Critical Areas Report
and Habitat Management Plan
for
Port of Kalama
T-Barge Dock
Kalama, Washington

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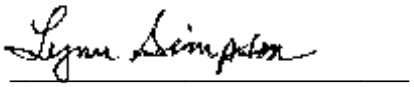
SIGNATURE

The information and data in this report were compiled and prepared under the supervision and direction of the undersigned.



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KMC 15.02.130(F) requires that an HMP be prepared by a qualified professional. Ms. Simpson meets the requirements of a qualified professional by education and experience. She has a B.A. in Geography/Environmental Studies and a B.S. in Chemistry and has worked for ELS for over 15 years as an Environmental Scientist. Ms. Simpson has been certified by the Washington Department of Transportation as a biological assessment senior writer for Endangered Species Act consultation. She has also written numerous NEPA and SEPA documents, as well as wetland and stream mitigation plans.

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CRITICAL AREAS REPORT

On behalf of the Port of Kalama, Ecological Land Services, Inc. (ELS) has completed this critical areas report addressing fish and wildlife habitat conservation areas as a component of the permitting process to install a T-barge dock, pier, and gangway on Port of Kalama property. A habitat management plan (HMP) is also required, and it is included in this document. Project figures are attached.

PROJECT DESCRIPTION

Project Location

The Port of Kalama proposes to install a T-barge dock, pier, and gangway on their property on the east bank of the Columbia River at approximately river mile (RM) 75.2 near the existing marina. A federal nexus is created by applying to the U.S. Army Corps of Engineers' (Corps') Portland District for a permit to install piling, as well as overwater and floating structures, in Waters of the United States.

The project is located directly across from 380 West Marine Driver in Kalama, Washington, Cowlitz County and is in Section 17 of Township 6 North, Range 1 West of the Willamette Meridian (see Sheets 1 and 2). The project is also within the 170800030306 6th field Hydraulic Unit Code and Water Resources Inventory Area 27 (Kalama/Lewis watersheds).

The Port extends along the east bank of the Columbia River from RM 72 to RM 77 and is located west of Interstate 5. The proposed pier will be located near the marina at RM 75.2 on approximately 5.43 acres of land owned by the Port (parcel number 41335). The aquatic land where the dock will be moored is within Waters of the State. The Port has an aquatic lands lease with the Washington Department of Natural Resources at this location.

Project Description

The T-Barge Dock Project proposed at the Port of Kalama is intended to provide berthing and cargo loading and unloading for three to five commercial boats in the range of 40 to 65 feet long. Their drafts are shallower than the proposed T-barge dock.

After project construction, the Port will lease the dock to the local commercial company that delivers ship stores and transports crew members. Ship stores include inventory carried on-board a ship to meet its daily requirements, such as food, water, general supplies, medical supplies, safety supplies, spare parts, etc. Pedestrians and forklifts will use the pier and gangway for crew access and to safely and efficiently move ship supplies between the land and the moored vessels. Electricity and water will be provided to the dock from existing marina utilities.

There will be no additional barge or ship traffic produced as a result of this project. This project will reduce fuel consumption and will reduce river miles travelled by the delivery boats.

Construction Activities

Drawings and photoplates of the project are attached to this document (Sheets 1 through 10).

Upland Area
Approximately 0.03 acres of the upland parcel adjacent to the dock will be used for staff vehicle parking and a truck loading/unloading area for cargo. This area is currently graveled and will be maintained as a graveled surface. Stormwater currently drains away from the river and toward the roadway, and the proposed project will maintain this flow direction.

Pier
The proposed cast-in-place concrete wall abutment and concrete deck (90 square feet) will support the landward portion of the pier. Construction will require equipment such as excavators, dump trucks, concrete trucks, compaction machines, delivery trucks, and forklifts. The river level is lower than the work area, and BMPs will be in place so that uncured concrete will not be allowed to enter the water.

Access to the barge dock will be from a 12-foot wide, 49.5-foot long, stationary pier supported by seven, 18-inch-diameter steel pipe piles. Four of the piles will be located above OHW and three will be located below OHW. Pier framing will consist of steel beam stringers and a fully grated deck of about 516 square feet. The decking material will be specified during a later design phase and will have at least 25 percent functional grating. Pier components will likely be manufactured offsite, and assembled on site. A steel-beam pile cap will be welded to the top of the piles.

Gangway Ramp
The 11'-4"-wide by 100-foot-long gangway with a through-truss frame, hand rails, and deck grating made of aluminum. The decking material will be specified during a later design phase and will have at least 25 percent functional grating.

T-Barge Dock
The floating structure is a "T" shaped pontoon that the Port will re-purpose. It is constructed entirely of steel with overall dimensions of about 171 feet by 67 feet with a depth of 12 feet. Its draft is between 6 and 9 feet, with a freeboard of between 3 and 6 feet. The main section's length is 151 by 20 feet, and the end tee is 67 by 20 feet for a total surface area of 4,360 square feet.

The pontoon is painted and is similar to a barge in appearance. It was originally built to transport floating sections for the new SR-520 Bridge from Grays Harbor to Lake Washington. Three 24-inch-diameter steel pipe spud piles will be used to anchor the T-barge. When the barge arrives, the spud piles will be lowered to sink into the substrate under their own weight, so they will not be driven into place. A steel-frame hoist structure and various small mechanical and electrical equipment will be mounted to the existing deck. The barge dock will be ballasted with either City water or sand to achieve the desired draft and freeboard. Water for ballast will not be taken from or released into the Columbia River.

When water levels are at MLLW, the depth from the bottom of the barge dock to the riverbed is estimated at a minimum of 4 feet at the northeast corner. Commercial boats using the dock will be approximately 44, 55, or 63 feet long with a 4.5-foot draft, so they have drafts that are

shallower than the T-barge dock. Dredging will not be necessary to maintain water depths at this time. The Port has an existing permit for maintenance dredging in this area.

Utilities

Lighting will be installed on the pier, gangway, and T-barge that will automatically turn on at night and will be directed at areas necessary for safe working conditions. There are existing street lights in the vicinity from Hendrickson Drive and from marina lighting.

A new 3-inch waterline and new electrical service will be extended from the south end of the marina and along Hendrickson Drive. Water and electrical services will extend along the pier and gangway and onto the barge dock. Electrical service will originate from a pole across the street. Potable water will originate from a water main located near the Port offices, southwest of the existing marina.

Pier, Gangway, and Piling Installation

The pier will be constructed onsite, and the gangway will be prefabricated, delivered and installed. A barge-mounted derrick crane will install the piles and will set the prefabricated gangway onto the pier and T-barge. An additional storage barge, tug boat, and small tender boat will likely be on the water during construction. It is anticipated that all seven pier piles will be installed with a vibratory hammer and then driven to depth and proofed for bearing capacity with an impact hammer. The three log-boom piles will be extracted and relocated 50 feet to the north using a vibratory hammer.

Appendix A in the biological evaluation contains a National Marine Fisheries Service (NMFS) spreadsheet summarizing impact areas from overwater/on-water structures and piling. The following table is a summary of that information and shows proposed overwater and on-water structures, area, location, as well as the type of decking material proposed for each structure.

Table 1. Project Summary

Structure	Dimensions (feet)	Area (square feet)	Decking Material
Waterward of OHW			
Barge Dock	(20' x 67') + (20' x 151')	4,360	Solid
Portion of Pier	12' wide (diagonal to shoreline)	300	100% Grated
Gangway	11'4" x 100' (12 ft overlap w/dock)	994	100% Grated
Move 3 Existing Piles	24" diameter	(9.4 - no net gain)	Not Applicable
Install 3 New Pier Piles	18" diameter	5.3	Not Applicable
Lower 3 Non-Driven New Spud Piles	24" diameter	9.4	Not Applicable
Reduce Log Storage Area	---	- 11,000	Not Applicable
Remove Approx. 10 Orphan Piles	1' diameter	- 8.8	Not Applicable
		***Net Area Waterward of OHW* = - 5,340.1 sf**	
Landward of OHW			
Concrete Landing and Decking	---	90 sf	Solid
Portion of Pier	---	294 sf	100 % Grated
Install 4 New Piles	18" diameter	(7.1 sf beneath pier)	Solid
		***Net Area Landward of OHW* = + 391 sf**	
Net Area of Entire Project	**= - 4,949 sf**		

Notes:
( ) = Not included in net area sum.
There will be 100% grating on the pier and gangway decks. Functional-grating area for the will be at least 25%.

Waterward of OHW

The project has proposed new overwater impact areas from the pier, gangway, and T-barge of 5,654 square feet and will reduce overwater areas of the log boom and log-storage areas by -11,100.7 square feet. Proposed new piles equal 14.7 square feet and proposed piling removal is -70.7 square feet for a net decrease of -56.0 square feet. The net difference of the proposed project waterward of OHW is -4,992 square feet.

Landward of OHW

The project has proposed new impact areas for the concrete landing and a portion of the pier of 384 square feet. Proposed new piles equal 7.1 square feet. The net difference of the proposed project waterward of OHW is +391 square feet.

Total Project

The proposed project will reduce the net in-water and overwater impacts by 4,601 square feet.

Log Boom and Log Storage Area
Three, existing, 24-inch hollow steel piles and log boom on the south side of the existing log storage area will be moved 50 feet northward to create a space for the new T-barge, gangway, and pier. This will reduce the log storage area by about 11,000 square feet.

The Port estimates that the log storage area is used by the tenant at least 50 percent of the time. The log storage area will not be expanded in this location for as long as the T-barge remains in place.

Orphan Piles
Approximately 10 orphan piles near the shoreline will be removed to construct the project. This will reduce the in-water and benthic impact areas by about 9 square feet.

Construction Sequencing
All construction will most likely be done in one continuous phase over 10 to 12 weeks. Pier piles will be driven before the pier is constructed, and the gangway cannot be installed until pier and T-barge float are in place. The contractor will determine the rest of the construction sequencing.

Concrete Details
All concrete work will comply with the 2012 International Building Code and the 2013 Washington State Amendments (IBC). Formwork and falsework will be designed by professional engineer licensed in the state of Washington and approved by the Port of Kalama's project engineer of record. The formwork will be mortar-tight. Concrete forms will be pre-fabricated to the extent possible to minimize onsite construction.

The concrete abutment and wall will be above OHW and will be constructed when river levels are below the work area. Reinforcing steel will be placed inside the forms, and the forms and reinforcing steel will be inspected prior to placing concrete. Concrete will be delivered to the site, placed, and vibrated using hand-held vibration wands to ensure a homogeneous finish. Finishing, curing and form removal will be completed per the relevant codes and specifications.

Concrete and construction materials will not enter the water because BMPs will be implemented. A boom will be placed around the work area and near the shore surrounding the abutment structure to avoid impacts to the aquatic environment.

Pile Installation Details
This project requires three existing 24-inch-diameter steel log-boom piles to be relocated, ten wooden orphan piles to be removed, and seven 18-inch-diameter hollow-steel piles to be installed to support the pier; three pier piles will be installed between OHW and MLLW, and four pier piles will be installed above OHW. Installing the 7 pier piles is estimated to occur over a period of seven days. Additionally, three 24-inch-diameter steel pipe spud piles will be used to anchor the T-barge. When the barge arrives, it will be moved into the plan location and anchored into place with the spud piles. The spud piles will not be driven, but will be lowered to sink into the substrate under their own weight.

It is anticipated that all seven pier piles will be installed with a vibratory hammer to tip elevations of about 20 feet below the mudline, then they will be driven for another 10 to 20 feet with an impact hammer to obtain bearing-capacity data (pile proofing). The designer estimates this will require an estimated 1,000 blows per pile. Each pile will also require impact-hammer proofing for about 60 minutes. A bubble curtain will be deployed when using the impact hammer to attenuate underwater sound-pressure levels (see Appendix B). No noise attenuation will be used during vibratory pile driving, because it does not generate enough noise to cause injury to listed fish or marine mammals. The area of underwater noise impacts is shown on Sheet 6.

A soft-start technique will be used for both vibratory and impact-hammer pile driving to allow aquatic species to leave the work area before full energy is used to drive piling. For vibratory pile driving, the contractor will initiate noise for 15 seconds at 40 to 60 percent reduced energy, followed by a 1-minute waiting period. This procedure will be repeated two additional times before full energy is applied. The soft-start procedure will be conducted prior to driving each pile if vibratory installation stops for more than 30 minutes. For impact driving, the contractor will be required to use an initial set of three strikes at 40 percent energy, followed by a 1-minute waiting period, then two subsequent three-strike sets (NMFS 2012).

Orphan Pile Removal

Orphan piles will be removed by vibrating the pile as it is extracted. If the pile breaks, the remaining portion will be removed if it is less than 2 feet below the sediment surface. Any remaining holes will be filled with clean sand. Orphan piles will be taken to an approved disposal site because they may contain creosote.

Secondary Project Features

Interdependent Activities

Interdependent activities are part of a larger action, have no independent purpose, and would only occur if the project occurs. Interdependent activities associated with this project include material staging, storage, and a temporary soil storage area for soils excavated from pier abutment construction. Construction materials and supplies will be stored either on the work barge or on the upland parcel.

Excavated soil from abutment construction will be stockpiled on the upland parcel until the area around the concrete wall abutment is backfilled. The estimated 60 to 70 cubic yards of excess soils will be covered with plastic to avoid erosion during precipitation events and will eventually be removed from the site to be placed on Port property. No traffic detours will be necessary.

Interrelated Activities

Interrelated activities are a part of a larger action; however, they could be performed separately from the larger action. This includes work that is outside of Corps jurisdiction, such as work performed landward of OHW. Interrelated activities for this project are listed below:

- Permanent structures landward of OHW: concrete wall abutment and four, 18-inch-diameter steel pipe piles.
- Docked vessels: there will be moorage for three to four work vessels ranging from 44 feet to 63 feet in length.

PROJECT TIMING

All construction will most likely be done in one continuous phase over 10 to 12 weeks. Pile driving and removal is the only proposed in-water work, which will take approximately 3 to 4 weeks. Most of the pile driving and all of the piling removal will be completed using the vibratory method, which does not cause injury to aquatic life. For this reason, all project work may occur during any time of the year.

EXISTING SITE CONDITIONS AND CRITICAL AREAS

Existing Conditions

ELS biologists conducted a site visit on January 15, 2018 to observe existing site conditions. The upland portions of the project area have been previously filled to approximately 23 feet in elevation using the Columbia River Datum (CRD). Ordinary high water (OHW), according to the Corps is 12.0 feet CRD, and mean lower low water (MLLW) is -2.0 feet CRD. The 100-year flood elevation in the area is 19.7 feet CRD. The project area is located outside of the influence of salt water from the ocean, but it is influenced by tides. The waterward portion of the proposed dock is approximately 700 feet from the federal navigational channel.

Existing conditions at the project site are discussed in detail and have been quantified as part of the habitat equivalency analysis that is presented in Appendix D of the biological evaluation.

Terrestrial Habitat Conditions in the Action Area

The project site is on the east bank of the Columbia River in the central portion of the Port of Kalama and adjacent to the marina. East of the project site are a port access road and internal railroad tracks, Interstate 5, the busiest railway line on the west coast, and the City of Kalama. About one mile downstream, to the north, is the mouth of the Kalama River.

The project area and surrounding properties are zoned for heavy industrial activities. Nearby industries include a lumber mill with log storage yards, a chemical manufacturer, and warehouses.

The terrestrial portion of the action area includes the 0.03-acre parcel that is currently not in use. It is proposed for use as a staging and stockpile area during construction and a parking and truck unloading area. This parcel is currently above the 100-year floodplain and is covered with compacted gravel.

The riverbank on the project site is at a 1:1 slope or steeper with riprap 2 to 3 feet in diameter. There are scattered California indigo trees growing along the bank between the riprap. This species is considered a non-native species that is common along the riverbanks in the lower Columbia River. There were a few large logs floating along the shoreline during the site visit on January 15, 2018.

Aquatic Habitat Conditions in Action Area

The project area is located at RM 75.2, which is outside of the influence of salt water from the ocean, but it is influenced by tides. The proposed project is located in water deep enough that it does not have to be dredged, and the project is about 700 feet outside of the navigational channel. The substrate in this reach of the river is dominated by sand and silt. Most of the

project area is in shallow-water habitat (less than 20 feet deep from OHW). There were no aquatic plants observed at the project site.

The proposed dock is at the entrance of the Port of Kalama marina. There is an existing log boom and log-storage area at the proposed barge dock location that is used by the adjacent lumber mill for on-water log storage. During the site visit, the log storage area appeared to be nearly full of logs, as shown on Sheet 10, and cormorants were perched on all three piling that are proposed for relocation and to have pile caps installed on them.

The most recent 303(d) list shows water-quality impairments within the Columbia River in the action area (Ecology 2018). At the project site and downstream (north) past Longview is an area listed as Category 5 (waters needing a total maximum daily load [TMDL]) for high water temperature and dissolved oxygen. Existing water quality in the project vicinity will have no effect on the project, and the project will have no effect on these water-quality parameters. The website showed no sediment-quality impairments in the vicinity.

Critical Areas Present

This report has been prepared according to requirements in the *Kalama Municipal Code* (*KMC*) *Critical Areas Protection Chapter 15.02* (KMC 2017). Critical areas described in this chapter include geological hazards, critical aquifer recharge areas, wetlands, frequently flooded areas, and fish and wildlife habitat conservation areas.

There are no geological hazards on or near the site such as slides, erosion, or mining hazards. The site, however, is located on alluvial soils where it is susceptible to liquefaction during earthquakes. Liquefaction is not considered a geological hazard, but is considered a "geological concern" by the KMC, which does not require further study. Features of the project that are in upland areas are currently above the 100-year floodplain, so they are not considered to be in a frequently flooded area. There are no wetlands on or near the project, which is in an industrial area that has been previously filled.

Critical aquifer recharge areas are determined by a very high susceptibility to contamination of the underlying aquifer due to high soil permeability and a high water table. Gravel parking areas and paved areas are impervious surfaces, because stormwater is unable to readily permeate into the soils. Therefore, the project will not affect a critical aquifer recharge area.

The only type of critical area addressed in this report are areas of fish and wildlife habitat conservation (KMC 15.02.130). Areas that will be addressed in this report are associated with the Columbia River. There are no other conservation areas on or near the site. The Columbia River is a shoreline of statewide significance (Type S) and has a recommended riparian buffer of 250 feet (Table KMC 15.02.130-2). However, the project area consists of impervious surfaces and currently provides no riparian habitat function that benefits the river or wildlife. Because the project does not propose to change or improve the riparian habitat, it will not be discussed further in this report.

Critical fish and wildlife habitat conservation areas include nine classifications. The following classifications will not be addressed because they do not occur within Kalama and they do not

apply to the project's vicinity: Classification 2: species of local importance (wildlife requiring protection such as western pond turtle, blacktail deer, bobcat, raccoon, and bear), Classification 3: commercial and recreational shellfish areas (crawfish fishery), Classification 4: kelp and eelgrass beds and herring and smelt spawning areas (Columbia River smelt [eulachon] spawning areas will be addressed in other classifications), Classification 5: naturally occurring ponds under 20 acres, state natural preserves, and unintentionally created ponds, Classification 8: state natural area preserves and natural resource conservation areas, and Classification 9: intentionally created ponds.

Critical fish and wildlife habitat conservation areas that will be addressed in this report are classifications associated with the Columbia River: Classification 1: areas where listed species have a primary association, Classification 6: waters of the state, and Classification 7: waterbodies planted with gamefish by a governmental entity. Because this project affects a Classification 1 critical fish and wildlife habitat conservation area (areas where listed species have a primary association), a habitat management plan has been written and is included with this document.

SITE DEVELOPMENT ALTERNATIVES

The Port of Kalama is installing a dock to support water-dependent commerce. Currently, a local commercial company serves the shipping industry by delivering ship stores and transporting crew members with small vessels between land and the ships. The small vessels are temporarily moored at the Port of Kalama marina; however, there are not enough slips, so they cannot fully operate their business. Additionally, the Port has determined that their marina will serve recreational, not commercial uses. For these reasons, the Port proposes to provide separate mooring facilities.

Most shipments come from trucks delivering cargo from Seattle to Portland or Astoria and then they are delivered to ships by boat from Portland or Astoria to the ship's location somewhere between Portland and Astoria (102 river miles apart). Boats sometimes pick up cargo in Portland and have to deliver it to Astoria, and vice versa. There is currently no certainty where the cargo will be trucked and where the boat will have to travel from to pick up and deliver their cargo.

By having their truck deliveries and boat operations in Kalama, the tenant will have one definite, central location for truck deliveries between Portland and Astoria. If this project is constructed, truck cargo from Seattle will be delivered to Kalama, saving truck mileage. The Kalama dock and location will also save fuel, river miles, and crew time to deliver cargo to the ships. The following trips are common under existing conditions, and examples of boat distances and running times are as follows: Portland to Kalama is 54 river miles round trip and takes 5 hours, Longview to Kalama is 12 river miles round trip and takes 1 hour, Astoria to Kalama is 150 river miles round trip and takes 8 hours, and Portland to Astoria is 204 river miles round trip and takes 13 hours. It is common for boats to make the trip from Portland to Astoria to pick-up truck deliveries and deliver them to ships.

No-action alternative means that service boats will have to find another commercial docking and unloading facility that is likely to be docked farther away from the ships they serve. This would

create a larger carbon footprint for the project because the proposed location is a central location that provides the most efficient transportation routes for trucks and service boats.

Currently, stormwater from the upland parking area flows away from the river. The site does not require a stormwater management plan, because there will be no change to current stormwater runoff patterns.

IMPACT AVOIDANCE AND MINIMIZATION MEASURES

The project has been designed to avoid and minimize impacts to habitats and species that may potentially occur in the vicinity of the project area. This will be accomplished by using the following measures:

General

- Stormwater runoff from the upland project area will continue to be directed away from the river where it will infiltrate.
- Conditions in local, state, and federal permits will be followed.
- Any stockpiled soils from concrete abutment excavation will either be hauled away the same day or covered with plastic until it is removed from the site.
- Disturbed soils from around the abutment will be stabilized by grading and compaction to avoid impacts to the river from erosion.

In-Water

- The T-barge dock, work boats, and the derrick barge, will not "ground out" at any time. Commercial boats moored at the barge dock have drafts are shallower than the T-barge dock.
- Contractors will have a spill containment and pollution control plan, and employees will be trained in its implementation.
- The contractor will maintain an oil-absorbing floating boom around in-water and overwater work areas.
- No debris will be allowed to enter the river from the barge, boats associated with construction, or moored boats.
- Pile driving with an impact hammer to proof piles will take place within a bubble curtain.
- A soft-start technique will be used for vibratory and impact-hammer pile driving to allow any aquatic species to leave the work area before full energy is used to drive the pile. The technique was explained previously in this section.
- Pile caps will be installed on all piling associated with this project to prevent perching by birds that feed on juvenile salmon.

POTENTIAL CRITICAL AREA IMPACTS

Direct Impacts

Direct impacts take place at or near the time of construction. The following direct effects to the environment may occur:

Riparian

Riparian habitat in this area does not provide habitat functions.

Aquatic

- Potential contaminant releases to the river from vessels used during construction.
- Intermittent, underwater noise from vibratory pile driving 6 piles in the water, estimated to extend as far as 2.6 miles from the project site for about 7 days.
- Intermittent, underwater noise from impact-hammer pile driving 2 pier piles in the water, 1,000 strikes per pile for about 2 days. Noise above background levels is estimated to extend as far as 2.6 miles from the project site for about 60 minutes per pile.
- Shading effects from the floating T-barge will be approximately 5,023 square feet.
- Minor shading effects from the fully grated gangway and pier over shallow-water habitat. At water levels between MLLW and MHHW, the pier will not be over the water. The gangway will be elevated above the water surface from about 3 to 20 feet.
- Benthic, epibenthic, and water-column impacts from three pier piles below OHW and three spud piles below OHW, totaling 14.7 square feet.
- Some additional nighttime lighting from lights directed at work areas of the barge, gangway, and pier, although this area is currently affected by light from the adjacent marina and roadway.

Indirect Impacts

Indirect impacts are defined as those negative effects that are caused by the project, but occur after project completion. There will be no negative indirect effects from this project for the following reasons:

- It will not increase ship traffic in the Columbia River.
- No anticipated developments related to this project.
- There will be no additional employees required.
- The project will not create the need for new or improved roadways.

Beneficial Effects

The biggest beneficial effect of the project is reducing the log storage area by 11,000 square feet. This will reduce water shading and bird perches that encourage birds and piscivorous fish to prey on listed juvenile fish. Pile caps will be placed on new and relocated piles to reduce bird perches. In addition, 10 orphan wooden piles will be removed in the vicinity of the dock.

The project's service boats are currently delivering material from Portland or Astoria ports to ships in the river to meet supply needs. Boat miles traveled on the river will decrease because service boats will have a central truck-delivery location thereby reducing their carbon footprint.

Probable Cumulative Impacts

The primary negative project impact will be from shading aquatic habitat with the on-water and overwater structures; however, the log storage area will be reduced in size by more than the proposed project impact area. Therefore, the project will not have negative cumulative impacts.

When considered together, all project effects constitute the action area. This area extends in the water from Astoria to Portland and is shown on Sheet 7.

DEVELOPMENT PERFORMANCE STANDARDS

The KMC *15.02.130(D)* requires development to conform to the following items (*italics*) when impact to critical fish and wildlife habitat cannot be avoided, followed by a discussion of how they are met for this project (in regular font).

a) *Locate buildings and structures in a manner that preserves the habitat or minimizes adverse impacts.*
   As discussed in the introduction, the riparian habitat provides no functions. This project was designed to minimize impacts to the river by acquiring the smallest mooring barge that can meet the project need. A floating structure is necessary to provide moorage for small boats that are not large enough to use a stationary pier. Avoidance and minimization measures are discussed in a previous section of this document.

b) *Consolidate habitat and vegetated open space in contiguous blocks, and where possible, locate habitat contiguous to other habitat, open space, or landscaped areas to contribute to ta continuous system of corridor that provides connections to adjacent habitat areas.*.
   This project site has no current habitat value, and there are no potential habitat connections to adjacent areas.

c) *Use native species in any landscaping of disturbed or undeveloped areas an in any enhancement of habitat or buffers.*
d) *Emphasize diversity in selection of plant materials and structure of landscaping.*
   No landscaping or buffer enhancement is proposed.

e) *Remove and/or control any noxious or undesirable species of plants as identified by the Cowlitz County Weed Control Board.*
   Port policy for maintaining its property is to control undesirable plants as they occur.

f) *Demonstrate how existing trees will be preserved, preferably in groves.*
   There are no existing trees.

g) *Preserve and introduce native plant species, which serve as food, shelter from climatic extremes and predators, and structure and cover for reproduction and rearing of young for critical wildlife.*
   There are no existing trees to preserve and no plans to introduce new plants. This area has no existing native plants and there are no corridors to suitable habitat, so this standard does not apply to this project.

h) *Preserve the natural hydraulic and ecological functions of drainage systems.*
   There are no natural drainage systems on or near the project site other than the Columbia River. A floating barge will have a negligible hydraulic effect on the Columbia River because of its relative size compared to the project. As discussed in the *Potential Habitat Impacts* section above, there will be insignificant impacts to ecological functions of the Columbia River.

i) Preserve critical fish and wildlife habitat areas through maintenance of stable channels, adequate low flows, (and) management of stormwater runoff, erosion, and sedimentation.
The project will not affect the river's channel stability or flows and will not increase streambank erosion or sedimentation. Stormwater is currently directed away from the river to Hendrickson Drive, and there are no proposed changes.

j) Manage access to critical fish and wildlife habitat areas to protect species, which are sensitive to human disturbance.
The project purpose is to provide an area near Interstate 5 that allows trucked supplies to be loaded onto delivery boats. The proposed area already has human disturbances from surrounding Port activities. By reducing the log storage area, aquatic species will benefit from reduced on-water shading when compared to existing conditions.

k) Maintain or enhance water quality through control of runoff and use of best management practices.
The project will not affect the river's channel stability or flows and will not increase streambank erosion or sedimentation. Stormwater is currently directed away from the river to Hendrickson Drive, and there are no proposed changes.

HABITAT PROTECTION FOR FISH AND WILDLIFE CONSERVATION CLASSIFICATIONS
Habitat protection for Classifications 1, 2, 4, 6, and 7 can be found in the habitat management plan below. Classifications 3, 5, 8, and 9 do not apply to this project.

HABITAT MANAGEMENT PLAN
Appendix D of the KMC (Habitat Management Report Requirements) states that all information required by Appendix A of the KMC (Critical Area Permits) be submitted. This information has been discussed in the first section of this document.

PRIORITY SPECIES AND HABITATS NEAR THE PROJECT SITE
The following table shows state priority habitats and federally listed or state-listed species, as well as state candidate species that have a primary association with habitat within 1,300 feet of the project. The list was compiled using the most recent state and federal species lists (WDFW 2017, WDNR 2018, NMFS 2018a and 2018b, USFWS 2017).

Table 2. State Priority Habitats and Federal and State Endangered, Threatened, Candidate, and Sensitive Species that have Primary Association with Habitat on or Adjacent to the Project Area.

Species or State Priority Habitat	State Status	Federal Status
Fish		
Chinook Salmon *(Onchorhynchus tshawytscha*)		
Lower Columbia River Chinook ESU	Candidate	Threatened
Upper Willamette River Chinook ESU	Candidate	Threatened
Upper Columbia River Spring-run Chinook ESU	Candidate	Endangered
Snake River Spring-run Chinook ESU	Candidate	Threatened
Snake River Fall-run Chinook ESU	Candidate	Threatened
Chum Salmon (*Onchorhynchus keta*)		
Columbia River Chum Salmon ESU	Candidate	Threatened
Coho Salmon (*Onchorhynchus kisutch*)		
Lower Columbia River Coho Salmon ESU	Candidate	Threatened
Sockeye Salmon (*Onchorhynchus nerka*)		
Snake River Sockeye DPS	Candidate	Endangered
Steelhead (*Onchorhynchus mykiss*)		
Lower Columbia River Steelhead DPS	Threatened	Threatened
Upper Willamette River Steelhead DPS	Threatened	Threatened
Middle Columbia River Steelhead DPS	Threatened	Threatened
Upper Columbia River Steelhead DPS	Threatened	Threatened
Snake River Basin Steelhead DPS	Threatened	Endangered
North American Green Sturgeon Southern DPS *(Acipenser medirostris)*	None	Threatened
Eulachon (Columbia River Smelt) Southern DPS *(Thaleichthys pacificus)*	Candidate	Threatened
Bull Trout – Columbia River DPS *(Salvelinus confluentus)*	Candidate	Threatened
River Lamprey (*Lampetra ayresi*)	Candidate	Candidate
Birds		
Western Grebe (*Aechmophorus occidentalis)*	Candidate	None
Bald Eagle (*Haliaeetus leucocephalus*)	Sensitive	Species of Concern
Purple Martin (*Progne subis*)	Candidate	None
Priority Habitats		
Instream	Priority Habitat	Not applicable
Riparian	Priority Habitat	Not applicable

MANAGEMENT RECOMMENDATIONS

Effects to federally listed species are addressed in the biological evaluation written for this project (ELS 2018) as required by the U.S. Army Corps of Engineers for the Endangered Species Act consultation. Effects to species are generally avoided or minimized if the project meets management recommendations that are discussed below.

Salmon and Steelhead

Federal

The Lower Columbia Salmon Recovery and Fish and Wildlife Subbasin Plan (LCFRB 2010) is being used as a recovery plan for salmon and steelhead by the National Marine Fisheries Service. This plan gives the following key recovery priorities in the lower Cowlitz subbasin to attain recovery of listed salmon and steelhead:

1. Manage regulated stream flows through the hydropower system.
2. Restore floodplain function, riparian function, and stream habitat diversity.
3. Protect intact forest in headwater basins.
4. Manage growth and development to protect watershed processes and habitat conditions.
5. Address immediate risks with short-term habitat fixes.
6. Manage forest lands to protect and restore watershed processes.
7. Restore passage at culverts and other artificial barriers.
8. Align hatchery priorities consistent with conservation objectives.
9. Manage fishery impacts so they do not impede progress toward recovery.
10. Reduce out-of-subbasin impacts so that the benefits of in-basin actions can be realized.

This project is limited in scope. Items 1 through 10 do not apply to this project.

State

WDFW does not have specific documents that have a short list of management recommendations for salmon; however, they do provide them for rainbow trout/steelhead (Rodrick and Milner 1991). Steelhead and salmon have similar life histories and habitat needs, so they are expected to be similar, if not identical. The following are management recommendations for steelhead:

- Buffer zones of at least the width of the height of the tallest tree should be maintained along stream banks, which provide rainbow trout and steelhead habitat, and any other stream which directly or indirectly influences rainbow trout and steelhead habitat.
- Road construction and maintenance activities should be avoided adjacent to streams which provide rainbow trout and steelhead habitat.
- Instream structures, such as bridges, piers, boat ramps, or culverts must not impede the natural movements of rainbow trout and steelhead.
- Waters inhabited by steelhead parr should not be treated with metal-based herbicides during the period March 1 through June 15.

Buffer zone management recommendation does not apply to this project because the existing conditions of the riparian buffer provide little to no habitat functions. This project avoids road construction and maintenance, and the dock will not impede natural movements of aquatic life. In addition, project does not propose herbicide treatment. For these reasons, the project meets state steelhead management recommendations.

North American Green Sturgeon

The federal recovery plan for this species has not yet been finalized, so there are no federal management recommendations. WDFW does not list management recommendations for this species.

Eulachon
WDFW does not list management recommendations for this species. The federal recovery plan for this species has not yet been written, so there are no federal management recommendations. The final recovery plan (NMFS 2017c) lists many management recommendations. The following priority actions that have habitat components are listed in the plan as follows:

- Continue to work with the U.S. Army Corps of Engineers to develop and implement actions to reduce impacts from dredging, e.g., entrainment, on eulachon.
- Continue to work with the states of California, Oregon, and Washington to implement programs that improve water quality for temperature.
- Continue to work with Federal agencies and the states of California, Oregon, and Washington to implement programs, e.g., revetment breaching and removal, to reduce the impacts of shoreline construction on eulachon and their habitats.

This project does not require dredging, it will have no effects on water temperature, and it will not cause increased impacts along the shoreline over current conditions. Therefore, the project complies with federal management recommendations for eulachon.

River Lamprey
This species is not federally listed, so there are no federal management recommendations. WDFW has not provided management recommendations for river lamprey. In our professional opinion, management recommendations would be similar to those for salmon and steelhead.

Bull Trout
Federal management recommendations are not explicit for the project area but state that for the Olympic Management Unit, recovery of bull trout includes protecting, restoring, and maintaining suitable habitat conditions and water quality with actions such as removing fish-passage barriers, maintaining and improving water quality, and improving habitat conditions in and along mainstem rivers (USFWS 2004). The project will not degrade habitat for bull trout, which are rare in the Columbia River. Water quality will not be negatively affected by the project, and it may have an overall beneficial effect by reducing the amount of petroleum products used by the service boats and reducing the number of river miles traveled. The mitigation project will improve instream habitat.

WDFW (Rodrick and Milner 1991) advises the following management recommendations for streams that contain bull trout and steelhead: 1) maintain buffer zones along stream banks of at least the width of the height of the tallest tree or 50 feet, whichever is wider, 2) avoid road construction and maintenance activities, and 3) avoid in-stream structures, such as bridges, trestles, boat ramps, or culverts, that impede the natural movements of fish. Current site conditions do not provide riparian habitat functions, and the project does not include road construction or maintenance. Habitat impacts from instream structures will be mitigated by improving instream cover at the mitigation site. For these reasons, state management recommendations will be met.

Western Grebe
This species is not federally listed, so there are no federal management recommendations, and WDFW has not provided management recommendations for this species.

Bald Eagle
The WDFW downloadable document updated on May 2011 (Larsen *et al* 2004) refers the viewer to the USFWS website, because the bald eagle listing in Washington was downlisted to sensitive, so it does not require a bald eagle management plan. However, the USFWS website does not have management recommendations, only guidelines to whether a permit is required under the Bald Eagle and Golden Eagle Protection Act for certain work within certain distances from nests and roosts.

Purple Martin
This species is not federally listed, so there are no federal management recommendations. The following are state management recommendations (NatureServe 2016).

- Retain snags during timber harvest, especially near saltwater and wetland sites.
- Retain old pilings. Coordinate w/WDFW if removing creosote-containing piling with a nest box or that have cavities used by purple martins.
- Create snags in forest openings or edges if snags are lacking or limited.
- Use fire to create or maintain favorable foraging habitat, where appropriate.
- Add nest boxes when natural cavities are lacking or limited and cannot be created.
- If pesticides are used where martins occur, refer to Appendix A for assessing pesticides and their alternatives.

This project does not propose timber harvest, removing old piling, or pesticide use. The project will not impact upland habitat or reduce nesting opportunities. Therefore, management recommendations will be met.

Instream Habitat
WDFW does not have specific documents that have a short list of management recommendations for instream habitat. Aquatic Habitat Guidelines are a series of documents with guidelines to facilitate the consistent application of good science and practice for resources and habitat management, project design, construction, and operation in, near, or affecting aquatic systems. This project meets guidelines in these documents, which are available on the WDFW website.

Riparian Habitat
The WDFW management recommendation for riparian habitat (Knutson and Naef 1997) is to "protect riparian habitat areas". Standard recommended RHA widths for areas with typed and non-typed streams. If the 100-year floodplain exceeds these widths, the RHA width should extend to the outer edge of the 100-year floodplain.

- Type 1 and 2 streams; or Shorelines of the State, Shorelines of Statewide Significance: 250 feet.
- Type 3 streams; or other perennial or fish bearing streams 5 to 20 feet wide: 200 feet.
- Type 3 streams; or other perennial or fish bearing streams less than 5 feet wide: 150 feet.
- Type 4 and 5 streams; or intermittent streams and washes with low mass wasting potential: 150 feet.
- Type 4 and 5 streams; or intermittent streams and washes with high mass wasting potential: 225 feet.

The following are important additions to the recommended RHA widths:

- Larger RHA widths may be required where priority species occur; consult Appendix D for these widths.
- Add 100 ft to the RHA's outer edge on the windward side of riparian areas with high blowdown potential.
- Extend RHA widths at least to the outer edge of unstable slopes along Type 4 and 5 waters in soils of high mass-wasting potential.

This project has little to no impact on the riparian habitat. Therefore, the project meets the intent of the riparian management recommendations.

CONCLUSION

The proposed project will avoid and minimize impacts to species listed by the state and federal agencies and to state priority habitats. Unavoidable project impacts will be mitigated by constructing two large woody structures that improve instream habitat, especially for juvenile salmonids. Beneficial project effects will be from reduced fuel consumption by service boats that will travel fewer river miles with less operating time to perform their services and potentially reducing the overall release of petroleum products into the river. For these reasons, the project will not have an overall negative impact on critical areas.

STATEMENT OF ACCURACY AND ASSUMPTIONS

Information in the critical areas report and the habitat management plan are based on designs by an engineer with extensive experience in designing similar structures. Assumptions made regarding the presence of listed species, project impacts on habitat and species, and whether the project meets management recommendations are from numerous Endangered Species Act consultations by the National Marine Fisheries Service and from cited WDFW documents. Using judgement based on our professional experience, the methods and conclusions in this document are accurate and are based on best-available science.

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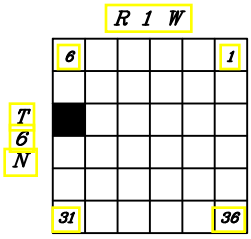
FIGURES

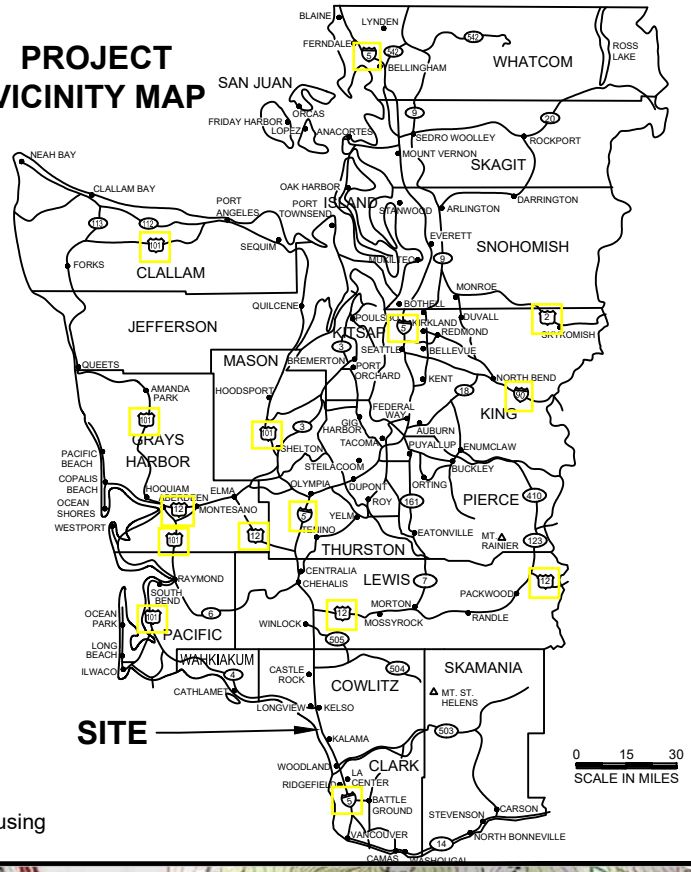
46.0097° Latitude
-122.8484° Longitude

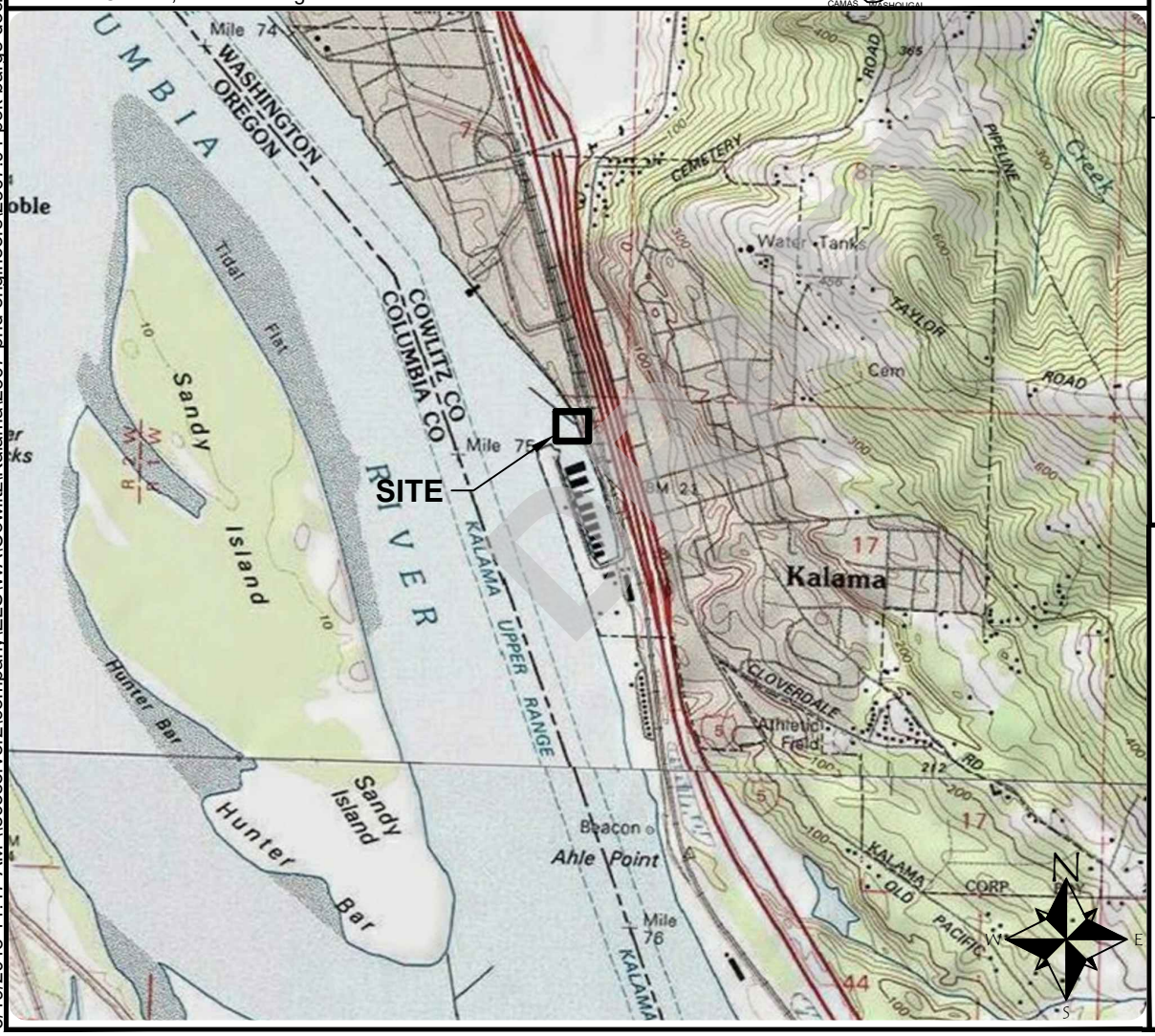
LOCATION MAP



NOTE:
USGS topographic quadrangle map reproduced using MAPTECH Inc., Terrain Navigator Pro software.

PROJECT VICINITY MAP





PROPOSED: New Dock
IN Columbia River - RM 74.3
NEAR: Kalama
COUNTY: Cowlitz **STATE:** WA
SHEET 1 **OF** 10
DATE: 3/19/18

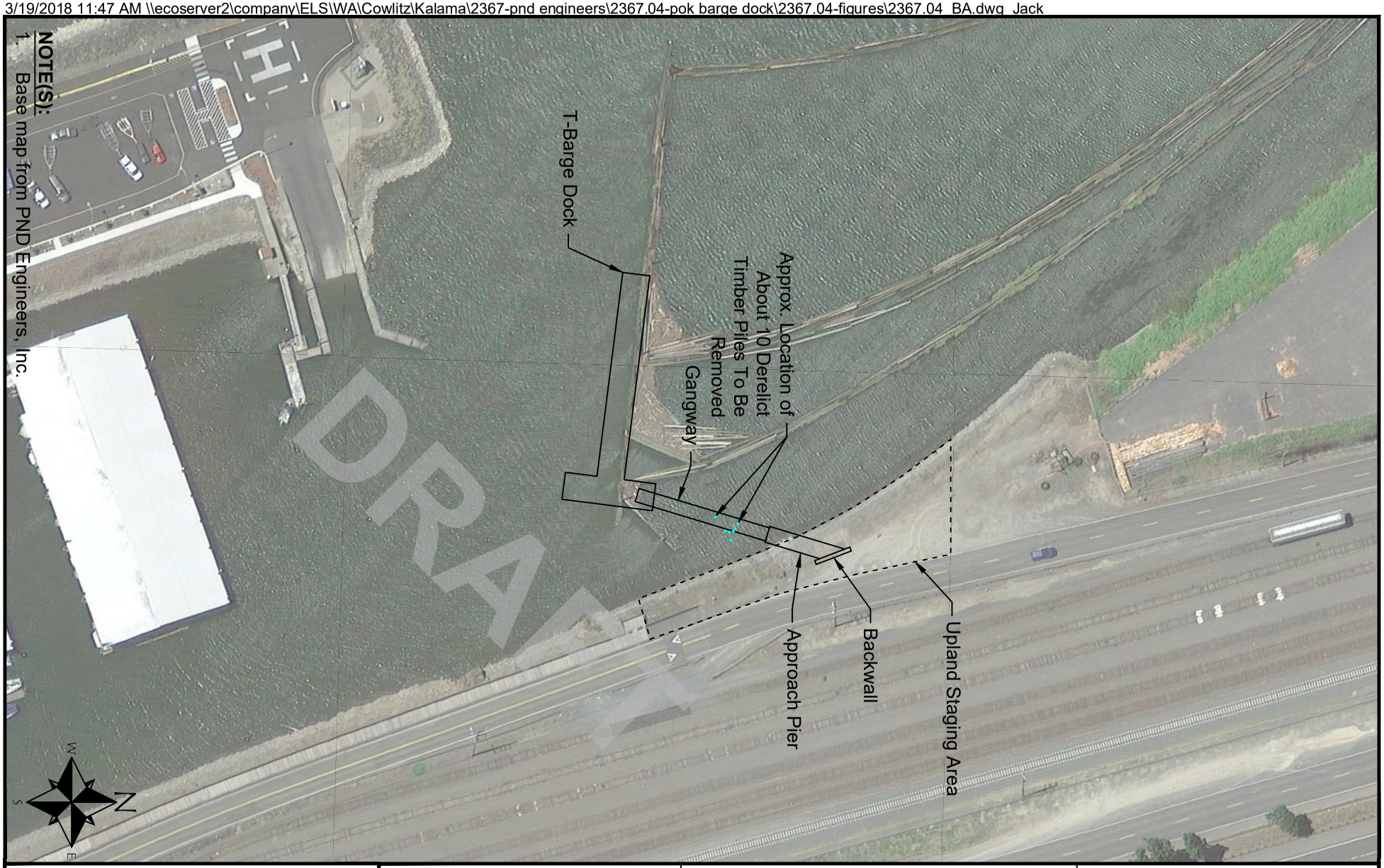
VICINITY MAP
APPLICANT: Port of Kalama
PROJECT NAME: Port of Kalama T-Barge Dock
REFERENCE #: Not Yet Assigned
SITE LOCATION ADDRESS:
1296 Third St. NW
Kalama, WA

PURPOSE:
Moor small vessels to serve shipping industry
DATUM: NAD83
ADJACENT PROPERTY OWNERS:
See JARPA

SCALE IN FEET
0 2000 4000

1157 3rd Ave., Suite 220A
Longview, WA 98632
Phone: (360) 578-1371

Ecological Land Services



NOTE(S):

1. Base map from PND Engineers, Inc.

0 100 200

SCALE IN FEET

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Phone: (360) 578-1371

PURPOSE:
Moor small vessels to serve shipping industry
DATUM: NAD83
ADJACENT PROPERTY OWNERS:

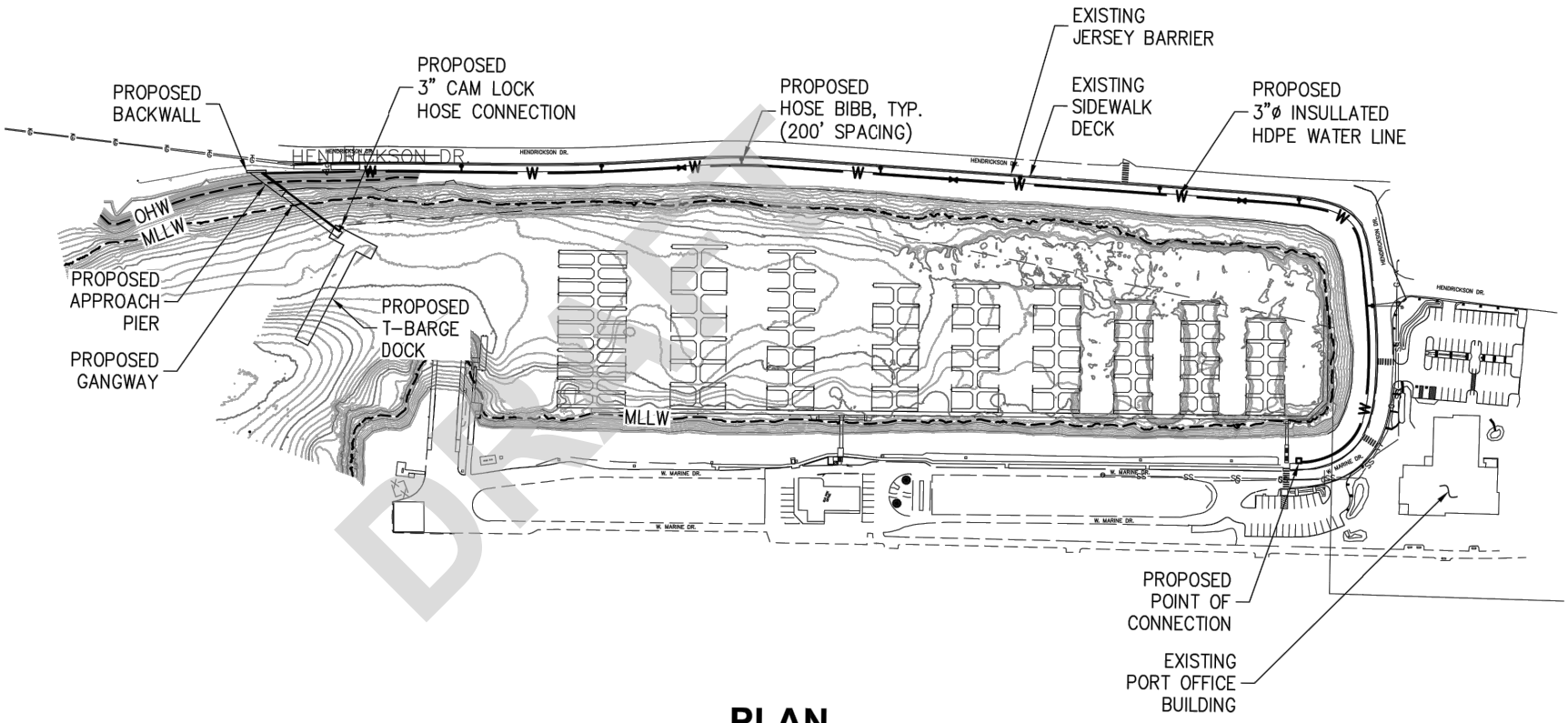
See JARPA

AERIAL PHOTOGRAPH

APPLICANT: Port of Kalama
PROJECT NAME: Port of Kalama T-Barge Dock
REFERENCE #: Not Yet Assigned
SITE LOCATION ADDRESS:
1296 Third St. NW
Kalama, WA

PROPOSED: New Dock

IN Columbia River - RM 74.3
NEAR: Kalama
COUNTY: Cowlitz **STATE:** WA
SHEET 2 **OF** 10
DATE: 3/19/18



PLAN

0 50 100 150 300 450 FT.

NOTE(S):

1. Base map from PND Engineers, Inc.

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SCALE IN FEET

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Longview, WA 98632
Phone: (360) 578-1371

PURPOSE: Moor small vessels to serve shipping industry **DATUM:** NAD83 **ADJACENT PROPERTY OWNERS:** See JARPA	**OVERALL SITE PLAN** **APPLICANT:** Port of Kalama **PROJECT NAME:** Port of Kalama T-Barge Dock **REFERENCE #:** Not Yet Assigned **SITE LOCATION ADDRESS:** 1296 Third St. NW Kalama, WA	**PROPOSED:** New Dock **IN** Columbia River - RM 74.3 **NEAR:** Kalama **COUNTY:** Cowlitz **STATE:** WA **SHEET** 3 **OF** 10 **DATE:** 3/19/18

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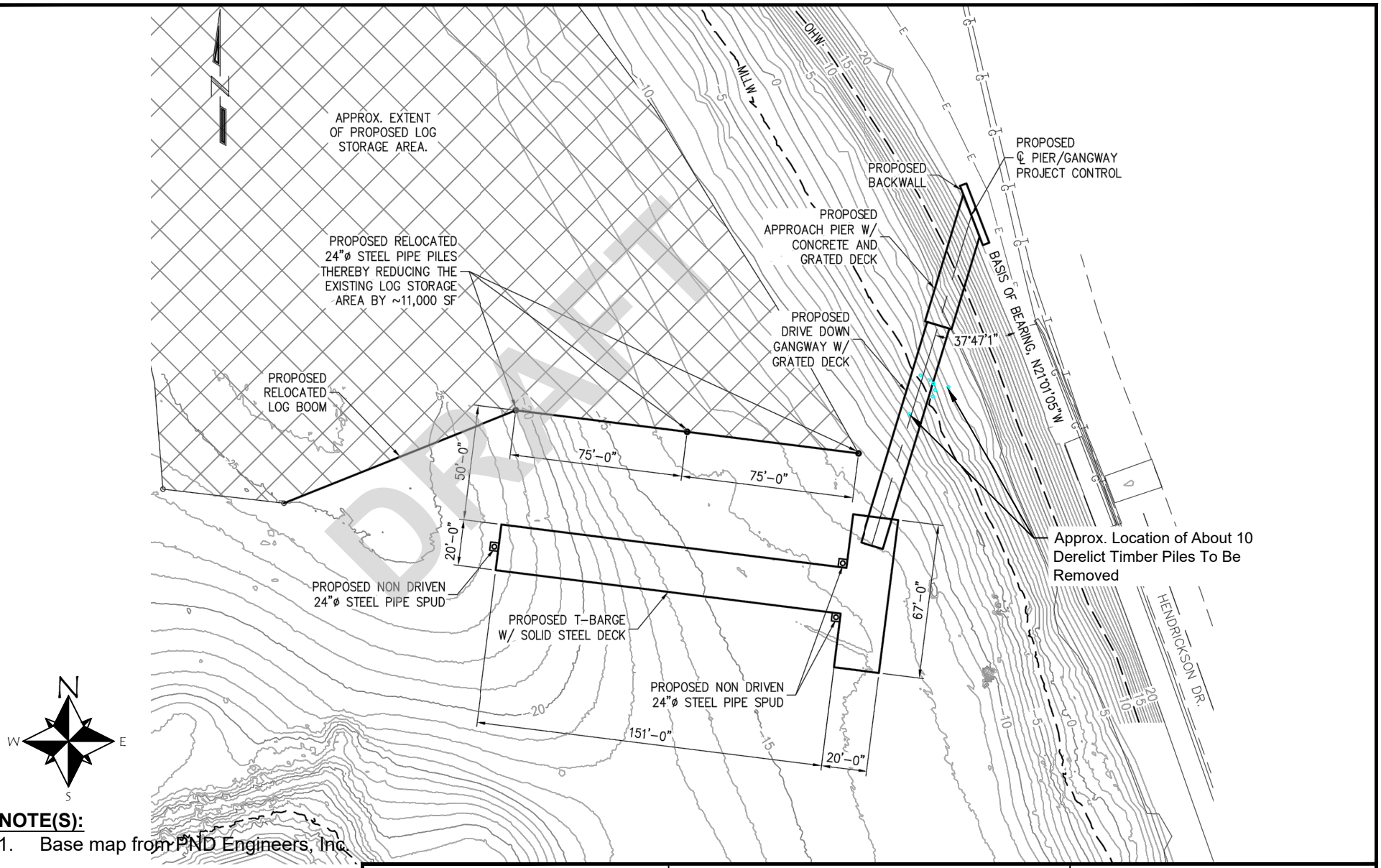

NOTE(S):

1. Base map from PND Engineers, Inc.

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SCALE IN FEET

Ecological Land Services

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Phone: (360) 578-1371

PURPOSE:
Moor small vessels to serve shipping industry
DATUM: NAD83
ADJACENT PROPERTY OWNERS:

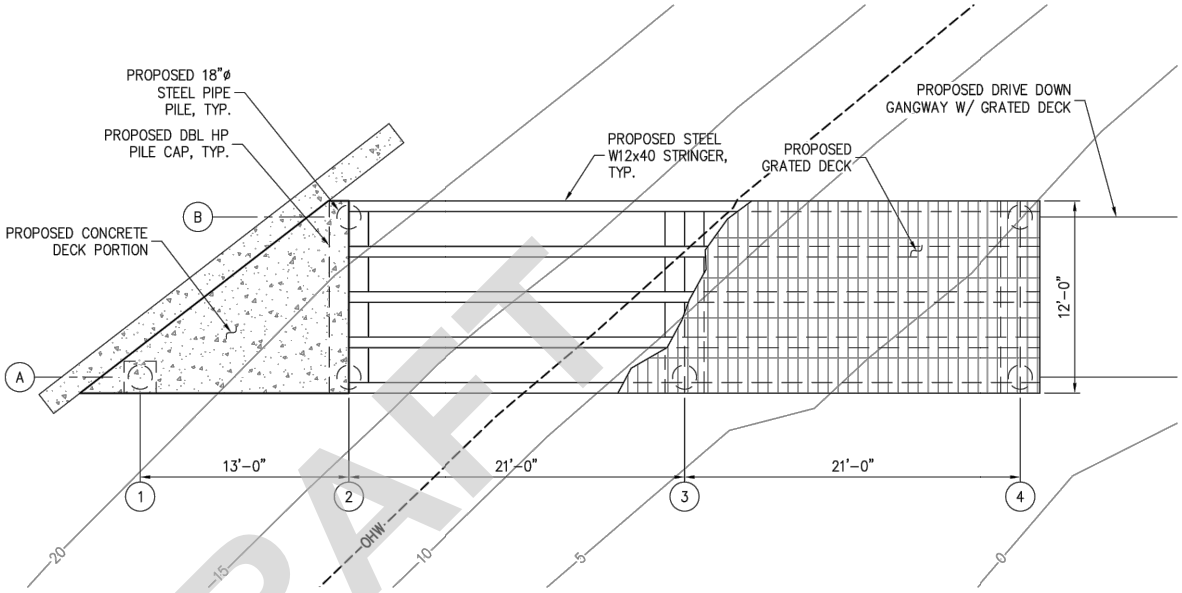
See JARPA

PROPOSED SITE PLAN

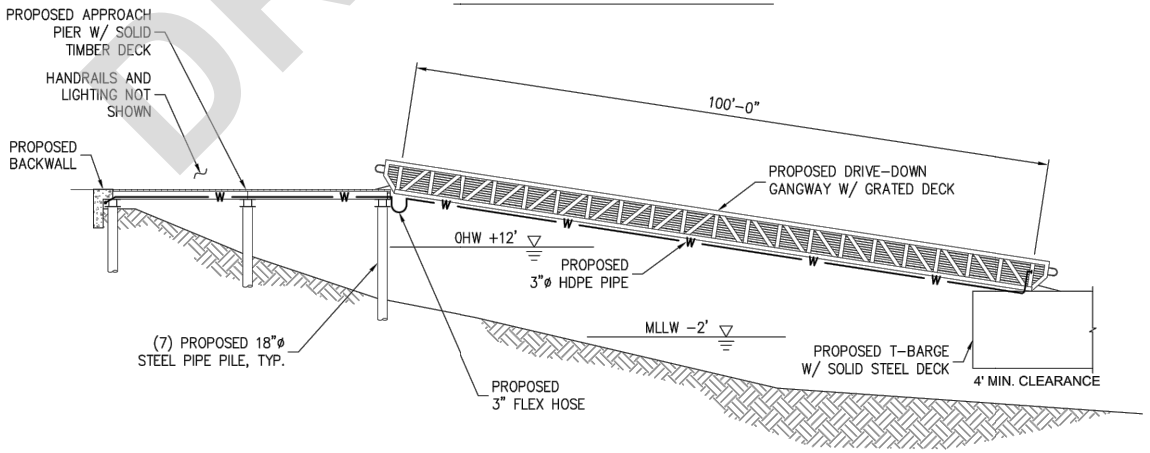
APPLICANT: Port of Kalama
PROJECT NAME: Port of Kalama T-Barge Dock
REFERENCE #: Not Yet Assigned
SITE LOCATION ADDRESS:
1296 Third St. NW
Kalama, WA

PROPOSED: New Dock

IN Columbia River - RM 74.3
NEAR: Kalama
COUNTY: Cowlitz **STATE:** WA
SHEET 4 **OF** 10
DATE: 3/19/18



APPROACH PIER PLAN



GANGWAY SECTION

NOTE(S):

1. Functional grating will be at least 25%.

0 12 24

SCALE IN FEET

Ecological Land Services
1157 3rd Ave., Suite 220A
Longview, WA 98632
Phone: (360) 578-1371

PURPOSE: Moor small vessels to serve shipping industry **DATUM:** NAD83 **ADJACENT PROPERTY OWNERS:** See JARPA	**APPROACH PIER PLAN & GANGWAY SECTION** **APPLICANT:** Port of Kalama **PROJECT NAME:** Port of Kalama T-Barge Dock **REFERENCE #:** Not Yet Assigned **SITE LOCATION ADDRESS:** 1296 Third St. NW Kalama, WA	**PROPOSED:** New Dock **IN** Columbia River - RM 74.3 **NEAR:** Kalama **COUNTY:** Cowlitz **STATE:** WA **SHEET** 5 **OF** 10 **DATE:** 3/19/18

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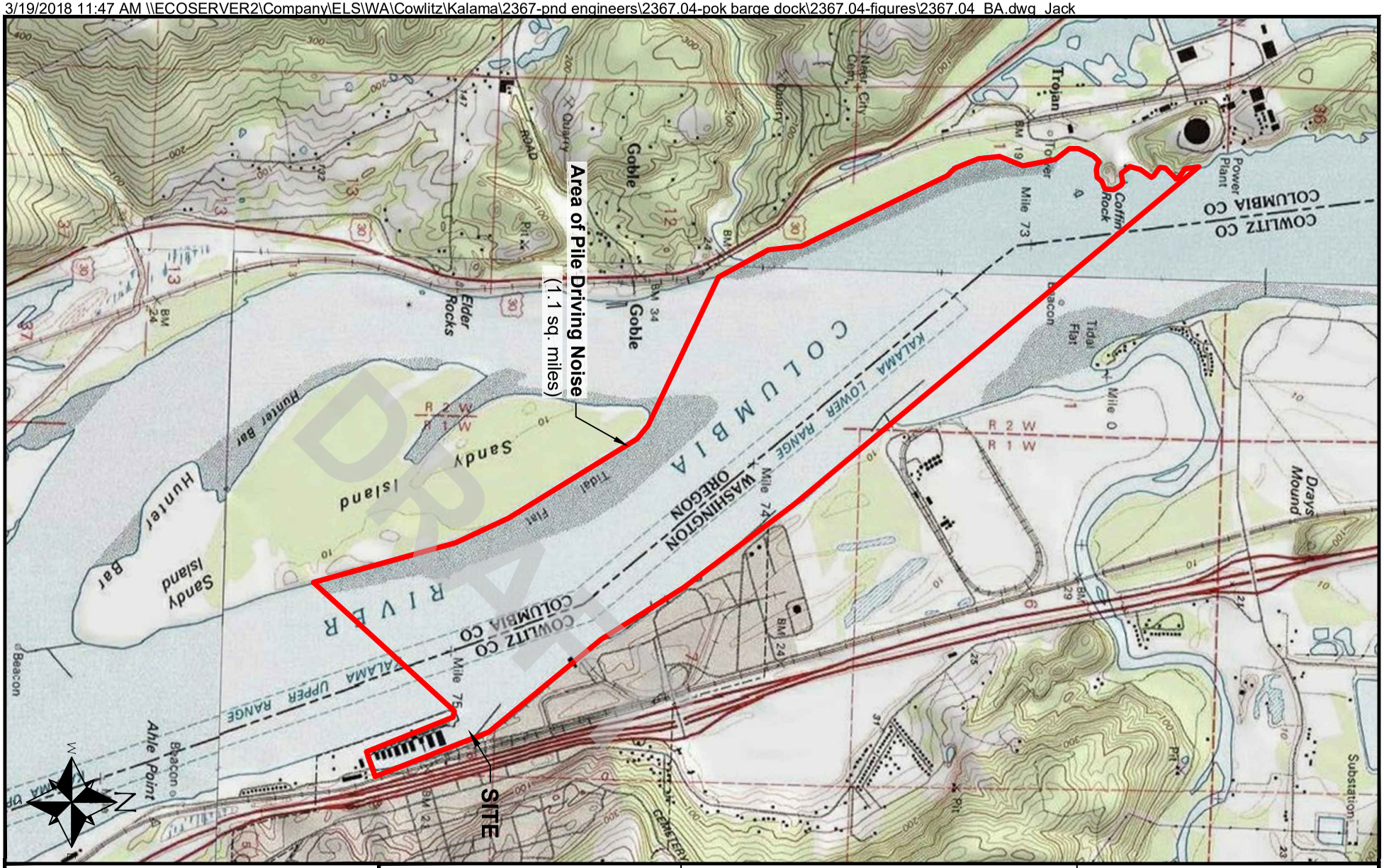

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Phone: (360) 578-1371

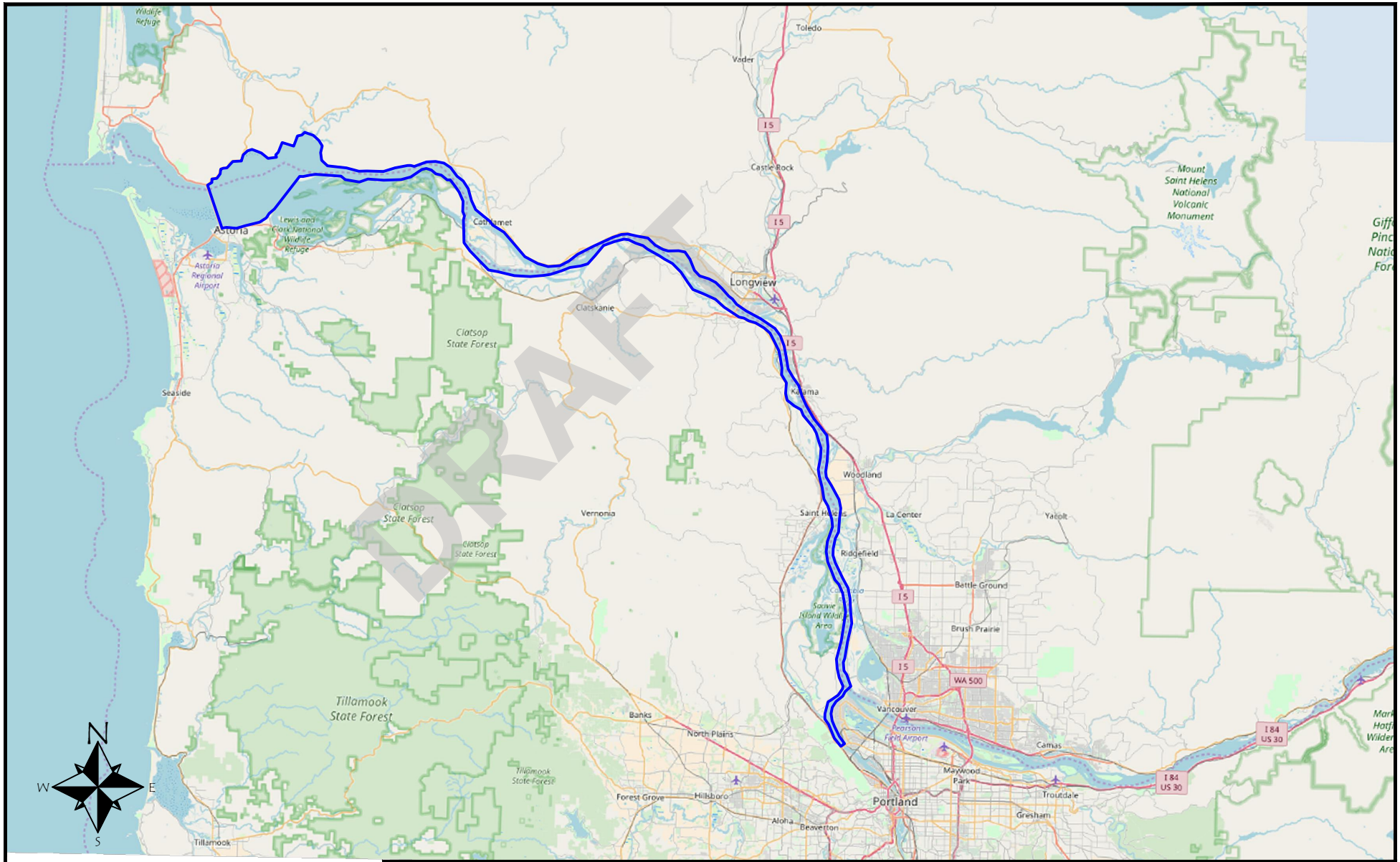
PURPOSE:
Moor small vessels to serve shipping industry
DATUM: NAD83
ADJACENT PROPERTY OWNERS:

See JARPA

EXTENT OF PILE-DRIVING EFFECTS ON FISH
APPLICANT: Port of Kalama
PROJECT NAME: Port of Kalama T-Barge Dock
REFERENCE #: Not Yet Assigned
SITE LOCATION ADDRESS:
1296 Third St. NW
Kalama, WA

PROPOSED: New Dock

IN Columbia River - RM 74.3
NEAR: Kalama
COUNTY: Cowlitz **STATE:** WA
SHEET 6 **OF** 10
DATE: 3/19/18



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PURPOSE:
Moor small vessels to serve shipping industry
DATUM: NAD83
ADJACENT PROPERTY OWNERS:

See JARPA

ACTION AREA MAP

APPLICANT: Port of Kalama
PROJECT NAME: Port of Kalama T-Barge Dock
REFERENCE #: Not Yet Assigned
SITE LOCATION ADDRESS:
1296 Third St. NW
Kalama, WA

PROPOSED: New Dock

IN Columbia River - RM 74.3
NEAR: Kalama
COUNTY: Cowlitz **STATE:** WA
SHEET 7 **OF** 10
DATE: 3/19/18

Looking from the north to the east at the proposed project site. The three circled piles will be relocated to the north and the bank protection will remain as shown.

NOT TO SCALE

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Phone: (360) 578-1371

PURPOSE:
Moor small vessels to serve shipping industry
DATUM: NAD83
ADJACENT PROPERTY OWNERS:

See JARPA

PHOTOPLATE 2
APPLICANT: Port of Kalama
PROJECT NAME: Port of Kalama T-Barge Dock
REFERENCE #: Not Yet Assigned
SITE LOCATION ADDRESS:
1296 Third St. NW
Kalama, WA

PROPOSED: New Dock

IN Columbia River - RM 74.3
NEAR: Kalama
COUNTY: Cowlitz **STATE:** WA
SHEET 8 **OF** 10
DATE: 3/19/18

Looking at the existing log storage area and shoreline conditions. The proposed upland area is on the right side of the photograph. Pile caps will be installed on all new and relocated piling to prevent bird perching.

NOT TO SCALE

Ecological Land Services
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Phone: (360) 578-1371

PURPOSE:
Moor small vessels to serve shipping industry
DATUM: NAD83
ADJACENT PROPERTY OWNERS:

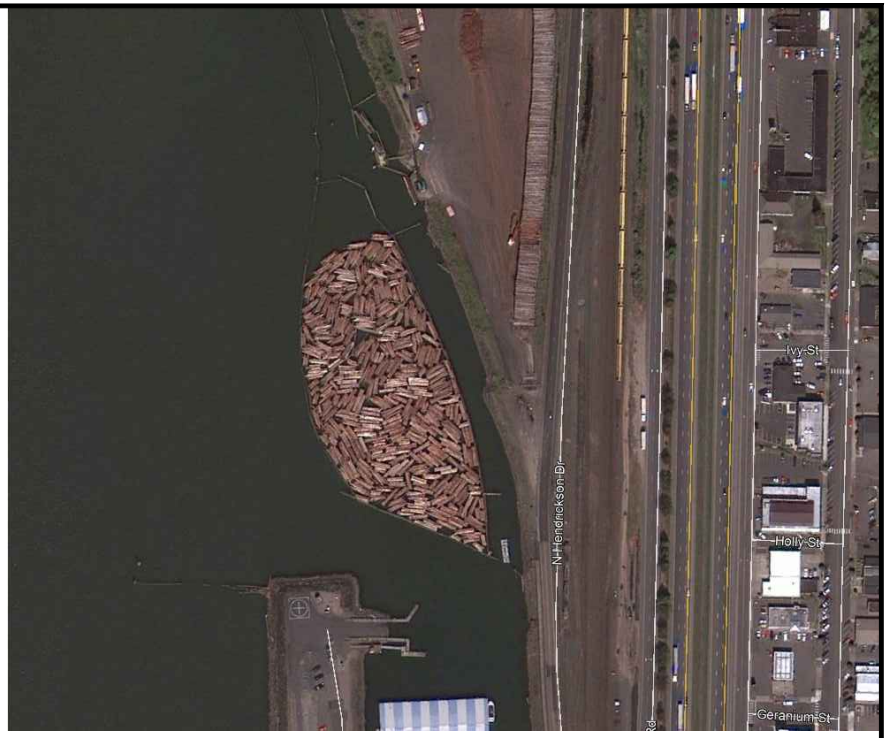
See JARPA

PHOTOPLATE 2
APPLICANT: Port of Kalama
PROJECT NAME: Port of Kalama T-Barge Dock
REFERENCE #: Not Yet Assigned
SITE LOCATION ADDRESS:
1296 Third St. NW
Kalama, WA

PROPOSED: New Dock

IN Columbia River - RM 74.3
NEAR: Kalama
COUNTY: Cowlitz **STATE:** WA
SHEET 9 **OF** 10
DATE: 3/19/18

Photograph of T-barge. Framework above the deck has been removed.



Photograph showing the extent of the log storage area.

NOT TO SCALE

Ecological Land Services
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Longview, WA 98632
Phone: (360) 578-1371

PURPOSE:
Moor small vessels to serve shipping industry
DATUM: NAD83
ADJACENT PROPERTY OWNERS:

See JARPA

PHOTOPLATE 3
APPLICANT: Port of Kalama
PROJECT NAME: Port of Kalama T-Barge Dock
REFERENCE #: Not Yet Assigned
SITE LOCATION ADDRESS:
1296 Third St. NW
Kalama, WA

PROPOSED: New Dock

IN Columbia River - RM 74.3
NEAR: Kalama
COUNTY: Cowlitz **STATE:** WA
SHEET 10 **OF** 10
DATE: 3/19/18