MILLENNIUM BULK TERMINALS—LONGVIEW SEPA ENVIRONMENTAL IMPACT STATEMENT

SEPA SURFACE WATER AND FLOODPLAINS TECHNICAL REPORT

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Acronyms and Abbreviations

Applicant	Millennium Bulk Terminals—Longview, LLC
BMP	best management practice
BNSF	BNSF Railway Company
CCC	Cowlitz County Code
CDID	Consolidated Diking Improvement District
CEQ	Council on Environmental Quality
CFR	Code of Federal REgulations
cfs	cubic feet per second
Corps	U.S. Army Corps of Engineers
CRD	Columbia River Datum
Ecology	Washington State Department of Ecology
EPA	U.S. Environmental Protection Agency
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
MSL	Mean Sea Level
NAVD88	North American Vertical Datum of 1988
NEPA	National Environmental Policy Act
NFIP	National Flood Insurance Program
NGVD29	National Geodetic Vertical Datum of 1929
NPDES	National Pollutant Discharge Elimination System
RCW	Revised Code of Washington
Reynolds facility	Reynolds Metals Company facility
SEPA	State Environmental Policy Act
SWMP	stormwater management plan
UP	Union Pacific Railroad
USC	United States Code
USGS	U.S. Geological Survey
WAC	Washington Administrative Code
WRIAs	Water Resource Inventory Areas

Chapter 1
Introduction

This technical report assesses the potential surface water and floodplains impacts of the proposed Millennium Bulk Terminals—Longview project (Proposed Action) and No-Action Alternative. For the purposes of this assessment, surface water and floodplains refers to on-site drainage, the Consolidated Diking Improvement District (CDID) #1, the Columbia River, and the Columbia River and Cowlitz River floodplain. This report describes the regulatory setting, establishes the method for assessing potential surface water and floodplains impacts, presents the historical and current surface water and floodplain conditions in the study area, and assesses the potential for impacts on surface water and floodplains.

1.1 Project Description

Millennium Bulk Terminals—Longview, LLC (Applicant) proposes to construct and operate a coal export terminal in Cowlitz County, Washington, along the Columbia River (Figure 1). The coal export terminal would receive coal from the Powder River Basin in Montana and Wyoming and the Uinta Basin in Utah and Colorado via rail, then load and transport the coal by ocean-going ships via the Columbia River and Pacific Ocean to overseas markets in Asia. The coal export terminal would be capable of receiving, stockpiling, blending, and loading coal by conveyor onto ships for export. Construction of the coal export terminal would begin in 2018. For the purpose of this analysis, it is assumed the coal export terminal would operate at full capacity in 2028.

The following subsections present a summary of the Proposed Action and No-Action Alternative. For detailed information on these alternatives, see the Washington State Environmental Policy Act (SEPA) Alternatives Technical Report (ICF International 2016a).

1.1.1 Proposed Action

The Proposed Action would develop a coal export terminal on 190 acres (project area). The project area is located within an existing 540-acre area currently leased by the Applicant at the former Reynolds Metals Company facility (Reynolds facility), and land currently owned by Bonneville Power Administration. The project area is adjacent to the Columbia River in unincorporated Cowlitz County, Washington near Longview city limits (Figure 2).

The Applicant currently and separately operates, and would continue to separately operate, a bulk product terminal on land leased by the Applicant. Industrial Way (State Route 432) provides vehicular access to the Applicant's leased land. The Reynolds Lead and the BNSF Spur, both operated by Longview Switching Company (LVSW),[1] provide rail access to the Applicant's leased area from a point on the BNSF Railway Company (BNSF) main line (Longview Junction, Washington) located to the east in Kelso, Washington. Ships access the Applicant's leased area via the Columbia River and berth at an existing dock (Dock 1) operated by the Applicant in the Columbia River.

[1] The Longview Switching Company (LVSW) is jointly owned by BNSF Railway Company (BNSF) and Union Pacific Railroad (UP).

Figure 1. Project Vicinity

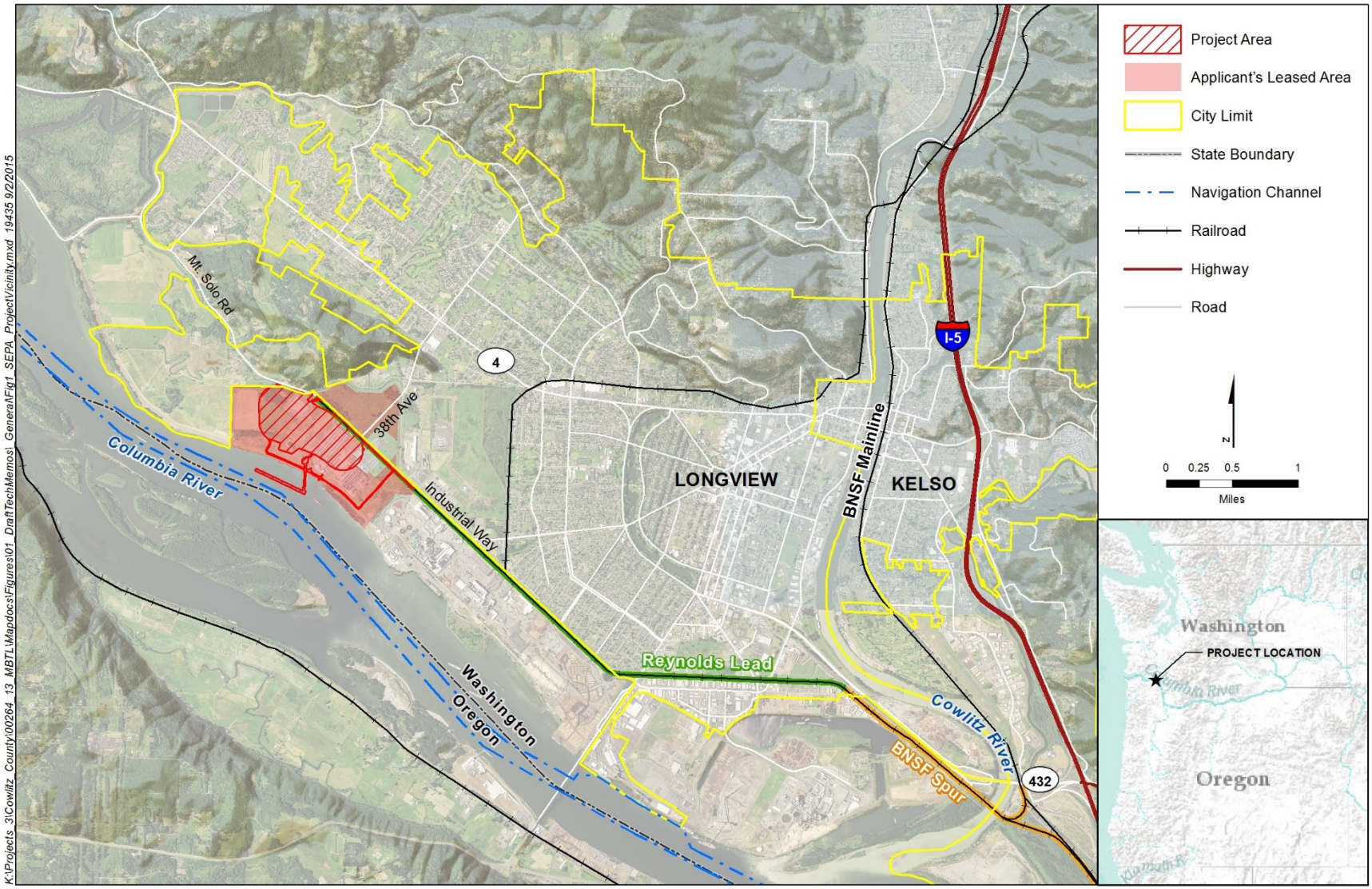
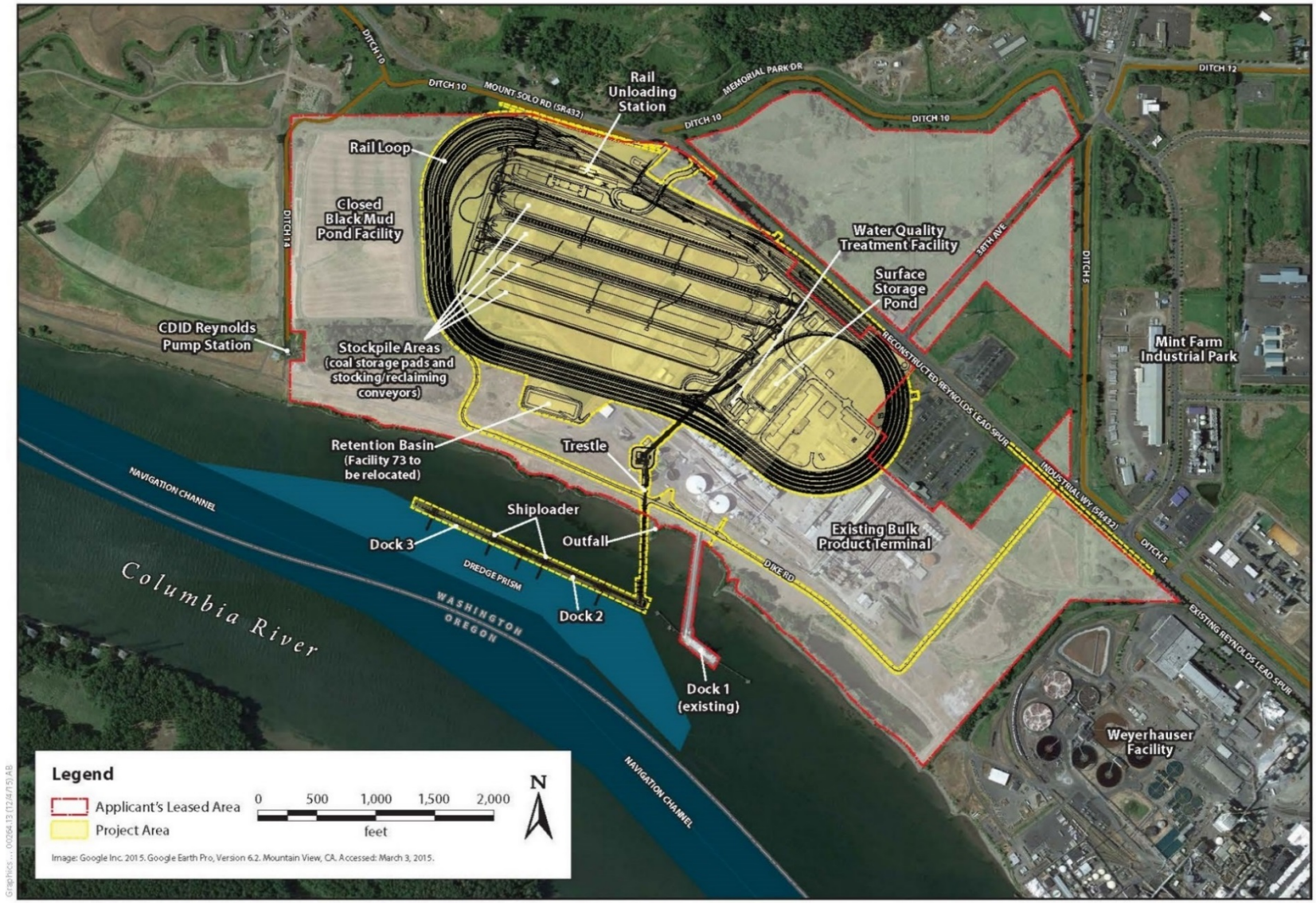


Figure 2. Proposed Action



Under the Proposed Action, BNSF or Union Pacific Railroad (UP) trains would transport coal in rail cars from the BNSF main line at Longview Junction, Washington, to the project area via the BNSF Spur and Reynolds Lead. Coal would be unloaded from rail cars, stockpiled and blended, and loaded by conveyor onto ocean-going ships at two new docks (Docks 2 and 3) on the Columbia River for export.

Once construction is complete, the Proposed Action would have an annual throughput capacity of up to 44 million metric tons.[2] The coal export terminal would consist of one operating rail track, eight rail tracks for the storage of rail cars, rail car unloading facilities, stockpile areas for coal storage, conveyor and reclaiming facilities, two new docks in the Columbia River (Docks 2 and 3), and ship-loading facilities on the two docks. Dredging of the Columbia River would be required to provide access to and from the Columbia River navigation channel and for berthing at the two new docks.

Vehicles would access the project area from Industrial Way (State Route 432). Ships would access the project area via the Columbia River and berth at one of the two new docks. Terminal operations would occur 24 hours per day, 7 days per week. The coal export terminal would be designed for a minimum 30-year period of operation.

1.1.2 No-Action Alternative

Under the No-Action Alternative, the proposed export terminal would not be constructed. Current operations of the bulk product terminal, which include the storage and transport of alumina and up to 150,000 metric tons per year of coal. Importing of alumina would continue and increase in the project area using Dock 1. The Applicant could expand the existing bulk product terminal onto the 190-acre project area, developing storage and shipment facilities to bulk product terminal operations. Coal and alumina would continue to be stored, transferred, and shipped. Additional bulk product transfers activities involving products such as calcine pet coke, coal tar pitch, cement, fly ash, and sand or gravel could also be pursued, and new or revised permits could be required. These operations would involve storage and upland transfer of bulk products, which would use existing or new buildings. Construction of new buildings could involve demolition and replacement of existing buildings and new or modified permits. Any new construction would be limited to uses allowed under existing Cowlitz County development regulations and federal and state permits.

1.2 Regulatory Setting

Federal, state, and local regulations, statutes, and guidelines require the review of the possible environmental impacts of the Proposed Action, including potential impacts on surface water and floodplains. The jurisdictional authorities and corresponding regulations, statutes, and guidance for determining potential aesthetic impacts are summarized in Table 1.

[2] A metric ton is the U.S. equivalent to a tonne per the International System of Units, or 1,000 kilograms or approximately 2,204.6 pounds.

Table 1. Regulations, Statutes, and Guidelines for Floodplains

Regulation, Statute, Guideline	Description
Federal	
National Environmental Policy Act (42 USC 4321 *et seq*.)	Requires the consideration of potential environmental effects. NEPA implementation procedures are set forth in the President's Council on Environmental Quality's Regulations for Implementing NEPA (49 CFR 1105).
U.S. Army Corps of Engineers NEPA Environmental Regulations (33 CFR 230)	Provides guidance for implementing the procedural provisions of NEPA for the Corps. It supplements CEQ regulations 40 CFR 1500–1508.
Rivers and Harbors Act of 1899	Authorizes the Corps to protect commerce in navigable streams and waterways of the United States by regulating various activities in such waters. Section 10 (33 USC 403) specifically regulates construction, excavation, or deposition of materials into, over, or under navigable waters, or any work that would affect the course, location, condition, or capacity of those waters.
Clean Water Act (33 USC 1251 *et seq*.)	Establishes the basic structure for EPA to regulate discharges of pollutants into the waters of the United States and regulating quality standards for surface water.
Section 404 of the Clean Water Act	Regulates the placement of dredged or fill material into waters of the United States, including special aquatic sites such as sanctuaries and refuges, wetlands, mudflats, vegetated shallows, coral reefs, and riffle and pool complexes. EPA is the agency responsible for enforcing this act.
Section 401 of the Clean Water Act	Requires that a water quality certification be obtained from Ecology for any activity that requires a federal permit or license to discharge any pollutant into a water of the United States. This certification attests that the state has reasonable assurance that the proposed activity would meet state water quality standards.
Sections 301 and 402 of the Clean Water Act	Prohibits the discharge of any pollutant to a water of the United States without a permit. Section 402 (33 USC 1342) establishes the NPDES permitting program, under which such discharges are regulated.
National Flood Insurance Act of 1968	Established the NFIP, a federal floodplain management program designed to reduce future flood losses nationwide through the implementation of community-enforced building and zoning ordinances in return for the provision of affordable, federally backed flood insurance to property owners. FEMA is the agency responsible for enforcing the National Flood Insurance Act.
Executive Order 11990, Protection of Wetlands	Applies to all agencies managing federal lands, sponsoring federal projects, or providing federal funds to state or local projects. EPA is the agency responsible for enforcing this Executive Order.

Regulation, Statute, Guideline	Description
Executive Order 11988, Floodplain Management	Requires federal agencies to avoid, to the extent possible, the long- and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative (42 FR 26951). FEMA is the agency responsible for enforcing this Executive Order.
State	
Washington State Environmental Policy Act (197-11 WAC, RCW 43.21C)	Requires state and local agencies in Washington to identify potential environmental impacts that could result from governmental decisions.
Water Resources Act of 1971 (RCW 90.54)	Sets forth fundamental policies for the state to ensure that waters of the state are protected and fully utilized for the greatest benefit. Ecology is the agency responsible for enforcing the Water Resources Act.
Water Pollution Control (RCW 90.48)	Policy to maintain the purity of waters of the state consistent with public health and public enjoyment, as well as propagation and protection of wildlife and industrial development of the state, and to that end require the use of all known available and reasonable methods by industries and others to prevent and control the pollution of the waters of the state.
Water Quality Standard for Surface Waters of the State of Washington (173-201A WAC)	Establishes water quality standards for surface waters of the state of Washington.
Shoreline Management Act	Regulates and manages the use, environmental protection, and public access of the state's shorelines. The Shoreline Management Act (RCW 90.58) was passed by the Washington State Legislature in 1971 and adopted in 1972. Ecology is the agency responsible for enforcing the Shoreline Management Act.
Local	
Cowlitz County SEPA Regulations (CCC 19.11)	Provide for the implementation of SEPA in Cowlitz County.
Cowlitz County Stormwater Drainage Ordinance	The Cowlitz County Stormwater Drainage Ordinance is a requirement of the NPDES Phase II Municipal Stormwater Permit issued to Cowlitz County by Ecology. The permit requires Cowlitz County to reduce stormwater runoff and pollution in unincorporated areas of Cowlitz County adjacent to the City of Longview and City of Kelso. The Proposed Action would not be within the area affected by the NPDES Phase II Municipal Stormwater Permit.
Cowlitz County Phase II Municipal Stormwater Management Plan	Requires Cowlitz County to develop a SWMP. The SWMP must incorporate best management practices to reduce the discharge of pollutants from the regulated area to the maximum extent practicable to protect water quality. Cowlitz County is responsible for enforcing the SWMP.

Regulation, Statute, Guideline	Description
Cowlitz County Critical Areas Ordinance	Requires Cowlitz County, in compliance with the Growth Management Act, to adopt development regulations based upon the best available science that assure the protection of critical areas such as wetlands, aquifer recharge areas, geologically hazardous areas, fish and wildlife habitat, and frequently flooded areas. Cowlitz County is responsible for enforcing this ordinance.
Cowlitz County Shoreline Master Program	Requires Cowlitz County to provide for the enhancement of shorelines and protection against adverse effects to vegetation, wildlife, and waters of the state and their aquatic life.

Notes:
USC = United States Code; NEPA = National Environmental Policy Act; CFR = Code of Federal Regulations; CEQ = Council on Environmental Quality; EPA = U.S. Environmental Protection Agency; Corps = U.S. Army Corps of Engineers; Ecology = Washington State Department of Ecology; NPDES = National Pollutant Discharge Elimination System; NFIP = National Flood Insurance Program; FEMA = Federal Emergency Management Agency; WAC = Washington Administrative Code; RCW = Revised Code of Washington; CCC = Cowlitz County Code SEPA = State Environmental Policy Act; City = City of Longview; SWMP = stormwater management plan

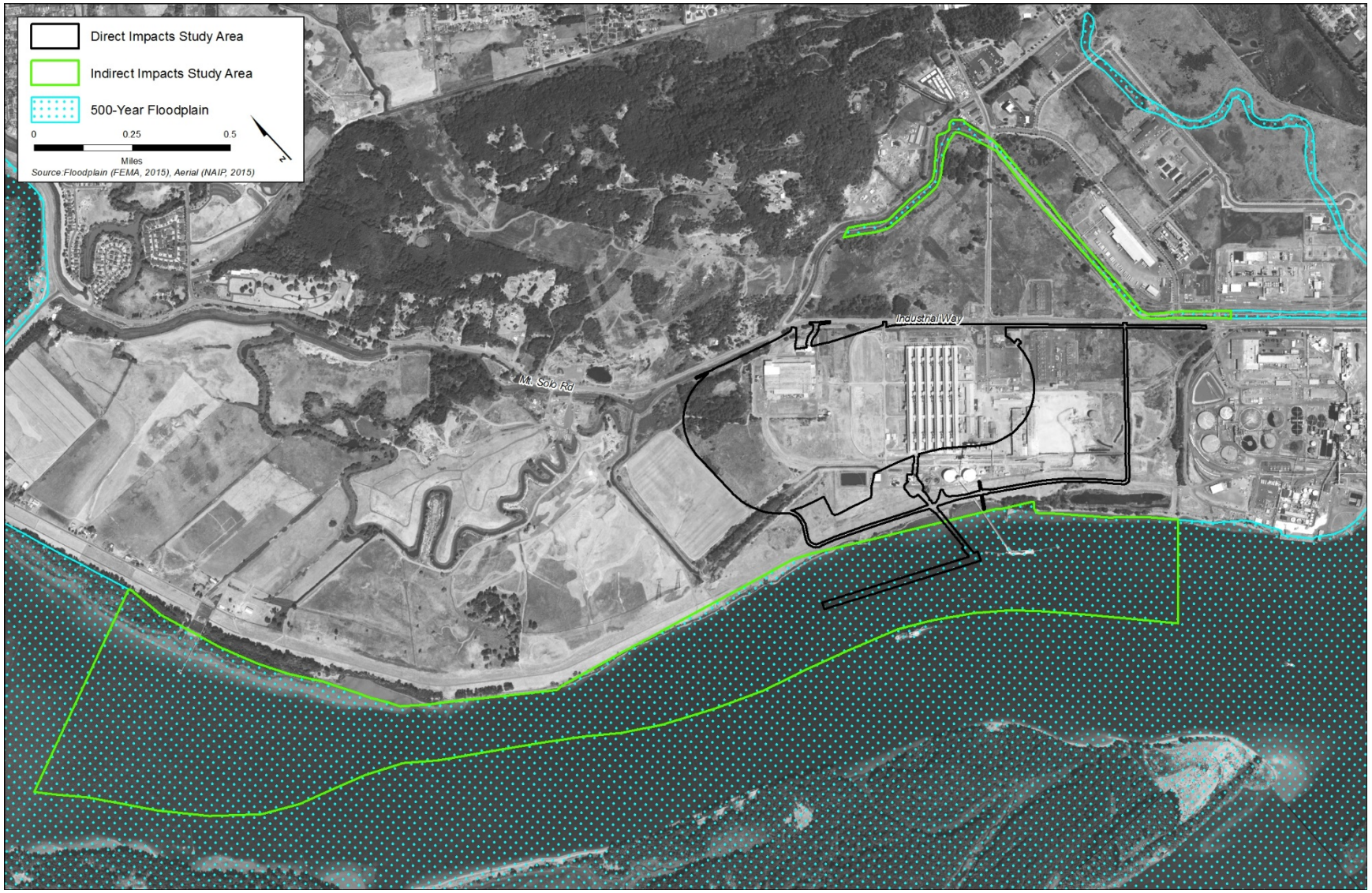
1.3 Study Area

The study area for direct impacts of the Proposed Action on surface water is the Columbia River and stormwater drainage ditches within the project area for the Proposed Action. The study area for indirect impacts on surface water encompasses the CDID #1 stormwater system drainage ditches adjacent to the project area and the Columbia River downstream 1 mile from the project area. Figure 3 shows the study area for surface water for the Proposed Action.

The study area for direct impacts on floodplains is the project area for the Proposed Action. The study area for indirect impacts on floodplains is the project area and surrounding 500-year floodplain on the north side of the Columbia River near the project area. Figure 4 shows the study area for floodplains.

Figure 3. Surface Water Study Area

Figure 4. Floodplain Study Area



Chapter 2
Existing Conditions

This chapter explains the methods for assessing the existing conditions and determining impacts, and describes the existing conditions in the study area as they pertain to surface water and floodplains.

2.1 Methods

This section describes the methods used to characterize the existing conditions and assess the potential impacts of the Proposed Action and No-Action Alternative on surface water and floodplains.

The existing conditions related to surface waters and floodplains in the study area and the evaluation of the potential effects of the proposed action are based on various reports and other pertinent literature (Section 2.1.1, *Data Sources*). No field surveys were conducted to prepare this report. The *Engineering Report for NPDES Application Millennium Bulk Terminals—Longview, LLC* (Anchor QEA 2011) was used to establish baseline conditions for on-site surface water conditions. Designations from the Washington State Department of Ecology (Ecology) and the Oregon Department of Environmental Quality were reviewed to establish environmental baseline conditions for the Columbia River. The impact analysis involved evaluating the potential changes the proposed project could have on surface waters and floodplains.

2.1.1 Data Sources

The following sources of information were used to characterize the study area.

- *Engineering Report for NPDES Application Millennium Bulk Terminals—Longview, LLC* (Anchor QEA 2011)
- *Engineering Report Update for NPDES Application Millennium Bulk Terminals—Longview, LLC* (Anchor QEA 2014)
- CDID #1 website
- *Columbia River Basin: State of the River Report for Toxics* (U.S. Environmental Protection Agency 2009)
- *Diminishing Returns: Salmon Declines and Pesticides* (Ewing 1999)
- *Millennium Coal Export Terminal Longview, Washington: Permanent Impacts to Aquatic Habitat* (Grette Associates, LLC 2014)
- *Columbia River Estuary ESA Recovery Module for Salmon and Steelhead* (National Marine Fisheries Service 2011)
- Columbia River Estuary Operational Forecast System website
- *Designated Beneficial Uses Mainstem Columbia River 340-41-0101* (Oregon Department of Environmental Quality 2003)

- *303(d)/305(b) Integrated Water Quality Assessment Report* (Oregon Department of Environmental Quality 2012)
- *Millennium Coal Export Terminal Longview, Washington: Water Resource Report Supplemental* (URS Corporation 2014a)
- *Millennium Coal Export Terminal Longview, Washington. Affected Environment Analysis – Water Resources* (URS Corporation 2014b)
- *Millennium Coal Export Terminal Longview, Washington: Water Collection and Drainage Package*. (URS Corporation 2014c)
- *Millennium Coal Export Terminal Longview, Washington: Water Management Plan* (URS Corporation 2014d)
- *Millennium Coal Export Terminal Longview, Washington: Water Balance Calculation* (URS Corporation 2014e)
- U.S. Geological Survey (USGS) water-quality data, Columbia River Estuary, 2004–2005 (U.S. Geological Survey 2005)
- USGS water-quality data, Columbia River at Dalles, Oregon, 2012 (USGS 14105700)
- *Stormwater Management Manual for Western Washington* (Washington State Department of Ecology 2012)
- Columbia River facts and maps website (Washington State Department of Ecology 2014a)
- Grays-Elochoman, Cowlitz River Basins Water Resource Management Programs (Washington State Department of Ecology 2014b)
- Other literature, as cited in the text

2.1.2 Impact Analysis

The following methods were used to evaluate the potential impacts of the Proposed Action and No-Action Alternative on surface waters and floodplains. This impact analysis evaluates how surface water conditions could affect the project area.

Potential surface water and floodplain impacts have been evaluated with respect to how the Proposed Action and No-Action Alternative could affect certain parameters such as changes to surface water drainage, surface water discharge, and floodplain connectivity. The assessment of impacts is also based on regulatory controls and the assumption that the Proposed Action would include the following element.

- An individual and general construction National Pollutant Discharge Elimination System (NPDES) permit for stormwater discharges and for stormwater improvements.

For the purpose of this analysis, construction impacts are based on peak construction period and operations impacts are based on maximum throughput capacity (up to 44 million metric tons per year).

2.2 Existing Conditions

The existing environmental conditions related to floodplains in the study area are described below.

In general, the project area is protected by a robust levee system operated and maintained by CDID #1. CDID #1 also operates and maintains a series of ditches and pump stations that receive surface water and shallow groundwater inflow that originates on the project area, as well as other adjacent areas and Longview. In addition, the Applicant now operates and maintains independent stormwater and facility process water treatment and conveyance facilities for the project area. Ultimately, all of these waters are discharged to the Columbia River as groundwater, surface water, or treated stormwater discharge.

The project area is located on the right-bank floodplain of the Columbia River near river mile 63 near Longview (Figure 4). The project area is generally protected from Columbia River flooding by a levee that was originally constructed in the 1920s and then improved in 1949. Project area topography is relatively flat.

2.2.1 Columbia River

The Columbia River basin comprises 260,000 square miles from its headwaters in British Columbia, Canada, to its mouth in Astoria, Oregon, bordering Washington and Oregon. The basin includes parts of seven states, 13 federally recognized Native American reservations, and one Canadian province; 19% of the watershed is in Washington. The average annual flow for the Columbia River at Beaver Army Terminal near Quincy, Oregon,[3] is approximately 236,600 cubic feet per second (cfs) (1 cfs = 448.8 gallons per minute). The river's annual discharge rate fluctuates with precipitation and ranges from 63,600 cfs in a low water year to 864,000 cfs in a high water year (U.S. Geological Survey 2014).

The Columbia River, downstream from the U.S.-Canadian border has been identified as a flow-exempt water body, which is to say that it is exempt from flow control requirements associated with the detention/retention and discharge of stormwater. However, water quality criteria must still be met for all stormwater discharges.

Dam construction began in the early 20th century for flood control and power production. Today, a major dam is located on average every 72 miles in the Columbia River watershed (Bonneville Power Administration 2001). After dams were constructed along the river, the flow regime of the river changed substantially. Records kept since 1878 show that flows were much higher in the spring and lower in winter before dam construction. In addition, the velocity of the water moving down the river was significantly greater before dam construction began in the 1930s. In 1917, Washington adopted a water code to help manage water allocations from surface water bodies in the state, including the Columbia River.

Since the water code was adopted, the state has allocated 768 surface water and 1,379 groundwater rights on the mainstem Columbia River. These Columbia River water users have the right to take approximately 13,000 cfs in instantaneous withdrawals from April through October, when most crops are grown in the basin. The total annual withdrawal from the mainstem Columbia River

[3] Approximately 12 river miles downstream of the project area.

during the growing season is about 4.7 million acre-feet of water (1 acre-foot = 325,851 gallons, enough water to cover 1 square acre of land to a depth of 12 inches).

The Bureau of Land Management is the single largest water user on the mainstem Columbia River and is allocated about two-thirds of the water from the river. Ecology has allocated 768 surface water and 1,379 groundwater rights on the mainstem Columbia River (Washington State Department of Ecology 2014a).

The lower Columbia River is tidally influenced by the Pacific Ocean from the estuary near Astoria, to Bonneville Dam, located upstream of Portland (Bonneville Power Administration 2001). Tidal fluctuations are diurnal, meaning there are two high tides and two low tides in each 24-hour tidal cycle. Tidal ranges vary along the lower Columbia River and are reported to have a mean range of 3.78 feet at Longview (Table 2).

Table 2. Tidal Station 9440422—Longview

Established	March 23, 1985
Present Installation	March 22, 2002
Mean Tidal Range	3.78 feet

Source: National Oceanic and Atmospheric Administration 2014.

The Columbia River experiences seasonal variation in flow from year to year depending on snow mass in the upper watershed. To account for this variability and provide a basis for navigation, in 1911 the U.S. Army Corps of Engineers (Corps) established a unique low-water datum on the Columbia River. The datum references the lowest recorded water level at that time and was recorded in Portland, Oregon, on October 6, 1886. This recorded water level became the "zero" of the gage operating there at that time and it has never been changed. This datum is called the Columbia River Datum (CRD).

CRD is primarily maintained by the Corps' Portland District and is tied to National Geodetic Vertical Datum of 1929 (NGVD29). Elevations of CRD are held at benchmarks along the river basin, and tide gages can be set to these elevations during survey operations. Shortly after the establishment of NGVD29, geodetic ties were made at all possible benchmarks where a tie to CRD existed. The presence of a geodetic tie at a CRD benchmark allows a reference point to which tidal datums can be leveled. For recent hydrographic and photogrammetric surveys, the relationships between CRD, NGVD29, North American Vertical Datum of 1988 (NAVD88), and tidal datums were reconciled at all installed subordinate tide gages and provided to the Office of Coast Survey and National Geodetic Survey (National Oceanic and Atmospheric Administration 2014).

All tidal datums are above CRD for the entire river, in keeping with the original premise of the low water reference datum. Trends of Mean Sea Level (MSL) reveal a slight downward slope from the entrance to upstream. There is a notable drop in MSL near Longview, between the sections of the system under basin influence and those under river influence. The differences between high water tidal datums and low water tidal datums also change drastically near Longview, with a much larger difference occurring in the estuary entrance than the upper reaches of the river basin (National Oceanic and Atmospheric Administration 2014). This is important to consider when reviewing tidal data upstream and downstream of Longview. Table 3 includes the current reported tidal heights at Longview. Data is presented in CRD, but the comparison to NAVD88 can also be determined.

Table 3. Tidal Heights at Tidal Station 9440422—Longview

Description	Acronym	Height (feet CRD)
Mean Higher High Water	MHHW	6.991
Mean High Water	MHW	6.512
Mean Tide Level	MTL	4.623
Mean Sea Level	MSL	4.475
Mean Low Water	MLW	2.736
Mean Lower Low Water	MLLW	2.382
Columbia River Datum	CRD	0.000
North American Vertical Datum 1988	NAVD88	-2.487

Source: National Oceanic and Atmospheric Administration 2014

CRD is a Corps nontidal datum defined at distinct river miles relative to NAVD88, and is used as chart datum above river mile 23 on the Columbia River. Datums are computed using observations from the low river stages of the year, generally August through October, due to the masking of the tidal signal from strong seasonal river runoff during other times of the year. Depending on river flow, water levels can be significantly higher than Columbia River datums.

NAVD88 and NGVD29 are fixed geodetic datums whose elevation relationships to local MSL and other tidal datums may not be consistent from one location to another. It is not uncommon for datums to become confused and elevations in waterways, especially tidal elevations, to be misrepresented or misreported with errors of several feet. For clarity, the definitions of the most common datums that could be encountered over the course of this analysis are provided below.

- **Mean Sea Level.** MSL is a tidal datum determined over a 19-year National Tidal Datum Epoch. The tidal epoch is based on the lunar cycle and requires an adjustment to all tidal gages each 19-year period. MSL pertains to local MSL and should not be confused with the fixed datum of NGVD29, often casually referred to as "Sea Level Datum" or NAVD88.
- **NGVD29**. NGVD29 is a fixed datum adopted as a national standard geodetic reference for heights but is now considered superseded. NGVD29 is sometimes referred to as Sea Level Datum of 1929 or as MSL on some early issues of Geological Survey Topographic Quads. NGVD29 was originally derived from surveys based on 26 tidal stations (21 in the coastal United States and 5 in coastal Canada), hence the confusion with the name.
- **NAVD88**. NAVD88 is a fixed datum and replaces NGVD29 as the national standard geodetic reference for heights. It is derived from a simultaneous, least squares,[4] and minimum constraint adjustment of Canadian/Mexican/United States leveling observations. Local MSL observed at Father Point/Rimouski, Canada, was held fixed as the single initial constraint. While the conversion between NAVD88 and NGVD29 varies at all locations except for Father Point/Rimouski, Canada, that at all other locations NAVD88 is lower than NGVD 29 and should, therefore, be reported with a larger elevation.

[4] A mathematical procedure for finding the best-fitting curve to a given set of points by minimizing the sum of the squares of the offsets (the residuals) of the points from the curve.

2.2.2 Water Resource Inventory Area 25

A watershed generally has a topographic boundary that defines an area draining to a single point of interest. Precipitation falling on a ridgeline of a mountain would drain into one watershed or the other depending on which side of the ridge the rain falls. Ecology and other state natural resources agencies have divided Washington State into 62 Water Resource Inventory Areas (WRIAs) to delineate and manage the state's major watersheds. The project area is located in the WRIA 25–Grays/Elochoman Basin.

2.2.3 Consolidated Diking Improvement District No. 1

Other than the Columbia River levee, the project area for the Proposed Action is surrounded and protected by the levees, ditches, and pump stations of CDID #1. CDID #1 consists of 19 miles of levees; over 35 miles of sloughs, ditches, and drains for flood protection; a stormwater collection and routing system; and seven pump stations for removing and discharging stormwater to receiving waters outside of the levee system, such as the Columbia River. The combined capacity of the seven pump stations (total of 19 pumps across these stations) is 700,000 gallons per minute. These pump stations are instrumental for removing stormwater and preventing local and area-wide flooding. The need for this pumping capacity is apparent when considering 1 inch of rain falling on the 16,000-acre watershed is equivalent to 434-million gallons of water. Removal of 4.8 inches of rain deposited from a 1986 storm required 54 hours of continuous pumping. These components work together to keep the local community dry. Information presented below is available on the CDID #1 website (Consolidated Diking Improvement District No. 1 2014).

In 1923, six separate diking districts were merged to form CDID #1. CDID #1 worked with the Corps to raise the levees in 1949. The facilities described below are in the project area and are currently operated and maintained by CDID #1.

2.2.3.1 Columbia River Levee

The CDID#1 levee system can be divided into three major segments, but the project area is primarily protected by the Columbia River levee. This levee protects the project area from flooding along the Columbia River and from related backwater elevations in Coal Creek Slough. It extends from the main pump station and office complex around the western edge of Longview and unincorporated portions of Cowlitz County, up the Columbia River to its confluence with the Cowlitz River. The levee is a mixture of well-defined rural levees and overbuilt sections associated with urbanized levees through industrial areas.

Vegetation on the levees is controlled through system-wide mowing, typically occurring at the beginning and middle of the growing season. The tops of all levees are maintained with a drivable surface for vehicle access. Regular patrols identify issues that could affect access for maintenance or emergency purposes such as unwanted vegetation, illegal dumping, abandoned vehicles, and unauthorized structures.

In addition to ongoing inspections conducted by CDID #1 personnel, CDID #1 participates in two inspection programs overseen by the Corps. These programs, identified below, ensure that the operations and maintenance work undertaken by CDID #1 is in conformance with applicable federal standards.

- **Rehabilitation and Inspection Program, ER 500-1-1.** Conducted annually, this routine inspection takes approximately 1 day, which involves driving the levee system to assess whether the flood control works would continue to provide the intended degree of flood protection and determine if the maintenance program is adequate.
- **Periodic Inspection, National Levee Safety Program Act of 2007.** Conducted every 5 years, this is a more thorough review of all levee and stormwater removal systems. The inspection is conducted entirely on foot, takes approximately 4 days to complete, and consists of a large multidisciplinary team of engineers.

2.2.3.2 Pump Stations

CDID #1 operates seven pumping stations with a total of 19 pumps. The combined water capacity of these pumps is 700,000 gallons per minute. These pump stations are located throughout the greater Longview area and are instrumental for removing stormwater and preventing local and area-wide flooding. The two pumps of primary interest in the project vicinity are the Reynolds Pump Station and the Industrial Way Pump Station.

- **Reynolds Pump Station**. The Reynolds Pump Station is located at the terminus of Ditch 14; this pump station draws water from Ditch 10 and pumps directly to the Columbia River. Total pumping capacity is 80,000 gallons per minute.
- **Industrial Way Pump Station**. The Industrial Way Pump Station is located adjacent to Ditch 5 and Industrial Way. It has a pumping capacity of 90,000 gallons per minute and pumps water a distance of nearly 0.5 mile, where it discharges to the Columbia River through the levee at the east end of the project area.

To provide additional safeguards against system failure and oversight of individual pump stations, CDID #1 maintains a radio-operated Supervisory Control and Data Acquisition system. This system performs real-time tracking of water-surface elevations, operational status, and alarm conditions for each facility and provides a visual readout to staff at the CDID #1 office, maintenance office, and main pump station. This system enables CDID #1 staff to respond quickly to issues that need attention and logs data that could be useful for troubleshooting system failures if they occur.

2.2.3.3 Sloughs, Ditches, and Drains

CDID #1 maintains approximately 35 miles of sloughs, ditches and drains that collect and convey stormwater to the CDID #1 pump stations. There are 15 numbered ditches and 31 numbered drains, together with cutoff sloughs and one bypass ditch. The drainage ditch system is composed of a combination of human-made ditches and altered natural channels. Longview is built on a natural floodplain and the levees—which prevent the river flood waters from inundating the city—also prevents stormwater, which falls behind the levees from escaping.

The ditches have a dual function, acting as a conveyance system to transport stormwater to the pumping stations and as a storage reservoir for intense rainfalls exceeding the capacity of the pumps. The Columbia River is the ultimate destination of the drainage water.

The sloughs, ditches, and drains are maintained on a regular rotational basis. Maintenance work involves cleaning ditches of mud and debris, clearing and removing vegetation and mowing on the banks and areas above water level, and repairing ditch banks that have eroded or slumped. The majority of ditches and drains are accessible by vehicle along at least one bank, and maintenance is

performed using excavation equipment (backhoe, track hoe, etc.) with the removed material being applied to the drainage way bank or placed in a dump truck and hauled to an approved disposal site. Some submerged vegetation is treated chemically. These treatments are contracted to a State of Washington-certified contractor for performing this type of work and are performed in compliance with local, state, and federal laws governing such operations.

Below is a description of the CDID #1 ditches that are on or adjacent to the project area.

- **Ditch 5.** Ditch 5 borders the eastern edge of Parcel 10213 and extends toward the south from 38th Avenue to the Industrial Way Pump Station along Industrial Way, which pumps water to the Columbia River via an underground pipeline. A second branch of Ditch 5 extends from the pump station toward the southeast along the north side of Industrial Way down to Washington Way. It connects with other drainage ditches (Ditch 1 and Ditch 3) and conveys flow to the pump station.
- **Ditch 10.** North of Industrial Way, Ditch 10 forms the northern boundary of Parcel 10213 and extends toward the west from 38th Avenue. It continues toward the west, crosses under Industrial Way through a culvert, and extends toward the northwest, eventually connecting to other segments of the drainage system including Ditch 14 and Ditch 16. Ditch 14 conveys flow to the south to the Reynolds Pump Station, which discharges to the Columbia River through and underground pipeline. South of Industrial Way, Ditch 10 is located offsite to the north of the former cable plant and remnant forested area. Ditch 10 intersects with Ditch 14 (see below) just north of the closed Black Mud Pond facility.
- **Ditch 14.** Ditch 14 is located along the western boundary of the project area and consists of a trapezoidal-shaped drainage ditch that receives flow from Ditch 10 and Ditch 16 and other privately owned ditches located both onsite (e.g., Cable Plant Ditch) and off site. It conveys flow toward the south to Reynolds Pump Station, which pumps water under the Columbia River levee.

2.2.4 On-Site Drainage

Stormwater and shallow groundwater drainage for the project area is controlled by a system of ditches, pump stations, treatment facilities, and outfalls. All of these facilities operate under a single NPDES permit. As shown in Figure 5, all of the project area drainage is either held onsite and evaporates, discharged to CDID #1 ditches that eventually flow to the Columbia River, or treated and discharged through Outfall 002A to the Columbia River. Table 4 lists the drainage basins in the project area.

Figure 5. Existing Site Drainage System

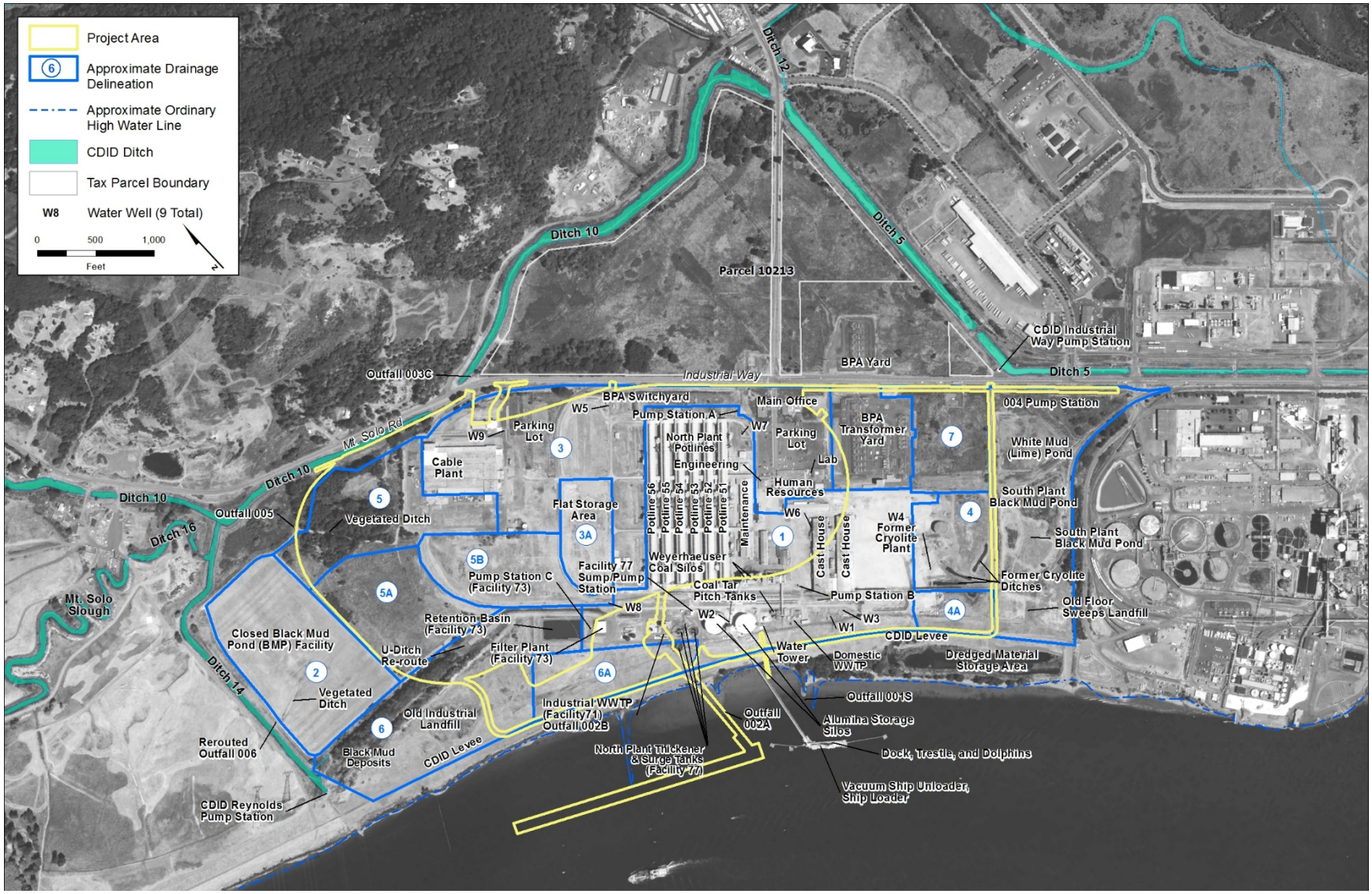


Table 4. Existing Drainage Basins in the Project Area

Area	Description
1	Stormwater runoff gravity drains to Facility 77 and is pumped to Facility 73 for treatment prior to discharge through Outfall 002A.
2	Stormwater runoff gravity drains to a vegetated conveyance swale and is pumped into the U-Ditch, where it drains to Facility 77 and is pumped to Facility 73 for treatment prior to discharge through Outfall 002A as designed. Larger runoff events may overflow the sump and discharge into CDID Ditch 14 through Rerouted Outfall 006.
3	Stormwater runoff ponds locally and/or gravity drains to a vegetated ditch and is discharged through Outfall 003C into CDID Ditch 10.
3A	Stormwater runoff ponds locally and infiltrates/evaporates and/or is pumped to the U-Ditch, where it drains to Facility 77 and is pumped to Facility 73 for treatment prior to discharge through Outfall 002A.
4	Stormwater runoff gravity drains to ditches and is pumped via Pump Station 004 to Facility 77, where it is pumped to Facility 73 for treatment prior to discharge through Outfall 002A.
4A	Stormwater runoff ponds locally and infiltrates/evaporates.
5	Stormwater runoff from improved areas ponds locally and infiltrates/evaporates; runoff from the larger events may gravity drain to a vegetated ditch and discharge through Outfall 005 to CDID Ditch 14. Stormwater runoff from unimproved areas may gravity drain towards the vegetated ditch.
5A	Stormwater runoff ponds locally and infiltrates/evaporates.
5B	Stormwater runoff ponds locally and infiltrates/evaporates.
6	Stormwater runoff ponds locally and infiltrates/evaporates. Larger runoff events may sheet flow to the U-Ditch, which discharges to Facility 77, and is then pumped to Facility 73 for treatment prior to discharge through Outfall 002A.
6A	Stormwater runoff ponds locally and infiltrates/evaporates. Stormwater runoff from unimproved areas may gravity drain toward the vegetated ditch.
7	Stormwater runoff ponds locally and infiltrates/evaporates.

The following is a brief description of the on-site drainage components of the project area.

- **Sheetflow and infiltration.** Subbasin 4A, 5, 5A, 5B, 6A, and 7 receive sheet flow from storm events where it subsequently infiltrates or evaporates.
- **Columbia River discharge.** Subbasins 1, 2, 3A, 4, and 6 are conveyed via pumped systems or gravity to Facility 73 where they are treated and then discharged to the Columbia River via #1 Outfall 002A.
- **CDID discharge.** Subbasin 3 flows through a vegetated ditch that discharges to Ditch 10 through Outfall 003C. During larger storm events, a portion of the flows from Subbasin 2 and Subbasin 5 (both described above) can discharge to the CDID #1 ditch system. Subbasin 2 will overflow the rerouted 006 pump station and discharge to Ditch 14 through Outfall 006. This is a designed overflow system and it is equipped with a high-flow alarm to alert staff when it is activated. Subbasin 5 flows can enter a vegetated ditch that discharges to Ditch 10 through Outfall 005. Ultimately, all CDID #1 ditch flows discharge to the Columbia River.
- **Drainage features on Parcel 10213.** These features include three vegetated ditches, two unvegetated ditches, and a shallow stormwater pond. Two of the vegetated ditches run north-

south across the two larger portions of Parcel 10213. They are narrow and linear and convey stormwater to a culvert approximately 16 inches in diameter located on the north end of these ditches, which then empties into CDID Ditch 10. The third vegetated ditch consists of three segments of linear vegetated ditches adjacent to Industrial Way. These three ditch segments are connected by two culverts that are beneath the site's access roads. This feature likely collects stormwater from Industrial Way and adjacent areas and conveys it to CDID Ditch 10.

One unvegetated ditch runs parallel to Ditch 10 and consists of two sections of a narrow ditch that was likely constructed to intercept shallow groundwater affecting agricultural use of the site. This unvegetated ditch is several feet deep, near vertical along its sides, and is bisected by one of the vegetated ditches that runs parallel across the site; however, there is no surface hydrology connection between these two ditches. The other unvegetated ditch serves as the outlet channel for the stormwater pond. This ditch is located at the northeast end of the stormwater pond and conveys excess stormwater from the pond to CDID Ditch 10 through a 16-inch culvert. All six features are privately owned and are not managed by CDID #1.

- **Off-site privately owned ditch.** This ditch is located near the northwest corner of the former Reynolds Metals Plant. It conveys flow into Ditch 14 at a point just north of the closed Black Mud Pond facility.

Outfall 002A

Outfall 002A is a 30-inch outfall to the Columbia River that discharges the water it receives from Facility 73 (the site's stormwater treatment system). Typical flow rates through the outfall are currently less than 2,000 gallons per minute and there is a maximum flow rate of 14,000 gallons per minute.

2.2.4.1 Columbia River and Cowlitz River Floodplain

The project area is located on the right bank floodplain of the Columbia River approximately 5 miles downstream of the confluence of the Cowlitz River and the Columbia River (Figure 1). The Columbia River, from the U.S.-Canadian border downstream, has been identified as a flow-exempt water body, which is to say that it is exempt from flow control requirements associated with the detention/retention and discharge of stormwater. However, water quality criteria must still be met for all stormwater discharges.

Longview and Kelso were developed on the floodplain of the Columbia River and Cowlitz River. The majority of the project area is behind the Columbia River levee that is operated and maintained by CDID #1. The average elevation of the project area is 13.9 feet NAVD88 (16.4 feet CRD), and the levee averages 33.9 feet NAVD (36.4 feet CRD) (Anchor QEA 2014). The portion of the project area waterward of the Columbia River levee is in the floodway of the Columbia River. Construction and operational changes associated with the proposed docks and trestle would occur on the river side of the existing levee system, where the floodplain is constrained by the levee alignment.

CDID #1 operates the slough, ditch, and drain system several feet lower than the low-flow elevation of the Columbia River throughout the year. This strategy provides necessary stormwater storage capacity and allows the pump system to maximize the flood control potential of the levee's interior drainage. The combined capacity of the seven CDID #1 pump stations (total of 19 pumps across these stations) is 700,000 gallons per minute. These pump stations are instrumental for removing stormwater and preventing local and area-wide flooding. The need for this pumping capacity is

apparent when considering 1 inch of rain falling on the 16,000-acre watershed is equivalent to 434-million gallons of water. Removal of 4.8 inches of rain deposited from a 1986 storm required 54 hours of continuous pumping.

The Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) maps the project area landward of the CDID #1 levee as Zone X (Federal Emergency Management Agency 2015). Zone X is described by FEMA as follows.

> Areas between limits of the 100-year flood and 500-year flood; or certain areas subject to 100-year flooding with average depths less than one (1) foot or where the contributing drainage area is less than one square mile; or areas protected by levees from the base flood (Medium shading).

The current FIRM delineates the project area in "medium shading" and maps the current levee that protects the site.

Flooding at the project area is expected to be minimal under existing conditions. The following events could cause flooding.

- Pump station failures
- Precipitation events that exceed pumping capacity
- Levee failure
- Levee overtopping

The portions of the project area located waterward of the levee are within the floodway. The project area improvements would need to consider the flood inundation limits and velocities for this condition.

Chapter 3
Impacts and Mitigation

This chapter describes the impacts on surface water and floodplains that would result from construction and operation of the Proposed Action or the ongoing activities of the No-Action Alternative.

3.1 Impacts

This section describes the impacts on surface water and floodplains that could result from the Proposed Action and No-Action Alternative. The Applicant identified the following best management practice (BMP) to be implemented as part of the project, which was considered when evaluating potential impacts of the Proposed Action.

- BMP C107: Construction Road/Parking Area Stabilization - roads, parking areas, and other onsite vehicle transportation routes would be stabilized to reduce erosion caused by construction traffic or runoff.

The following constructions activities could affect surface water and floodplains.

- Disturbance of surface soils during construction of the coal export terminal
- Redirection of drainage and sheet flow during construction
- Removal of vegetation from leveed floodplain

The following operations activities could affect surface water and floodplains.

- Use of water from rainfall runoff and on-site wells for dust suppression, washdown water, and fire-protection systems
- Redirection of stormwater via a new pump station

3.1.1 Proposed Action

3.1.1.1 Construction: Direct Impacts

Construction of the Proposed Action would take place in areas of the Columbia River and landward in a Zone B flood zone, an area within the floodplain that is protected from the base flood by a system of levees.

The following constructions activities at the project area could affect surface water and floodplains.

- Preparing the project area and preloading the coal stockpile areas.
- Regrading the project area to drain toward specific collection areas.
- Constructing the rail loop.
- Installing coal processing equipment (unloading facilities, transfer towers, conveyors).
- Constructing offices, maintenance buildings, and other structures.

- Constructing water-management and storage facilities.
- Construction of Docks 2 and 3 and Removal of Existing Pile Dikes.

The following direct impacts on surface water and floodplains could occur as a result of construction activities for the Proposed Action.

Alter Drainage from Heavy Equipment and Staging Areas

Placement of heavy equipment, including but not limited to excavators, pile-driving equipment, forklifts, and rail-track-laying equipment, and establishment of on-site staging areas could redirect sheet flow and potentially lead to localized flooding on- or offsite. Redirection of sheet flow has the potential to create rivulet and/or gully flow across bare soil, which could result in erosion and introduce sediment to the surrounding drainage channels and basins. Introduction of increased sediment loads to the drainage system could change the sediment deposition and transport characteristics of that system, resulting in potential changes in downstream channel morphology, including a reduction in channel sinuosity and storage, increased channel gradient, and reduced pool depth. The potential for localized flooding and increased erosion from redirected sheet flow increases with higher density of heavy equipment placement onsite. This could result in the need for additional channel maintenance. However, this is unlikely because erosion and sediment control BMPs and requirements of the NPDES construction general permit that would be obtained for the project, as described in the SEPA Water Quality Technical Report (ICF International 2016b), would avoid and minimize potential impacts during construction and all measures would be monitored to ensure effectiveness. Weekly inspection and inspection within 24 hours of a rain event would likely be required under the NPDES permit. The inspections must be performed by a Certified Erosion and Sediment Control Lead.

Decrease Floodplain Floodwater Retention

Site preparation would require clearing vegetation within a Zone B flood zone. However, because the project area is protected by levees, it does not currently function as a floodplain. Vegetation that would be removed from the project area does not currently contribute the Columbia River floodplains ability to retain or absorb floodwaters. Activities that occur landward of the levee would not modify conditions in the Columbia River. Thus no decrease in the ability of the Columbia River to retain floodwaters within the floodplain would result from the project.

Construction of Docks 2 and 3 and Removal of Existing Pile Dikes

The Columbia River would be permanently altered and benthic (i.e., river bottom) habitat removed by the placement of piles. A total of 610 of the 630 36-inch-diameter steel piles required for the trestle and docks would be placed below the ordinary high water mark, permanently removing an area equivalent to 0.10 acre (4,312 square feet) of benthic habitat. The majority of this habitat is located in the Delivered Water Zone (Grette 2014a). The placement of piles would displace benthic habitat, and the areas within each pile footprint would cease to contribute toward primary or secondary productivity. Individual pile footprints are relatively small (7.07 square feet) and are spaced throughout the dock and trestle footprint.

Creosote-treated piles would be removed from the deepest portions of two existing timber pile levees. In total, approximately 225 linear feet of the levees would be removed. Removal of creosote-treated piles would result in a temporary increase in turbidity and would temporarily affect benthic

habitat. Turbidity would be localized and short-term and the benthic habitat affected would recover relatively quickly. Benthic invertebrates typically recolonize disturbed areas within 30–45 days following disturbance. Overall, however, the removal of creosote-treated woodpiles from the Columbia River would be a beneficial impact, as any remaining creosote in those piles would be removed from the aquatic environment. Refer to the SEPA Fish Technical Report (ICF International 2016c) for further information.

Use Water for Construction

Construction of the Proposed Action would use water from rainfall runoff and on-site groundwater wells for dust suppression, washdown water, and fire-protection systems. This would be regulated under the NPDES Construction Stormwater General Permit. Rainfall would be collected and treated and either stored in a detention pond to be constructed as part of the Proposed Action, or discharged to the Columbia River through the existing Outfall 002A. The Proposed Action would not withdraw water from the Columbia River or other surface waters in the study area to meet construction water demands. Thus, no impacts on surface water and floodplains are anticipated related to water needs or use during construction.

3.1.1.2 Construction: Indirect Impacts

Construction of the Proposed Action would not result in indirect impacts on surface waters or floodplains because construction of the coal export terminal would be limited to the project area.

3.1.1.3 Operations: Direct Impacts

The following direct impacts on surface water and floodplains could occur as a result of operations of the Proposed Action.

Water Use for Operations

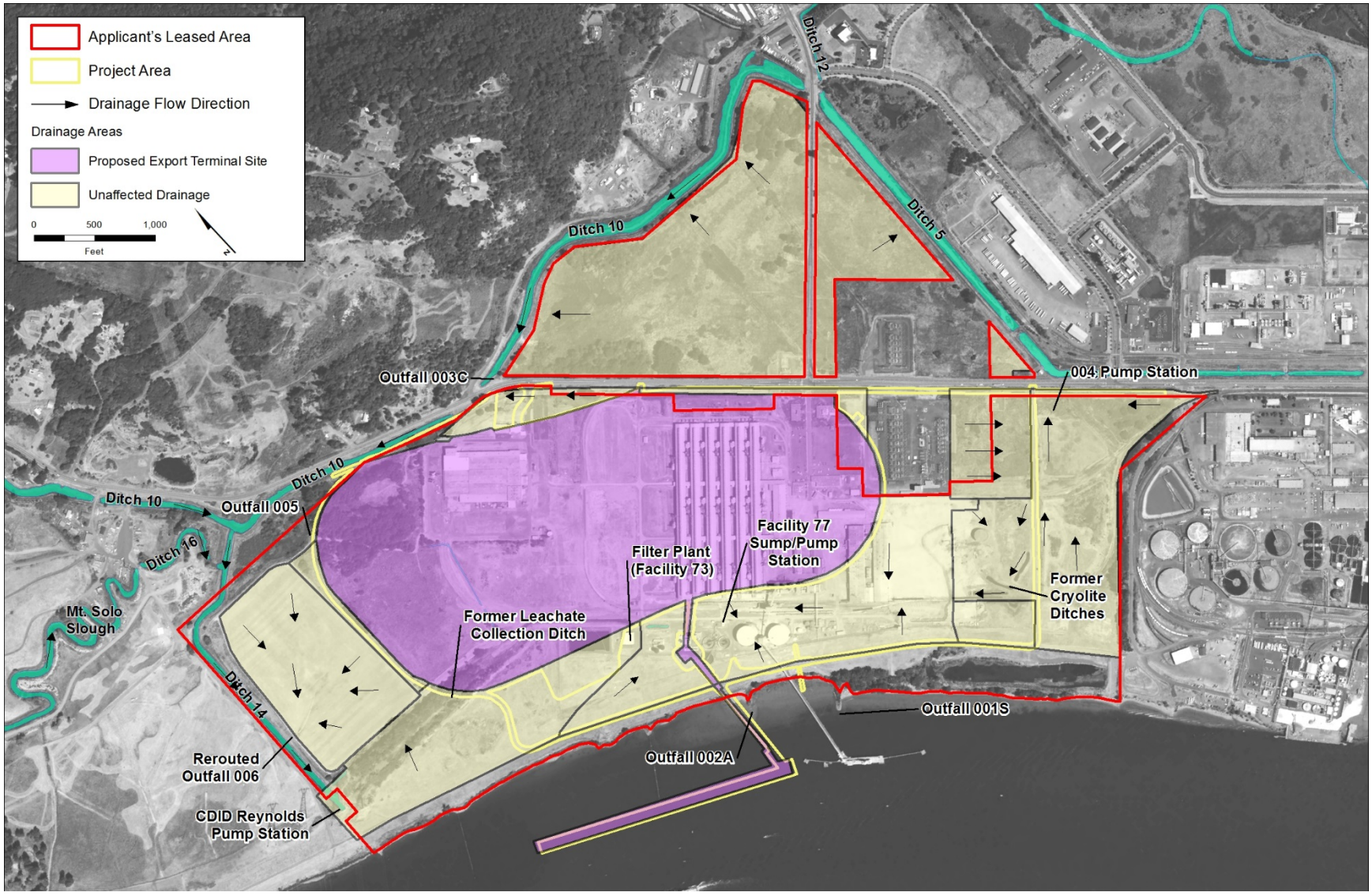
Operation of the Proposed Action would use water from rainfall runoff and on-site groundwater wells for dust suppression, washdown water, and fire-protection systems. Rainfall would be collected and treated and either stored in a detention pond to be constructed as part of the project, or discharged to the Columbia River through the existing Outfall 002A. The Proposed Action would not withdrawal water from the Columbia River or other surface waters in the study area to meet operations water demands. Thus, no impacts on surface water and floodplains are anticipated related to water needs or use during operations.

Alter Water Collection and Discharge

Currently, stormwater runoff at the project area is managed by infiltration or evaporation and by a complex stormwater collection and treatment system (Facilities 77 and 73); in conformance with the Applicant's existing NPDES permit (WA-000008-6). The NPDES system includes 12 stormwater basins and five outfalls that the Applicant manages under its NPDES permit, which discharge to the Columbia River. The existing stormwater collection and treatment system configuration would not adequately serve the needs of the future condition resulting from the Proposed Action. The Proposed Action would include modifications to the existing stormwater management system to address the anticipated need. Information on stormwater is included in the SEPA Water Quality Technical Report (ICF International 2016b).

The proposed modifications to the water management system would collect all stormwater and surface water (washdown water) from the stockpile areas, rail loop, office areas, the dock, and other paved/impervious surface areas at the project area and direct these waters to a series of vegetated ditches and ponds, then to a collection basin or sump (Figure 6). Similar to existing conditions, collected water would be pumped to an existing on-site treatment facility consisting of settling pond(s) with flocculent addition to promote settling as needed. Chemical treatments must be identified as part of the NPDES permit process. Treated water would be pumped to a surface storage pond for reuse in support of operations, or, if storage is not necessary the excess treated water would be discharged to the Columbia River via outfall 002A in accordance with the NPDES permit limits. The surface storage pond would have an approximate capacity of 3.6 million gallons and would be used to store water for reuse. The capacity of the pond would include a reserve of 0.36 million gallon maintained at all times for fire suppression. The stored water would be available for reuse for dust suppression, washdown and cleanup, and fire suppression. Water for dust suppression would be applied on the main stockpiles, within unloading and conveyance systems, and at the dock. Excess water from dust suppression and washdown would be collected, treated, and stored for reuse.

Figure 6. Proposed Drainage Plan



The proposed changes in water management for each basin are summarized in Table 5.

Table 5. Summary of Proposed Changes to Stormwater Collection and Discharge by Basin

Basin	Existing Collection and Discharge	Proposed Collection and Discharge
1	Collection: Collected from facility collection piping, pumps and ditches, directed to Sump/Pump Station (Facility 77), routed through Facility 73 treatment facility and then discharged to Columbia River through Outfall 002A.	Approximately 48% of this area (32 acres) would be absorbed into the project area. Stormwater generated in Basin 1 contained within the project area would be collected, treated, and reused; excess would be directed to the Proposed Action treatment system for discharge to the Columbia River under the NPDES permit.
	Discharge: Basin 1 gravity flows to Facility 77 and is then routed through Facility 73 for treatment and eventual discharge to the Columbia River via Outfall 002A.	Excess from the project area would be collected and treated within the project area, then routed to a new internal outfall (monitored under a separate NPDES permit). The outfall would tie in to the existing Facility 77 sump, and all waters from the Applicant would go through Facility 73. The Applicant's existing discharge line from Facility 73 would continue to discharge to the Columbia River through the existing Outfall 002A. The remaining areas of Basin 1 outside of the project area would continue to gravity flow to Facility 77 and be routed through Facility 73 for treatment and eventual discharge to the Columbia River via Outfall 002A.
2	Collection: Collected from the top of the cap of the closed Black Mud Pond facility into a sump where it is routed through a pump station to drainage ditches that gravity flow into Facility 77, routed through Facility 73 for treatment and then discharged to Columbia River through Outfall 002A. During heavy storm events, stormwater from the cap may overflow Outfall 006 Sump/Pump Station and flow to Ditch 14.	The Proposed Action would not modify Basin 2.
	Discharge: From the sump, it is routed through a pump station to drainage ditches that gravity flow into Facility 77, routed through Facility 73 for treatment and then discharged to Columbia River through Outfall 002A. During heavy storm events, stormwater from the cap may overflow Outfall 006 Sump/Pump Station and flow to Ditch #14.	The drainage routing for Basin 2 would remain the same as its existing condition.
3	Collection: Stormwater generated in Basin 3 ponds locally and/or drains to a vegetated ditch located along the northeastern boundary of the site, adjacent to Industrial	The Proposed Action would occupy approximately 85% of Basin 3 (21.8 acres). Runoff in Basin 3 in the project area would be collected, treated, and reused.

Basin	Existing Collection and Discharge	Proposed Collection and Discharge
	Way. The vegetated ditch discharges by gravity drainage to Ditch 10.	
	Discharge: Stormwater discharges by gravity to Ditch 10, located at the north edge of the basin and south of Industrial Way.	Excess would be directed to the Proposed Action's treatment system for discharge under NPDES permit through Facility 77 to Facility 73, and then to Outfall 002A. Runoff in Basin 3 outside of the Proposed Action would continue to gravity flow and discharge to Ditch 10.
3A	Collection: Collected from facility pumps, directed to Sump/Pump Station (Facility 77) routed through Facility 73 treatment facility and then discharged to Columbia River through Outfall 002A.	The Proposed Action would occupy 100% of Basin 3A. Runoff in Basin 3A in the project area would be collected, treated, and reused.
	Discharge: Directed to Sump/Pump Station (Facility 77) routed through Facility 73 treatment facility and then discharged to Columbia River through Outfall 002A.	Excess would be directed to the Proposed Action treatment system for discharge under the NPDES permit through Facility 77 to Facility 73, and then through Outfall 002A.
4	Collection: Collected and routed to Facility 77.	The Proposed Action would not occupy areas of Basin 4.
	Discharge: From Facility 77, pumped through Facility 73 treatment facility and then discharged to Columbia River through Outfall 002A.	The drainage routing for Basin 4 would remain the same as its existing condition.
4A	Collection: Allowed to pond and evaporate or infiltrate into the soil.	The Proposed Action would not occupy areas of Basin 4A.
	Discharge: Allowed to pond and evaporate or infiltrate into the soil.	The drainage routing for Basin 4A would remain the same as its existing condition.
5	Collection: Collected by gravity to Ditch 14.	The Proposed Action would occupy 93% of Basin 5.
	Discharge: Stormwater discharges by gravity to the Ditch 14, located at the north edge of the basin and south of Industrial Way.	Runoff in Basin 5 within the Proposed Action would be collected, treated, and reused. Excess would be directed to the Proposed Action's treatment system for discharge under CET NPDES permit through Facility 77 to Facility 73, and then to Outfall 002A. Runoff in Basin 5 outside of the Proposed Action would continue to discharge by gravity to CDID Ditch #14.
5A	Collection: Allowed to pond and evaporate or infiltrate into the soil.	The Proposed Action would occupy 91% of Basin 5A.
	Discharge: Allowed to pond and evaporate or infiltrate into the soil.	Runoff in Basin 5A within the Proposed Action would be collected, treated, and reused. Excess would be directed to the Proposed Action treatment system for discharge under the NPDES permit through Facility 77 to Facility 73, and then to Outfall 00 Proposed Action 2A. Runoff in Basin 5A outside of the Proposed Action would

Basin	Existing Collection and Discharge	Proposed Collection and Discharge
		continue to be allowed to pond and evaporate or infiltrate into the soil.
5B	Collection: Allowed to pond and evaporate or infiltrate into the soil.	The Proposed Action would occupy 100% of Basin 5B.
	Discharge: Allowed to pond and evaporate or infiltrate into the soil.	Runoff in Basin 5B within the project area would be collected, treated, and reused. Excess would be directed to the Proposed Action treatment system for discharge under the NPDES permit through Facility 77 to Facility 73, and then to Outfall 002A.
6	Collection: Allowed to pond and evaporate or infiltrate into the soil. Stormwater sheet flows from this area and is collected in the U-Ditch located to the south of the former plant's water treatment system and is conveyed to the collection sump at Facility 77, then pumped through Facility 73 treatment facility and then discharged to Columbia River through Outfall 002A.	The Proposed Action would occupy approximately 25% of Basin 6. Runoff in Basin 6 within the project area would be collected, treated, and reused.
	Discharge: From Facility 77, stormwater is then pumped through Facility 73 treatment facility and then discharged to Columbia River through Outfall 002A.	Excess would be directed to the Proposed Action treatment system for discharge under the NPDES permit through Facility 77 to Facility 73, and then to Outfall 002A. Runoff in Basin 6 outside of the project area would continue to gravity flow and discharge to Facility 77 would be routed through Facility 73 for treatment, and discharge to the Columbia River via Outfall 002A.
6A	Collection: Allowed to pond and evaporate or infiltrate into the soil.	The project area would occupy approximately 3% of Basin 6A. The settling pond of Facility 73 would eventually be relocated from Basin 6 into Basin 6A as an indirect impact of the Proposed Action.
	Discharge: Allowed to pond and evaporate or infiltrate into the soil.	Runoff in Basin 6A outside of the project area would continue to be allowed to pond and evaporate or infiltrate into the soil.
7	Collection: Allowed to pond and evaporate or infiltrate into the soil.	The project area would not occupy areas of Basin 7.
	Discharge: Allowed to pond and evaporate or infiltrate into the soil.	The drainage routing for Basin 7 would remain the same as its existing condition.

The proposed reuse of stormwater and surface water would alter the rate and volume of discharge from the project area. Table 6 summarizes the proposed changes in runoff volume and velocity for each basin shown in Figure 5. The proposed water collection and drainage system would reduce the annual runoff volume and 50-year peak discharge from each basin affected by operations of the Proposed Action.

This reduction would decrease the potential for on-site flooding during heavy rain and result in a potentially beneficial impact on the existing water treatment infrastructure by increasing available treatment capacity.

Table 6. Proposed Changes to Water Collection and Discharge in Volume and Rate of Discharge

Basin	Area (acres)	% Reduced by Proposed Action	Existing Avg. Annual Runoff Ac-ft (MGY)	Proposed Avg. Annual Runoff Ac-ft (MGY)	Existing Peak Runoff Discharge[a] (cfs)	Proposed Peak Runoff Discharge[a] (cfs)
1	88.7	48	284 (92.5)	147 (48.0)	44.7	23.2
2	33.1	0	52 (16.9)	52 (16.9)	5.5	5.5
3	64.2	85	165 (53.8)	24 (8.0)	24.5	3.6
3A	9.4	100	18 (5.9)	0	2.7	0.0
4	52.3	0	92 (30.0)	92 (30.0)	10.4	10.4
4A	5.6	0	13 (4.2)	13 (4.2)	2.0	2.0
5	25.1	93	55 (18.0)	4 (1.2)	8.1	0.6
5A	21.4	91	32 (10.4)	3 (1.0)	3.3	0.3
5B	17.3	100	28 (9.1)	0	3.0	0.0
6	40.5	25	64 (20.9)	48 (15.6)	6.9	5.2
6A	12.9	3	20 (6.5)	19.5 (6.4)	2.2	2.1
7	14.1	0	22 (7.2)	22 (7.2)	2.3	2.3

[a] Volume provided for 50-year storm.
Avg = average; Ac-ft = acre-feet; MGY = million gallons per year; cfs = cubic feet per second

Discharge Less Water to CDID #1 Ditches

Basins 2, 3, and 5 of the existing water management system at the project area currently discharge to CDID #1 drainage ditches. Once constructed, most of the project area would no longer drain to the CDID ditches. The exception being a portion of the access overpass and frontage improvements, which would continue to drain to the ditches. All stormwater and excess dust suppression water within the footprint of the project area would be collected, conveyed, treated, and either stored onsite for reuse or discharged to the Columbia River. The ditches would remain as they are today. Therefore, no negative impacts on the CDID #1 ditches would occur under the Proposed Action. However, less water would be discharged to the ditches from the project area. As discussed below, this could have a beneficial indirect impact on the CDID ditches.

Instigate Flooding from Interior Drainage System Failure

A new pump station and 18-inch outfall line is proposed to convey stormwater from the project area to the existing Facility 77 sump, and then all waters from the project area would go through Facility 73.

Failure of the interior drainage pumps could result in flooding onsite for Basin 3A. However, redundancy would be built into the system to avoid flooding associated with pump failure, i.e., interior drainage pumps would have backup systems. Thus, the potential that both systems would fail simultaneously would be unlikely.

3.1.1.4 Operations: Indirect Impacts

Modifications to the existing on-site water management system would be unlikely to have any measurable impact on the Columbia River. The Columbia River is one receiving water with a mean

annual discharge of 171.4 million acre-feet per year (55.85 trillion gallons per year).[5] The proposed changes to the volume and velocity of surface water discharged to the Columbia River associated with the Proposed Action would be negligible within the Columbia River. Annual discharge to the river is estimated to decrease from 276 to 138.5 million gallons per year, which would equate to a decrease in average annual flow in the Columbia River of 0.0000025 ($2.5 * 10^{-6}$ %). A decrease in flow of this magnitude would essentially be undetectable in the lower Columbia River.

The CDID #1 ditches are much smaller than the Columbia River; therefore, changes to the volume of surface water discharged from the project area could potentially have a measurable effect on the capacity of the ditches. However, the proposed changes would reduce flow to the ditches from 88 to 26.3 million gallons per year. This could be beneficial to the ditches because there would be additional capacity for drainage. As mentioned above, under existing conditions, the combined capacity of the CDID #1 pump stations is 700,000 gallons per minute. These pump stations are instrumental for removing stormwater and preventing local and area-wide flooding. The need for this pumping capacity is apparent when considering 1 inch of rain falling on the 16,000-acre watershed is equivalent to 434 million gallons of water. Removal of 4.8 inches of rain deposited from a 1986 storm required 54 hours of continuous pumping. Thus, any reduction in discharge to the CDID ditch system could provide a benefit during significant rain events.

3.1.2 No-Action Alternative

Under the No Action Alternative, the Applicant would not construct the coal export terminal and impacts on surface waters and floodplains related to construction of the Proposed Action would not occur. The Applicant would continue with current and future increased operations in the project area. The project area could be developed for other industrial uses including an expanded bulk product terminal or other industrial uses.

No activities that would require a Corps permit or shoreline permit would occur as part of the No-Action Alternative; thus, no impacts on surface waters of floodplains would occur. New construction, demolition, or related activities to develop the project area into an expanded bulk terminal could occur on previously developed upland portions of the project area.

Additionally, the quantity of impervious surface could change but drainage patterns would be similar to existing conditions. Any new or expanded industrial uses that could substantially alter drainage patterns would trigger a new NPDES permit or modification to the permitting process. Impacts related to being located in a Zone B flood zone would be similar to those stated for the Proposed Action.

3.2 Mitigation

Based on the findings in this technical report, the co-lead agencies (Cowlitz County and Washington State Department of Ecology) determined mitigation measures are not required.

[5] USGS Station 14246900 Columbia River at Beaver Army Terminal, near Quincy, Oregon: Average Discharge for Period of Record, 23 years (water years 1969, 1992–2013).

Chapter 4
Required Permits

The Proposed Action would require the following Cowlitz County permits related to surface water and floodplains.

- **Shoreline Substantial Development Permit.** The Proposed Action would result in new development in the shoreline area regulated by the Washington State Shoreline Management Act and *Cowlitz County Shoreline Master Program* (Cowlitz County 2012). Therefore, this alternative would require a Shoreline Substantial Development Permit. This permit is administered by the Cowlitz County Department of Building and Planning.
- **Critical Areas Permit.** The Proposed Action would result in development in designated critical areas because the project area contains a frequently flooded area, an erosion hazard area, and a critical aquifer recharge area. Therefore, this alternative would require a Critical Areas Permit from the Cowlitz County Department of Building and Planning.
- **NPDES Construction Stormwater General Permit.** A Construction Stormwater General Permit would be required from Ecology to address erosion control and water quality during construction.
- **NPDES Industrial Stormwater Permit—Washington State Department of Ecology**. An Industrial Stormwater Permit would be required from Ecology for discharge of industrial use water during operations.
- **Hydraulic Project Approval—Washington Department of Fish and Wildlife.** The Proposed Action would require a hydraulic project approval from WDFW because project elements would affect the Columbia River.
- **Clean Water Act Authorization, Section 404—U.S. Army Corps of Engineers.** Construction and operation of the Proposed Action would affect waters of the United States, including wetlands. Because impacts would exceed 0.5 acre, Individual Authorization from the Corps under Section 404 of the Clean Water Act and appropriate compensatory mitigation for the acres and functions of the impacted wetlands would be required.
- **Rivers and Harbors Act—U.S. Army Corps of Engineers.** Construction and implementation of the Proposed Action would affect navigable waters of the United States (i.e., the Columbia River). The Rivers and Harbors Act authorizes the Corps to protect commerce in navigable streams and waterways of the United States by regulating various activities in such waters. Section 10 of the RHA (33 U 403) specifically regulates construction, excavation, or deposition of materials into, over, or under navigable waters, or any work that would affect the course, location, condition, or capacity of those waters.

The following measures were identified by the Applicant as measures that would be implemented during construction and/or operations. These measures are assumed to be conditions or requirements of permits identified above that would be issued for the project, and thus are described here. These measures were considered when evaluated the potential impacts of the project:

- Based on site grading and drainage areas, five water quality ponds (wetponds) will treat runoff based on Ecology requirements. In general, the ponds are sized for treatment of the volume and

flow from the water quality design storm event (72% of the two-year storm). Additional storage will be provided within the coal storage area so that the runoff is always treated within the stockyard area, even for larger storm events. The ponds are designed to provide settlement as the water passes through. Subsequently, water released from these ponds will be conveyed downstream to the existing pump station outfall 002A that discharges into the Columbia River via an existing 30-inch steel pressure line. The ponds that treat runoff from the coal stockyard will harvest water for circulation around the site for multiple uses, including dust control measures.

The Ecology criteria will be used as the basis of design, which utilizes the Western Washington Hydrology Model computer simulation for facility sizing. Because of the flat nature of the site, some surface ponding will occur in both the yard areas and open conveyance systems. The piped conveyance systems will be sloped at .50% minimum.

- Additional water storage would be provided within the coal storage area in the event of a larger storm event. Water volumes exceeding the demands for reuse would be discharged offsite via the existing outfall 002A into the Columbia River. Water released offsite would be treated and would meet the requirements of Ecology and required discharge permits.

Chapter 5
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