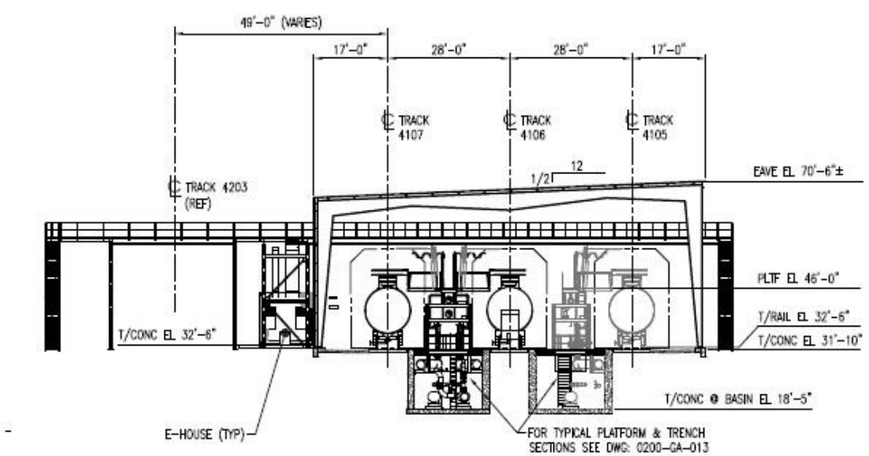
Figure 2.3-7. Rail Car Unloading Facility Cross Section (Revised)





TYPICAL SECTION THRU PUMP BASIN

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The 30 unloading stations with the ability to heat crude oil unit trains (Track 4105) also will be equipped with steam connections to heat the crude oil to decrease its viscosity and allow it to flow more easily. Steam will be produced in the Area 600 Boiler Building (described in section 2.3.8 below) and piped to the unloading facility. Tank cars that receive steam will be fitted with permanent internal steam manifolds at the bottom of the car. Inlet steam hoses will be connected to each car to allow steam to circulate in the manifold, thereby warming the contents of the tank car. Steam condensate exiting the manifolds will be collected via condensate hoses, and piped back to the steam boilers in a closed loop system. The cars will be heated to approximately 150°F.

Unloading and conveyance of the crude oil will be conducted so as to prevent exposure of the oil to the ambient atmosphere at all times from when it leaves the rail car to when it enters the storage tanks. During the entire unloading process, neither the crude oil nor crude oil vapors will be directly openly exposed to the atmosphere.

Flexible vent hoses will be manually connected to a valve at the top of the car accessed by a movable gangway. The vent hoses will connect to the collection header. Vapors leaving the collection header as oil flows into the header will travel through the vent hose to the car as the crude oil drains from the car. This prevents vapors from being vented to the atmosphere.

Unloading hoses will be manually connected to the valves on the cars using dry fit connectors, one hose per tank car. Dry fit connectors are designed so that the crude oil in the hose cannot come into contact with the atmosphere. The connector is designed such that crude oil will not flow without a secure connection. Each hose will be equipped with an automatic shutoff valve. Once the dry fit connector has been secured, the crude oil will gravity-drain from the cars to a collection header. The hoses will also have an emergency shutdown (ESD) valve before the collection header. The valve will automatically close during a fire or if an ESD button is depressed in the building. Buttons are located at the bottom of all the stair landings and in between stations on the upper mezzanine.

The collection header collects the flow from a grouping of six cars. The collection headers will be housed in below-grade watertight concrete trenches running parallel to the rail tracks. A single 9-foot-wide by 5-foot-deep trench will serve tracks 4106 and 4107; a 7-foot-wide by 5-foot-deep trench will serve track 4105. Although the primary purpose of the trench is to house the product collection header, stormwater and inadvertent release collection line, and electrical and data lines, the trench will also act as secondary containment. The combined secondary containment volume of both below-grade trenches, pump basins, and containment collection system is approximately 34,900 bbls.

Each collection header is directly connected to a dedicated pumping station which transfers the crude oil into a 24-inch-diameter transfer pipeline (one per track), which will collect the flow from all five pump basins on that track. As the crude oil flows from the collection header to the pumping stations, it will pass through a basket strainer to remove solids that may be present. The pumping stations monitor volumetric flow rate, crude oil density, and contaminants (sediment and water), and collect regular samples of the crude oil for analysis. The pumps are housed in pump basins beneath the rail unloading building. Each of the five pump basins serving tracks 4106 and 4107 will measure approximately 16 feet wide by 55 feet long and 15 feet deep. The five pump basins serving Track 4105 will measure approximately 16 feet wide by 51 feet long and 15 feet deep. Two pumps will serve each offloading header, with one acting as a

primary and the second as an on-line spare on standby. During pumping, the crude oil will not come into contact with the vaults; however, the pump basins will serve as secondary containment. The trenches and pump basins will be constructed of concrete, coated with sealant and include chemical resistant joint sealant. The trenches will be designed with a water stop at the concrete joints; the water stop will prevent groundwater from entering the trench, and will hold water collected within the trench, making the trenches watertight.

The discharge of all five unloading pumping stations will be combined into one 24-inch-diameter transfer pipeline per track, which will convey the crude oil to the storage tanks in Area 400. This transfer pipeline is part of Area 500 and is described in detail below. There will be a total of two non-heated 24-inch transfer pipelines from the non-heated unloading stations to the storage area inlet manifold. The discharge from the pumping stations with the potential for heating will be combined into a separate heat-traced and insulated, 24-inch transfer pipe to the storage area heated inlet manifold.

Unloading Facility Pedestrian Access

One pedestrian bridge will provide access for workers from the Administrative/Support Buildings, over the existing Terminal 5 rail loops, and to the interior of the rail loop. An additional four pedestrian bridges will allow workers to pass over the unit trains once they are inside the rail car unloading facility. The pedestrian bridges will be grated and a minimum of 3 feet wide to facilitate emergency access.

Rail Car Unloading Facility Containment Tanks

Approximately three double-shelled containment tanks, with a total capacity of approximately 1,500 barrels, will be constructed south of the Area 200 parking lot. These tanks will be connected to a piping system that will receive wastewater and inadvertent releases captured in the collection pans and unloading building floor drains. The combined volume of the containment tanks, secondary containment trenches, pump basins, and containment collection systems is approximately 34,900 bbls. The containment tanks are sized to contain the entire contents of a single tank car plus at least an additional 10 percent and three days of average wastewater production from the rail unloading building. Crude oil captured in a collection pan will flow by gravity into a dedicated line, and will be conveyed from the unloading facility to the containment tanks. The tanks will be constructed of steel, and anchored in accordance with applicable seismic design requirements. The tank contents will be disposed of or recycled at an off-site facility with the ability to handle the waste.

E-Houses, Transformer, Air Compressor, and Fire Pump and Foam Building

The following elements will be located in Area 200 (see Figure 2.3-2), and will support the unloading operations,

The unloading process will be controlled from six E-houses (some containing control rooms). The integration of the control functions of these E-houses is described in detail in section 2.3.6.1 below. Five of these E-houses will be approximately 325 square feet with a maximum height of 15 feet. One of the E-houses will be approximately 450 square feet with a maximum height of 15 feet.

Electrical equipment for the unloading facilities includes two transformers that will regulate electrical output to the unloading facility, an electrical meter, and electrical switchgear. Electrical equipment will be pad-mounted on concrete surfacing totaling approximately 1,100 square feet.

A fire pump and foam building will house an emergency fire pump and fire protection systems associated with the unloading facility. A small storage tank (500-gallon, double-walled) will be located adjacent to the emergency fire pump within the building to hold ultra-low sulfur diesel fuel. A fire foam concentrate tank (1,000-gallon, single wall with bladder) is also located inside the building. The single-story building will have an approximate footprint of 750 square feet. Fire suppression systems associated with the unloading building are described in detail in section 4.1.2.2.

Rail Car Receipt

The Applicant will impose standard requirements on crude oil specifications (specs) and quality with all shippers in order to manage the integrity of the crude oil received at the Facility (Wright 2016).

Vancouver Energy will only accept tank cars for crude oil shipment into the Facility that meet or exceed the U.S. DOT-117 standards specified in 49 CFR 179.202 (including any related federal agency or congressional modifications to those standards). All Facility customers will be required to ship crude oil using tank cars that meet or exceed these standards. Vancouver Energy is committed to making this requirement for all customers concurrent with startup of the Facility and in advance of the phase-out schedule allowed by the U.S. DOT.

2.3.4 Administrative and Support Buildings

The proposed project will require three approximately 3,400-square-foot office buildings for administrative functions, lockers, restrooms, and other employee support facilities. The building foundations will consist of a concrete slab with steel piers. These elements will be located on the north side of the Terminal 5 loop south of the existing private road. Parking and landscaping will be provided per City standards. To direct the flow of visitors, signage identifying the Facility will be located in the vicinity of the administrative and support buildings, or the Area 600 Boiler. Additional signage may also be included at existing common Port entrance locations where the Port manages signs for multiple tenants.

2.3.5 Area 500 – Transfer Pipelines

A combination of above- and belowground steel transfer pipelines will convey crude oil from the rail unloading building in Area 200 to the storage tanks in Area 300 and from the storage tanks to the marine vessel loading system in Area 400. The transfer pipeline system will also be equipped

with valves allowing the crude oil to be conveyed directly from Area 200 to Area 400[12]. Figure 2.3-9 illustrates the transfer pipeline alignment.

At full capacity, the system will include the following:

- Up to three 24-inch-diameter, approximately 1,800-foot-long pipes will collect the crude oil unloaded at the rail unloading stations; one of these pipelines will be electrically heat-traced to ensure that the viscosity of the crude oil will be maintained at approximately 150°F as it is conveyed out of the unloading building.
- Three 24-inch-diameter, approximately 5,500-foot-long pipelines will connect the rail car unloading facility to the storage tanks in Area 300; one of these pipes will be electrically heat-traced to ensure that the viscosity of the crude oil requiring heating will be maintained from the unloading facility to the storage area.
- One 36-inch-diameter, approximately 5,300-foot-long pipeline will connect the storage tanks with the vessel loading system in Area 400. This pipeline will be electrically heat-traced to ensure that the viscosity of the crude oil requiring heating will be maintained from the storage area to the marine vessel loading system.
- One 6- to 12-inch-diameter, approximately 5,300-foot-long pipeline will return crude oil from the vessel loading system back to the storage tanks; this pipeline is provided to handle loading process shutdowns and provide pressure relief and prevent pipe hammer in the pipe conveyance system.[13]
- One 10-inch-diameter (maximum), approximately 600-foot-long pipe will deliver hydrocarbon vapor generated during loading of vessels to the MVCU (described in section 2.3.7).

Piping will be constructed of American Standards Testing and Materials (ASTM) A53 or A106 pipe. Aboveground runs of piping will be supported so that the bottom of the piping is a minimum of 1 foot off the ground on vertical supports located every 20 to 25 feet. The vertical supports will be fixed on spread footings (see Figure 2.3-9). Where multiple pipes are placed within the routing pipelines may be either laid side-to-side, or stacked. Figure 2.3-9, includes a detail of the typical arrangement of an overhead crossing. Expansion loops will be constructed throughout the transfer pipeline runs to accommodate for thermal expansion of the pipelines during operation. The typical configuration of a pipeline expansion loop is shown in Figure 2.3-9. Where road or rail crossings occur and in other areas or limited space, the piping will be housed in underground steel casings or raised above ground for standard American

[12] Transfer of crude oil directly from Area 200 for loading to vessels will result in longer vessel loading times than when crude oil is transferred from the Area 300 storage tanks because the transfer rate will be limited by the gravity unloading rate from the tank cars. The rate is anticipated to be slightly less than half of the transfer rate direct from the storage tanks. Assuming that trains are consecutively staged, it is estimated that it would take 22 to 24 hours to unload four trains to fully load a 46 DWT vessel. A separate "direct transfer system" is not being proposed: rather the permanent transfer pipelines will be equipped with valves to direct crude oil flow towards Area 400 instead of Area 300 when this capability is needed. Only crudes that can be unloaded at ambient temperature (i.e. non heated) would be transferred in this manner. Heated crudes unloaded on the third unloading track will not be transferred directly to Area 400.

[13] Pipe hammer or transient pressure wave is the momentary increase in pressure which occurs in a liquid pipe system when there is a sudden change of direction or velocity of the liquid. When a rapidly closed valve suddenly stops flow in a pipeline, pressure energy is transferred to the valves and piping.

Railway Engineering and Maintenance-of-Way Association (AREMA) clearances. Secondary containment with leak detection will be provided for pipe installed underground (as shown in Figure 2.3-9). Runs of aboveground pipeline will be standard-walled, to ensure ease of inspection and maintenance, and in accordance with the applicable requirements of WAC 173-180-340 and 49 Code of Federal Regulations (CFR) 195.246 through 49 CFR 195.254. Transfer pipeline sections below ground will be cathodically protected and coated to prevent corrosion.

Crude oil flow rates between Area 200 – Rail Unloading and Area 300 – Storage will vary as each rail unloading track could have as few as 1 car or as many as 30 cars being gravity drained and crude oil being pumped to storage at any given time. The API of each crude being unloaded will also affect the gravity drainage rate and subsequent pumping rate to the tanks. The transfer rate from storage to Area 400 – Marine Terminal is designed to be variable to adjust to the type of vessel being loaded and the specific loading phase (see section 2.3.7). However, the system will be designed to allow for an approximate maximum transfer rate of 32,000 bbl/hr.

To allow greater flexibility in operations, the transfer piping system will be equipped with valves to allow crude oil being unloaded in Area 200 to be directly conveyed to the Area 400 Marine Terminal for loading onto vessels. This capability will allow occasional topping off of vessel loads, and may allow the Facility to begin limited operation during the construction of the Area 300 storage tanks. Direct transfer rates from train to vessel would vary depending on the vessel being loaded and the vessel loading phase. Pump systems are expected to be designed for an approximate maximum transfer rate from Area 200 to Area 400 of 14,000 bbl/hr for one feed line and 28,000 bbl/hr for two feed lines.

The piping system and associated supports and foundations will be designed to applicable seismic protection standards (as detailed in section 2.18.1), and will be electrically grounded to protect against the buildup of static electricity during crude oil conveyance. Manual and automatic isolation valves will be located on the piping system at the exit of the rail car unloading facility and at the entrance to the storage tank area. Annual hydrostatic testing on over-water portions will be conducted to meet applicable regulatory requirements and industry standards. The pipeline system will be inspected on a routine basis.

A skid-mounted, 50- by 100-foot proving station will also be installed on a concrete pad at the exit of Area 200. The proving station consists of a series of flow meters that are used to verify the volumetric flow of crude oil through the transfer pipelines as the crude oil is being conveyed in the transfer pipelines from Area 200 to areas 300 or 400. The proving station consists of piping, meters, and associated connection flanges that fully enclose the crude oil during the proving process.

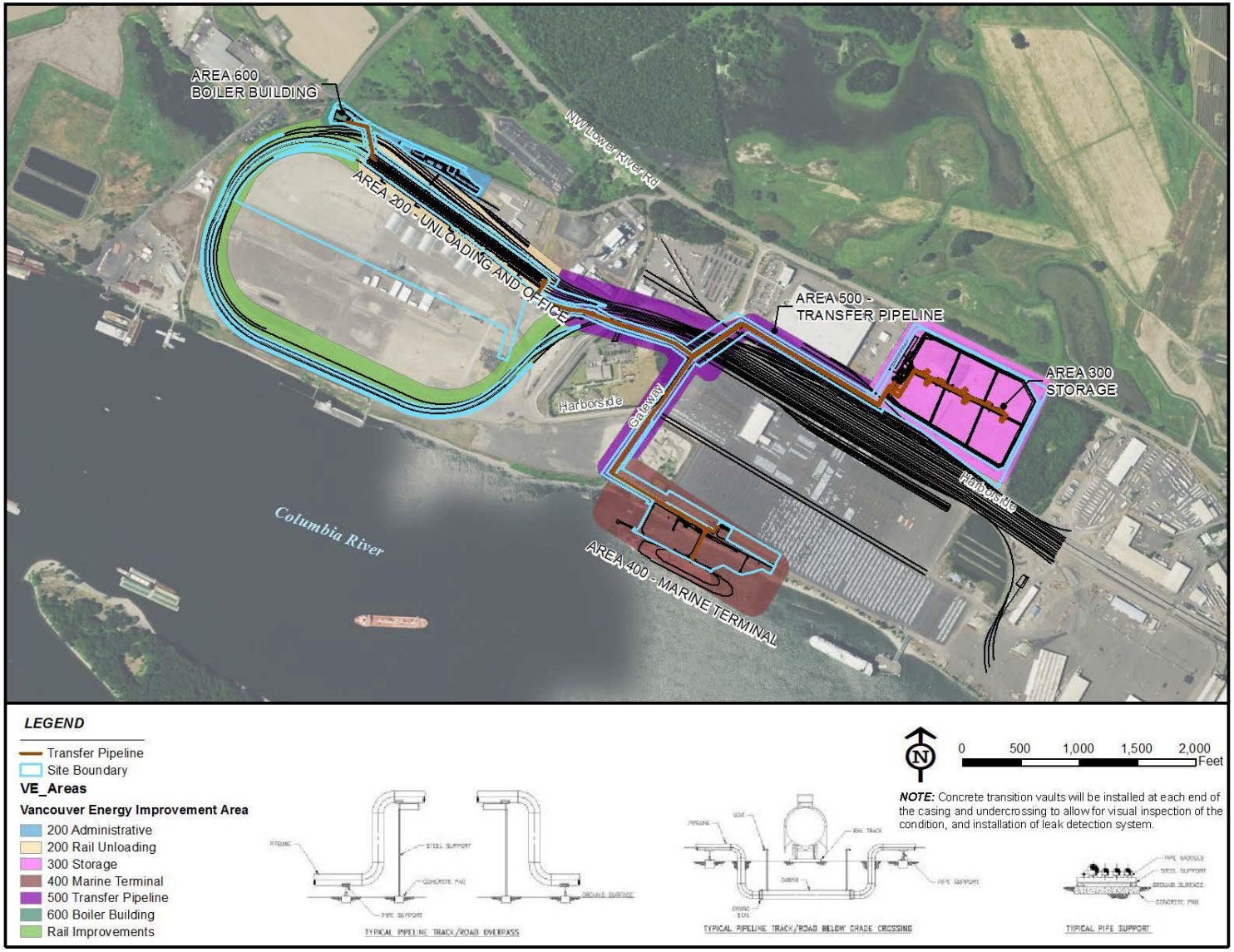

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Figure 2.3-9. Transfer Pipeline (Revised)

2.3.6 Area 300 – Storage

Storage Tanks

The crude oil will be stored in up to six double-bottom, internal floating-roof aboveground storage tanks (ASTs) located in Area 300 (see Figure 2.3-10). These tanks will be approximately 50 feet in height and 240 feet in diameter with a shell capacity of approximately 400,000 barrels each. The normal amount of product stored in each tank will be approximately 360,000 barrels, to take into account the presence of the internal floating roof and the additional headspace required to allow product movement in the event of seismic conditions. The working capacity of the tanks will be approximately 340,000 bbl[14]. The tanks will be painted white and positioned so that the distance between each tank is 120 feet in any direction. A typical cross-section of a storage tank is included in Figure 2.3-12.

The ASTs will be erected in the field and constructed per API Standard 650. AST features include a uniformly supported flat bottom, welded carbon steel construction, and control of crude oil temperature and internal tank pressure to API specifications, and will use appropriate live load characteristics for roof design. Two of the tanks may be equipped with electric tank heaters so that the contents of the tanks can be heated to approximately 150°F to control oil viscosity during loading and unloading. A cross-section of a typical electrical heated tank is shown on Figure 2.3-11. All of the tanks will be equipped with mixers to prevent crude oil from stratifying during storage.

Each tank will have a fixed roof to keep precipitation from reaching the inside of the tank and an internal floating roof with dual seals[15] to control vapor emissions to the atmosphere. The floating roof will be designed to avoid tipping during operations.

The first tank floor provides primary containment and the second floor acts as secondary containment until actions are taken to abate the source of any discharge. The interstitial space within the double-bottomed tanks will include a leak detection system. The tanks will also be cathodically protected to prevent corrosion.

Containment Berm

The tanks will be surrounded by a containment berm approximately 6 feet in height. The distance from the tank to the berm varies from a minimum distance of approximately 33 feet to a maximum of 150 feet. The containment area will be designed with a capacity at least equal to 110 percent of the volume of the API 650 maximum capacity of the largest tank plus precipitation from a 24-hour, 100-year storm event. This capacity reflects the most stringent of Washington spill prevention and control and National Fire Protection Association (NFPA) requirements and exceeds the requirements for secondary containment under 40 CFR 112.7 (Makarow 2015b).

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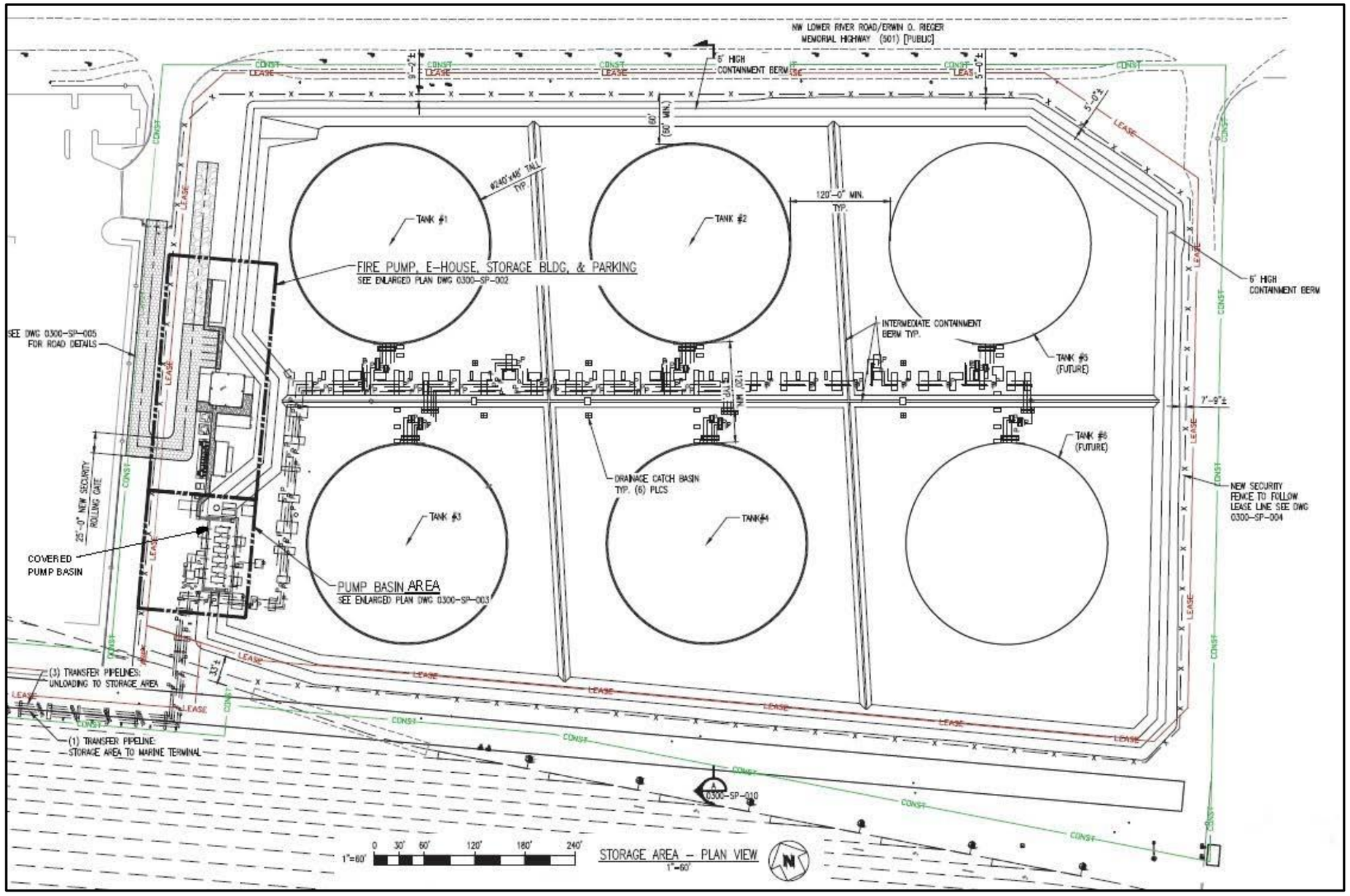
[14] Although the tanks could hold approximately 380,000 bbl, in actual operation internal floating roof tanks are never completely full. The working capacity of the tanks is slightly lower than the normal fill capacity.

[15] The internal floating roof of the crude oil storage tanks will have primary and secondary rim seals. The typical arrangement of such seals is a mechanical shoe primary seal that presses against the wall of the tank, and a secondary seal wiper mounted above the primary seal to provide additional control of evaporative losses.



BergerABAM	**Figure 2.3-10. Storage Tanks (Revised)**

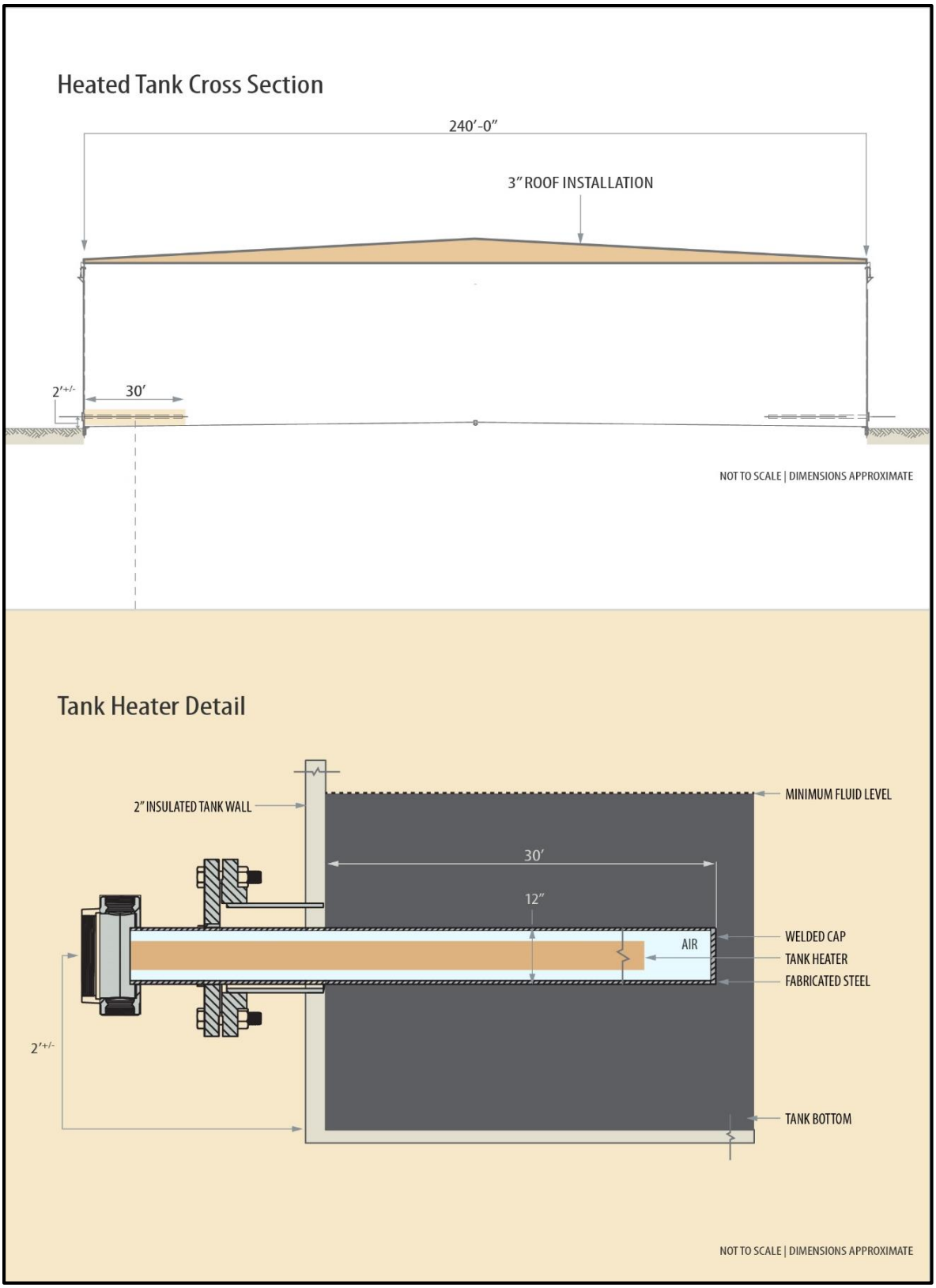


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Figure 2.3-11. Heated Tank Section (New)

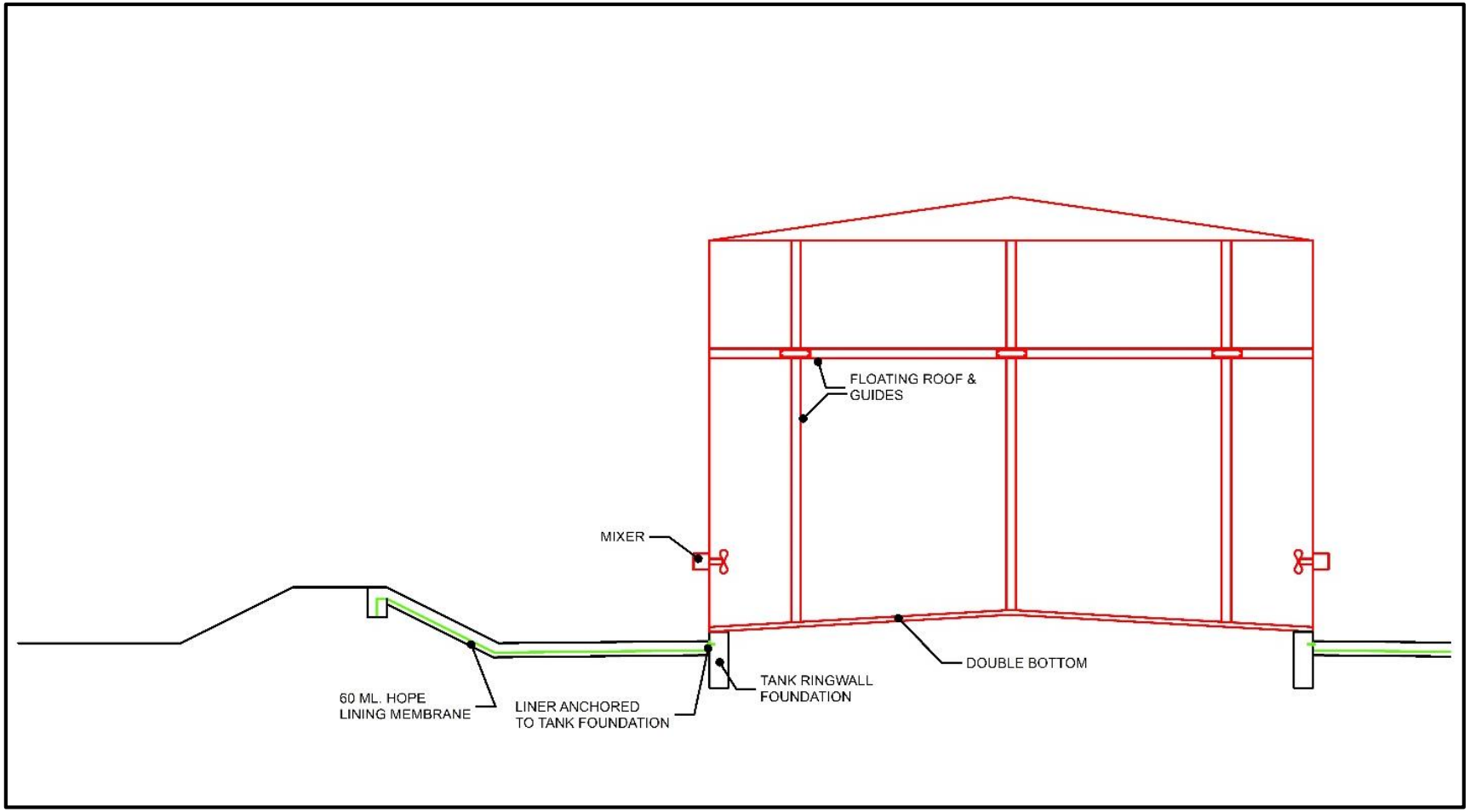

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Figure 2.3-12. Containment Berm Cross Section (Revised)
Note: Intermediate containment berms are not illustrated in this cross section.

As additional protection, 24-inch-high intermediate berms will be installed within the larger area to separate each tank area from the larger containment area (Figure 2.3-10). Each intermediate berm will be designed to contain at least 10 percent of the volume of the tank it encircles.

The tank containment area will be lined with a flexible impervious membrane to prevent any inadvertent releases from leaving the containment area via the ground. The impervious membrane liner would either be tied into the tank foundations or would cover the entire containment area. Figure 2.3-12 illustrates a typical cross section of the berm wall and liner system.

The containment berm will be designed in accordance with the requirements of WAC 173-180-320. WAC 173-180-320 (9)(c) specifically states "Secondary containment systems must be designed to withstand seismic forces," and sub (e) that "Secondary containment systems must be designed and constructed in accordance with sound engineering practice and in conformance with the provisions of this section."

A flexible impermeable liner will be used to mitigate the possibility of oil penetrating through the berm in the event of a seismic event. See section 2.18.1.4 for additional information on Protection from Natural Hazards, Mitigation Measures for Earthquake Hazards.

The containment area and its appurtenances will be designed to collect and treat stormwater so that the full containment volume is available at all times. Stormwater from the containment area will be treated and discharged at a maximum flow rate of 880 gpm. There may be short-term ponding while the stormwater system evacuates stormwater from the containment area. The area will be maintained so that there is no permanent ponding to avoid attracting wildlife.

The stormwater collection and treatment system is described in additional detail in section 5.3.

Tank to Dock Product Conveyance Pumps

Crude oil stored in the tanks will be pumped to the dock for transfer to a ship or barge. Three to six variable speed pumps will pump the crude, with at least one on standby. The pumps will be housed in the tank storage pump basin located on the west side of the storage tank area; the basin will measure approximately 36 by 92 feet square and 12 feet deep. The pump basin will be covered with a steel-framed shed roof to isolate stormwater from the basin. The pump basin will be equipped with a valved sump and attached underground storage tank to collect any windblown stormwater and/or inadvertent releases that collects in it. Collected stormwater or releases will be pumped and hauled off site for treatment, recycling, or disposal.

E-Houses, Transformer, Air Compressor, Fire Pump and Foam Building, and Storage Building

The following elements will be located along the west side of the Storage Area (see Figure 2.3-10), and will provide support to storage operations. Two E-houses will have a footprint of approximately 560 square feet each and will be single story.

Two transformers will regulate electrical output to the storage area. Both will be pad-mounted on approximately 140-square-foot concrete pads.

Electrical switch gear will also regulate electrical output to the E-houses. This will be pad-mounted on an approximately 630-square-foot concrete pad.

A fire foam skid and fire water pump house will contain an emergency fire pump and fire protection systems associated with the storage operations. A small storage tank used to store ultra-low sulfur diesel fuel (500-gallon, double-walled) will be located adjacent to the emergency fire pump within the building. A fire foam concentrate tank (1,000-gallon, single wall with bladder) is also located inside the building. The combined fire foam skid and fire water pump house will have a footprint of approximately 750 square feet and will be single-story. Fire suppression systems associated with the unloading building are described in detail in section 4.1.2.2.

Finally, a building will be constructed for storage. Sanitary sewer and domestic water will stub to this location for an interior restroom. The storage building will also be located outside the secondary containment berm.

2.3.7 Area 400 – Marine Terminal

2.3.7.1 Marine Terminal Operations

Loading operations will be conducted from the facilities installed at Berth 13. Both berths 13 and 14, as well as intermediate shore-based mooring points and mooring dolphins, will be used for vessel moorage and, therefore, require modifications to provide the necessary structural requirements for vessel mooring and employee access for mooring activities (see section 2.3.7.2). Berth 14 will also house a jib crane and storage cradle for a skiff, and the pre-boom reel to store the floating boom.

Vessels Calling at Vancouver Energy Terminal

The Facility is designed to accommodate ships from 46,000 to 165,000 Deadweight Tonnage[16]. Vessels calling at the Facility will be self-propelled vessels (tankers) and articulated tug barges (ATBs). ATBs consist of a double hull tanker barge that is directly coupled to a tugboat that pushes the barge from a notch in the stern of the barge. Table 2.3-3 summarizes the range of vessels expected to call. ATBs are expected to only be used during the initial start-up of the Facility before sufficient Area 300 tankage is available to stage a full load for a Handymax-size vessel. On a regular basis, once the Facility is fully operational and storage tanks have been constructed as proposed, ATBs will not likely be used, and an estimated 140 ship trips per year in the first full year of operations and up to 365 ship trips per year at full capacity will occur, primarily of the Veteran-class (i.e., 45 MDWT [thousand deadweight tons]) size. Figure 2.3-13 illustrates a typical Veteran-class vessel. Vessel sizes could change in the future, and planning standard for the Lower Columbia River could be increased. The presently approved planning standard for the Lower Columbia River limits the maximum volume of crude oil that can be loaded for a single shipment to approximately 300,000 bbl[17]. A vessel with a holding capacity greater than the standard would only be loaded to the planning standard. In the future, a request

[16] Deadweight Tonnage represents the number of metric tons (1 metric ton equaling 2,240 pounds) that a vessel can transport of cargo, stores, and bunker fuel.

[17] The planning standard counts both vessel fuel and cargo towards the 300,000 bbl limit.

may be made by another party to Ecology to increase the planning standard[18], and larger vessels could be loaded to a higher capacity.

Therefore, the Applicant anticipates that approximately 80 percent of the vessels calling at the Facility will be 45 MDWT, 15 percent of the vessels calling being 105 MDWT and 5 percent being 165 MDWT (Makarow 2015a).

The OPA 90 phased in the use of double-hulled vessels for both U.S. and foreign-registered vessels. After January 1, 2015, all tankers and articulated tug barges serving U.S. ports are required to have double hulls.

[18] Because the Applicant is not responsible for transit of the laden vessels once they have departed the Terminal, the Applicant does not have the authority to request an increase to the planning standard. Such a request would come to Ecology from a third party.

Table 2.3-3. Dimensions of Articulated Tug Barges and Tanker Vessels Anticipated to Dock at the Facility

VESSEL CLASS	27.5 MDWT	46 MDWT	75 MDWT	115 MDWT	125 MDWT	142 MDWT	160 MDWT
TYPE	**Articulated Tug Barges**	**Oil Tanker**	**Oil Tanker**	**Oil Tanker**	**Oil Tanker**	**Oil Tanker**	**Oil Tanker**
Length overall (LOA) [feet]	587.4	601.1	748.0	816.8	869.0	894.7	899.0
Length between perpendiculars (LBP) [feet]	583.1	570.9	718.5	784.1	825.0	847.0	866.1
Beam [feet]	74.0	105.6	105.64	143.7	136	151.6	157.5
Moulded depth [feet]	40.0	61.7	65.0	68.9	71.5	86.3	77.8
Ballast Condition *(for upriver transit)*							
Freeboard [feet]	23.8	42.7	44.5	48.4	50.0	54.3	49.8
Draft [feet]	16.2	19.0	20.5	20.5	21.5	32.0	28.0
Displacement (MT)	17,083	23,900	35,325	50,472	47,850	76,300	78,671
Loaded Condition *(for downriver transit)*							
Freeboard [feet]	9.8	20.7	22.0	25.9	28.5	43.3	34.8
Draft [feet]	30.2	41.0	43.0	43.0	43.0	43.0	43.0
Deadweight [MT]	27,181	46,172	64,100	94,200	86,821	90,700	103,000
Displacement [MT]	32,885	56,368	77,996	112,872	111,299	122,469	125,751
Cargo Capacity at max draft including FWA (BBL)		319,925	449,772	667,777	614,337	642,428	731,513

Source: Capt. Marc Bayer, Tesoro

BergerABAM	**Figure 2.3-13. Veteran-class Crude Oil Tanker (New)**

Vessel Arrival

Vessels arrive at the entrance to the Columbia River, and about 15 miles from the entrance board a Columbia River Bar Pilot. The Bar Pilot guides the vessel to Astoria where a Columbia River Pilot comes on board and the Bar Pilot disembarks. The Columbia River Pilot guides the vessel to the Vancouver Energy Terminal dock. During the transit to the dock, the pilot will update the terminal and vessel agent so that the terminal will be ready with line handlers to receive the vessel mooring lines on arrival at the dock.

In the vicinity of Kelly Point, two large docking assist tugs will meet the vessel at the approximate location of the confluence of the Columbia and Willamette Rivers. Every vessel coming to load at the terminal will use a minimum of two docking assist tugs for docking and undocking. One tug will be made fast (tied to) on the starboard bow and one tug made fast on the starboard quarter. The docking assist tugs will be supplied by one of the Tesoro-approved tug operators in the Columbia River. The tug will have a minimum HP of approximately 3,500 and be minimum twin screw. The docking assist tugs will join and depart the vessel in the vicinity of Kelly Point at the confluence of the Columbia and Willamette Rivers. The tugs will not be standing by the terminal during loading operations unless there is a severe weather event that requires their presence as outlined in the mooring analysis and documented in the Terminal Operations Manual.

The pilot will then guide the vessel on a slow approach using the docking assist system on the wharf as a guide to measure the speed of approach so that the vessel comes alongside the dock gently. Normally, the pilot will stop the vessel a couple of feet off the berth and use the tugs to push it alongside port side to the dock with the bow pointing upstream. The vessel's crew will then put out the forward and after spring lines to the dock while the pilot with the use of the tugs moves the vessel into position so that the shore loading hoses are lined up with the vessel's manifold. After the spring lines have been put out, tightened, and secured so the vessel cannot move up and down the dock, the breast lines are put out to hold the vessel firmly alongside. Finally, the vessel's headlines and stern lines are run to ensure the vessel is firmly secured alongside. Once the vessel is all fast and secured in place, the tugs are released. The dock shore gangway is then lowered to the deck to permit safe access for people to cross back and forth.

Only a single vessel will be docked at a time.

Booming and Loading

Only one vessel will be loaded at a time.

After the gangway is on and the vessel is "all fast," the full wrap boom is put around the vessel to contain any potential for oil spill (see section 2.10 below). Once the boom is in place, the "Terminal Person In Charge" (TPIC) comes aboard the vessel and conducts a safety inspection with the ship's Chief Officer "Vessel Person in Charge" (VPIC). During the deck inspection, the cargo and vapor hoses are connected under the guidance of the vessel's Bosun, Pumpman, and a deck officer. After completion of cargo and vapor hose connection, the TPIC and VPIC conduct the Pretransfer Meeting (Key Meeting). During this meeting, all aspects of the cargo transfer are discussed, such as starting; coming up to rate; topping off; completion of loading; and any safety security concerns, including signals for shut downs should the primary, secondary, and tertiary means of communication fail.

The vessel loading system will be designed to transfer crude oil from the storage tanks at the terminal to marine vessels at the dock at a rate of up to 32,000 bbl per hour. The daily loading rate is estimated to be 47 percent of the maximum hourly rate, or 360,000 bpd. The loading capacity of Veteran-class tankers is 3,600 cubic meters, or 22,643 bbl per hour. At the maximum rate of 22,643 bbl per hour, these Veteran-class tankers will require approximately 15 hours to load to full capacity.

The Facility will use positive displacement pumps on a variable frequency drive, thus allowing adjustment of loading flow rate by increasing or decreasing the speed/flow rate of the pumps as needed. The pumps will also be staged so they can be turned off and on in multiple configurations to ensure optimal loading feed to the vessels. Different vessels have different loading configurations. For example, a 46 DWT vessel calling to the Facility could have a header sized at 12 to 24 inches with the dimension of the header dictating the rate at which the vessel can be loaded. As a rule of thumb, vessels will start loading at 10 to 25 percent of their maximum rate of fill. The top-off rate will also depend on the vessel size and the amount of cargo it will carry. If a vessel is filling to less than 90 percent total cargo volume (as would be the case with some of the proposed larger vessels), the ship could be filled at full or near full rates to the very end. If the ship is filled to 95 to 98 percent of its rated capacity towards the end of the loading cycle, the fill rate is slowed down to the 10 to 25 percent.

However, the total time that vessels would be expected to be at the Facility would be approximately 24 hours based on the time needed to secure and release the vessels, as well as the lower fill rates used during initial and final loading.

On completion of loading, the vessel is gauged by an independent third-party cargo surveyor, and cargo quantities are reviewed, confirmed, and documented. The loading and vapor hoses are drained, disconnected, and fully blanked before they are retrieved by the shore. The vessel manifolds are fully blanked and secured.

Vessels will require engine power while docked; however, engine power will be minimal. Whole at dock vessels will be fueled by onboard ultra-low sulfur diesel fueled generators. Vessel boilers will be used to maintain the temperature of heated cargo.

Vessel Departure and Transit

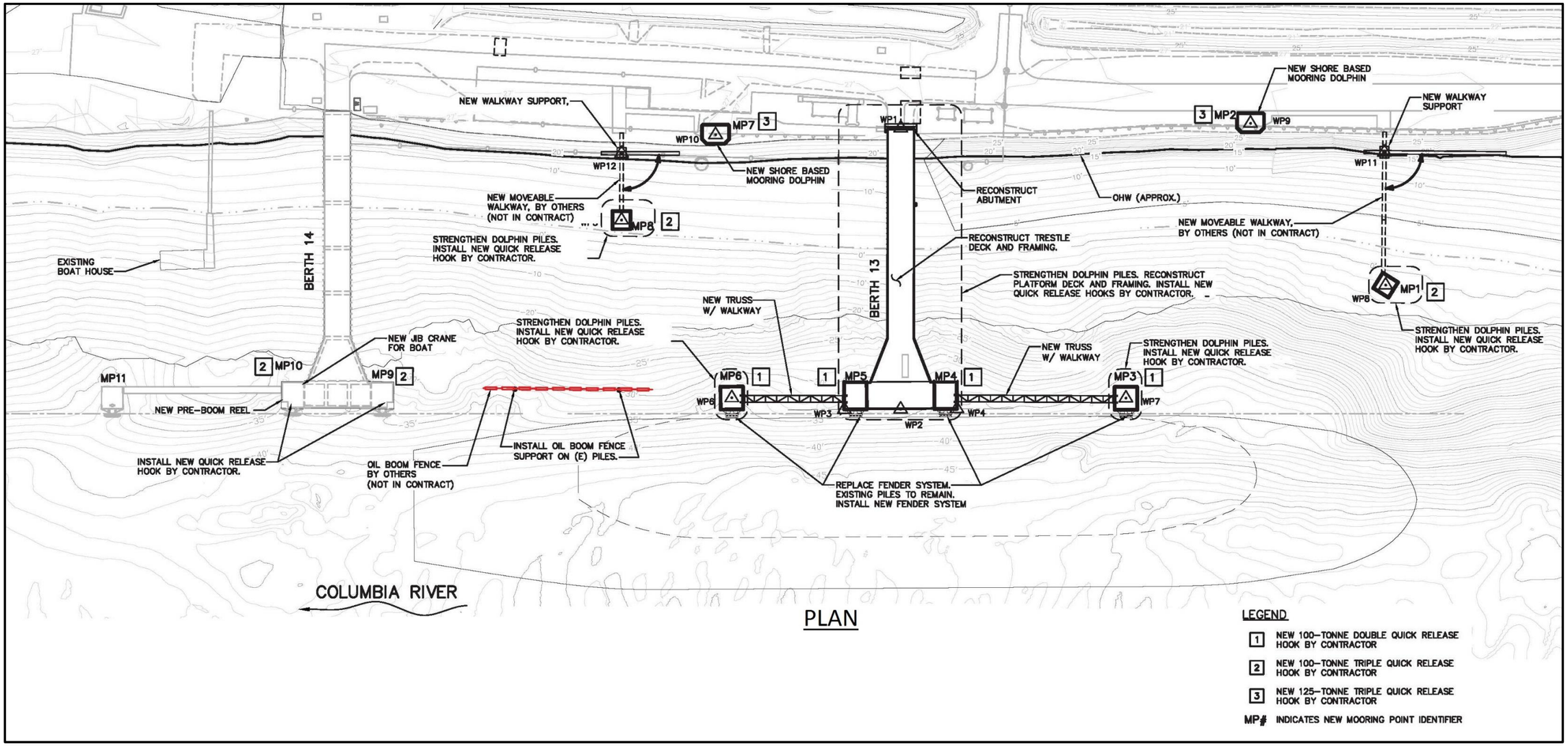
The containment boom around the vessel is removed and the second mate tests gear, the engines are tested ahead and astern, and the steering gear is tested as are communications and alarms.

At this time, the pilot comes onboard and the gangway is removed. Two large docking assist tugs are made fast on the starboard bow and starboard quarter. The tugs are then directed to push gently on the vessel, and the mooring lines are released from the shore and retrieved aboard ship starting with the head and stern lines, followed by the breast lines, and lastly the spring lines. Once the lines are all onboard, the second mate on the stern passes the word to the bridge that the propeller is clear and all lines are on board. The pilot uses the tugs to pull the vessel off the berth and then turn the vessel to starboard in the channel until the bow is pointing down river. Once the vessel starts to make headway towards sea, the tug boats are released and the vessel proceeds towards Astoria where the River pilot disembarks and the Bar pilot embarks to take the vessel to sea.

Loaded vessels departing from the Facility will be escorted by a suitably matched tug until the escorted vessel arrives in the vicinity of the river mouth. Once in the vicinity of the river mouth, the tug will be released from the escorted vessel and will standby as a sentinel tug until the vessel crosses the bar and is safely underway in the open ocean.

The Applicant will implement procedures that will only allow vessels calling at the Facility to depart a dock or enter the river when they can make the transit of the entire river with a minimum 2 feet of underkeel clearance and 10 feet across the bar. In addition, planned voyages for outbound Facility vessels will not include anchorage in the river. Only on advice of a River or Bar Pilot would a laden Vancouver Energy Terminal-related vessel anchor in the river to address emergent circumstances. The River and Bar Pilots have to retain this ability to make this professional judgment to effectively implement their charge of ensuring safe vessel transit.

The following elements will also be located in Area 400 (see Figure 2.3-14), and will support the marine vessel loading operations. The loading process will be controlled from a control room/E-house. The integration of the control functions of these E-houses is described in detail in section 2.3.6 above. The E-house will be approximately 825 square feet with a maximum height of 15 feet. One transformer will regulate electrical output to the unloading facility. It will be pad-mounted on a 225-square-foot pad. A fire pump and foam building will house an emergency fire pump and fire protection systems associated with the marine terminal. A small storage tank of 500 gallons or less will be located adjacent to the emergency fire pump to hold ultra-low sulfur diesel fuel. The single-story building will have an approximate footprint of 750 square feet.



BergerABAM

Figure 2.3-14. Marine Terminal (Revised)

2.3.7.2 Marine Terminal Configuration and Construction

Dock Improvements

Crude oil will be transferred to a vessel at Berth 13. Mooring improvements will be completed on berths 13 and 14, as well as two upland mooring points. The berths are existing steel pile-supported docks consisting of two concrete decked access trestles and T-docks, four breasting dolphins connected to the trestles by catwalks, and three mooring dolphins which are in good working order. To obtain an optimal mooring configuration and to meet current seismic standards, the following work will be required at the existing Berth 13 to accommodate the Facility.

- Remove a single breasting dolphin, including 11 (of 12) 18-inch steel pipe piles, four 12-3/4-inch steel fender piles and approximately 400 square feet of existing concrete pile cap.
- Remove approximately 1,370 square feet of grated walkway associated with the existing breasting dolphin to be removed.
- Reinforce the existing 18-inch steel pipe piles supporting the Berth 13 T-dock, two breasting dolphins and two mooring dolphins including the removal and replacement of the decking and piles caps to accommodate the reinforcement work.
- Replace the existing steel trusses and grated steel walkways between the Berth 13 platform and the adjacent upstream and downstream breasting dolphins with larger structural steel trusses and new grated steel walkways.
- Add approximately 750 square feet of new retractable/movable-rotable grated walkways between two existing mooring dolphins and the shoreline to provide safe access for line handling.

Mooring and Breasting Dolphins and Walkways

The project will remove an existing breasting dolphin and approximately 650 linear feet of existing 5-foot-wide steel grated walkways on Berth 14, which interferes with the optimal safe mooring configuration. The existing dolphin is supported by twelve 18-inch-diameter steel pipe piles and includes four 12-inch steel fender piles. One section of the walkway is also supported by a single 18-inch-diameter steel pipe pile, which along with one pile from the mooring dolphin will remain in place for attaching the required fence boom.

Two existing mooring dolphins will be connected to the shoreline by 5-foot-wide (exterior dimension) grated walkways to allow safe access during vessel mooring. The pedestrian access width of the walkway is 36 inches per OSHA/WISHA requirements. The walkways will be retractable and will be positioned on the shoreline above the OHWM except during vessel mooring. During vessel mooring, the total area overwater resulting from these modifications will be approximately 750 square feet of grated decking.

To provide an optimal safe mooring configuration, two shore-based mooring points will be installed above the OHWM. Quick release mooring hooks will be installed on a concrete base to handle mooring lines. New quick release mooring hooks will be installed on all mooring points. The mooring system will incorporate a load monitoring system for the physical tensioning of the mooring lines so that they operate within optimum design limits while a vessel is berthed.

Seismic Upgrades

To meet current seismic standards the current dock will be strengthened. To increase pile capacity the existing 18-inch steel piles associated with the Berth 13 T Dock and two associated

breasting dolphins and two mooring dolphins will be improved. Ground anchors will be installed at the base of the existing piles and a smaller diameter steel pile and concrete will be installed in the existing piles. To accommodate this work the existing concrete deck (precast panels) and pile caps will be removed to expose the tops of the piles. Steel braces will also be installed between the piles beneath the deck. Finally, the pile cap and decks will be reconstructed with poured in place concrete and/or structural steel framing depending on the location.

The existing grated walkways and associated support trusses that connect the breasting dolphins east and west of the Berth 13 dock will be replaced with larger steel trusses to physically connect the structures and provide additional strength. The trusses will be constructed of square or tubular pipe in an open web design that will allow for significant light penetration. This framing will add approximately 920 square feet of overwater structure. In-kind replacement 5-foot-wide steel grated walkways will be installed on top of the trusses.

Dock-Side Loading Equipment

Piping, jib cranes, a moveable gangway, an observation and control platform, dock safety unit, pipe trays, skiff, containment, boom reel, and lighting will be installed on the existing dock that serves berths 13 and 14.

Loading of vessels will only occur from Berth 13. The 36-inch transfer pipeline from and 6- to 12-inch return line to the Storage Area will be located on the trestle where they will connect with a manifold on the dock. Hoses supported by cranes or a pulley system will be connected to the manifold and used to transfer the crude oil from the piping system to the vessel being loaded. The hoses will be connected to the grounding grid to protect against the buildup of static electricity. The loading system will incorporate automatic shutoff valves with a maximum 30-second shutoff time. The pipelines serving the dock will undergo annual hydrostatic testing as required by federal standards. A catchment and/or sump capable of holding 3 bbls of discharge will be constructed at or below the deck level for the containment of inadvertent releases in addition to stormwater that may fall in the catchment area. The containment will be discharged within 1 hour of completion of any transfer by pumping into the return line, or will be hauled off site for recycling.

Berth 14 will be used to store equipment and perform operations with spill prevention and response. Equipment includes a mechanically operated crane and workboat cradle for storage of the aluminum skiff. The crane will be approximately 30 feet high. The crane will be designed for the lifting weight of the aluminum skiff and crew and the crane's reach. It is estimated that the total crane capacity will be 15 tons.

A combined fire pump with foam, E-house, and control room building located near the MVCU will house an emergency fire pump and fire protection systems associated with the marine terminal. A small storage tank (500-gallon, double-walled) will be located adjacent to the emergency fire pump within the building to hold ultra-low sulfur diesel fuel. A fire foam concentrate tank (1,000-gallon, single wall with bladder) is also located inside the building. The two-story building will have an approximate footprint of 1,000 square feet and a total internal square footage of 2,000 square feet.

A fence boom will be placed between the vessel location and the shoreline. Floating booms will be deployed after a vessel is at the berth and will fully wrap the vessel, connecting with the fence boom on both the downstream and upstream side of the vessel.

Marine Vapor Combustion Unit

Marine vessels will generally arrive at the berth empty with inert (noncombustible) gases occupying the tank. When the vessel cargo compartments are filled with crude oil, the vapors from previous cargo, vapors from the crude being added to the tank, and the inert gases will be displaced from the tank. These vapors will be sent to the MVCU system, which will combust the hydrocarbons in the vapors[19]. Piping from the dock will convey vapors first through a hydrogen sulfide treatment system located near the MVCUs. The treatment system consists of two 12-foot-diameter tanks with piping and appurtenances. Piping from the treatment system will then convey the vapors to the MVCUs located north of the access trestle and roadway. Up to eight units will be installed on a 100- by 50-foot concrete slab housing equipment, including eight 44-inch-diameter steel stacks approximately 25 feet in height. The MVCU will be designed and operated in accordance with the applicable requirements of 33 CFR 154 Subpart P. The control of air emissions resulting from MVCU operation is described in more detail in sections 2.12 and 5.1.

2.3.8 Area 600 – Boiler Building

The Area 600 Boiler Building will be located west of the Administration and Support Buildings. This building will have a footprint of approximately 6,000 square feet, and will be approximately 45 feet high. The building will house two primary and one standby natural gas-fired boilers, each with a capacity of 62 MMBTU/hr, to provide steam (two boilers operating) for the heating of tank cars during unloading. Boiler systems will be field-erected or package boilers with a fire- or water-tube design. An existing 6-5/8-inch natural gas main is located within Old Lower River Road. A new pressure regulator and 6-inch-diameter service line to the boiler building will be constructed. Steam from the boilers will be delivered to the point of use via insulated pipelines. The gas-fired boilers may also provide steam to pipes and ancillary equipment and potential space heating. The boilers will be designed, installed and operated in accordance with the applicable provisions of Labor and Industry's Boiler and Unfired Pressure Vessel laws (RCW 70.79) and rules (WAC 296-104).

Boiler System Water Treatment

Potable water from the City will be treated with a reverse osmosis water treatment unit. The raw water will then be treated, as needed, with a scale inhibitor similar to Nalco NexGuard 22310, a corrosion inhibitor similar to Nalco Tri-Act 1820, and an oxygen scavenger similar to Nalco 1720. The pH will be adjusted, as needed, using a product similar to Nalco 8735.

Boiler Plant Discharge Pretreatment

Wastewaters from the boiler plant include boiler blowdown, reverse osmosis wastewater, and miscellaneous drain water. There are three alternatives for discharge that are currently being pursued for discharges from the boiler plant. The three options are briefly described below and detailed descriptions of these alternatives will be included in a revised NPDES engineering report. Options being evaluated for discharge of the boiler plant wastewater are discussed in section 2.9 below.

[19] The MVCU is required to provide safety of transfer operations in accordance with 33 CFR Subpart P, as described in section 2.23.2.13.

2.3.8.1 Control Systems

The primary and secondary control systems of the Facility will manage the flow of product from the unloading facility to the storage tanks and finally to the marine loading facility and control the Facility fire protection systems. The primary control system will be located in the E-houses constructed adjacent to the rail car unloading elements. The primary control system will monitor and control the tank car unloading operations and transfer of the product to the storage tanks. The secondary control system will be located adjacent to the dock. This system will control the flow of product from the storage tanks to the marine loading system. The primary control system will be able to override the secondary system. Separate fire suppression control and gas detection systems will be provided at areas 200, 300, and 400.

2.3.9 Decommissioning

Decommissioning provisions are addressed in both the EFSEC regulations and the lease between the Applicant and the Port (Appendix E.2). The Facility is designed for an anticipated lifetime of 20 years. EFSEC regulations require facility decommissioning at the end of the period permitted in the Site Certificate, unless the Applicant or another party, such as the Port, obtain EFSEC approval to extend the Facility life and, potentially, transfer Facility operations.

The Port lease provides for an initial term of 10 years, with the possibility for two 5-year extensions that are subject to Port approval. At the end of the lease term (as may be extended), the Port has the option to request the removal of all improvements unless they remain economically and operationally viable. If the Port elects not to approve either 5-year extension, then the lease provides that Applicant will have no obligation to pay for removal of the improvements. The Applicant recognizes that these lease provisions regarding Port retention of the Facility improvements need to be addressed to EFSEC's satisfaction in the terms of the Site Certificate, and the Applicant and the Port would need to obtain any required EFSEC approvals if the Port elects to keep all of the improvements after the end of the lease term (as may be extended) and continue the use permitted by the Site Certificate.

In any event, the Applicant and the Port do not anticipate removal of the ground improvements and the seismic upgrades to the dock because removal of those improvements are not practical. The Applicant, therefore, is requesting that the Site Certificate provisions regarding decommissioning acknowledge that the seismic improvements to the dock and the ground improvements will not be removed at the end of the Facility operations, and, alternatively, the site restoration plan required by regulation will address any cap or other requirements deemed necessary to leave the ground improvements in place. If, at the end of the lease term (as may be extended under the terms of the lease), the Port elects to retain the balance of the Facility improvements, including the unloading facilities, the storage tanks and the transfer pipelines, and to continue the use permitted by the Site Certificate, the Port would be required to pursue an amendment to or transfer of the Site Certificate from the Applicant to the Port, and any such request would be subject to future EFSEC review and approval (WAC 463-66-100).

In accordance with WAC 463-72 040, at least 90 days prior to the beginning of site preparation, the Applicant will provide an initial site restoration plan to EFSEC, which addresses site restoration occurring at the conclusion of the plant's operating life, or in the event the project is suspended or terminated during construction or before it has completed its useful operating life. The plan will parallel a decommissioning plan, if such a plan is prepared for the project. The initial site restoration plan will be prepared in sufficient detail to identify, evaluate, and resolve all major environmental and public health and safety issues presently anticipated. It will describe the process used to evaluate the options and select measures that will be taken to restore or

preserve the site or otherwise protect all segments of the public against risks or danger resulting from the site. The plan will include a discussion of economic factors regarding the costs and benefits of various restoration options versus the relative public risk and will address provisions for funding or bonding arrangements to meet the site restoration or management costs. The provision of financial assurances will include evidence of pollution liability insurance coverage in an amount justified for the project, and a site closure bond, sinking fund, or other financial instrument or security in an amount justified in the plan.

If any of the suspension or termination scenarios specified in WAC 463-72 apply, (construction is suspended or ceases, the Applicant seeks early termination, of the approved Facility lifetime has expired), and provided the Port does not seek EFSEC approval to transfer operation of the Facility, as described above, then, the Applicant shall comply with all of the provisions of WAC 463-72, for submittal and EFSEC approval of a detailed site restoration plan within the time frames specified in those regulations. The detailed site restoration plan will address the elements required to be addressed in WAC 463-72-040, in detail commensurate with the time until site restoration is to begin.

2.3.10 Capital and Construction Costs

The total estimated capital cost of the Facility will be approximately $210 million, which includes both capital and construction costs.

Section 2.4 – Energy Transmission Systems

WAC 463-60-155
Proposal – Energy transmission systems.

The application shall identify the federal, state, and industry criteria used in the conceptual design, route selection, and construction for all facilities identified in RCW 80.50.020 (6) and (7), and shall indicate how such criteria are met.

(Statutory Authority: RCW 80.50.040 (1) and (12). 04-21-013, amended and recodified as § 463-60-155, filed 10/11/04, effective 11/11/04. Statutory Authority: RCW 80.50.040(1). 83-01-128 (Order 82-6), § 463-42-155, filed 12/22/82. Statutory Authority: RCW 80.50.040(1) and Chapter 80.50 RCW. 81-21-006 (Order 81-5), § 463-42-155, filed 10/8/81. Formerly WAC 463-42-240.)

Section 2.4 Energy Transmission Systems

As noted in WAC 463-60-155, the definitions from RCW 80.50.020(6) and (7) are for "Certification" and "Construction" but neither applies directly to this WAC. Prior to the reorganization of the definitions to alphabetical order, RCW 80.50.020(6) defined "Associated Facilities" and RCW 80.50.020(7) defined "Transmission facility."

Associated Facilities is now defined by RCW 80.50.020(4) as:

> *'Associated facilities' means storage, transmission, handling, or other related and supporting facilities connecting an energy plant with the existing energy supply, processing, or distribution system, including, but not limited to, communications, controls, mobilizing or maintenance equipment, instrumentation, and other types of ancillary transmission equipment, off-line storage or venting required for efficient operation or safety of the transmission system and overhead, and surface or subsurface lines of physical access for the inspection, maintenance, and safe operations of the transmission facility and new transmission lines constructed to operate at nominal voltages of at least 115,000 volts to connect a thermal power plant or alternative energy facilities to the northwest power grid. However, common carrier railroads or motor vehicles shall not be included.*

"Transmission Facility" is now defined by RCW 80.50.020(21) as:

> *'Transmission facility' means any of the following together with their associated facilities:*
>
> *(a) Crude or refined petroleum or liquid petroleum product transmission pipeline of the following dimensions: A pipeline larger than six inches minimum inside diameter between valves for the transmission of these products with a total length of at least fifteen miles;*
>
> *(b) Natural gas, synthetic fuel gas, or liquefied petroleum gas transmission pipeline of the following dimensions: A pipeline larger than fourteen inches minimum inside diameter between valves, for the transmission of these products, with a total length of at least fifteen miles for the purpose of delivering gas to a distribution facility, except an interstate natural gas pipeline regulated by the United States federal power commission*

The Facility does not involve the construction of facilities that connect the Facility with an existing energy supply nor does it involve the construction of pipelines with a length of more than 15 miles for product transmission. Pursuant to WAC 463-60-115, the Applicant requests a waiver of the application requirements of WAC 463-60-155, because this section does not apply to this type of facility.

Section 2.5 – Electrical Transmission Facilities

WAC 463-60-160
Proposal – Electrical transmission facilities.

(1) Prior to submitting an application for site certification for an electric transmission facility under RCW 80.50.060(3) an applicant shall follow the procedure as set in Chapter 463-61 WAC.

(2) An application for an electric transmission facility shall include the information required by this chapter unless the requirement may not be applicable to such a facility.

(3) An application for an electrical transmission facility shall include the results of any preapplication negotiations including any agreements between the applicant and cities, towns, or counties where the electrical transmission facility is proposed to be located.

(Statutory Authority: Chapter 80.50 RCW and RCW 80.50.040. 09-05-067, § 463-60-160, filed 2/13/09, effective 3/16/09.)

Section 2.5 Electrical Transmission Facilities

RCW 80.50.060(3) reads as follows:

> *(3)(a) The provisions of this chapter apply to the construction, reconstruction, or modification of electrical transmission facilities when:*
>
> *(i) The facilities are located in a national interest electric transmission corridor as specified in RCW 80.50.045;*
>
> *(ii) An applicant chooses to receive certification under this chapter, and the facilities are: (A) Of a nominal voltage of at least one hundred fifteen thousand volts and are located in a completely new corridor, except for the terminus of the new facility or interconnection of the new facility with the existing grid, and the corridor is not otherwise used for electrical transmission facilities; and (B) located in more than one jurisdiction that has promulgated land use plans or zoning ordinances; or*
>
> *(iii) An applicant chooses to receive certification under this chapter, and the facilities are: (A) Of a nominal voltage in excess of one hundred fifteen thousand volts; and (B) located outside an electrical transmission corridor identified in (a)(i) and (ii) of this subsection (3).*
>
> *(b) For the purposes of this subsection, "modify" means a significant change to an electrical transmission facility and does not include the following: (i) Minor improvements such as the replacement of existing transmission line facilities or supporting structures with equivalent facilities or structures; (ii) the relocation of existing electrical transmission line facilities; (iii) the conversion of existing overhead lines to underground; or (iv) the placing of new or additional conductors, supporting structures, insulators, or their accessories on or replacement of supporting structures already built.*

The Facility will not generate or transmit electricity, pursuant to WAC 463-60-115, nor will it construct transmission facilities as defined under RCW 80.50.060(3). The Applicant requests a waiver of the application requirements of WAC 463-60-160, because this section does not apply to this type of facility.

Section 2.6 – Water Supply System

WAC 463-60-165
Proposal – Water supply.

1) Water intake and conveyance facilities. The application shall describe the location and type of water intakes, water lines, pipelines and water conveyance systems, and other associated facilities required for providing water to the energy facility for which certification is being requested.

(2) Water supply and usage alternatives. (a) The applicant shall consider water supply alternatives, including use of reclaimed water, water reuse projects, and conservation methods. The application shall describe all supply alternatives considered, including the associated cost of implementing such alternatives, and the resulting benefits and penalties that would be incurred. (b) The application shall include detailed information regarding using air cooling as an alternative to consumptive water use, including associated costs. (c) The application shall describe water conservation methods that will be used during construction and operation of the facility.

(3) Water rights and authorizations. An applicant proposing to use surface or groundwater for the facility shall describe the source and the amount of water required during construction and operation of the energy facility and shall do one or more of the following: (a) Submit a water use authorization or a contractual right to use water supplied by a municipal corporation or other water purveyor; or (b) Submit a water right permit or water right certificate issued by the department of ecology for the proposed facility in an amount sufficient to meet the need of the facility. If the permit and/or certificate has been issued five years prior to the submittal date, the applicant shall provide evidence that the water right permit is in good standing, or that the certificate has not relinquished through nonuse; or (c) For applications for new surface or groundwater withdrawals, or applications for water right changes or transfers of existing rights or certificates for withdrawal, the applicant shall submit appropriate application(s) for such rights, certificates or changes in rights and certificates, to the department of ecology prior to submittal of the application for site certification to the council. The application for site certification shall include report(s) of examination, identifying the water rights, or water right changes, submitted to and under review by the department of ecology, the quantities of water in gallons per minute and acre feet per year that are eligible for change, together with any limitations on use, including time of year. The report(s) of examination shall also include comments by the Washington state department of fish and wildlife with respect to the proposed water right applications under review by the department of ecology. (d) Mitigation. The application shall contain a description of mitigation proposed for water

supply, and shall include any and all mitigation required by the department of ecology pursuant to the review of water rights or certificates, or changes to water rights or certificates required in (c) of this subsection.

(Statutory Authority: RCW 80.50.040 (1) and (12). 04-21-013, amended and recodified as § 463-60-165, filed 10/11/04, effective 11/11/04. Statutory Authority: RCW 80.50.040(1). 92-09-013, § 463-42-165, filed 4/2/92, effective 5/3/92. Statutory Authority: RCW 80.50.040(1) and Chapter 80.50 RCW. 81-21-006 (Order 81-5), § 463-42-165, filed 10/8/81. Formerly WAC 463-42-400.)

Section 2.6 Water Supply System

The Facility will require potable water for domestic purposes, process water, and emergency fire suppression water. All water required for the Facility is proposed to be obtained from the City's water utility. The Facility will connect to the City's existing water distribution network and construct necessary water service connections.

2.6.1 Water Intake and Conveyance Facilities

The City's existing water distribution facilities are adjacent to or located on the site. The Facility's water service will be connected to the City's existing distribution network in accordance with the City's water design and construction requirements. Necessary water metering and cross-connection control will be installed at each of the connection locations between the on-site water facilities and the public water distribution system. Multiple water service connections will be constructed because of the multiple discontinuous areas that are part of the project.

The project will not require the development of new water sources. The City currently has water rights for 108 million gallons per day (mgd) and has developed supply capacity (without storage) of 80.6 MGD. The City's water supply is obtained entirely from groundwater sources using 40 existing wells spread across 72 square miles. Online system storage includes approximately 24.5 million gallons which equates to roughly 11 hours of maximum day demand. Current peak demand is approximately 55 mgd (City of Vancouver 2013). The City has provided a letter confirming that its supply and distribution system has sufficient capacity to accommodate the project. The letter is included in the Engineering Report in section 5.3 of this ASC.

2.6.2 Water Supply and Usage Alternatives

A brief review of available water supplies compared the City's and the Port's water systems. Both provide potable-quality water. Both obtain water from local aquifers, provide water treatment, and have storage facilities. However, the Applicant selected the City as the water supplier for the project. The City's system provides source supply, storage, and distribution system redundancy. A portion of the City's water system is shown in Figure 2.6-1.

Water reuse is included with the water treatment system and package boiler units described in section 2.6.4. The boiler plants proposed consist of a closed loop system in which a maximum 10 percent of the total boiler water is blowdown or lost to the atmosphere during condensation; the remaining 90 percent is reused in each steam cycle. The possibility of reusing treated wastewater from the City's Westside Wastewater Treatment Plant (WWTP) located approximately 1 mile east of Area 300 for the required process water was investigated. But because of the need for significant off-site pipeline improvements and additional water treatment to provide suitable process water, this possibility was determined to be infeasible.

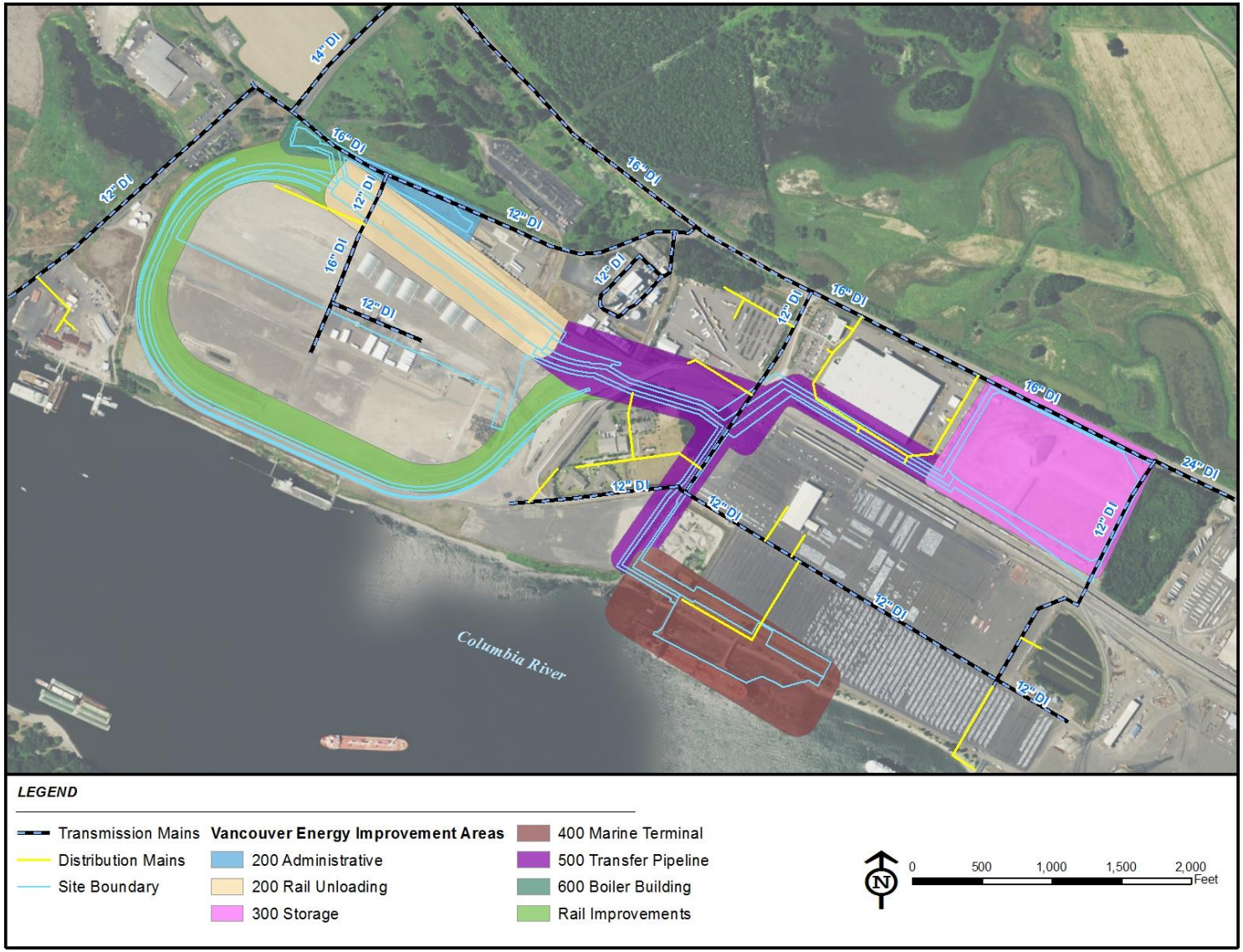


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Figure 2.6-1. Water Transmission Mains (Revised)

2.6.3 Water Rights and Authorizations

The Facility is not requesting new water rights or authorizations. All water will be acquired from the City water utility. Anticipated annual water use is estimated to be 22 million gallons with a maximum daily water use of 85,305 gallons per day (gpd). A request for utility services was submitted to the City for the Facility. The City indicated in a response letter attached in the Engineering Report in section 5.3 of this ASC that the City has sufficient supply and distribution system capacity for the proposal.

Construction of the Facility is expected to utilize two 10,000-gallon water trucks per day for a total of 20,000 gallons each day. Ground improvement installation would require approximately 30,000 to 280,000 gpd depending on the type of improvement chosen. Testing and commissioning the pipelines, tanks, and water lines will require additional water for pipeline flushing and hydrostatic testing. Testing and commissioning the transfer pipelines and storage tanks will be sequenced to reuse as much testing water as possible on site. Assuming no water reuse, testing and commissioning will require a total of 98.4 million gallons of water. With reuse, a total of 20 million gallons of water is expected to be required for testing and commissioning.

2.6.4 Process Water

Industrial processes at the Facility are limited to the transfer and storage of crude oil. Process water for the Facility is limited to the boiler plants, miscellaneous part and equipment wash, and cooling water for the fire suppression pumps.

The boiler plant in Area 600, will provide steam to heat crude oil within the rail cars to assist with unloading. The majority of the process water used to make steam will be maintained in a closed loop system. However, some process water for the boilers will be necessary for makeup water to replenish the equivalent of steam lost in the system, blowdown water, reverse osmosis reject water, miscellaneous drains, and water treatment. Some steam is lost during the condensate process as the water is returned to the boiler. Additionally, steam condensate blowdown is generated during the unloading of tank cars in Area 200. Within the rail unloading building as part of operating this system, during the connection and disconnection of the rail car steam coils, the operator opens the steam line valves and discharges steam directly to the containment pans. This procedure is an operational necessity, as it purges the lines of debris. Blowdown water is used for flushing particulates from the boiler system. The total of all process water for the boilers, including all sources of process water, is summarized in Table 2.6-1.

Inside the rail unloading area (Area 200), there is a process water line for the occasional use of a single pressure washer to clean miscellaneous piping fittings, work surfaces, rail car exterior wash, and equipment. At a maximum, the pressure washer will be rated for 5 gallons per minute (gpm). Conservative water use estimates for the miscellaneous part/equipment wash is included in Table 2.6-1.

The Rail Unloading area, Storage Tanks, and Marine Terminal area are protected with emergency fire pumps. The fire pumps selected for this project require a heat exchanger and cooling water supply to maintain operational engine temperatures. A maximum 30 gpm of cooling water supply is required each week for the required 30-minute maintenance cycling. Once a year fire pump flow testing is additionally required. Fire pump cooling water for the maintenance cycling is included in Table 2.6-1.

Table 2.6-1. Process Water Uses and Rates

Industrial Process	Average Water Use (gpd)	Maximum Water Use (gpd)
Area 200		
- Misc Part/Equipment Wash[a]	1,000	2,000
- Fire Pump[b]	107	900
Area 300		
Area 300 – Fire Pump[b]	107	900
Area 400		
- Fire Pump[b]	100	200
- Hose Bibb[c]	10	20
Area 600 – Boiler Building	52,177	69,264
Total Process Water	**53,508**	**73,984**

Note: gpd – gallons per day, gpm – gallons per minute
[a] Pressure washer rated at 5 gpm, with conservative usage assumptions.
[b] Averaged considering weekly 30-minute maintenance cycling at 30 gpm.
[c] Assumed water use for occasional miscellaneous maintenance activates and facility wash down.

The anticipated maximum day process water demand is approximately 51.4 gpm. Process water will be isolated from the potable water using approved reduced pressure cross-connection control devices. The annual water usage will vary based on the density and viscosity of the crude oil received, the volume of crude requiring heat and the ambient air temperatures, with lower ambient temperatures requiring higher water usage.

2.6.5 Potable Water

Potable water for the Facility is limited to the amount needed to serve the Administrative and Support Buildings (Area 200), future restroom inside the Storage Building (Area 300), and landscape irrigation. The Washington State Department of Health Water System Design Manual estimates that for a "factory" water use can be estimated by using a range of 15 to 35 gallons per day (gpd) per employee. A water use consumption rate of 35 gallons per person per day was used for the maximum, and 25 gpd was used for the average flow. Additional potable water demands for landscape irrigation were calculated and added to the appropriated water system connection location.

Table 2.6-2 shows a breakdown of the potable water uses and rates.

Table 2.6-2. Potable Water Uses and Rates

Potable Water Uses	Average Water Use (gpd)	Maximum Water Use (gpd)
Area 200 – Admin and Support Buildings	4,291	6,566
Area 300 – Storage Building	1,148	3,131
Area 400 – Future Domestic	565	845
Area 600 – Landscape Irrigation	266	779
Total Potable Water	6,270	11,321

Note: gpd – gallons per day
[a] The volume of 35 gpd for industrial factory sewer rates is based on Table G2-2, Design Basis for New Sewage Works (Ecology 2008)
[b] Assumption of 157 employees using facilities in Area 200, 6 employees in Area 300 with other sanitary uses, and 19 employees in Area 400 with other sanitary uses.

The maximum daily potable water demand is equivalent to the need for 6 gpm. Potable water use will be isolated from non-potable process water using approved double check cross-connection control devices. The annual water usage will vary based on ambient air temperatures and rainfall, with lower ambient temperatures and higher rainfall requiring less irrigation water usage.

2.6.6 Mitigation Measures

Mitigation measures for the water supply consist of the monetary contribution required by the City for water connections and new services. Service connection fees, system development charges, and industrial water use billing will be paid to the City. Connection fees and system development charges paid at the time of building permit application and application for water service is compensatory mitigation paid to the City for the long-term impacts to water rights, source development, system storage, and distribution piping.

The connection to the City water supply system will be made consistent with standard specifications adopted by the City. Backflow devices will be tested yearly per State requirements.

Section 2.7 – System of Heat Dissipation

WAC 463-60-175
Proposal – System of heat dissipation.

The application shall describe both the proposed and alternative systems for heat dissipation from the proposed facilities.

(Statutory Authority: RCW 80.50.040 (1) and (12). 04-21-013, amended and recodified as § 463-60-175, filed 10/11/04, effective 11/11/04. Statutory Authority: RCW 80.50.040(1) and Chapter 80.50 RCW. 81-21-006 (Order 81-5), § 463-42-175, filed 10/8/81. Formerly WAC 463-42-430.)

Section 2.7 System of Heat Dissipation

The Facility is not an electrical generating facility, and therefore does not require or incorporate the large heat dissipation systems (i.e., cooling towers or ponds) that are associated with using water or air to cool combustion equipment.

As noted in section 2.3.8, the Facility will be equipped with boilers fueled with natural gas to provide steam used to heat the crude oil in order to facilitate its conveyance during the rail car unloading operations. Three boilers, two operating and one on standby, each with a rated capacity of 62 MMBTU/hr will be located in the Area 600 Boiler Building.

The boiler system will be field-erected or package boilers with a fire- or water-tube design. The steam produced in the boilers is circulated in a closed system to the location where the heat carried by the steam is needed, where the steam is released in closed-system manifolds in the heated tank cars. As the steam releases its heat content, the steam condenses, and the water is piped back to the boiler. Excess heat is dissipated with the exhaust gases that exit the boiler building through the vent to the environment; therefore, a heat dissipation system is not required. Small amounts of steam will also be released periodically from the boiler systems. The steam that will be lost to atmosphere from the storage area boiler system will be low pressure steam, and in such quantities that no visual sign of steam loss will be noticeable. The steam that will be lost to atmosphere at the rail unloading area boiler system will be discharged to atmosphere within the rail unloading area and will not result in a visual plume.

To maintain the quality of water used in the closed system, a small amount of water from the closed steam system will be purged from the system and replaced with fresh water treated to the appropriate quality (see section 2.3.8). In order to meet the temperature discharge limits, the blowdown will be cooled through a non-contact tube and shell heat exchanger using the inlet raw water to cool the discharge as discussed in detail in section 2.9.1. The total amount of process water discharged from the boiler building will not exceed 22,464 gallons per day (15.6 gpm).

Section 2.8 – Characteristics of Aquatic Discharge Systems

WAC 463-60-185
Proposal – Characteristics of aquatic discharge systems.

(1) Where discharges into a watercourse are involved, the applicant shall identify outfall configurations including: (a) Location(s) of water discharge pipeline or conveyance system, the outfall, and any associated dilution systems; (b) Average and maximum discharge rate; (c) Extent of the dilution zone if necessary; (d) Width of the receiving water body at the outfall location; (e) Dimension(s), and rated and maximum carrying capacity of the water discharge pipeline or conveyance system, the outfall structure and any associated dilution systems; (f) Depth and width of the receiving water body at the discharge point; (g) Average, minimum and maximum water velocity of the receiving water body at the discharge point, and the times when the maximum and minimum flows occur.

(2) Where discharges are into a water-course via an existing discharge system for which certification is not being sought, the applicant shall also provide the following information: (a) Ownership of the discharge conveyance system; (b) A description of, and the terms and duration contained in, the use agreement that allows the applicant to use the discharge conveyance system; (c) Identification of the party responsible for operation and maintenance of the discharge conveyance system; (d) NPDES or state wastewater discharge permit number for the existing system discharge; (e) Location of connection point into the existing discharge system; (f) Diameter and rated and maximum volume capacity of the wastewater line or conveyance system into which discharge is being proposed; (g) Existing, rated and maximum flow levels in the wastewater line or conveyance system into which the discharge is being proposed; (h) Where a discharge is proposed to a publicly owned treatment works, in addition to the items provided in subsections (1) and (2) of this section, the applicant shall provide an engineering analysis showing that the proposed discharge will not cause the waste treatment facility to exceed capacities or to violate its authorized discharge limits, including both the quality of the discharge and the volume of the discharge, or to violate the permits governing its operation.

(Statutory Authority: RCW 80.50.040 (1) and (12). 04-21-013, amended and recodified as § 463-60-185, filed 10/11/04, effective 11/11/04. Statutory Authority: RCW 80.50.040(1) and Chapter 80.50 RCW. 81-21-006 (Order 81-5), § 463-42-185, filed 10/8/81. Formerly WAC 463-42-440.)

Section 2.8 Characteristics of Aquatic Discharge Systems

Discharges from the Facility contribute indirectly to downstream aquatic outfalls. All on-site sources of aquatic discharges, including stormwater and wastewater sources, discharge to existing conveyance and treatment systems prior to the eventual release of water to the Columbia River. All of the downstream outfalls are permitted and regulated by Ecology.

2.8.1 Description of Discharge Systems

There are five separate conveyance systems in which discharges are released from the Facility to eventual aquatic discharges. The multiple discharges are directly related to the spread-out nature of the Facility and the boundaries of the existing drainage basins at the Port. The conveyance systems are listed below.

- Terminal 5 stormwater system
- Terminal 4 stormwater system
- Combined Marine Terminal and Subaru lot stormwater treatment swales
- Process wastewater and domestic sewage discharge to City sanitary sewer
- Process wastewater and domestic sewage hauled off site

A portion of the Facility lease boundary is located within areas determined by the Port to be within its general use area, which the Port defines as areas in which it is not feasible that individual tenants collect and treat their own stormwater discharges. Areas in this Facility that fall under that designation are limited to rail improvements located within the master plan rail corridor, transfer pipeline alignment, and non-pollution-generating rail yard area on the north side of the rail unloading building.

2.8.1.1 Terminal 5 Stormwater System

Stormwater discharging to Terminal 5 is generated from the following Facility locations.

- Area 200 unloading and office
- Portion of Area 500 transfer pipelines
- Area 600 Boiler
- Rail infrastructure

Stormwater is discharged from the Facility to the Terminal 5 stormwater system in three locations just south of the rail unloading building. Stormwater from the Facility will be treated through water quality filter vaults prior to its discharge in accordance with the Terminal 5 Western Washington Phase II Municipal Stormwater Permit WAR045201 and VMC 14.25. The Port owns the stormwater conveyance systems and downstream treatment ponds. Stormwater from the connection points flows through a series of minimum 24-inch-diameter manmade conveyance pipelines to a pump station and is pumped to two water quality treatment lagoons located west of Terminal 5. Each connection location's minimum pipeline diameter and capacity at the point of connection is summarized below.

- T5 West Connection: 24" Corrugated Polyethylene Pipe, 19.2 cubic feet per second capacity
- T5 Mid Connection: 24" Corrugated Polyethylene Pipe, 6.4 cubic feet per second capacity
- T5 East Connection: 24" Corrugated Polyethylene Pipe, 7.6 cubic feet per second capacity

The project site discharges approximately 1.30 cubic feet per second (cfs) during a water quality event and approximately 8.08 cfs during a 100-year storm. An outfall is located immediately south of the treatment ponds at latitude 45° 38’ 60” and longitude -122° 44’ 45”.

A master stormwater system plan was prepared for the entire Terminal 5 expansion area by HDR Engineering Inc. and dated May 3, 2012; it is attached to the stormwater report in the Engineering Report in section 5.3 of this ASC. The conveyance system was sized assuming the entire 91-acre drainage basin is fully impervious at buildout. The report concluded that the conveyance system functions as intended to accommodate the 25- and 100-year storm events.

Stormwater generated on Terminal 5 is currently collected and treated in accordance with the current stormwater regulations and permitted under permit WAR045201. Construction of the additional rail lines will not affect collection or treatment of the stormwater adversely as the facilities in place were previously designed for the entire 91-acre basin. The conveyance pipeline and non-pollution-generating yard area is considered non-pollution-generating. As part of this project, stormwater inlets receiving stormwater from the general use areas in which the Facility is making improvements will be confirmed to have, or will be retrofitted, with spill containment devices.

2.8.1.2 Terminal 4 Stormwater System

Stormwater discharging to Terminal 4 is generated from the following Facility locations.

- Areas 300 storage
- Portion of Area 500 transfer pipelines

Stormwater is discharged from the Facility to the Terminal 4 stormwater system in two locations just south of the Storage Area. In accordance with the Port’s Terminal 4 Industrial Stormwater General Permit WAR000424, stormwater from the Facility will be treated through water quality filter vaults prior to its discharge. The Port owns the stormwater conveyance systems and outfall. Stormwater from this connection point flows through a series of 36-inch minimum manmade conveyance pipelines prior to the Columbia River outfall. The 36-inch pipeline has a hydraulic capacity of 27.1 cfs at the connection location. The project site discharges approximately 3.11 cfs during a water quality event and 19.25 cfs during a 100-year storm. The outfall is located upriver of the Storage Area at latitude 45° 38’ 15” and longitude -122° 42’ 45”.

BergerABAM reviewed the drainage options for Parcel 1A (Storage Area) for the Port in June 2010; a copy of the review is included in the stormwater report (see the Engineering Report in section 5.3 of this ASC). The conveyance system was sized assuming the Parcel 1A and adjacent tenant parcel totaling 44 acres would be fully impervious at buildout. The report concluded that the conveyance system, if designed and installed according to the recommendations of the memo, will function as designed to accommodate the 25- and 100-year storm events. The Port subsequently completed construction of this stormwater system in accordance with the recommendations of the prior reports. This stormwater system serves Farwest Steel and the future Area 300 Storage Area.

Stormwater from the general use area of Terminal 4 is currently collected and treated in accordance with the current stormwater regulations and permitted under permit WAR000424. Construction of the transfer pipeline along the general use area will not impact collection or treatment of the stormwater adversely as the facilities in place were designed for stormwater runoff along the rail corridor. As part of this project, stormwater inlets receiving stormwater

from the general use areas in which the Facility is making improvements will be confirmed to have, or will be retrofitted with, spill containment devices. The typical containment device is the installation of a T or 90 degree elbow on the outlet pipe to prevent crude oil from entering the outlet. Final design and maintenance requirements will be completed in consultation with the Port.

2.8.1.3 Combined Marine Terminal and Subaru Treatment and Infiltration Swales

Stormwater discharging to the combined Marine Terminal and Subaru treatment and infiltration swales is generated from the following Facility locations.

- Area 400 Marine Terminal
- Portion of Area 500 transfer pipelines

Stormwater discharged from the Facility to the combined Marine Terminal and Subaru treatment and infiltration swales will sheet flow across a proposed filter strip abutting the south side of the southernmost swale. The existing treatment and infiltration swales were designed by David Evans and Associates as part of the Port of Vancouver Columbia Gateway – Phase 1 project. The swales collect and treat the entire 25-acre basin through the pair of northernmost swales that eventually overflow, after required treatment, into the southernmost swales for infiltration. The project will not add any additional pollution generating surfaces or additional contributing land coverage to the treatment and infiltration swale system. The project site discharges approximately 0.19 cfs during a water quality event and 1.16 cfs during a 100-year storm. There is no outfall for this existing stormwater system.

Stormwater from the containment area located on the dock will be collected and conveyed to water quality filters and treatment units located upland. During loading operations, the containment area will be valved closed, and stormwater released only following inspection for any oil sheen. If an oil sheen is present, the oil will be removed prior to release to the stormwater system. The discharge from the stormwater treatment units will be directed to the upland treatment swales.

2.8.1.4 Wastewater Discharge to City Sanitary Sewer

Wastewater discharging to the City sanitary sewer is generated from the following Facility locations and is described in further detail in section 2.9.

- Process water from Area 600 Boiler effluent
- Process water from Storage Fire Pump cooling water
- Domestic sewage from Administrative and Support Buildings
- Domestic sewage from Storage Building

Wastewater is discharged to the City's sanitary sewer at two locations, one just north of the Administrative and Support Buildings into an existing 18-inch diameter gravity sewer, and a second just south of the Storage Area into an existing 18-inch diameter gravity sewer.

Capacity at the connection location for the 18-inch discharge gravity sewers at the Administrative and Support Buildings and Storage Area are 4.84 cubic feet per second and 6.65 cubic feet per second.

Wastewater is conveyed through the City's conveyance system to the WWTP located approximately 1 mile east of the Storage Area at 2323 West Mill Plain Boulevard. The City

owns the conveyance pipeline system, treatment plant, and associated outfall. The treatment plant and outfall are regulated under the Municipal NPDES Individual Permit WA0024350.

The WWTP discharges to the Columbia River, which is designated a Class A receiving water in the vicinity of RM 105. The Columbia River has a special temperature standard of 20°C (68°F). Nearby outfalls include Northwest Packing Company (RM 105.1), Great Western Malting (RM 106), Vancouver Marine Park Treatment Plant (RM 110), Vancouver Trout Hatchery (RM 113.5), City of Gresham STP (RM 117.5), and Camas STP (RM 121.2). Ecology approved the most recent mixing zone report in January 1996. A detailed discussion and engineering analysis relating to water body depth, width, maximum and minimum velocities, and a complete mixing zone engineering analysis for surface water quality-based discharge limitations and conformance are included in the previously approved mixing zone study.

A letter confirming conveyance system and treatment capacity from the City has been received (see Engineering Report in section 5.3 of this ASC). The Applicant submitted the City's Industrial Information Form, along with a completed Wastewater Discharge to publicly owned treatment works (POTW) permit application as the basis of review (see Appendix I.1). The maximum day wastewater generated from the Facility is approximately 26 gpm. The Applicant has demonstrated that the proposed discharge will not cause the waste treatment facility to exceed capacities or to violate its authorized discharge limits, including both the quality of the discharge and the volume of the discharge, or to violate the permits governing its operation.

Disposal to sanitary sewer is the Applicant's preferred option. An industrial waste discharge permit, demonstrating compliance with the City of Vancouver's pretreatment standards, can and should be issued by EFSEC through the integrated process. The Applicant has investigated and confirmed two alternative means by which industrial wastewater can be disposed of without directing discharges to the City's POTW. A description of the discharge options are included in section 2.9.4 below.

2.8.1.5 Haul Off

Wastewater generated from the following Facility locations will be temporarily stored on site and hauled off; these discharge streams are described in further detail in section 2.9.

- Process wastewater from Area 200 Rail Unloading Building
- Fire pump cooling water from Area 400
- Domestic sewage from Area 400

On-site storage for process wastewater streams is provided through double-walled storage tanks.

- As described in section 2.3.3.1, at Area 200, the double-walled steel fabricated containment tanks are located above-grade. The tanks are sized to store a minimum of three days of average annual flow and/or two days of the maximum day flow (whichever is greater) while preserving an additional 825 bbl of spill containment capacity. The containment tanks are connected to a collection and containment system that contains approximately 35,000 bbls of total storage and secondary containment capacity.
- The fire pump cooling water from Area 400 will be discharged to a minimum 1,000-gallon underground storage tank. The wastewaters from the fire pump cooling are estimated at a total of 900 gallons in the worst case produced once per week.

- Domestic sewage in Area 400 will be collected in portable toilets as described in section 2.9.2.

Wastewaters for haul off will be collected on a contracted schedule occurring each day of Facility operations Monday through Friday with likely an additional pump-out on Monday following the weekend operations. Wastewaters will be pumped by a DOT-licensed hauler like Bravo Environmental, LLC and hauled to a licensed industrial wastewater pretreatment facility, such as PPV Inc. The wastewater characterizations contained within the NPDES Engineering Report and the NPDES Engineering Report response letter have been provided to PPV Inc. to confirm suitability for haul off. PPV provided a description of their treatment process detailing the facility's processes. This narrative is included in the NPDES Engineering response letter (see section 5.3). Domestic sewage will be hauled by a licensed sewage contractor for disposal at a wastewater treatment plant.

2.8.2 Process Wastewater Discharge Alternatives

Although sanitary sewer discharge is preferred for discharges from the Area 600 Boiler Plant and for Area 300 Fire Pump cooling water, these discharges could be routed to either the Terminal 5 and Terminal 4 NPDES municipal stormwater outfalls or stored on site and hauled off site. The alternative process wastewater discharge would be routed to either the Terminal 5 NPDES municipal stormwater outfall or stored on site and hauled off site.

2.8.2.1 Area 600 Boiler Building Discharge

Discharge to the NPDES outfall would occur by comingling the Area 600 discharge with the stormwater system proposed to be installed on site. The water quality of the discharge alternative is currently being evaluated under Ecology's water quality criteria WAC 173-201A-320 for compliance with anti-degradation standard for the Columbia River. Additional discharge cooling would be added to the currently proposed raw water and discharge treatment for the Area 600 boiler plant. The discharge cooling would be provided to achieve a maximum of 20°F discharge temperature.

The downstream stormwater system as proposed would not be significantly modified if this alternative was selected. The stormwater would continue south across the rail corridor and east along the south side of the rail unloading building. The stormwater water quality vault would be upsized to treat the water quality storm plus the maximum day wastewater discharges. This upsizing is required to maintain treatment of the full water quality storm.

Downstream of the water quality filter is the proposed NPDES monitoring point for this portion of the facility. The discharges are then comingled with the runoff from Terminal 5 as described in section 2.8.1.1.

For the haul-off alternative, the Area 600 wastewater discharges would be pumped or stored on site to a holding tank. The holding tank would be sized to receive a minimum of two days of the maximum day flows, or three days of the average day flows (whichever is greater). The downstream hauling, discharge, and treatment systems are characterized above in section 2.8.1.5.

2.8.2.2 Area 300 Fire Pump Cooling Water

Discharge to the NPDES outfall was considered during early project development. Discharge to sanitary sewer is considered the preferred discharge alternative; however, if discharge is not authorized to the sanitary sewer, then the volume of weekly maintenance cycling water will be stored on site and hauled off site for disposal.

Section 2.9 – Wastewater Treatment

WAC 463-60-195
Proposal – Wastewater treatment.

(1) The application shall describe each wastewater source associated with the facility and for each source, the applicability of all known, available, and reasonable methods of wastewater control and treatment to ensure it meets current waste discharge and water quality regulations.

(2) Where wastewater control involves collection and retention for recycling and/or resource recovery, the applicant shall show in detail the methods selected, including at least the following information: (a) Waste source(s); (b) Average and maximum daily amounts and composition of wastes; (c) The type of storage vessel and the storage capacity and duration; and (d) Any bypass or overflow facilities to the wastewater treatment system(s) or the receiving waters.

(3) Where wastewaters are discharged into receiving waters, the applicant shall provide a detailed description of the proposed treatment system(s), including: (a) Appropriate flow diagrams and tables showing the sources of all tributary waste streams; (b) Their average and maximum daily amounts and composition; (c) Individual treatment units and their design criteria; (d) Major piping (including all bypasses); and (e) Average and maximum daily amounts and composition of effluent(s).

(Statutory Authority: RCW 80.50.040 (1) and (12). 04-21-013, amended and recodified as § 463-60-195, filed 10/11/04, effective 11/11/04. Statutory Authority: RCW 80.50.040(1). 92-09-013, § 463-42-195, filed 4/2/92, effective 5/3/92. Statutory Authority: RCW 80.50.040(1) and Chapter 80.50 RCW. 81-21-006 (Order 81-5), § 463-42-195, filed 10/8/81. Formerly WAC 463-42-470.)

Section 2.9 Wastewater Treatment

Sources of wastewater from the Facility include the boiler plant effluent(including blowdown, reverse osmosis reject water, and miscellaneous drains from the boiler plant), miscellaneous part and equipment wash (including facility wash down, part wash, and occasional rail car exterior wash), fire pump cooling water, and domestic sewage from the Administrative and Support Buildings and the Storage Area building. Most domestic wastewater sources and the boiler effluent discharges will be connected to the City public sanitary sewer system. Sanitary sewage collected from within the Port area is conveyed to the City's WWTP where it is treated and discharged to the Columbia River under City's NPDES Permit No. WA0024350. All process wastewater discharged from the Facility to the City's sanitary sewer system will undergo pretreatment to ensure compliance with the City's pretreatment program. A copy of the Application for a State Waste Discharge Permit to Discharge Industrial Wastewater to a POTW and the Application for a city Wastewater Discharge Permit is included in section 5.2.

2.9.1 Process Wastewater Sources

Sources of process wastewater include the following:

- Feed water treatment effluent (reverse osmosis reject water) from the Area 600 Boiler Building
- Blowdown from the Area 600 Boiler Building
- Miscellaneous part and equipment wash water in the rail unloading area (including rail car exterior washing)
- Fire pump cooling water from the Rail Unloading and Office Area, Storage Area, and Marine Terminal

The boiler plant is expected to produce continuous blowdown, with discharge flow rates fluctuating depending on steam demand. Blowdown temperature at the boiler plant will be lowered to 104°F through the use of a non-contact tube and shell heat exchanger. The blowdown water will then be pumped to the Area 200 systems, pass through an oil-water separator, and mixed with domestic waste from the Admin Buildings prior to discharge to sanitary sewer. Average and maximum process wastewater steady state flow rates are summarized in Table 2.9-1.

Miscellaneous part and equipment washing (including rail car exterior wash) will be completed in a designated area located within the Rail Unloading and Office Area. Wash water will be generated from a single 5-gpm pressure washer and will be collected and conveyed to the Unloading Facility Containment Tanks for haul off.

Steam condensate blowdown is generated during the unloading of tank cars in Area 200. Within the rail unloading building as part of operating this system, during the connection and disconnection of the rail car steam coils, the operator opens the steam line valves and discharges steam directly to the containment pans. This procedure is an operational necessity, as it purges the lines of debris. This results in the discharge of steam condensate blowdown. The steam condensate blowdown is collected in the Area 200 containment pans, which discharge to the Area 200 containment tanks.

The fire pumps are required to operate for a 30-minute maintenance cycle once a week. Cooling water from the fire pumps will be discharged for the Unloading Facility Containment Tanks,

City's sanitary sewer system, and on-site storage tanks for the Unloading Area, Storage Area and Marine Terminal areas, respectively.

Venting from the crude oil drain line will be piped in a continuous loop back through the top of the rail car, capturing all crude oil vapors within the rail car and/or crude pipelines. Therefore, no discharge of heavily hydrocarbon saturated condensate is necessary.

Table 2.9-1. Process Wastewater Sources

Wastewater Stream	Average Daily Flows (gpd)	Maximum Daily Flows (gpd)
Area 200		
– Miscellaneous Part/Equipment Wash	1,000[a]	2,000[a]
– Fire Pump Cooling Water	107[a]	900[a]
– Steam Condensate Blowdown	6,441 [a]	7,952 [a]
Area 300		
– Fire Pump Cooling Water	107	900
Area 400		
– Fire Pump Cooling Water	107[a]	900[a]
– Miscellaneous Equipment Drains	10[a]	20[a]
Area 600		
– Boiler Building Effluent	16,922	22,464
Sanitary Wastewater Total Process Wastewater	**24,694**	**35,136**

Note: gpd – gallons per day

[a] Process water discharged to stormwater system for treatment or stored on site and hauled off site for disposal.

The approximate constituent concentrations in the process wastewater are shown in Table 2.9-2. Detailed analysis of the boiler plant effluents was completed by DMS-Nalco assuming City water for make-up water and a reverse osmosis treatment unit for processing of boiler feed water. The analysis demonstrated that the combined effluent from the boiler plant will meet the discharge standards in the City's Pretreatment Ordinance VMC 14.10.

Table 2.9-2. Estimated Chemical Makeup of Process Water Discharge

Key Water Constituents	Pre-Treatment Ordinance Local Limits (VMC 14.10)	
All Units in mg/L		**Final Waste Water Discharge**
Ag as Ag	1.130000	ND
As as As	0.220000	ND
Cd as Cd	0.140000	ND
Cr as Cr	7.220000	ND
Cu as Cu	3.670000	ND
Hg as Hg	0.008000	ND
Mo as Mo	0.420000	ND
Ni as Ni	0.900000	ND
Pb as Pb	0.440000	ND
Se as Se	0.310000	ND
Tl as Tl	0.530000	ND
Zn as Zn	1.640000	0.061776
CN as CN	0.470000	NT

Key Water Constituents	Pre-Treatment Ordinance Local Limits (VMC 14.10)	
All Units in mg/L		**Final Waste Water Discharge**
BOD5	500.000000	6.428280
FOG	50.000000	7.713936
pH	10.000000	8.418850
Temp F	104.000000	75.774029

Additional non-process wastewater may be generated intermittently from the unloading area. Non-process wastewater originating from within the unloading area may include rainwater that enters the building from rail cars and is blown in at the entry and exits, oil and other contaminates dripping off rail cars, and fire retardant foam released by the fire suppression system during routine maintenance. Containment pans and secondary containment trenches will be installed between and adjacent to the tracks of the rail car unloading building to capture any spilled oil, rainwater, and biodegradable fire retardant and direct it to sump pumps installed at low points within each containment trench. The sump pumping system will transfer any collected non-process wastewater to a series of aboveground containment tanks where it will be removed by a vacuum truck or pumped out of the tanks and hauled off site to a licensed and approved disposal Facility.

The Applicant is considering the following feasible alternatives for discharge of the boiler plant wastewater. These options will be pursued as part of the EFSEC permit approval process for the wastewater discharges.

Option 1 – Preferred Discharge to City's sanitary sewer

Discharges from the boiler plant will be cooled to reduce its temperature below 104°F, and then will be pumped to the Area 200 systems, passed through an oil-water separator, and mixed with domestic wastewater from the admin buildings prior to discharge to sanitary sewer. A detailed evaluation of the boiler plant wastewater characterization was completed and confirmed that the discharges from the boiler plant meet the City's Pretreatment Ordinance for discharge to City's sanitary sewer. A sewer availability letter was received from the City indicating that the City has sufficient capacity in the collection system and treatment plant to receive these flows. This discharge would be permitted through EFSEC following conformation by EFSEC and their contract reviewer that the discharges meet the City's pretreatment requirements. The City's Industrial Information Form and application for a State Waste Discharge Permit to Discharge Industrial Wastewater to a Publicly Owned Treatment Works is included in section 5.2 of this ASC.

Option 2 – Discharge to stormwater outfall

Discharges from the boiler plant will be cooled to reduce their temperature below 20°C. Discharges will be comingled at the boiler plant with the stormwater from Area 600 and discharged south under the railroad tracks into Area 200 where the comingled stormwater and process water will be additionally treated through water quality filter vaults. A Tier II anti-degradation water quality review is underway as part of the permitting process that will demonstrate that there is no measureable change in the water quality of the Columbia River in accordance with WAC 173-201A-320. This discharge would be permitted through the NPDES Industrial Individual Permit process by EFSEC.

Option 3 – Haul off

Discharges from the boiler plant will be cooled to reduce its temperature below 104°F. Storage of the boiler plant discharges will be constructed on site in a storage tank of approximately 70,000 gallons. The sizing of the tank would be sufficient to store three days of the maximum day discharge from the Boiler Plant. Haul off would be provided through a contract vendor, such as Bravo Environmental, and hauled to a permitted industrial wastewater pretreatment facility, such as PPV Inc. It is anticipated that the haul-off option would result in an average of additional 2.5 truck trips per day during operation of the Facility.

2.9.2 Domestic Strength Wastewater Sources

Sources of domestic strength wastewater include the following:

- Domestic strength sanitary discharge from the administrative and support buildings
- Domestic strength sanitary discharge from the Storage Area Building
- Domestic strength sanitary discharge from the Marine Terminal

Domestic strength sanitary wastewater from the Administrative and Support Buildings in Area 200 will consist primarily of domestic waste from kitchen/break room, restroom facilities, and shower areas. Domestic strength sanitary wastewater from restrooms and other sanitary facilities will also be produced at the Area 300 Storage Building. No pretreatment is proposed at these locations. Discharges from both the Administrative and Support Buildings and Storage Building will be discharged directly to the sanitary sewer. Marine Terminal (Area 400) employees will use portable toilets located at the Marine Terminal. Sanitary waste from the Marine Terminal would be hauled off site (see Table 2.9-3).

Table 2.9-3. Domestic Wastewater Sources

Wastewater Stream	Average Daily Flows (gallons per day)	Maximum Daily Flows (gallons per day)
Area 200 – Admin and Support Buildings	3,925	5,495
Area 300 – Storage Building	150	210
Area 400 – Portable toilets	475[a]	665[a]
Total Domestic Wastewater	**4,550**	**6,370**
Domestic Wastewater to Sanitary Sewer	**4,075**	**5,705**

Note: gpd – gallons per day

[a] Domestic wastewater stored on site and hauled off site for disposal.
[b] Wastewater production at Areas 300 and 400 is assumed with employee concentrations of 6 and 19, respectively.

2.9.3 Process Wastewater Treatment Alternatives

Final treatment of all wastewater discharged from the Facility to the public sanitary sewer will be done at the City's existing WWTP. No treatment process modifications at the WWTP will be necessary to accommodate this project. Pretreatment will be conducted on site per the requirements of the City's pretreatment ordinance. Process wastewater streams requiring pretreatment include Area 600 boiler effluent and Area 300 fire pump cooling water. Pretreatment processes for these waste streams will be designed and furnished to meet wastewater discharge permit requirements.

Treatment technologies used in the boiler plant consist of a reverse osmosis raw water treatment with rechargeable water softener cartridges. Two heat exchangers are installed on the discharge side of the boiler plant to adjust temperature to a maximum of 104°F. A detailed analysis of the

water quality and balance within the boiler plant was completed by DMS-Nalco and demonstrates that the water quality of the discharge meets the discharge requirements of the City's pretreatment ordinance, monitoring for pH, conductivity, and flow.

The fire pump cooling water may require treatment for chlorine residual prior to discharge to the City's sanitary sewer system. After the fire pump maintenance cycling, the discharge water will be temporarily stored in on-site tank to confirm that temperature and chlorine levels are suitable for discharge. The performance specifications for the fire pump indicates that the water temperature leaving the units should be approximately 70°F and, therefore, treatment is not proposed. Chlorine levels could be reduced through the addition of Vitamin C or sodium sulfite tablets.

2.9.4 Selection of Wastewater Treatment Alternatives

The total discharge amount of the Facility's wastewater flows is not significant when compared to the overall treatment plant flows or capacity. The boiler units and effluent pretreatment systems are standard. An assessment of all known, available and reasonable methods of prevention control and treatment (AKART) was completed at a high level for the Facility. The wastewater discharges from the site were identified for the appropriate discharge location as a result of proximity to the City's sewer, and risk of potential contaminates with the process. Where the transloading process had the potential to interface with stormwater or wastewater, a haul-off approach was selected to protect water quality. This approach allows for the use of additional testing of effluents by the receiving facility, allows the capture and recycling of any oils within the wastewater, and centralizes the treatment at a facility with advanced forms of treatment.

The on-site wastewaters proposed for discharge to the City's sanitary sewer are all treated through the use of off-the-shelf-treatment technologies, such as package reverse osmosis units, package water softeners, heat exchangers, and dechlorination systems. The design team considered the use of package water softener in lieu of the reverse osmosis unit and found through detailed modeling that the background silica levels in the City's water presented operational concerns for the boiler plant. Therefore, the treatment technology was replaced to a reverse osmosis unit with water softener canisters.

Plate and tube and shell heat exchangers were also evaluated, and the tube and shell variety was selected as the preferred alternative due to ease of maintenance.

2.9.5 Waste Discharge/Water Quality Standards

Maximum wastewater discharges to the City's sanitary sewer system by the Facility will account for less than 0.1 percent of the total treatment capacity of the City's WWTP. The WWTP uses an activated sludge process, UV disinfection, and sludge incineration for treatment, and is rated for a maximum wet weather treatment capacity of 28.4 MGD. Current treatment plant maximum demands listed in the most recent Ecology facility fact sheet dated 2003 is 17.4 MGD. The WWTP is permitted through Ecology and its municipal NPDES Individual Permit WA0024350.

New wastewater sources will be connected to the existing public sanitary sewer via a combination of new gravity and pressure sewer lines. A small sanitary sewer pump station is necessary to convey wastewater from the Area 600 Boiler Building to the discharge location near the Administrative and Support Buildings. The public sanitary basin to which the Facility discharges contains a single pump station at the southeast corner of the Storage Area.

The City reviewed a pre-application narrative which listed wastewater discharges of 30 gpm and indicated that the City has sufficient wastewater treatment and conveyance capacity to serve the project (Aaron Odegard, City of Vancouver, Personal Communications, July 2013). An Industrial Information Form and copy of the Wastewater Discharge to POTW permit application have been submitted to the City. A letter stating that the City has sufficient capacity has been received and is attached in the Engineering Report in section 5.3 of this ASC.

The City commented on page 76 of the "City of Vancouver Comments Regarding Consistency of Proposal with Land Use Plans and Zoning Regulations" that the facility, with regard to non-domestic discharges, has sufficient capacity to receive the wastewaters from the Facility. Additionally, the City commented, "The applicant has provided sufficient information to grant preliminary approval related to this standard. Final civil engineering review and approval is required." A detailed analysis of the wastewater discharges demonstrates full compliance with the City's pretreatment ordinance in VMC 14.10.

Discharges to the City's sanitary sewer system will comply with VMC Title 14.10 Pretreatment Ordinance. The following discharge limits are specified in VMC 14.10.

Table 2.9-4. Required Wastewater Discharge Constituent Limits

Constituent	Daily Maximum Concentration Limit	Instantaneous Concentration Limit	Unit
pH (minimum)	5.5	N/A	-
pH (maximum)	10.0	N/A	-
Arsenic	0.22	0.44	mg/L
Biological oxygen demand	500	-	ppd
Cadmium	0.14	0.28	mg/L
Chromium	7.22	14.44	mg/L
Chromium (hexavalent)	4.28	8.56	mg/L
Copper	3.67	7.34	mg/L
Cyanide	0.47	0.94	mg/L
Hydrocarbon based Oil & Grease	50.0	-	mg/L
Lead	0.44	0.88	mg/L
Mercury	0.008	0.016	mg/L
Molybdenum	0.42	0.84	mg/L
Nickel	0.90	1.80	mg/L
Selenium	0.31	0.62	mg/L
Silver	1.13	2.26	mg/L
Temperature*	104		mg/L
Thallium	0.53	1.06	mg/L
Zinc	1.64	3.28	mg/L

* Temperature of the total influent measured at the treatment plant.

Discharges additionally will comply with VMC 14.10.050 Prohibited Discharge Standards, VMC 14.10.060 National Categorical Pretreatment Standards, and VMC 14.10.070 State Pretreatment Standards.

An application for a wastewater discharge permit has been submitted to the EFSEC to approve discharges to the City of Vancouver's POTW.

The Facility is not subject to categorical standards under 40 CFR 403.6 and 40 CFR Chapter I, Subchapter N, and does not meet the definition in VMC 14.10.040 WW as a significant industrial user. A detailed wastewater characterization was completed for the proposed industrial wastewater discharge streams. Detailed modeling of the boiler plant was completed by DMS-Nalco and is based upon DMS-Nalco's expertise modeling, maintaining, and servicing local boiler facilities. The full wastewater characterization report was submitted to EFSEC in the NPDES response letter dated May 17, 2016 (Makarow 2016). The industrial wastewater discharges from the Facility will meet the requirements of the City's pretreatment ordinance in VMC 14.10.

The Applicant believes that disposal to sanitary sewer is the preferred option for the Facility and that a pretreatment permit can and should be issued by EFSEC. The Applicant is concerned that a City permit would be subject to a separate review and appeal process, rather than the integrated process envisioned by Ch. 80.50 RCW. For that reason, the Applicant has investigated and confirmed two alternative means by which industrial wastewater can be disposed of without directing discharges to the City's POTW. These are summarized as follows (Makarow 2016).

Alternative 1: Boiler Wastewater Discharge to NPDES Outfall

Discharges from the boiler plant as compared to the state water quality standards in WAC 173-201A by DMS-Nalco are suitable for discharge to the Columbia River through the existing stormwater system. Additional treatment for temperature may be required following detailed engineering design of the systems to meet the anti-degradation water quality standard within the Columbia River.

If this alternative is selected as the preferred alternative, a Tier II anti-degradation water quality standards review (WAC 173-201A-320) will be completed for the Facility to demonstrate that Facility discharges from the Boiler Building will not result in a detectable change in water quality.

Under this alternative, the fire pump cooling water discharge from Area 300 will be converted from a discharge to the City's sanitary sewer system to a collection tank and hauled off. PPV Inc. reviewed the anticipated characterization for the fire pump cooling water and provided a description of treatment methods they would use at the treatment facility.

Alternative 2: Boiler Wastewater Haul Off

The wastewater constituents of the discharge was provided to PPV Inc. and reviewed by their in-house staff who prepared a summary of the proposed treatment process to be used for the Terminal's wastewater. This summary is provided as an attachment to the NPDES Engineering Report response letter attached in section 5.3 of this ASC.

Under this alternative, the fire pump cooling water discharge from Area 300 will be converted from a discharge to the City's sanitary sewer system to a collection tank and hauled off. PPV Inc. reviewed the anticipated characterization for the fire pump cooling water and provided a description of treatment methods they would use at the treatment facility.

Section 2.10 – Spill Prevention and Control

WAC 463-60-205
Proposal – Spillage prevention and control.

The application shall describe all spillage prevention and control measures to be employed regarding accidental and/or unauthorized discharges or emissions, relating such information to specific facilities, including but not limited to locations, amounts, storage duration, mode of handling, and transport. The application shall describe in general detail the content of a Construction Phase and an Operational Phase Spill Prevention, Control and Countermeasure Plan (Chapter 40 CFR Part 112 and Hazardous Waste Management Plan) that will be required prior to commencement of construction.

(Statutory Authority: RCW 80.50.040 (1) and (12). 04-21-013, amended and recodified as § 463-60-205, filed 10/11/04, effective 11/11/04. Statutory Authority: RCW 80.50.040(1) and Chapter 80.50 RCW. 81-21-006 (Order 81-5), § 463-42-205, filed 10/8/81. Formerly WAC 463-42-420.)

Section 2.10 Spill Prevention and Control

This section describes the spill prevention and control measures to be employed at the Facility regarding accidental and/or unauthorized discharges or emissions, especially as they relate to specific proposed Facility components, storage (locations, amounts duration), and modes of product handling from the time the crude oil enters the Facility to the time it is loaded to marine vessels.

The nature of the proposed Facility (offloading from rail, storage, and loading to marine vessels) and the nature of the product handled (crude oil) engender a comprehensive and rigorous regulatory environment for Facility design, construction, operation, and spill response contingency planning. Local state and federal programs all regulate spill prevention of the proposed Facility and offer significant redundancy in safety protocols for the proposed Facility. The cooperation of local, state, and federal agencies, and industry spill response cooperatives has made Washington State a national leader in spill contingency planning and response.

The Applicant will comply with the comprehensive regulatory context regarding Facility design, construction, operation, and contingency planning requirements and its actions will be fully coordinated to meet all applicable local, state, and federal requirements. The Applicant will also implement inspection and training processes to ensure long-term compliance with these requirements. Inspections and training relating to spill prevention and controls will be integrated into the overall day-to-day management of the Facility.

The Facility proposes to only receive, handle, store, and load Groups 2, 3, and 4 persistent oils as defined in WAC 173-182-030 (24) with a specific gravity less than 1 (meaning they will float on water), and an API gravity ranging from 15 to 45. The Facility will not receive, store, or load Group 5 persistent oils, those with a specific gravity greater than 1.0000 and an API gravity equal to or less than 15.0, which are heavier than water.

Stormwater protection will also require spill pollution controls – these are addressed separately in sections 2.11 and 5.3 of this Application.

2.10.1 Regulatory Overview and Applicability

2.10.1.1 Federal Requirements

The federal regulatory structure for spill prevention, control, and contingency planning related to the storage and loading of crude oil to marine vessels has developed over time through the interaction of multiple federal law-making processes. Lawmaking has primarily involved the following three components to address these requirements: the establishment of the National Contingency Plan (NCP), the Clean Water Act (CWA), as amended, and the Oil Pollution Act of 1990 (OPA 90). Appendix B.1 provides a summary of how these three statutes have interacted since their inception to include requirements applicable to oil storage facilities and to oil transfer operations over marine waters, as well as the broader regional contingency planning effort.

Spill Prevention and Control

Section 311(j) of the CWA establishes the spill prevention and control requirements for three categories of facilities: related to transportation, not related to transportation, and complexes. What constitutes transportation-related versus non-transportation-related facilities has been established through a series of executive orders (EOs) and memoranda of understanding (MOUs)

(EPA, 2005). Onshore and certain offshore non-transportation-related facilities (and portions of a complex) are subject to the SPCC regulation, provided they meet the other applicability criteria set forth in Section 112.1 of the law. A facility with both transportation-related and non-transportation-related activities is a "complex" and is subject to the dual jurisdiction of EPA, and USDOT further delegated authority over vessels and transportation-related onshore and offshore facilities to the USCG Commandant.

Per 33 CFR 154.1020, the Facility that is the subject of this application is considered a complex subject to both USCG and EPA jurisdiction. The USCG regulates the pier structures, transfer hoses and piping, hose-piping connection, containment, and controls associated with the transfer of oil between a vessel and an onshore facility. EPA regulates the tanks, internal piping, loading racks, and vehicle/rail operations that are completely within the non-transportation portion of the Facility. EPA jurisdiction begins at the first valve inside secondary containment.

Transportation-related activities, i.e., transportation of the crude oil by rail to the Facility, and transportation of the crude oil away from the Facility by vessel, are also regulated. USDOT regulates railroad cars from the time the oil is offered for transportation to a carrier until the time that it reaches its destination and is accepted by the consignee. USDOT, through delegation to the USCG, also regulates spill prevention and control related to vessels once they have been loaded and have left the berthing dock. These activities are not part of the Facility and are, therefore, not further addressed in this application.

The following are the federal regulations that address spill prevention and control provisions applicable to the Facility:

40 CFR 110 – Discharge of Oil ("Sheen Rule"), addresses the reporting of spills to the National Response Center.

40 CFR 112 – Oil Pollution Prevention, Subpart A and Subsection 112.8 of Subpart B, address the requirements for an SPCC plan for a non-transportation facility. These subparts apply to the facilities and operations related to offloading crude oil from the rail cars (Area 200); conveying oil to and storing it in the storage tanks (Area 300); and conveying it to the marine vessel loading area (Area 400).

33 CFR 154, Facilities Transferring Oil or Other Hazardous Materials in Bulk, applies to facilities capable of transferring oil to or from a vessel with a capacity of 250 barrels or more. Subparts A through D apply to the design and operation of the vessel loading equipment associated with Area 400.

33 CFR 156, Oil and Hazardous Material Transfer Operations, applies to the transfer of oil or hazardous material on the navigable waters or contiguous zone of the United States to, from, or within each vessel with a capacity of 250 barrels or more.

Spill Contingency Planning

The requirements for spill contingency planning at marine transportation-related (MTR) complexes are divided along similar lines as those described for spill prevention and control above.

40 CFR 112, Subpart D – Response Requirements, addresses contingency planning for non-transportation related facility response plans and associated training and drills; this subpart

applies to the equipment and operations related to the unloading of crude oil from the rail cars (Area 200), and its conveyance to, and storage in, the storage tanks (Area 300).

33 CFR 154, Subpart F – Response Plans for Oil Facilities, addresses oil spill response contingency planning for fixed MTR facilities that could reasonably be expected to cause substantial harm or significant and substantial harm to the environment by discharging oil into or on the navigable waters, adjoining shorelines, or exclusive economic zone (EEZ). In accordance with 33 CFR 154.1015, because the Facility is onshore and has the capacity to transfer oil to a vessel with a capacity of 250 barrels or more, it is considered to be an MTR that, because of its location, could cause substantial harm.

USCG Safety Regulations

The 33 CFR 154, Subpart E, addresses the design, installation, and operation of vapor control systems associated with marine vessel loading operations. These requirements are aimed at ensuring the *safety* of the operations and are, therefore, addressed in section 4.1.4.

2.10.1.2 State Requirements

Both RCW 88.46 Vessel Oil Spill Prevention and Response, and RCW 90.56 Oil and Hazardous Substance Spill Prevention and Response, provide the statutory authority for regulating spill prevention and control, and contingency planning in Washington. These authorities are implemented though the WAC as follows:

WAC 173-180 establishes minimum standards for safe oil transfer operations to meet a zero spill goal established by the legislature. WAC 173-180 applies to all classes of oil handling facilities, including transfer operations involving any size nonrecreational vessel. The Facility, meets the definition of a "Class 1 facility" in RCW 90.56.010 and WAC 173-180-025.8 as "Any structure, group of structures, equipment, pipeline, or device, other than a vessel, located on or near the navigable waters of the state that transfers oil in bulk to or from a tank vessel or pipeline, that is used for producing, storing, handling, transferring, processing, or transporting oil in bulk."

WAC 173-182 establishes the requirements for spill contingency planning. The Applicant will be required to prepare and implement a contingency plan because the project meets the definition of a "Class 1 facility." The Facility proposes to only handle Group 2, 3, and 4 persistent oils as defined in WAC 173-182-030 (24) with a specific gravity less than 1 (meaning they will float on water), and an API gravity ranging from 15 to 45. The Facility will not receive, store, or load Group 5 persistent oils, those with a Specific gravity greater than 1.0000 and an API gravity equal to or less than 15.0, which are heavier than water.

WAC 173-183, authorized by RCW 90.48.366, 90.48.367, and 90.48.368, establishes procedures for convening a resource damage assessment (RDA) committee, preassessment screening of resource damages resulting from oil spills to determine which damage assessment methods to use, and determining damages in cases where the compensation schedule is selected as the damage assessment methodology to apply. This WAC does not directly apply to spill prevention, control, and contingency planning; however, its activities are conducted in coordination with the "potentially liable party," i.e., the person or persons who may be liable for damages resulting from an oil spill.

WAC 173-184 establishes requirements for advance notice of oil transfer. An advance notice of oil transfer is required for the project during operations any time oil is transferred to a ship.

Table 2.10-1 summarizes the regulations promulgated under these statutes that apply to this Facility.

WAC 463-60-205 requires the ASC to describe in general detail the content of a construction and operations phase spill prevention, control and countermeasure plan that will be prepared prior to commencement of construction. Spill prevention and control activities are described in section 2.10.3 below. The Applicant has prepared preliminary construction and operation SPCC plans and has submitted these plans to EFSEC for review (see Appendix B.2 and Appendix B.3, respectively).

Table 2.10-1. Summary of Washington State Spill Prevention and Control and Contingency Planning Regulations Applicable to the Facility

WAC, Regulatory Authority, and Federal Regulations Incorporated by Reference	Applicable WAC Requirements	Identification of Primary Compliance Methods
WAC 173-180 **Facility Oil Handling Standards** Regulatory Authority: (1) RCW 88.46.160 and 88.46.165 provide statutory authority for regulating the transfer of oil on or over waters of the state. (2) RCW 90.56.220 provides statutory authority for developing operations and design standards and implementing a compliance program (3) RCW 90.56.230 provides statutory authority for operations manual preparation and review requirements (4) RCW 90.56.220 provides statutory authority for the personnel training and certification requirements (5) RCW 90.56.200, 90.56.300, and 90.56.310 provide statutory authority for the prevention plan preparation and review requirements Federal Regulations Adopted by Reference: 33 CFR 154.300, 33 CFR 154.310, 33 CFR 154.570, 33 CFR 154.710, 33 CFR 154.1050, 33 CFR 154.1055, 33 CFR 155, 33 CFR 156.120, 33 CFR 156.150, 33 CFR 156.170, 40 CFR 109. 40 CFR 112 Subpart F, 49 CFR 195	**Part A – General Requirements** WAC 173-180-010 Applicability WAC 173-180-015 Purpose WAC 173-180-020 Authority WAC 173-180-025 Definitions WAC 173-180-030 Compliance with federal rule or law WAC 173-180-035 Inspections WAC 173-180-040 Recordkeeping WAC 173-180-050 Oil Spills WAC 173-180-055 Work Hours WAC 173-180-060 Personnel Qualifications	• The Facility, meets the definition of a Class 1 facility in RCW 90.56.010 and WAC 173-180-025.8 as "[a]ny structure, group of structures, equipment, pipeline, or device, other than a vessel, located on or near the navigable waters of the state that transfers oil in bulk to or from a tank vessel or pipeline, that is used for producing, storing, handling, transferring, processing, or transporting oil in bulk." • The Applicant will comply with inspection, recordkeeping, oil spill notification, work hour, and personnel qualification requirements.
	Part B – Oil Transfer Requirements WAC 173-180-200 Applicability WAC 173-180-205- Oil Transfer Equipment WAC 173-180-215 Advance Notice of Transfer WAC 173-180-220 Transfer containment and recovery requirements WAC 173-180-221 Rate A Prebooming Requirements WAC 173-180-223 Compliance Schedule for Prebooming and Alternatives for Rate A transfers WAC 173-180-224 Safe and Effective Threshold Determination Reports WAC 173-180-230 Preloading or Cargo Transfer Plan WAC 180-235 Pretransfer Conference WAC 173-180-240 Communications WAC 173-180-245 Oil Transfer Procedures WAC 173-180-250 Emergency shutdown	• The Facility oil transfer equipment will be designed and operated to meet the requirements of equipment protection, operation, and testing. The Applicant will submit an advance notice of transfer (ANT) 24 hours prior to oil transfer operations and will participate in pre-transfer conferences. • The Facility meets the threshold of a "Rate A" transfer operation, with transfer rates exceeding 500 gallons per minute. The Applicant will implement the Rate A pre-booming requirements prior to the beginning of an oil transfer. • The Applicant will prepare a safe and effective threshold determination report for the Facility marine vessel loading area (Area 400) and submit it for review and approval 120 calendar days prior to the first oil transfer operation. • The Applicant will provide safe vessel access. • The Applicant will prepare a transfer plan prior to any oil transfer, and participate in a face-to-face pre-transfer conference with the vessel's person in charge (PIC) • Oil transfers will occur in accordance with the Facility's approved operations manual. • The oil transfer facilities will be equipped with an emergency shutdown that can shut down transfer operations within 30 seconds.
	Part C – Design Standards for Class I Facilities WAC 173-180-300 Applicability WAC 173-180-320 Secondary Containment Requirements WAC 173-180-330 Storage Tank Requirements WAC 173-180-340 Transfer Pipeline Requirements	• The secondary containment berm surrounding the storage area will be designed and constructed in accordance with the requirements of WAC 173-180-320. • The storage tanks will be designed and constructed in accordance with the requirements of WAC 173-180-330, including compliance with NFPA No. 30l, and inspection results will be kept for the service life of the Facility. • Transfer pipelines will be designed, constructed, protected, maintained, and inspected in accordance with WAC 173-180-340.

WAC, Regulatory Authority, and Federal Regulations Incorporated by Reference	Applicable WAC Requirements	Identification of Primary Compliance Methods
	Part D – Operations Manual Requirements for Class I and Class 2 Facilities WAC 173-180-400 Applicability WAC 173-180-405 Class 1 facility- Operations Manual Class 1 facility- Operations Manual Preparation WAC 173-180-430 Class 1 Facility- Operations Manual Review and Approval WAC 173-180-435 Class 1 Facility- Operations Manual Updates WAC 173-180-435 Class 1 Facility- Submitting Operations Manual for re-approval	• The Applicant will prepare, submit for approval, and update/submit for re-approval every 5 years a facility operations manual in compliance with WAC 173-180 400 to -435. • The Facility operations manual will be submitted for approval 120 calendar days prior to oil transfer operations.
	Part E – Training and Certification WAC 173-180-500 Applicability WAC 173-180-510 Class 1 Facility Training Requirements WAC 173-180-515- Class 1 Facility Certification Program WAC 173-180-515- Class 1 Facility- Training and Certification Program Approval	• The Applicant will develop and implement oil transfer training for key supervisory, operations, maintenance, management, and indirect operations personnel identified in WAC 173-180-510, and maintain training records for the designated period. • The Applicant will develop and implement a certification program to certify that key supervisory and operations personnel identified pursuant to WAC 173-180-510 have met the Facility's oil transfer training program requirements; the certification program will be submitted for approval 120 calendar days prior to oil transfer operations.
	Part F – Prevention Plans for Class 1 Facilities WAC 173-180-600 Applicability WAC 173-180-610 Plan Preparation WAC 173-180-620 Plan Format Requirements WAC 173-180-630 Plan Content Requirements WAC 173-180-640 Plan Submittal WAC 173-180-650 Plan Review and Approval WAC 173-180-660 Plan Maintenance and Use WAC 173-180-670 Plan Update Timeline	The Applicant will prepare a plan for prevention of oil spills from the Facility into the waters of the state, and for the protection of fisheries and wildlife, other natural resources, and public or private property from oil spills. The Applicant's SPCC plans, operation manuals, and other prevention documents which meet federal requirements under 33 CFR 154, 33 CFR 156, 40 CFR 109, 40 CFR 112, or the federal Oil Pollution Act of 1990 may be submitted to satisfy state contingency plan requirements.
	Part G – Oil Transfer WAC 173-180-700 Applicability WAC 173-180-710 Class 1 Facility Contingency Plans	The Applicant will develop and implement a contingency plan in accordance with WAC 173-182.
WAC 173-182 **Oil Spill Contingency Plan** Regulatory Authority: RCW 88.46.060, 88.46.070,	**Part 1 – Purpose, Authority, Applicability and Definitions** WAC 173-182-010 Purpose WAC 173-182-015 Applicability WAC 173-182-020 Authority WAC 173-182-030 Definitions	The Applicant will develop and implement a contingency plan in accordance with WAC 173-182.

WAC, Regulatory Authority, and Federal Regulations Incorporated by Reference	Applicable WAC Requirements	Identification of Primary Compliance Methods
88.46.080, 88.46.090, 88.46.100, 88.46.120, 88.46.160, 90.48.080, 90.56.050, 90.56.060, 90.56.210, 90.56.240, 90.56.270, 90.56.280, 90.56.310, 90.56.320, 90.56.340, and chapter 316, Laws of 2006, provide statutory authority for the contingency plan preparation and review requirements, drill and response contractor standards established by this chapter for onshore and offshore facilities and covered vessels. Federal Regulations Adopted by Reference: 33 CRF 165 Appendix B; and 33 CFR. 154 Appendix C.	**PART II – Covered Vessel and Facility Oil Spill Contingency Plans** **Section A--General Planning, Information and Timing** WAC 173-182-110 Authority to Submit Contingency Plan WAC 173-182-120 Submitting a contingency plan WAC 173-182-140 Plan Maintenance WAC 173-182-142 Significant changes to approved plans require notification WAC 173-182-145 Plan Implementation Procedures WAC 173-182-150 Post Spill Review and Documentation	The Applicant will submit the contingency plan for review and approval 65 days prior to the planned date for beginning operations. The plan will be resubmitted every 5 years for review and approval.
	PART II – Covered Vessel and Facility Oil Spill Contingency **Section B--Contingency Plan Format and Content** WAC 173-182-210 Contingency Plan Format Requirements WAC 173-182-220 Binding Agreement WAC 173-182-230 Contingency Plan General Content WAC 173-182-240 Field Document WAC 173-182-250 Initial Response Actions WAC 173-182-260 Notification and call-out procedures WAC 173-182-264 Notification requirements for facility spills to ground or containment that threaten waters of the state WAC 173-182-270 Maintain records for response equipment WAC 173-182-280 Spill management teams	The Applicant's contingency plan will be formatted and will contain the content in accordance with the requirements of Section B of WAC 173-182. The plan will be consistent with the Northwest Area Contingency Plan (NWACP).The plan will address initial response actions as well as procedures for advance notice to state emergency management agencies in the event of a discharge or substantial threat of a discharge. The plan will address notification and response actions in response to spills to ground or containment that could threaten the waters of the state. The plan will address the maintenance of response equipment and the availability an organization of spill management teams.
	PART II – Covered Vessel and Facility Oil Spill Contingency **Section C--Planning Standards** WAC 173-182-315 Facility planning standards for non-dedicated work boats and operators WAC 173-182-320 Facility planning standards for aerial surveillance WAC 173-182-325 Planning standards for dispersants WAC 173-182-330 Planning standards for in-situ burning WAC 173-182-335 Planning standards for storage WAC 173-182-345 Determining effectiveness of recovery systems WAC 173-182-348 Determining effective daily recovery capacity WAC 173-182-350 Documenting compliance with planning standards WAC 173-182-355 Transfer sites for covered vessels and vessel terminals WAC 173-182-420 Vancouver Planning Standard	The Applicant's contingency plan will address and document planning standards for spill response, including aerial tracking resources, the use of dispersants, in-situ burning, interim storage locations, and the effectiveness and capacity of recovery systems. The Applicant's contingency plan will address specifically how the plan meets the Vancouver planning standard of WAC 173-182-420.

WAC, Regulatory Authority, and Federal Regulations Incorporated by Reference	Applicable WAC Requirements	Identification of Primary Compliance Methods
	PART II – Covered Vessel and Facility Oil Spill Contingency **Section D--Response and Protection Strategies for Sensitive Areas** WAC 173-182-510 Requirements for response and protection strategies WAC 173-182-520 Facility Planning Standards for Shoreline Cleanup WAC 173-182-530 Planning standards for groundwater spills WAC 173-182-540 Planning standards for wildlife rescue and rehabilitation	The Applicant's contingency plan will address how sensitive and public resources will be protected in the event of a spill, and will identify the availability of resources for shoreline cleanup. The plan will address methods to assess and respond to spills affecting groundwater. The plan will identify applicable federal, state, and NWACP requirements for wildlife rescue and rehabilitation.
	PART II – Covered Vessel and Facility Oil Spill Contingency **Section E--Plan Evaluation** WAC 173-182-610 through 640	The Applicant will coordinate with the regulatory agency as needed during the agency's evaluation of the contingency plan.
	PART III – Drill and Equipment Verification Program WAC 173-182-700 Drill participation, scheduling and evaluation WAC 173-182-710 Type and Frequency of Drills WAC 173-182-710 Drill participation, scheduling and evaluation WAC 173-182- 730 Other ways to get drill credit WAC 173-182-740 Drill requirement waivers	The Applicant will conduct drills in the manner and upon the schedule identified in Part III of WAC 173-182.
WAC 173-183 **Oil Spill Natural Resource Damage Assessment** Regulatory Authority: RCW 90.48	WAC 173-183-010 through 920	In the event of a spill, the Applicant will participate in an agency-directed process to assess damages.
WAC 173-184 **Vessel Oil Transfer Advance Notice and Containment Requirements** Regulatory Authority: RCW 88.46.160, 88.46.165, and 90.56	WAC 173-184-010 through 130	The Applicant will provide prior notice of oil transfer, pre-boom oil transfers, and submit a Safe and Effective Threshold Determination report.

2.10.1.3 Local Requirements

Section 14.26 of the VMC protects water resources in the City by establishing development regulations and minimum standards to reduce the risks of contaminants entering water resources. All operations within the City are subject to this ordinance and must meet the minimum design standards of VMC 14.26.120. Table 2.10-2 summarizes the requirements of VMC 14.26, and how the Facility will meet these requirements in the context of the overall spill prevention and control and contingency planning effort required by federal and state requirements.

VMC 14.26.115. B.2. defines special protection areas inside the critical aquifer recharge areas (CARAs) (inside the City boundary) to include property within 1,900 feet of any municipal water supply well. VMC 14.26.135 establishes restrictions in special areas, including the prohibition of new bulk petroleum fuel operations. VMC 14.26.110 defines "Petroleum Fuels" as petroleum-based liquid products that are refined from crude oil specifically for fuel purposes, including but not limited to, all grades of automotive gasoline, aviation gasoline, diesel, heating oils, and kerosene. As part of this application, the Facility does not propose to store "petroleum fuels." In addition, the Facility is not located within 1,900 feet of any municipal water supply well.

Table 2.10-2. Summary of VMC 14.26.120 Minimum Requirements Applicable to the Facility

VMC 14.26.120 Requirement	Method of Compliance
A. Operational best management practices (BMPs): All operations shall adopt the following BMPs to ensure their operations minimize potential risks to water resources.	
1. Precautions: The owner/operator shall take precautions to prevent accidental releases of hazardous materials. Hazardous materials shall be separated and prevented from entering stormwater drainage systems, septic systems, and drywells.	• Facility design • Operations SPCC plan • Spill contingency plan • Individual Industrial Stormwater Permit
2. Hazardous Materials Management: Hazardous materials shall be managed so that they do not threaten human health or the environment or enter water resources.	• Facility design • Operations SPCC plan • Spill contingency plan
3. Hazardous Material Releases: All hazardous materials that have been released shall be contained and abated immediately, and the hazardous materials recycled or disposed of properly. The City shall be notified of any release of hazardous materials that clearly impact water resources, as soon as possible but no later than 24 hours after the release. The [Ecology] Stormwater Manual provides applicable operational BMPs for spills of oils and hazardous substances.	• Operations SPCC plan • Spill contingency plan • Individual Industrial Stormwater Permit
4. Oil/Water Separators: Oil/water separators shall be inspected, cleaned, and maintained as stipulated in the stormwater manual. The City may allow an operation to modify the regularity of cleanouts if the operation can demonstrate to the City's satisfaction that the separator operates effectively at less frequent cleaning intervals.	• Individual Industrial Stormwater Permit

VMC 14.26.120 Requirement	Method of Compliance
5. Pesticide and Fertilizer Management. All pesticides, herbicides, fungicides, and fertilizers shall be applied and managed according to the applicable BMPs for landscaping and lawn/vegetation management in the [Ecology] Stormwater Manual, VMC 20.760 Shoreline Management Area, and VMC 20.740 Critical Areas Protection.	• Individual Industrial Stormwater Permit
6. Stormwater Treatment Systems: Stormwater drainage systems and treatment facilities, including, but not limited to, catch basins, wetponds and vaults, biofilters, settling basins, and infiltration systems, shall be cleaned and maintained by the responsible party designated in VMC 14.25.230 according to the applicable operational BMPs for the maintenance of stormwater, drainage and treatment systems in the [Ecology] Stormwater Manual.	• Individual Industrial Stormwater Permit
8. Operation Closure: At the closure of an operation, all hazardous materials shall be removed from the closing portion of the operation and disposed of in accordance with local, state and federal laws.	• Decommissioning Plan

Note: BMP – best management practice

2.10.2 Facility Design

The Facility will incorporate numerous design elements aimed at preventing the release of product and providing secondary containment of materials that are accidentally discharged so that they do not result in a spill that has the potential to cause harm to the environment or to human health.

Federal and state regulations that apply to handling hazardous materials and crude oil at the Facility, and transferring crude oil over marine waters to a receiving vessel mandate specific requirements for equipment configuration and operation and maintenance. See section 2.10.1 above.

Numerous industry standards and codes also control the design, operation, maintenance, and testing of equipment to be installed. The Facility would be designed to meet such industry standards. Table 2.10-3 summarizes the primary design standards that will be implemented and the general areas in which they would provide mitigation.

Table 2.10-3. USEPA-Recommended Industry Standards Applicable to the Facility

Organization Name	Standard No.	Standard Name	Area of Mitigation
API	none	Manual of Petroleum Measurement Standards	Good engineering practice – alarm systems, discharge prevention systems and inventory control systems
API	570	Piping Inspection Code - Inspection, Repair, Alteration, & Re-rating of In-service Piping systems	Contingency planning Inspection of aboveground valves and piping
API	574	Inspection Practices for Piping System Components	Inspection of aboveground valves and piping
API	575	Inspection of Atmospheric and Low Pressure Tanks	Contingency planning Integrity testing
API	620	Design and Construction of Large, Welded, Low-Pressure Storage Tanks	Construction & materials used for containers

Organization Name	Standard No.	Standard Name	Area of Mitigation
API	650	Welded Steel Tanks for Oil Storage	Construction & materials used for containers
API	653	Tank Inspection, Repair, Alteration, Reconstruction	Contingency planning Brittle fracture Integrity testing
API	1110	Pressure Testing of Petroleum Liquid Pipelines	Testing of transfer pipelines for integrity
API	1169	Managing System Integrity for Hazardous Liquid Pipelines	Transfer pipeline integrity management system
API	2015	Safe Entry and Cleaning of Petroleum Storage Tanks	Storage tank maintenance and inspection
API	2350	Overfill Protection for Storage Tanks in Petroleum Facilities	Good engineering practice - alarm systems, discharge prevention systems and inventory control systems
API	2610	Construction, Operations, Maintenance, & Inspection of Terminal & Tank Facilities	Security Loading/unloading Diked storage area drainage Secondary containment of bulk storage containers
ASME	B31.3	Process Piping	Contingency planning Inspection of aboveground valves and piping
ASME	B31.4	Liquid Transportation systems for Hydrocarbons	Contingency planning Inspection of aboveground valves and piping
BOCA	N/A	Safe Entry and Cleaning of Petroleum Storage Tanks	Secondary Containment Mobile Containers
BOCA	None	National Fire Prevention Code	Secondary containment of bulk storage containers
NFPA	30	Flammable & Combustible Liquids Code	Secondary containment Loading/unloading (excluding offshore) Diked storage area drainage Mobile containers Good engineering practice -alarm systems, discharge prevention systems and inventory control systems
NACE	0169	Control of external corrosion on Underground or submerged metallic piping systems	Corrosion protection for buried piping
PEI	200	Installation of Aboveground Storage Tank for Motor Vehicle Fueling	Construction & materials used for containers Secondary containment of bulk storage containers
STI	F911	Standard for Diked Aboveground Steel Tanks	Construction & materials used for containers
STI	R931	Double Wall Aboveground Storage Tank Installation	Construction & materials used for containers

Organization Name	Standard No.	Standard Name	Area of Mitigation
STI	SP001-00	Inspection of In-Service Shop Fabricated Aboveground Tanks for Storage of Combustible & Flammable Liquids	Contingency planning
UL	142	Steel Aboveground Tanks for Flammable and Combustible Liquid	Construction & materials used for containers Contingency planning
STI	892	Corrosion Protection of underground piping networks associated with liquid storage and dispersing systems	Corrosion protection for buried piping
STI	SP001	Inspection of In-Service Shop Fabricated Aboveground Tanks for Storage of Combustible & Flammable Liquids	Integrity testing

Source: BergerABAM (2014)

Preventive design elements that will be incorporated into Facility design are further discussed in this section below.

2.10.2.1 Materials to Be Stored at the Facility

Table 2.10-4 summarizes oils, fuels, and hazardous materials to be stored at the Facility during construction and operation.

In addition, if any material has not been identified in the Tenant Environmental Questionnaire, or any increase in quantities stored is anticipated, the Applicant will also notify the Port in advance in compliance with the Port lease.

Table 2.10-4. Hazardous Materials On site during Operation and Maintenance

Products[a]	Use	Storage Location	Total Amount Stored at Facility
CTI-220	Cleaning Compound	Area 200, Area 300, Area 400[b]	110 gallons
Ultra-Low Sulfur Diesel	Emergency Fire Pump Fuel	Area 200, 300, 400[c]	1500 gallons
Mobil Actrel 1138L Cleaner	Equipment cleaning	Area 200, Area 300, Area 400[b]	20 gallons
15W-40 motor oil	Mobile equipment maintenance	Area 200[b]	220 gallons
Antifreeze	Mobile equipment maintenance	Area 200[b]	275 gallons
Hydraulic fluid	Mobile equipment maintenance	Area 200[b]	275 gallons
Mobil CM-P grease	Equipment maintenance	Area 200[b]	400 pounds
Mobil XHP 462 grease	Equipment maintenance	Area 200[b]	120 pounds

Products[a]	Use	Storage Location	Total Amount Stored at Facility
Mobil Polyrex Eem grease	Equipment maintenance	Area 200[b]	120 pounds
Nalco NexGuard 22310	Boiler water treatment	Area 300, Area 600[d]	310 gallons
Nalco Tri-Act 1820	Boiler water treatment	Area 300, Area 600[d]	310 gallons
Nalco 1720	Boiler water treatment	Area 300, Area 600[d]	310 gallons
Nalco 8735	Boiler water treatment	Area 300, Area 600[d]	140 gallons
Railroad/Marine engine oil	Mobile equipment maintenance	Area 200, Area 400[b]	275 gallons
Crude Oil	Commodity handled at Facility	Area 300	2.16 million bbl (90.72 million gallons)

Source: BergerABAM (2014)

[a] A fire pump is located in each of these areas; each fire pump has an associated 500-gallon tank of low sulfur diesel.

[b] Stored at the boiler building in double wall totes.

[c] Stored in appropriate containers within buildings located in each of these areas.

[d] This is a representative list of the types of materials to be stored and handled. The Applicant would finalize this list when the specific elements of the construction and operations SPCC Plans are developed.

2.10.2.2 Rail Unloading Facilities

As described in detail in section 2.3 above, crude oil unloading will be conducted so that under normal operations, the crude oil never comes into contact with the open atmosphere or unprotected ground surfaces.

Design elements aimed at preventing discharges of oil during unloading will include:

- The use of dry fit connectors on hoses connected to the rail car for unloading. Dry fit connectors require the operator to lock the connector into place to allow product flow to begin. When disconnected, all product on either side of the connector remains within the transfer hose or rail car.
- All conveyance of transferred oil occurs within piping and pumps such that crude oil exposure to the ambient atmosphere is minimized.

The unloading area incorporates the following containment systems:

- Containment pans between rails that will be piped to a separate line that conveys stormwater and inadvertent releases to the rail unloading facility containment tanks.
- Materials captured in the containment pans will drain to a dedicated piping system that will convey the liquids to secondary containment tanks located in Area 200. The secondary containment tanks will have a total capacity of 1,500 barrels, enough to contain 110 percent of the contents of a single rail tank car. Should a discharge to these tanks occur, the contents of the tanks will be transferred to vacuum truck(s) to be disposed of at an approved location off site.
- As noted in section 2.3, piping and pumping systems associated with the unloading area will be contained within concrete trenches and concrete pump basins. These trenches and basins can serve as secondary containment in the event of a release from the piping and pumping equipment. Should a release occur, discharged materials will be removed from the trenches and basins using vacuum truck(s) to be disposed of at an approved location off site.
- Ground surfaces between rail tracks in the unloading building will be concrete to facilitate material recovery in the event of an unanticipated discharge.

2.10.2.3 Aboveground Storage Tanks

Following unloading, crude oil will be conveyed in transfer pipeline to the storage area (Area 300). Design elements aimed at preventing discharges of oil during unloading will include:

- As described in section 2.17, the storage tanks will be designed in conformance with applicable industry standards.
- The storage tanks will be constructed to meet the NFPA 30 requirements of WAC 173-18-330 and associated manufacturing standards, and will include the necessary measures to prevent tank overfill.
- As described in section 2.17, during construction of the tanks industry standard testing techniques will be implemented to ensure the tanks are constructed to the required specifications.
- As described in section 2.3.5, cathodic protection of the tank components will be implemented to prevent corrosion.
- Prior to commissioning the Facility, the storage tanks will be hydrostatically tested to confirm they will meet operational stresses and loads prior to their receiving any crude oil and are free of leaks, in accordance with industry standards.
- Vegetation growth will be controlled within the bermed storage area to prevent vegetation roots from piercing the berm liner. Vegetation control will be accomplished using commercially available herbicides applied in accordance with local, state, and federal regulations.

Design elements related to containing unanticipated discharges will include:

- As described in section 2.3.6, the tanks will be constructed on a concrete foundation/ringwall with a double tank bottom, with interstitial monitoring to detect leaks should they occur
- As described in section 2.3.6, constructing the tanks in a fully lined bermed area with the capacity to contain 110 percent of the API 650 maximum capacity of the largest tank and precipitation from a 24-hour, 100-year storm event.
- As described in section 2.3.6, 24-inch-high intermediate berms will be installed within the larger area to separate each tank area from the larger containment area. Each intermediate berm will be designed to contain at least 10 percent of the volume of the tank it encircles.

2.10.2.4 Transfer Pipelines and Pumping Systems

Crude oil will be conveyed between the unloading area, the storage area, and the vessel marine loading area using a system of transfer pipelines and pumps, as described in section 2.3.4. Design elements aimed at preventing discharges of oil during conveyance will include:

- As described in section 2.17, the transfer pipelines will be designed in conformance with applicable industry standards.
- All conveyance of crude oil will occur within piping and pumps such that crude oil exposure to the ambient atmosphere is minimized.
- Transfer pipelines and the associated pumping systems will be equipped with flow and pressure sensors to identify out of the ordinary operating conditions that could be the result of a pipeline or pump failure and potential risk of crude oil discharge. Pressure relief valves are included on the pipeline and pump to avoid over-pressure situations.
- Transfer pipelines will be equipped with valves and ultrasonic flow meters to monitor volumetric flow during crude oil conveyance between areas 200, 300, and 400. Ultrasonic flow meters will be installed on each of the transfer pipelines from Area 200 to Area 300. These meters would be checked against a second set of flow meters located at Area 300,

which would monitor receipt. Flow meter readings will be monitored during transfer operations; if a discrepancy in the flow and receipt totals is identified transfer pumps will be immediately shut down and automated valves closed. Similar valving and meterage would be installed on the transfer pipelines from Area 300 to Area 400, and used to monitor and shut down transfers from Area 300 to 400. The valves and flow meters would also serve for similar monitoring and shutdown for transfers from Area 200 to 400. These valves will include 30-second shut-offs to stop the flow of product should anomalous flow and pressure conditions related to a product spill occur, or in response to operations personnel triggering the shutoff. It is anticipated that it would take an employee 30 to 60 seconds from detection of release until an ESD button or other shutoff device would be actuated.

- Transfer piping will be for the most part installed aboveground to facilitate inspections and maintenance. Where road or rail crossings occur, the piping will be housed in underground steel casings or raised aboveground using standard AREMA clearances (see section 2.3.4, Figure 2.3-9 for an illustration of typical road and rail crossings). Pipelines at each railroad, or road crossing will be designed and installed to adequately withstand the dynamic forces exerted by anticipated traffic or rail loads.
- Secondary containment with leak detection would be provided for pipe installed underground. Runs of aboveground pipeline would be standard-walled to ensure ease of inspection and maintenance in accordance with the applicable requirements of WAC 173-180-340 and 49 CFR 195.246 through 49 CFR 195.254. Piping would be cathodically protected at all underground locations and coated to prevent corrosion.
- All ESD valves throughout the Facility will be provided with a 30-second shut off to isolate Facility elements where the release has occurred.
- Sections of transfer pipelines constructed underground will be installed so that they are not in electrical contact with any metallic structures. This requirement will not preclude the use of electrical bonding to facilitate the application of cathodic protection. Tests will be carried out to determine if stray currents are present and protective measures will be taken.
- Transfer pipelines will be equipped with leak detection systems meeting regulatory standards.
- All pumps will have internal pressure relief systems to avoid overpressure.

Design elements related to containing unanticipated discharges will include:

- Piping systems associated with the unloading of crude oil in Area 200 will be placed in concrete trenches; these trenches can serve as secondary containment in the event of a product discharge. Should a discharge occur in the trench, the materials will be removed by vacuum truck and recycled or disposed off site at an approved location.
- Pumps will be located in concrete basins; the concrete basins can serve as secondary containment in the event of a product discharge. Should a discharge occur in the pump basins, the materials will be removed by vacuum truck and recycled or disposed off site at an approved location.

2.10.2.5 Marine Vessel Loading

As described in section 2.3.5, the trestle at Berth 13 will be equipped with piping and hoses to transfer the crude oil from the transfer pipeline system to the receiving marine vessel. In accordance with 33 C.F.R. § 154.530 a facility transferring oil or hazardous materials to or from a vessel with a capacity equal to or greater than 250 barrels, must have fixed catchments, curbing, or other fixed means for small discharge containment of materials at the hose handling and loading arm area, each hose connection manifold area, and under each hose connection that

will be coupled or uncoupled as part of the transfer operation. For this Facility, it is anticipated that the hose diameter will be between 6 and 12 inches, requiring that discharge containment capacity must be at least three barrels.

At Berth 13, a catchment and sump capable of holding 3 bbl of discharge will be constructed at or below the deck level of sufficient capacity to hold the small discharge containment in addition to stormwater that may fall in the catchment area. The containment will be discharged within one hour of completion of any transfer by pumping into the return line.

In addition the design elements aimed at preventing discharges of oil during conveyance will include:

- Hoses and their supporting equipment will be designed to meet the applicable hose protection requirements of WAC 173-180 Part B and 33 CFR 156.
- All piping located over water will be welded and will not contain any mechanical joints.
- Vessel mooring systems will meet the applicable requirements of 33 CFR 156.

The Applicant conducted an assessment of the oil spill risk from vessel loading operations and equipment at the Facility (see section 8 and Appendix B of Appendix P.1 to this ASC). In general, the study did not take into account any of the required containment systems that would be in place at the terminal, nor does it account for catchments or surface elevation changes on the facility (with only one exception in one scenario). Also, because the majority of the equipment analyzed in the study is proposed to be located on land, not all spills would reach the river. The use of the phrase "release" for purposes of the study refers to oil, which is no longer in its intended equipment (i.e., within piping, hoses, connecting equipment), but has not necessarily reached the water. The cargo loading oil spill risk assessment derived the types of equipment failures most likely to occur. The study used two different methodologies. The first used standard safety QRA practices and global failure frequencies. The second used Tesoro-specific historical spill experience and a spill study prepared for Ecology to estimate the potential for spills of various quantities. The study identified release scenarios based on the equipment where the failure occurred, whether the release resulted from a small, medium, large or full bore opening, and whether isolation of the transfer piping was successful or not. Released oil spill volumes were estimated for these scenarios, taking into consideration static and dynamic equipment inventories, and representative isolation times. The study concluded that small releases (less than 100 bbl) were the most likely, with an estimated frequency of one every seven to nine years. This conclusion was supported by the historical record, which demonstrates that the majority of spills are less than 1 bbl. Loading hoses contribute to the majority of this risk. The replacement of these hoses every five years (as mandated by state and federal regulations) is expected to further reduce the likelihood of these small releases. Spills of tens of thousands of bbl resulting from full bore rupture of the largest transfer pipeline were estimated to be very significantly less frequent, occurring once every 39,000 years or more.

2.10.2.6 Booming

In accordance with the requirements of WAC 173-180, the Applicant will prepare and implement a booming plan. The purpose of the booming plan is to deploy booms in advance of each oil transfer to ensure that any materials accidentally discharge to surface water can be contained.

The Facility will be classified as a "Class I" facility under WAC 173-180-025 (8), that meets "Rate A" oil transfer conditions (i.e., transfers greater than 500 gallons per minute, per WAC 173-180-220 (2)(a). The Facility will, therefore, be required to meet the pre-booming requirements and Rate A alternative measure requirements of WAC 173-180-221. In accordance

with these requirements, the Applicant has developed and submitted to EFSEC for review a preliminary "safe and effective threshold determination report" (included as Appendix K of the Operations Facility Oil Handling Manual, Appendix B.5 of this ASC). This report will identify a Facility-specific booming strategy taking into account ambient conditions (e.g., currents, wind speeds, vessel traffic, etc.) to ensure that transfers are conducted to meet the standards for safe oil transfer operations and meet the zero spill goal (WAC 173-180-010). The Applicant will develop a final safe and effective determination report based on final terminal design, and will submit the report for state review and approval 120 calendar days prior to the first oil transfer operation at the Facility as required by WAC 173-180-224 (4).

Based on the preliminary design of the Facility as presented in this ASC, and experience with oil transfers at other facilities, the Applicant has performed a preliminary review of booming requirements and anticipates the pre-booming system will consist of a fence boom placed between the vessel location and the shoreline, and a floating boom deployed after a vessel is at the berth. The floating boom would be connected with the fence boom on the downstream and upstream to ensure the vessel is fully encircled by boom.

Figure 2.10-1 illustrates this conceptual pre-booming configuration. As noted above, the final configuration will be submitted for review to EFSEC.

The fence boom would be secured with tide slides and fixed down wires hung from the berth structure. The floating boom would be stored on the berth, and would be deployed using a boom boat. Once in place, the floating boom would be anchored at the upriver and downriver ends to hold the boom position during the transfer operation.

Booming activities will meet and effective booming threshold of 1.5 knots (in excess of the typical 1.0 knot effective threshold) so that effective pre-booming would not be precluded a substantial portion of the year. Furthermore, Vancouver Energy has purchased two NOFI Harbour Busters©[20]. The Harbour Busters© are mobile containment booms that can withstand current speeds up to 3 knots, and include an integrated oil/water separator and storage tank (15 cubic meters gross, approximately 5 cubic meters of net oil). These containment booms can be rapidly deployed and will be on standby during all marine transfer operations.

[20] These mobile containment booms will also be added to Table 4 of the Operations Oil Handling Manual, and Figure 7.2 of the Operations Oil Spill Contingency Plan in future revisions.

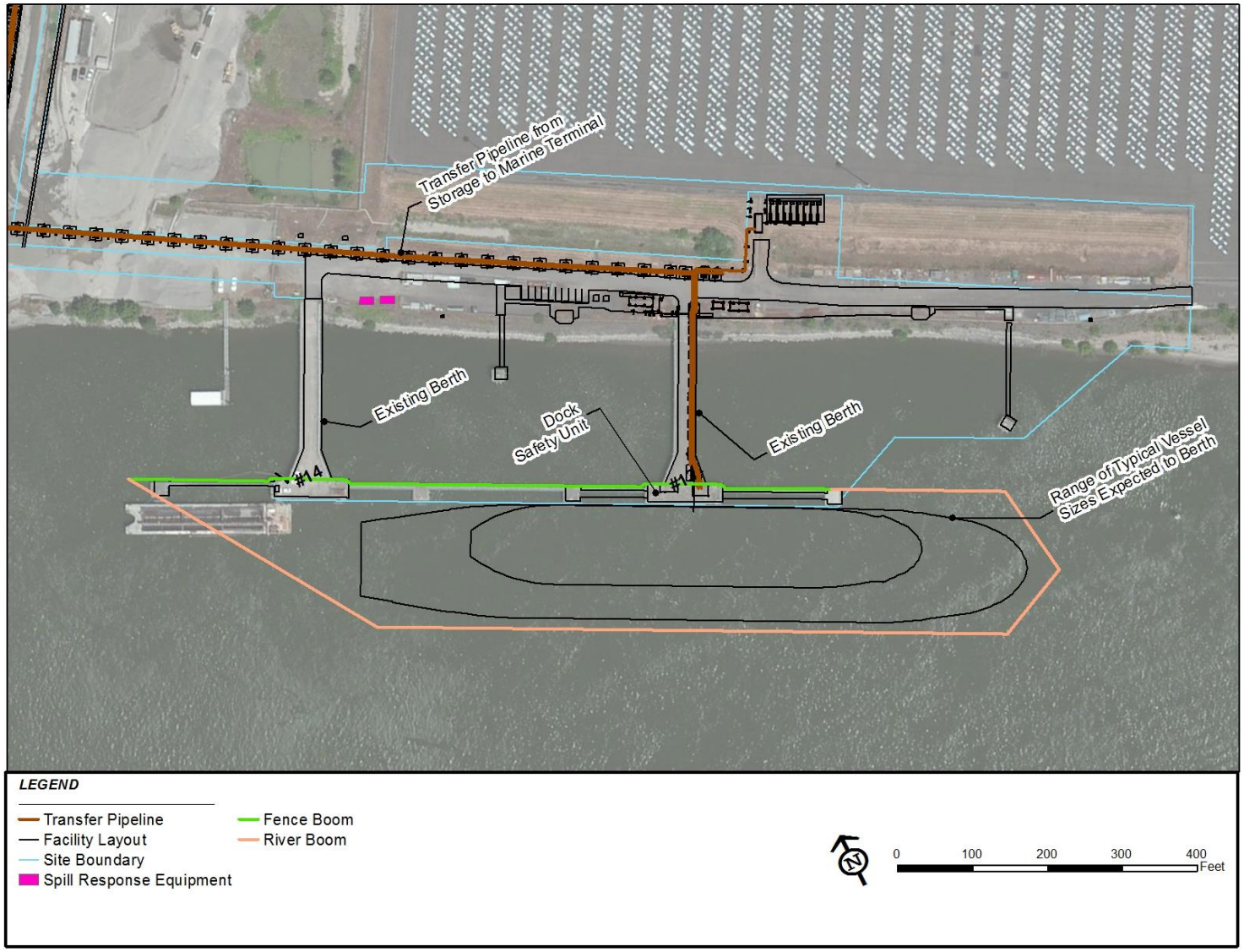

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Figure 2.10-1. Preliminary Pre-Booming Diagram (Revised)

The booming system would be designed with connections for a rapid oil skimmer (also known as a "Harbor Buster") designed for use in current speeds expected at the facility. The Harbor-Buster would be stowed on the berth, for example on a small aluminum flat-barge with wheels. When needed, it would be launched. The barge would be designed for compatibility with the boat that is used for deploying the floating boom. The boat would maneuver the Harbor Buster-barge into position where the fence- and floating- boom pigtails would be attached to the Harbor Buster and it is then deployed into the water from the barge or would be a stand-alone recovery boom just downstream from the dock.

The Applicant proposes to implement the following state of the art equipment during vessel loading operations in support of the pre-booming requirements:

1. Fence Boom – 1,600-foot total length in 100-foot sections, the fence boom must be 18 inches in height. End connectors will be made of aluminum and be the ASTM Universal Slide connector.
2. Containment Boom – 1,000 feet in length in 100-foot sections, the boom will have 12 inches of freeboard with a 6-inch skirt. The outer fabric will be 26-ounce PVC and the flotation logs will be in 3-foot lengths to accommodate being placed on a reel for deployment and recovery. The end connectors will be made of Aluminum and be the ASTM Universal Slide connecter.
3. Containment Boom – This boom will be 2,000 feet total length in 100-foot sections, the boom will have 12 inches of freeboard with a 6-inch skirt. The outer fabric will be 26-ounce PVC and the flotation logs will be in 6-foot lengths to accommodate being placed in a conex box on shore. The end connectors will be made of aluminum and be the ASTM Universal Slide connecter.
4. Twenty foot Conex – This conex is to store the boom listed in item 3 above and will be placed along the shoreline near the berth for rapid deployment.
5. Aluminum Hydraulic Boom Reel – Reel must be designed large enough to contain 1,000 feet of the contractor boom in item 2. It must be hydraulically controlled for deployment and recovery of the boom. There must be an override on the hydraulic system so boom can be deployed without hydraulic power also.
6. Boat – One boat constructed of aluminum material (minimum of 24 feet in length with at least a 6-foot beam for stability) with 200 horsepower. Tow post must be a minimum of three feet forward of the turning axis to ensure mobility while towing boom. Boat must have center console with a cab to provide weather shelter for crew.
7. Rapid Response Boom – NOFI Current Buster 2 Systems, two each of these systems. Each system will come on a reel in a container on a flatbed trailer towable by three-quarter ton or one-ton pickup truck. Each container will house the reel and the diesel power pack to deploy and retrieve the boom. Each container will house two each portable leaf blowers for inflating the boom as it is deployed. This type of boom is effective in currents up to 5 knots and can contain up to 95 barrels of oil in the separator bag. Figure 2.10-2(a) is an example of a container housing a reel and diesel power pack to deploy and retrieve the boom.

BergerABAM	**Figure 2.10-2. Rapid Response Boom Skimmer and Reel**

8. Skimmers for Rapid Response Boom – two each 13/30 fuzzy disc skimmers with diesel hydraulic power pack. Skimmer and power pack with the hydraulic hoses and discharge line. Figure 2.10-2(b) is a photograph of this type of skimmer.

9. Two NOFI Harbour Busters©.

Finally, Vancouver Energy will have access to the following Tesoro equipment (Haugstad 2013):

- In Pasco, 5,000 feet of river boom and associated anchor systems, and one Current Buster number 2 on reel in a conex with blower and HPU system installed
- In Vancouver, 5,000 feet of river boom and associated anchor systems, and one Current Buster number 2 on reel in a conex with blower and HPU system installed

2.10.3 Spill Prevention, Control, and Contingency Planning

2.10.3.1 Facility Construction

Hazardous materials present and used during construction will be typical of a large, industrial construction site (Table 2.10-5). Fuels, such as gasoline and diesel, will be used to power mobile construction equipment; maintenance of such equipment could require the use of lubricants, oils, and antifreeze. Solvents and paints will be used during assembly and surface finishing of Facility components. Small amounts of welding gases will also be stored and used on site to assemble metal structures and transfer pipelines. In accordance with the Port lease, the Facility would not use, store, or handle chlorinated solvents on site.

Table 2.10-5. Summary of Oils, Fuels, and Hazardous Materials to Be Stored during construction of the Facility

• Construction vehicle fuel (e.g., gasoline, diesel, kerosene) • Welding gases • Oil (e.g., transformer, lubricating) • Non-chlorinated solvents and thinners • Paints • Antifreeze • Coatings and sealants • Batteries

The Applicant has prepared and submitted to EFSEC for review a preliminary construction spill prevention, control and countermeasures plan (cSPCCP) (Appendix B.2). The Applicant will prepare and implement a final cSPCCP prior to the beginning of Facility construction. The final cSPCCP would be submitted to EFSEC for review and approval prior to beginning construction. The construction contractor(s) employed by the Applicant (see section 2.16 below) will develop and implement a cSPCCP implementing at a minimum the provisions in the Applicant's final cSPCCP, and in accordance with applicable state and federal regulations.

As described in Appendix B.2, the cSPCCP will address the petroleum products and hazardous substances handled on site, relationship of activities to past site remediation, spill prevention BMPs (including appropriate handling and storage of hazardous materials), spill response and notification procedures, and training of construction employees.

These measures include, but are not limited to, that chemicals, fuels, and industrial gases used during construction be stored in containers specifically designed for their individual

characteristics; small quantity chemicals be stored in their original containers to minimize risk of upset; and construction personnel working with chemicals be trained in proper handling technique and in emergency response procedures for chemical spills or accidental releases. Personal protective equipment will be provided in compliance with WISHA requirements; material safety data sheets will be provided and maintained onsite as required by WISHA regulations.

2.10.3.2 Facility Operations

Prior to the beginning of oil handling and operations, the Applicant will prepare and implement the following plans to comply with state and federal requirements.

- An operations spill prevention control and countermeasures plan (oSPCCP), prepared under 40 CFR 112 and WAC 173-180, Part F; the Applicant prepared a preliminary oSPCCP and has submitted this plan to EFSEC for review (see Appendix B.3).
- A safe and effective threshold determination report, prepared under WAC 173-180-224; the Applicant prepared a preliminary effective threshold determination report, and has submitted this report to EFSEC for review (see Appendix K of the Operations Facility Oil Handling Manual, Appendix B.5).
- A pre-loading transfer plan will be filed pursuant to WAC 173-180-230; the Applicant has prepared an example pre-loading transfer plan (see Appendix I of the Operations Facility Oil Handling Manual, Appendix B.5).
- A facility operations manual in compliance with WAC 173-180-400 to -435; the Applicant has prepared a preliminary Operations Facility Oil Handling Manual and has submitted this report to EFSEC for review (see Appendix B.5).
- An oil transfer training and certification program in compliance with WAC 173-180, Part E; the Applicant has prepared a preliminary oil transfer training and certification program as part of the Operations Facility Oil Handling Manual (Section 21 of Appendix B.5) and has submitted the program to EFSEC for review.
- A spill contingency plan in compliance with WAC 173-182, 40 CFR 112, Subpart D and 33 CFR 154, Subpart F; the Applicant has prepared a preliminary Operations Facility Oil Spill Contingency Plan and has submitted the plan to EFSEC for review (see Appendix B.4).

To comply with this complex regulatory context, the Applicant will prepare coordinated plans to meet all applicable local, state, and federal requirements. The Applicant will prepare final versions of the above-listed plans and documents based on final Facility design. The final plans will be submitted to EFSEC for review and approval prior to the beginning of oil handling operations at the Facility.

Section 2.11 – Surface Water Runoff

WAC 463-60-215
Proposal – Surface water runoff.

The application shall describe how surface-water runoff and erosion are to be controlled during construction and operation to assure compliance with state water quality standards. The application shall describe in general detail the content of the construction and operational storm water pollution prevention plans that will be prepared prior to commencement of construction and/or operation of the facility.

(Statutory Authority: RCW 80.50.040 (1) and (12). 04-21-013, amended and recodified as § 463-60-215, filed 10/11/04, effective 11/11/04. Statutory Authority: RCW 80.50.040(1) and Chapter 80.50 RCW. 81-21-006 (Order 81-5), § 463-42-215, filed 10/8/81. Formerly WAC 463-42-330.)

Section 2.11 Surface Water Runoff

2.11.1 Stormwater Erosion Control during Construction

Managing construction stormwater to reduce the discharge of contaminated stormwater runoff requires implementing specific procedures on site before construction activities begin. Additionally, monitoring, maintaining, and overseeing erosion control practices are necessary to ensure strict compliance.

A preliminary construction stormwater pollution prevention plan (cSWPPP) is attached as Appendix C.1. The plan includes a preliminary site-specific erosion and sediment control plan, construction best management practices (BMPs), and construction phase enforcement procedures.

A final cSWPPP, which will be submitted to EFSEC prior to construction, will meet the requirements of the NPDES Industrial Permit and State NPDES Individual Construction Stormwater General Permit and reflect final construction plans. The final plan also will include provisions for permanent stormwater management as discussed further in section 2.11.2. Once completed and submitted to EFSEC, the implementation of the construction BMPs is the responsibility of the contractor, supervised by the Applicant's resident inspector, and enforced by EFSEC.

Site Construction

Site-specific BMPs for temporary erosion and sediment control are identified in the cSWPPP and erosion and sediment control plans. BMPs have been selected from the Stormwater Manual and will comply with the permit issued for the project by EFSEC.

Construction activities will be sequenced and controlled to limit erosion. Clearing, excavation, and grading will be limited to the areas necessary to construct the project. Interim surface protection measures, including dust control, straw matting, and erosion control blankets, will be required to prevent erosion. Final surface restoration will be completed within 14 days of the area's final disturbance.

Sediment control measures used throughout construction will be designed based on a 10-year design storm. Water quality measures (other than sediment removal) will be based on the six-month, 24-hour design storm. All construction practices will emphasize erosion control over sediment control to eliminate the source of stormwater contamination. Temporary cutoff swales and ditches will be installed to route stormwater to the appropriate sediment trap and discharge location. A summary of construction-related BMPs is provided below.

Table 2.11-1. Construction Source Control BMPs

BMP Devices	Area 200 Unloading & Office	Area 300 Storage	Dock Area 400 Marine Terminal	Pipeline Alignment Area 500 Transfer Pipelines	Area 600 Boiler	Rail Infrastructure
Silt Fencing	X	X	X	X	X	X
High Visibility Fencing	X	X	X	X	X	X

BMP Devices	Area 200 Unloading & Office	Area 300 Storage	Dock Area 400 Marine Terminal	Pipeline Alignment Area 500 Transfer Pipelines	Area 600 Boiler	Rail Infrastructure
Stabilized Construction Entrance/Exit	X	X	X		X	X
Wheel Wash	X	X	X			
Construction Road/Parking Area Stabilization	X	X	X		X	
Check Dams	X	X				
Outlet Protection			X			
Compost Sock	X		X	X	X	X
Storage/Surge Tanks	X	X	X			
Weir Tanks	X	X				
Chemical Treatment	X	X	X			
Filtration	X	X	X			
Wick Drains		X	X	X		
Temporary and Permanent Seeding	X	X	X		X	
Mulching			X	X		
Plastic Covering	X	X	X			X
Surface Roughening		X				
Dust Control	X	X	X	X	X	X
Storm Drain Inlet Protection	X	X	X	X	X	X
Channel Lining	X	X				
Concrete Handling	X	X	X	X	X	X
Sawcutting & Surface Pollution Protection	X	X	X		X	X
Concrete Washout Area		X			X	X
pH Neutralization		X				
Maintain BMPs	X	X	X	X	X	X
Manage the Project	X	X	X	X	X	X

Water for hydrostatic testing will be obtained from the City or Port systems and will be discharged through the on-site stormwater treatment systems for disposal through the existing Port stormwater systems. Water used for flushing and hydrostatic testing will be tested and treated to removal chlorination or other constituents, which may be present as a result of

construction, such as residual chlorine or settleable solids if necessary prior to its discharge to ensure compliance with discharge limits. Testing water will be released at a controlled rate from on-site storage facilities and monitored to ensure safe conveyance through downstream system. Hydrostatic testing water is identified as an authorized non-stormwater discharge according to Section S1.C.3 of the Construction Stormwater General Permit for the State of Washington as issued by Ecology.

2.11.2 Permanent Stormwater Management

Existing land cover on the site is primarily gravel or compacted fill material. Vegetation on the site is sparse and is generally limited to short (6 to 8 inches) herbaceous plant material. No wetlands or wetland vegetation are present on the site. The total combined site area comprises approximately 47.4 acres, and the developed impervious area is estimated to be 44.4 acres.

The Port receives approximately 39.6 inches of rain per year measured at the "Vancouver 4 NNE" agricultural meteorological station. The Ecology stormwater manual requires stormwater to be designed assuming rainfall patterns follow a Type I-A distribution. Permanent stormwater management and compliance with City and Ecology standards require construction of storm drain systems to collect and treat stormwater.

The Facility's new development and redevelopment will comply with VMC Section 14.25, and Ecology's water quality regulations in WAC 173-201A. The following table summarizes changes to land coverage resulting from this project.

Table 2.11-2. Drainage Basin Areas

Drainage Basins	Total Area (acres)	Contributing Area (acres)	25-Year Storm Flow Rate (cfs)	100-Year Storm Flow Rate (cfs)
Area 200 Admin/Support Buildings	1.6	0.8	0.66	0.80
Area 200 Rail Unloading Area	6.2	5.3	3.39	4.22
Area 300 Secondary Containment Berm	18.2	18.2	2.0	2.0
Area 300 Support Buildings and Parking	2.9	1.6	1.1	1.36
Area 400 Marine Terminal	7.7	2.2	N/A	N/A
Area 500 Transfer Pipelines	4.9	N/A	N/A	N/A
Area 600 Boiler Building	0.9	0.5	0.31	0.38
Rail Infrastructure	5.4	N/A	N/A	N/A
Total	47.77			

As required by WAC 173-240-110, before constructing or modifying industrial stormwater facilities, engineering reports, plans, and specifications for the project must be submitted to EFSEC. A comprehensive NPDES Engineering Report addressing stormwater and wastewater

discharges from the facility is included in section 5.3. An operational final SWPPP, which will be submitted to EFSEC prior to construction, will meet the requirements of the NPDES Industrial Permit and reflect final design plans.

The project, therefore, will require compliance with the following standards and regulations.

- Ecology's Stormwater Management Manual for Western Washington
- Water Quality Standards WAC 173-201A
- City of Vancouver Municipal Code (VMC)VMC 14.24, 14.25 and 14.26
- City Surface Water General Requirements (revised September 2009)
- Port Industrial General Stormwater Permit
- Port Municipal Phase II General Stormwater Permit
- 40 CFR 112

The project requires compliance with all nine of the minimum requirements set forth in the Ecology stormwater manual.

2.11.2.1 Source Control BMPs

Operational and structural source control BMPs are designed to exceed the requirements of Chapter 2, Volume IV of the Ecology stormwater manual. On-site operations, including unloading, pumping, transfer, and storage of crude oil and miscellaneous materials, are conducted in covered facilities designed to keep stormwater from entering the structures and mixing with industrial activities. Segregation of stormwater is the preferred source control BMP eliminating risk of contact between industrial activity, crude product, and stormwater. Transfer of crude oil at the dock is completed with a closed piping system where oil transfer will not be exposed to stormwater. Stormwater would be protected from exposure to industrial activity.

Secondary structural containment measures are in place; they consist of containment pans along the unloading building, double bottom tanks with in situ monitoring for the tank farm, and an impervious lined berm that surrounds the tank farm and is sized to exceed the storage requirements of 110 percent of the API 650 maximum capacity of the largest tank plus a 24-hour, 100-year storm event. Secondary containment systems at the rail unloading building are conveyed to double-walled storage tanks located near the office building where the contents will be hauled off site to a permitted disposal or recycling facility. A stormwater control structure and oil-water separators located within the containment area of the storage area complete initial treatment of stormwater. The oil-water separators discharge to manually controlled pumps that discharge to water quality filter vaults for treatment of turbidity, heavy metals, and volatile organics. The pumps are manual on, automatic off, to require that each time the pumps are turned on supervising personnel conduct a visual inspection for oil sheen.

Parking and access areas are designed with a combination of catch basin filters and filter vaults to treat stormwater runoff.

Equipment and parts wash (including rail car exterior washing) will be conducted in a covered portion of the rail unloading building. All wastewater produced will be pumped to the secondary containment tanks located at the Administration and Support Buildings to be hauled off site and disposed of at an approved location.

No industrial activity takes place within the rail corridor, which is used only for rail transportation. Maintenance activities necessary for rail transportation will be conducted on the

rail spur located at the southeast corner of the rail unloading building. Rail containment pans and a concrete working surface will be provided around the rail spur. Stormwater from the rail spur will be collected in catch basins and containment pans for treatment and monitoring. A containment valve, oil-water separator, and monitoring manhole will be provided for this facility. This stormwater will continue to flow through the stormwater collection system on the south side of the rail building and will eventually contribute flows to water quality vault 0200-WQV-002 for additional water quality treatment. A downstream monitoring manhole is provided to confirm that discharges meet the NPDES stormwater permit conditions.

Any maintenance activities related to rail cars and locomotives will only be completed for cars already on site being processed by the facility. The facility will not be used as a maintenance facility receiving rail cars from other parties and transporters for maintenance activities. A detailed listing of activities conducted on site and off site are included in the NPDES Engineering Report attached in section 5.3.

Spill containment measures along the pipeline alignment (Area 500) will comply with 40 CFR 112.7 by providing secondary containment, inspections, and contingency planning. Federal regulations require that containment measures be designed for the most likely quantity of oil that will be discharged during the typical failure mode (40 CFR 112.7 (5)(c)). The most likely spill event is small drips resulting from nicks, corrosion pinholes, or gasket seal failures resulting in discharges less than 5 gallons. An example of secondary containment that can address these discharges is to confirm or retrofit all stormwater inlets within the contributory drainage area of the pipeline alignment with spill control devices to contain small oil leaks or spills. Containment measures and response protocols for larger non-typical events will be addressed in the SPCCP, as well as the contingency plan that will be prepared prior to beginning operation of the Facility.

2.11.2.2 Operational Source Control BMPs

In addition, containment pans and other containment measures will supplement the structural source control BMPs. A comprehensive site-specific oSPCCP will be developed in accordance with 40 CFR 112. The Applicant prepared and submitted to EFSEC for review a preliminary oSPCCP, attached as Appendix B.3 to this ASC.

Table 2.11-3. Applicable Structural Source Control & Operational BMPs

BMP Devices	Area 200 Unloading & Office	Area 300 Storage	Dock Area 400 Marine Terminal	Area 500 Transfer Pipelines	Area 600 Boiler Building	Rail Infrastructure
Landscaping and lawn/vegetation management	X	X	X		X	
Loading and unloading areas	X					
Parking and storage of vehicles and equipment	X	X	X		X	
Soil erosion and Sediment control at industrial sites	X	X	X	X	X	

BMP Devices	Area 200 Unloading & Office	Area 300 Storage	Dock Area 400 Marine Terminal	Area 500 Transfer Pipelines	Area 600 Boiler Building	Rail Infrastructure
Storage of liquids in permanent aboveground tanks	X	X	X			

2.11.2.3 Water Quality Treatment Analysis and Design

In accordance with the City's General Requirements, the Western Washington Hydrology Model (WWHM) with a continuous storm event was used to size the stormwater treatment system. Per the General Requirements, the water quality storm is the six-month, 24-hour event, as estimated using the WWHM. A comprehensive NPDES Engineering Report has been submitted to EFSEC for review and approval, as attached in section 5.3 of this ASC. A Tier II anti-degradation analysis is being completed in accordance with WAC 173-201A-320 to demonstrate water quality compliance. The results of the Tier II study will be provided to EFSEC upon completion for review.

2.11.2.4 Flow Control Analysis and Design

The project discharges to existing Columbia River outfalls through existing manmade conveyance pipelines. This project is categorically exempt from the flow control provisions of the stormwater manual. According to Appendix I-E of the manual, the Columbia River is listed as a flow control-exempt water body.

Stormwater conveyance pipelines and structures on site were sized for the 100-year storm to ensure safe conveyance. The pipeline running along the south side of the rail unloading building was additionally analyzed to ensure capacity to convey 1,000 gpm of water entering the system at the extreme west and east ends of the building from the fire suppression systems. Stormwater conveyance pipelines were designed using Manning's equation assuming that the pipelines are flowing at 75 percent of capacity. Grade of the proposed pipelines was determined assuming 2.5 feet per second using the two-year storm event.

2.11.3 Permanent Waterways

All of the permanent surface water runoff will be collected, treated, and conveyed in permanent constructed conveyances from source to discharge. All conveyances constructed with this project will be inlets, pipelines, manholes, and vaults. The conveyances are described in detail in the Stormwater NPDES Engineering Report provided in section 5.3 of this ASC. No permanent above-grade surface waterways will be constructed with this project. Surface water runoff from the Storage Area will be treated to enhanced water quality standards and discharged to the Terminal 4 stormwater system. The capacity of the Terminal 4 stormwater system was sized to accommodate flows from the Storage Area assuming the entire Parcel 1A was impervious. Stormwater discharges will be conveyed through existing pipelines to an existing outfall to the Columbia River.

Stormwater discharges from Area 200, Area 600, rail improvements, and portions of Area 500 will be treated with water quality filter vaults and discharged to the existing Terminal 5 stormwater system. The Terminal 5 conveyance system flows through manmade conveyance to

water quality lagoons located west of Terminal 5 for final treatment prior to discharge through an existing outfall to the Columbia River.

Stormwater discharges from Area 400 will be treated and conveyed to existing infiltration swales located immediately north of the site. The MVCU, as proposed, may impact approximately 4 percent of the treatment capacity of the bioswales located immediately south of the Subaru facility. These swales treat water from the 25-acre basin, including Subaru, CalPortland, and Marine Terminal area. To mitigate for loss of treatment capacity of the swale, a new filter strip located along the south side of the southernmost swales will be constructed and will treat stormwater from more than 4 percent of the total basin acreage. No additional stormwater will be infiltrated.

The remaining project, consisting of a portion of Area 500 along the old Gateway Avenue, is considered within the Port's general use area. Stormwater will be collected through existing inlets and a conveyance system and discharged into the Port's stormwater treatment systems at either Terminal 4 or Terminal 5 for treatment prior to discharge through existing outfalls to the Columbia River.

Upland construction activity will not affect any permanent waterways. Existing downstream conveyances, treatment systems and/or infiltration facilities are already receiving stormwater from the Facility areas. See sections 3.3 and 3.4 for a detailed discussion of design and construction methodologies for dock improvements in relation to protecting and preserving natural waterways.

Section 2.12 – Emission Control

WAC 463-60-225
Proposal – Emission control.

(1) The application shall describe and quantify all construction and operational air emissions subject to regulation by local, state or federal agencies.

(2) The application shall identify all construction and operational air emissions that are exempt from local, state and federal regulation, and the regulatory basis for the exemption.

(3) The applicant shall demonstrate that the highest and best practicable treatment for control of emissions will be utilized in facility construction and operation.

(4) The application shall identify all state and federal air emission permits that would be required after approval of the site certification agreement by the governor, and the timeline for submittal of the appropriate applications for such permits.

(5) In the case of fossil-fuel fired energy plants, the application shall describe and quantify all emissions of greenhouse gases.

(6) In the case of a nuclear-fueled plant, the applicant shall address optional plant designs as these may relate to gaseous emissions.

(Statutory Authority: RCW 80.50.040 (1) and (12). 04-21-013, amended and recodified as § 463-60-225, filed 10/11/04, effective 11/11/04. Statutory Authority: RCW 80.50.040(1). 92-09-013, § 463-42-225, filed 4/2/92, effective 5/3/92. Statutory Authority: RCW 80.50.040(1) and Chapter 80.50 RCW. 81-21-006 (Order 81-5), § 463-42-225, filed 10/8/81. Formerly WAC 463-42-520.)

Section 2.12 Emission Control

The Facility has the potential to emit air pollutants during both construction and operations.

During construction, emissions will primarily consist of dust and exhaust from construction vehicles and equipment. A temporary grout batch plant will be installed near ground improvement activities to provide a source of cementitious grout.

During operation, air pollutant emissions will result from the following project components:

- natural-gas fired boilers to provide steam to facilitate transfer of crude oils from rail cars to storage tanks;
- MVCU that combust hydrocarbons displaced from vessels as they are filled;
- storage tank evaporative and working losses;
- emergency engines to power firewater pumps; and
- leakage from components.

Air pollutant emissions from these emissions units include "criteria" pollutants designated by the EPA, such as nitrogen oxides (NO_x), carbon monoxide (CO), and sulfur dioxide (SO_2), as well as airborne solids and liquids that combine in what is referred to as particulate matter (PM). Volatile organic compounds (VOCs), which are a precursor to the criteria pollutant ozone (O_3), also will be emitted. In addition, emissions will include toxic air pollutants (TAPs), as regulated in Washington under WAC 173-460 and defined in WAC 173-460-150, and hazardous air pollutants (HAPs) as defined in Section 112 of the Clean Air Act (CAA) and regulated under 40 CFR Part 63. The proposed Facility will utilize a set of best practices and the pollution control equipment to comply with state and federal air quality law.

As part of ongoing operations analysis, the Applicant has determined that in the event of a power failure, it would be desirable to have leased, portable power generators (i.e., emergency engines) available to operate critical safety, security, and environmental equipment. Any emergency engines would be operated in accordance with the required air emissions permit(s) from Ecology or local air authority in compliance with WAC 173-400-930. Maintenance of the emergency engines would be performed by the leasing company at an off-site location. The emergency engines would be fueled by ultra-low sulfur diesel or biodiesel, and would be subject to horsepower limitations, operational hour limitations, and other permit conditions to ensure operations do not cause an exceedance of applicable air quality standards.

2.12.1 Regulatory Authority

The authority for air permitting is granted to EFSEC under RCW Chapter 80.50 for crude oil facilities that receive more than an average of 50,000 barrels per day transported over marine waters. EFSEC regulations are promulgated under WAC Title 463. To address air quality, EFSEC has adopted the provisions of WAC 173-400 (General Regulations for Air Pollution Sources) by reference under WAC 463-78-005.

The federal and Washington clean air acts require new (industrial) stationary sources to obtain the applicable air pollution permits before commencing construction. The permitting process, referred to as new source review (NSR), is used to ensure that the source uses the best available control technology (BACT) to limit emissions, and does not cause ambient pollutant concentrations to exceed established standards. Some emission units may have to comply with

new source performance standards (NSPS) if they fit the classification for units defined in 40 CFR Part 60.

The air permits required for a source vary depending on its emission potential and location. If the source is located in an area where federal and state ambient air quality standards are met (referred to as an "attainment" area), then the source is subject to the prevention of significant deterioration (PSD) permitting program. If the source is located in a region where concentrations exceed ambient standards, the area is deemed "non-attainment" and the source is permitted under the non-attainment NSR (NNSR) program. The source is considered "major" if the potential-to-emit (PTE) of any one designated pollutant exceeds the PSD threshold for that pollutant. A source can avoid being classified as major by seeking enforceable operations limits in its permit application.

The proposed Facility will be located in a region considered to be in attainment for all criteria pollutants. However, the region was designated non-attainment for carbon monoxide (CO) and ozone in the past and is therefore regulated under regional air quality "maintenance" plans whose purpose is to ensure continued compliance with ambient air quality standards. New stationary sources may, therefore, be subject to additional requirements set forth in the regional maintenance plans.

Vancouver is designated as a CO maintenance area. The Southwest Clean Air Agency (SWCAA) Section 400-111 rules contain measures for new major stationary sources as part of the maintenance area plans applicable to Vancouver. The proposed Facility will not exceed the threshold of 100 tons-per-year of CO designated in the plan for major stationary sources and, therefore, no additional measures are required to comply with the CO maintenance plan.

Vancouver is also located in an ozone maintenance area and is, therefore, subject to the Washington state implementation plan (SIP) part of the Portland-Vancouver ozone maintenance plan. The Portland-Vancouver region was declared as "in attainment" for ozone in 2004 and remains subject to an ozone maintenance plan. Under the SWCAA Section 400-111 rules, new major stationary sources must offset VOC and NO_x emissions or may apply to SWCAA for an allocation of the available growth allowance. The proposed Facility will not exceed the plan's 100 tons per year major source threshold of VOC or NO_x and, therefore, no additional measures are required to comply with the maintenance plan.

TAP emissions are addressed through NSR as specified in WAC 173-460. All TAPs whose potential emissions exceed the *de minimis* rate must undergo review. If emissions of any TAP exceed the corresponding small quantity emission rate (SQER), dispersion modeling must be conducted to demonstrate that ambient concentrations of that TAP do not exceed a pollutant-specific acceptable source impact level (ASIL). The ASILs, SQERs, and *de minimis* values for each TAP are listed in WAC 173-460-150. Some emission units may need to comply with national emissions standards for hazardous air pollutants (NESHAPs) for unit classes defined under 40 CFR Parts 61 and 63.

Because the Facility would be a new source of air pollutants, under the CAA, it must undergo NSR to obtain the applicable air pollution permits before construction begins. The permitting process is used to ensure that the proposed Facility complies with state and federal air quality laws and does not contribute to any future violation of the state and federal ambient air quality standards.

Based on the annual emissions identified in section 2.12.2, the proposed Facility is required to apply for and obtain a notice of construction (NOC) preconstruction permit, as required under WAC 173-400-110. The NOC permit application identifies potential emissions of criteria air pollutants and TAPs; addresses BACT for proposed emission units; and presents an air quality modeling analysis demonstrating compliance with ambient air quality standards and HAP and TAP criteria.

2.12.2 Criteria Pollutants

The six common air pollutants, referred to as criteria pollutants, are ozone (O_3), particulate matter (PM), nitrogen dioxide (NO_2), carbon monoxide (CO), sulfur dioxide (SO_2), and lead (see section 3.2.1 for an expanded discussion of these pollutants). There is no significant emission source of lead associated with the proposed Facility. Although no significant source of ozone is associated with the Facility, nitrogen oxides (NOx) and VOCs react in the atmosphere to form ozone and these pollutants will be emitted during Facility operations. The NAAQS address particulate matter in terms of the size fractions PM_{10} and $PM_{2.5}$, which include inhalable particulate matter smaller than 10 microns in diameter and fine particulate matter smaller than 2.5 microns in diameter, respectively. Virtually all the particulate matter generated by the Facility will be PM2.5, and this application refers to all size categories generically as PM. Nitrogen oxides (NO_X) includes nitrogen dioxide (NO_2) and nitric oxide (NO).

2.12.2.1 Construction Emissions

Equipment

Construction equipment includes heavy diesel vehicles, cranes, and generators used for excavation, Facility construction, and paving. Diesel engines emit criteria pollutants and TAPs. Diesel engine emissions are regulated by federal rules.

A temporary batch plant will be brought on site. Dry grout materials will be brought and stored at the construction site, and then mixed to order for the grouting. The batch plant will consist of a cement silo, batch plant mixer, and high-pressure pumps to convey the grout to the location of use. Water for mixing the grout will be sourced from the City.

Operation of a temporary batch plant for mixing of grout used for the improvements will result in air emissions. The batch plant will most likely be brought on site and operated by a third-party contractor.

Typically, such batch plants are permitted in accordance with portable source regulations and are permitted to be used temporally at a location provided they comply with the provisions of such permit. Any temporary batch plant will be operated in accordance with the required air emissions permit(s) from Washington State Department of Ecology (Ecology) or local air authority in compliance with WAC 173-400-036. Batch plant emissions will be monitored and controlled in accordance with the batch plant's permit conditions to ensure operations do not cause an exceedance of applicable air quality standards.

Odor

Intermittent and temporary odors may be discernible off site during construction because of the use of diesel vehicles and because of paving, painting, and other construction activities.

Dust
Fugitive dust emissions generated during construction will be mitigated through compliance with existing nuisance regulations. Common work practices include the application of water to unpaved areas to prevent entrainment of fugitive dust. During construction, emissions are also minimized by covering exposed piles, limiting vehicle speed, and other BMPs.

2.12.2.2 Operations Emissions

Boilers
Because some crude oils do not flow easily when cold, the Facility may include natural gas-fired boilers to generate steam for heating rail cars during the unloading process to facilitate crude oil unloading and transfer to Area 300. For purposes of air emissions, permitting this ASC conservatively assumes three boilers, each with a nameplate heat input capacity of 62 MMBtu/hr, will be installed in the Area 600 Boiler Building to generate steam which will be used to heat rail cars. The boilers are expected to operate throughout the year, but at varying loads dictated by rail car arrival schedules and the viscosity of the crude oil contained in the rail cars. Typically, no more than two boilers will operate at any given time, with the third boiler maintained as a redundant unit. However, to allow for uninterrupted steam supply, the third boiler may operate for limited periods until one of the operating boilers is shut down. The calculation of annual emissions from the unloading boilers was based on the conservative assumption that two of the boilers will operate at full capacity every hour of the year (see section 5.1.2.1.1). This assumption is sufficient to address emissions attributable to the occasional startup of the third unit.

Two of the crude oil storage tanks may use electrical heating elements to control the viscosity of crude oils as necessary during filling, storage and emptying of the tanks. For purposes of air emissions, permitting this ASC conservatively assumes that two storage tanks will be so equipped.

The three steam boilers are stationary equipment units associated with the Facility that are subject to federal NSPS. Subpart Dc applies to steam-generating units that commence construction, modification, or reconstruction after June 9, 1989, and have a maximum design heat input capacity of 100 MMBtu/hr or less, but greater than or equal to 10 MMBtu/hr. Subpart Dc will apply to all natural gas-fired boilers at the Facility because each one has a maximum design heat input capacity within the range specified by the standard.

Because these boilers will be fired solely with natural gas, the PM and SO_2 emission standards defined in Subpart Dc do not apply and only the record-keeping and reporting provisions of Subparts A and Dc apply. These requirements include maintaining records of daily fuel use and occurrence and duration of startup, shutdown, or malfunction; malfunction of control equipment (if any) Boiler emissions will include criteria pollutants and TAPs. The most effective and feasible control equipment options and corresponding emission rates are determined in a BACT analysis for the boilers, attached in section 5.1, Attachment 1. Boiler emissions are more specifically addressed in section 5.1.

Crude Oil Storage Tanks

The Facility includes six 360,000-bbl capacity crude oil storage tanks, each with a working capacity of approximately 342,000 bbl[21]. These tanks are subject to an NSPS that applies to storage vessels for petroleum liquids (40 CFR Part 60 Subpart Kb). The Facility will comply with Subpart Kb by incorporating the option identified in §60.112b(a)(1): A fixed roof in combination with an internal floating roof that floats on the liquid surface. The tanks will feature an internal floating-roof design with a pontoon-style internal deck. The storage tanks may emit VOCs as fugitive emissions. The most effective and feasible control options for the storage tanks are determined in the BACT analysis, attached in section 5.1, Attachment 1. Fugitive emissions from the tanks are more specifically addressed in section 5.1.

Marine Vapor Combustion Unit

Vessels will arrive at the Facility with the onboard tank compartments filled with inert gas with oxygen levels below eight percent. The inert gas consists of cleaned exhaust from dedicated onboard inert gas generators (engines burning ultra-low sulfur distillate). Note that the inert gas is added to the tank compartments as the cargo is unloaded at another destination – not at the Facility, which is a loading facility.

When the vessel cargo compartments are filled with crude oil, the vapors from the cargo compartments, made up of hydrocarbon and inert gases, may be displaced through a hydrogen sulfide treatment system and then will be routed to a MVCU, that combusts the hydrocarbons in the vapors[22]. In order to ensure adequate destruction of hydrocarbons by the MVCU, the vapor stream must consist of at least approximately 20 percent hydrocarbon. Natural gas will be added if needed to the displaced vapors prior to combustion at the MVCU as an "assist gas" to increase the heating value of the vapors, and ensure adequate destruction.

The MVCU is expected to achieve a least 99.8 percent destruction of the hydrocarbons in the delivered vapors. MVCU emissions are more specifically addressed in section 5.1.

Emergency Diesel Fire Water Pump Engines

Emergency fire water pumps powered by diesel engines will be used if water is needed to fight a fire within the Facility. Each of the engines will be 225 horsepower (hp) or smaller, and, while specific makes and models have not been selected, emission rates were calculated using emission factors for a 225 hp fire water pump engine that is representative of the units that will be installed. All three engines will be fueled with ultra-low sulfur diesel (ULSD). Planned operation of the units will be limited to half an hour a week for readiness testing and one 8-hour test per year, as specified by the National Fire Protection Association's NFPA 25. Emission rate calculations are detailed in section 5.1, Attachment 2.

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[21] Although the tanks could hold approximately 380,000 bbl, in actual operation internal floating roof tanks are never completely full, and the tanks are expected to operate at a normal fill capacity of 360,000 bbl. The working capacity of the tanks is slightly lower than the normal fill capacity. For purposes of emissions estimation a more accurate working capacity of 342,000 bbl is assumed, based on preliminary tank design drawings. Elsewhere in the ASC, the working capacity is referred to as "approximately 340,000 bbl".

[22] The MVCU is required to provide safety of transfer operations in accordance with 33 CFR Subpart P, as described in section 2.23.2.13.

Fugitive Component Leaks
VOC emissions associated with minute vapor leakage from valve seals, pump seals, pressure relief valves, flanges, and similar equipment will occur at the Facility. Emissions from leaks are limited by procedures addressed in the BACT analysis, attached in section 5.1, Attachment 1. The emission rate calculations for the Facility fugitive component leaks are summarized in section 5.1, Attachment 2.

Locomotive and Marine Vessel Emissions
Crude oil will be delivered to the Facility by rail for transport by marine vessel. Emissions from locomotives and vessels are not included in the Facility emissions inventory or dispersion modeling because they are mobile sources powered by off-road engines. These sources of emissions are specifically exempted by federal and state regulations from pre-construction permitting.[23]

Odor
Emissions from the boiler units are expected not to cause any significant offensive odors at the Facility or adjacent properties. Odor impacts from natural-gas combustion units are not typically observed, since the methyl mercaptan that gives the gas its odor is destroyed during combustion.

Vessel gases vented to the MVCU contain hydrocarbons and reduced sulfur compounds which could contribute to periods of offensive odor if not oxidized in the vapor combustor. The NAAQS for sulfur dioxide (75 ppb) is sufficiently lower than the average detection threshold for sulfur dioxide of 670 – 4,750ppb[24]. Conservative air quality modeling of MVCU operations, included in section 5.1, demonstrate that the maximum sulfur dioxide concentrations attributable to MVCU emissions do not exceed the odor threshold for sulfur dioxide at any location outside the property boundaries.

The crude oil storage tanks will have an internal floating roof design with dual rim seals, which will minimize the formation of fugitive hydrocarbon vapor emissions that are a potential source of odors.

Other minor transient odor impacts attributable to diesel-fueled locomotives may occur during operation. These impacts likely will not extend beyond the boundaries of the property and be indiscernible from unrelated industrial and vehicle operations in the vicinity of the Port.

Dust
Fugitive dust emissions during operation are expected to be insignificant because all Facility roads, parking lots, and storage platforms will be concrete or asphalted.

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[23] *See, e.g.*, WAC 173-400-030(79) ("Secondary emissions do not include any emissions which come directly from a mobile source such as emissions from the tailpipe of a motor vehicle, from a train, or from a vessel."); *See also in re* Cardinal FG Company, 12 E.A.D. 153, 171-172 (EAB 2005) (Ecology correctly concluded that emissions from a permanently situated non-road vehicle powered by a "nonroad engine" were not attributable to the stationary source); Letter from EPA AQMD Director to Ken Waid (Jan. 8, 1990) stating that "to and fro" vessel emissions are not attributable to a stationary source and that when determining PSD applicability you do not consider those emissions that "result from activities which do not directly serve the purposes of the terminal and are not under the control of the terminal owner or operator.")
[24] U.S. EPA Sulfur Dioxide Final Acute Exposure Guideline Levels, May, 2008

Summary

The projected annual emissions of criteria pollutants from the project units identified in this section are summarized in Table 2.12-1. Annual emissions of pollutants relevant to PSD would be emitted at rates less than the PSD thresholds, so they are all addressed in a minor source permit process. Annual facility-wide GHG emissions are less than 100,000 tons per year on a carbon dioxide equivalent (CO_2e) basis.

Table 2.12-1. Projected Annual Emissions (tons per year)

	NO_x	CO	SO_2	PM	VOC	GHG (CO_2e)
Area 600 boilers	4.15	13.6	1.39	2.83	1.89	44,170
MVCU	8.04	3.49	6.59	2.62	8.64	50,530
Components	--	--	--	--	0.822	236
Tanks	--	--	--	--	21.7	261
Firewater pumps	0.00632	0.0302	0.000130	0.00321	0.00698	13.5
Total:	12.2	17.1	7.97	5.45	33.1	95,200
PSD threshold[1]	100	100	100	100	100	N/A
PSD SER[2]	40	100	40	10	40	N/A
NOC exemption[3]	2.0	5.0	2.0	0.5	2.0	N/A

[1]PSD criteria pollutant threshold of 100 tons for 28 source category exception as defined in 40 CFR 52.21.

[2]PSD significant emission rates: PSD review required for pollutant emissions from a major source with emissions exceeding the SER. The SER shown for PM is that of $PM_{2.5}$. The SER for PM_{10} is 15 tons per year.

[3]Notice-Of-Construction (NOC) Exemption levels for new or modified stationary sources (WAC 173-400-110 Table 110(5)). The NOC Exemption level shown for PM is that of $PM_{2.5}$. The Exemption level for PM_{10} is 0.75 ton per year.

2.12.3 Toxic Air Pollutants

The industrial emissions of almost 400 TAPs are regulated under WAC 173-460, and WAC 173-400-110 requires that increases in TAP emissions attributable to the entire project must be reviewed during the preconstruction permitting process. To comply with WAC 173-460, the Applicant developed an inventory of TAPs associated with project emission units. Any TAP expected to have a pre-control emission rate increase as a result of the project that exceeds the *de minimis* level defined for that TAP in WAC 173-460-150 is subject to NSR.

The impact attributable to the emission increase of a given TAP that is subject to the NSR requirements of WAC 173-460 is determined to be insignificant if it can be shown that the total emission rate increase of that TAP, after the application of BACT, is less than the SQER prescribed in WAC 173-460-150. If the expected emission increase of a TAP exceeds the prescribed SQER, a dispersion modeling analysis is required to demonstrate that the ambient impact of the aggregate emission increase of that TAP does not exceed the ASIL assigned to that TAP in WAC 173-460-150.

In addition to Washington's TAP regulations, under the provisions of Section 112 of the 1990 Clean Air Act Amendments, the EPA is required to regulate emissions of a total of 187 HAPs from stationary sources. EPA does this by specific industry categories to tailor the required controls and work practices to the major sources of emissions and the HAPs of concern from that

industry. The rules promulgated under Section 112 generally specify the maximum achievable control technology (MACT) standards[25] that must be applied for a given industry category.

MACT standards can require facility owners/operators of new (and old) sources on a case-by-case basis to meet emission limits, install emission control technologies, monitor emissions and/or operating parameters, and use specified work practices necessary to meet the standard. In addition, the standards typically include recordkeeping and reporting provisions. MACT standards are codified in 40 CFR Parts 61 and 63. There are two types of HAP sources: major and area sources of HAP emissions. Major sources have a potential to emit more than 10 tons of a single HAP, or 25 tons of all HAPs combined. Area sources are facilities that are not a major source.

The Facility's annual potential emissions of all HAPs will not exceed EPA's combined 25 ton per year or single 10 ton per year major source threshold. Therefore, the Facility is categorized as an area source of HAPs, and the MACT standards for area sources of HAP apply to it.

Construction

Temporary emissions of small amounts of TAPs and HAPs are likely from the operation of construction vehicles and equipment during the construction phase. Emissions from mobile sources are regulated under federal standards for mobile sources. Additional site air permits are not required for the temporary deployment of mobile sources on the site, as indicated under WAC 173-400-020.

Operation

The proposed Facility will contain several potential sources of TAPs and HAPs. The Area 600 boilers will combust natural gas to produce steam, and the MVCU will combust both natural gas and the displaced vapors from the vessels. Combustion exhaust contains small quantities of compounds identified in regulations as TAPs and/or HAPs. Similarly, fugitive emissions associated with the transfer and storage of crude oil at the Facility will include TAPs and/or HAPs. The calculated emission rates of TAPs and HAPs are presented in Table 2.12-2. Further details concerning the calculated TAPs emission rates from each unit are available in section 5.1, Attachment 2.

Table 2.12-2. Facility-wide TAPs/HAPs emissions

Compound	CAS	HAP?[1]	WA TAP Averaging Period	Emission Rate	SQER[2]	Model?[3]
				lb/avg per	lb/avg per	
Acetaldehyde	75-07-0	Yes	Annual	4.23E-02	71	No
Acrolein	107-02-8	Yes	24-Hour	1.50E-04	0.00789	No
Arsenic	7440-38-2	Yes	Annual	3.20E-01	0.0581	Yes
Benzene	71-43-2	Yes	Annual	1.35E+02	6.62	Yes
Benzo(a)anthracene	56-55-3	No	Annual	2.97E-03	1.74	No
Benzo(a)pyrene	50-32-8	No	Annual	1.93E-03	0.174	No
Benzo(b)fluoranthene	205-99-2	No	Annual	2.88E-03	1.74	No

[25] The standards that were developed through this MACT approach became known as the National Emission Standards for Hazardous Air Pollutants (NESHAPs). The purpose of these NESHAPs is to protect the public health by reducing discharges of HAPs from major air emission sources.

Compound	CAS	HAP?[1]	WA TAP Averaging Period	Emission Rate	SQER[2]	Model?[3]
				lb/avg per	lb/avg per	
Benzo(k)fluoranthene	207-08-9	No	Annual	2.89E-03	1.74	No
Beryllium	7440-41-7	Yes	Annual	1.92E-02	0.08	No
1,3-Butadiene	106-99-0	Yes	Annual	2.16E-03	1.13	No
Cadmium	7440-43-9	Yes	Annual	1.76E+00	0.0457	Yes
Carbon monoxide	630-08-0	No	1-Hour	1.02E+01	50.4	No
Chromium, (hexavalent)	18540-29-9	No	Annual	8.96E-02	0.00128	Yes
Chrysene	218-01-9	No	Annual	2.90E-03	17.4	No
Cobalt	7440-48-4	Yes	24-Hour	7.60E-04	0.013	No
Copper	7440-50-8	No	1-Hour	3.36E-04	0.219	No
Cyclohexane	110-82-7	No	24-Hour	9.54E-01	789	No
Dibenzo(a,h)anthracene	53-70-3	No	Annual	1.95E-03	0.16	No
Diesel Engine Particulate	DEP	No	Annual	6.41E+00	0.639	Yes
7,12-Dimethylbenz(a)anthracene	57-97-6	No	Annual	2.56E-02	0.00271	Yes
Ethylbenzene	100-41-4	Yes	Annual	3.08E+01	76.8	No
Fluorene	86-73-7	No	24-Hour	4.73E-05	1.71	No
Formaldehyde	50-00-0	Yes	Annual	1.20E+02	32	Yes
Hexane	110-54-3	Yes	24-Hour	1.79E+01	92	No
Hydrogen Sulfide	7783-06-4	No	24-Hour	4.90E-01	0.263	Yes
Indeno(1,2,3-cd)pyrene	193-39-5	No	Annual	2.90E-03	1.74	No
Isopropyl benzene	98-82-8	Yes	24-Hour	3.93E-02	52.6	No
Manganese	7439-96-5	Yes	24-Hour	3.44E-03	0.00526	No
Mercury	7439-97-6	Yes	24-Hour	2.35E-03	0.0118	No
3-Methylchloranthrene	56-49-5	No	Annual	2.88E-03	0.0305	No
Naphthalene	91-20-3	Yes	Annual	9.80E-01	5.64	No
Nitrogen dioxide	10102-44-0	No	1-Hour	6.43E+00	1.03	Yes
Propylene	115-07-1	No	24-Hour	4.18E-04	394	No
Selenium	7782-49-2	Yes	24-Hour	2.17E-04	2.63	No
Sulfur dioxide	7446-09-5	No	1-Hour	4.59E+00	1.45	Yes
Toluene	108-88-3	Yes	24-Hour	4.29E-01	657	No
Vanadium	7440-62-2	No	24-Hour	2.08E-02	0.0263	No
Xylene (-m)	108-38-3	Yes	24-Hour	2.89E-01	29	No
Xylene (-o)	95-47-6	Yes	24-Hour	1.08E-01	29	No
Xylene (-p)	106-42-3	Yes	24-Hour	1.20E-01	29	No

Notes:

[1] TAP: Washington toxic air pollutants listed in WAC 173-460-150; HAP: federal hazardous air pollutants listed in Section 112b of the Clean Air Act.

[2,3]Small Quantity Emission Rate as defined in WAC 173-460-150 – emission rates. TAPs with project emission rates greater than the SQER require an air quality modeling analysis to demonstrate compliance with the Washington State ASILs.

As indicated in Table 2.12-2, 10 TAPs were identified whose emission rates exceed the SQER. Air quality modeling is required to demonstrate that the ambient concentrations of these TAPs are below the associated ASILs. Section 5.1 includes the local air quality modeling analysis that demonstrates that TAPs concentrations are all below the associated ASIL for each of the 10 TAPs.

Also shown in Table 2.12-2, the Facility's annual potential emissions of all HAPs combined does not exceed EPA's 25 ton per year major source threshold and nor does the Facility's annual potential emissions of any individual HAP exceed EPA's 10 ton per year major source threshold. Therefore, the Facility is categorized as an area source of HAPs, and area source MACT standards apply to the proposed emission units as appropriate.

The MACT standards applicable to the project are discussed in detail in section 5.1.3.1.2.

Section 2.13 – Carbon Dioxide Mitigation

WAC 463-60-230
Proposal – Carbon dioxide mitigation.

For thermal electric energy facilities, the application shall include a carbon dioxide mitigation plan and information required by Chapter 463-80 WAC.

(Statutory Authority: Chapter 80.50 RCW and RCW 80.50.040. 09-05-067, § 463-60-230, filed 2/13/09, effective 3/16/09.)

Section 2.13 Carbon Dioxide Mitigation

Washington State law requires that new fossil-fueled thermal electric generating facilities provide mitigation of CO_2 emissions under WAC 463-80, requiring mitigation of 12 percent of the project's total CO_2 emissions over 30 years of operation. WAC 463-80-060 specifies mitigation plan options, including a payment to a third party option. A mitigation payment rate is established by rule at $1.60 per metric ton of CO_2.

The project is not a thermal electric energy facility as described in RCW 80.70.020. Pursuant to WAC 463-60-115, the Applicant requests a waiver of the carbon dioxide mitigation standards required by WAC 463-80.

While the legal requirement to comply with the mitigation obligation applicable to new fossil-fueled thermal electric generating facilities does not apply to the Facility, the Applicant proposes to voluntarily implement these mitigation requirements. Note that the mitigation program in WAC 463-80 applies exclusively to stationary sources based on CO_2 emissions (i.e., not to all GHGs as CO_2e). The Applicant has, however, agreed to implement the mitigation requirements of WAC 463-80 based on CO_2e emissions from stationary source operations at the Facility. With total annual operational GHG emissions of about 86,184 metric tons (Table 2.13-1), over a 30-year life of the Facility at 12 percent of the total CO_2e emissions (i.e., based on the WAC 463-80 mitigation formula that assumes 60 percent capacity operations and 20 percent of total emissions), this amounts to mitigation of 310,270 metric tons of GHGs. This obligation would be met by payment of $496,440 to the Climate Trust for the implementation of projects to reduce GHG emissions. This commitment fully meets the Applicant's voluntarily assumed obligation to mitigate Facility operations GHG emissions.

Table 2.13-1. Facility Stationary Source Annual GHG Emissions (metric tons of carbon dioxide equivalents)

Area 200 Boilers	Area 200 MVCUs	Components	Area 300 Tanks	Firewater Pumps	Total
40,071	45,841	11	237	12	86,172

Section 2.14 – Greenhouse Gases Emissions Performance Standards

WAC 463-60-232
Proposal – Greenhouse gases emissions performance standards.

For baseload electric generating facilities, the application shall provide information required by, and describe how the requirements of Chapter 463-85 WAC will be met.

(Statutory Authority: Chapter 80.50 RCW and RCW 80.50.040. 09-05-067, § 463-60-232, filed 2/13/09, effective 3/16/09.)

Section 2.14 Greenhouse Gases Emissions Performance Standards

The Facility is not a baseload electric generation facility under RCW 80.80.010(4). Pursuant to WAC 463-60-115, the Applicant requests a waiver of the greenhouse gases emissions performance standards of WAC 463-85.

Note: Greenhouse gas emissions will be addressed as part of the overall assessment of air impacts in section 5 of the site certification application.

Section 2.15 – Construction and Operation Activities

WAC 463-60-235
Proposal – Construction and operation activities.

The application shall: Provide the proposed construction schedule, identify the major milestones, and describe activity levels versus time in terms of craft and noncraft employment; and describe the proposed operational employment levels.

(Statutory Authority: RCW 80.50.040 (1) and (12). 04-21-013, amended and recodified as § 463-60-235, filed 10/11/04, effective 11/11/04. Statutory Authority: RCW 80.50.040(1) and Chapter 80.50 RCW. 81-21-006 (Order 81-5), § 463-42-235, filed 10/8/81.)

Section 2.15 Construction and Operation Activities

The Applicant will be responsible for the construction of Project. Construction of the project will occur in several general stages including the following main activities:

- Construction of temporary access roads, construction stormwater BMPs and temporary laydown areas.
- Placement of temporary construction offices
- Site grading and installation of subsurface ground improvements
- Installation or movement of underground utilities
- Construction of above ground utilities
- Excavation for, and pouring of unloading track trenches, and other subsurface basins
- Construction of the storage area berm, including placement of the HDPE liner
- Installation of rail ballast, rail ties, tracks and other rail infrastructure
- Construction of building, tank and equipment foundations
- Construction of field erected buildings and tanks
- Construction of above and below ground pipelines
- Removal of portions of berths 13 and 14, reinforcement of existing piling and construction of new walkways
- Installation of piping, mechanical, electrical, fire protection and other equipment necessary for the Facility
- Testing and commissioning.

2.15.1 Construction Schedule and Milestones

Figure 2.15-1 identifies the major schedule milestones, engineering and procurement, construction and start-up. The construction schedule is intended as the Applicant estimate only and is subject to change. The construction schedule will be revised to reflect the actual date of approval of the Site Certification Agreement and other permit approvals, and provided to EFSEC at least 60 days prior to the beginning of construction.

As indicated in section 2.3.1.1, the Applicant may choose to defer construction of some of the Facility elements to a later date.

2.15.2 Construction Workforce

During the construction period, approximately 298 construction workers would be employed at the site. Levels would vary over the construction period with a maximum daily workforce of 149 construction workers. Table 2.15-1 summarizes the anticipated composition of construction workforce by trade. Most of the construction workforce is anticipated to be hired from the Vancouver/Portland metropolitan area, and its adjoining cities and counties. The workforce may also be sourced from the broader Seattle/Tacoma area. Workers from the Portland/Vancouver area would be expected to commute daily to the construction site; commuters from further afield would be expected to commute on a weekly basis, staying in RV parks and motels near the Facility site during the workweek.

Table 2.15-1. Construction Workforce by Trade for Phase I

Trade	Number of Construction Staff
Steel erecting	32
Laborers	53
Mechanical and piping	50
Equipment operators	25
Tank erectors	40
Electrical	25
Concrete	25
Ground improvements/piling	22
Dock seismic upgrades	20
Fire system installation	6
Total	298

As discussed in section 2.3.1.1, construction of some elements may be deferred. If the Applicant choses to construct these elements at a later date, it is anticipated that additional construction would occur over a period of 6 months and would be expected to employ a construction workforce of 81 persons.

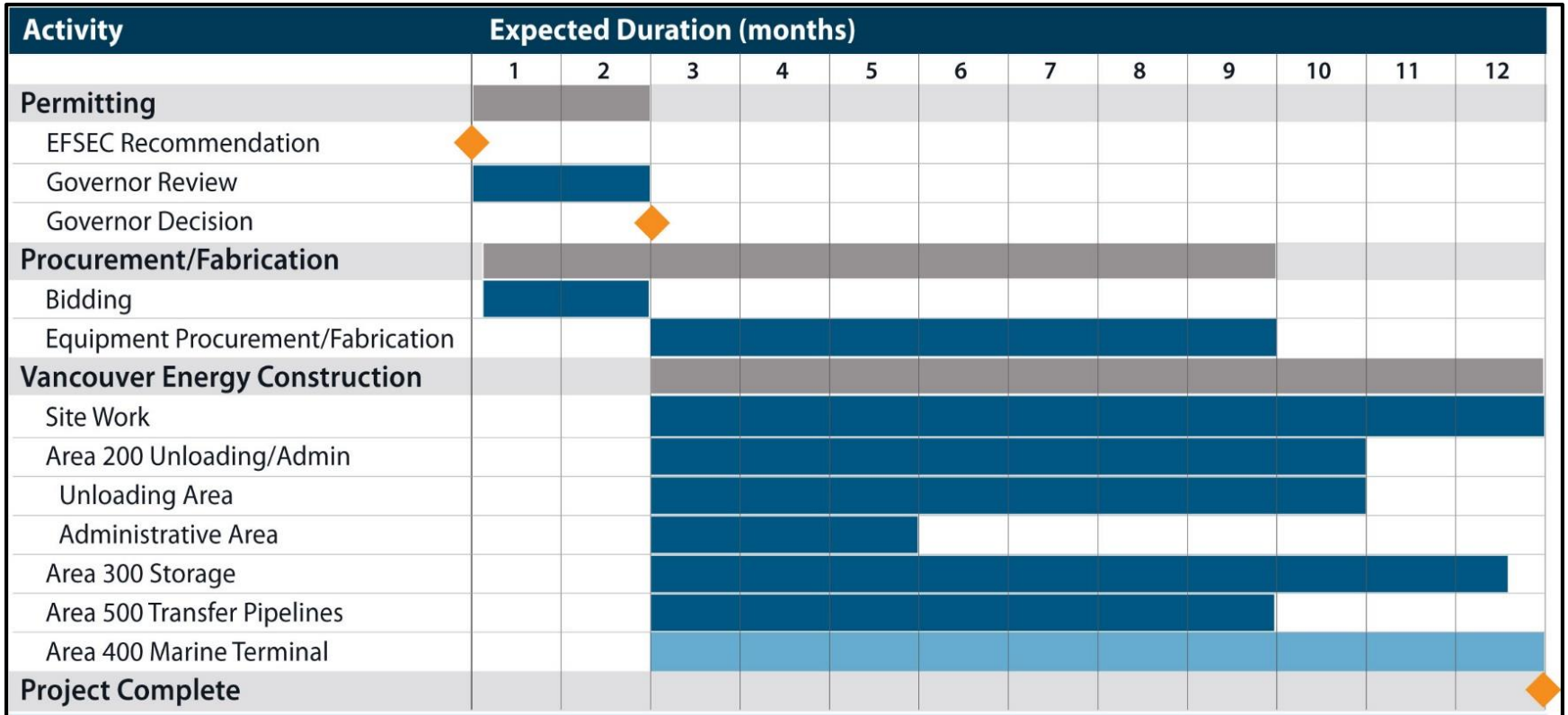
2.15.3 Operation

When operational, employee levels will vary as a function of project capacity ramping up to satisfy market demand. At full operation there will be up to 176 permanent full time staff. Table 2.15-2 provides a breakdown of staff by trade. The Facility will be staffed and operated 24 hours per day, 7 days per week, and 365 days per year.

Temporary workforce may be added during major Facility maintenance activities. Regular maintenance of major equipment purchased from suppliers (e.g., boiler water treatment systems) may be conducted under contract.

Table 2.15-2. Operations Staff

Trade	Number of Operations Staff	
	Start-up	Full Build-out
Marine (dock, vessel securement, etc.)	16	19
Rail (engineers, switchmen, inspectors, etc.)	20	40
Trans-load (trans-loaders, tanks farm, trainers, etc.)	30	79
Safety, health, environment & maintenance (mechanics, maintenance, EHS, etc.)	9	13
Office/management (managers, coordinators, supervisors, etc.)	16	25
Total	91	176



Notes:

1)The schedule is represented as an expected duration in months.

2) The Applicant acknowledges that construction of in-water Marine Terminal components will be conducted outside the fish exclusion window. Therefore, the schedule shows a block of time held for this work. Specific timing and duration of work in Area 400 will depend on timing for start of construction in relation to the approved fish exclusion window.

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Figure 2.15-1. Construction Milestones (Revised)

Section 2.16 – Construction Management

WAC 463-60-245
Proposal – Construction management.

The application shall describe the organizational structure including the management of project quality and environmental functions.

(Statutory Authority: RCW 80.50.040 (1) and (12). 04-21-013, amended and recodified as § 463-60-245, filed 10/11/04, effective 11/11/04. Statutory Authority: RCW 80.50.040(1) and Chapter 80.50 RCW. 81-21-006 (Order 81-5), § 463-42-245, filed 10/8/81.)

Section 2.16 Construction Management

2.16.1 Construction Management Organization

The Applicant has hired industry professional contractors to complete the design of the project and will contract with (one or more) engineering, procurement, and construction (EPC) contractors, or construction management firm. Those parties will be responsible for the design, procurement, construction, and startup of the Facility. The main EPC contractor or construction manager will be responsible for managing subcontractors.

The EPC contractor will employ a lead project manager, along with a project engineer, a site manager supported by a field engineering team, quality assurance and quality control (QA/QC) specialists, environmental specialists, and a site safety officer. The EPC contractor will be required to implement a safety plan, a QA/QC plan, an environmental protection plan, an SWPP plan, and an SPCC plan.

2.16.2 Safety Program

As part of the ASC review process, the Applicant has developed a preliminary Construction Safety and Health Manual (CSHM) (Appendix D.2). Prior to beginning of construction, the Applicant will submit a final CSHM to EFSEC for review and approval. As part of its Construction Execution Plan, the EPC contractor will be required to develop a construction safety plan that applies to the employees of the EPC contractor and all subcontractors working at the project site, which integrates the requirements of the Applicant's final CSHM at a minimum and complies with all applicable laws, ordinances, regulations, and standards concerning health and safety. The EPC contractor's safety manager will have the authority to issue stop work orders when health and safety procedures are violated by the employees of either the EPC contractor or a subcontractor. Upon identification of any health and safety issue, the safety manager will work with the responsible site managers and employees to correct the issue. The construction safety plan will include, but will not be limited to, the following areas:

- Description of the company safety program
- Management of Construction Health, Safety, Security, and Environmental (HSSE) Activities
- Incident Investigation
- Accident Reporting and Documentation
- Asbestos Removal
- Blasting and Use of Explosives
- Bloodborne Pathogens
- Code of Safe Practices
- Cold Environment
- Communication
- Confined Space Entry
- Crane Operations
- Critical Lift Procedure
- Discipline
- Education and Training
- Environmental Protection
- Equipment

- Fire Protection
- Drug Testing
- Flammable and Combustible Liquids
- Fugitive and Dust Control
- Hazard Communication
- Hearing Conservation
- Hot Environments
- Housekeeping Practices
- Impalement Protection
- Job Hazard Analysis
- Ladders – Use, Handling and Storage
- Lead Abatement
- Lock and Tag Program
- Microbial Remediation Program
- Inspections by the Washington Department of Labor and Industries
- Outdoor Heat Exposure
- Personnel Hoisting
- Personal Protective Equipment (PPE)
- Portable Electrical Equipment
- Respiratory protection
- Safety and Health Audit
- Safety Orientation
- Scaffold Use, Assembly, and Dismantling
- Severe Weather
- Emergency Procedures
- Trenching and Excavation
- Trucking Compliance
- Work at Elevated Locations (Fall Protection)
- Proximity to Active Rail Lines
- Work Near or Over Water
- Off-Site Activities (Fieldwork)

In addition, the final CSHM and EPC construction safety plan(s) will incorporate the following revisions to address EFSEC's review of the preliminary plan (see Appendix M).

- Reference WISHA and OSHA standards.
- Identify that safety teams will be staffed based on crew size.
- Each construction contractor and/or subcontractor will implement behavior based safety programs for activities at the Facility construction site, based at a minimum on the elements described in the Applicant's CHSM.
- Delete section 5.4(d), because it is redundant with the overall contents of the CHSM.
- Correct the definition of ACM at Section 6.4(b) to >1% asbestos.
- Section 16 will be updated to reflect that all workers will receive safety orientation prior to working on the site. Attachment 12 is preliminary and will be updated to reflect training that

will be required for specific construction occupations at the site. Emergency Procedures training will be added to the list.

- Section 23 will be updated to conform to the latest updates to Hazard Communication published by OSHA and effective May 25, 2012.
- Section 34, Attachment 19 will be updated to reflect WISHA standards.
- Section 45.5 and Attachment 31 will be updated to reflect the correct depth of 4 feet for excavation protection.
- Subsection 47.4 will be updated to consistently reflect fall protection at four feet, and 10 feet for roofing, scaffold or steel erection work.
- A Hot Work program will be added to the CHSM.
- The table of contents will be reviewed and edited as appropriate to reduce the potential for confusion.
- The Applicant will also implement a safety program for Facility Operations. See section 4.1.4.

2.16.3 Environmental Protection Program

During construction, the Applicant will require that its EPC contractor and all subcontractors implement an environmental protection program to ensure that construction activities comply with the conditions, limits, and specifications required by the site certification agreement and any other applicable federal permits and regulations. Copies of all applicable permits and approvals will be kept on site. The EPC project manager, and all contractor and subcontractor employees, will be required to read, follow, and be responsible for all required compliance activities and the prompt correction of deficiencies. The environmental protection program will include, but not be limited to, the following:

- Implementation of safety and environmental practices consistent with the Applicant's final pre-construction plans
- Avoidance of sensitive areas by construction activities
- Waste handling and storage
- Stormwater management
- Spill prevention and control
- Any additional requirements of the site certification agreement and other issued permits and approvals and applicable regulations

2.16.4 Training Programs

During construction, the EPC contractor will be required to provide a training program to ensure that any contractor or subcontractor employees entering the construction area are instructed on applicable health and safety requirements and protocols. The training will include, but not be limited to, the following areas:

- Drug and alcohol free workplace policy
- Personal health and safety
- Fall safety
- Confined space
- Excavation
- Crane and rigging
- Equipment and operations safety

- Fire prevention
- Electrical safety
- Emergency response
- Hazards communication
- Stormwater pollution prevention
- Spill prevention, control, and countermeasures
- Site-specific safety concerns
- Unusual conditions

Similarly, extensive training of operations employees will begin prior to their beginning work at the project facilities. All employees will receive training regarding operations-related health and safety, hazards communication, emergency response, stormwater pollution prevention, and spill prevention, control, and countermeasures. Task-specific training will be provided to ensure project facilities are operated and maintained in accordance with industry standards and all applicable permits, approvals, and regulations.

2.16.5 Quality Control Systems and Record Keeping

A QA/QC program will be implemented during all phases of the project to ensure that the engineering, procurement, construction, and startup of the Facility are completed as specified. The elements of the QA/QC program will include:

- A formal QA/QC program that ensures equipment suppliers deliver their components as designed and specified and that the installation of equipment is completed as specified.
- A procedures manual describing activities at the Facility from the initiation of final design through project startup.
- A description by the EPC contractor of the activities and responsibilities within the contractor's organization and the measures taken to assure quality work, including design control, configuration management, and drawing control.
- A review by independent QA/QC personnel of all documentation and their witness of field activities as an organization parallel to the construction organization to assure compliance with the specifications.
- Field inspectors' acceptance for the installation, alignment, and commissioning of all major equipment.

Typical QA/QC checks include:

- Factory QA/QC
  - Inspection of major equipment at manufacturer's facilities
  - Review and inspection of third-party test verification reports
  - Review and inspection of manufacturer's QA/QC procedures
  - Manufacturing drawing review and verification
  - Visual inspection
  - Witness and/or review of testing
  - Verification of welding procedure specifications compliance
  - Inspection of flange interface flatness measurements, finishing, and protection
  - Witness or review of turbine run-in load testing
  - Inspection of paint finishing and protection

  - Shipment packaging and handling, tracking, and identification
  - Pre-commissioning field testing and verification
- Field Inspection QA/QC
  - Reviewing equipment and material delivery acceptance inspection procedures
  - Inspection of all critical interfaces
  - Verification of all mechanical assembly work including erection of major components
  - Verification of field wiring and tagging
  - Pre-commissioning field testing and verification
- Concrete/Structural
  - Inspection of forms, structural steel, and rebar prior to backfilling and prior to casting
  - Field engineer's witness of concrete pouring
  - Inspection of concrete testing during pour (slump) and verification of break test results
  - Inspection of field welds
  - Tank Construction
  - Internal monitoring of tank shape
  - Hydrostatic testing
- Electrical System Installation
  - Inspection of terminations and termination hardware
  - Witness and/or review of polarity, cable marking, and phase rotation tests
  - Witness and/or review of grounding system resistance measurements
  - Inspection of all lock-out/tag-out locations and energizing sequences and plan
  - Inspection of painting/tagging/wiring/preparation for shipment
  - Verification of field wiring and tagging

The Applicant will audit the EPC contractor periodically, including reviews of documentation and surveillances of field activities, to ensure compliance with the specifications and with the requirements of the QA/QC plan. Checks may include:

- Verification of drawings
- Verification of materials
- Verify compliance with engineering specifications
- Verify compliance with environmental permits and regulations
- Verify compliance with health and safety program

Records will be maintained at the on-site administration building in accordance with the Applicant's records management program and any additional record-keeping requirements of project permits and approvals.

Section 2.17 – Construction Methodology

WAC 463-60-255
Proposal – Construction methodology.

The application shall describe in detail the construction procedures, including major equipment, proposed for any construction activity within watercourses, wetlands and other sensitive areas.

(Statutory Authority: RCW 80.50.040 (1) and (12). 04-21-013, amended and recodified as § 463-60-255, filed 10/11/04, effective 11/11/04. Statutory Authority: RCW 80.50.040(1) and Chapter 80.50 RCW. 81-21-006 (Order 81-5), § 463-42-255, filed 10/8/81.)

Section 2.17 Construction Methodology

2.17.1 Construction Summary

As noted in section 2.3.1 above, the Facility will be constructed primarily on previously developed areas located at the port. The site is relatively flat and without natural vegetation or water features, resulting in limited preconstruction grading activities and modification or removal of vegetation. The only construction element that will include work within a sensitive area is the proposed modifications to berths 13 and 14 and other associated work within the shoreline area for the Marine Terminal (Area 400). For completeness this section addresses all construction elements.

Before any on-site ground disturbance, stormwater pollution prevention measures will be implemented in accordance with the project's cSWPPP. Measures will include, but will not be limited to, installing stabilized construction entrances, wheel washes, and temporary stormwater collection and treatment facilities (hay bales, silt fences, other temporary measures), and temporary stormwater ponds.

Construction areas will be secured with temporary or permanent fences to control access to the construction sites. Primary construction access is expected to be established off the existing Gateway overpass; secondary access will be established at the west entrance to Terminal 5 and at Parcel 1A.

Construction on portions of Terminal 5 will involve impacts to areas of known residually impacted soils and protective caps that have been the subject of past remediation and containment activities. Work within these areas will comply with the restrictive covenants and consent decrees in place and the contaminated material management plan (CMMP) that will be developed for the project (see section 4.1.3).

Prior to the construction of foundations and above-ground facilities, existing above-ground and underground utilities will be removed and if necessary reinstalled in a different location. The Applicant will coordinate with the owners and operators of these utilities before they are disconnected or moved. With the exception of rail loop adjustments, dock modifications and utility movements, no existing structures will be moved or removed from the site.

Construction laydown areas will be established for temporary construction trailers, storage of construction equipment and materials, and construction employee parking. The laydown areas will be on areas adjacent to the project site and would occupy approximately 57.2 acres. Final configuration will be determined based on construction needs. Construction staging and laydown activities would only occur in areas that have been previously disturbed and developed. Although in some locations light surface levelling might be required to provide safe access to construction employees and equipment, surface disturbance in these areas is not anticipated. In addition, areas adjacent to the proposed piping system alignment will be used to stage pipe prior to and during the process of constructing the piping system. Figure 2.17-1 illustrates the anticipated location of temporary construction boundaries and temporary laydown areas with respect to the Facility site boundary.

Conventional construction equipment – including bulldozers, front end loaders, trucks, tractor scrapers and graders – will be used for upland construction activities, including, but not limited to:

- Earth-moving equipment: Compactors, loaders, backhoes, tractors, graders, pavers
- Materials-handling equipment: Concrete mixers and pumps, cranes, derricks
- Stationary equipment: Pumps, compressors, generators
- Mobile equipment: Cranes, hauling equipment, trucks
- Impact equipment: Pile drivers, ballast tampers
- Impact tools: Jackhammers, rock drills, pneumatic wrenches
- Steel assembly equipment: Welding and cutting tools
- Ground improvement equipment: See section 3.1.3.6
- Equipment to be used for water-oriented construction: See section 2.17.7

As described in further detail in the sections that follow, foundations will be constructed, and equipment and project facilities will be installed. Field toilets and temporary containment tanks will be installed for construction personnel. During construction, potable water will be provided in containers until permanent potable water service is established.

Cleanup of debris, final site stabilization, and landscaping will complete construction activities.

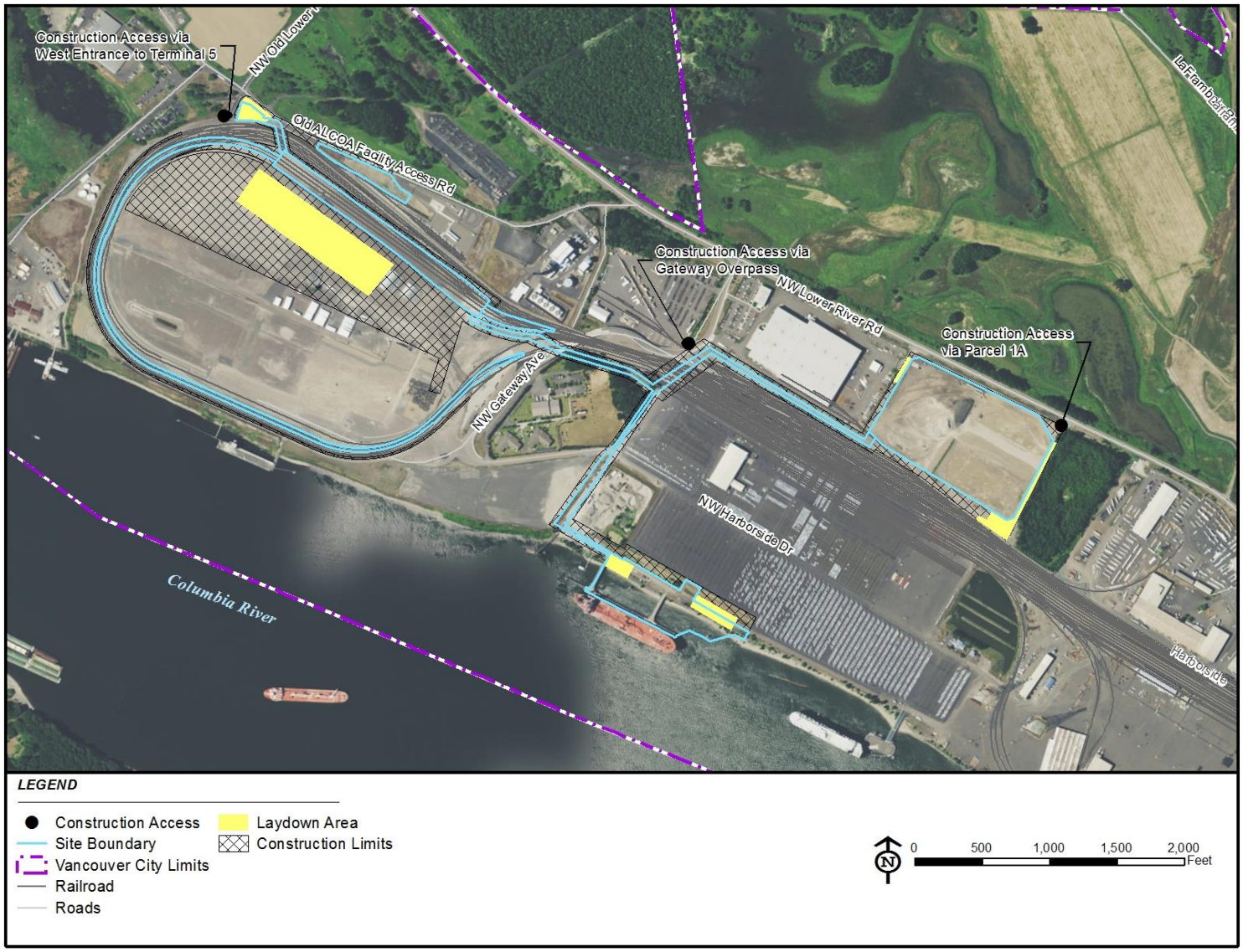

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Figure 2.17-1. Temporary Construction Boundary and Laydown Areas (Revised)

2.17.2 Site Preparation

During site preparation, the construction contractor will install stormwater pollution prevention measures and the permanent stormwater drainage system. This system is described in detail in the Preliminary cSWPPP, Appendix C.1 to this application. A Certified Erosion and Sediment Control Lead (CESCL) will be responsible for ensuring that stormwater pollution prevention measures are implemented and maintained according to the BMPs identified in the project cSWPPP and selected in accordance with the Stormwater Manual.

2.17.3 Foundations

Foundations, ground improvements, buildings, storage tanks, and piping systems will be designed to the applicable seismic code, and will take into consideration site-specific soil stability, as described in more detail in section 3.1. Foundation types and ground improvements are described in section 2.18.1.4 below.

2.17.4 Area 300 - Storage Area

Ground improvements in Area 300 will first be constructed below each tank and below the transfer pipelines. Following site grading and subsurface preparation, AST support piling will be installed and tank foundations will be poured. Sand and gravel material will be laid throughout the storage tank area, and the surrounding berm constructed. The berm around the storage tank area will be constructed from materials excavated from the loading facility area during the construction of the piping trench, general grading of the storage tank area, and imported from off-site sources. Materials excavated from areas with potential contamination would be tested; if they are deemed contaminated, they would be disposed of in accordance with Port management procedures and replaced with clean fill for berm construction. Soils excavated from the construction of storage tank foundations could also be used. Soil types used for berm construction would be identified and selected in accordance with sound engineering practice. The impervious membrane liner will then be placed covering the berm and storage area, and will either be tied into the AST foundations or will cover the entire containment area.

The storage tanks will be constructed on site from pre-fabricated sections of steel plate. A 100- to 150-ton crane will be brought to the site to move the tank sections into place. During the construction process, the various elements of the storage tank assembly will be tested according to API standards as indicated in section 2.3.6.

Piping will be delivered to the site in prefabricated lengths. Pipe supports will be constructed on pile or stone column-supported concrete foundation designed to the applicable seismic code. Piping will be installed and field welded. Field welds will be inspected per applicable standards.

2.17.5 Rail Improvements

As noted above in section 2.3.2, an approximate 4,900-foot-long rail loop will be constructed and 1,500 feet of existing track relocated to accommodate unit trains. Construction of the rail loop and track relocation will follow typical industry standards. The track alignment and construction limits will be established by field survey. Minor grading of the rail alignment will consider the existing relatively flat ground level at Terminal 5. Soils will be compacted in consideration of subsurface conditions to ensure ground stability. Approximately 12 inches of finely graded compacted granular material (sub-ballast) will be placed as necessary.

After the sub-ballast has been placed, specialized construction equipment will be used to construct the track. The track will consist of railroad ballast (rock), 115-pound hardened steel continuously welded rails, mounted on either 8-foot-6-inch or 8-foot-3-inch crossties, and other miscellaneous materials. Crossties will be concrete for the most part, except at crossings where timber will be used. A stockpile for the track material will be located at one of the proposed laydown areas. The material will be distributed by truck to the final location and the rails will be spiked or clipped to the proper gauge on the crossties. Railroad ballast will be dumped using construction equipment mounted on rails. A specialized piece of construction equipment, called a tamper, will be used to raise the track through the ballast, and the ballast will be compacted under the crossties. The track surface will be smoothed to a tolerance of 1/16th of an inch. The ballast will then be shaped to form a typical uniform ballast section.

2.17.6 Utilities

Natural Gas

Natural gas service will be obtained from Northwest Natural Gas. A service regulator and 4-inch-diameter service line will be required for the Area 600 Boiler Building. The existing 4-inch natural gas main in Gateway Avenue, which serves the Jail Work Center and other Port tenants, will be extended further south towards berths 13 and 14 to provide assist gas for the MVCU. A 4-inch main will be extended south in Gateway Avenue and then east in Harborside Drive. A meter will be placed on the Facility side of each of these connections.

Northwest Pipeline (Williams) has a 10-inch-diameter gas service running along the south side of Old Lower River Road within the site limits of the Area 600 Boiler Building and the Area 200 Administration and Support Buildings that supplies natural gas to the Clark Public Utilities River Road Generating Plant. A portion of this line will be relocated around the Area 600 Boiler Building. Relocation of the gas line will be completed by Northwest Pipeline (Williams) through a contract with the Applicant.

Water

The City's existing water distribution facilities are adjacent to or located on the site. The Facility's water service will be connected to the City's existing distribution network in accordance with the City's water design and construction requirements. Necessary water metering and cross-connection control will be installed at each of the connection locations between the on-site water facilities and the public water distribution system. Multiple water service connections will be constructed because of the multiple discontinuous areas that are part of the project.

Electrical

The Facility will obtain electrical service from Clark Public Utilities.

2.17.7 Dock Improvements

Dock improvements will include in-water and overwater construction. Additional details regarding dock improvement construction techniques are provided in section 2.3.7.2.

Construction Equipment

In-water construction will be completed with typical waterborne construction equipment. The contractor will likely conduct most of the work from construction barges. The anticipated equipment includes, but is not limited to:

- Crane and material barge(s) (typical dimensions of 150 feet x 60 feet)
- Cranes
- Work skiff(s)
- Tug(s)
- Impact pile driver (anticipated size of 165,000 to 212,000 ft-lbs)
- Vibratory pile driver
- Concrete pumps or buckets
- Air compressors and generators
- Typical hand held equipment
  - Concrete saws
  - Welding and cutting torches
  - Saws, chainsaws and drilling equipment
  - Underwater chainsaw
- Dump truck or wheeled excavator (for material removal on dock)
- Emergency response and safety equipment

Mobilization

The contractor will mobilize labor and equipment to the site. Laydown areas for materials and equipment will be located landward of the OHWM.

Demolition

In-water and overwater demolition will consist of removal of the existing breasting dolphin and associated walkways and removal of the existing deck and pile caps from those areas of the structure requiring seismic work. Demolition will generally proceed by removing existing concrete caps, and then removing the associated piles for each structure. Piles will be removed by vibratory extraction or by pulling them directly with a crane mounted on a barge. If a pile is unable to be extracted with the above methods it will be cut off consistent with agency-approved BMPs. Any voids left in the river bottom following pile removal are expected to collapse and fill in rapidly due to the sandy/silty nature of the substrates at the site and natural sediment transport activities in the river. The removed piles will be stored temporarily on a barge before being sent to a recycling center. All pile removal activities below the OHWM will be conducted within the published in-water work window. Demolition may be conducted using land- and/or barge-based equipment.

Pile Strengthening

Prior to strengthening, the inside of the piles will be inspected for substrate that must be removed, if necessary. The piles were installed with partially closed ends and significant substrate is not anticipated to be present. The end of the pile will be opened with a drill to allow installation of the ground anchor. The ground anchor will likely consist of a steel threaded rod that will be inserted into a hole drilled into the substrate and secured with grout. A new steel pile

will then be placed inside the existing pile and concrete grout pumped into the piles to complete the pile work. This may be conducted using land- and/or barge-based equipment.

Overwater Construction

New concrete pile caps will be formed using water-tight forms. The superstructure will be constructed with steel framing with a steel grid deck and a poured in place concrete topping slab. Walkways and trusses will be manufactured off site and brought to the site for installation. Temporary piles (up to 40) may be used for the concrete formwork. Temporary piles will be 18- to 24-inch-diameter open-ended steel pipe or H-piles and will be installed with a vibratory hammer.

Other overwater portions of the project will include installation of associated on deck infrastructure, such as the hanging fendering system, bollards, handrails, etc.

Overwater construction may be conducted using land- and/or barge-based equipment.

Overwater activities would be conducted according to the BMPs established for the project, which will minimize any potential for impacts to water quality such as inadvertent releases or release of construction debris into the waters at the site. Overwater construction would not be limited to the in-water work window.

Upland Access Trestle Improvements

The project will install ground improvements at the upland end of the access trestle and along the shoreline. A series of drilled shafts will be installed at the Berth 13 Trestle abutment. Ground improvements, if required, will consist of vibro-compaction, stone columns or other similar method that results in the establishment of an area of denser soils through compaction and the placement of additional materials. Six 24-inch steel pipe piles will also support the access trestle. Pipe pile installation will require use on an impact pile driver. This work would not be limited to the in-water work window.

2.17.8 Commissioning

During commissioning, all systems and components of the Facility will be checked, inspected, and tested to verify that every operational component of the Facility is functioning properly.

Hydrostatic Testing

Prior to commissioning the Facility, the storage tanks will be hydrostatically tested to ensure they will meet operational stresses and loads prior to their receiving any crude oil and are free of leaks, in accordance with industry standards. Hydrostatic testing water will be obtained from the City or Port municipal supply. The piping systems will be filled with water and then pressurized to check for leaks. Water used to test the piping systems will then be pumped to the first storage tank, which will be filled with additional water and then pressurized. Once the testing process for the first tank has been completed, the water will be drained into the next storage tank, and so forth until all of the tanks have been tested. At the completion of the testing process, the hydrostatic test water will be discharged to the stormwater system. Nothing will be added to the testing water. Upon the completion of testing, the water will be analyzed and treated as necessary before its discharge in compliance with wastewater permits issued by EFSEC. Leaks identified during the testing process will be repaired before final commissioning.

2.17.9 Project Construction Cleanup

During this final stage all temporary construction features, equipment and excess materials will be removed. Some temporary stormwater BMPs may remain on site until the site is fully stabilized.

Section 2.18 – Protection from Natural Hazards

WAC 463-60-265
Proposal – Protection from natural hazards.

The application shall describe the means to be employed for protection of the facility from earthquakes, volcanic eruption, flood, tsunami, storms, avalanche or landslides, and other major natural disruptive occurrences.

(Statutory Authority: RCW 80.50.040 (1) and (12). 04-21-013, amended and recodified as § 463-60-265, filed 10/11/04, effective 11/11/04. Statutory Authority: RCW 80.50.040(1). 92-09-013, § 463-42-265, filed 4/2/92, effective 5/3/92. Statutory Authority: RCW 80.50.040(1) and Chapter 80.50 RCW. 81-21-006 (Order 81-5), § 463-42-265, filed 10/8/81. Formerly WAC 463-42-290.)

Section 2.18 Protection from Natural Hazards

The following sections address the means to be employed to protect the Facility from natural hazards that could occur on or surrounding the Facility. Existing conditions, potential impacts, and mitigation measures, where appropriate, are discussed below. Additional information is also presented in section 3.1.3.

2.18.1 Earthquake Hazard

Earthquake-related damage could occur from surface fault rupture, ground motion, and liquefaction and lateral spreading. The project site is located in a region where geologic evidence indicates that significant earthquakes can occur from three sources of seismic energy (Cascadia Subduction Zone [CSZ], intraplate, and crustal earthquakes). Additional details regarding earthquakes and seismicity are provided in section 3.1.3.

2.18.1.1 Surface Fault Rupture

Geologic mapping completed in the vicinity of the project site has not identified evidence of historical or geologically recent surface rupture crossing the site. Potentially active faults have not been mapped or inferred within the site boundaries (Personius et al. 2003). Surface rupture is unlikely to occur at the site.

2.18.1.2 Ground Motion

Ground motion is shaking that occurs during an earthquake set in motion from a passing seismic wave. The project is located in an area that has the potential for strong earthquake ground motion. The potential ground motion during an earthquake event is generally represented by horizontal peak ground motion acceleration (PGA) and is expressed in gravity units (g). The expected earthquake return interval is generally expressed as a probability of exceedance during a given time period or design life. The U.S. Geological Survey (USGS) publishes probabilistic seismic hazard data for the relative contribution of different magnitude-distance combinations for a given location. For an estimated seismic shear wave velocity of 760 meters per second, a PGA of 0.2 g was estimated for a 475-year return period earthquake (10 percent chance of not being exceeded in 50 years), and a PGA of 0.42 g was estimated for a 2,475-year return period earthquake (2 percent probability of exceedance in 50 years), except where subject to deterministic limitations (Leyendecker et al. 2000).

2.18.1.3 Liquefaction and Lateral Spreading

Liquefaction occurs when saturated, loose to medium dense sand, or soft to medium stiff, low-plasticity silt are subject to ground shaking during an earthquake. The ground shaking can result in the rearrangement of the soil particles, which leads to a rise in the pore water pressure within the susceptible soils. If the pore water pressure rises to a level that approaches the total weight of the overlying soil column, the soils begin to behave and deform as a viscous liquid. As soil strength is reduced in the liquefiable layers, there is an increased risk of settlement and the loss of some bearing capacity for both shallow and deep foundations. Unsaturated soils do not liquefy, but may settle during an earthquake (Mabey et al. 1993). Structures can be adversely affected by liquefaction-induced settlement and reduced bearing capacity. The site has been identified as having moderate to high liquefaction susceptible soils (Palmer et al. 2004).

Lateral spreading occurs as blocks of soil moves horizontally toward unsupported banks such as a river or stream channels in response to earthquake ground motion and liquefaction in a subsurface layer. Ground displacement generally occurs on slopes of less than 3 degrees (Bartlett and Youd 1992). Lateral spreading can have adverse impacts on building foundations, roadways, pipelines, and other utilities built on or across the failure (Youd 1993). Lateral spreading could potentially occur along the banks of the Columbia River. Lateral spreading of the riverbank at the dock during a seismic event would induce large lateral forces on the in-water piles for the trestles and/or dock.

2.18.1.4 Mitigation Measures for Earthquake Hazards

A preliminary ground improvement design was submitted to EFSEC for review (Appendix L.3). The design proposes the use of deep soil mixing (DSM) columns, jet grout columns, and wick drains to mitigate the liquefiable soils at the Facility site. Combinations of these methods have been selected as appropriate to the subsurface soils present within each area of the Facility. These methods are described below. The proposed final design of the Facility will comply with the provisions of the building codes and requirements for seismic hazards that apply to the proposed location. These include the following:

- 2012 International Building Code (IBC), Chapters 16, 17, 18, 19, 22, and 23
- ASCE 7-10 (Minimum Design Loads for Buildings and Other Structures), Chapters 11, 12, 13, 14, 15, and 23
- ACI 318-11 (Building Code Requirements for Structural Concrete), Chapter 21 and Appendix D
- AISC Steel Construction Manual, 14th Edition, including AISC 360-10 (Specifications for Structural Steel Buildings), Part 2
- AISC Seismic Design Manual 2nd Edition, including AISC 341-10 (Seismic Provisions for Structural Steel Buildings), General Sections
- AF&PA SDPWS 2008 (AF&PA Special Design Provisions for Wind and Seismic), General Sections

The Washington State Building Code Act adopts by reference building and related codes that local jurisdictions must adopt and enforce. Titles 16 and 17 of the VMC establish these requirements in the City.

The upland Facility elements will be designed assuming a Facility importance factor of 1 combined with the site classification recommendations from the geotechnical investigation report. The upland facilities will meet the design criteria of IBC 2012 as supplemented by city and state amendments and ASCE 7. Based on the site classifications of D and E and the site specific hazards analysis conducted, API 650, Appendix B, requires that mitigation measures be constructed to address seismic, and in particular, liquefaction. The API standards are designed for the protection of life and to prevent catastrophic collapse of the storage tanks. To meet the mitigation requirements of the API standard, a combination of ground improvements as described above will be constructed for the essential facilities to meet or exceed the standards. Foundations for upland aboveground structures are described in section 2.17.3. Ground improvements are described in section 2.18.1.4. Design of the dock modifications will conform to IBC 2012, as amended and adopted by the state of Washington and the City with the exception of mooring and berthing design, seismic design, and structural load combinations, which are not adequately addressed by IBC; these will be supplemented with applicable industry standards.

Seismic design will be a performance-based design approach using multi-level earthquake performance objectives. The dock design considers ground motion from the three levels of seismic hazards:

- Operational Level Earthquake—5.8 magnitude
- Contingency Level Earthquake—8.4 magnitude
- Design Earthquake—9.0 magnitude

During the Operational Level Earthquake, the structure will reach the operational limit on utilities with minor repairs necessary to regain dock operations. During the Contingency Level Earthquake, damage will occur to the structure but repairs could be accomplished. During the Design Earthquake, the structure will not collapse but significant damage could occur, likely beyond reasonable levels of repair. The dock improvements are described in section 2.17.7.

Tables 2.18-1 and 2.18-2 list the seismic design criteria for the Facility.

Table 2.18-1. 2012 IBC Seismic Design Criteria Storage (Area 300)

Parameter	Value	2012 IBC/ASCE 7-10 Reference
0.2 Second Spectral Acceleration, S_S	0.94	ASCE 7-10 Figure 22-1
1.0 Second Spectral Acceleration, S_1	0.41	ASCE 7-10 Figure 22-2
MCE_G Peak Ground Acceleration, PGA (Site Class B)	0.41	ASCE 7-10 Figure 22-7
Soil Profile Site Class	N/A*	ASCE 7-10 Section 20.3.1 and 21.3*
0.2 Second MCE_R Spectral Acceleration, S_{MS}	1.04	Site Specific Ground Motion, ASCE 7-10 Ch. 21 *
1.0 Second MCE_R Spectral Acceleration, S_{M1}	0.8	Site Specific Ground Motion, ASCE 7-10 Ch. 21 *
MCE_G Peak Ground Acceleration, PGA	0.37	Site Specific Ground Motion, ASCE 7-10 Ch. 21 *
0.2 Second Design Spectral Acceleration, S_{DS}	0.69	2012 IBC Equation 16-39
1.0 Second Design Spectral Acceleration, S_{D1}	0.53	2012 IBC Equation 16-40
Seismic Design Category	D	2012 IBC Table 11.6-1 (& -2)

* A liquefaction hazard was identified for the Storage area (Area 300). In accordance with ASCE 7-10 Section 11.4.7 and 20.3, a site-specific ground motion analysis was completed for seismic design at the Storage area to develop the criteria listed above.

Table 2.18-2. 2012 IBC Seismic Design Criteria Unloading and Office (Areas 200 and 600)

Parameter	Value	2012 IBC/ASCE 7-10 Reference
0.2-Second Spectral Acceleration, S_s	0.94	ASCE 7-10 Figure 22-1
1.0-Second Spectral Acceleration, S_1	0.41	ASCE 7-10 Figure 22-2
MCE_G Peak Ground Acceleration, PGA (Site Class B)	0.41	ASCE 7-10 Figure 22-7
Soil Profile Site Class	E*	ASCE 7-10 Section 20.3.1*
Site Coefficient, F_a	0.97	2012 IBC Table 1613.3.3(1)
Site Coefficient, F_v	2.40	2012 IBC Table 1613.3.3(2)
Site Coefficient, F_{PGA}	0.9	ASCE 7-10 Table 11.8-1
0.2 Second MCE_R Spectral Acceleration, S_{Ms}	0.91	2012 IBC Equation 11.4-1
1.0 Second MCE_R Spectral Acceleration, S_{M1}	0.98	2012 IBC Equation 11.4-2
MCE_G Peak Ground Acceleration, PGA	0.37	2012 IBC Equation 11.8-1
0.2 Second Design Spectral Acceleration, S_{Ds}	0.61	2012 IBC Equation 11.4-3
1.0 Second Design Spectral Acceleration, S_{D1}	0.66	2012 IBC Equation 11.4-4
Seismic Design Category	D	2012 IBC Table 11.6-1 (& -2)

* A liquefaction hazard was identified for the Unloading and Office area (Areas 200 and 600). Based on ASCE 7-10 Section 20.3.1, Site Class E was used to develop seismic design criteria for the structures in Areas 200 and 600 assuming the fundamental period of the structures in Areas 200 and 600 is less than 0.5 second.

Final analysis of the seismic conditions and determination of the building foundation and ground improvement designs will be completed to address seismic conditions found at the site prior to construction. It is anticipated that EFSEC will contract with the City for the review of final project design for compliance with the required code provisions, as well as for providing the required inspections and issuance of occupancy permits. The Applicant will submit the required plans, which will be designed in compliance with the codes and requirements referred to above.

As confirmed by a series of three geotechnical site-specific field explorations of subsurface materials and conditions, presented in Appendices L.1, L.2, and L.3, mitigation solutions for the risk of liquefaction during a design level earthquake, include improving the condition of soils beneath the site to reduce the risk of liquefaction during an earthquake or the use of deep foundations to provide foundation support below the liquefiable soils.

Final ground improvement methods will be determined during design refinements and documented in construction plans submitted to EFSEC for review. The following section provides the type of ground improvements considered for each area of the Facility. Ongoing design and analysis will determine the final configuration of the ground improvements that will be installed; ground improvements may be refined as the design progresses. The final ground improvement selection and design will be documented in the Facility construction plans and submitted to EFSEC for review prior to beginning construction.

Area 300 (Storage)

Ground improvements will be constructed below each tank and the transfer pipeline. The ground improvements will consist of stone columns 3 feet in diameter and spaced approximately 8 feet on center (square grid spacing). The columns will be installed along the alignment of the pipeline to depths ranging from 25 to 47 feet below ground surface based on soil properties. At Tank 1, the base design is supplemented with two additional rings of more shallow stone columns (installed to 30-foot depth) to address potential differential settlement concerns in unusually poor soil conditions.

The tanks will be surrounded by a containment berm approximately 6 feet in height. A flexible impermeable liner will be used to mitigate the possibility of oil penetrating through the berm in the event of a seismic event. The berm will be designed in accordance with the requirements of WAC 173-180-320. WAC 173-180-320 (9)(c) specifically states "Secondary containment systems must be designed to withstand seismic forces," and sub (e) that "Secondary containment systems must be designed and constructed in accordance with sound engineering practice and in conformance with the provisions of this section."

As stated in the geotechnical report (GRI Dec. 2013, Appendix L.1), Area 300 is estimated to potentially experience between 6 to 10 inches of liquefaction-induced settlement during a seismic event. The containment berm design will have a capacity at least equal to 110 percent of the API 650 maximum capacity of the largest tank volume, plus precipitation from a 24-hour, 100-year storm event. This design results in a freeboard of 8 inches. In a worst-case scenario of a maximum liquefaction-induced settlement, at the same time as a 24-hour, 100-year, storm event, not only would the berm settle up to 10 inches but so would the other non-ground improved surface area inside of the berm. The settlement of the non-ground improved area inside the containment berm would be sufficient to contain the difference between the 10-inch liquefaction-induced settlement and the provided 8 inches of freeboard.

The geotechnical report addresses the seismic stability of the berm in terms of bearing capacity failure or breaching. Based on an assumed groundwater Elevation +12 feet, and the thickness of well-compacted structural fill at the storage site, the site will be mantled with 15 to 20 feet of non-liquefiable soils, which are not susceptible to reduction of seismic strength. Preliminary evaluation of the berm seismic stability indicates that the risk of seismic bearing capacity failure impacting the berm is low. The geotechnical report states there is a low risk of the design level earthquake damaging the berm and causing breaches.

Area 400 (Marine Storage)

A combination of jet grout columns, DSM panels, and stone columns to mitigate lateral spreading and liquefaction-induced settlement will be used. There are two zones of ground improvements in Area 400, the pipeline and the Marine Terminal abutment.

Ground improvements associated with pipeline includes stone columns, DSM, and jet grout. DSM panels will limit the potential liquefaction below the pipeline alignment, jet grout will provide vertical support of the pipe-rack foundation, and a series of stone columns will form a nonliquefiable buttress that stabilizes the shoreline area. The DSM panels are spaced approximately 35 feet apart and are planned to be 55 feet long, 6 feet wide, and extend to a depth of approximately 45 feet. A jet grout column will be situated below the DSM panels, which will be 8 feet in diameter and extend about another 32 feet below the DSM panels. The stone columns are located between the DSM panels and the top of the bank and are 3 feet in diameter and

spaced at 8 feet on center. The stone columns extend to the non-liquefiable soils at about 78 feet below ground surface.

Ground improvements in the vicinity of the Marine Terminal abutment will be located where the pipeline support transitions from foundations bearing on improved soils to pipe-racks supported by the dock structure. The area for improvement is approximately 160 feet long (parallel to the river) and 72 feet wide (perpendicular to the river). All ground improvements will begin landward of OHWM and will use jet grout to a depth of approximately 78 feet. Jet grout columns are approximately 6 feet in diameter and spaced to achieve replacement ratios between 40 and 100 percent. Landward of the jet grout block, a combination DSM/jet grout, as described above for Area 400 pipeline, would be constructed to support Area 400 facilities.

Within Area 400, the pipeline, pipeline supports, and the ground improvement are designed to function as a system. When subjected to design earthquake loading, the system will result in actual movements less than the movement that would be expected to cause pipeline rupture or other damage. Following a seismic event, the Applicant will undertake system inspection and repair.

The system is designed in accordance with all applicable building codes using widely accepted design methods. Analysis of the ground improvements indicates that if isolated and discontinuous zones of liquefaction may occur, and should these discontinuous zones of liquefaction develop, very little movement at the pipe supports is expected. Analysis indicates that, at the pipe supports, vertical movement less than 2 inches plus an additional 2 inches of horizontal movement is expected. The transfer pipes have been designed to accommodate this movement. The calculated movement includes the effects of lateral spreading associated with the portion of the riverbank between the pipe rack foundation and the top of the riverbank's slope.

Potential sliding of portions of the shoreline embankment south of and downslope from the system of proposed ground improvements is not mitigated by these improvements and, if this sliding occurs, it could deform the dock or displace a moored vessel. The dock structure has been analyzed for the potential impacts from failure of the slope on the piles. The improvements proposed by the Applicant have been designed to address these potential loads.

Deformation criteria for the pipeline supports near the abutment are indicated in the ground improvement basis of design. Additionally, universal tied expansion joints will be installed at the transition from the ground support to the support on the dock to mitigate differential movement between components.

Area 500 (Transfer Pipelines)

In Area 500, spread footing foundations will be constructed at anchor points along the length of the pipeline to ensure transfer pipelines are supported. The footings would have depths of 5 or 10 feet. The shallower depths would be used for non-anchor footings, and the deeper depths for anchor footings. The spread footings will be constructed by excavating the footing footprint, layering base materials, concrete forming and pouring, and backfilling. They are a common foundation construction technique for providing stability in weak soils. The design and size of the footings accounts for both the bearing capacity and resistance, but also settlement that may occur.

Area 600 (Boiler)
Ground improvements will not be necessary; the building will be constructed on a 1-foot-deep spread footing. The E-house will be constructed on a 2-foot slab-on-grade foundation.

Rail Infrastructure
Ground improvements will not be necessary; the rail loops will be constructed on concrete or wooden ties.

Ground Improvement Verification and Testing
Within Areas 300 and 400, following installation of stone columns, verification and testing will be performed using a series of cone penetration test (CPT) soundings. If required, geotechnical drilled borings and seismic penetration testing may be used with the CPT soundings. The CPT soundings will extend at least 3 feet below the bottom of the immediately adjacent stone columns and will be performed at least seven days after the column installation The CPT data will be analyzed by the ground improvement design engineer to evaluate achievement of the settlement design criteria. If the required settlement is not met, additional exploration, laboratory testing, and analysis will be conducted as necessary. See Appendix L.3, Section 7.0, for additional details.

Due to the sensitive fine grained soils in Area 300, the Applicant will hydro test each tank by slowly filling each tank with water over the period of one month. The plan is to fill each tank to the 25 percent level and maintain that loading for one week, followed by another 25 percent and maintaining for one week until the tanks are full and the full load has been maintained for a week. By doing so, the ground improvement system will accelerate drainage of the fine grained soils. One of the benefits of hydro testing each tank with water and holding the largest load for more than seven days is the over-consolidation of the fine-grained soils and a reduction of the anticipated secondary compression. See Appendix L.3, Section 7.0, for additional details.

2.18.2 Volcanic Eruption
Volcanoes in the region pose a variety of eruptive hazards. Volcanoes of the Cascade Mountains are found from northern California to British Columbia. Mount St. Helens and Mount Hood are located within 50 miles of the project, located to the northeast and southeast of the project site, respectively. The Boring Lava Field volcanoes resulted from a smaller series of eruptions and are within approximately 25 miles southeast of the project. The Boring Lava Field volcanoes are low, broad lava shield volcanoes and all are considered extinct.

Mount St. Helens is capable of producing eruptions of ash, lava flows, pyroclastic flows, and lahars (Wolfe and Pierson 1995). However, the Facility is upstream of drainages that extend from the flank of Mount St. Helens and would not be subject to pyroclastic flows or lahars. The USGS estimates that there is between a 0.01 and 0.02 percent annual probability that 4 inches or more of ash would be deposited at the site from eruptions throughout the Cascade Range, with the highest probability resulting from Mount St. Helens (Wolfe and Pierson 1995).

Mount Hood has produced lava and pyroclastic flows, lahars, and debris avalanches (Scott et al. 1997). A future Mount Hood eruption could generate a lahar that would enter the Columbia River 15 miles upstream from the project area at the mouth of the Sandy River. A large lahar entering the Columbia River could produce localized flooding and sediment deposition at the mouth of the Sandy River.

Based on the distance and activity level of nearby volcanoes to the project site, there is a low potential for damaging volcanic processes to reach the project, and these events would be considered extremely rare.

2.18.2.1 Mitigation of Volcanic Eruption

Volcanic events can typically be anticipated through monitoring of earthquakes and other data from the USGS volcano monitoring network. Should an eruption occur and pose a risk to the Facility the operations will be shut down until conditions allow for safe operation and the Construction/Operations Emergency Plan will be implemented to address ash fall.

2.18.3 Flooding

The 100-year floodplain and floodway of the Columbia River are located at 30 feet (NAVD 88) and extend generally to the top of the bank along berths 13 and 14 (FEMA Map 53011C0363D). In addition, there is an isolated floodplain located on Parcel 1A as shown on FEMA Map 53011C0364D. The port filled this area as authorized by City permit GRD2012-00025.

The 100-year floodplain represents the area subject to flooding by a flood with a 1 percent chance of being equaled or exceeded in any given year. Hazards from flooding include an increase in river elevation and current and the amount of debris in the river. During a flood the river levels will rise and can inundate, damage or sweep away buildings or equipment, result in debris accumulation, and present hazards to river navigation.

Facility elements that are located in the Floodplain include berths 13 and 14 and the control room, e-house and motor control center buildings in Area 400.

The project is located within the inundation area of the 500-year flood event. Floodwaters are anticipated to inundate the facilities with approximately 1-foot of water during the 500-year event. Facility design has taken this potential flooding into consideration. The containment berm around the product storage tanks provides protection against inundation. The below grade trenches will be water-tight eliminating inundation concerns during the 100-year flood, or from seasonal shallow groundwater. The unloading facility is located within the inundation area of the 500-year flood plain. Flood waters inundating the unloading facility would fill the below grade trenches and containment pans.

It is not anticipated that any fill will be placed in the 100-year flood fringe or floodway.

2.18.3.1 Mitigation for Flooding

The Facility will be designed to comply with the City's Frequently Flooded Areas provisions of the Shoreline Management Program. These provisions require that buildings and structures located in the floodplain be elevated to at least one foot above the flood elevation or be floodproofed, be anchored to prevent floatation, collapse or lateral movement and incorporate other design elements to insure safety during a flood event. Compliance with these provisions will be determined during the issuance of construction permits anticipated by EFSEC.

In order to prevent the contamination of flood water, operating procedures will require that any crude oil spill including minor leaks and drips be contained and affected surfaces cleaned promptly limiting the amount of any residue that could comingle with flood waters inundating the containment pans, containment piping, and below grade trenches. In the event of flood events exceeding the 100-year or 500-year flood stages, the Applicant will monitor the rate of flood water rise and suspend threatened Facility operations prior to the flooding occurring.

Dock operations will comply with the USCG- and Ecology-approved Terminal Operating Limits as published in the Terminal Operations Manual.

2.18.4 Tsunami

Tsunamis are large damaging waves generated in oceanic areas due to earthquakes. The project site is approximately 95 miles up the Columbia River from the Pacific Coast and is at an elevation of approximately 25 to 35 feet (North American Vertical Datum [NGVD]). Based on the distance from the coast to the site and the elevation of the project site, tsunamis are not considered a potential hazard, and tsunami inundation is not a concern for the project. No mitigation measures are considered necessary for tsunami hazards.

Seiches are earthquake-generated waves that can occur in inland bodies of water, including rivers. The site is adjacent to the Columbia River. After the 1964 Alaska earthquake, a very minor (less than 1 foot) seiche was reported in the upper (non-free flowing) section of the Columbia River system from McNary Reservoir (McNary Dam) to Franklin D. Roosevelt Lake (Grand Coulee Dam) (McGarr and Vorhis 1965). No historic seiches are known from the lower, free-flowing Columbia River. The likelihood that seiches could affect the project is very low. No mitigation measures are considered necessary for seiche hazards.

2.18.5 Storms

Washington State is vulnerable to severe weather events, primarily from storm systems moving into the State from the Pacific Ocean. Severe storms are generally considered to be an atmospheric disturbance with sustained winds of over 40 mile per hours and or significant precipitation events. The County has been subject to infrequent but severe weather events including the Columbus Day Windstorm in October 1962, with recorded wind speeds of up to 92 miles per hour in Vancouver. Tornadoes occur very infrequently but have occurred in Vancouver including a Category F-3 event in April 1972 and an EF-1 event in January of 2008 that touched down NE of the project site near Vancouver Lake. Other severe weather events include ice storms resulting from strong easterly winds through the Columbia Gorge and lightning strikes. Strong winds and tornadoes can damage buildings and equipment. Lighting could strike buildings affecting power and electrical equipment. Ice storms can coat roads, equipment and buildings resulting in unsafe travel and working conditions and increase load on roofs. Heavy rainfall events can result in localized standing water.

2.18.5.1 Mitigation for Storms

The Facility will be designed to comply with the International Building Code requirements to reduce the risk of damage to structures from storm events. Buildings will be designed for a snow load of 25 pounds per square foot and a 135 mph wind speed (exposure c, strength level per ASCE 7-10). Protection against lightning will be provided by proper grounding and use of intrinsically safe electrical installations. All buildings are required to be designed by a structural engineer. Compliance with the code provisions will be determined during the building permits administered by EFSEC.

During severe weather events, the Facility operator will monitor the conditions at the site and if conditions result in risks to employees or facilities, will cease operations until safe to resume.

2.18.6 Avalanche and Landslides

Landslide hazard areas are typically defined as areas that, due to a combination of slope inclination, soil type, geologic structure, and the presence of water, are susceptible to failure and subsequent downhill movement. No landslides have been mapped on the site or in the vicinity of the project area (Fiksdal 1975). With the exception of along the banks of the Columbia River, the project site is relatively flat. The banks of the river near the area of the dock and a small depression in the area of the storage area have portions where slope inclinations are greater than 25 percent. Avalanche is typically associated with the rapid flow of snow downhill. The project site is well below the snow line elevation and climatic conditions generally do not allow the buildup of snow at the site. Avalanches are not a concern for the project and no mitigation measures are considered necessary.

Based on the lack of landslide deposits mapped in the vicinity of the site, its low topographic relief, and the absence of geologic structures that may increase landslide susceptibility, the impact of landslides to the project is negligible. No mitigation for landslide hazard is anticipated.

Section 2.19 – Security Concerns

WAC 463-60-275
Proposal – Security concerns.

The application shall describe the means employed for protection of the facility from sabotage, terrorism, vandalism and other security threats.

(Statutory Authority: RCW 80.50.040 (1) and (12). 04-21-013, amended and recodified as § 463-60-275, filed 10/11/04, effective 11/11/04. Statutory Authority: RCW 80.50.040(1) and Chapter 80.50 RCW. 81-21-006 (Order 81-5), § 463-42-275, filed 10/8/81. Formerly WAC 463-42-300.)

Section 2.19 Security Concerns

2.19.1 Port of Vancouver Security

The Facility is located at the Port and will be operated in accordance with the Port's security program. Access to the Port's marine terminals is allowed primarily through the main security gate at the 26th Avenue overpass. The Port's security plan and policies require that all people entering the port's terminal areas show photo identification and have a valid business purpose to be on the Facility. This is accomplished through the port's screening process, administered to anyone who enters the port's marine terminals. In addition, this area is secured with fencing, video camera monitors and 24/7 stationary and mobile patrols.

The Port has a professional full-time proprietary security force. This security force monitors Port property via roving random vehicle patrols, staffed gates, and monitored closed-circuit television (CCTV). The security force maintains a strong liaison with Vancouver Police Department (VPD) for security-related response.

All personnel who perform work (including contractors and consultants) within the Port's maritime facility are required to have a Transportation Worker Identification Credential (TWIC) in order to perform their duties without an appropriate credential person to provide an escort. This program was established by Congress and is administered by the Transportation Security Agency and the USCG.

2.19.2 Construction Phase Security Plan

The Applicant prepared and submitted to EFSEC for review a preliminary construction security plan (Appendix D.4). The plan addresses regulatory requirements, threat assessment, and site security measures likely to be implemented (including access control, screening, traffic control, and incident procedures and emergency response). Area 400 – Marine Terminal lies within the Maritime Transportation Security Act (MTSA)-regulated area of the Port and is subject to the Port Facility Security Plan on file with the U.S. Coast Guard (USCG) in accordance with 33 CFR 105. As construction progresses, other locations of the site will also become subject to 33 CFR 105; such areas will be secured in accordance with the Applicant's facility security plan (see section 2.19.3 below). Because of the sensitive nature of the security plan prepared under 33 CFR 105[26], a detailed security plan cannot be disclosed publicly; the following provides a summary of the likely security provisions to be implemented.

The Applicant and selected contractor(s) will develop a formal site security plan to safely secure the site during the construction phase. This plan will outline access procedures, roles and responsibilities and identify the methods of physically securing the site. Measures, such as perimeter fencing, access gates, CCTV systems, and security personnel, may be employed. Area 400 will require that construction personnel comply with TWIC requirements. The plan will be developed in coordination with the Port security personnel.

[26] Security plans for facilities subject to these regulations are considered Security Sensitive Information (SSI) under 49 CFR 1520 and subject to protection from general release.

The construction security plan will be drafted to comply with federal statutory and regulatory requirements under the MTSA of 2002, 46 U.S.C. § 70101, et seq. This federal statute and implementing federal regulations preempt any conflicting state and local regulations or requirements.

2.19.2.1 Site Security

The perimeter of the Port is fenced and gated to prevent unauthorized access to the Port. The overpass from Terminal 4 to Terminal 5 provides access to the rail loop at Terminal 5. Gates and traffic schemes are in effect to restrict access to the rail loop at the east base of the overpass. Facility specific security enhancements to physical security include increased fencing, gates, and possible staffed gate house with powered gates.

Construction will be secured via a combination of temporary fencing, portable lighting, and 24/7 security officers. Security officers will be hired from the Port or an outside vendor. Security officers will have redundant communications with the Port to report suspicious activity and to contact VPD for response. Security officers will work with Port security to provide mobile coverage of active construction sites.

Area 200 - Unloading

This construction site is located in the Terminal 5 rail loop. The rail loop may be in use by the Port and other tenants during construction. Potential threats include property crimes related to equipment and materials. Mitigations will include existing perimeter fencing, existing Port lighting, and existing random Port security patrols. Additional mitigations may include temporary fencing, portable lighting to enhance existing Port lighting, and 24/7 staffing by a contract security officer. Day/construction security officer duties will include access control in addition to monitoring. Afterhours duties will include patrols and monitoring of the site, construction equipment, and materials.

Area 300 - Storage

This construction site is located in Parcel 1A East. Potential threats include property crimes related to equipment and materials. Mitigations will include existing perimeter fencing, existing Port lighting, and existing random Port security patrols. Additional mitigations may include temporary fencing, portable lighting to enhance existing Port lighting, and 24/7 staffing by a contract security officer. Day/construction security officer duties will include access control in addition to monitoring. Afterhours duties will include patrols and monitoring of the site, construction equipment, and materials.

Area 400 – Marine Terminal

This construction site is located in Terminal 4, berths 13 and 14. Potential threats include property crimes related to equipment and materials. Mitigations will include the berths 13 and 14 that lie within the MTSA-regulated footprint of the Port. The Port controls access to the MTSA area via perimeter fencing, staffed entrance gates, Port lighting, random Port security patrols, and monitoring via security staff and CCTV. Additional mitigations may be considered to include portable lighting to enhance existing Port lighting, and 24/7 staffing by a contract security officer. Day/construction duties will include access control in addition to monitoring. Afterhours duties will include patrols and monitoring of the site, construction equipment, and materials.

2.19.2.2 Access Control

Access control to the construction sites will be the primary function of security during day/construction hours. Access control measures serve to mitigate unauthorized access to the sites for safety, security, and loss control risks. Access lists are coordinated with construction supervision to accommodate dynamic scheduling of construction. A Facility-specific decal will be provided to individuals who have completed the Facility-specific orientation. This decal will be required for unescorted access within the defined Facility boundaries.

Visitors and guests will be admitted to the site only after preapproval or coordination with construction supervision. All entrants will be required to initially provide a government-issued photo identification to match with access lists or to record visitor guest information. Visitor guest access and escort requirements will be determined by construction supervision weighing active construction and security risks.

TWIC escorts will be required for non-TWIC visitors and guests at Area 400 – Marine Terminal in accordance with Port procedures. A TWIC will be required for individuals working the marine loading construction area because this area is within the Port MTSA-regulated footprint. Although not required at the rail unloading construction site, nor for the storage tanks construction site, consideration will be given to requiring TWIC for other construction areas for construction crew flexibility.

2.19.2.3 Screening

Random entry screening of personnel and vehicles will be conducted by contract security to prevent the introduction of unauthorized individuals, substances, and devices to the construction sites. Screening rates will be coordinated with the Port to be in alignment with current Port security posture. Random exit screening will be conducted by contract security to mitigate potential loss of materials and tools. Any tools, materials, or equipment being brought out of the Facility will require an authorized Material Gate Pass. These passes will be obtained from the Facility HSSE lead. All items are subject to inspection prior to release.

Coordination with construction supervision will be conducted to manage deliveries and demobilizations.

2.19.2.4 Traffic Control/Blockage of Roadways

If a roadway managed by a public or private entity must be blocked or access restricted as a result of Facility work, advanced planning and notification to stakeholders will be conducted. All road closures and traffic control activities will be coordinated through the Facility HSSE lead or his delegate, and taking into consideration the construction traffic management plan.

2.19.2.5 Monitoring

Monitoring and random patrols of the construction sites will be the primary function after hours. Monitoring and random patrols serve to mitigate loss control and general crime risks. Monitoring and random patrols will encompass active construction sites, materials staging areas, equipment and tool storage areas, and any flammable or hazardous materials storage areas. Locked storage, trailers, Conex, cabinets, etc. will be used for storage when tools and materials are not in use.

2.19.2.6 Incident Procedures and Emergency Response

Site familiarization visits will be coordinated with construction supervision, contract security, Port security, Vancouver Police Department, and Vancouver Fire Department. These visits will

be conducted preconstruction and at major construction milestones to ensure safe and timely response to any emergent situation. Safe and timely access and egress routes will be clearly established. Standard clear nomenclature will be established to describe the construction site and site hazards. These visits will include a review of current threat status of the construction site, high value items and their storage strategies, and site hazards.

Emphasis will be given to potential risks to responders, including construction and flammable and/or hazardous materials on site. General site plot plans will be used to illustrate these visits. This plot plan will be updated with each major construction milestone or significant hazard change. A laminated portable copy will be provided to contract security.

A security incident reporting call list will be established to ensure timely and comprehensive notification of any security incident. Current 24-hour contact numbers with name and title will be included in the reporting procedure.

On-duty security will initiate incident reporting and will prepare a laminated plot plan with location of the incident clearly marked for emergency responders.

Telephonic threats or bomb threats will be reported to law enforcement. A bomb threat record sheet will be kept near the public or main listed telephone for the construction site.

Post incident procedures will include a root cause review of the incident to determine lessons learned and any possible modification to the security plan.

2.19.3 Operations Site Security Plan

The Applicant prepared and submitted to EFSEC for review a preliminary operations security plan (Appendix D.3, Section 3.2). The operations site security plan will be developed pursuant to 33 CFR 105 and will be approved by the Port and USCG.

Regulatory determination assumptions have been made based on terminal facilities with similar attributes but are subject to final determination of the federal regulators. It is assumed the entire Facility is subject to the MTSA of 2002, 33 CFRs 101 and 105 (MTSA).

Security plans for facilities subject to these regulations are considered Security Sensitive Information. (SSI) under 49 CFR 1520 and subject to protection from general release. The following provides a general description of how the Facility will meet these requirements without disclosure of SSI.

The Marine Terminal (Area 400) lies within the MTSA-regulated area of the Port and is also subject to the Port Facility Security Plan on file with the U.S. Coast Guard (USCG) in accordance with 33 CFR 105. The Port Facility Security Plan is SSI and not subject to release. General reference to the requirements are made without disclosure of Port SSI.

Security measures anticipated at the site include fencing to prevent any public access to project facilities. The northern side of the WVFA rail loop facilities is fenced to prevent public access. Security gating will be provided at the rail loop access at the Gateway overpass. It is assumed that Area 200, Rail Unloading, is subject to the Transportation Security Administration (TSA) rail security regulations as detailed in 49 CFR 1520 and 1580.

Parking for the Facility's operations and maintenance staff will be provided at the administration and support buildings. All other persons, such as vendor equipment personnel, maintenance contractors, material suppliers, and all others, will acquire permission for access from a

designated site employee prior to entrance. Access to each project area will be granted on a project/job need basis by the Plant Manager.

2.19.4 Federal Requirements

As a result of the Facility's capacity to store and transfer oil in bulk to a vessel that has a total capacity of all bulk products carried of 250 barrels or more, the Facility is regulated under the federal provisions of 33 CFR 154. In turn, the MTSA of 2002, as implemented through 33 CFR 105, establishes federally mandated security requirements for facilities regulated under 33 CFR 154. The primary provisions of 33 CFR 105 are summarized in Table 2.19-1 below.

Table 2.19-1. Summary of 33 CFR 105 Provisions

Subpart	Provisions
Subpart A – General	• Applicability, documentation and compliance dates • Compliance with the Maritime Security (MARSEC) directive(1)
Subpart B – Facility Security Requirements	• Definition of a security organizational structure, including the appointment of a Facility Security Officer, preparation and conducting of a Facility Security Assessment (FSA) in accordance with Subpart C, and implementation of the Facility Security Plan (FSP), including related training, drill and record keeping activities. • Implementation of the TWIC program • Compliance with Maritime Security (MARSEC) level coordination and implementation at the port (1)
Subpart C – Facility Security Assessment (FSA)	• Requirements for conducting and documenting the FSA
Subpart D – Facility Security Plan (FSP)	• Format, content and preparation of the FSP • Requirements for submittal of the FSP 60 days prior to the beginning of terminal operations • Amendment, annual auditing, and biannual USCG inspection processes

(1) MARSEC directives and levels are established by the USCG under 33 CFR 101, Maritime Security: General.

The Applicant will conduct a FSA and develop a FSP in accordance with 33 CFR 105; the plan will be submitted to the USCG Captain of the Port (COPT) 60 days prior to beginning operations. The plan is sensitive security information and will be protected in accordance with 49 CFR 1520. The contents of the plan will be developed based on the final design and operational parameters of the Facility, and are expected to include, but not be limited to, the implementation of the following security actions, subject to final determination by the USCG:

- All unloading, storage, internal pipe lines, and valves will be contained within the Facility's restricted area that will be monitored by a dedicated security force at all times
- Access to the restricted area will be secured and monitored
- Site security lighting
- Monitored security video camera system
- All persons requiring unescorted access to the Facility, including employees and contractors, must possess a TWIC
- Identification of coordination actions with local and state law enforcement agencies
- Procedures for access during emergency events

- Appointing a Facility Security Office with responsibilities to maintain and implement the FSP

As identified in Appendix D.3, Section 3.2, the FSP will also address:

- Roles and responsibilities of Operators, Management, and Corporate Security in security activities
- The security administration and organization of the Facility
- Personnel training
- Drills and exercises
- Records and documentation
- Responses to change in MARSEC level
- Declaration of security with arriving vessels
- Communications
- Security systems and equipment maintenance
- Security measures for access control, including designated public access areas
- Security measures for restricted access
- Security measures for handling cargo
- Security measures for delivery of vessel stores and bunkers[27]
- Security measures for monitoring
- Security incident procedures
- Audits and security plan amendments
- FSA report
- Facility vulnerability and security measures summary

In addition, the Port will support and supplement the Facility's security efforts with controls to deter access, and fixed and mobile patrols and will coordinate with the Facility for an integrated security posture.

[27] As noted elsewhere in this ASC, bunkering will not be permitted at the Facility; however federal regulations mandate that it be addressed in the FSP.

Section 2.20 – Study Schedules

WAC 463-60-285
Proposal – Study schedules.

The application shall furnish a brief description of all present or projected schedules for additional environmental studies. The studies descriptions should outline their scope and indicate projected completion dates.

(Statutory Authority: RCW 80.50.040 (1) and (12). 04-21-013, amended and recodified as § 463-60-285, filed 10/11/04, effective 11/11/04. Statutory Authority: RCW 80.50.040(1) and Chapter 80.50 RCW. 81-21-006 (Order 81-5), § 463-42-285, filed 10/8/81. Formerly WAC 463-42-130.)

Section 2.20 Study Schedules

Since submittal of the original ASC in August 2013, and the ASC Supplement in January 2015, the Applicant has conducted additional studies and prepared reports and plans in support of preparation of EFSEC's DEIS, to supplement EFSEC's review of applications for air and water discharges, and to respond to concerns raised in EFSEC's DEIS. These additional analyses and plans have been appended to this revised ASC as follows:

- Appendix A
  - Cultural Resources Geoarcheological Investigation Report (April 2015)
  - Cultural Resources Inadvertent Discovery Plan (April 2015)
- Appendix B
  - Construction SPCCP (April 2015)
  - Operations SPCCP (June 2015)
  - Oil Spill Contingency Plan (June 2015, and revisions January 2016)
  - Operations Facility Oil Handling Manual (June 2015)
  - Spill Response Exercise (January 2016)
- Appendix C
  - Construction SWPPP (February 2015, revised August 2015)
  - Operation SWPPP (February 2015, revised October 2015)
- Appendix D
  - Construction Safety Manual (April 2015)
  - Operations Safety Program (April 2015)
  - Construction Security Plan (April 2015)
- Appendix F
  - Contaminated Media Management Plan (February 2015, revised August 2015)
  - Water Quality Protection and Monitoring Plan (February 2015, revised August 2015)
- Appendix H
  - Marine Mammal Monitoring Plan (April 2015)
  - Construction Wildlife Monitoring Plan (June 2015)
  - Wake Stranding in the Lower Columbia River Technical Report (January 2016)
  - Lower Columbia River Morphology and Fish Stranding Technical Report (January 2016)
- Appendix J
  - Transportation Impact Analysis (August 2013, revised July 2014)
  - Construction Traffic Management Plan (April 2015)
- Appendix K
  - Assessment of Vancouver Energy Socioeconomic Impacts: Primary Economic Impacts (July 2014)
- Appendix L
  - Geotechnical Investigation Vancouver Energy Upland Facility (December 2013, revised April 2015)

  - Geotechnical Investigation Tesoro Savage Vancouver Energy Distribution Terminal – Dock Facility (September 2014)
  - Vancouver Energy Terminal Ground Improvement Design – Areas 300 & 400 (April 2015)
- Appendix N
  - Fire Protection Design (July 2014)
  - Life Safety Design (July 2014)
- Appendix O
  - Facility Structural Design (April 2015)
  - Storage Tank Design (March 2015)
- Appendix P
  - Quantitative Vessel Traffic Risk Assessment (January 2016)
  - 2014 AIS Traffic Analysis (January 2016)
  - Facility Siting Study and Quantitative Risk Assessment (May 2016)

The Applicant is aware of the following studies and analyses, which are currently underway, or expected to be undertaken.

- The Applicant is coordinating with EFSEC and its consultant to conduct geotechnical modelling to respond to concerns raised in EFSEC's November 2015 Draft Environmental Impact Statement (Derr 2016).
- The Applicant is conducting a Tier II anti-degradation analysis being completed in accordance with WAC 173-201A-320 to demonstrate water quality compliance (May 2016).

Section 2.21 – Future Activities

WAC 463-60-295
Proposal – Potential for future activities at site.

The application shall describe the potential for any future additions, expansions, or further activities which might be undertaken by the applicant on or contiguous to the proposed site.

(Statutory Authority: RCW 80.50.040 (1) and (12). 04-21-013, amended and recodified as § 463-60-295, filed 10/11/04, effective 11/11/04. Statutory Authority: RCW 80.50.040(1) and Chapter 80.50 RCW. 81-21-006 (Order 81-5), § 463-42-295, filed 10/8/81. Formerly WAC 463-42-140.)

Section 2.21 Potential for Future Activities at the Site

At this time, the Applicant does not have any plans for additions, expansions, or future activities within the proposed project boundary or on properties contiguous to the proposed project boundary. The lease between the Applicant and the Port allows for other activities by the Applicant, including handling of other petroleum products, receiving petroleum products at the Marine Terminal and expanding the Facility. The Applicant does not presently have plans to conduct these activities, nor does the Facility design support these activities. At this time, these activities are speculative and engineering and environmental information is not available to support permitting. If the Applicant chooses to modify the Facility to take advantage of the above-described allowances of the lease, an amendment to the Site Certification Agreement would be pursued through EFSEC.

Section 2.22 – Analysis of Alternatives

WAC 463-60-296
Proposal – Analysis of alternatives.

The application shall include an analysis of alternatives for site, route, and other major elements of the proposal.

(04-23-003, recodified as § 463-60-296, filed 11/4/04, effective 11/11/04. Statutory Authority: RCW 80.50.040 (1) and (12). 04-21-013,§ 463-42-296, filed 10/11/04, effective 11/11/04.)

Section 2.22 Analysis of Alternatives

The Facility's principal purpose is to provide North American sourced crude oil to U.S. refineries to potentially offset or replace declining Alaska North Slope and California crude oil production and foreign crude oil imports. The Port site is the closest developed deep-water marine water terminal to the Midwest oil fields, therefore minimizing the distance needed for product transportation and shipping to West Coast refineries.

2.22.1 Site Selection

The Facility is designed to receive crude oil by rail, store it on site, and load it on marine vessels primarily for delivery to refineries located on the West Coast of North America. The Port issued a "statement of interest" seeking proposals to develop a petroleum by rail facility at the Port. Tesoro, a long term Port tenant, teamed with Savage Services Corporation to jointly submit a proposal to the Port for the formation of the Applicant and development of the Facility. The Port received four proposals and after consideration of a variety of criteria, including safety, environmental, community, financial, market and operations, selected the Applicant to enter into negotiations for the site.

In order to meet the Applicant's purpose and need for the Facility, the following elements were deemed necessary to develop a facility of this type: (1) a deep-draft marine terminal ideally owned by a public port, with existing land use zoning to allow the Facility and with existing marine infrastructure; (2) a project site that has existing, or can accommodate, rail infrastructure capable of handling multiple unit trains to accommodate the proposed project capacity; (3) a site that is in close proximity to Class I rail access, and as close as possible to the source of the product to minimize the cost of rail transportation with a relatively central location to serve West Coast refineries; and (4) a site large enough to accommodate the remaining Facility elements, especially sufficient area for storage that allows product segregation to service multiple clients. In addition, a specific site has to be available for control by a potential applicant, and overall development of the project must be timely to meet current market needs.

Port locations in California do not meet the Applicant's purpose and need because they would be located furthest by rail from the crude production areas in the Midwest.

Of the eleven deep-draft ports in Washington State, three are located along the Washington side of the Columbia River system (Longview, Kalama, and Vancouver), seven are located in Puget Sound (Olympia, Tacoma, Seattle, Everett, Anacortes, Bellingham, and Anacortes), and one in Grays Harbor on the coast.

At the time of original ASC submittal (August 2013), the Port of Kalama was advertising the "Northport" 70-acre Marine Heavy industrial site, located in the northern area of the port (Port of Kalama, 2014). This site is accessible from a BNSF spur, but is not currently developed to accommodate unit trains. A previous development proposal for this site investigated the potential to add rail infrastructure to accommodate unit trains (URS, 2006); however the proposal was dependent on the filling of wetlands to accommodate the rail infrastructure (as of January 2014, these wetlands had not yet been filled (Carrico, 2014)). In addition, rail capacity for use of this location has been identified as constrained due to trains leaving/entering the main BNSF lines at Kalama (BST Associates, et al., 2011). Use of this site for any type of cargo would also require the development of a new vessel berth and dock (Port of Kalama 2016). Due to the lack of rail

infrastructure, existing rail capacity constraints, and need for a new berth and dock, this location would not meet the Applicant's criteria for development of the Facility. Since 2013, this site has been chosen by the Port of Kalama and Northwest Innovation Works for a methanol production facility and is, therefore, no longer available (Port of Kalama and Cowlitz County 2016).

The former Reynolds Metal aluminum smelter site in Longview is already proposed for the location of a coal export facility (Millennium Bulk Terminal). The Port of Longview is currently advertising a heavy industrial zoned 49-acre site at its east industrial park (Port of Longview 2014); an existing marine dock at the site services an existing grain terminal, and would not be available for use by another tenant. Due to the lack of marine infrastructure, this site does not meet the Applicant's criteria for development of the Facility. Public port locations in northwestern Washington (Anacortes, Bellingham, Everett), though accessible directly by mainline rail, or spur to mainline rail, are also situated furthest from the crude production areas with respect to rail transportation, and for the most part lack the area necessary to implement unit train handling. The Port of Port Angeles is not served by rail. Potential sites that could accommodate unit train infrastructure at the Port of Tacoma were under the control of others. The Port of Seattle is specialized in containerized intermodal activities, and does not have the necessary infrastructure to accommodate unit trains. The Port of Olympia is accessible by rail spur from the BNSF mainline, but does not have any real estate currently available to accommodate a 45-acre development (Port of Olympia 2014). Suitable project sites may exist at the Port of Grays Harbor. However these locations themselves are currently under development, and are not available for control by the Applicant.

In Oregon, reasonable rail access is available at the following deep-draft ports: Astoria, Newport, Portland and St. Helens (Parsons Brinckerhoff 2010). The Port of Portland is the only port served directly by a mainline railroad. The Port of Portland is in close proximity to the Port of Vancouver, and potential environmental issues would likely not be materially distinguishable from the Port of Vancouver site. In May 2014, the Port of Portland issued a statement to the effect that it will wait for "sufficient answers to the important questions regarding environmental and physical safety to proceed with any type of [crude-by-rail] development at this time" (Port of Portland 2014); in November 2015, the City of Portland passed a resolution wherein it actively opposes expansion of infrastructure whose primary purpose is storing or transporting fossil fuels in or through Portland (City of Portland 2015). Further, the Port of Vancouver, not the Port of Portland, solicited bids for this development. The remaining three Oregon ports are served by short line rail spurs. The Port of St. Helens is already the location of a smaller crude-by-rail facility.

The site selected for the Facility meets all of these criteria:

1) The Port of Vancouver is located at head of the deep-water shipping channel on the Columbia River; the Facility will use an existing berth built in the 1990s and established specifically for deep-draft vessels. The Port of Vancouver is one of the closest available port to the source of domestic crude oil, and is reasonably central in location to the West Coast refineries.

2) The Terminal 5 site represents the westernmost extension of the WVFA project and is designed to accommodate unit trains. The WVFA project also involves other improvements specifically designed to increase the ability to the Port to handle train traffic. Therefore, the use of Terminal 5 and the existing WVFA infrastructure by unit trains and their impact on rail volumes and frequency has been fully anticipated; the cargo proposed to be handled (crude oil) is

but one of the cargoes that could take advantage of infrastructure fully anticipated as a matter of land use planning and development.

3) In addition to the developed WVFA rail loop at Terminal 5, sufficient land is available at Parcel 1A to accommodate the necessary storage tanks for the temporary storage of crude oil. Furthermore, the location proposed for Facility elements have all been previously disturbed, and there will be no fill of wetlands or surface water bodies.

The Applicant has worked very closely with the Port to ensure the Facility will not impede overall terminal use by existing tenants or the development of other Port projects. All project elements have been carefully sited to avoid conflicts with existing easements and utilities, and to allow continued access to existing and future adjacent activities. In addition, the project will reuse a former brownfield site for job creating activities and reduce pressures for the development of greenfield locations.

2.22.2 Unloading System Alternatives

During project design, the Applicant considered two variations for the unloading facility: An uncovered facility and a covered facility. Ultimately the development of a covered facility was selected for the following reasons:

- A covered facility minimizes the amount of stormwater that can potentially come in contact with an unintentional release of materials, and allows the use of the existing Port stormwater facilities as described in section 2.11 above; exposure of stormwater in the unloading area to potential contaminants would have meant that stormwater collected from this area would have needed to be treated as process water and could not be sent to the City's WWTP, resulting in more ground disturbance to construct the necessary capture, treatment and discharge facilities.
- In addition, a covered unloading facility would minimize the exposure of workers to the elements and provide safer work conditions.

2.22.3 Water Supply and Usage Alternatives

As described in section 2.6.2 above, the Applicant investigated alternative water supply sources, and the potential for reusing treated wastewater from the City's WWTP.

2.22.4 Wastewater Discharge

As noted in section 2.9.5, the total discharge amount of the Facility's wastewater flows is not significant when compared to the overall City treatment plant flows or capacity. The boiler units and pretreatment systems are standard equipment. The Applicant completed a detailed wastewater characterization for the proposed industrial wastewater discharge streams. Detailed modeling of the boiler plant was completed by DMS-Nalco and is based upon DMS-Nalco's expertise modeling, maintaining, and servicing local boiler facilities. The full wastewater characterization report is included in section 5.3. The industrial wastewater discharges from the Facility will meet the requirements of the City's Pre-Treatment Ordinance in VMC 14.10 (Makarow 2016). The Applicant is considering discharge alternatives and a summary of those are presented in section 2.9.3.

2.22.5 Stormwater Discharge

The existing Port stormwater capture and treatment infrastructure at the site is fully developed. As described in section 2.11, the conveyance facilities have the capacity to accept treated Facility

stormwater. Establishment of a separate stormwater system would have required substantially more ground disturbance, including a new outfall to the Columbia River.

2.22.6 Marine Terminal

As noted above, overall site selection considered the availability of existing berthing facilities. The existing berths 13 and 14 are suited to the use being proposed by the Facility. Although modifications are required to meet industry standards, the impacts of these modifications are significantly lower than the impacts of developing a new marine terminal. Constructing a new marine terminal would have likely included dredging, driving a large number of piles, creating all new over-water surface, and possible bank modifications. Selection of the existing berths over a greenfield location significantly minimized new impacts, and all additional new impacts will be fully mitigated.

Since submittal of the ASC in August 2013, the Applicant continued to refine berth modifications to achieve the minimum number of additional, permanent impacts to the aquatic environment and are reflected in the revised ASC submitted February 2014 (BergerABAM 2014). The August 2013 proposal focused on providing the optimal and safe mooring configuration by reinforcing the existing berth structure. Overall, the previous proposal would have included the installation of new permanent piling and the creation of additional overwater coverage (which would have been mitigated by removing the existing piling at another location). Through continued design, the Applicant developed a proposal that allows the strengthening of the existing structure by in-place improvement of existing piling, and by tying the structure into improvements constructed in the upland portion of the shoreline. This design modification resulted in a configuration that requires no new permanent in-water piling, and which minimizes the additional overwater coverage while enhancing berth structural conditions.

2.22.7 Air Emissions Control

As part of the air permitting effort, the Applicant performed a BACT analysis to identify pollutant-specific alternatives for emission control, and the pros and cons of each alternative. This analysis is presented in detail in section 5.1. This was made on a case-by-case basis and considered the technical, economic, energy and environmental costs of a certain type of control process for each emissions source.

In August 2014, the Applicant chose to use electrical energy to provide heat to two of the six storage tanks instead of using natural gas fired boilers, and proposing a limitation on the use of Area 200 boilers (Flint 2014). This resulted in an overall Facility emissions reduction, especially for greenhouse gas emissions.

2.22.8 Route Selection

Route selection is not applicable to this Facility, as the Facility does not have any linear electrical or gas transmission elements.

2.22.9 No Action Alternative

Under the No Action Alternative, the Facility would not be built. U.S. refineries located along the West Coast would continue to receive crude oil from existing sources, i.e., domestic sources connected to existing overland transportation systems capable of moving the crude oil to the west coast, the Alaska North Slope, and foreign sources. Foreign imports would likely make up for declining Alaska North Slope and California crude oil production.

Section 2.23 – Pertinent Federal, State, and Local Requirements

WAC 463-60-297
Proposal – Pertinent federal, state and local requirements.

(1) Each application shall include a list of all applicable federal, state, and local statutes, ordinances, rules, permits, and required use authorizations (i.e., leases, easements, rights of way, or similar authorizations) that would apply to the project if it were not under council jurisdiction. For each federal, state, or local requirement, the applicant shall describe how the project would comply or fail to comply. If the proposed project does not comply with a specific requirement, the applicant shall discuss why such compliance should be excused.

(2) Inadvertent failure by the applicant to discover and list a pertinent requirement shall not invalidate the application, but may delay the council's processing of the application.

(04-23-003, recodified as § 463-60-297, filed 11/4/04, effective 11/11/04. Statutory Authority: RCW 80.50.040 (1) and (12). 04-21-013, § 463-42-297, filed 10/11/04, effective 11/11/04.)

Section 2.23 Pertinent Federal, State, and Local Requirements

2.23.1 Applicable Federal, State, and Local Permits and Requirements

Table 2.23-1 includes a list of the federal, state, and local permits and requirements that would apply to the proposed project if it were not reviewed under the EFSEC process. The table includes the name of the permit or approval, the agency responsible for issuing the permit along with the applicable regulation or statute, and the section of the EFSEC application that addresses that requirement. For the meaning of the acronyms used in the table, please see the list of acronyms, initialisms, and abbreviations at the beginning of this application.

Table 2.23-1. Applicable Federal, State, and Local Permits and Requirements

Permit or Approval	Agency/Statute and/or Regulation	Application Section
Federal Permits/Approvals		
NEPA Compliance	USACE (anticipated federal lead agency for this project) 40 CFR 1500-1508	Not Applicable
ESA Section 7 Consultation	USFWS and NMFS Section 7 of ESA	3.4, Appendix H.1
Magnuson Stevens Fisheries Conservation and Management Act	NMFS 50 CFR 600	3.4, Appendix H.1
MMPA	USFWS and NMFS 50 CFR 18 and 50 CFR 216	3.4, Appendix H.1
Migratory Bird Treaty Act	USACE and USFWS 16 USC 703, Executive Order 13186, 50 CFR 21	3.4
Bald and Golden Eagle Protection Act	USFWS 16 USC 668, 50 CFR 22	3.4
NHPA Section 106 Review	USACE, in consultation with DAHP 16 USC 470	4.2.5
Section 10 Permit	USACE Rivers and Harbors Act 33 CFR 322	Appendix H.2
PATON Permit	USCG 33 CFR 62	4.3
Hazardous Materials & Oil Transportation Regulations	U.S. Department of Transportation HMTA, 49 CFR 100-185	4.1.4
Maritime Procedures	USCG 46 CFR 35 (Tank Vessels – Operations)	2.10
MTSA	USCG 33 CFR 101-107	2.19
Rail Security Regulations	TSA 49 CFR 1520 and 1580	2.19
Facilities Transferring Oil or Other Hazardous Materials in Bulk	USCG 33 CFR 154 Subpart E Vapor Control Systems 33 CFR 154 Subpart F Response Plans for Oil Facilities	4.1.4.2

Permit or Approval	Agency/Statute and/or Regulation	Application Section
Oil and Hazardous Material Transfer Operations	USCG 33 CFR 156	2.10
Discharge of Oil ("Sheen Rule")	EPA 40 CFR 110	2.10
Oil Pollution Prevention	40 CFR 112, Subpart A, Subsection 112.8 of Subpart B	2.10
EPCRA	EPA 40 CFR 350-372	4.1.6.1
CERCLA	EPA 42 USC 103	4.1.3
Pretreatment Section 307(b)	EPA Section 307(b) of the Clean Water Act, 40 CFR 403	2.9
State Permits/Approvals		
SEPA Compliance	Ecology (EFSEC lead agency for this project) RCW 43.21C and WAC 197-11	Parts 2, 3, and 4
Section 401 Water Quality Certification	Ecology Section 401 CWA	3.3
HPA	WDFW Hydraulic Code (RCW 77.55 and WAC 220-110)	Appendix H.2
Ballast Water Management	WDFW RCW 77.120 and WAC 220-150	Appendix H.1
Aquatic Land Management	DNR RCW 79.105 and WAC 332-30-123	H.2
NPDES Industrial Stormwater Permit and oSWPPP	Ecology CWA, 40 CFR 122.28, RCW 90.48 and WAC 173-220	2.11, 3.3, 5.2 Appendix C.2
NPDES Construction Stormwater Individual Permit and cSWPPP	Ecology CWA, 40 CFR 122.28, RCW 90.48 and WAC 173-220	2.11, 3.3, 5.3 Appendix C.1
MTCA Consent Decree/ Restrictive Covenant Work	Ecology RCW 70.105D, RCW 64.70, WAC 173-340	4.1
Facility Oil Handling Standards • Oil Transfer Requirements • Design Standards • Operations Manual • Training/Certification • Oil Transfer Response Plans	Ecology WAC 173-180 (Facility Oil Handling Standards)	2.10, 2.19, 4.1
Vessel Oil Transfer Advance Notice and Containment	Ecology WAC 173-184	4.1
Spill Prevention and Contingency Plans	Ecology RCW 90.56 (Oil and Hazardous Substance Spill Prevention and Response), WAC 173-180 (Facility Oil Handling Standards), WAC 173-182	2.10, 2.11, 5.2, 5.3

Permit or Approval	Agency/Statute and/or Regulation	Application Section
	(Oil Spill Contingency Plan), WAC 173-183 (Oil Spill Natural Resource Damage Assessment) 40 CFR 300 (National Oil and Hazardous Substances Pollution Contingency Plan)	
Dangerous/Hazardous Waste Regulations	Ecology RCRA 40 CFR 260 RCW 70.105 (Hazardous Waste Management), WAC 173-303	4.1
Safety and Health Regulations	Washington State Labor & Industries OSHA RCW 49.17 (WISHA), WAC 296	4.1
Hazardous Chemical Emergency Response Planning And Community Right-To-Know Reporting	Ecology WAC 118-40	4.1.6.1
Boiler and Unfired Pressure Vessel Rules	Labor and Industries RCW 70.79;WAC 296-104	2.3
Washington State Waste Discharge Permit Program	Ecology WAC 173-216	2.9
Local Permits/Approvals		
Site Plan Review	City VMC 20.270	4.2
Shoreline Substantial Development Permit	City RCW 90.58 and City SMP	Appendix I.1, I.2
Critical Areas Permit	City VMC 20.740	4.2, Appendix H.1
Tree Ordinance	City VMC 20.770	2, Appendix H.1
Archaeological Predetermination Review	City VMC 20.710	4.2.5
Transportation Concurrency	City VMC 11.70	4.3, Appendix J.1
Major Grading Permit	City IBC, VMC Title 12 and Title 17	3.1, Appendix I.1
Civil Engineering Review	City VMC Title 10, Title 11, and Title 14	Appendix F.2, I.1, J.1
Building, Fire, Mechanical and Electrical Permits	City IBC, IMC, IFC, UPC, NEC, Washington State Energy Code, VMC Title 16 and Title 17	2.18, 3.1, 4.1
Hazardous Materials Regulatory Fee Certificate	City of Vancouver VMC 16.40	2.3, 4.1.6.1
Industrial Waste Discharge Permit	City Wastewater Discharge Standards WAC 173-221A VMC 14.10	5.2

Permit or Approval	Agency/Statute and/or Regulation	Application Section
Air Discharge Permit(s)	SWCAA Federal Clean Air Act (as delegated to SWCAA) Washington Clean Air Act RCW 70.94 NSPS 40 CFR 60 Crude Oil Storage Tanks equipment and procedures defined in 40 CFR 60.112b HAPs 40 CFR 61 MACT Standards 40 CFR 63 RCW 70.94 NOC preconstruction permit WAC 173-400-110 TAPs WAC 173-460 Particulate Matter WAC 173-470 Sulfur Oxides WAC 173-474 VOCs WAC 173-490 BACT WAC 173-400-113 Reporting of Emissions of Greenhouse Gases WAC 173-441 Mandatory Report of Greenhouse Gas Rule 40 CFR 98 General Conformity Rule 40 CFR 93, Subpart B	5.1

2.23.2 Federal Permits and Approvals

This section covers applicable federal permits and approvals for the proposed project. Where a federal regulation is delegated to the state, it is included under the state process in section 2.23.3 below.

2.23.2.1 National Environmental Policy Act Compliance

Federal lead agency is likely the USACE.
40 CFR 1500-1508

Any project with a federal nexus requires that the lead federal agency comply with the National Environmental Policy Act (NEPA). The federal action of issuance of a permit or approval by the USACE triggers NEPA review, and the USACE typically will take NEPA lead status.

Project Compliance

The USACE, or appropriate lead agency, is responsible for compliance with the requirements of NEPA. For the proposed project, NEPA compliance could require the preparation of an environmental assessment (EA) or environmental impact statement (EIS), or may rely on programmatic NEPA compliance available through one or more Nationwide Permits. The Applicant would provide the USACE with any relevant project studies and information to assist the NEPA review and determination. The USACE handles all NEPA review and documentation requirements as part of the Section 10 permit (see section 2.23.2.8).

2.23.2.2 Endangered Species Act, Section 7 Consultation

USFWS and NMFS
Section 7 of the Endangered Species Act

The Endangered Species Act (ESA) provides protection for federally listed endangered and threatened species and their habitat. The ESA requires that federal agencies consult with the USFWS and NMFS when actions have the potential to affect listed species or critical habitat. NMFS addresses actions affecting salmon, other marine fishes, marine mammals, and marine reptiles. USFWS addresses actions affecting birds, terrestrial animals, plants, amphibians, and most freshwater fish. The consultation process can be informal if the effects would be beneficial or discountable, or formal if the effects are more than discountable. The Columbia River provides habitat for multiple listed salmonids, smelt, sturgeon, and Steller sea lion. The proposed in-water construction elements require federal permits which triggers the need for ESA compliance.

Project Compliance

The USACE, as the federal lead agency for the proposed project, is required to demonstrate compliance with Section 7 of the ESA. A biological evaluation (BE) was prepared and submitted in September 2014 to the USACE as the federal lead for consultation with the USFWS and NMFS. The BE was revised in December 2014 to respond to comments received from the USACE in a Memorandum for the Record (MFR), dated November 19, 2014. A final August 2015 revision responds to comments received from the USACE, USFWS, and NMFS, in a letter from the USACE, dated May 28, 2015, regarding the effects analysis, effects determinations, and extent of the Action Area in which the impacts are evaluated. Federal agency concurrence with the BE was obtained from USFWS on March 16, 2016. NMFS' review of the BE is ongoing as of May 2016.

2.23.2.3 Magnuson Stevens Fisheries Conservation and Management Act

NMFS
50 CFR 600

The Magnuson Stevens Fisheries Conservation and Management Act provides for the conservation and management of fishery resources to prevent overfishing, rebuild overfished stocks, and facilitate the long-term protection of essential fish habitats in order to protect the viability of commercial and recreational fisheries. The Act requires that federal agencies consult with NMFS when actions have the potential to affect essential fish habitat. The consultation is done as part of the ESA consultation process described above.

The Columbia River includes habitats that have been designated as essential fish habitat (EFH) under the Act for various life-history stages of Chinook and coho salmon (Pacific salmon EFH composite). The proposed in-water construction elements require federal permits which triggers the need for compliance with the Act.

Project Compliance

The USACE, as the federal lead agency for the proposed project, is required to demonstrate compliance with the Magnuson-Stevens Act. A BE was prepared and submitted in September 2014 to the USACE as the federal lead for consultation with NMFS. The BE was revised in December 2014 to respond to comments received from the USACE in a MFR, dated

November 19, 2014. A final August 2015 revision responds to comments received from the USACE, USFWS, and NMFS, in a letter from the USACE, dated May 28, 2015, regarding the effects analysis, effects determinations, and extent of the Action Area in which the impacts are evaluated. Federal agency concurrence with the BE was obtained from USFWS on March 16, 2016. NMFS' review of the BE is ongoing as of May 2016.

2.23.2.4 Marine Mammal Protection Act

USFWS and NMFS
50 CFR 18 and 50 CFR 216

The Marine Mammal Protection Act (MMPA) provides protection for all marine mammals and prohibits the import, export, sale, hunting, killing, capture, and harassment of marine mammals. Activities that could result in the "take" of marine mammals should be designed and implemented to avoid take. If take is unavoidable, issuance of an Incidental Harassment Authorization (IHA) or Letter of Authorization (LOA) may be required.

The Columbia River provides habitat for California sea lions, harbor seals, and Steller sea lions which are protected by the MMPA under the jurisdiction of NMFS. The proposed project, with both in-water work and activities adjacent to the river, has the potential to impact these species.

Project Compliance

The pile removal associated with the improvements to berths 13 and 14 will generate sound levels that could exceed established disturbance thresholds for marine mammals. The Applicant has developed and submitted to the USACE and EFSEC for review a marine mammal monitoring plan (MMMP) (Appendix H.3) for vibratory installation and removal of temporary piles and upland impact pile driving. The MMMP was developed to minimize the exposure of marine mammals to temporarily increased underwater noise levels. The plan describes procedures to identify the presence of marine mammals during construction activities, which may result in "take" and establishes actions that will be taken to minimize impacts to such marine mammals.

2.23.2.5 Migratory Bird Treaty Act

USFWS and USFWS
16 USC 703, Executive Order 13186 and 50 CFR 21

The Migratory Bird Treaty Act of 1918 prohibits the taking or possessing of and commerce in certain migratory birds.

Project Compliance

The proposed project is not expected to result in the taking, possession, or commerce of migratory birds.

2.23.2.6 Bald and Golden Eagle Protection Act

USFWS
16 USC 668 and 50 CFR 22

The Bald and Golden Eagle Protection Act of 1940 prohibits the taking or possessing of and commerce of bald and golden eagles with limited exceptions (16 USC 668–668d, June 8, 1940, as amended 1959, 1962, 1972, and 1978). The statute is administered by USFWS. Potential

occurrence of bald eagles in the vicinity of the proposed Facility and potential impacts from the proposed project are discussed in section 3.4.

Project Compliance
The proposed project is not expected to result in the taking, possession, or commerce of bald and golden eagles. A construction wildlife monitoring plan will be implemented during impact pile-driving and vibratory pile installation and removal activities to demonstrate that noise levels attenuate to a level of non-disturbance to bald eagles potentially present in the vicinity of the construction site.

2.23.2.7 Section 106 Review

Department of Archaeology and Historic Preservation
Section 106 of the National Historic Preservation Act

The National Historic Preservation Act (NHPA) provides for the preservation of sites listed on the National Register of Historic Places and those eligible for listing. The NHPA requires the lead federal agency to consider the impacts of a federal action on any cultural or historic resource listed on or eligible for listing on the National Register.

Project Compliance
The USACE, as the anticipated federal lead agency for the proposed project, is required to demonstrate compliance with Section 106 of the NHPA. State and local compliance with cultural resources regulations is addressed below in section 2.23.4.7. A cultural resources report has been prepared and submitted to the USACE as part of the Section 10 permit process. The Applicant has submitted a preliminary cultural resources inadvertent discovery plan (CRIDP) (Flint 2015) to the USACE and EFSEC for review (Appendix A.3). The inadvertent discovery plan describes the procedures to be implemented in the event of the discovery of previously unidentified archaeological resources during construction of the Facility, and in the event ground disturbing activities are required in response to an emergency event during operations.

2.23.2.8 Section 10 Permit

United States Army Corps of Engineers (USACE)
Rivers and Harbors Act 33 CFR 322

A Section 10 permit issued by the USACE is required when work occurs in, over, or within a navigable waterway. The Columbia River is a navigable waterway, and proposed work associated with the ship loading and the existing dock at berths 13 and 14, may trigger the requirement for a Section 10 permit.

Project Compliance
A Joint Aquatic Resource Permit Application (JARPA) (Appendix H.2) has been prepared for the project and was submitted on February 14, 2014 to the USACE for review and potential issuance of the Section 10[28] permit or acknowledgement that the work is authorized through one

[28] The USACE issued public notice for review of an individual permit application in July 2015. The USACE Public Notice references review under Section 404 of the CWA for placement of fill inside existing piles. The Applicant has provided comments to the USACE that Section 404 does not apply in this situation (Carson 2015).

or more nationwide permits. The JARPA was submitted with applicable reports and studies completed for the project to demonstrate how the project complies with the permitting requirements. A revised JARPA was submitted to the USACE in July 2015.

2.23.2.9 Private Aids to Navigation Permit

United States Coast Guard (USCG)
33 CFR 62

A Private Aids to Navigation (PATON) permit issued by the USCG is required for all activities involving in-water structures that may affect marine traffic or involve the installation of navigational aids (lights and/or markings). In-water construction elements may elect to, or be required to, install lights or other markings to aid in navigation. A permit is required to install new navigational aids and/or modify existing navigational aids.

Project Compliance

The USACE will provide the USCG with a copy of the submitted JARPA and the USCG will review the application to determine if navigational aids will be required. Any new or modified navigational aids will follow the requirements for navigational aids per 33 CFR 62.

2.23.2.10 Hazardous Materials & Oil Transportation Regulations

U.S. Department of Transportation (USDOT)
49 CFR 100-185

The USDOT regulates the transportation of hazardous materials for all modes of transportation, including air, highway, rail and water under the hazardous materials regulations (HMR) contained in 49 CFR 100-185. The Marine Terminal elements, as a portion of the Facility used to transfer oil in bulk to a vessel, must comply with the applicable HMRs.

Project Compliance

Facility design, procedures, policies, and operations of the proposed elements at the Marine Terminal will be carried out in accordance with the rules and regulations of 49 CFR 100-185.

2.23.2.11 Maritime Procedures

USCG
46 CFR 35

The purpose of 46 CFR 35 is to regulate the operations of tank vessels. Specifically, 49 CFR 35.03 requires that work vests be worn by crew members when working near or over water under favorable working conditions. Section 49 CFR 35.30 covers general safety rules and subpart 35.35 covers requirements that apply to cargo handling on tank vessels.

Project Compliance

All vessels calling on the Facility will comply with the provisions of the program in the operation of the vessel.

2.23.2.12 Maritime Transportation Security Act (MTSA)

USCG
33 CFR 101-107

The MTSA is designed to protect ports and waterways from a terrorist attack. The law requires vessels and port facilities to develop security plans and conduct assessments of the vulnerability of their facilities. The USCG collaborates on the plans to help secure ports and vessels in or adjacent to U.S. waterways.

Project Compliance

The proposed project will produce the required facility plans for the operation of the oil terminal in compliance with the MTSA. These plans are discussed in further detail in section 2.19 of this application.

2.23.2.13 Facilities Transferring Oil or Other Hazardous Materials in Bulk

USCG
33 CFR 154 Subparts A through F, and Subpart P

The 33 CFR 154, Facilities Transferring Oil or Other Hazardous Materials in Bulk, applies to facilities capable of transferring oil to or from a vessel with a capacity of 250 barrels or more.

Subparts A through D apply to the design and operation of the vessel loading equipment associated with Area 400.

Subpart F, *Response Plans for Oil Facilities*, addresses oil spill response contingency planning for fixed marine transfer facilities that could reasonably be expected to cause substantial harm or significant and substantial harm to the environment by discharging oil into or on the navigable waters, adjoining shorelines, or exclusive economic zone (EEZ).

Subpart P, *Vapor Control Systems*, regulates the manner in which vapors inside marine vessels are collected, conditioned, and then disposed of to ensure the safety of the loading operation at all times. The regulations require that a "certifying entity" review the plans and calculations for the MVCU, and conduct inspections and witness tests that demonstrate the Facility conforms to the certified plans and specifications, meets the requirement of the applicable regulations and operates properly. Prior to beginning operations, and based upon the inspection and testing, the Facility must receive a letter of adequacy from the USCG Captain of the Port (COPT) with jurisdiction over the geographical location where the Facility is located.

Project Compliance

The Facility will incorporate the necessary design elements to comply with these regulations, and the Applicant will make the necessary submittal to the USCG to obtain approval of the MVCU prior to beginning operations of the vessel loading systems, and prepare a spill response contingency plan.

2.23.2.14 Oil and Hazardous Material Transfer Operations

USCG
33 CFR 156

This regulation applies to the transfer of oil or hazardous material on the navigable waters or contiguous zone of the United States to, from, or within each vessel with a capacity of

250 barrels or more. The regulation establishes procedures for advance notification of transfers to the USCG, design considerations for the equipment used to transfer oil, supervision and monitoring of transfer operations, and transfer equipment tests and inspections.

Project Compliance
The Applicant will design the transfer equipment to comply with the requirements of 33 CFR 156, and will implement the necessary procedures for advance notification, supervision and monitoring, and tests and inspections.

2.23.2.15 Discharge of Oil ("Sheen Rule")
EPA
40 CFR 110

This regulation addresses the reporting of spills to the National Response Center.

Project Compliance
The Applicant will document and implement the requirement to notify the National Response Center in the event of reportable spills of oil in its cSPCCP, oSPCCP and spill response contingency plan.

2.23.2.16 Oil Pollution Prevention
EPA
40 CFR 112

Subpart A and Subsection 112.8 of Subpart B, address the requirements for an oSPCCP for a non-transportation facility. These subparts apply to the facilities and operations related to offloading crude oil from the rail cars (Area 200); conveying oil to and storing it in the storage tanks (Area 300); and conveying it to the marine vessel loading area (Area 400).

Project Compliance
The Applicant will develop and implement an oSPCCP.

2.23.2.17 EPCRA
EPA
40 CFR 350-72

The Emergency Planning and Community Right-to-Know Act (EPCRA) establishes requirements for federal, state and local governments, Indian Tribes, and industry regarding emergency planning and "Community Right-to-Know" reporting on hazardous and toxic chemicals. Based on the quantities of crude oil stored and the presence of extremely hazardous substances contained in the crude oil stored on-site in quantities greater than corresponding threshold planning quantities TPQs, the Facility is likely to be required to participate in emergency planning efforts with the Clark County Local Emergency Planning Committee, and to file reports with EPA and Ecology.

Project Compliance
The Applicant will make the necessary determinations regarding the quantities of extremely hazardous substances stored on site in relation to the corresponding threshold planning quantities and will initiate applicable planning and reporting activities in consequence.

2.23.2.18 CERCLA

EPA
42 USC 103

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) establishes cleanup requirements for uncontrolled or abandoned hazardous-waste sites, as well as accidents, spills, and other emergency releases of pollutants and contaminants into the environment. Terminal 5 is the former location of an aluminum smelter and cleanup activities have been performed pursuant to CERCLA. The project site is subject to the consent decree and environmental restrictive covenants implemented by Ecology for the existing site contamination left in-place by the former operations.

Project Compliance

Construction of the Facility will comply with the site-specific restrictive covenants, consent decrees, MTCA, RCRA, and Dangerous Waste Regulations, as well as the CMMP developed for the project. Disturbance of the deed restricted areas will be avoided to the extent practical.

2.23.2.19 Pretreatment Section 307(b)

EPA
Section 307(b) of the Clean Water Act, 40 CFR 403

Section 307(b) of the Clean Water Act (CWA) establishes pretreatment standards for toxic pollutant discharge to publicly owned treatment works.

Project Compliance

The Facility will discharge to the City of Vancouver Wastewater Treatment Plant and will comply with the General Pretreatment Standards outlined in 40 CFR 403, WAC 173-216, and VMC 14.10.080 as described in section 2.9.

2.23.3 State Permits and Approvals

2.23.3.1 State Environmental Policy Act Compliance

Ecology (EFSEC will be lead agency for this application)
RCW 43.21C and WAC 197-11

The SEPA requires that any decisions by state or local agencies related to issuance of permits, construction of public facilities, or adoption of regulations or policies, is reviewed to understand how the proposal affects the environment. Environmental review is required under SEPA for any project or activity not meeting the categorical exemption thresholds found in WAC 197-11-800. Typically, the agency responsible for the project or permits is the lead agency. EFSEC is the lead agency for projects requiring site certification.

Project Compliance

Absent EFSEC review, Ecology and/or the City will be the likely SEPA lead agency. It is anticipated that EFSEC will be the lead agency for the project because the project is applying for EFSEC site certification. As lead agency, EFSEC will issue a scoping notice to receive comments from the public, other agencies and jurisdictions, and interested tribes. Scoping will help identify what will be studied in the environmental impact statement (EIS). The lead agency will then evaluate the proposal and issue a draft EIS, followed by a final EIS.

2.23.3.2 Section 401 Water Quality Certificate

Ecology
Section 401 Clean Water Act

A Section 401 water quality certification is required by the federal permitting agency (USACE) when an activity may result in any discharge into navigable waters. Water quality certificates are issued by Ecology.

Project Compliance
The project will require an individual 401 water quality certification. The Applicant included a JARPA in the ASC, and has prepared a water quality protection and monitoring plan.

2.23.3.3 Hydraulic Project Approval

Washington State Department of Fish and Wildlife (WDFW)
Hydraulic Code (RCW 77.55 and WAC 220-110)

Hydraulic Project Approval (HPA) is required for any construction activities that use, divert, obstruct, or change the natural flow or bed of any fresh water or saltwater of the state (e.g., the Columbia River). The proposed project will likely require an HPA for work proposed in the water. WDFW will also likely review the project for consistency with management recommendations that have been developed to protect habitat for designated Priority Habitats and Species.

Project Compliance
It is anticipated that EFSEC will contract with WDFW to prepare a recommendation to issue an HPA as part of the site certification. A JARPA has been completed for the project. WDFW can use it in the review and recommendation for issuance of the HPA. The JARPA is submitted with applicable reports and studies completed for the project to demonstrate how the project complies with the permitting requirements.

2.23.3.4 Ballast Water Management

WDFW
RCW 77.120 and WAC 220-150

The WDFW Ballast Water Program regulates the management of ballast water for all vessels of 300 gross tons or more that have operated outside the waters of the state. The owner or operator of a vessel is required to complete a ballast water reporting form at least 24 hours before arriving in waters of the state. Discharge of ballast water is allowed only if there has been open sea exchange or if the ballast water has been treated and meets standards as set in the law.

Project Compliance
All vessels calling on the Facility will comply with the provisions of the program in the operation of the vessel.

2.23.3.5 Aquatic Land Management

Washington State Department of Natural Resources (DNR)
RCW 79.105 and WAC 332-30-123

The DNR Aquatic Resources Program manages the use of state-owned aquatic lands to ensure that their use is appropriate and done in a manner that considers the environmental risks, public health and safety risks, and financial risks of the proposed use. DNR regulates use of aquatic lands by issuing a use authorization.

Most of Area 200 is located on land that is under ownership by the Port. A small portion of Berth 13 is located on DNR lands, and the Port and DNR have entered into an agreement that allows the Port to assume management of state owned aquatic lands on behalf of DNR.

Project Compliance

The Port will make appropriate notice to DNR as required by the Port management area agreement.

2.23.3.6 NPDES Industrial Stormwater Permit and Operations Stormwater Pollution Prevention Plan

Ecology
Clean Water Act, 40 CFR 122.28, RCW 90.48 and WAC 173-220

A NPDES permit is required for any surface water discharges of stormwater from industrial facilities. Stormwater from the project site will be discharged to the Port's stormwater system, which in turn discharges to the Columbia River through existing outfalls. Wholesale petroleum bulk stations and terminals (SIC Code 5171) are listed in the general permit as requiring coverage under the industrial general stormwater permit. However, WAC 463-76-031 only allows coverage under the general permit for areas not associated with the industrial activity. Therefore, the need for an individual permit is anticipated. An oSWPPP and monitoring plan is a requirement of the NPDES permit.

Project Compliance

Section 5.3 includes the required application materials for the NPDES permit. A preliminary oSWPPP is included in this Application in Appendix C.2.

2.23.3.7 NPDES Construction Stormwater Individual Permit and Construction Stormwater Pollution Prevention Plan

Ecology
Clean Water Act, 40 CFR 122.28, RCW 90.48 and WAC 173-220

An NPDES Construction Stormwater Individual Permit is required for the Facility.

Project Compliance

A preliminary cSWPPP has been developed and submitted to EFSEC. A final cSWPPP will be submitted prior to construction and will be maintained throughout construction. The cSWPPP covers inspection, monitoring, and reporting as required during construction. The cSWPPP will detail specific applications in which BMPs will be installed to prevent and mitigate any construction-related impacts to surface water.

2.23.3.8 MTCA Consent Decree/Restrictive Covenants

Ecology
RCW 70.105D, RCW 64.70, WAC 173-340

The proposed project site was previously the location of industrial activities that resulted in soil and groundwater contamination. Final removal of contaminated soils on the project site was completed in March 2010 as required by the Cleanup Action Plan and Consent Decree for the site. However, residual concentrations of contaminants remain on the site and an Environmental Restrictive covenants have been placed on the property. In addition, there are four locations within the proposed project boundary that have more restrictive conditions (described further in section 4.1). The proposed project will be required to demonstrate conformance with the requirements of the consent decrees and restrictive covenants for the site.

Project Compliance
Any project activities that propose changes within the locations on the project site under consent decrees or restrictive covenants will be required to receive Ecology approval and demonstrate that the project complies with the consent decree. It is anticipated that EFSEC will coordinate with the Port, as land owner subject to covenant, and with the Industrial Section of Ecology through the site certification process.

2.23.3.9 Facility Oil Handling Standards

Ecology
WAC 173-180, 33 CFR 154, 40 CFR 112 (Oil Pollution Prevention), 40 CFR 300 (National Oil and Hazardous Substances Pollution Contingency Plan),

The Facility oil handling standards in WAC 173-180 cover all aspects of operations for the proposed project, including oil transfer requirements, design standards, operations manuals, training and certification, and oil transfer response plans. These standards require that the proposed Facility prepare facility operation plans, security plans, emergency and spill response plans to address potential security and safety concerns for the Facility.

Project Compliance
The proposed project will produce the required facility plans for the operation of the oil terminal in compliance with WAC 173-180. These regulations are discussed in further detail in sections 2.10, 2.19, and 4.1 of this Application. A preliminary Operations Facility Oil Handling Manual is included as Appendix B.5.

2.23.3.10 Vessel Oil Transfer Advance Notice and Containment

Ecology
40 CFR Part 112 (Oil Pollution Prevention), WAC 173-184

An advance notice of oil transfer (ANT) is required for the project during operations any time oil is transferred to a ship. The purpose of these notices is to ensure the safe transfer of oil on or over water to meet the zero spill goal established by WAC 173-184.

Project Compliance
When submitted to Ecology through the online ANT system, the ANT will demonstrate compliance with the requirements of WAC 173-184. These notices will be required during operations of the site and not during construction activities.

2.23.3.11 Spill Prevention and Contingency Plans

Ecology
40 CFR 112, 40 CFR 300, RCW 90.56, WAC 173-180 and WAC 173-182, WAC 173-183

An SPCCP is required for both construction and operation of the proposed project to help prevent any discharge of oil into navigable waters or adjoining shorelines. The cSPCCP is a required submittal item for the NPDES permits described above and the various prevention and facility operating plans required for the project. An oil spill contingency plan is also required for the project and will be developed and in place prior to operations beginning at the site.

Project Compliance

A preliminary cSPCCP and oSPCCP are included in Appendices B.2 and B.3, respectively, to address WAC 463-60-205 and described in sections 5.2 and 5.3 as part of the applications for wastewater and stormwater discharges. Compliance with WAC 173-180, 173-182, and 173-183 is further discussed in sections 2.10 and 2.11 of this Application. Final SPCCPs for both construction and operations will be completed prior to the beginning of construction or operations.

2.23.3.12 Dangerous/Hazardous Waste Regulations

Ecology
RCRA, RCW 70.105, WAC 173-303

Any business that produces dangerous waste is referred to as a “dangerous-waste generator” under WAC 173-303 and is legally responsible to identify dangerous waste and how much may be generated by business activities. Dangerous waste, according to state law, includes both federally identified hazardous waste and Washington “state-only” dangerous waste. The proposed project will comply with the requirements of WAC 173-303 with regards to any hazardous waste generated during construction, operation and decommissioning activities. Should any hazardous materials be excavated from the site during the construction, they will be handled in accordance with existing covenant requirements and disposed of in accordance with applicable state and federal regulations.

Project Compliance

Facility design and operations of the proposed project will be in accordance with the rules and regulations of WAC 173-303. Compliance with the dangerous waste regulations is addressed in section 4.1.3 of this application.

2.23.3.13 Safety and Health Regulations

Washington State Labor & Industries (L&I)
OSHA, RCW 49.17 (WISHA), WAC 296

Employers in Washington must comply with all applicable safety and health rules as identified in WAC 296. The proposed project, as an industrial facility, must also comply with the Washington Industrial Safety and Health Act (WISHA) under RCW 49.17. Compliance with the state regulations results in compliance with the federal Occupational Safety and Health Act (OSHA) that ensures employees do not suffer any material impairment of health and functional capacity due to occupational exposure to hazards.

Project Compliance
Facility design and operations of the proposed project will be carried out in accordance with the rules and regulations of WISHA and WAC 296. Section 4.1.4 of this Application provides additional detail regarding compliance with these regulations. Preliminary construction and operation safety plans are provided as Appendices D.2. and D.3, respectively.

2.23.3.14 Hazardous Chemical Emergency Response Planning and Community Right-To-Know Reporting

Ecology
WAC 118-40, RCW 38.52.030(2); 38.52.050 (1) and (3); and 43.63A.060.

This chapter implements the provisions of EPCRA in the state of Washington to establish a mechanism for compliance by state and local governmental agencies and industry. Compliance with the requirements of EPCRA, as recognized by the United States Environmental Protection Agency, is regarded as compliance with the provisions of this chapter.

Project Compliance
The Applicant will make the necessary determinations regarding the quantities of extremely hazardous substances stored on site in relation to the corresponding threshold planning quantities and will initiate applicable planning and reporting activities in consequence.

2.23.3.15 Boiler and Unfired Pressure Vessel Laws and Rules

Labor and Industries
RCW 70.79; WAC 296-104

These laws and rules establish requirements for construction, installation, repairs and general requirements applicable to boilers.

Project Compliance
The boilers will be designed, installed, and operated in accordance with these provisions.

2.23.3.16 Washington State Waste Discharge Permit Program

Ecology
WAC 173-216

The Washington State Waste Discharge Permit Program was established to satisfy the requirement for discharge permits under the Water Pollution Control Act, Chapter 90.48 RCW and to implement applicable pretreatment requirements under Section 307 of the Federal Water Pollution Control Act. Ecology delegates authority to the City of Vancouver to permit and accept industrial wastewater discharges. However, RCW 90.48.262 states that EFSEC shall issue Waste Discharge Permits for energy facilities subject to Chapter 80.50 RCW.

Project Compliance
The project will comply with the City's industrial pretreatment ordinance VMC 14.10 and will submit to EFSEC for issuance of permit an Industrial Waste Discharge Permit as described in section 2.23.5 and as submitted in section 5.2.

2.23.4 City Permits and Approvals

This section discusses applicable City permits and approvals for the proposed project. As explained in this application, the proposed project will be reviewed and approved through the EFSEC site certification process. The Applicant conducted a pre-application conference with the City and the report is included as Appendix I.1, which identified applicable development standards that would apply to the project absent EFSEC jurisdiction. The applicable City requirements have been stated below. Section 4.2 addresses applicable and use plans and regulations in more detail and how the Facility is consistent with the application standards. Table 2.23-1 lists the applicable city standards and approvals.

Project Compliance

If not reviewed through the EFSEC process, the proposed project would be subject to the City's Type II site plan review process as described in VMC 20.210.050. The City's land use procedures ordinance requires that all land use applications required for a project shall be considered under the highest review process. The Type II process applies to quasi-judicial permit and actions that involve discretion by the responsible official, in this case the planning director. The Type II process includes a public notice but does not involve a public hearing. Appeals of the planning director's decision can be made to the City's land use hearing examiner. Because the project also involves a shoreline substantial development permit, the decision of the City would also be provided to Ecology and appeals of the decision on the shoreline permit could be made to the Washington Shoreline Hearings Boards.

Following approval of the preliminary land use application through the Type II process and resolution of any appeals the City requires approval of final site plan documenting compliance with conditions identified in the land use decision and the approval of engineering plans documenting compliance with City construction standards (for city owned utilities and roadways). These are followed by the review and issuance of grading, building and other construction permits.

Section 4.2 lists how the project is in compliance with the application city land use standards.

2.23.4.1 Transportation Concurrency

City

VMC 11.70

VMC 11.70 requires that projects that generate additional weekday PM peak hour vehicle trips be reviewed for transportation impacts.

Project Compliance

If not reviewed through the EFSEC process, the proposed project would be subject to the City's Type II site plan review process. The City would address compliance with transportation concurrency standards through the site plan review process.

It is estimated that, at full project build-out and operating capacity, the project as proposed will result in approximately 332 average daily trips (ADT), with approximately 48 trips occurring in the weekday AM peak hour and 46 trips occurring in the weekday PM peak hour. Traffic generation is based on the anticipation that approximately 110 full-time staff will be employed by the Facility at full capacity. The trip estimates are based on trip rates from *Trip Generation*,

9th Edition published by the Institute of Transportation Engineers using data for land use code 110 (Light Industrial).

A transportation impact analysis was completed by Kittelson & Associates for the project. Based on the analysis, all intersections within the study area will operation adequately during the AM and PM peak hours and all concurrency corridors will maintain acceptable levels of service. Additional information is included in section 4.3 and Appendix J.1 of this application.

2.23.4.2 Major Grading Permit

City
IBC, VMC Title 12 and Title 17

A major grading permit is required by the City for any grading, cuts, fills, and or stockpiling of more than 500 cubic yards or by the presence of a critical area no matter the grading volume. Grading permits are required for general site grading and not for excavations for utilities or building foundations.

Project Compliance
If not reviewed through the EFSEC process, the proposed project would be subject to a major grading permit from the City. The grading permit would require the submittal of an application form, grading plans, and geotechnical report. It is anticipated that EFSEC will contract with the City for the review and issuance of this permit.

2.23.4.3 Civil Engineering Review

City
VMC Title 10, Title 11, and Title 14

The City requires that development complete a civil engineering design and review process. This process ensures compliance with the City's engineering standards.

Project Compliance
If not reviewed through the EFSEC process, the proposed project would be subject to the City's civil engineering review process.

The City's civil engineering review requires the submittal of the following documentation: preliminary and final civil plans, erosion/sediment control, water, sewer, contaminated materials management plan, an SPCC plan, and a stormwater report. It is anticipated that EFSEC will contract with the City for the review and issuance of this permit.

Streets and Sidewalks – The project does not include any proposed improvements to existing streets or sidewalks. Primary vehicular access to the proposed project will be to the administration building portion of Area 200, on NW Old Lower River Road, a private road owned and maintained by the Port. NW Old Lower River Road connects with NW Lower River Road (SR 501) approximately 1,000 feet west of the proposed office building. Area 300 will be accessed from a shared drive with Farwest Steel from NW Lower River Road. Area 300 is not anticipated to require full-time staffing and parking will be provided for routine maintenance needs. Area 400 will be accessed by Gateway Avenue and Port-maintained access roads. An existing asphalt area at the berths will be used by project personnel during ship loading operations. Area 600 will not be occupied full time, but parking will be provided for

maintenance vehicles and access will be from NW Old Lower River Road. Driveways will comply with the provisions of VMC 11.80.110.

Water – The proposed project location is currently served by City water and a Port-operated private water system. According to the pre-application conference report (lines 1397-1398), City records show an existing 12-inch, 14-inch, and 16-inch ductile iron (DI) main in NW Old Lower River Road, a 16-inch DI main in SR 501, and a 10-inch DI main in NW Harborside Drive in the dock area. Existing fire hydrants are currently available on or adjacent to all areas of the proposed project with an estimated minimum fire flow of 3,500 gallons per minute (gpm). Consistent with City standards as stated in the pre-application report (lines 1407-1430), the proposed project will meet Fire Marshal pipe size requirements.

Sanitary Sewer – The anticipated sanitary sewer discharges include domestic sewerage from the administration and support buildings in Area 200, treated boiler blowdown water (wastewater generated from solids left behind during the steam generation process) in Areas 300 and 600, domestic sewerage from a restroom located inside of the boiler building in Area 300, and a sump pump located in the pump basin in Area 300. Boiler blowdown water will be pre-treated for heat before discharge to the City sanitary sewer system. New service laterals will be installed to existing manholes. Pretreatment, sewer connections, and lateral installations will meet applicable City standards. As stated in the pre-application report (lines 1496-1501), the construction of public sewers will not be required.

Erosion Control – The project's grading plans are designed to minimize and control erosion and sedimentation. A site-specific cSWPPP will be developed and implemented. A preliminary cSWPPP is included in as Appendix C.1; this preliminary cSWPPP was developed based on the Facility level of design at the time of submittal. A final cSWPPP will be developed prior to beginning any Facility-related ground disturbance.

BMPs will be used in accordance with the cSWPPP for the project to ensure compliance with City and state regulations and are further described in section 3.3.

Stormwater – Stormwater improvements have been analyzed and designed in accordance with City development standards and the Washington State Department of Ecology (Ecology) 2012 Stormwater Management Manual for Western Washington (Stormwater Manual). The stormwater report prepared for the project is contained in the Engineering Report in section 5.3 of this ASC. Stormwater from the site will be discharged through manmade conveyances to the Columbia River; therefore, the proposed project is exempt from the flow control minimum requirement. Stormwater treatment technologies will be implemented to treat and monitor stormwater quality in accordance with the required NPDES stormwater permits.

2.23.4.4 Building, Fire, Mechanical and Electrical Permits

City

RCW 19.27, IBC, IMC, IFC, UPC, NEC, Washington State Energy Code, VMC Title 16 and Title 17

The Washington State Building Code Act adopts by reference building and related codes that local jurisdictions must adopt and enforce. Titles 16 and 17 of the VMC establish these requirements in the City. Applications and plans are required to be submitted and reviewed by the City prior to issuing permits.

Project Compliance
It is anticipated that EFSEC with contract with the City of Vancouver for review and issuance of permits under the required code provisions as well as for providing the required inspections and issuance of occupancy permits. The project will be required to submit the required permit applications, building, electrical, mechanical, fire, plumbing, and other plans. All plans will be designed in compliance with the codes referenced above. Application and issuance of building permit applications will be completed following issuance of the site certification agreement.

2.23.4.5 Hazardous Material Regulatory Fee Certificate

City
VMC Title 16.40

Title 16.40 of the VMC requires that no hazardous materials occupancy shall operate within the City of Vancouver without a hazardous material regulatory fee certificate.

Project Compliance
Certificates are issued upon payment of the hazardous material regulatory fee.

2.23.4.6 Critical Areas Protection

City
VMC Title 20.740

VMC 20.740 designates ecologically sensitive and hazardous areas (critical areas) establishes criteria to protect their functions and values. Critical areas protected include geologically hazardous areas, wetlands, frequently flooded areas, and wildlife habitat conservation areas.

Geologic Hazard Areas
The Critical Areas Protection ordinance (VMC 20.740.130) adopts standards for geologically hazardous areas including landslide, seismic, and erosion hazard areas. The ordinance provisions are designed to protect human health and safety, infrastructure and to avoid impacts on adjacent hazards. The provisions related to seismic hazards require compliance with the adopted building codes.

Wetlands
VMC 20.740.140 establishes standards for development or clearing activities within wetlands and associated wetland buffers. These standards require that project activities result in no net loss of wetland or buffer functions. Base buffer widths are established based on wetland category, wetland characteristics, and land use intensity.

The Facility would be sited on an existing industrial site and would not result in any impacts to wetlands or wetland buffers.

Frequently Flooded Areas
VMC 20.740.120 establishes standards for development within the 100-year floodplain. These standards require development within the 100-year floodplain to be developed in a manner that

prevents increased risk of flooding and flood damage on adjacent properties and to ensure that structures are built to withstand floods.

Wildlife Habitat Conservation Areas

VMC 20.740.110 establishes standards for development within fish and wildlife habitat conservation areas. Project activities at berths 13 and 14 in Area 400 are located within the riparian management area and riparian buffer area of the Columbia River. The riparian boundaries are measured landward from the biological OHWM and are limited by existing impervious surfaces.

The City adopts state-designated Priority Habitats and areas associated with Priority Species, as fish and wildlife habitat conservation areas. WDFW publishes a list of Priority Species and Habitat. These are species that require special management for their survival due to their population status, sensitivity to habitat alteration, and/or recreational, commercial, or tribal importance. Priority Species include state endangered, threatened, sensitive, and candidate species; animal aggregations (e.g., heron colonies, bat colonies) considered vulnerable; and species of recreational, commercial, or tribal importance that are vulnerable.

Project Compliance

If not reviewed through the EFSEC process, the proposed project would be subject to the City's critical areas review process as described in VMC 20.740.040. The Applicant would prepare a critical areas report in accordance with VMC 20.740.050. The Applicant has demonstrated compliance with the provisions of the Critical Areas Code in the following sections: Geologic Hazards – sections 2.18 and 3.1; Wetlands – section 3.5; Frequently Flooded Areas – section 3.3; Wildlife Habitat Conservation Areas – section 3.4 and Appendix H.1.

2.23.4.7 Archaeological Resource Protection

City

VMC Title 20.710

VMC 20.710.020 establishes procedures and criteria for determining a project's impact on archaeological resources. It requires preparation of a study or survey to determine the potential presence of archaeological resources and if a significant archaeological resource is present, it needs to be shall be further evaluated, avoided, properly mitigated, or properly recovered.

Project Compliance

The geoarchaeological investigation conducted for the project, as well as previous studies, indicate a low likelihood for encountering cultural material during construction. The Applicant has submitted a preliminary CRIDP (Flint 2015) to EFSEC for review (Appendix A.3) that describes the procedures to be implemented in the event of the discovery of previously unidentified archaeological resources during construction of the Facility, and in the event ground disturbing activities are required in response to an emergency event during operations.

2.23.5 Industrial Waste Discharge

City

VMC 14.10

The City requires industrial waste discharge permits for the discharge of industrial wastewater to the sanitary sewer system. The permit type is based on the volume and nature of the discharge.

New industrial wastewater dischargers must complete a permit application and submit the application at least 120 days prior to the desired date of discharge and the permit must be obtained prior to commencing discharge.

Project Compliance

The project will comply with the City's industrial pretreatment ordinance VMC 14.10 and will submit to EFSEC for issuance of permit an Industrial Waste Discharge Permit as described in section 2.23.6 and as submitted in section 5.2.

2.23.6 Southwest Clean Air Agency Permits and Approvals

2.23.6.1 Air Discharge Permits

SWCAA

Clean Air Act, 33 CFR 154, 40 CFR 60, 40 CFR 60.112b, 40 CFR 61, 40 CFR 63, 40 CFR 98, 40 CFR 93 Subpart B, RCW 70.94 and WAC 173-400-110, WAC 173-401, WAC 173-441, WAC 173-460, WAC 173-470, WAC 173-474, and WAC 173-490

An air discharge permit is required for the installation and operation of all facilities with the potential for discharge of air pollutants that trigger applicable permitting requirements. Per WAC 463-60-537 a Notice of Construction application is included with this Site Certification Application for criteria pollutant emissions that do not trigger PSD thresholds and for hazardous and toxic air pollutants.

The application includes the requisite narrative, air emission model results, and a BACT analysis in compliance with permitting requirements. See section 5.1 of this application for the air permit and air quality analysis.