

A. PUBLIC HEARING OBJECTIVE

The subject application is being processed as a Level II Shoreline Substantial Development Permit, pursuant to CH. 90.58 RCW and Section 8.6 SMP, which all applications are to be heard and granted, conditioned, or denied by the Hearing Examiner after considering the findings in this report, public testimony, and the advice of the Director or their designee.

The objective of this hearing is to determine whether the proposed improvements are in conformance with the Shoreline Management Act of 1971 (SMA) and the 2018 Cowlitz County Shoreline Master Program (SMP).

The Hearing Examiner may make his/her decision following the close of the public hearing but shall render such decision within 10 days following the public hearing date.

B. DESCRIPTION OF PROPOSAL

The applicant has submitted a Level II Shoreline Substantial Development for changes to their previously approved limestone import barge dock and stockpile facility operations, previously approved under SL 13-094. The proposed modifications and expansions to current permitted use will allow for expanded storage and additional barge trips to facilitate the increase in market demand that CRC is currently experiencing. Per SMP Table 8-1, the proposed project will require a Level II Shoreline Substantial Development Permit, due to being an Industrial Development 4,000 square feet or greater.

The following changes are proposed to the CRC project:

1. Increase in barge offload days to include Saturday and Sunday and for unloading operations to be 24 hours per day. CRC is still proposing to follow State holiday closures and peak salmon and steelhead closures as previously required by the previous Hearing Examiner decision.
2. Increase from 24 barges per year to 48 barges per year to accommodate an additional 200,000 tons of materials per year.
3. Installation of an access trestle to get equipment off and onto the moored barges for maintenance and repairs and to construct a ramp between the trestle and haul road.
4. Utilizing the previously identified "Auxiliary Stockpile" that would require a new SSDP per previous Hearing Examiner decision to accommodate the additional 200,000 tons of material per year. This includes increasing the asphalt stockpile pad from 83,000 square feet to 102,000 square feet, expanding asphalt haul road on north and west sides, as well as reconstruction of the biofiltration swale

The two parcels combine for a cumulative 5.15 acres of land, with much of the site developed as previously permitted. Existing vegetation on site is limited to cottonwood trees near the Columbia River on the northern and southern portions of the site. The proposed development will result in 90 square feet of in-water impact, 6,899 square feet of overwater impacts, and 7,864 square feet of shoreline impacts, resulting in 14,853 square feet of total impact. The applicant is proposing 18,191 square feet of riparian habitat enhancement through native plantings, to improve riparian habitat areas on site. The site is zoned Heavy Manufacturing (MH) and has a Comprehensive Plan classification of (Smallholding).

During previous review of the project, under SL 13-094, the adjacent RV park was privately owned. Currently, the RV park is owned by the Port of Woodland, with the Port of Woodland Commission providing CRC with a letter of support regarding the proposed changes to the existing dock facility (Exhibit 6).

C. BACKGROUND INFORMATION REGARDING PROPOSAL

1. **Project History:** Department staff received a Level II Shoreline Substantial Development Permit application on February 24, 2025, and determined the application to be complete on March 3, 2025.
2. **Zoning:** The subject property is zoned MH. Per CCC 18.10.236, uses permitted within the ML zone district are permitted within the MH zone district. The applicant is proposing an expansion of a previously approved land use.
3. **Comprehensive Plan:** The subject parcel is designated as Smallholding per the Comprehensive Plan. Smallholding areas are intended to provide for self-sustaining lifestyle choices, with the opportunity for management of natural resources for the creation of economic benefit. Smallholding lands can provide a transition from more urbanized areas to those that are classified as remote, with limited development potential, or economic resource land utilized for commercial or industrial resource management.

D. STATE ENVIRONMENTAL POLICY ACT COMPLIANCE

Finding: Cowlitz County issued a Mitigated Determination of Non-Significance on October 22, 2025, with a 14-day public comment period ending November 5, 2025. A public SSDP notification was issued on November 25, 2025, with the 30-day comment period ending on December 25, 2025. Comments were received from the Department of Ecology (ECY), Cowlitz Indian Tribe, and Washington Department of Fish and Wildlife (WDFW) regarding the project proposal. ECY comments were related to solid waste management, spill prevention, preparedness, and response. Cowlitz Indian Tribe submitted comments regarding an Inadvertent Discovery Plan. WDFW indicated that they did not have any formal comments but wanted to remind the project proponent that any changes to their existing Hydraulic Project Approval (HPA) would need to be amended through a Modification Request.

Conclusion: Comments received are reflected within the findings of this report. Staff concludes that SEPA compliance has been achieved.

E. FINDINGS REGARDING LAND USE

1. **Zoning:** The subject parcel is zoned MH. The MH district permits all uses permitted in the ML zone district. The ML zone district permits construction and contracting offices, equipment and material storage yards, as well as light manufacturing and fabrication of processed metals and materials. The Land Use Ordinance states that the Heavy Manufacturing land use district purpose is to allow heavy industrial uses or structures where the primary use involves fabrication, manufacturing, assembly, processing and distribution of raw materials, primarily serving nonlocal wholesale and retail markets. Heavy industrial uses may generate some noise, smoke, dust, odors, toxic gases, vibration, glare, heat and other environmental pollutants in conformance with applicable regulations and must be tolerated, to the benefit of the economy and general welfare of the county. Heavy industrial uses are dependent upon rail, water, or arterial access to the interstate highway system. Minimum dimensional standards are established in Table 1.1 (from Table 18.10.501) as follows:

Table 1.1- Minimum Zone District Standards for Heavy Manufacturing Zone District

Land Use Zone District	Lot Area (acres or sq. ft.)	Lot Width at Building Line (feet)	Rear Yard Setback (feet)	Side Yard Setback (feet)	Building Height (feet)	Maximum Lot Coverage (percentage)	Minimum District Size (acres)
MH	—	—	—	—	(CCC 18.10.535)	—	—

Finding: Minimum Zone District Standards applied to the MH zoning district do not include a minimum lot area, rear yard setbacks, side yard setbacks, or maximum lot coverage.

Conclusion: The applicant’s proposal will meet all standards outlined in Table 18.10.501 Minimum Zone District Standards.

2. CCC 18.10.500 - Performance Standards and Requirements. The following is an analysis of bulk development standards applicable to the proposed development.

a. CCC 18.10.505 Front yard setback.

Finding: The front yard setback in all land use districts shall be a minimum of 20 feet from the front property line or 50 feet from the center of the right-of-way or easement of the fronting road, whichever is greater. If the fronting road is classified as an urban arterial, or rural arterial, the distance from the center of the right-of-way or easement shall be increased to 55 feet and 60 feet, respectively.

Conclusion: The fronting road is Dike Road, an existing public road. The proposed development will meet setback requirements of CCC 18.10.505.

b. CCC 18.10.535 Exceptions – Setbacks related to building heights.

Finding: Buildings exceeding 35 feet in height shall be provided with a side and rear yard setback equal to the required yard plus three feet for each story above 35 feet.

Conclusion: No buildings are proposed.

3. CCC 18.10.561 Off-street parking – General provisions

Finding: Minimum parking space and drive aisle-dimensional requirements can be found in the following table.

Table 2.1 OFF-STREET PARKING DIMENSIONAL TABLE

	Less than 90°	90°	Parallel
A. Width of Parking Space	9'	9'	9'
B. Length of Parking Space	18'	18'	22'
C. Width of Driveway Aisle	18'	24'	12'

All spaces must be within three hundred feet (300') of the building they are intended to serve.

Conclusion: A condition of approval will ensure all off-street parking spaces meet the required dimensional standards.

4. CCC 18.10.562 Number of off-street parking spaces required.

Finding: The proposed limestone import barge dock and stockpile facility operations will require one space per two employees on the combined total of the two largest shifts, per CCC 18.10.562.

Conclusion: The site identifies four parking spaces while also providing sufficient additional parking area to accommodate normal and expected staffing requirements, routine maintenance, and monitoring to be conducted by CRC staff. Therefore, staff finds that all applicable parking requirements have been met as proposed.

5. Cowlitz County Comprehensive Plan: Smallholding Land Use Category

According to the Cowlitz County Comprehensive Plan, Smallholding areas are intended to provide for self-sustaining lifestyle choices, with the opportunity for management of natural resources for the creation of economic benefit. The guideline is for lots to have a minimum lot size of five acres and lot width of 100 feet. Minimum lot configuration must provide for adequate area for on-site sewage system and domestic well, in addition to any required buffering from adjacent uses. The Smallholding area is intended to minimize conflicts between resource management and residential activities. Clustered development is encouraged to efficiently utilize land and infrastructure needed to serve development and maximize resource conservation.

Smallholding lands can provide a transition from more urbanized areas to those that are classified as remote, with limited development potential, or economic resource land utilized for commercial or industrial resource management. Public water and sewer service is generally not available. Privately owned community water systems may exist. Smallholding areas are within a fire district. Access may be provided via lower classification of public roadways and private roads. The Smallholding classification includes areas otherwise fitting the Rural Category, but where natural land features limit development.

Goal LU 12: Provide areas that support self-sustaining lifestyles.

Finding: Policy LU 12.1 As clustered development provides for flexible parcel sizing, utilizing provisions of the Cowlitz County Planned Unit Development Ordinance and/or the Optional Incentives found in the Cowlitz County Critical Areas Ordinance is encouraged as a means of efficiently utilizing land and minimizing infrastructure costs associated with development. Policy LU 12.2 New development within the Smallholding classification should be served by individual wells and on-site sewage systems on individual lots. Policy LU 12.3 Lands within the Smallholding classification are served by maintained public or private roadways, or those roadways to which improvements can be made by the project proponent at the time of development to bring roadways into compliance with adopted regulations. Policy LU 12.4 Lands within the Smallholding classification are to be located within a fire district.

Conclusion: Proposed changes to previously approved limestone import barge dock and stockpile facility operations will continue to meet land use goals identified within the Smallholding Comprehensive Plan Designation, as the development is properly sized to support on-site well and septic systems, is served by a maintained public road and located within a fire district.

Goal LU 13: Provide opportunities for management of natural resources to create economic benefit in Smallholding areas.

Finding: Policy LU 13.1 Allow agriculture and forest management on parcels within Smallholding areas, including ancillary uses associated with resource production and distribution. Policy LU 13.2 Provide flexibility for a variety of uses to locate in Smallholding areas, if appropriate in character and scale to the environment. Policy LU 13.3 Adopt and maintain a “right to farm and forestry” ordinance. Policy LU 13.4 Require all subdivisions, short subdivisions, development permits, and building permits issued for development activities within five hundred (500) feet of lands used for agriculture or forest management to contain a notice stating, “The subject property is within or near agricultural land or forest land on which a variety of commercial activities may occur that are not compatible with residential development for certain periods of limited duration. Commercial natural resource activities performed in accordance with county, state and federal laws are not subject to legal action as public nuisances. (RCW 7.48.305).” Policy LU 13.5 Consider compatibility issues during review of development proposals adjacent to lands used for agriculture or timber management. Policy LU 13.6 Encourage innovative techniques to promote agricultural and forest management activities within Smallholding Areas.

Conclusion: Proposed changes of limestone import barge dock and stockpile facility operations will not impact the ability for agricultural or forest management of nearby parcels.

6. Findings Regarding Shoreline Management Act/Shoreline Master Program Compliance

- a. ***Permitting Required:*** The site is located within a High-Intensity Shoreline Environment Designation. A Level II Shoreline Substantial Development Permit is required due to the total area of disturbance required for development, per Table 8-1, 2018 SMP.
- b. ***Public Notice:*** Notice of the proposal was advertised in *The Daily News* on November 25, 2025. Written notice of the proposal was sent to property owners within 300 feet of the proposal on November 20, 2025. Notice of Application was posted on and near the subject property by staff on November 20, 2025. All Notices of Application included notice of future public hearing, with time and location of hearing advertised in *The Daily News* on January 31, 2025, with Notice of Public Hearing sent to property owners within 300 feet and posted on and near the subject property by staff on January 29, 2026.
- c. ***Priorities for Development within Shorelines of Statewide Significance:*** In addition to the general shoreline regulations and shoreline use and modification regulations, development proposals within a Shoreline of Statewide Significance must be consistent with the priorities outlined in RCW 90.58.020 and within Section 5.5 of the SMP. The proposal must be consistent with the following priorities:
 - i. ***Recognize and protect statewide interests over local interest.***

Finding: The development proposal is subject to review under the County’s SMP, including state agencies with jurisdiction, affected tribes, citizen’s advisory committees, and elected officials.

Conclusion: Through public notice and comment periods SEPA compliance has been achieved with state agency feedback included in review materials.
 - ii. ***Preserve the natural character of the shoreline.***

Finding: The portion of the Columbia River adjacent to the subject property is characterized by major disturbances associated with industrial development.

Conclusion: The development footprint and subject parcel has already experienced major disturbances and will continue to support industrial development. Per the submitted Level II Habitat Assessment and Biological Assessment, the project has been designed to protect and preserve the existing habitat with mitigation efforts to enhance the Columbia River's riparian buffer, water quality, and habitat functions. The submitted assessments indicate that the project will achieve no net loss of ecological function.

iii. Support actions that result in long-term over short-term benefit.

Finding: Per applicant the project has been designed to operate over the long term, while protecting resources and values of the shoreline, per submitted habitat assessment and biological assessment.

Conclusion: Proposed project will provide long-term economic benefits and will continue to make use of the same previously disturbed industrial development footprint.

iv. Protect the resources and ecological function of the shoreline.

Finding: Any time construction activity occurs adjacent to a water body, there is a potential for water contamination because of construction materials, sediment, or hazardous materials entering the water body. WDFW submitted an informal SEPA comment reminding the project proponent that any changes to their existing Hydraulic Project Approval (HPA) scope of work will need to be amended through a Modification Request. Additionally, the applicant may require modifications to existing US Army Corps of Engineers Section 404 Permit #2013-834, Washington Department of Ecology Section 401 Permit #15862, and Washington Department of Natural Resources Aquatic Lands Lease #20-090857.

Conclusion: Per submitted habitat assessment and biological assessment, the proposal will not change any ecological functions of the shoreline through enhancement of the riparian buffer with native trees and shrubs. Applicant will observe all established conditions and limits upon operations during peak salmon season / weekends which will not reduce recreational opportunities.

v. Increase public access to publicly owned areas of the shoreline.

Finding: The project, as proposed, will retain the existing pedestrian and public access to the shoreline.

Conclusion: The proposal will not change how the shoreline is accessed. The proposal is consistent with this priority.

vi. Increase recreational opportunities for the public on the shoreline.

Finding: The project cannot increase access for or encourage recreational use of the shoreline at the subject parcel due to the industrial purpose of the development.

Conclusion: Due to safety concerns, the project cannot increase recreational opportunities for the public on the shoreline. The proposal is consistent with this priority.

d. General Shoreline Regulations: The proposal is subject to the General Shoreline Regulations within section 6 of the SMP; conformance with each section is discussed below:

i. Section 6.1, No Net Loss of Ecological Function: All development activities within shoreline jurisdiction must demonstrate no net loss in ecological function because of undertaking project activities. In addition, mitigation sequencing is required when a project results in adverse impacts on the environment.

Finding: The proposed water dependent industrial use within a High-Intensity SED has no setback related to critical areas, maximum height requirements, or building setbacks. All development within shoreline jurisdiction must still be located, designed, constructed, conducted, and maintained in a manner that maintains ecological function. The development will include a trestle with associated piling, expansion of stockpiling areas, and the extended haul road are proposed within the 200-foot shoreline jurisdiction. In-water habitat will be impacted by the grated overwater trestle and additional in-water piling required. The applicant has provided a Level II Habitat Assessment and a Biological Assessment to address potential ecological impacts. Per submitted assessments, the project will result in no-net loss of ecological function as proposed.

Proposed mitigation includes riparian habitat enhancement on the subject parcel through native shrubs and trees plantings on 18,191 square feet of riparian habitat to connect the existing enhancement area to the ordinary high-water mark, resulting in less fragmented inner riparian habitat. The overall mitigation-to-impact ratio is 1.22:1.

Per submitted shoreline narrative:

- The trestle elevation will avoid interference with beach access and still allow for safe passage of wildlife and pedestrians.
- The raised elevation and fully grated trestle decking allows for light penetration, reducing shading impacts.
- Overwater lighting will be minimized by directing light only to work areas and only used when equipment is being loaded or unloaded during times of low natural light.
- Per the County SMP, water-dependent uses within the High-Intensity Shoreline Environment Designation do not have an RHA buffer, though the project has been designed to minimize impacts near the OHWM to the greatest extent practical. No native trees or shrubs will be removed.
- Reduction in river miles needed to move barges by tugs past the Woodland site to Portland to load and unload onboard equipment for maintenance and repairs will be reduced by approximately 90 miles per round trip, reducing water and air pollutant emissions from tugboats.
- Land access to the barge with trestle will allow for a second front wheel loader to be placed on the barge, reducing barge offloading and moorage time by up to two days per offloading event.
- A stormwater plan will be implemented that treats stormwater runoff from additional impervious surfaces to meet current standards and minimize stormwater quality impacts.

- Barge offloading to be limited to 48 barges per year, with offloading prohibited on Memorial Day, Independence Day, and Labor Day holiday weekends to avoid and minimize impacts to recreational hog line fishing.

Conclusion: The project would result in no net loss of ecological function and would satisfy the requirements of this section of the SMP through the avoidance and minimization measures proposed.

- ii. **Section 6.2, Archaeological, Cultural and Historical Resources:** Shorelines are often locations where archaeological, cultural and historical resources are often found. The SMP requires that inadvertent discovery language be applied to each permit, and that archaeological surveys be completed in the event a proposal is located within an area of known or probable archaeological significance.

Finding: The proposed development is occurring on an existing, heavily disturbed site. The original project had an approved cultural resource report, and no historic, cultural, or archaeological sites or artifacts were discovered during the development of the site.

Conclusion: Standard inadvertent discover language will be applied to all permits as required per Section 6.2 of the SMP, ensuring compliance with this section of the SMP.

- iii. **Section 6.3, Critical Areas Protection:** The SMP provides for the protection of critical areas within shoreline jurisdiction through the adoption of the regulations contained within the County Critical Areas Ordinance (CCC 19.15), and in some instances, provides additional modifications and clarifications to the adopted regulations.

Finding: The proposed water dependent industrial use within a High-Intensity SED has no setback related to critical areas, maximum height requirements, or building setbacks. All development within shoreline jurisdiction must still be located, designed, constructed, conducted, and maintained in a manner that maintains ecological function. Findings of above Section 6.d.i apply.

Conclusion: The project would result in no net loss of ecological function and would satisfy the requirements of this section of the SMP in addition to CCC 19.15 through the avoidance and minimization measures proposed.

- iv. **Section 6.4, Flood Prevention and Flood Damage Minimization:** The SMP addresses flooding impacts through the application of Ch. 16.25 CCC and the requirements for development in floodways and channel migration zones (CMZs) included in Section 6.4.

Finding: The original development raised the elevation of the site interior to above the Base Flood Elevation (BFE). All in-water development shall be designed to withstand regulatory flood flows and the additional hydraulic forces associated with debris hangup on the structures during floods or high-water events.

Conclusion: No floodplain permit will be required for this project.

- v. **Section 6.5, Public Access:** Public access provisions apply to all shorelines of the state unless stated otherwise and are intended to protect the ability of the public to

reach, touch, and enjoy the water's edge, to travel on the waters of the state, and to view the water and the shoreline from adjacent locations.

Finding: During trestle construction, the public will not be able to access the area under the trestle, however, after construction, public access along the Columbia River will be maintained for pedestrians as it currently exists. CRC will continue to coordinate with Cowlitz County and WDFW to identify other weeks of expected peak salmon and steelhead runs and will use best efforts to schedule barge operations to avoid those weeks which shall be no more than four (4) weeks per year.

Conclusion: After trestle construction phase, public access will not be altered. The project will meet the requirements of Section 6.5 of the SMP.

- vi. **Section 6.6, Vegetation Conservation:** The SMP provides limitations as to the amount of vegetation removed for a proposal, as well as the vegetation used for restoration and mitigation efforts.

Finding: No native trees or shrubs shall be removed from within the shoreline jurisdiction. The applicant indicates that sparse herbaceous plants and weeds will be removed during site development of ancillary storage site. Proposed development to occur on already disturbed site.

Conclusion: Through avoidance and mitigation replanting proposed, the project will meet requirements of Section 6.6 of the SMP.

- vii. **Section 6.7, Water Quality and Quantity:** Development proposals within shorelands are required to comply with applicable Stormwater and sewage requirements, in addition to requirements specific to the shoreline environment.

Finding: A stormwater system will be designed to meet best management practices listed in the 2024 Stormwater Management Manual for Western Washington. The existing biofiltration swale will be reconstructed and expanded to accommodate the proposed stockpile and haul road expansions.

Conclusion: Applicant will acquire applicable construction stormwater permits. The proposal will conform to the requirements of Section 6.7 of the SMP.

- e. **Shoreline Use and Modification Regulations:** Sections 7.1, 7.2.6 and 7.2.8 of the SMP apply to this proposal and are discussed below.

- i. **Section 7.1, Shoreline Use, Modification, and Standards Table:** Table 7-1 provides an overview of the permitted uses within each Shoreline Environment Designation. Table 7-2 defines the RHA buffer widths and other dimensional standards within each SED. Section 7.1 provides additional guidance and clarification of the application of standards and uses within shoreline jurisdiction.

Finding: The Shoreline Environmental Designation (SED) along the section of the Columbia River adjacent to the subject parcel is designated High-Intensity. Per Table 7-1, the proposed use of Industrial water-dependent is permitted through an SSDP within High-Intensity SED.

SED Table 7-2 describes the shoreline buffers (interchangeable with RHA) and building setbacks as applied to water-dependent uses. For High-Intensity SED, the building setbacks would be 0' from the OHWM.

Conclusion: Per Table 7-2, no shoreline buffer or building setback is associated with the proposed water-dependent development within High-Intensity SED. The proposal is in conformance with Section 7.1 of the SMP. Per submitted Level II Habitat Assessment and Biological Assessment, the applicant will also adhere to SMP Section 6.1 No Net Loss and to Cowlitz County Critical Areas Ordinance 19.15.

- ii. **Section 7.2.6, Industrial:** The SMP regulations regarding Industrial uses within shoreline jurisdiction.

Finding: Per Section 7.2.6.A water dependent industrial uses are preferred over non-water dependent industrial uses.

Per Section 7.2.6.B water-related and non-water-oriented industrial uses shall not be allowed if they displace existing viable water-dependent uses or if they are proposed to occupy space designated for water-dependent uses identified in previously approved SSDP or other approval.

Conclusion: Proposed development is an expansion of previously approved water-dependent industrial use; therefore, it is a preferred use of the project site.

Finding: Per Section 7.2.6.C where industrial use is proposed for location on land in public ownership, public access shall be required consistent with Section 6.5, Public Access. Industrial development and redevelopment shall be encouraged to locate where environmental cleanup and restoration of the shoreline can be incorporated.

Conclusion: The proposed expansion of operations is located on privately owned land with public access continuing to occur according to the conditions of the previous shoreline permit. Public access will only be limited during trestle construction.

Finding: Per Section 7.2.6.D new non-water-oriented industrial development may be allowed in shoreline jurisdiction if the site is physically separated from the shoreline by another property or public right of way, and public access and/or ecological protection is provided.

Conclusion: Proposed development is an existing water-dependent use.

Finding: Per Section 7.2.6.E waterward expansion of existing non-water-oriented development shall conform to the buffer and setback provisions of this chapter. If the existing non-water-oriented industrial use does not conform to the setback and buffer provisions, the structure can still be expanded but only on the landward sides of the structure.

Conclusion: The proposed project is water-dependent and does not have associated shoreline setbacks or buffers.

Finding: Per Section 7.2.6.F proposed development shall maximize the use of existing industrial facilities and avoid duplication of dock or pier facilities.

Conclusion: Proposed development is an expansion of an existing facility and will avoid duplication of facilities.

Finding: Per Section 7.2.6.G siting of accessory development or use within shoreline jurisdiction shall be limited to facilities required to serve water-oriented uses.

Conclusion: All proposed development will serve a water-dependent use.

Finding: Per Section 7.2.6.H in the High-Intensity SED, water-oriented structures and facilities are not subject to the height restrictions defined in SMP Table 7-2, providing the applicant demonstrates a need for the proposed height of the structure or facility and the view of a substantial number of residences in areas adjoining such shorelines will not be obstructed.

Conclusion: Proposed development is water-dependent. The proposed trestle is an essential feature of unloading and loading heavy equipment onto and off barges. The trestle needs to be at the proposed elevation to allow for movement of equipment onto and off the barges. Additionally, the trestle will not obstruct views from nearby residents, as the existing tower and conveyor on site are taller than the proposed trestle.

Finding: Per Section 7.2.6.I overwater structure, or other structures waterward of the OHWM, are allowed only for those portions of water-dependent industrial uses that require overwater facilities as an essential feature of their function and when allowed within the adjacent upland SED. Design of overwater structures or structures beyond the OHWM shall demonstrate that they will not interfere with normal stream geomorphic processes, require additional future shoreline stabilization, or interfere with navigation or normal public use of the water.

Conclusion: The proposed trestle is essential to unload and load heavy equipment from the barges. The new trestle and crane will allow for a second wheel-loader to be placed on the barge to shorten offloading times and will allow equipment traveling on the barge to be offloaded for repairs and maintenance. Currently, equipment traveling on barges must be offloaded to receive normal repair and maintenance at facilities that have a crane, such as in Portland, Oregon. The trestle will require piling, the only in-water features of the project. The submitted assessment concludes that the pilings will not interfere with normal stream geomorphic processes, will not result in the need for future shoreline stabilization, and will not interfere with navigability.

- iii. **Section 7.2.8, In-Stream Structures:** The SMP regulations regarding In-Stream Structures within shoreline jurisdiction.

Finding: Per Section 7.2.8.A in-stream structures include, but are not limited to, structures for hydroelectric projects (along with ancillary facilities and structures), irrigation, water supply and utility service transmission, and fish habitat enhancement. Operation, maintenance, and repair of in-stream structures may be permitted when the proposed activity will not increase the permanent footprint of the structure and areas impacted by temporary construction or stockpiling of materials are limited to the minimum area feasible, and all disturbed areas will be returned to their pre-project or improved ecological condition.

Conclusion: The proposed trestle will sit within the overall permanent footprint of the marine terminal with the trestle pilings being the only in-water structure required. Areas disturbed by construction will be returned to their pre-project state.

Finding: Per Section 7.2.8.B in the High-Intensity Shoreline Environment Designation, in-stream structures which meet the following criteria are not subject to the height restrictions of SMP Table 7-2; the applicant demonstrates the need for the proposed height of the structure and the view of a substantial number of residences in areas adjoining such shorelines will not be obstructed.

Conclusion: The applicant has indicated that the proposed elevation of the trestle is needed to allow heavy equipment to be loaded onto and off the barge. As discussed in Section 6.d.I and Section 6.e.II, the trestle is needed to reduce unnecessary river miles traveled by tugboats to push the barges for repair and maintenance of equipment. The trestle will be shorter than the existing tower and conveyor system on site, therefore the trestle will not create a larger obstruction for nearby residences.

Finding: Per 7.2.8.C.1 a hydraulic analysis prepared by a licensed professional engineer that describes anticipated effects of the project on stream hydraulics, including potential increases in base flood elevation, changes in stream velocity, and the potential for redirection of the normal flow of the affected stream.

Conclusion: For the original project permitting, a Hydraulic and Geomorphic Assessment for the marine terminal was completed. The original assessment found that the materials-handling facility proposed by Columbia River Carbonates is not expected to cause significant changes to the hydraulic, geomorphic, or sediment transport characteristics within and along the Columbia River near the project site. The proposed trestle will require 36 in-water pilings, generating 90 square feet of impact, and the trestle surface will be located approximately 10 to 12 feet above the ordinary high-water mark and 21 to 23 feet above the mean lower low water mark. As such, the project as proposed should not impact the base flood elevation or result in changes to the stream velocity or direction.

Finding: Per 7.2.8.C.2 a management plan prepared by a qualified professional that describes the anticipated effects of the project on fish and wildlife resources, shoreline critical areas, and cultural resources, provisions for protecting in-stream resources during construction and operation, and measures to compensate for impacts to resources that cannot be avoided.

Conclusion: A Level II Critical Areas Assessment with Mitigation Plan and a Biological Assessment, both prepared by Ecological Land Services, reviews potential impacts of the project as proposed in addition to the mitigation measures to address the impacts while achieving no net loss of ecological function.

Finding: Per 7.2.8.C.3 a description of sites proposed for the depositing of debris, overburden, and other waste materials generated during construction.

Conclusion: Areas used during construction as staging and material storage will be outside of shoreline jurisdiction in upland areas of the site.

Finding: Per 7.2.8.C.4 the proposed location and design of powerhouses, penstocks, accessory structures, and access and service roads for hydropower facilities.

Conclusion: The project does not include hydropower facilities or associated structures.

Finding: Per 7.2.8.C.5 proposed provisions for accommodating public access to and along the affected shoreline, as well as any proposed on-site recreational features, provided that the following conditions do not exist:

- a. Unavoidable health or safety hazards to the public.
- b. Inherent and unavoidable security problems.
- c. Unacceptable and unmitigable significant ecological impacts.
- d. Unavoidable conflict with the proposed use; or
- e. A cost that is disproportionate and unreasonable to the long-term cost of the development.

Conclusion: The applicant has indicated that due to the industrial nature of the project, the site will be fenced for security reasons in addition to avoiding health and safety hazards to the public. The project has unavoidable impacts that will be mitigated through habitat restoration. Additionally, public access is proposed to remain as it currently exists, which will not produce an unreasonable long-term cost for the facility.

Finding: Per 7.2.8.D in addition to the other provisions of this section, flood control works shall comply with the following standards.

1. New or expanded structural flood hazard reduction measures, such as dikes, levees, berms, and similar flood control structures, shall be consistent with flood hazard regulations or management plans adopted pursuant to RCW 86.12, provided the plan has been adopted after 1994 and approved by Ecology.
2. New or expanded structural flood hazard reduction measures shall be permitted only when it can be demonstrated by scientific and engineering analysis that all the following measures can be met:
 - a. They are necessary to protect existing development.
 - b. Non-structural flood hazard reduction measures are infeasible.
 - c. Impacts to ecological processes and functions, including disruption to downstream ecological processes such as flooding, natural drainage flows, and stormwater runoff, and priority fish and wildlife species and habitats can be successfully mitigated to ensure no net loss of functions, as set forth in Section 6.1, No Net Loss of Ecological Function.
 - d. Appropriate vegetation conservation actions are undertaken consistent with Section 6.6, Vegetation Conservation.
3. New structural public flood hazard reduction measures, such as dikes and levees, shall dedicate and improve public access pathways unless public access improvements would cause:
 - a. Unavoidable health or safety hazards to the public;
 - b. Inherent and unavoidable security problems;
 - c. Unacceptable and unmitigable significant ecological impacts;
 - d. Unavoidable conflict with the proposed use; or
 - e. A cost that is disproportionate and unreasonable

4. To the maximum extent feasible, new or altered dikes and levees shall be designed to be:
 - a. No greater than the minimum height required to protect adjacent lands from the predicted flood stage as identified in the applicable comprehensive flood control management plan or as required by the U.S. Army Corps of Engineers for dike certification.
 - b. Placed landward of associated wetlands and designated vegetation conservation areas, except for actions that increase ecological functions, unless there is no other feasible alternative to reduce flood hazard to existing development as determined by a geotechnical analysis.
 - c. Located and designed to protect and restore the natural character of the stream, avoid the disruption of channel integrity, and provide the maximum opportunity for natural floodway functions to take place including levee setbacks to allow for more natural functions of floodplains, channel migration zones, off-channel habitat, and associated wetlands directly interrelated and interdependent with the stream.
 - d. Planted with appropriate vegetation meeting any permit or certification requirements while providing the greatest amount of ecological function possible.

Conclusion: No new, structural, public flood-hazard reduction measures are proposed.

7. Conclusion and Staff Recommendation

The individual findings and conclusions stated above establish that this proposal either meets, or if conditioned as recommended below, will meet: the applicable standards established in the SMP and the four criteria for granting a substantial development permit on a shoreline of statewide significance. Completion of this project, if constructed as conditioned below, will therefore be consistent with the Shoreline Management Act, the County's Shoreline Master Program, and existing land uses in the project area.

Recommendation: Level II Shoreline Substantial Development Permit 25-1046 be approved, subject to the following conditions:

1. Permit to Construct: Prior to any construction activities, all necessary and required building permit applications shall be made to the Department of Building and Planning.
 - a. The applicant shall comply with all applicable sections of the currently adopted Building Codes at the time of permit submittal.
 - b. Work shall substantially conform to the plans and specifications submitted with this permit request, as shown on the site plan submitted with this application, Exhibit 3. Substantial changes to the submitted site plan may require further special use approval.
2. In the event of the discovery of cultural and/or archeological sites during construction, the project shall be halted, and the applicant shall immediately notify the Washington State Department of Archaeology and Historic Preservation and copy such notification to the Cowlitz County Department of Building and Planning.

3. The permittee shall provide a copy of all permits, conditions, and drawings to all contractors performing their respective work.
4. Representatives from this department shall be allowed to inspect the authorized activity at any time deemed necessary to ensure that the project is being, or has been, accomplished in accordance with the terms and conditions of this permit.
5. The permittee shall maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. The permittee shall notify this department immediately should the authorized activity cease or be abandoned.
6. The applicant shall enter into a binding agreement with CDID #2 to mitigate potential impacts on Dike Road and the levee system. This agreement will include the following components:
 - i. Traffic Restrictions Based on River Elevations:
 1. The applicants will restrict loaded truck traffic on Dike Road, between milepost Caples Road and the Site Entrance, under the following river level conditions (NAVD88), as measured at the Columbia River-St. Helens gauge (SHNO3):
 - a. Forecasted to exceed 14.5 feet for more than twenty-four (24) consecutive hours.
 - b. Loaded truck traffic will be restricted on this portion of Dike Road until river levels fall below 14.5 feet.
 - ii. The agreement will be in place until the road is reconstructed by the County, or 10 years, whichever is shorter.
7. The applicant shall contact the Cowlitz County Department of Public Works to discuss potential Haul Route requirements.
8. The applicant shall evaluate the 'S' turns on Caples Road (between approximate MP 1.5 to 1.8) to determine if any safety improvements are necessary due to the vehicles this project utilizes.

Attachments: (Exhibits 2 - 11)

- Exhibit 2 – Shoreline Master Program Narrative
- Exhibit 3 – Vicinity Map and Site Plan
- Exhibit 4 – Level II Habitat Assessment and Mitigation Plan
- Exhibit 5 – Endangered Species Act Biological Assessment
- Exhibit 6 – Port of Woodland Commission Letter of Support
- Exhibit 7 – Columbia River Carbonates Letter of Product Demand for Expansion
- Exhibit 8 – Columbia River Carbonates Proposed Change of Permit Conditions Summary
- Exhibit 9 – Acoustical Engineering Report
- Exhibit 10 – Cultural Resources Survey
- Exhibit 11 – Hydraulic and Geomorphic Assessment



SHORELINE MASTER PROGRAM NARRATIVE

Revised: August 5, 2025



Phase 2 Woodland Terminal Blending & Storage Facility *Woodland, Cowlitz County, Washington*

Prepared for
Columbia River Carbonates
300 N Pekin Road
Woodland, Washington 98674
(360) 225-4105

Prepared by
Ecological Land Services
1157 3rd Avenue, Suite 220A • Longview, WA 98632
(360) 578-1371 • Project Number 0558.15

**Phase 2 Woodland Terminal Blending and Storage Facility
Cowlitz County Shoreline Master Program Narrative
Shoreline Substantial Development Permit
August 5, 2025**

INTRODUCTION

Columbia River Carbonates (CRC) has contracted Ecological Land Services, Inc. (ELS) to prepare permit application documents for Phase 2 of the Woodland Terminal Blending and Storage Facility project. The project is on Cowlitz County parcel numbers WB1503005 and WB1503004 located at 1901 and 1903 Dike Road in Woodland, Washington in Section 15, Township 5 North, and Range 1 West of the Willamette Meridian (Figure 1). This shoreline narrative has been completed following the Cowlitz County Shoreline Master Program (SMP)(The Watershed Company & Parametrix 2018).

Columbia River Carbonates (CRC) was established in 1985 as the first high grade calcium carbonate products production facility in the Pacific Northwest. The company provides high-bright slurry products to the pulp and paper industry for paper filler and coating applications, enabling papermakers to significantly reduce the need for wood fiber by substituting calcium carbonate. Other markets include dry filler and pigment products for paint, PVC pipe, construction material, and agricultural applications. The proposed improvements to the existing project will ensure there is a continued sustainable supply of high-grade, high-bright calcium carbonate for processing at the CRC production facility in Woodland, Washington to serve demand from specialized industrial customers and other markets in the Pacific Northwest. The project will allow for expanded storage and additional barge trips to continue receiving calcium carbonate stone by barge from its exclusively marine-based mine on Calder Bay, Prince of Wales Island, in southeast Alaska.

PROJECT PERMIT PLANNING

CRC intends to seek Cowlitz County permits for the proposed elements included in this report. CRC fully understands that any improvements below the biological ordinary high water mark (OHWM) and the US Army Corps of Engineers regulatory ordinary high water (OHW) in the Columbia River requires further state and federal permitting. The intent with this application is to move forward with the upland improvements and additional barge trips after Cowlitz County approval. Any improvements in the Columbia River associated with the access trestle will only be completed after all additional state and federal permits are approved. After Cowlitz County permits are completed, CRC consultants will begin completing further reports and applications needed to receive the additional permits.

PROJECT NEED AND PURPOSE

Recent market demands have driven CRC to design project modifications and expansions to their currently permitted and constructed Woodland Terminal Blending and Storage Facility (Figures 2 through 4). See the letter completed by *Columbia River Carbonates* dated *July 29, 2025* for further information regarding market demand and expansion requirements. Existing permit numbers are listed below:

- US Army Corps of Engineers – Section 404 Permit #2013-834
- Washington Department of Ecology – Section 401 Permit #15862
- Cowlitz County Wetland and Floodplain Permit – #13-06-0570

- Cowlitz County Shoreline Permit No. 13-0948
- Washington Department of Fish and Wildlife Hydraulic Project Approval – #2018-5-37+03 and #2023-5-14-01
- Washington Department of Natural Resources Aquatic Lands Lease – #20-090857

On average, CRC receives 300,000 tons per year of calcium carbonate to be processed in their Woodland, Washington facility. There are several driving factors that necessitate the expansion. CRC has grown significantly since the original permitting and design phase in 2013 for this marine terminal. When the original project was conceived, CRC processed approximately 120,000 tons per year of material. Currently CRC processes nearly 300,000 tons of material annually and has experienced a 6 percent annual growth in product demand over the time they have been in business. Additionally, CRC has been approached by a potential client that would require an additional 200,000 tons of calcium carbonate per year. At current capacity, the approved Woodland Terminal Blending and Storage Facility stockpile and work timing restrictions will not be able to handle the additional tonnage. For this reason, CRC is proposing to increase the number of barge trips per year, increase barge offloading hours, increase the upland stockpile size, and install an access trestle to get equipment off and onto the moored barges for maintenance or repairs.

The new trestle and crane will allow for a second wheel-loader to be placed on the barge to shorten offloading times and will allow equipment traveling on the barge to be offloaded for repairs and maintenance. The wheel-loader requires regular maintenance with no way to get the on or off the barge at the marine terminal. Currently, equipment traveling with barges, primarily the wheel-loader, must be offloaded to receive routine maintenance and other repairs at facilities that have a crane, such as Advanced American in Portland, Oregon, where there is a crane large enough to lift the 70,000-pound wheel-loader off the barge. Maintenance on the equipment is either:

- carried out at the Advanced American facility and then trucked back to the marine terminal on an oversize load truck, or
- carried out at the Advanced American facility and then trucked on an oversize load truck to Portland where the wheel-loader is then swung back out onto the barge. Tugs must then make a second trip to Portland to then transport the barge back to the marine terminal.

CRC receives barges every two weeks. Transporting the barge and wheel-loader to Portland for offloading, maintenance, and then trucking, creates complications in the scheduling and delivery of calcium carbonate. Every piece of equipment on the barge needs regular maintenance to ensure proper performance and to avoid malfunctions. Any activities that require maintenance beyond what CRC can complete on the barge means a delivery has to be stopped and the entire load must be pushed by tugboats upstream to Portland. The crane swings the wheel-loader off and then CRC has a third-party vendor complete the repair. The calcium carbonate delivery must wait on the barge while all repairs are completed, putting the delivery behind schedule and affecting future delivery scheduling.

This additional barge and tug travel results in additional air emissions from diesel exhaust, a potential for engine leaks and spills into the river, and additional ship-wake stranding of fish that use the river margins. The trestle is a crucial part of operations that will reduce the amount of air emissions from the burning of fossil fuels and will ensure deliveries remain on schedule.

Most of the proposed work will be in upland areas that only require Cowlitz County permits. After these are received, federal and state permit applications will be submitted to construct the access trestle because it will be within Corps and state jurisdictions. CRC will proceed with upland improvements while waiting for federal and state permits. These improvements include stockpile and haul road expansion, biofiltration swale reconstruction, additional barge trips, and expanded barge offloading hours.

SITE DESCRIPTION

The site is located on the east bank of the Columbia River (Type S; shoreline) westerly of Dike Road near Woodland, Washington (Figures 2 and 3). The site has the following adjacent properties: RV park to the north, Dike Road and agricultural uses to the east, undeveloped land and landscape storage yard to the south, and the Columbia River to the west. The project is located at approximately river mile (RM) 82 of the Columbia River, and the property is zoned as heavy manufacturing (MH).

All permitted elements associated with the previous project have been installed and the 100-year floodplain of the Columbia River now only extends to the onsite revetment. Permitted elements below the ordinary high water mark (OHWM) of the Columbia River include mooring dolphins, the enclosed conveyor system with associated piling, and large woody material structures installed for mitigation and to discourage vehicular traffic along the river.

Upland features include landscaping along Dike Road, perimeter fencing, paved access road, asphalt haul road around the asphalted stockpile area, walls around the stockpile area to contain calcium carbonate that has been offloaded by the conveyor, conveyor tower to the stockpile, soundwall on the northern side of the site, stormwater biofiltration swale, bank revetment wall that is enhanced with native shrubs, and a stormwater outfall with a duckbill check valve in the revetment. Most of the site has been improved for industrial use with the exception of the following areas that were avoided during construction: a sandy area between the northern haul road and the soundwall, cottonwood trees along the river on the north and south corners of the site, and a narrow sandy area between OHWM and the revetment.

The majority of the site has been developed as previously permitted. Existing vegetation is limited to cottonwood trees near the Columbia River on the northern and southern portions of the site. The sub-canopy is dominated by Himalayan blackberry. During the September 2024 site visit, this Himalayan blackberry had recently been maintained, leaving mainly bare ground in the forested portions of the site. Vegetation along the OHWM consisted of mainly weedy forbs. The revetment above the OHWM has been enhanced with various willow species, as required by permits. Overall, vegetation presence and variety onsite is very minimal. For more information regarding existing conditions, please refer to the Level II Habitat Assessment and Mitigation Plan (ELS 2025).

PROJECT DESCRIPTION

CRC is proposing the following structural and operational changes to their marine terminal:

1. Expand Stockpile and Haul Road.
 - a. Increase the asphalt stockpile pad from 37,867 square feet (approximately 40,000 tons of storage) to approximately 83,000 square feet to 102,000 square feet.
 - b. Expand asphalt haul road on north and west sides.
 - c. Reconstruct the biofiltration swale.
2. Construct New Access Trestle.

- a. Construct an access trestle and associated piling from upland improvements over the beach and Columbia River to provide equipment ingress/egress from moored barges.
 - b. Construct ramp between trestle and haul road.
3. Operational Changes.
 - a. Increase the number of barge trips from 24 to 48 trips per year.
 - b. Increase barge offload days to include Saturday and Sunday and for operations to be 24 hours per day.

Construction tasks shown below may overlap each other or occur concurrently.

1. Expand Stockpile and Haul Road

(Crane, dozer, backhoe, dump truck, delivery trucks, pickups) – 4 months, likely from May through August.

To accommodate the additional material, the asphalt pad used for carbonate stockpile will be increased from 37,867 square feet to approximately 62,945 square feet. This additional area was referred to as the “auxiliary stockpile area” in the Hearing Examiner (No. 13-0948) decision. The purpose of this stockpile area was to provide ample square footage to accommodate stockpiling material due to unforeseen circumstances preventing normal material transport from the stockpile to the production facility. Because the auxiliary stockpile was not thoroughly considered during the application review process, it was not approved as part of the current permits. The Hearing Examiner stated that a supplemental Substantial Development Shorelines Permit request must be submitted to approve the auxiliary stockpile.

The existing asphalt haul road will be expanded on the north side of the site to encircle the stockpile area. This will require the existing biofiltration swale to be relocated to the northwest and expanded to treat the proposed new impervious surfaces. A stormwater technical information report will be prepared that addresses treatment of the expanded impervious area, and designed to meet requirements for biofiltration swales according to the Department of Ecology stormwater management manual.

A noise study was conducted for the original marine terminal and permits required that a sound wall be installed. A second noise study was written for this proposed project. This report summarizes the results of a noise study conducted by ABD Engineering & Design, Inc. (ABD 2024) to determine if the current operation follows the applicable state noise regulations as required under the conditions of approval imposed by the amended Conditions of Approval (Permit 13-06-0570, Appeal 15-07-3229) issued by Cowlitz County: “11. Maximum permissible noise levels shall be in accordance with the provisions of WAC Chapter 173-60.” This report determined that the site is operating in compliance with WAC noise criteria and the Conditions of Approval related to noise.

2. Construct New Access Trestle

(Crane barge, materials barge, tug boat, tender boat, hand tools) – One month.

A short earthen ramp will connect the site with the trestle. The fully grated, 30-foot-wide trestle will extend approximately 250 feet to a 29-foot by 30-foot concrete platform where the crane will load/unload heavy equipment from barges for repairs and maintenance. A total of 45 piles will support the trestle; of these, 24, 20-inch diameter piles will support the grated portion and 12, 24-inch diameter piles will support the concrete platform. Nine piles supporting the trestle will be landward of the OHWM, resulting in a total of 36 piles below the OHWM.

A vibratory pile driver will be used to drive all piles into the sediment to the basalt-bedrock interface, or to the point of refusal. The project engineers estimate that an impact hammer will be necessary to finish

driving all piling for this project. A confined bubble curtain will be used during impact-hammer driving to minimize underwater noise effects.

After piling are in place, the new concrete platform will be constructed with cast-in-place concrete. No uncured concrete will be allowed to enter the river. Framing for the trestle bridge section will be installed, and then the fully grated decking and railing will be attached to the framing. Grating will allow over 60 percent light penetration.

To connect the trestle to the site haul road, an earthen ramp approximately 30 feet wide by 36 feet will be constructed. It will be made with imported aggregate base using excavators, dump trucks, and compacting equipment, then it will be paved with asphalt to prevent rutting. The ramp will connect the trestle to existing upland improvements and will be completely located landward of the OHWM.

During the original marine terminal consultation, the NMFS representative asked why some overwater surfaces were proposed to be concrete and not proposed to be fully grated. The CRC design engineer replied with a memorandum (see Appendix B) that explains the difficulties associated with designing the platforms to have fully grated surfaces. To summarize the reply, a grated surface would require significant steel framework to provide strength, which would block light penetration. Concrete provides the needed strength with fewer environmental impacts during construction and less long-term maintenance when compared to steel framing. Work lighting will be used seasonally only under low-light or no-light conditions during mornings and early evenings during the equipment loading/unloading process. Work lights will be directed onto the crane unloading area and trestle, and they will only be used as needed.

3. Operational Changes

Increase Barge Trips and Offloading Hours

The current number of barge trips were limited during the original shoreline substantial development permit process with Cowlitz County at 24 barge trips per year. To accommodate approximately 200,000 tons of additional calcium carbonate to be offloaded each year, the number of barge trips will need to be doubled to 48 per year.

Currently, barge operations are conditioned in the Hearing Examiner's decision (No. 13-0948) to occur from 7:00 a.m. to 10:00 p.m., Monday through Friday, excluding state holidays. The decision also limits barge trips to 24 per year with each barge being moored for no more than four days. Limiting barge unloading to four days between Monday and Friday can be problematic when a late-week barge arrives. If a barge arrives on Friday and unloading cannot begin, the barge must remain moored until Monday, losing two out of the four allotted days. This severely limits the hours in which offloading can occur and if maintenance is required to the barge or offloading equipment, then too much time can be lost and the offloading window will run out.

CRC proposes to balance the increased demand for material with the requirements of their current permit while also being conscientious of surrounding properties and activities. The proposed 48 barge trips per year will follow these general guidelines:

- Barge offloading operations will occur Monday through Sunday, 24 hours per day.
- Barge offloading operations will not occur during the following holiday weekends: Memorial Day, Independence Day, and Labor Day.
 - o Holiday weekend means the three-day weekend for Memorial Day and Labor Day. The holiday weekend in relation to Independence Day depends on the year and means: (1) the entire week when the Day falls on a Wednesday; (2) a four day weekend when the

Day falls on a Tuesday or Thursday; (3) a three-day weekend including Friday when the Day falls on a Friday or Saturday; and, (4) a three-day weekend including Monday when the Day falls on a Sunday or Monday.

The current Cowlitz County Shoreline Permit No. 13-0948 allows trucking 7:00 a.m. to 6:00 p.m., Monday through Friday, excluding state holidays. Currently, trucks do not haul limestone to the facility every day of the week. The proposed increase of imported calcium carbonate will not result in more truck trips per day from the site, but trucks will haul limestone during more days from Monday through Friday (excluding state holidays). The existing truck route to the Woodland facility from the marine terminal is to turn south (right) on Dike Road, then east (left) on Caples Road and north (left) to the facility on North Pekin Road.

Impact Avoidance and Minimization Measures

The project has been designed to avoid and minimize impacts to shoreline jurisdiction in the vicinity of the project area. Due to the landscape position of the site and the water-dependent nature of the project, complete avoidance of impacts to shoreline jurisdiction for the Columbia River is not possible. In addition to avoidance and minimization measures, the nature of the product to be delivered is an important factor when addressing how to minimize dust or spillage of calcium carbonate during delivery. Calcium carbonate's aquatic toxicity is low. The entire length of the overwater conveyance system between the barge and shore is enclosed in a 12-foot-diameter steel tube, thereby eliminating the chance of material falling into the river. The construction barge, delivery barges and tugboats are required to have spill pollution prevention plans and on-board spill-containment booms, so the chance of contaminants entering the aquatic environment or traveling far from additional boat presence is low.

Fundamental design decisions were made to avoid and minimize project impacts while still meeting project needs. The following list summarizes general avoidance and minimization measures considered during the project design:

- Avoids interfering with beach access: The trestle elevation will still allow safe passage for wildlife and pedestrians along the sandy beach.
- Minimizes aquatic impacts: The raised elevation and fully grated trestle decking allows for light penetration, reducing shading impacts.
- Minimizes overwater lighting: Lights will be directed only to work areas and will be used only when equipment is being loaded/unloaded during times of low natural light.
- Avoids and minimizes impacts to riparian areas along the beach: Although no RHAs are required by Cowlitz County SMP (The Watershed Group and Parametrix 2018), impacts near the OHWM have been minimized to the greatest extent practicable. No native trees or shrubs will be removed. Signs will be placed along the OHWM to inform the public about the mitigation planting area.
- Reduces water and air pollution from tug boats: River miles required to move barges by tugs past the Woodland site to Portland to load and unload onboard equipment for maintenance and repairs will be reduced by approximately 90 miles per round trip. This will reduce water and air pollutants emissions from tug boats.
- Minimizes barge moorage impacts: Barge offloading will be limited to an average of 48 barges per year or about four days per month. Having land access to the barge with the trestle will allow for a second front wheel loader to be placed on the barge, reducing barge offloading and moorage time by up to two days per offloading event.

- Minimizes stormwater quality impacts: A stormwater plan will be implemented that treats stormwater runoff from additional impervious surfaces to current standards.
- Avoids and minimizes impacts to recreational hog line fishing: Barge offloading is limited to 48 barges per year, and offloading is prohibited on Memorial Day, Independence Day, and Labor Day holiday weekends.

The following best management practices (BMPs) will be followed during construction to further avoid and minimize impacts to habitat:

General

- Construction equipment will be inspected for leaks daily.
- Land-based construction will occur mainly during the dry season (May-October).
- The staging and material storage areas will be in upland areas of the site.
- All bare soils will be mulched with certified weed-free straw after ground disturbing activities.
- Conditions in local, state, and federal permits will be followed.
- No pollutants, such as contaminated water, silt, welding slag, sandblasting abrasive, or grout cured less than 24 hours will contact the water.

In-Water

- The in-water work window of October 1 through December 15 will be observed.
- Barges will not “ground out” at any time.
- 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 or boats associated with project blending and storage facility.
- Pile driving with an impact hammer will take place within a confined bubble curtain and a soft-start technique will be used to allow aquatic species to relocate.
- The barges used by the applicant shall not take in ballast water or release ballast water into the Columbia River.

Project Impact Summary

Following the application of avoidance and minimization methodologies, impacts that will remain include habitat and shoreline impacts. A total of 14,853 square feet of permanent impacts will occur to aquatic and shoreline habitat that will be mitigated to ensure no net loss of ecological functions (Figures 4 and 6). A total of 6,144 square feet of temporary impacts will occur to shoreline jurisdiction due to biofiltration swale construction along the waterward side of upland improvements. Because the biofiltration swale will be seeded and allow for infiltration, there are no impacts to the shoreline environment. Table 1 provides a summary of proposed impacts to aquatic habitat and shoreline jurisdiction.

Table 1. Impact Summary - Habitat and Shoreline Jurisdiction

In-Water Impacts		
Habitat Area	Proposed Impact	Impact Size
Columbia River Waterward of OHWM	24, 20-inch steel piling	52.3 square feet
	12, 24-inch steel piling	37.7 square feet
Total In-Water Impacts:		90.0 square feet
Overwater Impacts		
Habitat Area	Proposed Impact	Impact Size
Columbia River Waterward of OHWM	Grated trestle (>60% light admittance)	6,029 square feet
	Trestle Platform (30'x29')	870 square feet
Total Overwater Impacts:		6,899 square feet
Shoreline Impacts		
Habitat Area	Proposed Impact	Impact Size
Columbia River Shoreline Jurisdiction Landward of OHWM	Grated Trestle (>60% light admittance)	2,191 square feet
	9, 20-inch steel piling	19.6 square feet
	Earthen Ramp (30'x 36')	1,080 square feet
	Expanded Stockpile and Road	4,573 square feet
	Total Shoreline Impacts	7,864 square feet
Total Impact Area		14,853 square feet

Mitigation Summary

Proposed mitigation includes riparian habitat enhancement on the project site. Native shrubs and trees will be installed on 0.42 acres (18,191 square feet) of riparian habitat to connect the existing enhancement area that was required under the previous local, state, and federal permits to the OHWM (Figure 6). This will create a less fragmented inner riparian habitat and will provide valuable functions including water quality, water quantity, and wildlife habitat. Although there is no RHA required by the SMP, the applicant recognizes important functions provided by riparian habitat; therefore, the remaining portion of riparian habitat will be enhanced, and on the north and south property boundaries, riparian plantings will continue up to 150 feet landward of the OHWM. The overall mitigation-to-impact ratio is 1.22:1 (18,191 divided by 14,853).

Signs will be installed along the edge of the OHWM to inform the public about the mitigation planting area. Signs will be consistent with CCC 19.15.170(H)(2)(a), be made of an enamel-coated metal face and attached to the fencing or metal t-posts and will be placed within site distance of each other and be maintained in perpetuity. Signs will be worded as follows: “Protected Critical Area, Do not Disturb, Contact Cowlitz County Building and Planning Regarding Uses and Restrictions.” Monitoring, maintenance, and contingency methods have been developed to ensure the mitigation plantings are meeting performance standards and mitigation goals.

SMP NARRATIVE LAYOUT

Only applicable sections of the SMP are included within this narrative, with some sections having text with strikethrough, so the SMP reference numbering was still clear. SMP language is followed by the ELS response inside the box, and font is *italicized*.

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Figure 10	Statewide Washington Integrated Fish Distribution (SWIFD)

5. SHORELINE DESIGNATIONS AND SHORELINES OF STATEWIDE SIGNIFICANCE

5.4 SHORELINE ENVIRONMENT DESIGNATIONS

The County classification system consists of shoreline environment designations (SEDs) that are consistent with and implement the Shoreline Management Act, the Program, and the Cowlitz County Comprehensive Plan. These designations have been assigned consistent with the corresponding criteria provided for each shoreline designation. In delineating shoreline designations, the County aims to ensure that existing shoreline ecological functions are protected with the proposed pattern and intensity of development. Such designations should be consistent with the policies for restoration of degraded shorelines. The SEDs are listed below:

- High-Intensity
- Residential
- Urban Conservancy
- Rural Conservancy
- Natural
- Aquatic
- Recreation

5.4.1 HIGH-INTENSITY ENVIRONMENT

Purpose

The purpose of the High-Intensity SED is to provide for high-intensity, water-oriented commercial, transportation, and industrial uses while protecting existing ecological functions and restoring ecological functions in areas that have been previously degraded.

Management Policies

- A. Priority should be given to water-dependent, water-related, and water-enjoyment uses in that order of preference. Non-water-oriented uses should be allowed in limited instances when they do not interfere with or limit water oriented development or where there is no direct access to the shoreline because of another property or public right-of-way separating it from the shoreline.

This project is water-dependent because it requires barge moorage and unloading.

- B. Full utilization of existing urban and extensively altered areas should be achieved before further expansion of intensive development is allowed.

This project proposes full use of the project site so that no new areas need to be developed. The proposed stockpile expansion area is located within the previously improved areas of the shoreline.

- C. Non-water-oriented uses on sites adjacent to the water should provide public benefit in the form of ecological enhancement and/or public access in compliance with the provisions of this Program.

Not applicable. This project is water-dependent.

- D. Where unavoidable impacts to ecological functions occur, appropriate mitigation should be provided in accordance with this Program to assure no net loss of ecological function. Where

applicable, development should include environmental cleanup and restoration of the shoreline in accordance with relevant state and federal law.

There are proposed unavoidable impacts to shoreline resources associated with this project; however, they will be fully mitigated to ensure no net loss of ecological function. There are no environmental cleanup sites associated with this or adjacent properties according to the Washington Department of Ecology (Ecology) website.

- E. Where feasible as described by this Program, visual and/or physical public access should be provided.

Currently, there is no public access from this operating industrial site that is fenced to protect the public, but full public access is available outside the fence along the shoreline. This project proposes to maintain this public access situation. The upland site will remain inaccessible to the public, and the proposed trestle will be elevated so that the public can walk beneath the trestle.

- F. Aesthetic objectives of this Program should be considered consistent with the primary purpose of accommodating high-intensity development. Implementation of these objectives may include means such as sign regulations, maintenance of natural vegetative buffers, screening and architectural standards, and other standards.

To achieve aesthetic objectives, there are proposed dense plantings of native trees and shrubs between the proposed facility and the river. This area currently has little vegetation, and the proposed natural vegetation will screen the facility from adjacent public access areas and from the river.

5.5 SHORELINES OF STATEWIDE SIGNIFICANCE

The Act designated certain shoreline areas as Shorelines of Statewide Significance (SSWS). SSWS rivers in Cowlitz County include the Columbia River, Cowlitz River, Lewis River, mainstem Toutle River and the Kalama River downstream from the National Forest boundary. SWSS lakes in Cowlitz County include Merwin Lake, Yale Reservoir and Silver Lake. Shorelines thus designated are important to the entire state. Because these shorelines are major resources from which all people in the state derive benefit, the County gives preference to uses which favor long-range goals and support the overall public interest. In accordance with RCW 90.58.020, SSWS will be managed as follows:

- A. Every project located on a SSWS shall demonstrate consistency with the following priorities, in order of preference, in all permit review, in addition to compliance with other criteria provided by this Program:
1. Recognize and protect the statewide interest over local interest.
 - a. Solicit comments and opinions from groups and individuals representing state-wide interests by circulating amendments to the Program, and any proposed amendments affecting SSWS, to state agencies, affected tribes, adjacent jurisdictions, citizen's advisory committees and local officials, and statewide interest groups.
 - b. Recognize and take into account state agencies' policies, programs, and recommendations in developing and administering use regulations and in approving shoreline permits.

- c. Solicit comments, opinions, and advice from individuals with expertise in ecology and other scientific fields pertinent to shoreline management.

This project maintains the existing facility footprint and activities, which has undergone significant public comments and permitting. This project only expands the upland activity on the same parcel, and it proposes a trestle within the existing marine terminal footprint. ELS has prepared a Level II Habitat Assessment and Mitigation Plan that addresses shoreline and ecological habitats.

2. Preserve the natural character of the shoreline.

- a. Designate and administer shoreline environment designations and use regulations to minimize damage to the ecology and environment of the shoreline as a result of man-made intrusions on shorelines.

This does not require an applicant response.

- b. Restore, enhance, and/or redevelop those areas where intensive development or uses already exist in order to reduce adverse impact on the environment and to accommodate future growth rather than allowing high intensity uses to extend into low-intensity use or underdeveloped areas.

This project will remain on the existing facility footprint, so it will not extend to low-intensity or underdeveloped areas.

- c. Protect and preserve existing diversity of vegetation and habitat values, wetlands, and riparian corridors associated with shoreline areas.

This project has been designed to protect and preserve existing habitat values associated with adjacent shoreline areas. Proposed mitigation will enhance the Columbia River's riparian buffer, improve water quality, water quantity, and habitat functions for the Columbia River, resulting in no net loss of ecological function.

3. Support actions that result in long-term over short-term benefit.

- a. Evaluate the short-term economic gain or convenience of developments relative to the long-term and potentially costly impairments to the natural shoreline.
- b. Protect resources and values of SSWS for future generations by modifying or prohibiting development that would irretrievably damage shoreline resources.
- c. Actively promote aesthetic considerations when contemplating new development, redevelopment of existing facilities, or general enhancement of shoreline areas.

The proposed project has been designed to operate over the long term, protect resources and values of the shoreline, and maintain aesthetic considerations for this expansion project, which will occur within the same parcel and footprint in the river.

4. Protect the resources and ecological function of the shoreline.

- a. Minimize development activity that will interfere with the natural functioning of the shoreline ecosystem, including, but not limited to, stability, drainage, aesthetic values, and water quality.

This project has been designed to avoid and minimize impacts to the shoreline ecosystem by following critical area and shoreline regulations, stormwater

treatment requirements to maintain water quality, and proposes to enhance the riparian buffer with native trees and shrubs to provide compensatory mitigation that will also protect aesthetic values.

- b. All shoreline development should be located, designed, constructed, and managed to avoid disturbance of and minimize adverse impacts to wildlife resources, including spawning, nesting, rearing, and habitat areas and migratory routes.

This project has been designed to avoid and minimize impacts to the wildlife and fish resources, and the applicant proposes to enhance the riparian buffer with native trees and shrubs as compensatory mitigation for minor impacts. There will be no impacts to wildlife resources that cannot be replaced onsite with the proposed mitigation. Refer to the Project Description section of this narrative for further details regarding impact avoidance and minimization. The Level II Habitat Assessment contains further information regarding state and federal listed species in the project vicinity and their corresponding management recommendations.

- c. Balance public access demands with the need to preserve shoreline ecology. Public access shall be discouraged where it has the potential to impact sensitive shoreline resources.

Continued public pedestrian use of the shoreline is not expected to impact sensitive shoreline resources.

- d. Shoreline materials including, but not limited to, bank substrate, soils, beach sands, and gravel bars should be left undisturbed by shoreline development. Gravel mining should be severely limited in SSWS shoreline areas.

Shoreline materials will be left undisturbed with the exception of planting native trees and shrubs between the OHWM and the existing revetment. The piling to support the trestle on the river bank have a small footprint of impact and will be fully mitigated onsite. The majority of cover over the water and the shoreline is overhead from the trestle. Vegetation will remain undisturbed below and water will freely pass through.

- e. Preserve environmentally sensitive wetlands for use as open space or buffers and encourage restoration of currently degraded wetland areas.

There are no wetlands on or adjacent to the site.

- 5. Increase public access to publicly owned areas of the shoreline.

- a. Retain and enhance public access to the shoreline including passive enjoyment, recreation, fishing, and other enjoyment of the shoreline and public waters consistent with the enjoyment of property rights of adjacent lands.

This project will retain existing, pedestrian, public access to the shoreline that will provide passive enjoyment, recreation, fishing, and other enjoyment consistent with adjacent properties.

- b. Give priority to developing a system of linear access consisting of paths and trails along the shoreline areas, providing connections across current barriers wherever feasible.

This project will retain existing, pedestrian, public access to the shoreline; however, the shoreline area is too narrow to create paths and trails because it is limited by Dike Access Road on the levee and the existing marine facility.

- c. Provide multipurpose non-motorized trail facilities in accordance with the provisions of the American's with Disabilities Act, wherever feasible.

This project will retain existing, pedestrian, public access to the shoreline but it does not provide ADA access due to the sandy, narrow shoreline area as described above.

- 6. Increase recreational opportunities for the public on the shoreline.

- a. Plan for and encourage development of public facilities for water-oriented recreational use of the shoreline.

This project is privately owned and cannot increase access because of the shoreline width and cannot encourage public facility use on this relatively small parcel that is fully developed for industrial purposes and zoned for heavy manufacturing.

6. GENERAL SHORELINE REGULATIONS

6.1 NO NET LOSS OF ECOLOGICAL FUNCTION

- B. All shoreline use and development, including preferred uses and uses that are exempt from permit requirements, shall be located, designed, constructed, conducted, and maintained in a manner that maintains shoreline ecological functions (RCW 90.58.020).

A trestle and associated piling, expanded stockpile area, and extended haul road are proposed through the 200-foot shoreline jurisdiction, which will affect in-water habitat by the grated overwater trestle and additional in-water piling. In shoreline jurisdiction above the OHWM, the trestle will not affect native vegetation planted on the bank as mitigation for the original project. Mitigation proposed for site expansion will fully compensate for project impacts. For these reasons, shoreline ecological functions will be maintained.

- C. Shoreline ecological functions that shall be protected include, but are not limited to, fish and wildlife habitat, food web support, and water quality maintenance.

The project was designed to avoid and minimize impacts to shoreline ecological functions to the extent practicable. Unavoidable impacts will be fully mitigated and will provide improved riparian buffer function by planting native trees and shrubs where there is currently only sparse herbaceous vegetation. This will provide improved fish and wildlife habitat, support the food web, and maintain water quality.

- D. Shoreline processes that shall be protected include, but are not limited to, water flow; erosion and accretion; infiltration; groundwater recharge and discharge; sediment delivery, transport,

and storage; large woody debris recruitment; organic matter input; nutrient and pathogen removal; and stream channel formation/maintenance.

The project was designed to protect shoreline processes listed above to the extent practicable. The above-listed processes will be protected by this project with the exception of stream channel formation/maintenance, which could be affected because any changes made by river migration toward the proposed facility will be stopped to avoid damage to the infrastructure. River migration is unlikely due to the straight-north flow of the Columbia River in the project location. The project is not located on a curve in the river where accretion/erosion mostly occur. The processes of organic matter input and nutrient/pathogen removal will be improved by proposed native shoreline trees and shrubs that will provide compensatory mitigation.

- E. Mitigation requirement. If a proposed shoreline use or modification is entirely addressed by specific, objective standards (such as setback distances, pier dimensions, or materials requirements) contained in this SMP, then the mitigation sequencing analysis described in subsection E, below, is not required. In the following circumstances, the applicant must provide a mitigation sequencing analysis as described in subsection E:

Mitigation is proposed for impacts to shoreline ecological functions. Mitigation sequencing was followed in developing the mitigation plan. See the Level II Habitat Assessment for more details.

7. If a proposed shoreline use or modification is addressed in any part by discretionary standards (such as standards requiring a particular action if feasible, requiring a demonstration of need, or requiring the minimization of development size) contained in this Chapter, then the mitigation sequencing analysis is required for the discretionary standard(s); or

Mitigation sequencing was followed in developing the mitigation plan. See the Level II Habitat Assessment for more details.

8. When an action requires a Shoreline Conditional Use Permit or Shoreline Variance Permit; or

The project will be permitted through a Shoreline Substantial Development Permit (SSDP) as indicated by SMP Table 7-1.

9. When specifically required by this SMP.

Mitigation sequencing has been met as shown in the Level II Habitat Assessment that includes a mitigation plan.

- F. Mitigation sequence. An application for any permit or approval shall demonstrate all reasonable efforts have been taken to provide sufficient mitigation such that the activity does not result in net loss of ecological functions. Mitigation shall occur in the following prioritized order:

1. Avoid the adverse impact altogether by not taking a certain action or parts of an action or by moving the action.

A list of impact avoidance and minimization measures is included at the beginning of this narrative in the Project Description section. The project has been designed to avoid impacts to the river and riparian areas that are not necessary to meeting the project needs. Due to the landscape position and the water-dependent nature of the project, complete avoidance of impacts to shoreline jurisdiction was not possible.

2. Minimize adverse impacts by limiting the degree or magnitude of the action and its implementation by using appropriate technology and engineering, or by taking affirmative steps to avoid or reduce adverse impacts.

A list of impact avoidance and minimization measures is included at the beginning of this narrative. The project has been designed to minimize impacts to the river and riparian areas that are not necessary to meeting the project needs. Due to the landscape position and the water-dependent nature of the project, complete impact minimization to shoreline jurisdiction was not possible.

3. Rectify the adverse impact by repairing, rehabilitating, or restoring the affected environment.

Proposed impacts to aquatic habitat and shoreline jurisdiction for this expansion project are not possible to repair or rehabilitate. However, compensatory mitigation proposes to restore 0.42 acres between the OHWM and the existing bank restoration plantings. Mitigation will include enhancing native vegetation within the riparian area of the Columbia River along the entire western site boundary and adding signs to protect the plantings. The mitigation goal is to ensure no net loss of ecological functions, meet vegetation conservation standards established in the SMP, and to provide vegetative screening between the Columbia River and the industrial development.

4. Reduce or eliminate the adverse impact over time by preservation and maintenance operations during the life of the action.

The project has the following operation and maintenance BMPs specific to shoreline jurisdiction:

- *Maintain the biofiltration swale to promote infiltration of surface runoff so that stormwater runoff into the Columbia River occurs only during high precipitation events.*
- *Inspect and maintain signs that inform the public about the mitigation plantings.*

5. Compensate for the adverse impact by replacing, enhancing, or providing similar substitute resources or environments. Preference shall be given to measures that replace the impacted functions on-site or in the immediate vicinity of the impact. However, alternative compensatory mitigation within the watershed that addresses limiting factors or identified critical needs for shoreline resource conservation based on watershed or comprehensive resource management plans may be authorized.

Proposed mitigation is in-kind and onsite. Placing habitat features below the OHWM of the Columbia River has historically been approved by local, state, and federal agencies; however, this method of mitigation for in-water impacts has been avoided by regulatory agencies due to complications with habitat feature longevity where the features will not maintain its original structure and logs have broken free. Some structures had been observed recruiting more large and small woody material, however there was no consistency on the habitat productivity of large wood structures in the Columbia River.

6. Monitor the adverse impact and compensation projects, and take appropriate corrective measures.

Performance standards, monitoring, maintenance, and contingency methods have been developed. The Level II Habitat Assessment has exact requirements for the 5-year

monitoring period. These measures will ensure the mitigation site is meeting the mitigation goal and replacing any lost functions resulting from the proposed development.

- G. The amount of mitigation required by this Program shall not exceed the amount necessary to ensure that the proposed shoreline use or modification will result in no net loss of shoreline ecological functions and will not have a significant adverse impact on other shoreline functions fostered by the policy of the Act.

Mitigation for impacts to aquatic habitat and shoreline jurisdiction is proposed at an overall 1.22:1 ratio, which is appropriate to fully compensate for impacts to result in no net loss of shoreline ecological functions. This will create a less fragmented inner riparian habitat and will provide valuable functions including water quality, water quantity, and wildlife habitat. Although there is no RHA required by the SMP, the applicant recognizes important functions provided by riparian habitat; therefore, the remaining portion of riparian habitat will be enhanced, and on the north and south property boundaries, riparian plantings will continue up to 150 feet landward of the OHWM.

- H. Adverse Impacts. Example of common actions that may result in adverse ecological impacts include, but are not limited to, the following:

1. Removal of native plant communities in shoreline jurisdiction;

Native plant removal is limited to sparse herbaceous vegetation to install the trestle and access ramp. No vegetation will be removed in the stockpile expansion and haul road expansion areas.

2. Removal of trees or shrubs that overhang the water;

No trees or shrubs overhang the water.

3. Removal of vegetation on slopes if that vegetation supports maintenance of slope stability and prevents surface erosion;

The existing sparse herbaceous vegetation does not support slope stability, but proposed mitigation of native tree and shrub plantings will enhance bank stability.

4. Removal or alteration of priority habitats or habitat for priority species;

Existing priority habitats include instream and riparian habitats. Instream habitat will be impacted by the overwater trestle and associated piling. Riparian habitat will be improved by planting native trees and shrubs in areas near the OHWM where only sparse herbaceous vegetation is present.

5. Construction of new or expanded in- and over-water structures;

Aquatic habitat will be impacted by the new trestle and associated piling.

6. Construction of new or expanded shoreline stabilizations;

None are proposed.

7. New discharges of water into shoreline waterbodies that may introduce pollutants;

New impervious surfaces will generate additional stormwater runoff; however, the expanded biofiltration swale will treat runoff from these areas by infiltrating all runoff except during high precipitation events. This level of treatment is required by the original permits. To date, CRC has not observed a discharge of stormwater from the existing facility to the Columbia River during the wet season. All stormwater has infiltrated.

8. Construction of new impervious surfaces whose discharges are not infiltrated and thus may alter hydrologic conditions of shoreline waterbodies; and/or;

Runoff from new impervious surfaces will be infiltrated. There are no stormwater retention requirements for the Columbia River.

9. Changes in grading or fill that reduce floodplain capacity.

The project does not propose work within the 100-year floodplain that will reduce floodplain capacity. The existing facility is above the 100-year floodplain as is the proposed trestle and its associated ramp.

- I. Applicants for permits have the burden of proving that the proposed development is consistent with the criteria set forth in this Program and the Act, including demonstrating all reasonable efforts have been taken to provide sufficient mitigation such that the activity does not result in net loss of ecological functions.

Answers in this document show that the proposed expansion is consistent with the SMP and SMA, and all reasonable efforts have been taken to propose a mitigation project that does not result in the net loss of ecological functions.

- J. The County may coordinate with state and federal agencies regarding mitigation requirements.

Based on previous project experience, proposed mitigation will be approved by state and federal agencies.

6.2 ARCHAEOLOGICAL, CULTURAL, AND HISTORIC RESOURCES

- A. If historic, cultural, or archaeological sites or artifacts are discovered in the process of development, work shall be stopped immediately in accordance with the provisions of federal, state, and local laws, the site secured, and the find reported as soon as possible to the Director. The property owner also shall notify the Washington Department of Archaeology and Historic Preservation (DAHP) and affected tribes. Tribal contacts will be provided by the Director. The Director may provide for a site investigation by a qualified professional and may provide for avoidance or conservation of the resources in coordination with appropriate agencies. All shoreline permits shall contain a special provision notifying permittees of this requirement. Failure to comply with this requirement shall be considered a violation of the shoreline permit and shall subject the permittee to legal action as specified in Section 8.10, Enforcement.

The original project had an approved cultural resources report, and no historic, cultural, or archaeological sites or artifacts were discovered in the process of development. Because excavation for this proposed expansion will not extend into native soils, no further investigation is necessary.

- B. Prior to approval of development in an area of known or probable cultural resources, the County shall require a site assessment by a qualified professional archaeologist in coordination with affected tribes. Conditions of approval may require preservation or conservation of cultural resources as provided by applicable federal, state, and local statutes. All permits issued for development in areas known to be archaeologically significant shall provide for monitoring of any development activity for previously unidentified cultural resources.

The original project had an approved cultural resources report, and no historic, cultural, or archaeological sites or artifacts are discovered in the process of development. Because excavation for this proposed expansion will not extend into native soils, no further investigation is necessary.

6.3 CRITICAL AREAS PROTECTION

6.3.2 GENERAL PROVISIONS

- A. Critical Areas and Buffers. Critical areas and critical areas buffers that are within shoreline jurisdiction are regulated by the Critical Areas Regulations [Chapter 19.15 CCC, approved December 20, 2016], which are herein incorporated into this Program, with the following clarifications and modifications.

All critical areas regulations under 6.3.2 Subsection (A) are discussed in the Level II Habitat Assessment and Mitigation Plan prepared by Ecological Land Services, Inc., revised August 2025.

- B. Shoreline uses, activities, developments, and their associated structures and equipment shall be located, designed, and operated to protect the ecological processes and functions of critical areas. Where significant adverse impacts to critical areas are unavoidable, impacts shall be mitigated to ensure no net loss of ecological functions pursuant to Section 6.1 of this Program.

The proposed project is located, designed, and operated to protect the ecological processes and functions of critical areas as described in detail in the Level II Habitat Assessment and Mitigation Plan prepared by Ecological Land Services, Inc., revised August 2025. Unavoidable impacts will be fully mitigated to ensure no net loss of ecological functions pursuant to Section 6.1 of this Program.

- C. New and expanded development proposals shall integrate protection of wetlands, fish and wildlife habitat, and flood hazard reduction with other stream management provisions, such as retention of channel migration zones, to ensure no net loss of ecological functions.

The proposed development expansion integrates protection of riparian, aquatic, and terrestrial wildlife habitat, and ensures no net loss of ecological functions through the proposed mitigation plan. This site is too small to reduce flood hazards of the Columbia River or to alter habitat regimes in this large river.

This project protects existing ecological functions through avoidance and minimization measures during the design, construction, and operations phases of the project, and it enhances ecological functions within shoreline jurisdiction by planting native vegetation along the OHWM.

- D. Critical areas within the shoreline jurisdiction shall be regulated for any use, development, or activity as provided in accordance with this Program and the Critical Areas Regulations incorporated herein.

Not applicable to the applicant.

- E. If provisions of the Critical Areas Regulations incorporated herein and other parts of this Program conflict, the provisions most protective of ecological resources shall apply.

The proposed project follows the most protective regulations to protect ecological resources.

- F. Unless otherwise stated, critical area buffers shall be protected consistent with principles of no net loss, and in accordance with this Program and the Critical Areas Regulations incorporated herein.

There are no required RHA buffers for water-dependent uses in the Heavy Industrial SED. However, this project proposes to enhance riparian habitat up to 150 feet landward of the OHWM to compensate for project impacts, and there will be no net loss of ecological functions as required by the SMP and critical areas regulations.

- G. These provisions do not extend the shoreline jurisdiction beyond the limits specified in this Program as defined in Section 3.1, Applicability. All critical areas and critical area buffers located in areas outside of the jurisdiction of the Shoreline Management Act shall be subject to the provisions of the Cowlitz County Municipal Code and the Washington State Growth Management Act.

There are no critical areas or their buffers on or near the site that are outside of SMA jurisdiction.

6.4 FLOOD PREVENTION AND FLOOD DAMAGE MINIMIZATION

- A. Development or uses in floodplains shall avoid significantly or cumulatively increasing flood hazards, and shall be consistent with applicable flood hazard regulations or management plans adopted pursuant to RCW 86.12, provided the plan has been adopted after 1994 and approved by Ecology.

This project meets all applicable flood hazard regulations. The existing facility is above the 100-year floodplain as is the proposed trestle and its associated ramp.

- B. New residential, commercial, or industrial development and uses, including subdivision of land, within shoreline jurisdiction are prohibited if it would be reasonably foreseeable that the development or use would require structural flood hazard reduction measures in the channel migration zone or floodway over the life of the development.

This project is not a new industrial development and does not propose additional work that would require structural flood hazard reduction measures in the channel migration zone or floodway over the life of the development.

- C. The following uses and activities may be authorized in floodways or channel migration zones when otherwise permitted by this Program:

Subsections (C)(1) through (C)(9) are not applicable to the project because no development is proposed within a regulatory floodway or channel migration zone.

- D. Removal of materials for flood management purposes shall be consistent with an adopted flood hazard reduction plan and is allowed only after a biological and geomorphological study shows that extraction has a long-term benefit to flood hazard reduction, does not result in a net loss of ecological functions, and is part of a comprehensive flood management solution.

No material removal is proposed for flood management purposes.

- E. Channel Migration Zones: The Channel Migration Zone Maps are available for review in the Planning Department as either hard copy or computer-generated images of the County's Geographic Information System. Applicants may submit a site-specific CMZ study if they believe these conditions do not exist on the subject property and the map is in error. The CMZ study must be prepared consistent with WAC 173-26-221(3)(b), and may include, but is not limited to, historic aerial photographs, topographic mapping, flooding records, and field verification. The CMZ study must be prepared by a licensed geologist or engineer with at least five years of applied experience in assessing fluvial geomorphic processes and channel response.

No channel migration zones are mapped in this section of the Columbia River.

- F. Information Required. In addition to any information required as part of a critical areas assessment per the Critical Areas Regulations incorporated herein, the County shall require the applicant to provide the following information as part of an application for development within a flood hazard area.

1. Flood hazard area characteristics up and downstream or up- and downcurrent from the project area;

The original development received permits for shoreline and critical areas within a flood hazard area. This project does not propose any activity that would impact a flood hazard area, so no additional information is required. The previous project raised the elevation of the site interior, so all proposed upland improvements are now above the base flood elevation.

2. Existing shoreline stabilization and flood protection works within the area;

This project does not propose additional shoreline stabilization or flood protection works.

3. Physical, geological, and soil characteristics of the area;

The NRCS soil maps in the area show that the proposed project site and areas near the river are Riverwash. However, most of the site has been filled to raise the site above the 100-year floodplain, so most of the site soils consist of clean fill material from local sources.

4. Biological resources and predicted impact to fish, vegetation, and animal habitat associated with shoreline ecological systems;

A total of 14,853 square feet of unavoidable impacts will occur to aquatic and shoreline habitat that will be mitigated to ensure no net loss of ecological functions. These impacts will occur in-water from piling (90 square feet), overwater from the grated trestle and platform (6,899 square feet), and landward of the OHWM from the grated trestle, earthen ramp, piling, and expanded stockpile and road (7,864 square feet). Proposed mitigation consists of onsite enhancement to riparian habitat at a 1.22:1 ratio to ensure no net loss of ecological functions. The grated trestle will have a minimum of 60 percent light admittance to avoid shading effects to aquatic habitat and juvenile salmonids from piscivorous fish. Piling will also have anti-perch caps installed to prevent birds of prey

from using the piling as perches to prey on juvenile salmonids. Artificial lighting on the trestle will be directed away from the water and only used during loading/unloading equipment to minimize lighting effects.

5. Predicted impact upon adjacent area shore and hydraulic processes, adjacent properties, and shoreline and water uses; and

The proposed project will not impact adjacent-area shore or hydraulic processes, adjacent properties or shoreline and water uses.

6. Analysis of alternative flood protection measures, both structural and nonstructural.

The proposed project does not propose actions that will affect existing flood-protection measures that are structural or non-structural.

6.5 PUBLIC ACCESS

Public access provisions apply to all shorelines of the state unless stated otherwise and are intended to protect the ability of the general public to reach, touch, and enjoy the water's edge, to travel on the waters of the state, and to view the water and the shoreline from adjacent locations.

A. Applicability (also see Figure 6-2):

2. Public access shall be required in the following circumstances:

- a. The use or development is a public project; or
- b. The project is a water-enjoyment or non-water-oriented use or development; or
- c. The project is a residential development of more than four (4) dwelling units; or
- d. The project is a subdivision of land into more than four (4) lots; or
- e. The project is a private water-dependent or water-related use or development and one of the following conditions exists:
 - i. The project increases or creates demand for public access;
 - ii. The project impacts or interferes with existing access by blocking access or discouraging use of existing access; or
 - iii. The project impacts or interferes with public use of waters subject to the Public Trust Doctrine.

3. Public access to the shoreline shall not be required for the following:

- a. Activities qualifying for an exemption from the shoreline substantial development permit process;
- b. New single-family residential development of four (4) or fewer units;
- c. Minor modifications or expansion activities associated with existing uses licensed by the Federal Energy Regulatory Committee;
- d. If reasonable, safe, and convenient public access to the shoreline exists in the general vicinity, and/or the County or agencies' plans show adequate public access at the property; or
- e. If the applicant can demonstrate with substantial evidence that at least one of the following conditions exist:
 - i. Unavoidable health or safety hazards to the public exist which cannot be prevented by any reasonable means;
 - ii. Inherent security requirements of the use cannot be satisfied through the application of alternative design features or other solutions;

- iii. The cost of providing the access, easement, or an alternative amenity is unreasonably disproportionate to the total long term cost of the proposed development;
- iv. Environmental impacts that cannot be mitigated, such as damage to spawning areas or nesting areas, would result from public access on-site;
- v. Significant undue and unavoidable conflict between access provisions and the proposed use and/or adjacent uses would occur and cannot be mitigated; and/or
- vi. It is demonstrated to be unconstitutional or otherwise illegal.

During trestle construction, the public will not be able to access the area under the trestle. After construction, public access along the Columbia River will be maintained for pedestrians as it currently exists. Available bank fishing and hog-line fishing in the Columbia River in the vicinity of the proposed trestle is not adequate for salmon fishing. The water is shallow and has a high percent cover of aquatic vegetation. For this reason, recreational fishing will not be impacted by the proposed trestle. For hog-line fishing in the river, CRC will continue to follow the limits and conditions set during the previous project's permitting. This condition reads as follows:

"The applicant shall coordinate with the Director of Building and Planning and the WDFW to identify other weeks of expected peak salmon and steelhead runs and will use best efforts to schedule barge operations to avoid those weeks which shall be no more than four (4) weeks per year."

CRC will continue to coordination with Cowlitz County and WDFW as previously required.

6.6 VEGETATION CONSERVATION

- A. All development shall minimize vegetation removal in areas of shoreline jurisdiction to the amount necessary to accommodate the permitted use. Mitigation sequencing per Section 6.1(E) of this Program shall be applied unless specifically excluded by this Program, so that the design and location of the development minimizes short- and long-term vegetation removal.

There are no native trees or shrubs within shoreline jurisdiction that will be removed. Vegetation impacts are limited to sparse herbaceous plants and weeds.

- B. Vegetation within shoreline buffers, other stream buffers, wetlands or wetland buffers, or other critical areas shall be managed consistent with Table 7-2 of this Program and the Critical Areas Regulations incorporated herein. Buffers are defined for all shoreline waterbodies in Table 7-2 of this Program.

No native trees or shrubs will be disturbed on the shoreline. No riparian buffers are required for water-dependent uses in the High Intensity SED per the SMP, however, vegetation was still avoided during design.

- C. Other vegetation within shoreline jurisdiction, but outside of shoreline buffers, other stream buffers, wetlands and wetland buffers, and other critical areas shall be managed according to Section 6.1, No Net Loss of Ecological Function, of this Program, and any other regulations specific to vegetation management contained in this Program and Cowlitz County Code.

There is only sparse herbaceous vegetation in project expansion areas. The expansion of the stockpile is located within the previously improved footprint of the project and will have no impacts to native vegetation. Proposed mitigation is to enhance the riparian habitat between the OHWM

and the revetment and the two areas in the northwest and southwest corners of the site with native trees and shrubs, which will result in no net loss of ecological function.

D. Vegetation conservation standards of this Program shall not apply retroactively in a way which requires lawfully existing uses and developments, including residential landscaping and gardens, to be removed, except as required as mitigation for new and expanded development. Routine maintenance of existing landscaping and gardens is allowed.

There is existing landscaping near Dike Road outside of shoreline jurisdiction that will continue to be maintained, and there is no proposed landscaping.

E. When restoring or enhancing shoreline vegetation, proponents shall use native species that are of a similar diversity, density, and type to that occurring in the general vicinity of the site prior to any shoreline alteration. The vegetation shall be nurtured and maintained to ensure establishment of a healthy and sustainable native plant community over time.

The riparian plantings will consist entirely of native species generally found along this reach of the Columbia River, and proposed plantings will also have a higher degree of diversity. Plantings will also provide a vegetative screen between the shoreline and proposed development. The mitigation area will be monitored for 5 years to ensure success of the mitigation site and that it is meeting performance standards.

F. Mitigation plans shall be approved before initiation of other permitted activities unless a phased schedule that ensures completion prior to occupancy has been approved.

The mitigation plan is part of the permit application and will be approved during the permitting processes. Plantings will be installed during appropriate planting windows after permits have been issued. Please refer to the Level II Habitat Assessment revised August 2025 for the mitigation plan, goals, performance standards, and monitoring requirements.

G. Aquatic weed control shall only occur to protect native plant communities and associated habitats or where an existing water-dependent use is restricted by the presence of weeds. Aquatic weed control shall occur in compliance with all other applicable laws and standards and shall be done by a qualified professional.

No aquatic weeds have been observed at the site, and no control is proposed.

H. Limbing or crown thinning shall comply with the Tree Care Industry Association pruning standards, unless the tree poses a safety hazard that cannot be eliminated by pruning, crown thinning, or other technique that maintains some habitat function. If a safety hazard cannot be easily determined by the Director, a written report by a certified arborist or other qualified professional is required to evaluate potential safety hazards. No more than 25 percent of the limbs of any single tree may be removed and no more than 20 percent of the canopy cover in any single stand of trees may be removed for view preservation.

No limbing or crown thinning is proposed.

I. Vegetation may be removed from levees, dikes, docks, airports, roads, and railways in accordance with the provisions of this Program, including the requirement to result in no net loss of ecological functions; as well as applicable federal, state, and local standards, including but not limited to the requirements of the U.S. Army Corps of Engineers, the Federal Aviation

Administration, the Washington State Department of Transportation Aviation Division, and Cowlitz County.

The project does not propose to remove vegetation from the dike or road. There are no airports, railways, or docks in the project vicinity.

6.7 WATER QUALITY AND QUANTITY

- A. All shoreline development shall comply with the applicable requirements of the County's Stormwater Manual and best management practices to prevent impacts to water quality and stormwater quantity that would result in a net loss of shoreline ecological functions and/or a significant impact to aesthetic qualities or recreational opportunities.

The proposed project will comply with the applicable requirements of the most recent Department of Ecology stormwater manual to prevent water quality and stormwater quality impacts, so there will not be a net loss of shoreline ecological functions and/or significant impact to aesthetic qualities or recreational opportunities.

- B. Stormwater management structures including ponds, basins, and vaults shall be located outside of shoreline jurisdiction where feasible, as far from the water's edge as feasible, and shall minimize disturbance of buffers. Low-impact development facilities (which do not substantially change the character of the shoreline) such as vegetation filter strips, grass-lined swales, and vegetated bioretention and infiltration facilities, are encouraged in association with development allowed in shoreline jurisdiction.

The existing biofiltration swale will be reconstructed and expanded to accommodate the proposed stockpile and haul road expansion. Stormwater will infiltrate, with the exception of very high precipitation events where treated stormwater will be discharged to the existing outfall. Since the previous project's completion, the existing outfall has yet to discharge during any rain events.

- C. Aerial application of pesticides, herbicides and fertilizers within shoreline jurisdiction is prohibited unless as part of a public agency program for control of noxious species or specific pests, or for quarantine or public health purposes.

Aerial application of pesticides, herbicides and fertilizers is not proposed.

- D. Sewage management. To avoid water quality degradation, sewer service is subject to the requirements outlined below.

1. Sewage disposal facilities for any proposed use shall meet all applicable Department of Health standards, as set forth in WAC 173-272A, On-Site Sewage Systems.
2. Any existing septic system or other on-site system that fails or malfunctions will be required to connect to an existing municipal sewer service system if feasible, or make system corrections approved by the Cowlitz County Environmental Health Unit.
3. Any new development, which consists of an occupied use such as a business, park or recreation facility, single-family or multi-family unit, in an urban area will be required to connect to an existing municipal sewer service system, if service is available, or install an on-site septic system approved by Cowlitz County Environmental Health Unit.

There is no existing municipal sewage system in the vicinity, and there is no existing onsite septic system. Restrooms for workers are, and will continue to be, portable toilets outside of shoreline jurisdiction. No septic system is proposed.

7. SHORELINE USE AND MODIFICATION REGULATIONS

7.1 SHORELINE USE, MODIFICATION, AND STANDARDS TABLE

- A. Table 7-1 Permit Requirements for Shoreline Uses and Modifications shall be used to determine which uses or modifications may be permitted, approved with conditions, or prohibited in each shoreline environment as applicable. These permit requirements apply only to new or expanded uses or modifications; legally established existing uses and modifications may continue to exist, be used, and be maintained and repaired. For those uses and modifications that meet the exemption criteria mentioned in Section 3.2, a shoreline substantial development permit is not required if Table 7-1 indicates "P." However, if "CU" is listed for a use or modification that is exempt from the shoreline substantial development permit requirement, that use or modification must obtain a Conditional Use Permit. In the event conflicts exist between Table 7.1 and the text in this chapter, the text shall apply.

The project is classified as industrial and water-dependent. It is in the High Intensity SED. The modification proposed in shoreline jurisdiction is fill. These classifications and modification are labeled "P" in Table 7-1.

- B. Table 7-2 Dimensional Standards shall be used to determine shoreline buffer widths, building setbacks, building height restrictions, and maximum lot coverage in each shoreline environment as applicable.

1. Shoreline buffers.

- a. Buffer widths for shorelines of the State are defined in Table 7-2 Dimensional Standards. With respect to shorelines of the State, the term "shoreline buffer" is interchangeable with the term "Riparian Habitat Area," or "RHA," used in the County's Critical Areas Regulations. For non-shoreline streams and other critical areas in shoreline jurisdiction, see the Critical Areas Regulations, incorporated herein, for applicable buffers.

Water-dependent projects in High-Intensity SEDs and in shorelines of the state do not have a shoreline buffer or RHA.

- b. Water-dependent uses and developments do not require shoreline buffers. Mitigation sequencing shall be applied to ensure no net loss of shoreline ecological functions, consistent with Section 6.1 of this Program.

The project is water-dependent. The mitigation plan demonstrates that there will be no net loss of shoreline ecological functions through establishing and enhancing a riparian or shoreline buffer.

2. Building setbacks.

- a. Building setback widths for shorelines of the State are defined in Table 7-2 Dimensional Standards. Setbacks are required in addition to the shoreline buffer in order to ensure the integrity of the full buffer width, and shall be measured from the landward edge of the shoreline buffer.

No buildings are proposed.

- b. Building setbacks do not apply to water-dependent uses and developments. Mitigation sequencing shall be applied to ensure no net loss of shoreline ecological functions, consistent with Section 6.1 of this Program.

No buildings are proposed.

3. Building height restrictions.

- a. There shall be a 35-foot maximum building height for all structures, except that the following are not subject to this restriction: bridges and, in the High- Intensity shoreline environment, water-oriented industrial structures and facilities meeting the requirements of Section 7.2.6(H) of this Program, and in-stream structures meeting the requirements of Section 7.2.8(B) of this Program.

No buildings are proposed.

- b. Outside of the allowances of Subsection a. above, to exceed the 35-foot maximum building height an applicant must obtain a Shoreline Variance and comply with the following criteria in addition to standard Shoreline Variance criteria:

- i. Demonstrate that the public interest will be served by accommodating the increased height;

Not applicable.

- ii. Demonstrate that the view of a substantial number of residences in areas adjoining such shorelines will not be obstructed; and

Not applicable.

- iii. Demonstrate that the increased height will not substantially interfere with views from a designated public place, vista, or feature specifically identified in an adopted local, state, or federal plan or policy.

Not applicable.

4. Maximum lot coverage. Maximum lot coverage shall be consistent with the County's Land Use Ordinance (CCC 18.10) and the standards in Table 7-2.

Projects in High-Intensity SEDs do not have a maximum lot coverage requirement.

- C. All uses and development activities proposed for jurisdictional shoreline areas must comply with all provisions of the Cowlitz County Code, as determined by the County.

This project complies with all provisions of the Cowlitz County Code.

- D. Any uses not explicitly listed or substantially comparable to those included in the following table, as determined by the Director, shall be reviewed through a Shoreline Conditional Use Permit.

Project uses are explicitly listed and substantially comparable to those listed, so it does not require a conditional use permit.

7.2 SHORELINE USE REGULATIONS

Only the sections that apply to the project are addressed below.

7.2.6 INDUSTRIAL

- A. Water-dependent industrial uses are preferred over non-water-dependent industrial uses.

The proposed project is within the existing facility footprint and will not displace water-dependent industrial uses.

- B. Water-related and non-water-oriented industrial uses shall not be allowed if they displace existing viable water-dependent uses or if they are proposed to occupy space designated for water water-dependent uses identified in a previously approved SSDP or other approval.

Existing water-dependent uses will not be displaced by this project.

- C. Where industrial use is proposed for location on land in public ownership, public access shall be required consistent with Section 6.5, Public Access. Industrial development and redevelopment shall be encouraged to locate where environmental cleanup and restoration of the shoreline area can be incorporated.

Public access to the Columbia River will continue to occur according to the previous shoreline permit. Public access will only be restricted near the water during trestle construction. No environmental cleanup of the site is required. Compensatory mitigation for project impacts will occur onsite and will restore vegetation to the shoreline. CRC will continue to follow the conditions set forth in the previous shoreline permit regarding using best efforts to schedule barge operations to avoid peak salmon and steelhead fishing up to 4 weeks per year. These schedule changes will be determined in coordination with Cowlitz County and WDFW, as previously required.

- D. New non-water-oriented industrial development may be allowed in shoreline jurisdiction if:
1. The use is part of a mixed-use project that includes water-dependent uses and provides a significant public benefit with respect to the Shoreline Management Act's objectives such as providing public access and/or ecological restoration; or
 2. Navigability is severely limited at the proposed site, and the industrial use provides a significant public benefit with respect to the Shoreline Management Act's objectives such as providing public access and/or ecological restoration; or
 3. The site is physically separated from the shoreline by another property or public right of way, and public access and/or ecological protection is provided.

This project is water-dependent, so these requirements do not apply.

- E. Waterward expansion of existing non-water-oriented industrial development shall conform to the buffer and setback provisions of this chapter. If the existing non-water-oriented industrial use does not conform to the setback and buffer provisions, the structure can still be expanded but only on the landward sides of the structure.

This project is water-dependent, and the site does not have required setbacks or buffers.

- F. Proposed developments shall maximize the use of existing industrial facilities and avoid duplication of dock or pier facilities. Proposals for new industrial and port developments shall demonstrate the need for expansion into an unimproved natural area. Only water-dependent elements of a proposal for industrial use may encroach on required vegetated buffers of this Program.

The proposed project is an expansion of an existing industrial facility and avoids duplication of facilities. The proposed trestle is water-dependent, only 30 feet wide, and will not require vegetation removal. Stockpile and haul road expansion areas are not within vegetated buffers.

- G. Siting of accessory development or use within shoreline jurisdiction shall be limited to facilities required to serve approved water-oriented uses.

This project is water-dependent.

- H. In the High-Intensity Shoreline Environment Designation, water-oriented structures and facilities which meet the following criteria are not subject to the height restrictions defined in Table 7-2 of this Program:

1. The applicant demonstrates a need for the proposed height of the structure or facility; and
2. The view of a substantial number of residences in areas adjoining such shorelines will not be obstructed.

This project is water-dependent.

- I. Overwater structures, or other structures waterward of the OHWM, are allowed only for those portions of water-dependent industrial uses that require overwater facilities as an essential feature of their function and when allowed within the adjacent upland SED. Design of overwater structures or structures beyond the OHWM shall demonstrate that they will not interfere with normal stream geomorphic processes, require additional future shoreline stabilization, or interfere with navigation or normal public use of the water.

The proposed trestle is an essential feature of loading and unloading heavy equipment onto and off barges. The new trestle and crane will allow for a second wheel-loader to be placed on the barge to shorten offloading times and will allow equipment traveling on the barge to be offloaded for repairs and maintenance. Currently, equipment traveling with barges, primarily the wheel-loader, must be offloaded to receive routine maintenance and other repairs at facilities that have a crane, such as Advanced American in Portland, Oregon. This additional barge and tug travel results in additional air emissions from diesel exhaust, a potential for engine leaks and spills into the river, and additional ship-wake stranding of fish that use the river margins.

The only in-water features of the trestle are the piling, which will not interfere with normal stream geomorphic processes, will not require future shoreline stabilization, and will not interfere with navigation. Normal public use will be interrupted only during construction to ensure public safety.

7.2.8 IN-STREAM STRUCTURES

- A. In-stream structures include, but are not limited to, structures for hydroelectric projects (along with ancillary facilities and structures), irrigation, water supply and utility service transmission, and fish habitat enhancement. Operation, maintenance, and repair of in-stream structures may be permitted when:
1. The proposed activity will not increase the permanent footprint of the structure.

2. Areas impacted by temporary construction or stockpiling of materials are limited to the minimum area feasible, and all disturbed areas will be returned to their pre-project or improved ecological condition.

The proposed trestle is within the overall permanent footprint of the marine terminal so the permanent footprint will not expand. Temporary construction and material stockpiles will not remain in shoreline jurisdiction and disturbed areas will be returned to pre-project condition.

- B. In the High-Intensity Shoreline Environment Designation, in-stream structures which meet the following criteria are not subject to the height restrictions defined in Table 7-2 of this Program:
1. The applicant demonstrates a need for the proposed height of the structure; and
 2. The view of a substantial number of residences in areas adjoining such shorelines will not be obstructed.

The trestle needs to be at the proposed elevation to allow heavy equipment to be loaded onto and off the barge. The existing tower and conveyor are taller than the proposed trestle, so views from nearby residences will not be obstructed by the trestle.

- C. Applications for new or expanded in-stream structural uses shall include the following information prior to final approval, unless the County determines that the issues are adequately addressed via another regulatory review process, such as Federal Regulatory Commission (FERC) provisions for hydroelectric dams:

1. A hydraulic analysis prepared by a licensed professional engineer that describes anticipated effects of the project on stream hydraulics, including potential increases in base flood elevation, changes in stream velocity, and the potential for redirection of the normal flow of the affected stream.

The trestle needs to be at the proposed elevation to allow heavy equipment to be loaded onto and off the barge. The existing tower and conveyor are taller than the proposed trestle, so views from nearby residences will not be obstructed by the trestle.

2. A management plan prepared by a qualified professional that describes the anticipated effects of the project on fish and wildlife resources, shoreline critical areas, and cultural resources, provisions for protecting in-stream resources during construction and operation, and measures to compensate for impacts to resources that cannot be avoided.

ELS has written a mitigation plan that anticipates effect of the project on critical habitat areas and proposes to enhance vegetation in the riparian buffer. Impact avoidance and minimization measures are included that protect habitats during construction and operation, and there are performance standards to follow to maintain this area and ensure the project is meeting the mitigation goals.

3. A description of sites proposed for the depositing of debris, overburden, and other waste materials generated during construction.

Areas used during construction as staging and material storage will be outside of shoreline jurisdiction in upland areas of the site.

4. The proposed location and design of powerhouses, penstocks, accessory structures, and access and service roads for hydropower facilities.

The project does not include hydropower facilities or associated structures.

5. Proposed provisions for accommodating public access to and along the affected shoreline, as well as any proposed on-site recreational features, provided that none of the following conditions exist:

- a. Unavoidable health or safety hazards to the public;
- b. Inherent and unavoidable security problems;

The site is fenced for security reasons and to avoid health and safety hazards to the public. The trestle will be outside of fencing but located high enough off the beach that the public will not be able to reach it.

- c. Unacceptable and unmitigable significant ecological impacts;

Unavoidable impacts from this project are minimal and will be fully compensated by the mitigation plan that will ensure no net loss of ecological functions.

- d. Unavoidable conflict with the proposed use; or

Public access is proposed to remain as it currently exists, with the exception of trestle construction, so there will be no unavoidable conflicts between site operations and public use. The proposed use is the same as existing.

- e. A cost that is disproportionate and unreasonable to the total long-term cost of the development.

Retaining public access to the shoreline will not produce a disproportionate or unreasonable long-term cost of the facility.

- D. Flood Control Works. In addition to the other provisions of this section, flood control works shall comply with the following standards.

- 1. New or expanded structural flood hazard reduction measures, such as dikes, levees, berms, and similar flood control structures, shall be consistent with flood hazard regulations or management plans adopted pursuant to RCW 86.12, provided the plan has been adopted after 1994 and approved by Ecology.

No new flood-control works are proposed, and the project will not affect the existing levee.

- 2. New or expanded structural flood hazard reduction measures shall be permitted only when it can be demonstrated by a scientific and engineering analysis that all of the following measures can be met:

- a. They are necessary to protect existing development.
- b. Non-structural flood hazard reduction measures are infeasible.
- c. Impacts to ecological processes and functions, including disruption to downstream ecological processes such as flooding, natural drainage flows, and storm water runoff, and priority fish and wildlife species and habitats can be successfully mitigated to ensure no net loss of functions, as set forth in Section 6.1, No Net Loss of Ecological Function.
- d. Appropriate vegetation conservation actions are undertaken consistent with Section 6.6, Vegetation Conservation.

No new or expanded structural flood-hazard reduction measures are proposed.

3. New structural public flood hazard reduction measures, such as dikes and levees, shall dedicate and improve public access pathways unless public access improvements would cause:
 - a. Unavoidable health or safety hazards to the public;
 - b. Inherent and unavoidable security problems;
 - c. Unacceptable and unmitigable significant ecological impacts;
 - d. Unavoidable conflict with the proposed use; or
 - e. A cost that is disproportionate and unreasonable to the total long-term cost of the development.

No new, structural, public flood-hazard reduction measures are proposed.

4. To the maximum extent feasible, new or altered dikes and levees shall be designed to be:
 - a. No greater than the minimum height required to protect adjacent lands from the predicted flood stage as identified in the applicable comprehensive flood control management plan or as required by the U.S. Army Corps of Engineers for dike certification.
 - b. Placed landward of associated wetlands and designated vegetation conservation areas, except for actions that increase ecological functions, unless there is no other feasible alternative to reduce flood hazard to existing development as determined by a geotechnical analysis.
 - c. Located and designed so as to protect and restore the natural character of the stream, avoid the disruption of channel integrity, and provide the maximum opportunity for natural floodway functions to take place including levee setbacks to allow for more natural functions of floodplains, channel migration zones, off-channel habitat, and associated wetlands directly interrelated and interdependent with the stream.
 - d. Planted with appropriate vegetation meeting any permit or certification requirements while providing the greatest amount of ecological function possible.

No new or altered dikes or levees are proposed.

7.3 SHORELINE MODIFICATION REGULATIONS

7.3.1 GENERAL REGULATIONS

The following provisions shall apply to all shoreline modifications:

- A. Structural modifications may be permitted only where they are demonstrated to be necessary to support or protect an allowed primary structure or a legally existing shoreline use that is in danger of loss or substantial damage, or for reconfiguration of the shoreline for mitigation or enhancement purposes.

Proposed structural modifications in shoreline jurisdiction include constructing a new trestle, expanding the biofiltration swale, and expanding the stockpile and haul road. These activities support the previously permitted facility.

- B. Preference shall be given to shoreline modifications that have a lesser impact on ecological functions.

The project has followed mitigation sequencing through avoidance, minimization, and mitigation of impacts. The proposed layout results in the least amount of impacts to the shoreline while still allowing for the additions to the current use.

- C. Modifications shall be designed to incorporate all feasible measures to protect ecological shoreline functions and ecosystem-wide processes.

The trestle has been designed to avoid and minimize impacts aquatic and riparian habitat, and the minimal impacts will be compensated by the mitigation plantings between the OHWM and the existing revetment that will increase ecological shoreline functions.

The expanded biofiltration swale will treat additional stormwater runoff from the expanded stockpile area and haul road to protect water quality, and the existing habitat in these areas consists mainly of bare sand with weedy herbaceous species. Mitigation for these expansions within shoreline jurisdiction will provide native tree and shrub plantings in the area described above. This will create better shoreline ecological functions because there will be improved habitat along the shoreline that is adjacent to the river, providing improved aquatic habitat when compared to the proposed expansion area that is separated from the river.

- D. Shoreline modifications shall be limited in number and extent and only allowed when appropriate to the specific type of shoreline and environmental conditions for which they are proposed.

The proposed expansion is limited in number and extent. The new trestle is within the existing terminal footprint, and the upland expansion is within the small parcel. The unavoidable and minimal impacts will be compensated by the proposed mitigation plantings of trees and shrubs along the river that will maximize the quality of riparian habitat. and there will be no net loss of ecological functions.

7.3.5 FILL AND EXCAVATION

- A. Fill may be placed in flood hazard areas only when otherwise allowed by the frequently flooded areas regulations in this Program (the Critical Areas Regulations incorporated herein, Chapter 4), and where it is demonstrated in a hydraulics analysis prepared by a qualified professional that adverse impacts to hydrogeologic processes will be avoided.

No fill is proposed in flood hazard areas.

- B. Fill below or waterward of the OHWM for any use except ecological restoration requires a Shoreline Conditional Use Permit. Fill may be placed below the OHWM only when it is demonstrated that the fill is necessary to:

1. Accomplish an aquatic habitat restoration plan;
2. Support a mitigation action, environmental restoration, beach nourishment or other enhancement project;
3. Correct the adverse results of past shoreline modification that have disrupted natural stream geomorphic conditions and adversely affected aquatic or terrestrial habitat;
4. Support a water-dependent use;
5. Serve as part of a public access proposal;
6. Support cleanup of contaminated sediments as part of an interagency environmental clean-up plan, or permitted under MTCA or CERCLA; or
7. Expand or alter transportation facilities of statewide significance currently located on the shoreline only when demonstrated that alternatives to fill are not feasible.

No fill is proposed waterward of the OHWM. Piling to support the trestle will be the only project element below the OHWM.

- C. Consultation with DNR is required for any filling and excavation projects on State-owned aquatic lands.

No fill is proposed waterward of the OHWM and therefore fill will not be placed on DNR state-owned aquatic lands.

- D. Fill is restricted in wetlands or fish and wildlife habitat conservation areas in accordance with the critical areas standards in this Program, the Critical Areas Regulations incorporated herein, Chapters 2 and 3.

No fill is proposed in wetlands or in fish and wildlife habitat conservation areas.

- E. Disposal of dredge materials is not considered fill and shall be regulated under Subsection 7.3.6, Dredging and Dredge Material Disposal.

No dredged material will be placed on the project site.

- F. Excavation of previously deposited dredge materials above the OHWM may be permitted if the spoils site is part of a dredge materials management plan and the spoils were not originally placed as part of a beach nourishment or other shoreline restoration project.

The area proposed for grading was not dredged material.

- G. Excavation below the OHWM is considered dredging and is subject to provisions in Subsection 7.3.6.

No excavation is proposed waterward of the OHWM.

LIMITATIONS

ELS bases this report's determinations on standard scientific methodology and best professional judgment. In our opinion, local, state, and federal regulatory agencies should agree with our determinations. However, the information contained in this narrative should be considered preliminary and used at your own risk until it has been approved in writing by the appropriate regulatory agencies. ELS is not responsible for the impacts of any changes in environmental standards, practices, or regulations after the date of this report.

REFERENCES

- Ecological Land Services, Inc. (ELS). 2025. *Level II Habitat Assessment and Mitigation Plan*. Revised August.
- The Watershed Company and Parametrix. 2018. *Shoreline Master Program, Cowlitz County*. Prepared by The Watershed Company and Parametrix. November 2022.

FIGURE SET

Exhibit 3: Vicinity Map and Site Plan

C:\Users\Emilio\Box\EL\SWA\Cowlitz\County\0558.15-Phase 2 Woodland Terminal Blending & Storage Facility\0558.15-Figures CAD_Only\558.15_PR.dwg Emilio

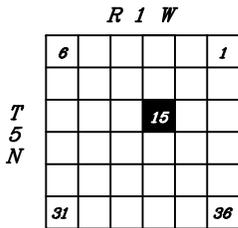
WASHINGTON



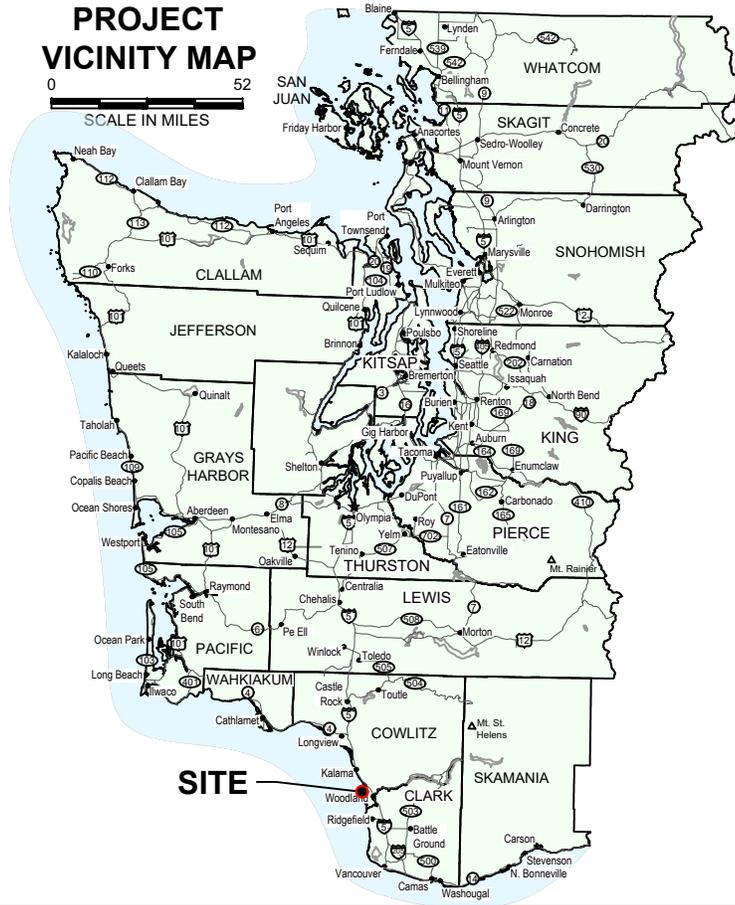
SITE

45.9106° Latitude
-122.8038° Longitude

LOCATION MAP



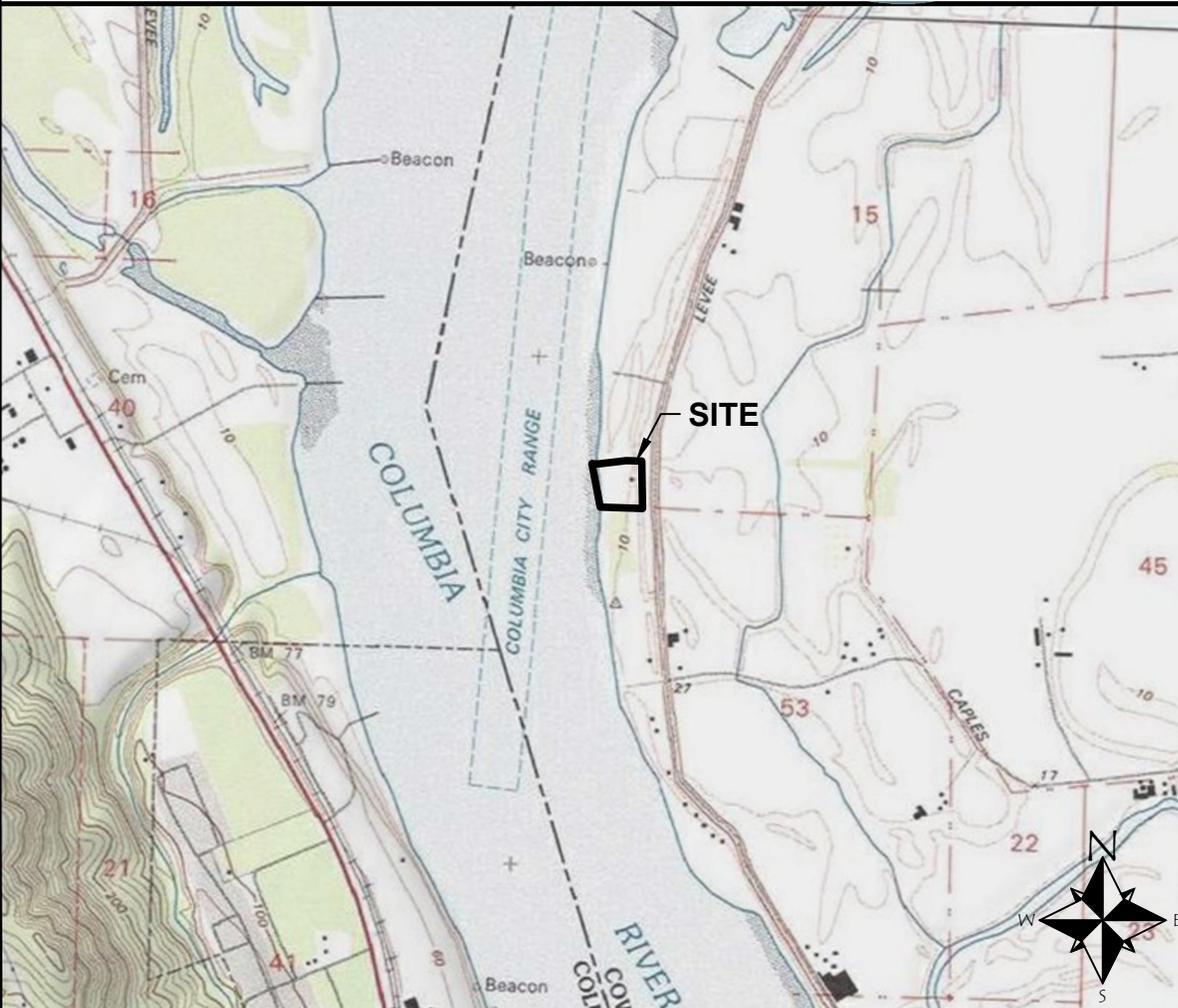
PROJECT VICINITY MAP



SITE

NOTE:

Quadrangle topographic map from USGS.



SITE

PROPOSED: In-water work

IN Columbia River
NEAR: Woodland
COUNTY: Cowlitz
STATE: WA
SHEET 1 OF 7
DATE: 1/27/26

VICINITY MAP

APPLICANT: Columbia River Carbonates
PROJECT NAME: Phase 2 Blending & Storage Facility
REFERENCE #: NWS-2013-834
SITE LOCATION ADDRESS:
1902 Dike Road
Woodland, WA 98674

PURPOSE:

Construct Access Trestle

DATUM: NAD83

ADJACENT PROPERTY OWNERS:
See JARPA

4000
2000
0

SCALE IN FEET

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





LEGEND:

- Approx. Site Boundary
- Approx. OHWM-under SMA (Shorelines Management Act)
- 12.7 Approx. Corps OHW 12.7' Elevation

100
50
0

SCALE IN FEET

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

PURPOSE:
Construct Access Trestle

DATUM: NAD83

ADJACENT PROPERTY OWNERS:
See JARPA

EXISTING - ESA
APPLICANT: Columbia River Carbonates

PROJECT NAME: Phase 2 Blending & Storage Facility

REFERENCE #: NWS-2013-834

SITE LOCATION ADDRESS:
1902 Dike Road
Woodland, WA 98674

PROPOSED: In-water work

IN Columbia River

NEAR: Woodland

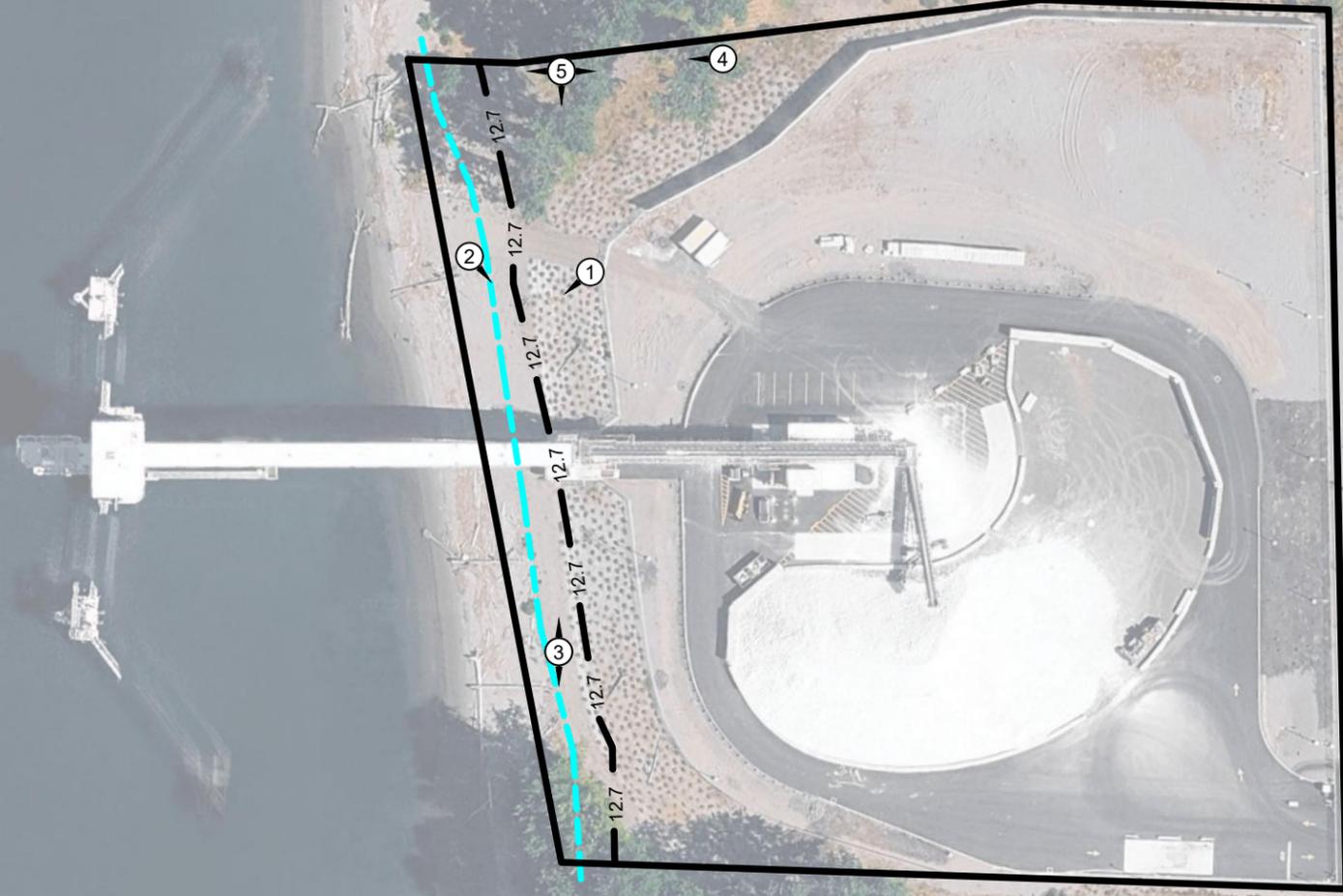
COUNTY: Cowlitz

STATE: WA

SHEET 2 OF 7

DATE: 1/27/26

Columbia River



Dike Road



LEGEND:

- Site Boundary
- OHWM-under SMA (Shorelines Management Act)
- 12.7 Corps OHW 12.7' Elevation
- Photo Point Location

NOTE: Corps 12.7' CRD elevation from survey by Gibbs & Olson (9-17-2024).

200
100
0

SCALE IN FEET

Ecological Land Services

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

PURPOSE:
Construct Access Trestle

DATUM: NAD83

ADJACENT PROPERTY OWNERS:
See JARPA

Existing Conditions Plan View - ESA

APPLICANT: Columbia River Carbonates

PROJECT NAME: Phase 2 Blending & Storage Facility

REFERENCE #: NWS-2013-834

SITE LOCATION ADDRESS:
1902 Dike Road
Woodland, WA 98674

PROPOSED: In-water work

IN Columbia River

NEAR: Woodland

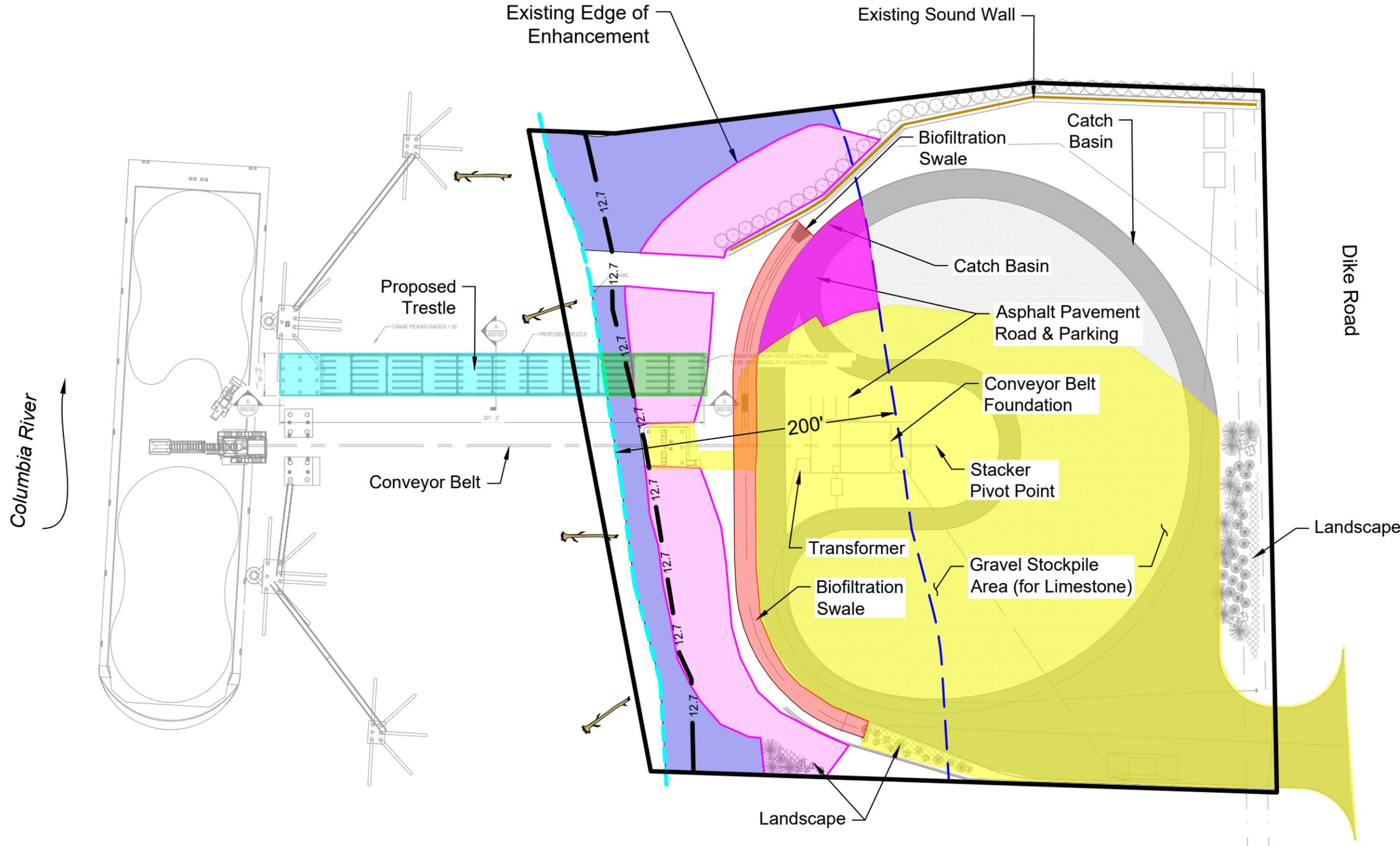
COUNTY: Cowlitz

SHEET 3 OF 7

STATE: WA

DATE: 1/27/26

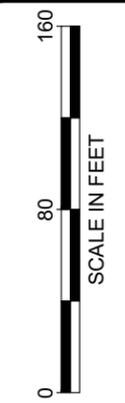
NOTE(S):
1. Aerial from Google Earth™ (7/03/2024).



LEGEND:

- Site Boundary
- OWHM-under SMA (Shorelines Management Act)
- 200-foot Shoreline Jurisdiction
- Existing Enhancement Areas
- Corps 12.7' Elevation
- Existing Large Woody Debris (4)
- Existing Sound Wall
- Existing Enhancement Areas
- Mitigation Area (18,191 sq. ft./0.42 ac.)
- Existing Improvements
- Temporary Shoreline Impact (6,144 sq.ft. \ 0.14 ac.)
- Permanent Shoreline Impact (4,573 sq.ft. \ 0.10 ac.)
- Trestle Impact Waterward of OWHM (6,899 sq. ft. \ 0.16 ac.)
- Trestle Impact Landward of OWHM (2,191 sq. ft. \ 0.05 ac.)

NOTE: Corps 12.7' CRD elevation from survey by Gibbs & Olson (9-17-2024).



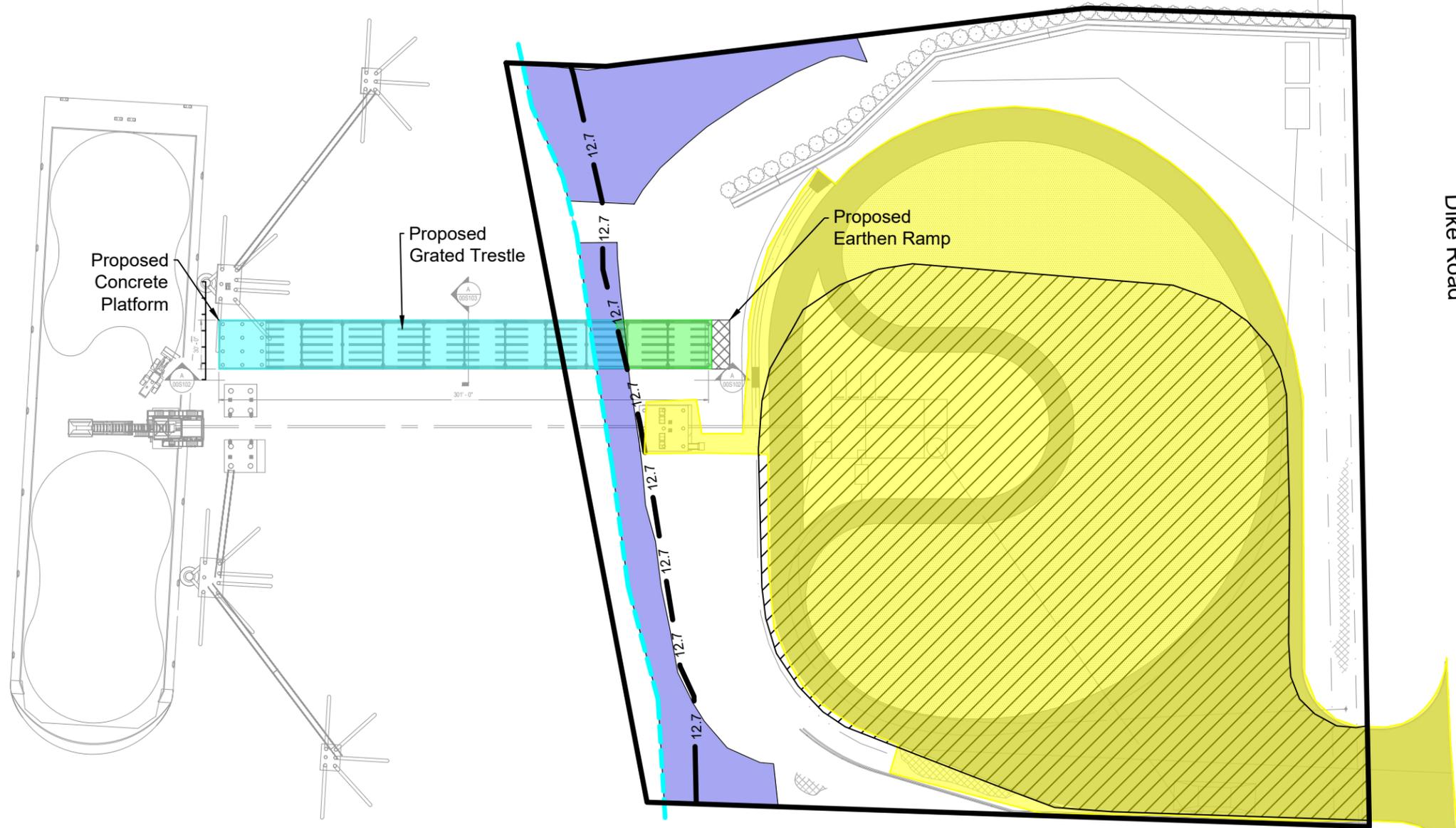
1157 3rd Ave., Suite 220A
 Longview, WA 98632
 Phone: (360) 578-1371
 Fax: (360) 414-9305
www.eco-land.com

Ecological Land Services

DATE: 2/3/25
 DWN: MPM
 REQ. BY: LS
 PRJ. MGR: LH
 CHK:
 PROJECT NO:
 558.15

Figure 4
PROPOSED CONDITIONS
 Phase 2 Woodland Terminal Blending & Storage Facility
 Columbia River Carbonates
 Cowlitz County, Washington
 Section 15, Township 5N, Range 1W, W.M.

Columbia River



Dike Road

LEGEND:

- Site Boundary
- OHWM-under SMA (Shorelines Management Act)
- Corps OHW 12.7' Elevation
- Proposed Mitigation Area (18,191 sq. ft. / 0.42 ac.)
- Proposed Work Area (133,798 sq. ft. / 3.07 ac.)
- Existing Work Area (99,235 sq. ft. / 2.28 ac.)
- Trestle and Concrete Platform Impact Waterward of OHW (7,324 sq. ft. / 0.17 ac.)
- Trestle Impact Landward of OHW (1,648 sq. ft. / 0.04 ac.)



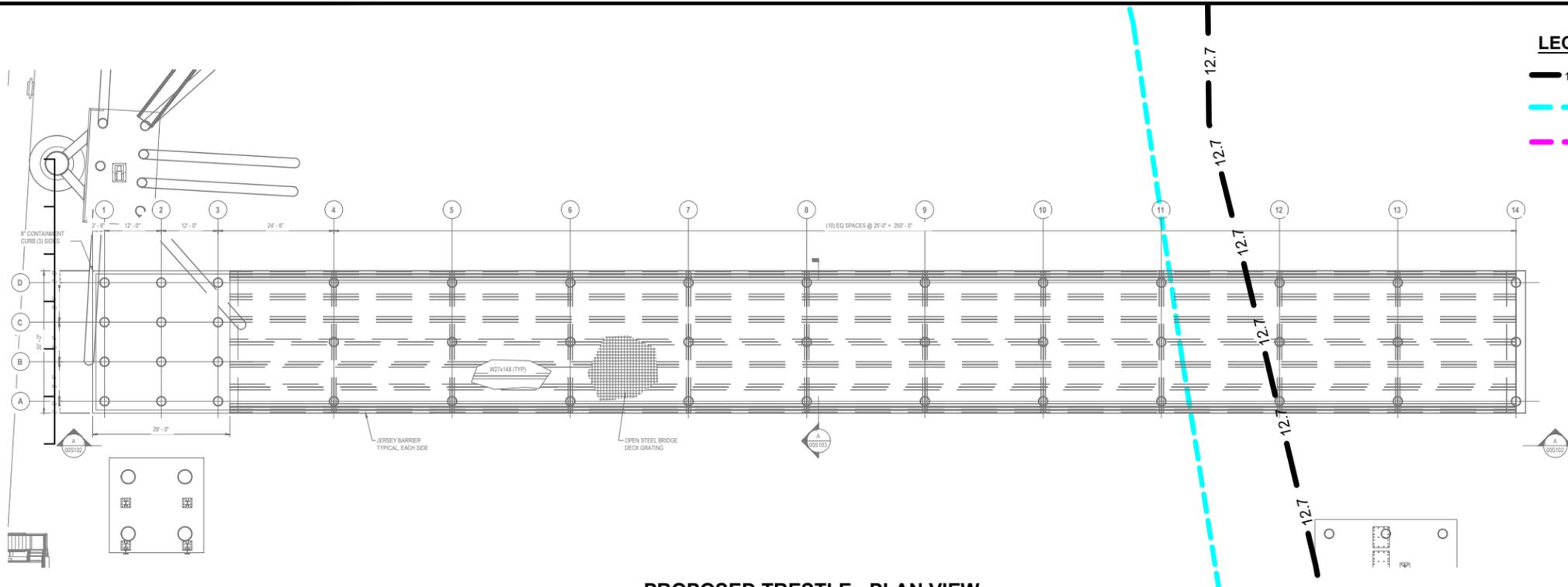
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 Longview, WA 98632
 Phone: (360) 578-1371



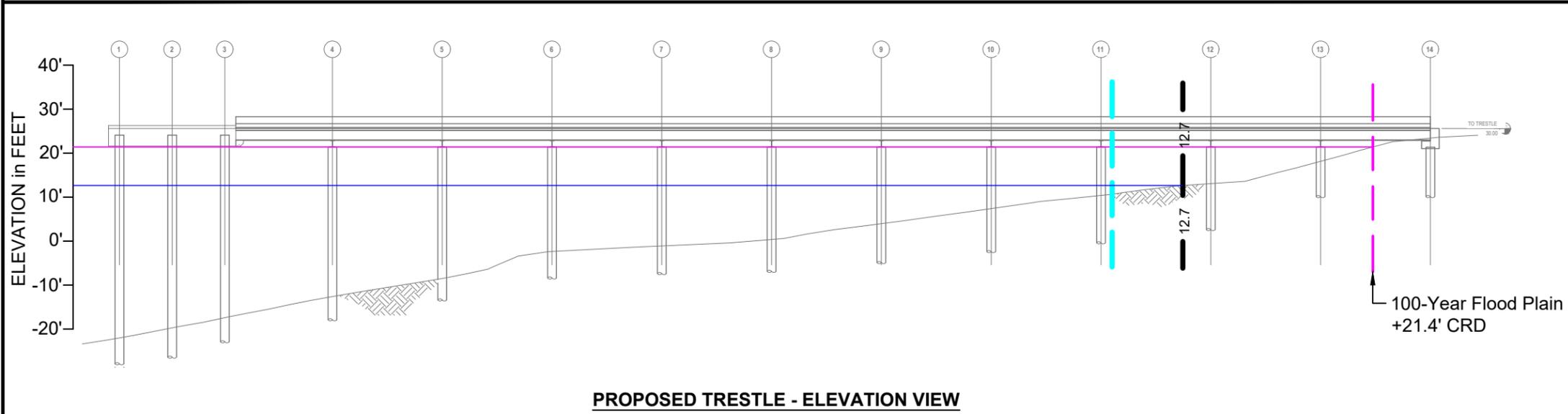
NOTE: Corps 12.7' CRD elevation from survey by Gibbs & Olson (9-17-2024).

<p>PROPOSED: In-water work IN Columbia River NEAR: Woodland COUNTY: Cowlitz SHEET 4 OF 7 DATE: 1/27/26</p>	<p>PROPOSED CONDITIONS APPLICANT: Columbia River Carbonates PROJECT NAME: Phase 2 Blending & Storage Facility REFERENCE #: NWS-2013-834 SITE LOCATION ADDRESS: 1902 Dike Road Woodland, WA 98674</p>	<p>PURPOSE: Construct Access Trestle</p> <p>DATUM: NAD83 ADJACENT PROPERTY OWNERS: See JARPA</p>
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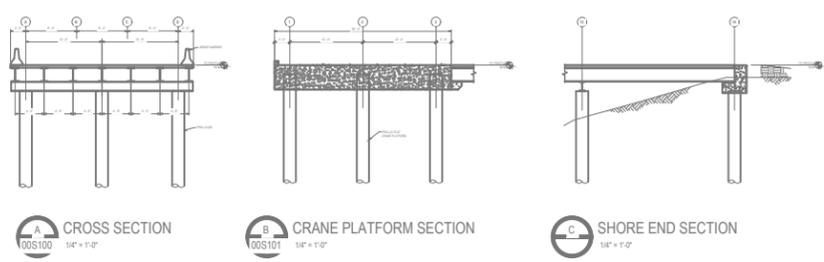
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PROPOSED TRESTLE - PLAN VIEW



PROPOSED TRESTLE - ELEVATION VIEW



PROPOSED TRESTLE - SECTIONS

LEGEND:

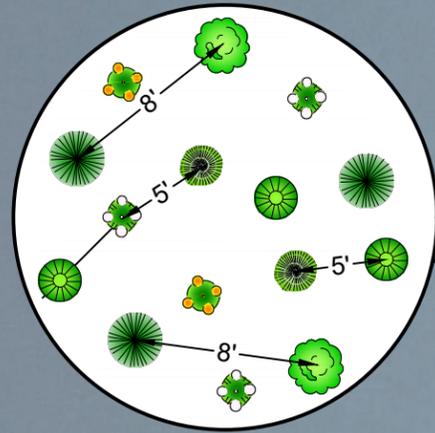
- 12.7 Corps OHW 12.7' Elevation
- OHWM-under SMA (Shoreline Management Act)
- 100-Year Flood plain (+21.4' CRD)

PROPOSED: In-water work
APPLICANT: Columbia River Carbonates
PROJECT NAME: Phase 2 Blending & Storage Facility
REFERENCE #: NWS-2013-834
SITE LOCATION ADDRESS: 1902 Dike Road, Woodland, WA 98674
IN Columbia River
NEAR: Woodland
COUNTY: Cowlitz
STATE: WA
SHEET 5 OF 7
DATE: 1/27/26

PURPOSE: Construct Access Trestle
DATUM: NAD83
ADJACENT PROPERTY OWNERS: See JARPA

SCALE IN FEET
 0 30 60
 1157 3rd Ave., Suite 220A
 Longview, WA 98632
 Phone: (360) 578-1371

NOTE:
 1. Corps 12.7' CRD elevation will be provided Trestle site plan from CRC (12/11/2024).

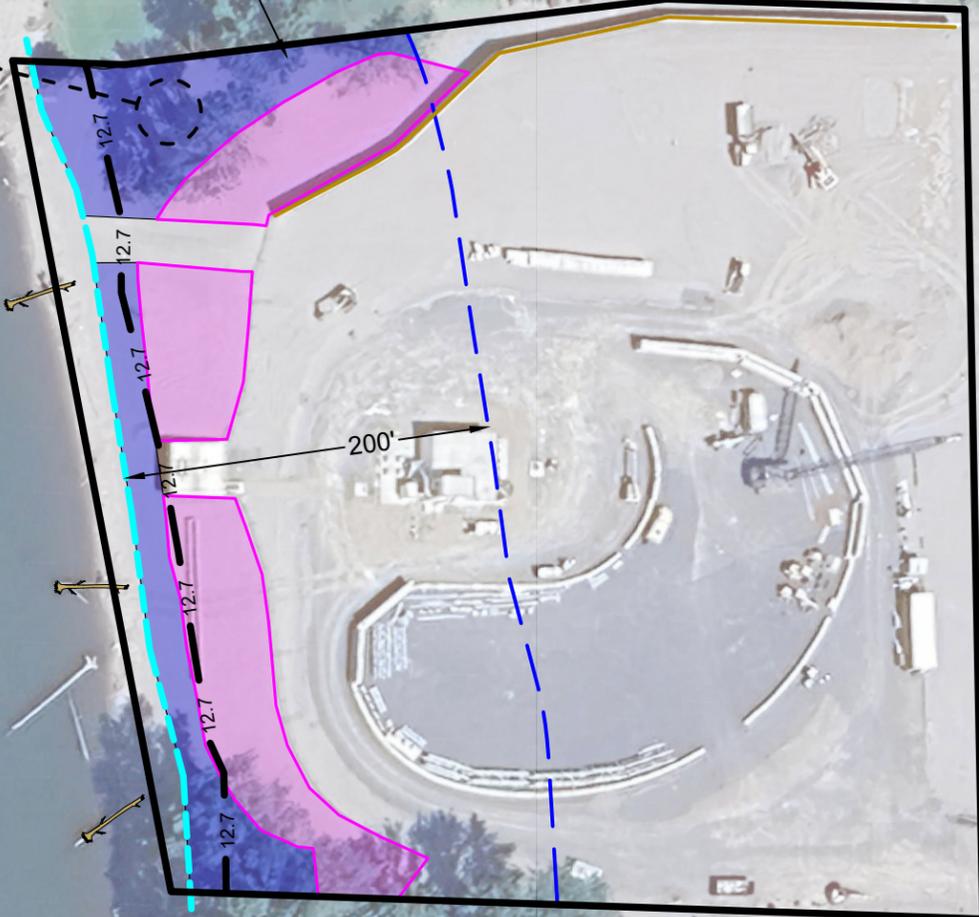


Existing Edge of Enhancement

Columbia River

Dike Road

Common Name	Scientific Name	Size	Spacing on Center	Quantity
Trees				
Black cottonwood	<i>Populus trichocarpa</i>	1-gallon	8 feet	45
Shore pine	<i>Pinus contorta</i>	1-gallon		45
Total Trees:				90
Shrubs				
Common snowberry	<i>Symphoricarpos albus</i>	1-gallon	5 feet	180
Serviceberry	<i>Amelanchier alnifolia</i>	1-gallon		160
Mock orange	<i>Philadelphus lewisii</i>	1-gallon		60
Oceanspray	<i>Holodiscus discolor</i>	1-gallon		120
Total Shrubs:				520
Total Plants to be Installed:				610



LEGEND:

- Site Boundary
- OHWM-under SMA (Shorelines Management Act)
- 200-foot Shoreline Jurisdiction
- Existing Enhancement Areas
- Existing Large Woody Debris (4)
- Existing Sound Wall
- Corps 12.7' Elevation
- Mitigation Area (0.42 ac./18,191 sq. ft.)

NOTE:

- Corps 12.7' CRD elevation from survey by Gibbs & Olson (9-17-2024).
- Aerial from Google Earth™ (5/14/2023).

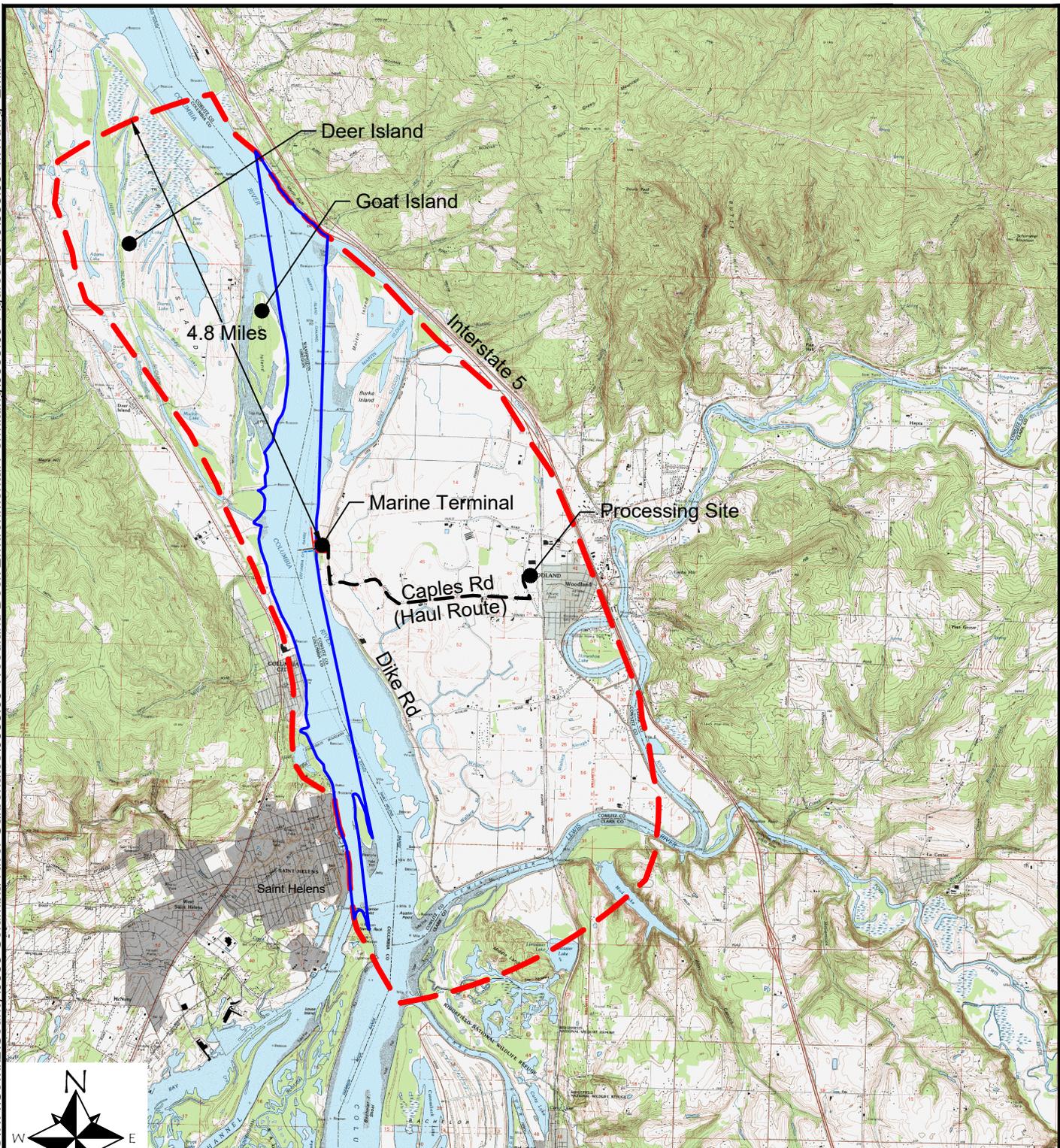


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www.eco-land.com

DATE: 2/3/25
 DWN: MPM
 REQ. BY: LS
 PRJ. MGR: LH
 CHK:
 PROJECT NO:
 558.15

Figure 6
PROPOSED MITIGATION AND PLANTING PLAN
 Phase 2 Woodland Terminal Blending & Storage Facility
 Columbia River Carbonates
 Cowlitz County, Washington
 Section 15, Township 5N, Range 1W, W.M.

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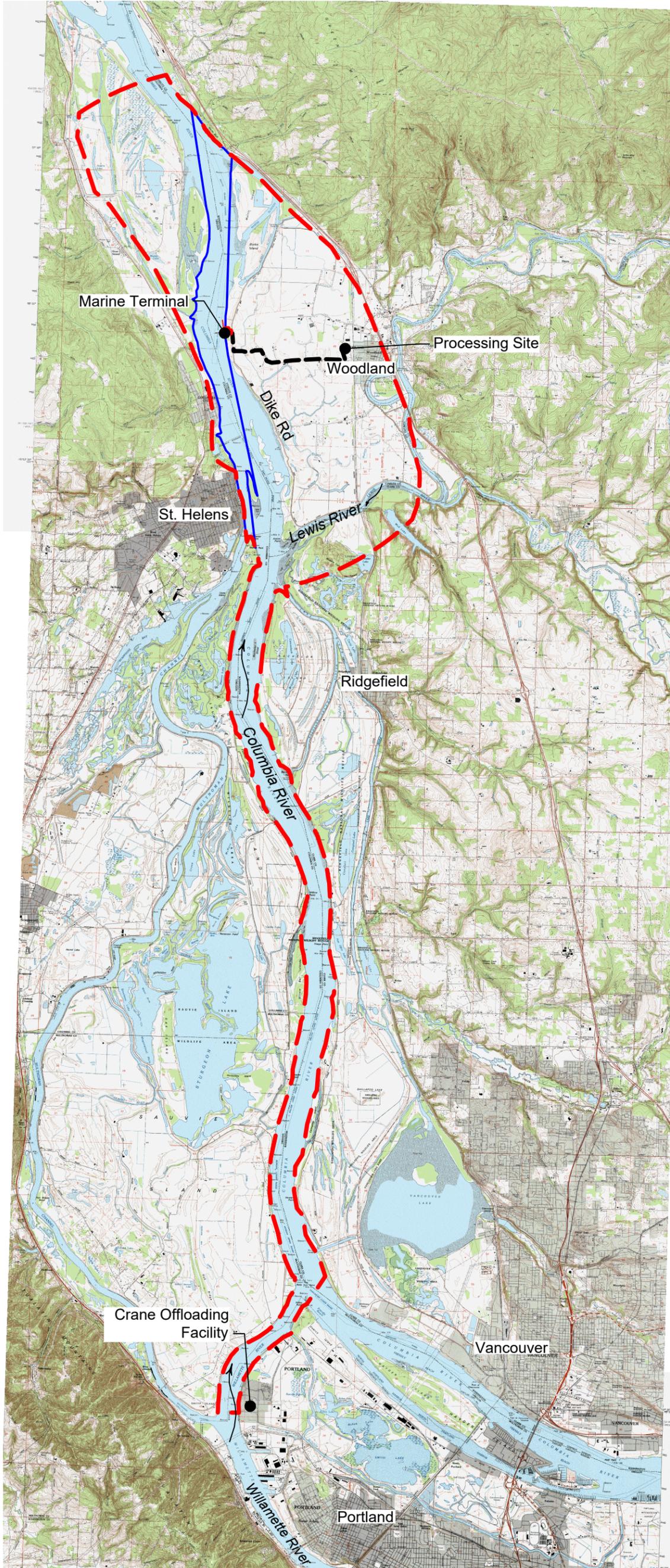


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LEGEND:

- In-Air Pile Driving Noise
- Underwater Noise

<p>PURPOSE: Construct Access Trestle</p> <p>DATUM: NAD27/NAD83</p> <p>ADJACENT PROPERTY OWNERS: See JARPA</p>	<p align="center">CONSTRUCTION NOISE IMPACTS</p> <p>APPLICANT: Columbia River Carbonates</p> <p>PROJECT NAME: Phase 2 Blending & Storage Facility</p> <p>REFERENCE #: NWS-2013-834</p> <p>SITE LOCATION ADDRESS: 1902 Dike Road Woodland, WA 98674</p>	<p>PROPOSED: In-water work</p> <p>IN Columbia River</p> <p>NEAR: Woodland</p> <p>COUNTY: Cowlitz STATE: WA</p> <p>SHEET 6 OF 7</p> <p>DATE: 1/27/26</p>
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LEGEND:
— — — Action Area
— — — Underwater Noise



0 2 4
 SCALE IN MILES



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 Phone: (360) 578-1371

PURPOSE:
 Construct Access Trestle
DATUM: NAD27/NGVD 29
ADJACENT PROPERTY OWNERS:
 See JARPA

ACTION AREA
APPLICANT: Columbia River Carbonates
PROJECT NAME: Phase 2 Blending & Storage Facility
REFERENCE #: NWS-2013-834
SITE LOCATION ADDRESS:
 1902 Dike Road
 Woodland, WA 98674

PROPOSED: In-water work
IN Columbia River
NEAR: Woodland
COUNTY: Cowlitz **STATE:** WA
SHEET 7 OF 7
DATE: 1/27/26



LEVEL II HABITAT ASSESSMENT & MITIGATION PLAN

Revised: August 5, 2025



Phase 2 Woodland Terminal Blending & Storage Facility *Woodland, Cowlitz County, Washington*

Prepared for
Columbia River Carbonates
300 N Pekin Road
Woodland, Washington 98674
(360) 225-4105

Prepared by
Ecological Land Services
1157 3rd Avenue, Suite 220A • Longview, WA 98632
(360) 578-1371 • Project Number 0558.15

SIGNATURE PAGE

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



Lacey Hoffmann
Senior Biologist

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APPENDIX A

Routine Determination Methods

APPENDIX B

Memorandum from Design Engineer – Tower and Dolphin Platform Strength

INTRODUCTION

Columbia River Carbonates (CRC) contracted Ecological Land Services, Inc. (ELS) to prepare a Level II habitat assessment and mitigation plan in accordance with the *Cowlitz County Code (CCC) Chapter 19.15.130, Fish and Wildlife Conservation Areas (CCC 2024)* and the *Cowlitz County Shoreline Master Program (SMP) (The Watershed Company and Parametrix 2018)* for the Phase 2 Woodland Terminal Blending and Storage Facility project, including proposed industrial improvements, upland expansion of the carbonate stockpile and haul road, loader trestle, and barge delivery schedule revisions. The project is on Cowlitz County parcel numbers WB1503005 and WB1503004 located at 1901 and 1903 Dike Road in Woodland, Washington in Section 15, Township 5 North, and Range 1 West of the Willamette Meridian (Figure 1).

Columbia River Carbonates (CRC) was established in 1985 as the first high grade calcium carbonate products production facility in the Pacific Northwest. The company provides high-bright slurry products to the pulp and paper industry for paper filler and coating applications, enabling papermakers to significantly reduce the need for wood fiber by substituting calcium carbonate. Other markets include dry filler and pigment products for paint, PVC pipe, construction material, and agricultural applications. The proposed improvements to the existing project will ensure there is a continued sustainable supply of high-grade, high-bright calcium carbonate for processing at the CRC production facility in Woodland, Washington to serve demand from specialized industrial customers and other markets in the Pacific Northwest. The project will allow for expanded storage and additional barge trips to continue receiving calcium carbonate stone by barge from its exclusively marine-based mine on Calder Bay, Prince of Wales Island, in southeast Alaska.

PROJECT PERMIT PLANNING

CRC intends to seek Cowlitz County permits for the proposed elements included in this report. CRC fully understands that any improvements below the biological ordinary high water mark (OHWM) and the US Army Corps of Engineers regulatory ordinary high water (OHW) in the Columbia River requires further state and federal permitting. The intent with this application is to move forward with the upland improvements and additional barge trips after Cowlitz County approval. Any improvements in the Columbia River associated with the access trestle will only be completed after all additional state and federal permits are approved. After Cowlitz County permits are completed, CRC consultants will begin completing further reports and applications needed to receive the additional permits.

SITE DESCRIPTION

The site is located on the east bank of the Columbia River (Type S; shoreline) westerly of Dike Road near Woodland, Washington (Figures 2 and 3). The site has the following adjacent properties: RV park to the north, Dike Road and agricultural uses to the east, undeveloped land and landscape storage yard to the south, and the Columbia River to the west. The project is located at approximately river mile (RM) 82 of the Columbia River, and the property is zoned as heavy manufacturing (MH).

All permitted elements associated with the previous project have been installed and the 100-year floodplain of the Columbia River now only extends to the onsite revetment. Permitted elements below the OHWM of the Columbia River include mooring dolphins, the enclosed conveyor system with associated piling, and large woody material structures installed for mitigation and to discourage vehicular traffic along the river.

Upland features include landscaping along Dike Road, perimeter fencing, paved access road, asphalt haul road around the asphalted stockpile area, walls around the stockpile area to contain calcium carbonate that has been offloaded by the conveyor, conveyor tower to the stockpile, soundwall on the northern side of the site, stormwater biofiltration swale, bank revetment wall that is enhanced with native shrubs, and a stormwater outfall with a duckbill check valve in the revetment. Most of the site has been improved for industrial use apart from the following areas that were avoided during construction: a sandy area between the northern haul road and the soundwall, cottonwood trees along the river on the north and south corners of the site, and a narrow sandy area between OHWM and the revetment.

VEGETATION

Most of the site has been developed as previously permitted. Existing vegetation is limited to cottonwood trees near the Columbia River on the northern and southern portions of the site. The sub-canopy is dominated by Himalayan blackberry. During the September 2024 site visit, this Himalayan blackberry had recently been maintained, leaving mainly bare ground in the forested portions of the site. Vegetation along the OHWM consisted of mainly weedy forbs. The revetment above the OHWM has been enhanced with various willow species, as required by permits. Overall, vegetation presence and variety onsite is very minimal.

SOILS

Soils within the site are mapped as Riverwash (172) as referenced on the Natural Resources Conservation Service (NRCS) website (2024a; Figure 7). Riverwash is a somewhat poorly drained soil found on low gradient floodplains. According to the *Washington State Hydric Soils List*, Riverwash is considered a hydric soil (NRCS 2024b).

Soils were not evaluated as there were no indicators of wetland hydrology or a hydrophytic wetland vegetation community. General soil observations in the enhancement area included sand, and near the cottonwoods, there was more organic matter in the topsoil, but soils were mainly composed of sand. ELS does not agree with the NRCS soil map, as no wetlands were found in locations that did not have documented hydric soils.

HYDROLOGY

The Columbia River (Type S; shoreline) is located immediately adjacent to the subject site. The Columbia River flows northerly along the western boundary of the site. Topographically lower portions of the site along the northern and southern edges receive infrequent overbank flooding generally from May through early July when water is being discharged from the Columbia River dams. Soils are largely composed of sand, so flood waters infiltrate as the river levels subside.

Stormwater from the upland development is directed to stormwater treatment swales where it mainly infiltrates because of the high infiltration rates. During high precipitation events, some stormwater can discharge to the Columbia River through a duckbill check-valve discharge pipe along the revetment. The project is in Water Resource Inventory Area (WRIA) 27 – Lewis and in 12-digit hydrologic unit code (HUC) 170800030306 – Burris Creek-Frontal Columbia River.

NATIONAL WETLAND INVENTORY

The National Wetlands Inventory Map (NWI) does not indicate the presence of wetlands on or near the site (Figure 8, USFWS 2024a). The Columbia River corresponds with a riverine, tidal, unconsolidated bottom, permanently flooded-tidal (R1UBV) mapped water feature, and there is a mapped riverine, intermittent, streambed, seasonally flooded (R4SBC) water feature on the north end of the site. There was no observed ditch or natural water feature in this area. ELS partially agrees with NWI mapping, as no wetlands were delineated during the site visit; however, no water feature in the northern portion of the site was observed. NWI mapping is typically used to gather general wetland information about a region, and due to the large scale necessary for regional mapping, are limited in accuracy for localized analyses.

CRITICAL AREAS HABITAT SUMMARY

COLUMBIA RIVER

The Columbia River borders the project area to the west. The OHWM was delineated based on topographical changes, wrack deposits, and the presence of large woody material deposited during regular high-water events. The streambank below the OHWM consisted of mainly sand with an abundance of wrack deposits and large woody material. Some of the large woody material present was installed as mitigation for the original blending and storage facility.

CRITICAL AREA HABITAT BUFFERS

The proposed access trestle, stockpile expansion, and additional trips are considered water-dependent shoreline uses. The definition of water-dependent use in the SMP is:

“A use or portion of a use which cannot exist in a location that is not adjacent to the water and which is dependent on the water by reason of the intrinsic nature of its operations. Examples of water-dependent uses may include, but are not limited to, the following: ship cargo terminal loading areas, ferry and passenger terminals, barge loading facilities, ship building and dry docking, marinas, boating facilities, private moorage facilities, aquaculture, float plane facilities, sewer outfalls, hydroelectric generating plants and water diversion facilities, such as agricultural pumphouses.”

The project has a functional requirement for a waterfront location to get a second piece of machinery on the barge to cut down offloading time by up to two days. The additional upland storage of calcium carbonate is directly related to offloading additional barges. The proposed development meets the definition of a water-dependent shoreline use.

The Columbia River is a Type S (shoreline) stream and is further classified as a Shoreline of Statewide Significance by SMP *Table 3-1*. The project is in the High-Intensity shoreline environment designation (SED) and is considered a water-dependent use. SMP *Table 7-2* states that water-dependent activities in the High-Intensity SED do not require a riparian habitat area (RHA) or shoreline buffer; however, there is a 10-foot building setback. Table 3 summarizes critical area habitats within the project area and required setbacks.

Table 1. Summary of Critical Area Habitat.

Critical Area	Stream Type	SED	RHA Width ¹ (feet)	Building Setback ¹ (feet)
Columbia River	Type S (shoreline) Shoreline of Statewide Significance	High-Intensity	0	10

¹Cowlitz County SMP Table 7-2

PROJECT NEED AND PURPOSE

Recent market demands have driven CRC to design project modifications and expansions to their currently permitted and constructed Woodland Terminal Blending and Storage Facility (Figures 2 through 4). Existing permit numbers are listed below:

- US Army Corps of Engineers – Section 404 Permit #2013-834
- Washington Department of Ecology – Section 401 Permit #15862
- Cowlitz County Wetland and Floodplain Permit – #13-06-0570
- Cowlitz County Shoreline Permit No. 13-0948
- Washington Department of Fish and Wildlife Hydraulic Project Approval – #2018-5-37+03 and #2023-5-14-01
- Washington Department of Natural Resources Aquatic Lands Lease – #20-090857

On average, CRC receives 300,000 tons per year of calcium carbonate to be processed in their Woodland, Washington facility. There are several driving factors that necessitate the expansion. CRC has grown significantly since the original permitting and design phase in 2013 for this marine terminal. When the original project was conceived, CRC processed approximately 120,000 tons per year of material. Currently CRC processes nearly 300,000 tons of material annually and has experienced a 6 percent annual growth in product demand over the time they have been in business. Additionally, CRC has been approached by a potential client that would require an additional 200,000 tons of calcium carbonate per year. At current capacity, the approved Woodland Terminal Blending and Storage Facility stockpile and work timing restrictions will not be able to handle the additional tonnage. For this reason, CRC is proposing to increase the number of barge trips per year, increase barge offloading hours, increase the upland stockpile size, and install an access trestle to get equipment off and onto the moored barges for maintenance or repairs.

The new trestle and crane will allow for a second wheel-loader to be placed on the barge to shorten offloading times and will allow equipment traveling on the barge to be offloaded for repairs and maintenance. The wheel-loader requires regular maintenance with no way to get the

on or off the barge at the marine terminal. Currently, equipment traveling with barges, primarily the wheel-loader, must be offloaded to receive routine maintenance and other repairs at facilities that have a crane, such as Advanced American in Portland, Oregon, where there is a crane large enough to lift the 70,000-pound wheel-loader off the barge. Maintenance on the equipment is either:

- carried out at the Advanced American facility and then trucked back to the marine terminal on an oversize load truck, or
- carried out at the Advanced American facility and then trucked on an oversize load truck to Portland where the wheel-loader is then swung back out onto the barge. Tugs must then make a second trip to Portland to then transport the barge back to the marine terminal.

CRC receives barges every two weeks. Transporting the barge and wheel-loader to Portland for offloading, maintenance, and then trucking, creates complications in the scheduling and delivery of calcium carbonate. Every piece of equipment on the barge needs regular maintenance to ensure proper performance and to avoid malfunctions. Any activities that require maintenance beyond what CRC can complete on the barge means a delivery has to be stopped and the entire load must be pushed by tugboats upstream to Portland. The crane swings the wheel-loader off and then CRC has a third-party vendor complete the repair. The calcium carbonate delivery must wait on the barge while all repairs are completed, putting the delivery behind schedule and affecting future delivery scheduling.

This additional barge and tug travel results in additional air emissions from diesel exhaust, a potential for engine leaks and spills into the river, and additional ship-wake stranding of fish that use the river margins. The trestle is a crucial part of operations that will reduce the amount of air emissions from the burning of fossil fuels and will ensure deliveries remain on schedule.

Most of the proposed work will be in upland areas that only require Cowlitz County permits. After these are received, federal and state permit applications will be submitted to construct the access trestle because it will be within Corps and state jurisdictions. CRC will proceed with upland improvements while waiting for federal and state permits. These improvements include stockpile and haul road expansion, biofiltration swale reconstruction, additional barge trips, and expanded barge offloading hours.

Critical area habitats addressed in this report include the Columbia River and adjacent areas. There is a 200-foot shoreline jurisdiction associated with the Columbia River, and the site is within High-Intensity Shoreline Environmental Designation (SED).

METHODOLOGY

The property was evaluated for the presence of wetlands using the Routine Determination Method according to the U.S. Army Corps of Engineers' 1987 *Wetland Delineation Manual* and the *Regional Supplement to the Corps of Engineers' Wetland Delineation Manual* (Environmental Laboratory 1987); *Western Mountains, Valleys, and Coast Region (Version 2.0)* (Corps 2010). The

Routine Determination Method and defining wetland criteria are discussed further in Appendix A. Wetlands are regulated as “Waters of the United States” by the U.S. Army Corps of Engineers (Corps) and as “Waters of the State” by the Washington Department of Ecology (Ecology), and locally by Cowlitz County. The OHWM delineation was conducted following *RCW 90.58.030 and Determining the Ordinary High Water Mark for Shoreline Management Act Compliance in Washington State* (Ecology 2016).

On September 10, 2024, ELS biologists evaluated the subject site for the presence of critical area habitats including wetlands, streams, habitat buffers, and state priority species and habitats. No wetlands were delineated on or near the site. The OHWM of the Columbia River (Type S) was determined based on wrack deposits, changes in vegetation, and topography changes. OHWM flagging consisted of consecutively numbered pin flags or neon flagging tape and were recorded with a handheld GPS capable of submeter accuracy under ideal conditions. The Corps’ jurisdictional line for this location on the Columbia River is 12.7 feet CRD.

PROJECT DESCRIPTION

CRC is proposing the following structural and operational changes to their marine terminal:

1. Expand Stockpile and Haul Road.
 - a. Increase the asphalt stockpile pad from 37,867 square feet (approximately 40,000 tons of storage) to approximately 83,000 square feet to 102,000 square feet.
 - b. Expand asphalt haul road on north and west sides.
 - c. Reconstruct the biofiltration swale.
2. Construct New Access Trestle.
 - a. Construct an access trestle and associated piling from upland improvements over the beach and Columbia River to provide equipment ingress/egress from moored barges.
 - b. Construct ramp between trestle and haul road.
3. Operational Changes.
 - a. Increase the number of barge trips from 24 to 48 trips per year.
 - b. Increase barge offload days to include Saturday and Sunday and for operations to be 24 hours per day.

Construction tasks 1 and 3 shown below may overlap each other or occur concurrently. The new access trestle (construction task 2) will only be constructed after local, state, and federal permits are approved.

1. EXPAND STOCKPILE AND HAUL ROAD

(Crane, dozer, backhoe, dump truck, delivery trucks, pickups) – 4 months, likely from May through August.

To accommodate the additional material, the asphalt pad used for carbonate stockpile will be increased from 37,867 square feet to approximately 62,945 square feet. This additional area was referred to as the “auxiliary stockpile area” in the Hearing Examiner (No. 13-0948) decision. The

purpose of this stockpile area was to provide ample square footage to accommodate stockpiling material due to unforeseen circumstances preventing normal material transport from the stockpile to the production facility. Because the auxiliary stockpile was not thoroughly considered during the application review process, it was not approved as part of the current permits. The Hearing Examiner stated that a supplemental Substantial Development Shorelines Permit request must be submitted to approve the auxiliary stockpile.

The existing asphalt haul road will be expanded on the north side of the site to encircle the stockpile area. This will require the existing biofiltration swale to be relocated to the northwest and expanded to treat the proposed new impervious surfaces. A stormwater technical information report will be prepared that addresses treatment of the expanded impervious area and designed to meet requirements for biofiltration swales according to the Department of Ecology stormwater management manual.

A noise study was conducted for the original marine terminal and permits required that a sound wall be installed. A second noise study was written for this proposed project. This report summarizes the results of a noise study conducted by ABD Engineering & Design, Inc. (ABD 2024) to determine if the current operation follows the applicable state noise regulations as required under the conditions of approval imposed by the amended Conditions of Approval (Permit 13-06-0570, Appeal 15-07-3229) issued by Cowlitz County: “11. Maximum permissible noise levels shall be in accordance with the provisions of WAC Chapter 173-60.” This report determined that the site is operating in compliance with WAC noise criteria and the Conditions of Approval related to noise.

2. CONSTRUCT NEW ACCESS TRESTLE

(Crane barge, materials barge, tugboat, tender boat, hand tools) – One month.

A short earthen ramp will connect the site with the trestle. The fully grated, 30-foot-wide trestle will extend approximately 250 feet to a 29-foot by 30-foot concrete platform where the crane will load/unload heavy equipment from barges for repairs and maintenance. A total of 45 piles will support the trestle; of these, 24, 20-inch diameter piles will support the grated portion and 12, 24-inch diameter piles will support the concrete platform. Nine piles supporting the trestle will be landward of the OHWM, resulting in a total of 36 piles below the OHWM.

A vibratory pile driver will be used to drive all piles into the sediment to the basalt-bedrock interface, or to the point of refusal. The project engineers estimate that an impact hammer will be necessary to finish driving all piling for this project. A confined bubble curtain will be used during impact-hammer driving to minimize underwater noise effects.

After piling are in place, the new concrete platform will be constructed with cast-in-place concrete. No uncured concrete will be allowed to enter the river. Framing for the trestle bridge section will be installed, and then the fully grated decking and railing will be attached to the framing. Grating will allow over 60 percent light penetration.

To connect the trestle to the site haul road, an earthen ramp approximately 30 feet wide by 36 feet will be constructed. It will be made with imported aggregate base using excavators, dump trucks, and compacting equipment, then it will be paved with asphalt to prevent rutting. The ramp will connect the trestle to existing upland improvements and will be completely located landward of the OHWM.

During the original marine terminal consultation, the NMFS representative asked why some overwater surfaces were proposed to be concrete and not proposed to be fully grated. The CRC design engineer replied with a memorandum (see Appendix B) that explains the difficulties associated with designing the platforms to have fully grated surfaces. To summarize the reply, a grated surface would require significant steel framework to provide strength, which would block light penetration. Concrete provides the needed strength with fewer environmental impacts during construction and less long-term maintenance when compared to steel framing. Work lighting will be used seasonally only under low-light or no-light conditions during mornings and early evenings during the equipment loading/unloading process. Work lights will be directed onto the crane unloading area and trestle, and they will only be used as needed.

3. OPERATIONAL CHANGES

Increase Barge Trips and Offloading Hours

The current number of barge trips were limited during the original shoreline substantial development permit process with Cowlitz County at 24 barge trips per year. To accommodate approximately 200,000 tons of additional calcium carbonate to be offloaded each year, the number of barge trips will need to be doubled to 48 per year.

Currently, barge operations are conditioned in the Hearing Examiner's decision (No. 13-0948) to occur from 7:00 a.m. to 10:00 p.m., Monday through Friday, excluding state holidays. The decision also limits barge trips to 24 per year with each barge being moored for no more than four days. Limiting barge unloading to four days between Monday and Friday can be problematic when a late-week barge arrives. If a barge arrives on Friday and unloading cannot begin, the barge must remain moored until Monday, losing two out of the four allotted days. This severely limits the hours in which offloading can occur and if maintenance is required to the barge or offloading equipment, then too much time can be lost, and the offloading window will run out.

CRC proposes to balance the increased demand for material with the requirements of their current permit while also being conscientious of surrounding properties and activities. The proposed 48 barge trips per year will follow these general guidelines:

- Barge offloading operations will occur Monday through Sunday, 24 hours per day.
- Barge offloading operations will not occur during the following holiday weekends:
Memorial Day, Independence Day, and Labor Day.
 - o Holiday weekend means the three-day weekend for Memorial Day and Labor Day. The holiday weekend in relation to Independence Day depends on the year and means: (1) the entire week when the Day falls on a Wednesday; (2) a four day weekend when the Day falls on a Tuesday or Thursday; (3) a three-day

weekend including Friday when the Day falls on a Friday or Saturday; and, (4) a three-day weekend including Monday when the Day falls on a Sunday or Monday.

The current Cowlitz County Shoreline Permit No. 13-0948 allows trucking 7:00 a.m. to 6:00 p.m., Monday through Friday, excluding state holidays. Currently, trucks do not haul limestone to the facility every day of the week. The proposed increase of imported calcium carbonate will not result in more truck trips per day from the site, but trucks will haul limestone during more days from Monday through Friday (excluding state holidays). The existing truck route to the Woodland facility from the marine terminal is to turn south (right) on Dike Road, then east (left) on Caples Road and north (left) to the facility on North Pekin Road.

IMPACT AVOIDANCE AND MINIMIZATION MEASURES

The project has been designed to avoid and minimize impacts to shoreline jurisdiction in the vicinity of the project area. Due to the landscape position of the site and the water-dependent nature of the project, complete avoidance of impacts to shoreline jurisdiction for the Columbia River is not possible. In addition to avoidance and minimization measures, the nature of the product to be delivered is an important factor when addressing how to minimize dust or spillage of calcium carbonate during delivery. Calcium carbonate's aquatic toxicity is low. The entire length of the overwater conveyance system between the barge and shore is enclosed in a 12-foot-diameter steel tube, thereby eliminating the chance of material falling into the river. The construction barge, delivery barges and tugboats are required to have spill pollution prevention plans and on-board spill-containment booms, so the chance of contaminants entering the aquatic environment or traveling far from additional boat presence is low.

Fundamental design decisions were made to avoid and minimize project impacts while still meeting project needs. The following list summarizes general avoidance and minimization measures considered during the project design:

- Avoids interfering with beach access: The trestle elevation will still allow safe passage for wildlife and pedestrians along the sandy beach.
- Minimizes aquatic impacts: The raised elevation and fully grated trestle decking allows for light penetration, reducing shading impacts.
- Minimizes overwater lighting: Lights will be directed only to work areas and will be used only when equipment is being loaded/unloaded during times of low natural light.
- Avoids and minimizes impacts to riparian areas along the beach: Although no RHAs are required by Cowlitz County SMP (The Watershed Group and Parametrix 2018), impacts near the OHWM have been minimized to the greatest extent practicable. No native trees or shrubs will be removed. Signs will be placed along the OHWM to inform the public about the mitigation planting area.
- Reduces water and air pollution from tugboats: River miles required to move barges by tugs past the Woodland site to Portland to load and unload onboard equipment for maintenance and repairs will be reduced by approximately 90 miles per round trip. This will reduce water and air pollutants emissions from tugboats.

- Minimizes barge moorage impacts: Barge offloading will be limited to an average of 48 barges per year or about four days per month. Having land access to the barge with the trestle will allow for a second front wheel loader to be placed on the barge, reducing barge offloading and moorage time by up to two days per offloading event.
- Minimizes stormwater quality impacts: A stormwater plan will be implemented that treats stormwater runoff from additional impervious surfaces to current standards.
- Avoids and minimizes impacts to recreational hog line fishing: Barge offloading is limited to 48 barges per year, and offloading is prohibited on Memorial Day, Independence Day, and Labor Day holiday weekends.

The following best management practices (BMPs) will be followed during construction to further avoid and minimize impacts to habitat:

General

- Construction equipment will be inspected for leaks daily.
- Land-based construction will occur mainly during the dry season (May-October).
- The staging and material storage areas will be in upland areas of the site.
- All bare soils will be mulched with certified weed-free straw after ground disturbing activities.
- Conditions in local, state, and federal permits will be followed.
- No pollutants, such as contaminated water, silt, welding slag, sandblasting abrasive, or grout cured less than 24 hours will contact the water.

In-Water

- The in-water work window of October 1 through December 15 will be observed.
- Barges will not “ground out” at any time.
- 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 or boats associated with project blending and storage facility.
- Pile driving with an impact hammer will take place within a confined bubble curtain and a soft-start technique will be used to allow aquatic species to relocate.
- The barges used by the applicant shall not take in ballast water or release ballast water into the Columbia River.

PROJECT IMPACT SUMMARY

Following the application of avoidance and minimization methodologies, impacts that will remain include habitat and shoreline impacts. A total of 14,853 square feet of permanent impacts will occur to aquatic and shoreline habitat that will be mitigated to ensure no net loss of ecological functions (Figures 4 and 6). A total of 6,144 square feet of temporary impacts will occur to shoreline jurisdiction due to biofiltration swale construction along the waterward side of upland

improvements. Because the biofiltration swale will be seeded and allow for infiltration, there are no impacts to the shoreline environment. The following table provides a summary of proposed impacts to aquatic habitat and shoreline jurisdiction.

Table 2. Impact Summary - Habitat and Shoreline Jurisdiction

In-Water Impacts		
Habitat Area	Proposed Impact	Impact Size
Columbia River Waterward of OHWM	24, 20-inch steel piling	52.3 square feet
	12, 24-inch steel piling	37.7 square feet
Total In-Water Impacts:		90.0 square feet
Overwater Impacts		
Habitat Area	Proposed Impact	Impact Size
Columbia River Waterward of OHWM	Grated trestle (>60% light admittance)	6,029 square feet
	Trestle Platform (30'x29')	870 square feet
Total Overwater Impacts:		6,899 square feet
Shoreline Impacts		
Habitat Area	Proposed Impact	Impact Size
Columbia River Shoreline Jurisdiction Landward of OHWM	Grated Trestle (>60% light admittance)	2,191 square feet
	9, 20-inch steel piling	19.6 square feet
	Earthen Ramp (30'x 36')	1,080 square feet
	Expanded Stockpile and Road	4,573 square feet
	Total Shoreline Impacts	7,864 square feet
Total Impact Area		14,853 square feet

MITIGATION SUMMARY

Proposed mitigation includes riparian habitat enhancement on the project site. Native shrubs and trees will be installed on 0.42 acres (18,191 square feet) of riparian habitat to connect the existing enhancement area that was required under the previous local, state, and federal permits to the OHWM (Figure 6). This will create a less fragmented inner riparian habitat and will provide valuable functions including water quality, water quantity, and wildlife habitat. Although there is no RHA required by the SMP, the applicant recognizes important functions provided by riparian habitat; therefore, the remaining portion of riparian habitat will be enhanced, and on the north and south property boundaries, riparian plantings will continue up to 150 feet landward of the OHWM. The overall mitigation-to-impact ratio is 1.22:1 (18,191 divided by 14,853).

Signs will be installed along the edge of the OHWM to inform the public about the mitigation planting area. Signs will be consistent with CCC 19.15.170(H)(2)(a), be made of an enamel-coated metal face and attached to the fencing or metal t-posts and will be placed within site distance of

each other and be maintained in perpetuity. Signs will be worded as follows: “Protected Critical Area, do not Disturb, Contact Cowlitz County Building and Planning Regarding Uses and Restrictions.” Monitoring, maintenance, and contingency methods have been developed to ensure the mitigation plantings are meeting performance standards and mitigation goals.

LISTED SPECIES AND PRIORITY HABITATS IN THE PROJECT VICINITY

This fish and wildlife habitat assessment will address the species and habitats present within the project area according to CCC 19.15.130, which lists eight classifications of fish and wildlife habitat. The project vicinity has Classification 1 (areas with which federal or state designated endangered, threatened, or sensitive species have a primary association), Classification 2 (state priority habitats and areas associated with state priority species), and Classification 5 (Waters of the State, which includes Type S, Type F, Type Np, and Type Ns streams). All of the other classifications listed in the table are not present and will not be discussed further in this assessment (Classifications 3, 4, 6, 7, and 8). Figures 9 and 10 show habitats and species in the vicinity.

SUITABLE HABITAT FOR FISH AND WILDLIFE

The following table includes state priority habitats and federally listed or state-listed species as well as state sensitive species that have a primary association with habitat within 300 feet of disturbance areas. The table was compiled using the most recent state and federal species lists (WDFW 2024, NWIFC 2024, WDNR 2024a and 2024b, NMFS 2024, and USFWS 2024b). The following table lists the species that have suitable habitat within 300 feet of project disturbances.

Table 3. Endangered, Threatened, Candidate, and Sensitive Species and Priority Habitat that have Primary Habitat or Association within 300 feet of Project Disturbances.

Species or State Priority Habitat	State Status	Federal Status	Designated Critical Habitat in Project Vicinity?
<i>Fish</i>			
Bull Trout (<i>Salvelinus confluentus</i>)			
Columbia River DPS	Candidate	Threatened	Designated
Chum Salmon (<i>Oncorhynchus keta</i>)			
Columbia River Chum Salmon ESU	--	Threatened	Designated
Chinook Salmon (<i>Oncorhynchus tshawytscha</i>)			
Lower Columbia River Chinook ESU	--	Threatened	Designated
Upper Willamette River Chinook ESU	--	Threatened	Designated
Upper Columbia River Spring-run Chinook ESU	--	Endangered	Designated
Snake River Spring-run Chinook ESU	--	Threatened	Designated
Snake River Fall-run Chinook ESU	--	Threatened	Designated
Coho Salmon (<i>Oncorhynchus kisutch</i>)			
Lower Columbia River Coho Salmon ESU	--	Threatened	Designated
Steelhead (<i>Oncorhynchus mykiss</i>)			
Lower Columbia River Steelhead DPS	Candidate	Threatened	Designated
Upper Willamette River Steelhead DPS	N/A	Threatened	Designated
Middle Columbia River Steelhead DPS	Candidate	Threatened	Designated
Upper Columbia River Steelhead DPS	Candidate	Threatened	Designated

Species or State Priority Habitat	State Status	Federal Status	Designated Critical Habitat in Project Vicinity?
Snake River Basin Steelhead DPS	Candidate	Endangered	Designated
Sockeye Salmon (<i>Oncorhynchus nerka</i>)			
Snake River Sockeye ESU	--	Endangered	Designated
Green Sturgeon (<i>Acipenser medirostris</i>)			
North American Green Sturgeon Southern DPS	--	Threatened	No
Eulachon (Columbia River Smelt) (<i>Thaleichthys pacificus</i>)			
Eulachon Southern DPS	--	Threatened	Designated
River Lamprey (<i>Lampetra ayresii</i>)	Candidate	--	None designated
Birds			
Yellow-Billed Cuckoo (<i>Coccyzus americanus</i>)	Endangered	Threatened	No
Streaked Horned Lark (<i>Eremophila alpestris strigata</i>)	Endangered	Threatened	No
Reptiles			
Northwestern Pond Turtle (<i>Actinemys marmorata</i>)	Endangered	Proposed Threatened	None designated
Mammals			
Columbian White-Tailed Deer (<i>Odocoileus virginianus leucurus</i>)	Threatened	Threatened	None designated
Insects			
Monarch Butterfly (<i>Danaus plexippus</i>)	Candidate	Candidate	None designated
Priority Habitats			
Instream	Priority Habitat	Not applicable	Not applicable
Riparian	Priority Habitat	Not applicable	Not applicable

Federally designated critical habitat under the Endangered Species Act is mapped for most of the listed fish species in the project area, and suitable habitat for all fish species in the table is present in the Columbia River. Proposed project elements occur both in shoreline jurisdiction and below the OHWM of the Columbia River.

ELS recorded observations of surrounding topography, wildlife use, and habitat functions in the study area according to CCC 19.15.130(C). Birds, reptiles, mammals, and insects could occur in the project vicinity because there is suitable habitat on and near the project site. Wildlife observations during the site visits were limited to various songbirds and birds of prey. None of the terrestrial species identified in Table 3 have a documented presence or suitable habitat on or within 300 feet of the site. It should also be noted that a botanical survey has not been performed, so some of the smaller plants and plants that were not flowering may have gone unnoticed, although, it is unlikely due to the small size of the site and limited amount of riparian vegetation. Terrestrial species that are not plants are unlikely to remain in the project area during construction if present due to the current industrial use of the site. Project avoidance and minimization measures will reduce impacts to listed species and their associated habitat. Management recommendations for listed species will be met, and applicable management recommendations are further described below.

MANAGEMENT RECOMMENDATIONS

Effects to species are generally avoided or minimized if the project meets management recommendations that are discussed below. Species detailed in the table above that do not have state or federal management recommendations will not be discussed. Also, species with no suitable habitat onsite or within 300 feet of the site will not be discussed.

BULL TROUT

Federal

Federal management recommendations are not explicit, 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).

State

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.

The Kalama River is designated as critical habitat for bull trout as it contains physical and biological features essential to bull trout conservation, including migratory corridors and foraging habitat (Federal Registration 2010). The Little Kalama River, while not specifically named in the designation, is a tributary to the Kalama River and may provide supporting hydrologic or riparian functions. Bull trout may use the lower Columbia River and its tributaries, such as the Kalama River and Little Kalama River for migration, overwintering, or foraging; however, their presence in these tributaries is considered rare. The U.S. Army Corps of Engineers (2001) and the USFWS (2002) have both concluded that use of the lower Columbia River system by bull trout is limited and likely occurs only in low numbers. No in-water work is proposed as part of the project, and no trees or shrubs will be removed from riparian areas. All activities will occur within upland, previously maintained areas dominated by lawn grasses and weedy forbs. The project will not alter streambanks, disrupt migratory pathways, or degrade instream habitat conditions. Roof runoff from the proposed structure will infiltrate onsite and will not discharge to either the Kalama or Little Kalama River. Furthermore, the project will not result in overwater shading, instream structures, or water quality degradation. Mitigation enhancements are proposed, which align with recovery objectives for bull trout habitat. Accordingly, the project is not expected to adversely affect bull trout or their designated critical habitat and is consistent with both federal and state management recommendations.

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.

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:

1. 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.
2. Road construction and maintenance activities should be avoided adjacent to streams which provide rainbow trout and steelhead habitat.
3. Instream structures, such as bridges, piers, boat ramps, or culverts must not impede the natural movements of rainbow trout and steelhead.
4. Waters inhabited by steelhead parr should not be treated with metal-based herbicides during the period March 1 through June 15.

The proposed project will avoid all tree and shrub removal in riparian habitats. Upland improvements are limited to regularly mowed and maintained areas. No in-water work is proposed and no impacts to water quality will occur. Stormwater from roof runoff will infiltrate into upland areas and never be discharged to the Kalama River or Little Kalama River. No floodplain fill is proposed. Riparian function will be enhanced through mitigation actions, and no herbicides will be applied to riparian habitat. Overall, the project, when paired with mitigation will result in no net loss of ecological function which is consistent with both federal and state management recommendations.

NORTH AMERICAN GREEN STURGEON – SOUTHERN DPS

Federal

Federal management recommendations in the recovery plan for green sturgeon (NMFS 2018) are called “recovery actions”. Most of the recovery actions focus on the Sacramento River Basin and San Francisco Bay Delta Estuary environments, as threats in spawning and rearing habitats are considered the greatest impediments to recovery. The remaining recovery actions do not include activities related to habitat management in the Kalama River or Little Kalama River.

State

WDFW does not list management recommendations for this species.

Green sturgeon are considered rare in freshwater tributaries such as the Kalama River and Little Kalama River, which lack the deep, estuarine habitats typically used by this species. Subadult and adult green sturgeon are known to use the Columbia River estuary between June and September, with peak presence in August, primarily for thermal refugia and foraging (Federal Register 2008). Their typical distribution is limited to brackish and saltwater areas between the Columbia River mouth and approximately River Mile 30, with rare occurrences documented as far upstream as Bonneville Dam. Sturgeon typically occur in deeper water near the substrate where they feed on benthic and epibenthic organisms (Federal Register 2008). Although there are no management recommendations for the North American Green Sturgeon Southern DPS, the project will not negatively impact this population.

YELLOW-BILLED CUCKOO

No federal management recommendations for this species have been developed and a recovery plan is not available. WDFW management recommendations include 1). retain existing and potential habitat in greater than 10-acre tracts, 2). fence to exclude livestock, 3). avoid bank stabilization and channelization, 4). avoid insecticide use (Rodrick and Milner 1991). There is no suitable habitat for yellow-billed cuckoo in the project area.

STREAKED HORNED LARK

No federal or state management recommendations for this species have been developed and a recovery plan is not available. Streaked horned lark habitat is mapped by WDFW farther to the north at Martin Bar South, a dredged material disposal site. The intertidal habitat along the Columbia River does exhibit flat, sandy, and mostly bare ground habitat where the larks would have a view of the river. This habitat could be used for foraging but is not suitable for breeding or nesting. No official survey during the breeding and nesting season was conducted. The project is not anticipated to have any impacts to streaked horned larks.

COLUMBIAN WHITE-TAILED DEER

The revised recovery plan (USFWS 1983) does not make management recommendations; however, WDFW management recommendations include the following activities (WDFW 2004):

- Protect existing riparian habitat and reestablish woody cover in cleared areas.
- Maintain a diverse landscape of at least 50 percent woody cover wherever possible.

- On cottonwood plantations, plant and harvest cottonwoods in small, staggered blocks. Leave native cover along sloughs and other corridors.
- Provide adequate cover on mainland areas adjacent to Columbia River islands to allow for deer movements off islands during periodic floods.
- Small, narrow pastures with interspersed cover are recommended over large, unbroken pastures.
- Promote short (2 to 4 inches), actively growing forage in pastures by grazing or haying. Grazing should occur on a seasonal basis, and cattle should be kept out of woodlots year-round. Rotational grazing systems are recommended.
- Pasture and property fencing should be no more than 4 feet high with at least 12 inches between the top two wires. The bottom wire should be at least 17 inches above the ground.
- Remove unused fencing and flag new fencing.
- Predator control should be considered if a wildlife biologist has determined control is necessary to protect the viability of a small population.

The proposed project will avoid all large tree removal. The area to the north is currently used as a popular RV park with access to the Columbia River by patrons. Current onsite use is industrial that has perimeter fencing. Installing the trestle along the shoreline will not impede deer movement if they are present. Passage along the shoreline will be maintained. Additionally, onsite mitigation will enhance riparian habitat. For these reasons, the project is consistent with management recommendations.

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 (Cramer 2012). This project has been designed according to the Aquatic Habitat Guidelines.

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 are somewhat different than widths required in the CCC. Because this project is water-dependent, there are no required riparian habitat area buffers. This project has been designed to avoid and minimize impacts to riparian habitat to the greatest extent possible. Although there are no Cowlitz County regulated riparian or shoreline buffers for this project, mitigation is proposed to ensure no net loss of ecological function from piling and trestle impacts near the Columbia River, and shoreline impacts. This mitigation will consist of installing native trees and shrubs beginning at the OHWM and extending up to 150 feet landward.

LEVEL II HABITAT ASSESSMENT

Per SMP *Table 7-2*, no RHAs are required for water-dependent uses in the High-Intensity SED. Although this is the case, the proposed project includes impacts below the OHWM of the Columbia River (Type S; shoreline). The Columbia River qualifies as Classification 1, 2, and 5; all of which are fish and wildlife habitat conservation areas per *CCC Table 19.15.130-A*. Therefore, this project requires a Level II habitat assessment, which includes Level I items as well as species management recommendations (above) and development standards that are included below.

CCC 19.15.130(D) THROUGH (F) – DEVELOPMENT STANDARDS

The following are development standards applicable to this project (in *italics*) as listed in *CCC 19.15.130(D)* through *(F)*, followed by a discussion of how they are met (in regular font).

CCC 19.15.130(D) – GENERAL REQUIREMENTS

1. *Alterations within All Classifications. A habitat conservation area may be altered, provided that the proposed alteration of the habitat or the mitigation proposed does not degrade the quantitative and qualitative functions and values of the habitat.*

Best management practices stated in the *Avoidance and Minimization* section will be in place prior to and for the duration of construction to prevent and minimize habitat disturbances. Onsite mitigation is proposed for unavoidable impacts by enhancing the shoreline area between the OHWM and the revetment that will provide a no net loss of shoreline ecological functions. Proposed mitigation measures and their associated goals, objectives, and performance standards are discussed in subsequent sections of this report.

2. *Nonindigenous Species. Plants, wildlife, or fish species not indigenous to the region shall not be introduced into a habitat conservation area unless authorized by a state or federal permit or approval.*

Nonindigenous species will not be introduced; nonindigenous plants will not be installed.

3. *Approvals and the Best Available Science. Any approval of alterations or impacts to a habitat conservation area shall be supported by the best available science.*

Best available science and the most recent available data were used in preparing this document and the mitigation plan.

4. *Clearing and Grading. When clearing and grading is permitted as part of an approved critical areas assessment the following shall apply: a) Grading is allowed only during the dry season, which is typically regarded as beginning on May 1st and ending on October 1st of each year; provided, that the county may extend or shorten the dry season on a case-by-case basis, determined on actual weather conditions; and b) Best management practices for erosion and sediment control must be in place prior to, during, and after construction.*

Clearing is not proposed for this project. Grading will occur during the dry season unless otherwise approved on a case-by-case basis; best management practices will be in place prior to, during, and after construction. Grading will be limited to the outer extent of shoreline jurisdiction on previously improved or graded surfaces.

CCC 19.15.130(E) – SPECIFIC HABITATS

1. *Endangered, Threatened, and Sensitive Species. Where federal or state management recommendations exist to protect a state or federally protected species, development or activities may be allowed within or adjacent to a habitat conservation area or buffer with which the state or federally endangered, threatened, or sensitive species has a primary association only when the management recommendations are utilized as demonstrated in a critical area assessment prepared by a qualified professional and approved by the Director.*

This project will meet management recommendations for federal and state-listed species and habitats. For further discussion, refer to the *Management Recommendations* section of this report.

3. *Riparian Habitat Areas (RHA). RHAs shall be established for habitats that include aquatic and terrestrial ecosystems that mutually benefit each other and that are located adjacent to waters of the state. Unless otherwise allowed in this title, all structures and activities shall be located outside of the RHAs.*

Per SMP Table 7-2, water-dependent developments in the High-Intensity SED do not require RHAs, and there is a 10-foot building setback. No new buildings are proposed. The trestle will provide equipment access to the barge that is necessary for maintenance, will cut down on barge/tug trips to offload equipment, and will reduce offloading events by up to two days. The trestle will be located above riparian habitat near the OHWM, so shrub vegetation can still be installed. The pilings have small footprints and will minimize impacts to the shoreline. Although no RHAs are required, mitigation in the form of riparian enhancement is proposed to mitigate for in-water impacts and shoreline impacts.

d. Riparian Habitat Area Widths. Required RHA widths.

For Type S waters, RHA widths for water-dependent activities in the High-Intensity SED per SMP Table 7-2 are 0 feet with a 10-foot building setback.

- iii. Option 3 – Inner Zone of RHA. The inner zone of the RHA is the inner one-half or 50 percent of the standard RHA widths shown in Table 19.15.130-B. Where proposed use or development activities would occur partially or entirely within the inner zone, the following standards must be met:*
 - (A) A level two critical areas habitat assessment is required, and*
 - (B) The applicant demonstrates compliance with all applicable provisions of subsection (E)(5) of this section.*

Although no RHA is required, the proposal includes work below the OHWM in the Columbia River. For this reason, a Level II habitat assessment has been prepared.

5. *Alterations to Waters of the State and Associated RHAs. Activities may be permitted within a pond, lake, water of the state, marine habitat, or associated riparian habitat area when the activity complies with the provisions in this subsection and in accordance with an approved critical area assessment and, if applicable, in accordance with the Shoreline Management Act, Chapter 90.58 RCW, the county's Shoreline Master Program, and all other applicable state or federal permits.*

a. General.

i. All work shall comply with the Washington Department of Fish and Wildlife in-water work window for the applicable species;

In-water work will comply with the in-water work window as established by WDFW. The general in-water work window for the Columbia River is October 1 through December 15.

ii. The proposal will not degrade the functions or values of the fish habitat or other critical areas.

Best management practices stated in the *Impact Avoidance and Minimization Measures* section will be in place prior to and for the duration of construction to prevent and minimize habitat disturbances. Mitigation proposed will fully compensate for any lost functions or values. In-water impacts have been minimized to the greatest extent possible through engineering efforts. The trestle surface will be grated to allow light penetration and will be above the OHWM to further allow light passage and minimize shading impacts. The piling will have anti-perch caps installed to prevent birds of prey using the piling as perches to prey on juvenile salmonids. Riparian enhancement will result in an ecological lift of water quality, water quantity, and habitat functions. Installed native vegetation will provide detritus into the Columbia River which helps support benthic, epibenthic, and macroinvertebrate populations that serve as food sources for juvenile salmonids. Plantings will further slow surface runoff and promote infiltration. Infiltrating surface runoff will help to remove contaminants from the water, which leads to a functional lift in water quality. During extreme high-water events, the plantings will help slow floodwaters and promote infiltration, which also supports water quality functions. No mitigation is proposed for the additional shading due to more frequent barge presence. The barge is in deep-water habitat below -15' CRD. This avoids shading impacts to shallow-water habitat.

e. Fills. Fills shall minimize impacts to anadromous fish or their habitat.

No fill is proposed below the OHWM.

6. Other Classifications.

a. Classifications 2 and 3. Whenever activities are proposed adjacent to or within Classification 2 or 3 areas, an approved critical area assessment prepared by a qualified

professional may be required and must comply with Washington Department of Fish and Wildlife management recommendations for affected species or habitats.

This project will meet management recommendations as described in the *Management Recommendations* section of this document.

CCC 19.15.130(F) – ADDITIONAL MITIGATION REQUIREMENTS FOR FISH AND WILDLIFE HABITAT CONSERVATION AREAS.

- 1. Mitigation for alterations to fish and wildlife habitat conservation areas shall be consistent with the Washington State Department of Fish and Wildlife and other state or federal agencies' management recommendations and guidance documents for best practices mitigation. See CCC 19.15.170, Mitigation requirements.*

Mitigation is proposed for this project, and it is described in detail in subsequent sections of this report. The proposed project follows mitigation sequencing as required by CCC 19.15.170(C), as further demonstrated in the *Impact Avoidance and Minimization* section of this report. Mitigation proposed will rectify project impacts and result in no net loss of ecological functions. Per CCC 19.15.170(D), compensatory mitigation for impacts to critical area habitats are required to be either in-kind and onsite, or in-kind and within the same stream reach, or subbasin. Proposed mitigation for shoreline impacts is located onsite and is considered in-kind, as riparian enhancement is proposed. Mitigation for the in-water impacts includes riparian enhancement. This is not considered in-kind; however, riparian enhancement is a regularly accepted form of compensatory mitigation for in-water impacts on the lower Columbia River.

- 2. Mitigation shall be required to the level or extent necessary to achieve no net loss of critical area functions and values.*

As mentioned above, the proposed mitigation will fully replace impacted functions of shoreline and aquatic habitats at an overall 1.22:1 ratio.

- 3. Proposed mitigation for impacts within fish and wildlife habitat conservation areas may be conditioned by the county on a case-by-case basis using recommendations provided by Washington Department of Fish and Wildlife. [Ord. 16-174 § 2 (Exh. A), 12-20-16.].*

Mitigation is proposed for this project, and it is described in detail in subsequent sections of this report. Proposed mitigation will result in no net loss of ecological functions provided by in-water and riparian habitat.

MITIGATION PLAN

According to CCC 19.15(C)(4)(b)(i) through (iii), Level II habitat assessments must develop a protection plan that includes enhancement of functions within the RHA, a construction and monitoring plan, and a discussion of ongoing management practices that will protect habitat after development. This *Mitigation Plan* section and the *Goals, Objectives, and Performance Standards* section detail compliance with CCC 19.15(C)(4)(b) to ensure the long-term success of

the proposed mitigation to ensure there is no net loss of ecological function after construction. Mitigation is proposed at a 1.22:1 ratio for all project impacts. No mitigation for the added frequency of barge shading due to more barge trips is proposed. See the *Avoidance and Minimization* section below for further details.

AVOIDANCE AND MINIMIZATION

The project has been designed to avoid and minimize impacts to shoreline jurisdiction in the vicinity of the project area. Due to the landscape position of the site and the water-dependent nature of the project, complete avoidance of impacts to shoreline jurisdiction for the Columbia River is not possible while still meeting project needs. The following list summarizes general avoidance and minimization measures considered during the project design:

- Avoids interfering with beach access: The trestle elevation at approximately 17 feet above the beach will still allow safe passage for wildlife and pedestrians along the sandy beach. The trestle will be at the same elevation as the existing foundations for the conveyor system.
- Minimizes aquatic impacts: The raised elevation and fully grated trestle decking allows for light penetration, reducing shading impacts.
- Minimizes overwater lighting: Lights will be directed only to work areas and will be used only when equipment is being loaded/unloaded during times of low natural light.
- Avoids and minimizes impacts to riparian areas along the beach: Although no RHAs are required by Cowlitz County SMP (The Watershed Group and Parametrix 2018), impacts near the OHWM have been minimized to the extent practicable. No native trees or shrubs will be removed. Signs will be placed along the OHWM to inform the public about the mitigation planting area.
- Reduces water and air pollution from tugboats: River miles required to move barges by tugs past the Woodland site to Portland to load and unload onboard equipment for maintenance and repairs will be reduced by approximately 90 miles per round trip. This will reduce water and air pollutants emissions from tugboats.
- Minimizes barge moorage impacts: Barge offloading will be limited to an average of 48 barges per year or about four days per month. Having land access to the barge with the trestle will allow for a second front wheel loader to be placed on the barge, reducing barge offloading and moorage time by up to two days per offloading event. Additionally, the barge will be moored in deep-water habitat while offloading (-15' CRD and deeper), which avoids impacts to shallow-water habitat.
- Minimizes stormwater quality impacts: A stormwater plan will be implemented that treats stormwater runoff from additional impervious surfaces to current standards.
- Avoids and minimizes impacts to recreational hog line fishing: Barge offloading is limited to 48 barges per year, and offloading is prohibited on Memorial Day, Independence Day, and Labor Day holiday weekends.

The following best management practices (BMPs) will be followed during construction to further avoid and minimize impacts to habitat:

General

- Construction equipment will be inspected for leaks daily.
- Land-based construction will occur mainly during the dry season (May-October).
- The staging and material storage areas will be in upland areas of the site.
- All bare soils will be mulched with certified weed-free straw after ground disturbing activities.
- Conditions in local, state, and federal permits will be followed.
- No pollutants, such as contaminated water, silt, welding slag, sandblasting abrasive, or grout cured less than 24 hours will contact the water.

In-Water

- The in-water work window of October 1 through December 15 will be observed.
- Barges will not “ground out” at any time.
- 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 or boats associated with project blending and storage facility.
- Pile driving with an impact hammer will take place within a confined bubble curtain and a soft-start technique will be used to allow aquatic species to relocate.
- The barges used by the applicant shall not take in ballast water or release ballast water into the Columbia River.

UNAVOIDABLE IMPACTS

The following table summarizes unavoidable impacts from the project.

Table 4. Impact Summary - Habitat and Shoreline Jurisdiction

In-Water Impacts		
Habitat Area	Proposed Impact	Impact Size
Columbia River Waterward of OHWM	24, 20-inch steel piling	52.3 square feet
	12, 24-inch steel piling	37.7 square feet
Total In-Water Impacts:		90.0 square feet
Overwater Impacts		
Habitat Area	Proposed Impact	Impact Size
Columbia River Waterward of OHWM	Grated trestle (>60% light admittance)	6,029 square feet
	Trestle Platform (30'x29')	870 square feet
Total Overwater Impacts:		6,899 square feet
Shoreline Impacts		
Habitat Area	Proposed Impact	Impact Size
Columbia River Shoreline Jurisdiction Landward of OHWM	Grated Trestle (>60% light admittance)	2,191 square feet
	9, 20-inch steel piling	19.6 square feet
	Earthen Ramp (30'x 36')	1,080 square feet
	Expanded Stockpile and Road	4,573 square feet
	Total Shoreline Impacts	7,864 square feet
Total Impact Area		14,853 square feet

RIPARIAN AND SHORELINE VEGETATION ENHANCEMENT

Proposed mitigation will provide a native tree and shrub buffer between the upland operations portion of the project and the general public. The mitigation plantings will also provide a multi-layered forest canopy where none currently exists along the Columbia River. Native trees and shrubs will enhance inner and outer RHA functions as well as shoreline ecological functions.

Areas for enhancement that consist of compacted sand and gravel will be ripped prior to plant installation to ensure greater plant success in compacted soils. Existing grass or other herbaceous vegetation will be maintained to the greatest extent possible, and no trees shall be installed within 30 feet of each side of the existing conveyor system. This will avoid future pruning and limbing.

Inner and outer RHA enhancement will provide important functions including bank stability, terrestrial habitat, detritus input, and promoting infiltration of surface runoff. Shoreline vegetation screening within shoreline jurisdiction will improve habitat variability and provide a

screen between the river and the development, as well as between the public and the development. This will provide valuable habitat for small terrestrial species. Installed vegetation will also provide detritus input to the Columbia River. The shoreline vegetation is proposed in areas where there is currently only herbaceous cover. Installing native trees and shrubs will not only result in a lift in habitat functions, but also water quality functions through promoting infiltration of surface runoff. Riparian enhancement is a commonly accepted form of mitigation for impacts to resources below the OHWM because of the functional lift to water quality, water quantity, and habitat functions it can provide.

A total of 18,191 square feet (0.42 acres) will be enhanced. Prior to installing plants, if required, all compacted sand/gravel in the enhancement areas will be ripped or tilled to allow plants to better establish root systems. The shrub and tree species to be planted were selected based on native vegetation that is commonly found in Columbia River floodplains, thrives in sandy soils, and can tolerate sun for most of the day.

Signs will be installed along the edge of the OHWM to inform the public about the mitigation planting area. Signs will be consistent with CCC 19.15.170(H)(2)(a), be made of an enamel-coated metal face, be attached to metal t-posts, and will be placed within site distance of each other and be maintained in perpetuity. Signs will be worded as follows: “Protected Critical Area, do not Disturb, Contact Cowlitz County Building and Planning Regarding Uses and Restrictions.” Detailed planting specifications are shown in the following table.

Table 5. Planting Specifications

Common Name	Scientific Name	Size	Spacing on Center	Quantity
Trees*				
Black cottonwood	<i>Populus trichocarpa</i>	1-gallon	8 feet	45
Shore pine	<i>Pinus contorta</i>	1-gallon		45
Total Trees:				90
Shrubs				
Common snowberry	<i>Symphoricarpos albus</i>	1-gallon	5 feet	180
Serviceberry	<i>Amelanchier alnifolia</i>	1-gallon		160
Mock orange	<i>Philadelphus lewisii</i>	1-gallon		60
Oceanspray	<i>Holodiscus discolor</i>	1-gallon		120
Total Shrubs:				520
Total Plants to be Installed:				610

* No trees will be installed within 30 feet of the conveyor to avoid interference with operations.

SPECIFICATIONS FOR SITE PREPARATION, PLANTING, AND MAINTENANCE

The following specifications will be used to protect existing critical area habitats, set boundaries for enhancement, provide direction for installing vegetation and habitat features, and provide maintenance requirements for the 5-year monitoring and maintenance period.

Prepare Enhancement Areas

1. Stake or flag the enhancement area boundaries.
2. Inspect the site to determine if mowing grasses is necessary prior to planting potted stock.
3. Rip or till soils in planting locations as needed to loosen compact soils.

General Plant Specifications

1. Plant the native trees and shrubs during the late fall to early spring (October-March) at the spacing identified in the table above.
2. Group the plants in uneven patches dominated by a single species, with patches interspersed among one another.
3. All plant materials will be kept cool and moist prior to installation.
4. All plant materials will have well developed roots and sturdy stems, with an appropriate root to shoot ratio.
5. No damaged or desiccated roots or diseased plants will be accepted.

Plant Containerized Trees and Shrubs

1. Dig the receiving hole several inches wider than the size of the root system.
2. Position the planted species' root collar so that they are at or slightly above the level of the surrounding soil to allow for settling.
3. Back the hole with soil.
4. Gently compact the soil around the planted species to eliminate air spaces.
5. Install a minimum of 3-inch depth by 4-foot diameter mulch layer around the base of planted species. The mulch will be comprised of chipped, clean wood. Avoid placing mulch directly against plant stems.
6. Install tree shelters as needed.
7. Irrigate all newly installed plants as site and weather conditions warrant.

Install Habitat Signs

1. Install durable, plastic critical area habitat signs at a minimum of 100-foot intervals on metal or wood posts where the critical area habitats border the development.

Maintain Enhancement Areas

The planted trees and shrubs will be maintained as often as necessary to ensure that the specified performance standards are met. The maintenance includes the following:

- Inspect the plantings at least once annually, or more often as appropriate, and maintain to achieve the performance standards specified in the subsection titled "*Goals, Objectives, and Performance Standards.*"
- Irrigate planted trees and shrubs during the dry season for the first 2 to 3 years after planting. Water should be delivered at a minimum rate of 1 gallon every 4 weeks. Adjust as necessary based on site and weather conditions.

- Remove competing vegetation from around the base of plant species during first 2 to 3 years after planting and as needed thereafter.
- Replace mulch as needed to suppress competing vegetation.
- Inspect tree shelters to ensure they are upright, stable, and likely to remain so for another year. Ensure that the terminal shoot of the planted species is not ensnared in the wall of the tree shelter. Remove tree shelters when species is robust enough to withstand browse or if shelter is impeding growth.
- Replace dead or failed plants to meet the minimum annual performance standards (Table 5). Replaced plants will be installed as described for the original installation.

Minor corrective actions will be undertaken as necessary as a part of routine maintenance and will be documented in the subsequent monitoring report. Corrective actions include, but are not limited to, the following:

- Replant trees or shrubs.
- Implement a fertilizing schedule.
- Repair damaged limbs or prune dead branches.
- Substitute the anti-herbivore device, such as installing a different type of tree shelter, painting lower stems with sanded latex paint, or spraying herbivore deterrent.

GOALS, OBJECTIVES, AND PERFORMANCE STANDARDS

The goal of this mitigation plan is to establish a multi-strata riparian habitat buffer and shoreline vegetation screening to compensate for impacts to in-water habitat and shoreline jurisdiction from installing the grated trestle, associated piling, and expanding the calcium carbonate stockpile. The proposed mitigation will enhance habitat and water quality functions. To accomplish this goal, the following goals, objectives, and performance standards have been established.

VEGETATIVE STRUCTURE

Objective 1: Establish a multi-strata riparian habitat buffer and shoreline vegetation screening to compensate for impacts to in-water habitat and shoreline functions and to enhance vegetative structure, habitat, and water quality functions.

Performance Standard 1a: By Year 1, native trees and shrubs will achieve at least 90 percent survival. Dead plants will be replaced if this performance standard is not met.

Performance Standard 1b: By Year 2, native trees and shrubs will achieve at least 80 percent survival. Dead plants will be replaced if this performance standard is not met.

Performance Standard 1c: By Year 3, native trees and shrubs will achieve at least 75 percent survival. Dead plants will be replaced if this performance standard is not met.

Performance Standard 1d: By Year 5, planted trees and shrubs will have a minimum 25 percent cover. Dead plants will be replaced if this performance standard is not met.

Table 6. Performance Standards for Vegetation by Monitoring Year

	Percent Survival and Cover			
	Year 1	Year 2	Year 3	Year 5
Tree and Shrub Strata				
Survival	≥90%	≥80%	≥75%	--
Cover ¹	--	--	--	≥25%
Invasive Plants				
Cover of non-native, invasive plants, excluding reed canarygrass	<10%	<10%	<10%	<10%

LONG-TERM SITE PROTECTION

Objective 2: Establish long term protection mechanism for all mitigation areas.

Performance Standard 2a: Record a conservation covenant with Cowlitz County protecting mitigation areas in perpetuity. This performance standard will be met when a conversation covenant is recorded at the county and a copy is included in the as-built report.

Performance Standard 2b: Critical area habitat signage with verbiage approved by the responsible official made of enamel coated metal attached to a durable approved post shall be installed at a maximum of 100 feet apart. Signage shall be maintained in perpetuity. This performance standard will be met when all installed signs are documented in the final monitoring report.

MONITORING, MAINTENANCE, AND CONTINGENCY METHODS

The riparian habitat and shoreline enhancement areas will be monitored for a five-year period following project construction in Year 0 (as-built), 1, 2, 3, and 5. Because no riparian trees are proposed to be removed, 10 years of monitoring should not be required to ensure those lost functions are being replaced. A monitoring period of 5 years has been established as this will ensure the installed plantings are meeting vegetation performance standards. Monitoring reports will be submitted to Cowlitz County by December 31st of each monitoring year. The goal of monitoring is to determine if previously stated performance standards are being met. The mitigation area will be monitored once during the growing season, preferably during the same two-week period each year to better compare data.

Monitoring of the enhancement areas will follow the requirements of established performance standards. Monitoring plots will be established within riparian habitat and shoreline jurisdiction. A minimum of three monitoring plots will be established to document if the site is meeting

performance standards. At least one photostation will be established per monitoring plot to document changes over time. Additional photostations may be established outside of monitoring plots as needed. Photostations and monitoring plot locations will be established in the as-built report.

MONITORING PLOTS

During the first annual monitoring event, a minimum of three monitoring plots will be established. The monitoring plots will be identified by GPS and placed on an as-built site map that will accompany the monitoring reports. The monitoring plots will be permanently marked with untreated wood posts or metal t-posts. Permanent photo points will be established at each monitoring plot and directions documented on the site map.

Vegetation

To assess the status of the vegetation within the enhancement areas, the vegetation monitoring will measure the following:

- Total density of planted native trees and shrubs (to determine survival rate) within a 15-foot radius from the metal t-post.
- Percent aerial cover of planted and naturally recruiting native trees and shrubs within a 15-foot radius from the metal t-post.
- Percent aerial cover of naturally occurring herbaceous plants within a 5-foot radius from the metal t-post.
- Percent aerial cover of non-native, invasive plants within a 15-foot radius from the metal t-post.
- Change in the plant community over time (documented at each designated photo point).

Fauna

To assess the development of wildlife habitat within shoreline jurisdiction, wildlife monitoring will document the following regarding use of the downed logs or rootwads, and overall plant condition:

- Insect use
- Amphibian/reptile use
- Bird use
- Mammal use
- Level of herbivory

Soils and Hydrology

If the planted species show poor or failed growth, soil moisture and soil nutrients may also be monitored during the growing season. If necessary, soil moisture will be monitored monthly during the growing season and soil nutrients will be assessed annually during the growing season. Corrective actions will be taken as appropriate based on the soil moisture and soil nutrient data. These actions include, but are not limited to, a revised irrigation schedule and a fertilization schedule.

At minimum the following items will be included in annual monitoring reports:

- Location, map, and as-built drawing including any changes.
- Historic description of the project, including dates of plant installation, current year of monitoring, and remedial actions taken (if necessary).
- Description of monitoring methods.
- Documentation of vegetative performance standards and overall development.
- Assessment of invasive plant species and recommendations for continued management.
- Photographs from established photostations.
- Observations of wildlife including amphibians, invertebrates, reptiles, birds, and mammals. If photographs are taken, they will be included.
- Summary of maintenance and contingency measures completed for the past year and proposed for the next year.

MAINTENANCE

Maintenance will occur during the growing season and will include the following:

- Irrigating planting areas as needed during the dry season for the first three years. Taper watering in Years 2-3.
- Remove competing non-native species as needed within a 3-foot radius of planted species, re-apply mulch as needed.
- Replace dead or failed plants as described for the original installation to meet the minimum performance standards.

CONTINGENCY MEASURES

If performance standards are not met by Year 5, steps will be taken to correct the situation in a timely manner. The following steps will be implemented when an area is identified as failing or potentially failing:

- Identify the cause(s) of failure or potential failure.
- Identify the extent of failure or potential failure.
- Implement corrective actions such as irrigating, fertilizing, or replanting.
- Document activities and include this data in annual monitoring reports.
- If a routine corrective action will not correct the problem, immediately consult with the appropriate agencies.
- Evaluate recommendations from resource agency staff and implement recommendations in a timely manner.

Funding for corrective actions will be the responsibility of the applicant.

LIMITATIONS

ELS bases this report's determinations on standard scientific methodology and best professional judgment. In our opinion, local, state, and federal regulatory agencies should agree with our determinations; however, the information contained in this report should be considered preliminary and used at your own risk until it has been approved in writing by the appropriate regulatory agencies. ELS is not responsible for the impacts of any changes in environmental standards, practices, or regulations after the date of this report.

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FIGURES AND PHOTOPLATES

WASHINGTON



SITE

45.9106° Latitude
-122.8038° Longitude

LOCATION MAP

		R 1 W			
	6				1
			15		
T					
5					
N					
	31				36

PROJECT VICINITY MAP

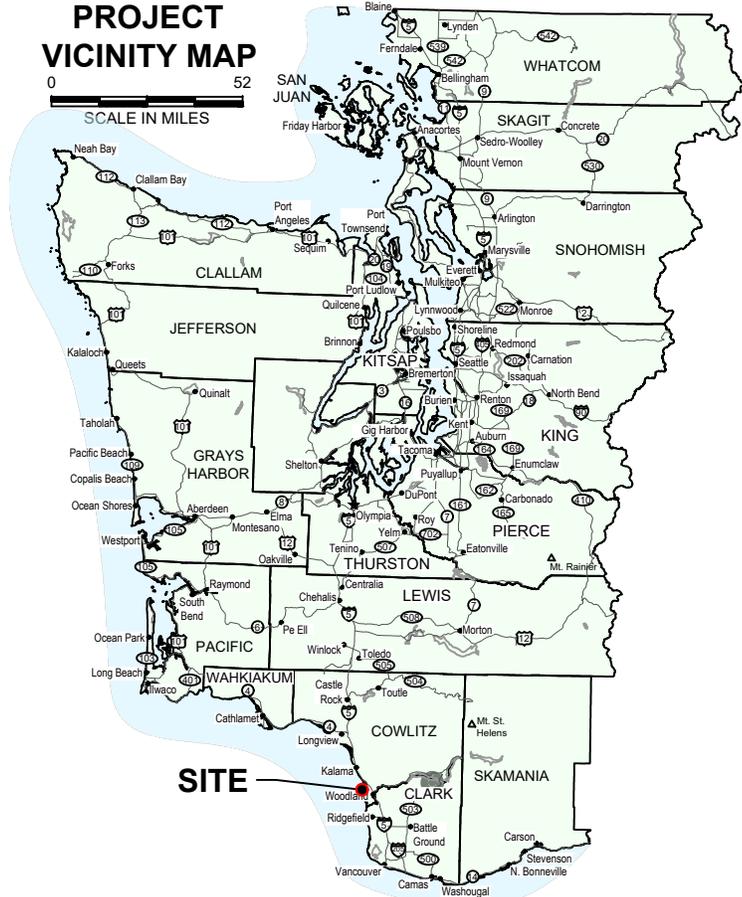


Figure 1
VICINITY MAP
Phase 2 Woodland Terminal Blending & Storage Facility
Columbia River Carbonates
Cowlitz County, Washington
Section 15, Township 5N, Range 1W, W.M.

DATE: 2/3/25
DWN: MPM
REQ. BY: LS
PRJ. MGR: LH
CHK:
PROJECT NO:
558.15

1157 3rd Ave., Suite 220A
Longview, WA 98632
Phone: (360) 578-1371
Fax: (360) 414-9305
www.eco-land.com



NOTE:
Quadrangle topographic map from USGS.

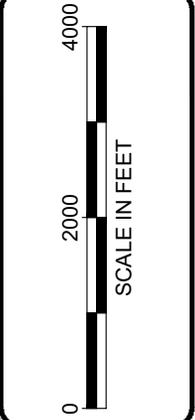
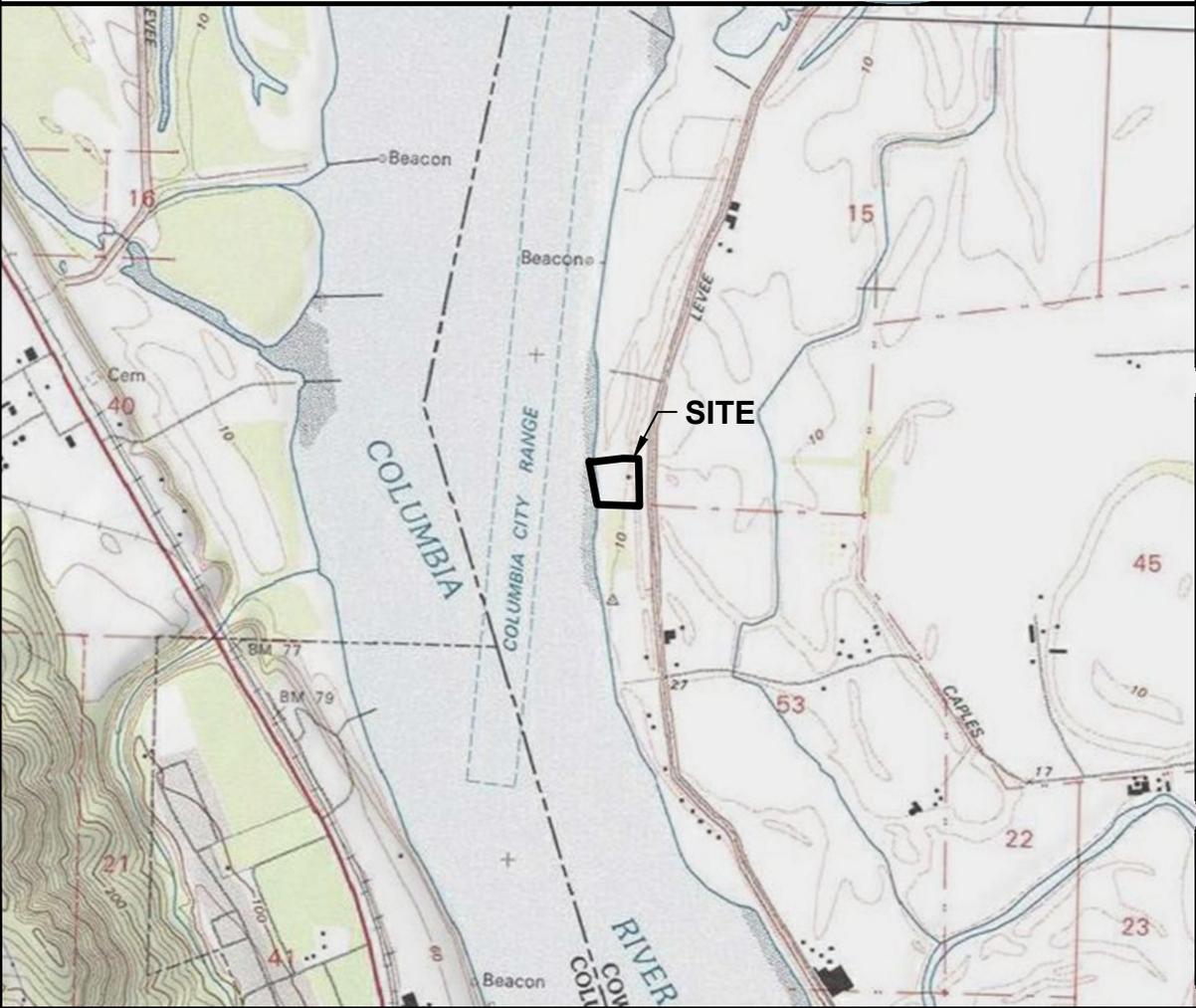




Figure 2
EXISTING CONDITIONS
Phase 2 Woodland Terminal Blending & Storage Facility
Columbia River Carbonates
Cowlitz County, Washington
Section 15, Township 5N, Range 1W, W.M.

DATE: 2/3/25
DWN: MPM
REQ. BY: LS
PRJ. MGR: LH
CHK:
PROJECT NO:
558.15

1157 3rd Ave., Suite 220A
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NOT TO SCALE

LEGEND:

-  Approx. Site Boundary
-  Approx. OHWM-under SMA (Shorelines Management Act)
-  Approx. 200-foot Shoreline Jurisdiction



Columbia River

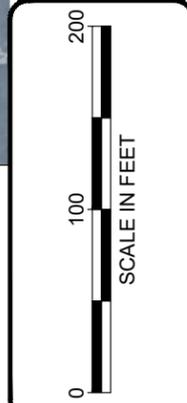


LEGEND:

- Site Boundary
- OHWM-under SMA (Shorelines Management Act)
- 200-foot Shoreline Jurisdiction
- Existing Sound Wall
- Existing Large Woody Debris (4)
- Existing Enhancement Areas
- 12.7 Corps 12.7' Elevation
- 1 Photo Point Location

NOTE: Corps 12.7' CRD elevation from survey by Gibbs & Olson (9-17-2024).

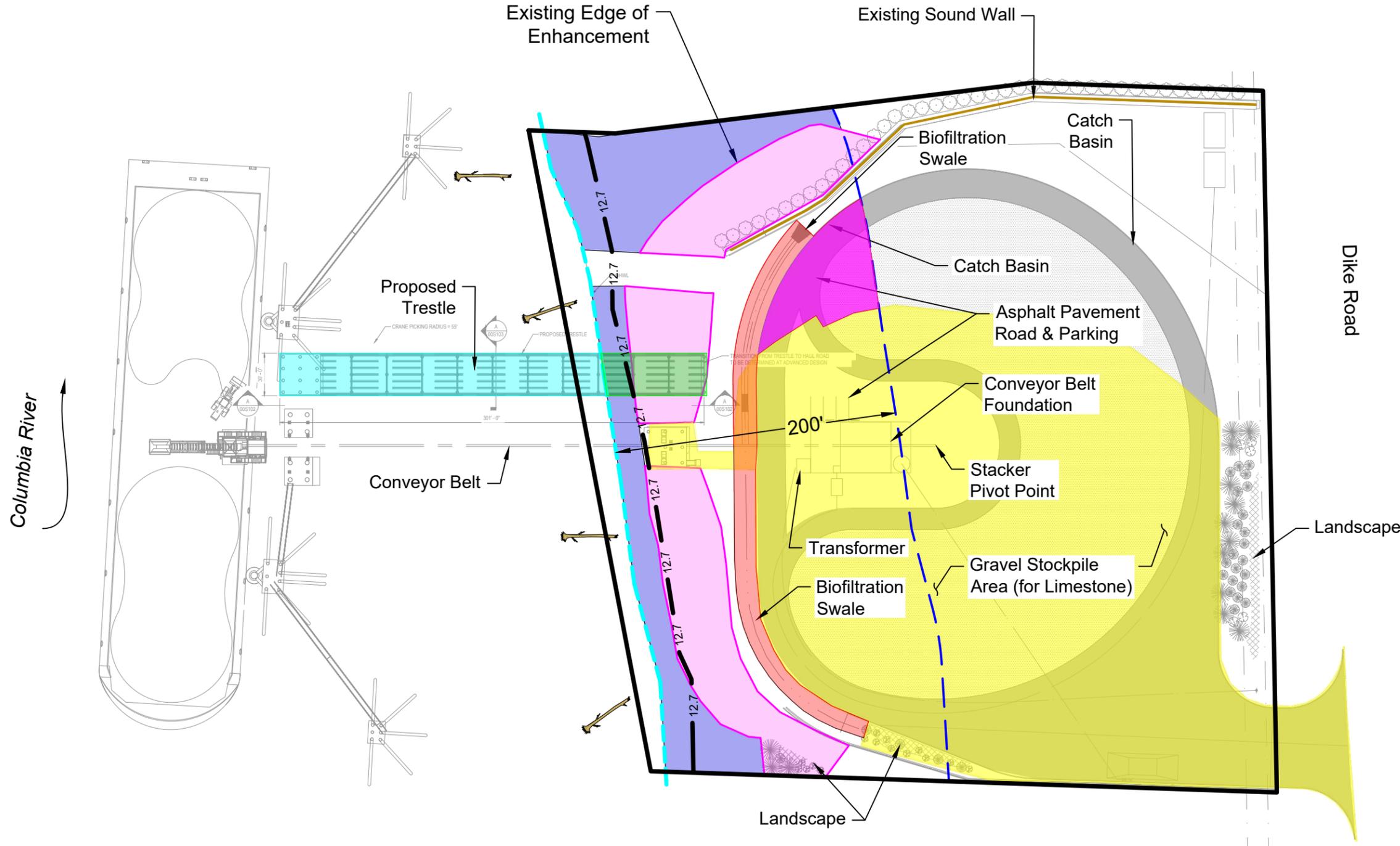
NOTE(S):
1. Aerial from Google Earth™ (5/14/2023).



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Figure 3
EXISTING CONDITIONS PLAN VIEW
Phase 2 Woodland Terminal Blending & Storage Facility
Columbia River Carbonates
Cowlitz County, Washington
Section 15, Township 5N, Range 1W, W.M.



LEGEND:

- Site Boundary
- OWHM-under SMA (Shorelines Management Act)
- 200-foot Shoreline Jurisdiction
- Existing Enhancement Areas
- Corps 12.7' Elevation
- Existing Large Woody Debris (4)
- Existing Sound Wall
- Existing Enhancement Areas
- Mitigation Area (18,191 sq. ft./0.42 ac.)
- Existing Improvements
- Temporary Shoreline Impact (6,144 sq.ft. \ 0.14 ac.)
- Permanent Shoreline Impact (4,573 sq.ft. \ 0.10 ac.)
- Trestle Impact Waterward of OWHM (6,899 sq. ft. \ 0.16 ac.)
- Trestle Impact Landward of OWHM (2,191 sq. ft. \ 0.05 ac.)

NOTE: Corps 12.7' CRD elevation from survey by Gibbs & Olson (9-17-2024).

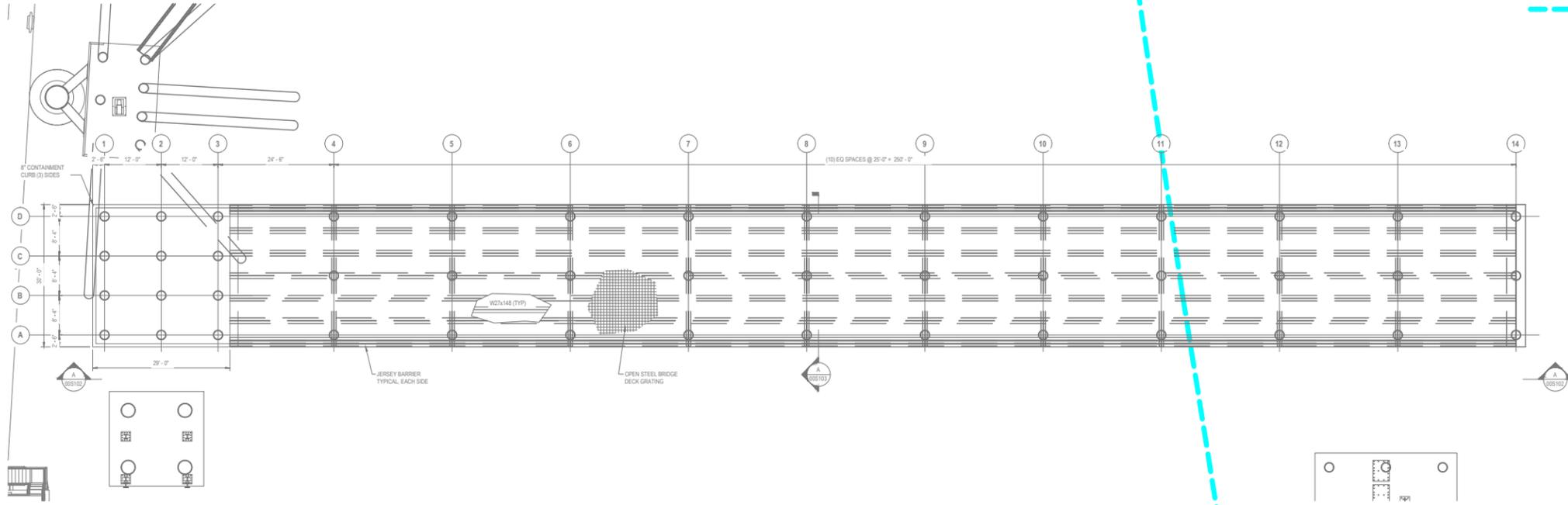


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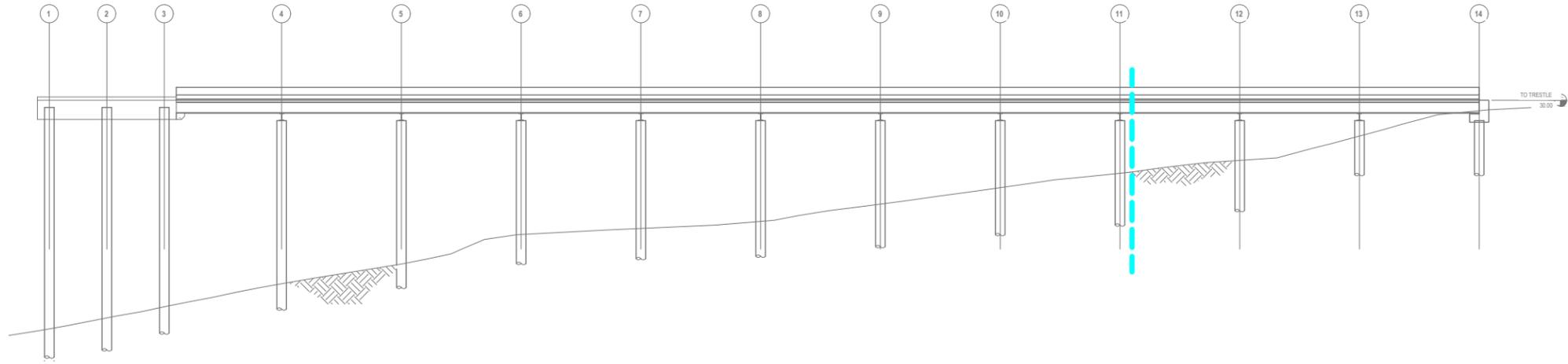
Figure 4
PROPOSED CONDITIONS
 Phase 2 Woodland Terminal Blending & Storage Facility
 Columbia River Carbonates
 Cowlitz County, Washington
 Section 15, Township 5N, Range 1W, W.M.

C:\Users\Emilio\Box\ELSWA\Cowlitz\County\0558-15-Phase 2 Woodland Terminal Blending & Storage Facility\0558.15-Figures CAD Only\558.15_PR.dwg Emilio

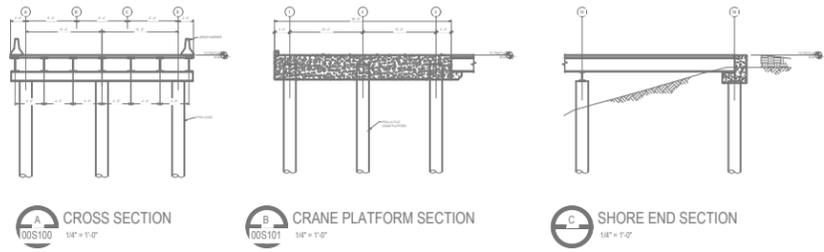


PROPOSED TRESTLE - PLAN VIEW

LEGEND:
 OHWM-under SMA (Shorelines Management Act)



PROPOSED TRESTLE - ELEVATION VIEW

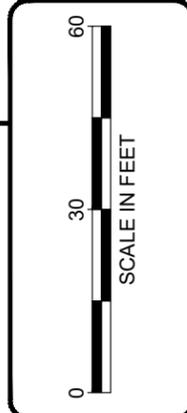


PROPOSED TRESTLE - SECTIONS

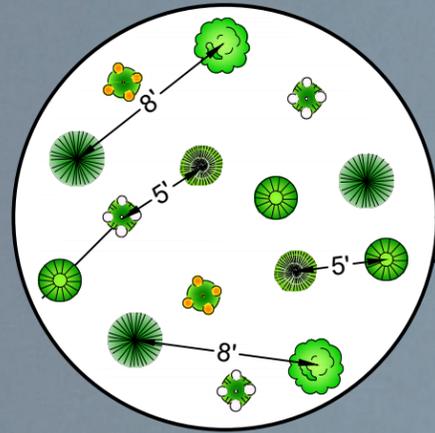
Figure 5
PROPOSED TRESTLE
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NOTE:
 1. Corps 12.7' CRD elevation will be provided
 Trestle site plan from CRC (12/11/2024).

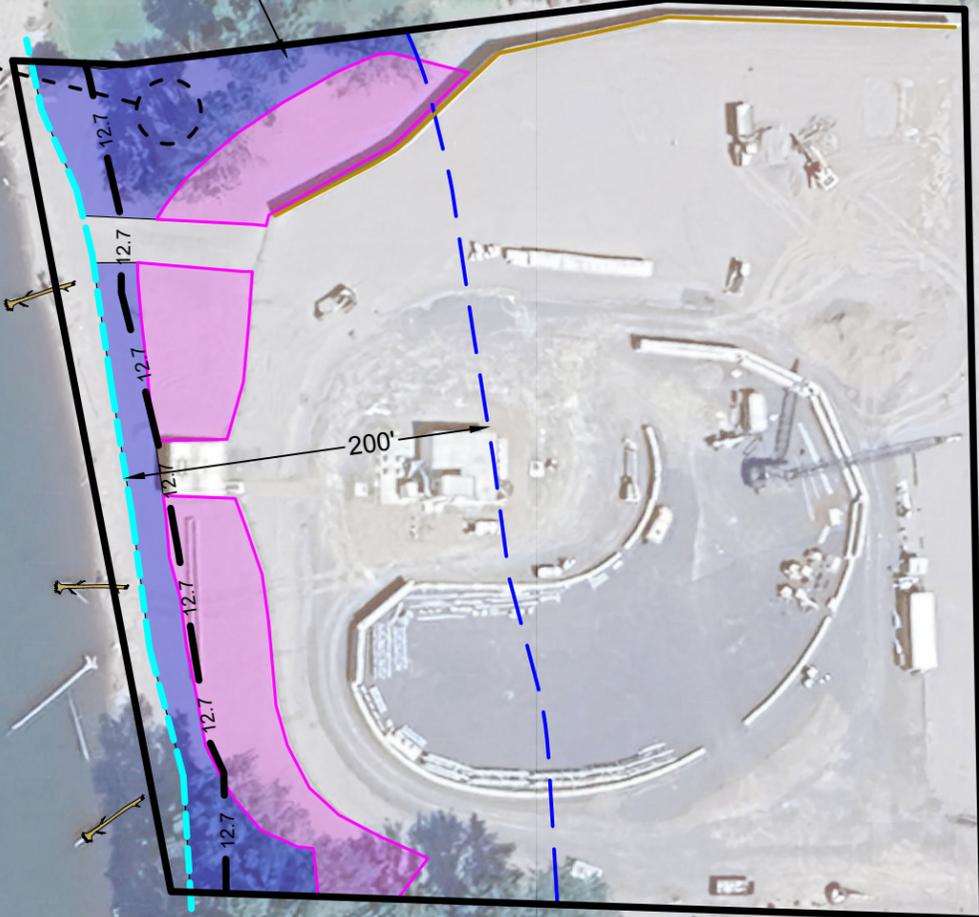


Existing Edge of Enhancement

Columbia River

Dike Road

Common Name	Scientific Name	Size	Spacing on Center	Quantity
Trees				
Black cottonwood	<i>Populus trichocarpa</i>	1-gallon	8 feet	45
Shore pine	<i>Pinus contorta</i>	1-gallon		45
Total Trees:				90
Shrubs				
Common snowberry	<i>Symphoricarpos albus</i>	1-gallon	5 feet	180
Serviceberry	<i>Amelanchier alnifolia</i>	1-gallon		160
Mock orange	<i>Philadelphus lewisii</i>	1-gallon		60
Oceanspray	<i>Holodiscus discolor</i>	1-gallon		120
Total Shrubs:				520
Total Plants to be Installed:				610



LEGEND:

- Site Boundary
- OHWM-under SMA (Shorelines Management Act)
- 200-foot Shoreline Jurisdiction
- Existing Enhancement Areas
- Existing Large Woody Debris (4)
- Existing Sound Wall
- Corps 12.7' Elevation
- Mitigation Area (0.42 ac./18,191 sq. ft.)

NOTE:

- Corps 12.7' CRD elevation from survey by Gibbs & Olson (9-17-2024).
- Aerial from Google Earth™ (5/14/2023).



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Figure 6
PROPOSED MITIGATION AND PLANTING PLAN
 Phase 2 Woodland Terminal Blending & Storage Facility
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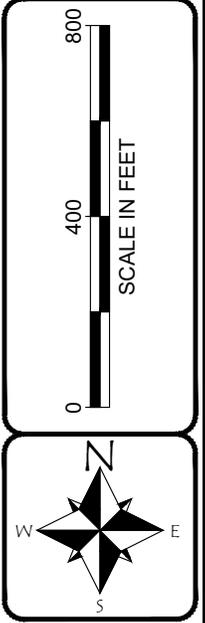


LEGEND:

-  Site Boundary
-  NRCS Soil Boundary
- 17** Caples silty clay loam, 0 to 3 percent slopes. **Hydric.**
- 32** Clato silt loam, 0 to 3 percent slopes. Not hydric.
- 172** Riverwash. **Hydric.**
- 263** Water

NOTE(S):

1. Map provided on-line by NRCS at web address:
<http://websoilsurvey.nrcs.usda.gov/app/>




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Figure 7
NRCS SOIL SURVEY
Phase 2 Woodland Terminal Blending & Storage Facility
Columbia River Carbonates
Cowlitz County, Washington
Section 15, Township 5N, Range 1W, W.M.



LEGEND:

-  Site Boundary
- Wetlands**
-  Freshwater Emergent Wetland
-  Freshwater Forested/Shrub Wetland
-  Riverine

- R1UBV** Riverine, tidal, unconsolidated bottom, permanently flooded-tidal.
- R1USQ** Riverine, tidal, unconsolidated bottom, regularly flooded.
- R4SBC** Riverine, intermittent, streambed, seasonally flooded.

NOTE(S):

1. Map provided on-line by US Fish & Wildlife Service at web address:
<https://www.fws.gov/program/national-wetlands-inventory/wetlands-mapper>

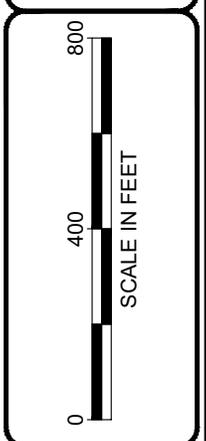
Figure 8
USFWS NATIONAL WETLANDS INVENTORY
 Phase 2 Woodland Terminal Blending & Storage Facility
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 Cowlitz County, Washington
 Section 15, Township 5N, Range 1W, W.M.

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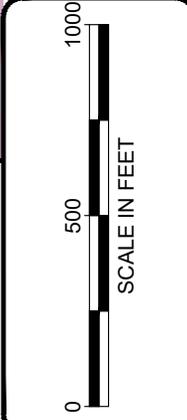
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LEGEND:

- Site Boundary
- Parcel Boundary
- Chinook, *Oncorhynchus tshawytscha*, Occurrence
- Spring Chinook, *Oncorhynchus tshawytscha*, Occurrence/Migration
- Dolly Varden/ Bull Trout, *Salvelinus malma*/S. confluentus, Occurrence/Migration
- Pink Salmon Odd Year, *Oncorhynchus gorbuscha*, Occurrence/Migration
- Coho, *Oncorhynchus kisutch*, Occurrence/Migration
- Fall Chinook, *Oncorhynchus tshawytscha*, Occurrence/Migration
- Chum, *Oncorhynchus keta*, Occurrence
- Summer Chinook, *Oncorhynchus tshawytscha*, Occurrence/Migration
- Winter Steelhead, *Oncorhynchus mykiss*, Occurrence/Migration
- Fall Chum, *Oncorhynchus keta*, Occurrence/Migration
- White Sturgeon, *Acipenser transmontanus*, Occurrence/Migration
- Sockeye, *Oncorhynchus nerka*, Occurrence/Migration
- Summer Steelhead, *Oncorhynchus mykiss*, Occurrence/Migration
- Resident Coastal Cutthroat, *Oncorhynchus clarki*, Occurrence/Migration
- Green Sturgeon, *Acipenser medirostris*, Occurrence/Migration
- Waterfowl Concentrations, Regular Concentration
Riverine, Aquatic Habitat
- Big brown bat, *Eptesicus fuscus*, Occurrence

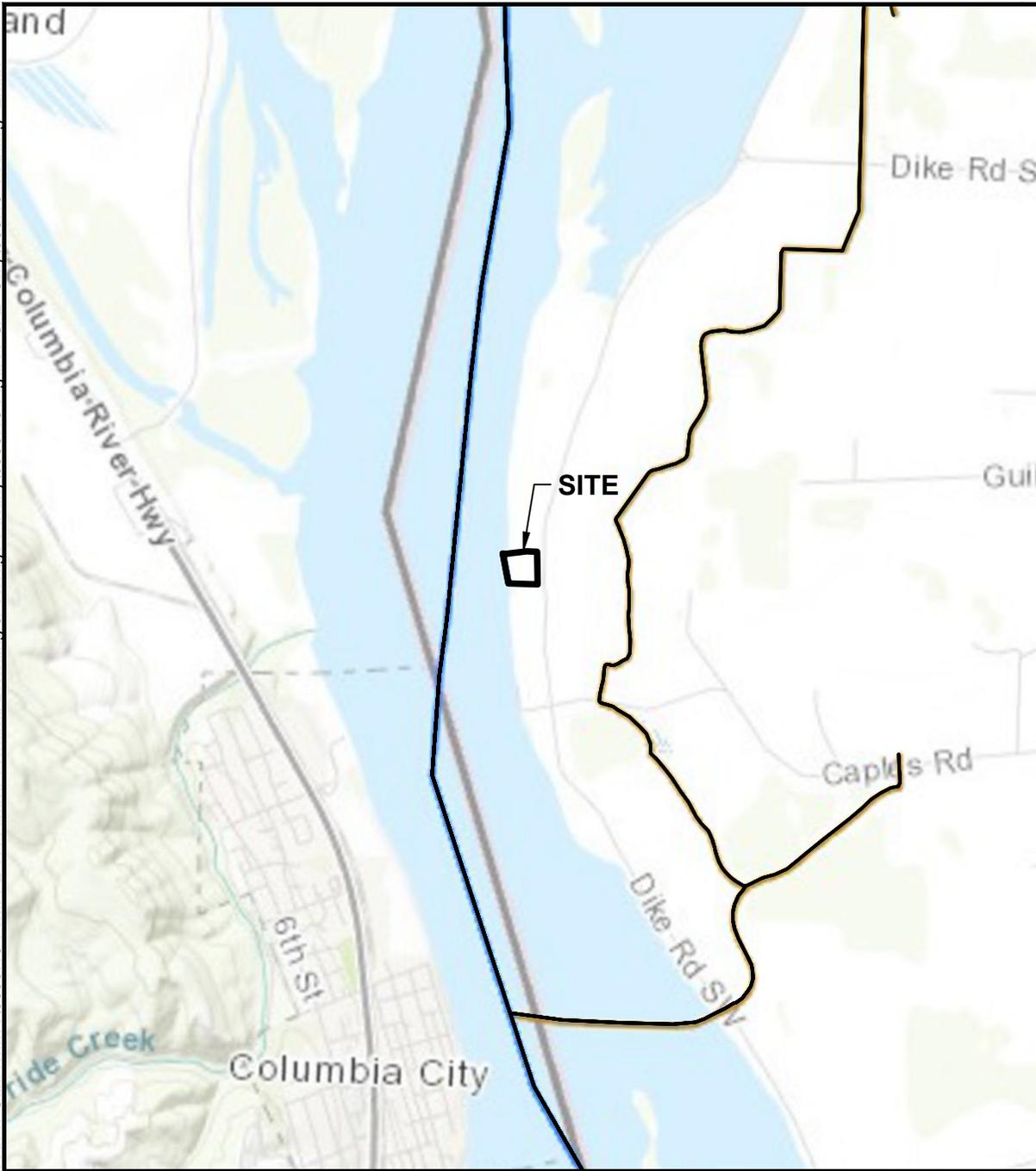


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Figure 9
WDFW PRIORITY HABITATS AND SPECIES
 Phase 2 Woodland Terminal Blending & Storage Facility
 Columbia River Carbonates
 Cowlitz County, Washington
 Section 15, Township 5N, Range 1W, W.M.

NOTE: Map provided on-line by Washington State Department of Fish & Wildlife at web address: <http://apps.wdfw.wa.gov/phsontheweb/>

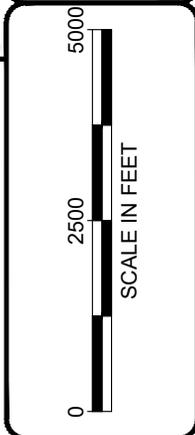


LEGEND:

- Site Boundary
- Hydro DNR**
- DNR Flowline
- Type S Waters
- Type F Waters
- Type N Waters
- Non-Typed Waters
- Water Type Unknown

- WRIs & WAUs**
- WRIA Boundaries
 - Watershed Administrative Units

- Fish Distribution**
- All SWIFD Listed Species
 - Fall Chum, Spring Chinook, Summer Chinook, Fall Chinook, Coho, Pink Odd Year, Rainbow, Sockeye, Summer Steelhead, Winter Steelhead, Coastal Cutthroat Trout, Green Sturgeon, Largemouth Bass, Mountain Whitefish, Native Char/Dolly Varden/Bull Trout, Walleye, White Sturgeon



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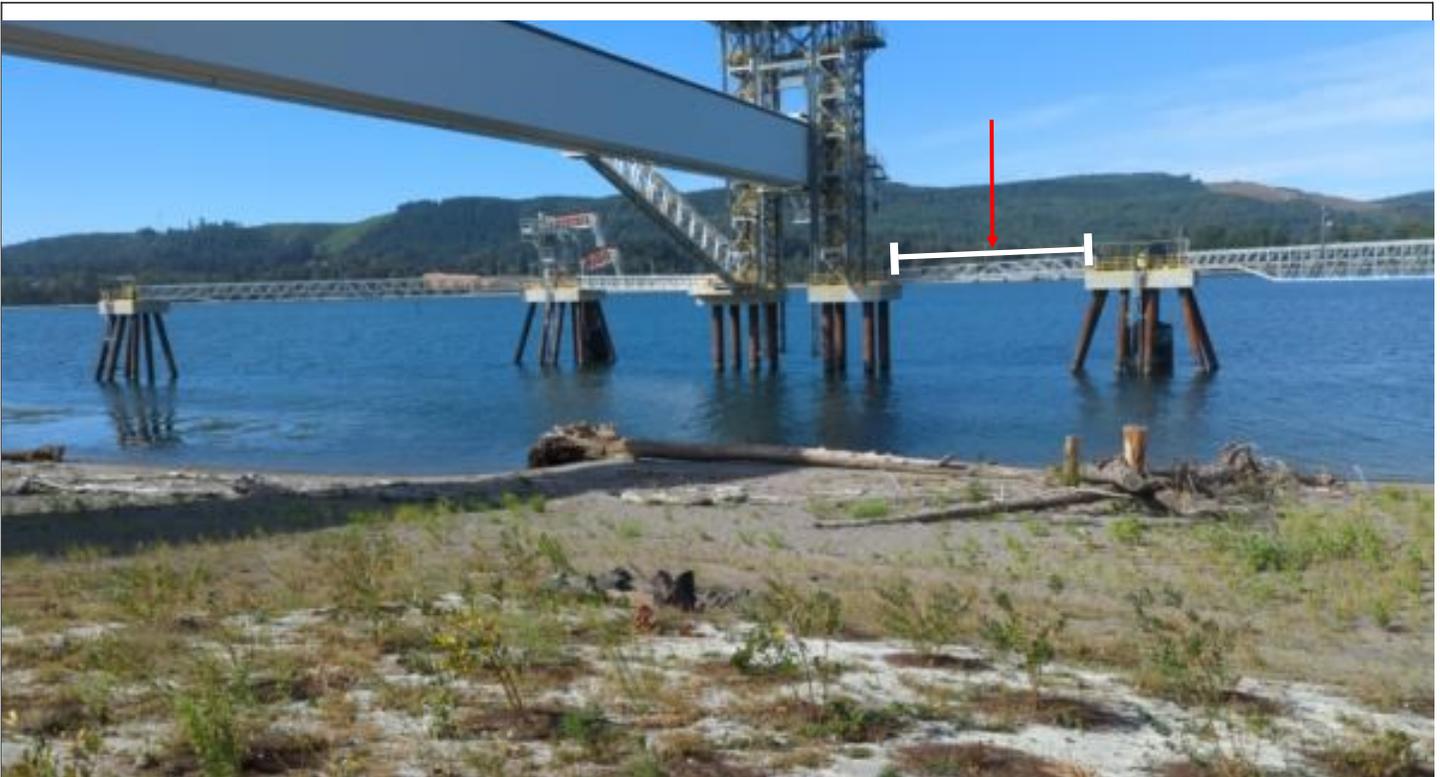
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Figure 10
 STATEWIDE WASHINGTON INTEGRATED FISH DISTRIBUTION (SWIFD)
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 Cowlitz County, Washington
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NOTE:

Map provided on-line by WA State Dept of Fish & Wildlife at web address: <https://geo.nwifc.org/swifd/>



Above: View southwest from Photo Station 1 on 9/10/24, showing proposed trestle location. Trestle will connect to existing structure in the vicinity of the white bars in the photo.

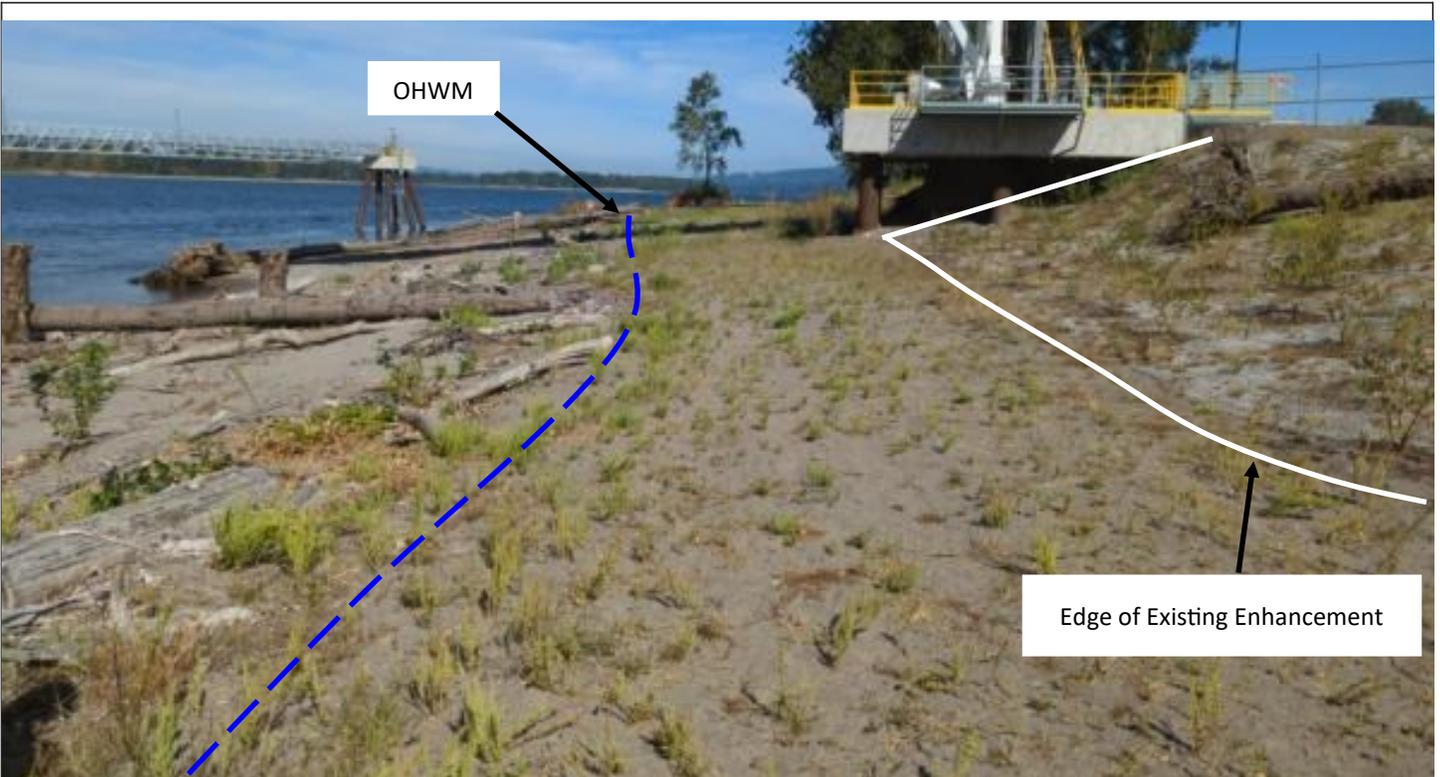
Below: View south from Photo Station 2 on 9/10/24, showing proposed trestle location. Trestle will connect to uplands in the vicinity of the white bars in the photo.



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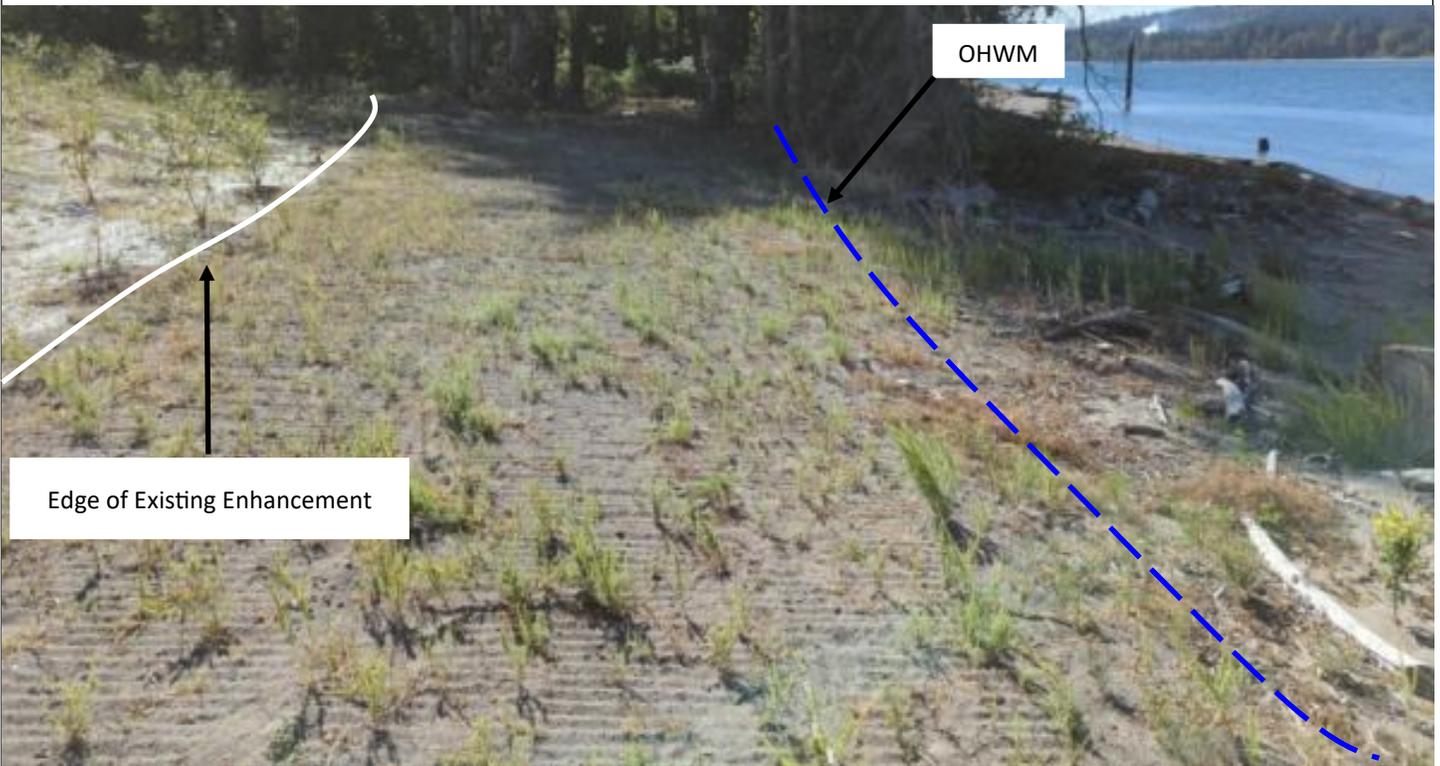
DATE: 9/10/24
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PRJ. MGR: LH
PROJ.#: 558.15

Photoplate 1
Site Photos
Phase 2 Marine Terminal Permitting
Columbia River Carbonates
Lewis County, Washington



Above: View north from Photo Station 3 on 9/10/24.

Below: View south from Photo Station 3 on 9/10/24.



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Above: View west from Photo Station 4 on 9/10/24, showing proposed enhancement area in riparian habitat.
 Below: View east from Photo Station 5 on 9/10/24, showing proposed enhancement area in riparian habitat.





Above: View south from Photo Station 5 on 9/10/24, showing proposed enhancement area in riparian habitat.

Below: View west from Photo Station 5 on 9/10/24, showing proposed enhancement area in riparian habitat.



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**Photoplate 4
 Site Photos**
 Phase 2 Marine Terminal Permitting
 Columbia River Carbonates
 Lewis County, Washington

APPENDIX A

ROUTINE DETERMINATION METHOD AND PLANT INDICATOR RATING DEFINITIONS

ROUTINE DETERMINATION METHOD

The Routine Determination Method is defined according to the U.S. Army Corps of Engineers' 1987 *Wetland Delineation Manual* and the *Regional Supplement to the Corps of Engineers' Wetland Delineation Manual* (Environmental Laboratory 1987); *Western Mountains, Valleys, and Coast Region (Version 2.0)* (Corps 2010). The Routine Determination Method examines three parameters – vegetation, soils, and hydrology – to determine if wetlands exist in a given area. Hydrology is critical in determining what is a wetland, but is often difficult to assess because hydrologic conditions can change periodically (hourly, daily, or seasonally). Consequently, it is necessary to determine if hydrophytic vegetation and hydric soils are present, which would indicate that water is present for a long enough duration to support a wetland plant community. By definition, wetlands are those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.

VEGETATION INDICATOR STATUS

The indicator status, following the scientific names of plant species, indicates the likelihood of the species to be found in wetlands according to the *National Wetland Plant List Indicator Rating Definitions* (Corps 2012). Listed from most likely to least likely to be found in wetlands, the indicator status categories are:

- **OBL** (obligate wetland) - occur almost always under natural conditions in wetlands.
- **FACW** (facultative wetland) - usually occur in wetlands, but occasionally found in non-wetlands.
- **FAC** (facultative) - equally likely to occur in wetlands or non-wetlands.
- **FACU** (facultative upland) - usually occur in non-wetlands, but occasionally found in wetlands.
- **UPL** (obligate upland) - occur almost always under natural conditions in non-wetlands.
- **NI** (no indicator) - insufficient data to assign to an indicator category.

APPENDIX B

MEMORANDUM FROM DESIGN ENGINEER – TOWER AND DOLPHIN PLATFORM STRENGTH



Technical Memorandum

Date: Tuesday, April 24, 2018

Project: Columbia River Carbonates Marine Terminal

To: Columbia River Carbonates, Attn: Reed Sherar

From: Jenny Carlson, PE, SE

Subject: Light Permeable Surfaces for In-water Structures

Introduction

Columbia River Carbonates (CRC) is proposing a new marine terminal on the Columbia River near Woodland, WA. The proposed in-water structures are designed to have either concrete or steel deck solid horizontal surfaces. It is our understanding a regulatory agency has requested the solid surfaces be replaced with a surface that is light permeable, such as open steel framing. This memorandum is intended to explain the purposes and design criteria for the in-water structures for the proposed marine terminal and how revising the proposed structure details to incorporate light permeable construction for horizontal surfaces will impact their design, construction, and use.

I am the structural engineer of record for the design of the in-water structures including the dolphins, hoist tower platforms, and the pedestrian access catwalks. I have been designing similar in-water structures on the Columbia River for 25 years. I will address each of the structure types and the feasibility for providing light permeable construction below.

Dolphins

There are four dolphin structures proposed for the CRC marine terminal. Two of the structures are mooring dolphins, one each at the extreme upstream and downstream ends of the terminal. The dolphin structures consist of steel pipe piles driven into the river bottom at angles (“batter” piles), a pile “cap”, and a bollard or capstan. The bollard is used to tie marine vessel mooring ropes or “lines” around so the vessel cannot move away from the terminal. We anticipate the tension (pulling) load in the mooring line will be 70 metric tons (MT), or approximately 154,000 pounds. The pile cap is a horizontal structure that ties all the piles and the bollard together. The cap provides a path for loads to travel from the bollard to the piles, which are anchored in the ground.

The other two dolphin structures proposed are breasting dolphins in the central area of the terminal berthline. These dolphin structures also consist of batter piles driven into the river bottom, a pile cap, and a small bollard. In addition, there will be a fender system mounted on the side of the dolphin facing away from the shoreline. The fender system will consist of rubber elements that compress and absorb load when a marine vessel berths or “parks” against dolphin. The vessel can only stop by bumping into the dolphin, causing an impact load. The



anticipated impact load for the breasting dolphin is approximately 300,000 pounds. The small bollard will be used for “spring” lines, which are mooring ropes that run almost parallel to the vessel and keep it from moving up and down stream. The load on the bollard will be approximately 40,000 pounds. Similar to the mooring dolphins, the pile cap is a horizontal structure that ties the piles, bollard, and fender system together and provides a load path from the bollard and fender system to the piles.

The material chosen for the pile cap construction for all of the dolphins is solid concrete that is 4 feet thick. Concrete was chosen for this design because it is relatively homogeneous and provides a simple solution for large loads to be passed from the point of application (bollard or fender system) to the point of resistance (piles). The tops of the piles must be held tightly in position, to prevent rotation of the pile tops. We call this “fixity”. Casting the piles into the deep concrete cap accomplishes this requirement. Another consideration for the use of a concrete pile cap is that it is difficult to install piles precisely where they need to be. A concrete cap is accommodating for out of tolerance piles.

It is possible to design an open steel framed pile cap that would provide adequate structural integrity for these dolphins. However, the load path between the bollards, fender system, and piles would be complex to design. The piles are battered in different directions to allow mooring loads in various directions. Tying the piles to the steel framing at an angle to ensure fixity and allowing for out of tolerance pile installation would require field framing and cutting to make sure the steel pieces fit together. Then extensive on site welding would be required between the piles and framing. The welders would be working over the water and likely during bad weather conditions. This will impact the integrity of the welds and the performance of the structure. The steel framing will likely be at least 4 feet deep, heavy sections, and quite closely spaced. The permeability of the pile cap will be very limited. The steel will also require coating to prevent corrosion, which will create a long term maintenance requirement. It is anticipated the cost of design and construction will increase if a steel frame pile cap is used.

Hoist Tower Platforms

The proposed tubular gallery conveyor system will be supported over the water between two steel framed towers. The proposed towers will extend approximately 70 feet above the platforms which support them. There will be a hoist system with counterweights built into the tops of the two towers which will raise and lower the tubular gallery between the towers as unloading operations require. The weight from the tower steel, counterweights, and tubular gallery will be about 250,000 pounds on each of the tower support platforms. The horizontal loads from wind and earthquakes on the towers that will be resisted by the support platforms will be approximately 50,000 pounds on each platform.

The support platforms are horizontal deck type structures supported by vertical pipe piles. The material chosen for the support platform deck is solid concrete that is 4 feet thick. The reasons for choosing concrete are similar to the reasons stated above for the mooring dolphins. Concrete provides a simple load path from application to resistance, develops pile top fixity, and accommodates out of tolerance pile installation.



I have never seen an open steel frame used in lieu of concrete for a support platform deck over water for towers of this size. The magnitude of the loads being applied to the deck by each column in the tower will require very heavy and closely spaced steel beams and extensive field welding to transfer these loads through steel framing and into the piles. Permeability of the deck will be very limited. It is anticipated the cost of design and construction will be significantly higher to use steel framing for this hoist platform deck.

Catwalks

There are approximately 220 feet of 3 foot wide pedestrian walkways between the in-water structures proposed for this marine terminal. The catwalks are required to allow terminal personnel to assist in mooring vessels. The catwalks will be supported by long-span open steel tubular trusses. Two mid-span supports are proposed. Each mid-span support will be comprised of two battered pipe piles with a horizontal steel cap beam. The proposed deck material is "expanded metal" steel, which has minor openings and serrations for slip resistance.

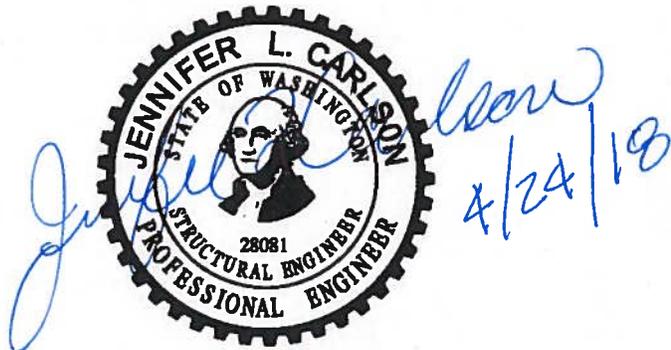
We understand a regulatory agency has requested the deck material be revised to a material with a minimum of 60% open area to allow light penetration. This could be done by installing a fiberglass grating product meeting the 60% requirement with embedded grit for slip resistance. There would be minor impact on design or overall construction cost to make this revision. Similar grating has been used successfully on recent Columbia River over-water catwalk installations.

Conclusion

The design complexities, performance concerns, and cost impacts associated with replacing solid horizontal concrete surfaces with open steel framing for the dolphins and hoist support platforms are significant. I would recommend discussing the issues addressed above with the regulatory agency and request approval to not make this design change. Revising the deck material for the catwalks to incorporate 60% open area is a reasonable design change that I would recommend CRC consider instituting.

Sincerely,

Jenny Carlson, PE, SE





ENDANGERED SPECIES ACT BIOLOGICAL ASSESSMENT FOR COWLITZ COUNTY

August 18, 2025



Phase 2 Woodland Terminal Blending & Storage Facility *Woodland, Cowlitz County, Washington*

Prepared for
Columbia River Carbonates
300 N Pekin Road
Woodland, Washington 98674
(360) 225-4105

Prepared by
Ecological Land Services
1157 3rd Avenue, Suite 220A • Longview, WA 98632
(360) 578-1371 • Project Number 0558.15

SIGNATURE PAGE

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



Lynn Simpson
Senior Environmental Scientist



Lacey Hoffmann
Professional Biologist

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Table 2 Aquatic Habitat Impact Summary.
Table 3 Endangered, Threatened, Proposed and Candidate Species with a No-Effect Determination.
Table 4 Endangered, Threatened, Proposed and Candidate Species with Suitable Habitat in the Action Area.
Table 5 Distances that Vibratory Pile-Driving Noise Will Exceed Behavioral Disturbance Levels for Fish.
Table 6 Distances that Impact-Hammer Pile Driving Noise Will Exceed Injury or Behavioral Disturbance Thresholds for Fish.

FIGURES (APPENDED)

- Sheet 1 Vicinity Map
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Sheet 3 Existing Conditions Plan View
Sheet 4 Proposed Conditions
Sheet 5 Proposed Mitigation and Planting Plan
Sheet 6 Construction Noise Impacts
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APPENDICES

- Appendix A Confined Bubble Curtain Details
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INTRODUCTION

This version of the biological assessment (BA) was created at the request of Cowlitz County planners and the Shoreline Hearing Examiner. This version does not contain all the requirements of a BA for Endangered Species Act (ESA) consultations but addresses project effects to only species and habitats included under the ESA that are required for addressing Cowlitz County's critical areas ordinance.

The critical areas section of the Cowlitz County Municipal Code only requires that species' management recommendations be followed. The code does not require describing project effects to any federal- or state-listed species, or critical habitats for federally listed species. Also, the action area described in this version of the BA does not include effects from additional barge trips from the Calder Mine on Prince of Wales Island in Alaska, through the Pacific Ocean, and up the Columbia River to the existing marine terminal in Woodland – or the return trip. Additionally, requirements under other federal acts, such as the Magnuson-Stevens Fishery Conservation and Management Act, are not included in this document. ELS is writing another version of the BA that will meet federal requirements to obtain a Section 10 permit for in-water work within Corps jurisdiction after Cowlitz County permits are approved. CRC will proceed with upland development and additional barge trips after the Cowlitz County permit approvals are complete. The in-water work, including the trestle, will not be constructed until all state and federal permits are approved.

Columbia River Carbonates (CRC) was established in 1985 as the first high-grade calcium carbonate production facility in the Pacific Northwest at its processing facility in Woodland, Washington. CRC provides high-bright slurry products to the pulp and paper industry for paper filler and coating applications that enable papermakers to significantly reduce the need for wood fiber by substituting calcium carbonate. Other markets include dry filler and pigment products for paint, PVC pipe, construction materials, and agricultural applications. This terminal ensures there is a continued, sustainable supply of high-grade, high-bright calcium carbonate that is delivered by barge from its exclusive marine-based mine on Calder Bay, Prince of Wales Island in southeast Alaska.

This proposed project, Phase 2 Woodland Marine Terminal Blending and Storage Facility, allows expanded storage and additional barge trips to continue receiving calcium carbonate stone to meet the increasing demands from specialized industrial customers and other markets in the Pacific Northwest. Improvements include proposed industrial improvements: upland expansion of the carbonate stockpile and haul road, a trestle for equipment access between a moored barge and land-based infrastructure, a concrete platform for a crane, and schedule revisions for barge deliveries.

ESA CONSULTATION HISTORY

This project has not undergone previous consultation under the Endangered Species Act (ESA) or Magnuson-Stevens Fishery and Conservation Management Act (MSA). However, the original marine terminal project underwent previous consultation (Corps Reference No. NWS-2013-834).

DESCRIPTION OF PROPOSED ACTION

LOCATION AND FEDERAL NEXUS

The project is located on the east bank of the Columbia River at 1903 Dike Road near Woodland, Washington in Cowlitz County, Section 15 of Township 5 North, Range 1 West of the Willamette Meridian (see Sheet 1). The project is at approximately River Mile (RM) 82.5 of the Columbia River within the 170800030306 6th field Hydraulic Unit Code and Water Resources Inventory Area 27 (Kalama/Lewis watersheds).

PURPOSE AND NEED

CRC has grown significantly since 2013 during the original permitting and design phase for this marine terminal. When the original project was conceived, CRC processed approximately 120,000 tons per year of material. Currently, CRC processes nearly 300,000 tons of material annually and has experienced a 6 percent annual growth in product demand over the time they have been in business. Additionally, CRC has been approached by a potential client that would require an additional 200,000 tons of calcium carbonate per year. At current capacity, the approved Woodland Terminal Blending and Storage Facility stockpile and work timing restrictions will not be able to handle the additional tonnage. For this reason, CRC is proposing to increase the number of barge trips per year, allow for a second wheel-loader to access the barge, shortening offload times increase barge offloading hours, increase the upland stockpile size, and install an access trestle to get equipment off the moored barges for maintenance or repairs.

The new trestle and crane will allow for a second wheel-loader to access the barge, shortening offload times and allowing equipment traveling on the barge to be offloaded for repairs and maintenance. The wheel-loader that travels with the barge requires regular maintenance with no way to move it on or off the barge at the marine terminal. CRC currently receives barges every two weeks. Every piece of equipment on the barge needs regular maintenance to ensure proper performance and to avoid malfunctions, but there is no crane at the Woodland terminal that can lift equipment off the barge. In 2024, CRC had to send the barge to Portland for equipment removal and repairs six times. One tugboat round trip is 90 river miles, so in 2024 there were an additional 540 river miles traveled. During a repair, it must return to Woodland and be moored in until the repairs are finished. The barge cannot be unloaded until repairs are made and a second trip to Portland is made to pick up the equipment. These trips will no longer be necessary after a large crane is available at the Woodland terminal. No trips to Portland will reduce diesel air emissions from tugboats and will also reduce barge moorage in Woodland while waiting for equipment repairs.

The trestle and crane platform are crucial to streamline significant increases of barge trips, it will reduce the amount of air emissions from fossil fuels, unloading schedules will be maintained, and there will be fewer moorage days in Woodland when equipment repairs are required.

PROJECT SETTING

The proposed marine terminal project is located on the east bank of the Columbia River on a floodplain approximately 4 miles long and 2 miles wide named the Woodland Bottoms. The City of Woodland is approximately 2.5 miles to the east. The Woodland Bottoms is primarily used for raising crops and for some livestock grazing.

The 3.75-acre project site is on the east side of the Columbia River extending about 500 feet along the riverbank, and the CRC processing facility in Woodland is approximately 2.25 miles west. Dike Road is used to access the site, and it is located on top of the dike. In the project area there is no zoning, and the comprehensive plan designation at the project site and adjacent properties along the shoreline is Heavy Manufacturing.

Ground elevation on the project site is about 25 feet (CRD). The 100-year flood elevation in the area is 21.4 feet Columbia River Datum (CRD). Dredging at this site will not be necessary to maintain adequate water depths. Moorage at the marine terminal is approximately 600 feet from the federal navigational channel, and is located in aquatic land managed by the Washington Department of Natural Resources (WDNR).

EXISTING CONDITIONS

The proposed project site consists of a fixed commercial offshore marine terminal with a fully enclosed overwater conveyor system (see Sheets 2 and 3). There are two berthing dolphins and two mooring dolphins. All the dolphins are connected with a fully grated walkway. The marine terminal accommodates a barge length of about 400 feet and 100 feet wide containing calcium carbonate (limestone) stones that are roughly 6 to 10 inches in diameter. The barge self-unloads with a loader that travels with the barge. The loader scoops stones and unloads them into a hopper, which transfers them to the conveyor that deposits them on land in a stockpile.

The conveyor is supported by two, pile-supported concrete platforms that support the hoist towers, one of which is in the water and the other is onshore. The conveyor is totally enclosed in a 12-foot-diameter tube gallery between the hoist tower over the water and the transfer tower on the land. Pedestrian access is provided inside the conveyor tube on both sides of the conveyor. At the landward end of the conveyor gallery, calcium carbonate is transferred to another conveyor and then transferred to a radial stacker with a pivoting arm, which distributes the rocks on the semicircular stockpile in a 180-degree radius spreading the product evenly on the stockpile. A front-end loader loads dump trucks from this stockpile, and then the trucks haul the limestone to the Woodland plant site.

It takes an average of 2 days to unload a barge. Barge unloading occurs during daylight hours approximately one to four times per month. It takes about 20 to 30 hours to unload the barge; however, unloading occurs across 1 to 3 days rather than at one time because working hours at the site are currently 7:00 am to 10:00 pm Monday through Friday, not 24 hours per day.

Limestone is stockpiled on land and trucked to the production facility on a daily basis. Truck trips are Monday through Friday during normal working hours. During a peak transporting period, it is expected that two trucks will travel to and from the site per hour. Over an 8-hour work day, there could be a total of 30 truckloads hauled to the processing facility. The haul route is from the marine terminal site to the processing facility south along Dike Road then east on Caples Road to Pekin Road.

Mobile equipment and employee vehicles are parked on the northwestern portion of the site. Other site features include a retaining wall on the south property line, a 2:1 sloped bioengineered

revetment along the shoreline that consists of riprap covered with topsoil, native plants, and four large wood structures along the shoreline. A permanent wheel-wash facility removes product dust from vehicle wheels prior to entry onto the Dike Road. CRC has a Fugitive Dust Control Plan, as part of their Authority to Operate air-quality permit from the Southwest Clean Air Agency.

There is a 9-foot-high sound wall is along the north side of the CRC property between the development site and the neighboring RV park to the north. A 10-foot landscaped buffer is on the north side of the sound wall, along Dike Road, and a portion of the south property line. Mature cottonwood trees with mostly native plants in the understory remain on the northwestern and southwestern property corners near the river.

CRC avoids scheduling barge unloading operations for about 3 weeks during peak salmon and steelhead runs. This avoids peak hog-line fishing that occurs in the area.

As a condition of the original shoreline permit, no more than 24 barges are currently unloaded each calendar year. Barges must be promptly moved as soon as practicable once unloading is completed. The barges used by the applicant will not take in or discharge ballast into the Columbia River.

PROJECT DESCRIPTION

CRC is proposing the following structural and operational changes to their marine terminal:

1. Expand Stockpile and Haul Road.
 1. Increase the asphalt stockpile pad.
 2. Expand asphalt haul road on north and west sides of the site.
 3. Reconstruct and extend the biofiltration swale and stormwater conveyance system.
2. Construct New Access Trestle.
 1. Construct an access trestle and associated piling from upland improvements over the beach and Columbia River to provide equipment ingress/egress from moored barges.
 2. Construct an earthen ramp and concrete platform between the trestle and the haul road.
3. Operational Changes.
 1. Increase the number of barge trips from 24 to 48 trips per year.
 2. Increase barge offload days to include Saturday and Sunday and for operations to be 24 hours per day.

Construction tasks and operational changes shown below may overlap each other or occur concurrently. Figures of project plans and cross sections are attached (see Sheets 4 and 5).

1. Expand Stockpile Pad and Haul Road

(Crane, dozer, backhoe, dump truck, delivery trucks, pickups) – 4 months, likely from May through August.

To accommodate the additional material, the stockpile area will be constructed with compacted gravel surrounded by a short wall of ecology blocks and expanded to the north from to current

37,867 square feet to approximately 62,945 square feet. The haul road will consist of a rock base with an asphalt surface be and will be expanded to encircle the entire stockpile area and.

A stormwater technical information report will be prepared that addresses treatment of the expanded impervious area, and the site was designed to meet requirements for biofiltration swales according to the Department of Ecology stormwater management manual (Ecology 2024). The impervious surface area increase will require the existing stormwater treatment biofiltration swale to be filled and the replacement swale will be expanded to encompass the expanded work area. Two catch basins and underground piping to the bioswale will be added, and the existing outfall will not be disturbed. Because the expanded area will be over 1 acre in size, a construction stormwater plan will be written and implemented.

2. Construct New Access Trestle and Ramps

(Crane barge, materials barge, tugboat, tender boat, hand tools, excavators, dump trucks, and compacting equipment, asphalt paver) – One month.

The new, fully grated trestle will be 30-foot-wide and 250 feet long and a new 29-foot by 30-foot concrete platform will be constructed to support a new crane to load/unload heavy equipment from barges for repairs and maintenance. A total of 45 piles will support the trestle and concrete platform. The grated trestle portion will have 33, 20-inch diameter piles and the 29-foot by 30-foot concrete platform will have 12, 24-inch diameter piles. All of the piles supporting the concrete platform will be waterward of OHW. Nine piles supporting the trestle will be landward of OHW, resulting in a project total of 24 piles waterward of OHW. The OHW Corps jurisdictional line for this river mile of the Columbia River was professionally surveyed again in September 2024.

A vibratory pile driver will be used to drive all piles into the sediment to the basalt-bedrock interface, or to the point of refusal. The project engineers estimate that an impact hammer will be necessary to finish driving all piling for this project. A confined bubble curtain will be used during impact-hammer driving to minimize underwater noise effects (see Appendix A).

A soft-start technique will be used for both 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. 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 hammering stops for more than 30 minutes. For impact hammering, 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).

After piling are in place, the new concrete platform will be constructed with cast-in-place concrete. No uncured concrete will be allowed to enter the river. Framing for the trestle bridge section will be installed, and then the fully grated decking and railing will be attached to the framing. Grating will allow over 60 percent light penetration.

A new 30-foot wide by 36-foot long earthen ramp (750 square feet) will connect the haul road to the trestle. The ramp will be completely located landward of OHW. It will be constructed of an

aggregate base from a local source using excavators, dump trucks, and compacting equipment, then it will be paved with asphalt to prevent rutting.

The concrete platform is necessary to support the new heavy crane and cannot be placed on a grated surface. During the original marine terminal consultation, the NMFS representative asked why some overwater surfaces were proposed to be concrete and not proposed to be fully grated. The CRC design engineer replied with a memorandum (see Appendix B) that explains the difficulties associated with designing platforms on the dolphins to have fully grated surfaces. To summarize the reply, a grated surface would require significant steel framework to provide strength, which would block light penetration. Concrete provides the needed strength with fewer environmental impacts during construction and less long-term maintenance when compared to steel framing. For these reasons, the crane platform must be concrete and cannot be placed on a grated surface.

CRC sometimes has to repair or maintain heavy equipment that travels with the barge, but there is no crane at the Woodland terminal that can lift it. In 2024, equipment on the barge required repairs, requiring a tug to take the barge to Portland so a large crane could remove the equipment and then a truck could take the equipment to a nearby repair shop. After repairs, the reverse procedure occurs to take the barge back to Woodland.

Work lighting will be used seasonally only under low-light or no-light conditions during mornings and early evenings during the equipment loading/unloading process. Work lights will be directed onto the crane unloading area and trestle, and they will only be used as needed.

3. Operational Changes

Increase Barge Trips and Offloading Hours

The current number of barge trips were limited during the original shoreline substantial development permit process with Cowlitz County at 24 barge trips per year. To accommodate approximately an increase of 200,000 tons of additional calcium carbonate each year, the number of barge trips will need to be doubled to 48 per year.

Currently, barge operations are conditioned in the Hearing Examiner's decision (No. 13-0948) to occur from 7:00 a.m. to 10:00 p.m., Monday through Friday, excluding state holidays. That decision limited barge trips to 24 per year with each barge being moored for no more than four days. Limiting barge unloading to four days between Monday and Friday can be problematic when a late-week barge arrives. If a barge arrives on Friday and unloading cannot begin, the barge must remain moored until Monday, losing two out of the four allotted days. This severely limits the hours in which offloading can occur and if maintenance or repairs are required to the barge or offloading equipment, then too much time can be lost and the offloading window will run out.

Barge unloading will take place during daylight hours approximately two to eight times per month. It takes about 20 to 30 hours to unload the barge over 1 to 3 days.

CRC proposes to balance the increased demand for material with the requirements of their current permit while also being conscientious of surrounding properties and activities. The proposed 48 barge trips per year will follow these general guidelines:

- Barge offloading operations will occur Monday through Sunday, 24 hours per day.
- Barge offloading operations will continue to not occur during the following holiday weekends: Memorial Day, Independence Day, and Labor Day.
 - o Holiday weekend means the three-day weekend for Memorial Day and Labor Day. The holiday weekend in relation to Independence Day (Day) depends on the year and means the following: (1) the entire week when the Day falls on a Wednesday; (2) a four day weekend when the Day falls on a Tuesday or Thursday; (3) a three-day weekend including Friday when the Day falls on a Friday or Saturday; and, (4) a three-day weekend including Monday when the Day falls on a Sunday or Monday.

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. Stockpiled materials used for construction will be located on the barge or on the property. The construction SWPPP will be followed to avoid aquatic effects due to stormwater runoff from stockpiles or from the site during construction. There will be no traffic detours, and no soils will be taken offsite for disposal.

Interrelated Activities

Interrelated activities are a part of a larger action and depend on the larger action for their justification. They include actions outside of the Corps' jurisdiction and/or actions that do not need a Corps permit. For this project, interrelated activities are listed below:

- Increased barge moorage time by 48 days per year.
- Increased truck traffic to the Woodland processing facility along the current haul route.
- Reduced barge trips to Portland to repair or maintain heavy equipment that travels with the barge. There is no crane in Woodland that can lift the equipment off the barge.
- Mitigation for this project is proposed.

MITIGATION SUMMARY

Proposed mitigation will provide a native tree and shrub buffer between the upland operations portion of the project and the shoreline (see Sheet 4 and ELS 2025). A total of 0.42 acres of riparian habitat will be enhanced. Shrub and tree species were selected based on native vegetation that is commonly found in Columbia River floodplains, thrive in sandy soils, and can tolerate sun for most of the day. This vegetation will help to create a natural buffer between the upland development and the Columbia River, as well as a buffer between surrounding recreation and the development.

IMPACT AVOIDANCE AND MINIMIZATION MEASURES

The project has been designed to avoid and minimize impacts to habitats in the vicinity of the project area. Due to the proposed changes, complete avoidance is not possible. In addition to avoidance and minimization measures, the nature of the product to be delivered is an important

factor when addressing how to minimize dust or spillage of calcium carbonate stones during delivery. Aquatic toxicity is very low for calcium carbonate. The entire length of the overwater conveyance system between the barge and shore is enclosed in a 12-foot-diameter steel tube, thereby eliminating the chance of material falling into the river. The construction barge, delivery barges, and tugboats are required to have spill pollution prevention plans and on-board spill-containment booms, so the chance of contaminants entering the aquatic environment or traveling far from additional barge and tugboat presence is low.

Fundamental design decisions were made to avoid and minimize project impacts while still meeting project needs. The following list summarizes general avoidance and minimization measures considered during project design:

1. Minimizes aquatic impacts: The fully grated trestle decking allows for light penetration and is raised elevation off the water, which reduces water shading.
2. Minimizes overwater lighting: Work lights will be directed only to work areas and will be used only when equipment is being loaded/unloaded during times of low natural light.
3. Reduces water and air pollution from tugboats: River miles required to move barges past the Woodland site to Portland by tugs will be reduced by 90 miles per round trip. This will reduce water and air pollutants emitted by tugboats.
4. Minimizes barge moorage impacts: Barge offloading will be limited to an average of 48 barges per year or about four days per month. Having land access to the barge will allow for a second front-wheel loader to be placed on the barge, reducing barge offloading and moorage time by up to two days per offloading event.
5. Avoids and minimizes stormwater impacts: A stormwater plan will be implemented that treats stormwater runoff from additional impervious surfaces to current standards. Because the disturbed area will be over 1 acre in size, a construction stormwater plan will be written and implemented.
6. Avoids and minimizes impacts to recreational hog-line fishing: Barge offloading is limited to 24 barges per year, and offloading is prohibited on the Memorial Day, Independence Day, and Labor Day holiday weekends. CRC is committed to using its best efforts to avoid offloading for up to three additional weeks during peak hog-line fishing as determined each year.
7. Avoids interfering with beach access: The trestle and platform elevation will continue to allow safe passage for wildlife and pedestrians along the sandy beach.

The following best management practices (BMPs) will be followed during construction to further avoid and minimize habitat impacts:

General

8. Construction equipment will be inspected for leaks daily.
9. Land-based construction will occur mainly during the dry season (May through October).

10. The staging and material storage areas will be in upland areas of the site.
11. All bare soils will be mulched with certified weed-free straw after ground disturbance.
12. Conditions in local, state, and federal permits will be followed.
13. No pollutants, such as contaminated water, silt, welding slag, sandblasting abrasive, or grout cured less than 24 hours will contact the water.

In-Water

14. The in-water work window of October 1 through December 15 will be observed.
15. Barges will not “ground out” at any time.
16. Contractors will have a spill containment and pollution control plan, and employees will be trained in its implementation.
17. The contractor will maintain an oil-absorbing floating boom around in-water and overwater work areas.
18. No debris will be allowed to enter the river from the construction barge or accessory boats.
19. Pile driving with an impact hammer will take place within a confined bubble curtain and a soft-start technique will be used to allow aquatic species to relocate.
20. The barges used by the applicant shall not take in ballast water or release ballast water into the Columbia River.
21. Barges and tugboats will have spill response plans that will be implemented if necessary.

PROJECT TIMING

Construction activities will be limited to daylight hours and from 7:00 a.m. to 6:00 p.m., Monday through Friday. Pile driving will be the only in-water work, which will occur within the current Columbia River in-water work window between October 1 and December 15. Pile driving will take approximately 5 to 10 days (up to 2 calendar weeks). Construction work over the water may occur during any month before permit expiration.

Upland work away from the shoreline will take approximately 6 months to complete and includes earthwork, grading, and expanding the stockpile, haul road, and stormwater system. The electrical and mechanical equipment will then be installed. After approval of Cowlitz County permits, the applicant will only move forward with the upland improvements and additional barge trips. In-water work will be completed only after all state and federal authorizations have been received.

ACTION AREA

NOISE ASSESSMENT

Background information involving noise-impact assessments is explained fully in the latest *WSDOT Biological Assessment Preparation, Advanced Training Manual, Version 01-2025* (WSDOT 2025).

IN-AIR NOISE

Equipment used for project construction will create noise in the air from the pile-driving barge, tow boat, chain saw, and hand tools. In-air noise from vibratory pile driving is estimated at 101 dBA, which is similar to the noise from a garbage truck (100 dBA, very loud). Terrestrial noise

from impact-hammer pile driving is estimated at 110 dBA, which is similar to a rock concert (extremely loud).

Background noise is estimated to be typical of rural areas where traffic volumes are so low that they do not appear on their table for traffic noise levels – fewer than 125 vehicles per hour. Occasional personal vehicles and large trucks hauling agricultural products pass by the site. This assessment used 40 dBA as background, which is a very conservative estimate for rural noise. Using the Practical Spreading Loss Model, the extent of vibratory-hammer noise will attenuate to background levels at approximately 2.4 miles, and the extent of impact-hammer noise will attenuate to background levels at approximately 4.8 miles (see Sheet 6).

Hills to the west of the site are closer than 4.8 miles; however, noise does not typically travel over and around land masses. Interstate 5 is about 2.5 miles to the east and generates more noise than is expected from construction at the site, so construction noise will not extend east of Interstate 5.

UNDERWATER NOISE

This project includes vibratory and impact-hammer pile driving during the in-water work window of October 1 through December 15. There have been no measurements at this site for underwater noise during pile driving, so underwater noise has been estimated using the *Technical Guidance for Assessment and Mitigation of the Hydroacoustic Effects of Pile Driving on Fish* (Caltrans 2020). The Practical Spreading Loss model was used to calculate the distance to injury and behavioral disturbance thresholds for fish.

Based on previous pile driving in the area, five or six piles can be driven within one day. It is estimated to require 5 to 10 days of pile driving.

Vibratory Pile Driving

Vibratory pile driving will be used to drive all piles to the planned depth or to refusal. The underwater noise estimate for vibratory pile driving of each piling size was derived using guidance from the Caltrans document (Section 4.6.2.1, Type of Pile Driver). It states that the vibratory hammer produces sound energy that is spread out over time and is generally 10 to 20 dB lower than impact pile driving. As a conservative estimate, 10 dB was subtracted from the noise value stated for that piling size. No noise attenuation method will be used for vibratory pile driving. Noise estimates for vibratory pile driving are shown in the table below.

Impact-Hammer Pile Driving

The design engineer estimates that impact-hammer pile driving will be necessary to finish driving the piling 50 to 60 feet into the streambed sediments. Piling will be driven to the bedrock interface. The applicant estimates a 100 blows per pile, which is based on the number of blows required to drive piles for the original marine terminal.

Noise attenuation for impact-hammer use will be achieved with a confined bubble curtain. The bubble curtain will be installed at or just below the surface of the sediment so the entire water column around the pile will be enclosed. The conservative estimate for noise attenuation with a confined bubble curtain is 5 dB.

To determine the extent of underwater noise, the Practical Spreading Loss Model and NMFS calculator sheets (see Appendix C) were used. Results are shown in the table below.

Table 1. Underwater Sound-Pressure Levels for Pile Driving.

Hollow-Steel Piles	Impact-Hammer Pile Driving, No Attenuation	Impact-Hammer Pile Driving w/Confined Bubble Curtain	Vibratory Pile Driving
20-inch @ 10 meters (33 piles)	208 dB _{peak} ¹ 187 dB _{RMS} ¹ 176 dB _{SEL} ¹ 196 dB _{cumulativeSEL} ²	203 dB _{peak} ³ 182 dB _{RMS} ³ 171 dB _{SEL} ³ 191 dB _{cumulativeSEL} ²	198 dB _{peak} ⁴ 177 dB _{RMS} ⁴ 166 dB _{SEL} ⁴ ---
24-inch @ 10 meters (12 piles)	205 dB _{peak} ⁵ 188 dB _{RMS} ⁵ 173 dB _{SEL} ⁵ 201 dB _{cumulativeSEL} ²	200 dB _{peak} ³ 183 dB _{RMS} ³ 168 dB _{SEL} ³ 194 dB _{cumulativeSEL} ²	195 dB _{peak} ⁴ 178 dB _{RMS} ⁴ 163 dB _{SEL} ⁴ ---

1 = Caltrans 2020, Table I.2-1a. 20" Diameter, Depth 3-4 meters, at 10 meters distance, diesel3 impact-hammer data used.

2 = Calculated from NMFS spreadsheet, see Appendix C.

3 = Impact-hammer level (no attenuation) shown in the table minus a conservative 5 dB reduction.

4 = Impact-hammer level (no attenuation) shown in the table minus 10 dB reduction.

5 = Caltrans 2020, Table I.2-1a, Astoria, 4 meters deep.

Noise Impacts - Vibratory Pile Driving

Using the Practical Spreading Loss Model and vibratory pile driving of the project's loudest pile diameter (24-inch piles, 178 dB_{RMS}) will attenuate to the disturbance threshold for vibratory noise (120 dB_{RMS}) at approximately 215,443 meters (134 miles). Underwater noise extends in a linear manner and does not bend around land masses, so the impacted area is determined by drawing straight lines from the marine terminal site to the nearest land mass. The area of river affected by project construction is shown on Sheet 7.

STORMWATER ASSESSMENT

This BA section was developed based on information in the original *Preliminary Stormwater Assessment*. The stormwater design for this project is still being written and will be based on requirements in the *Stormwater Management Manual for Western Washington* (Ecology 2024). This manual designates the Columbia River as a receiving water with a water level that is not affected by stormwater runoff, so stormwater detention is not required.

To summarize, all stormwater will flow to the bioswales proposed for the west and north sides of the site will primarily infiltrate, but some could discharge to the Columbia River through the existing outfall. CRC has not yet observed flows into the river because of the high infiltration rates of the underlying material. Discharge is possible during the rainy season from late October through April, but most precipitation events are likely to infiltrate with no outflow to the river. Below the fill, native soils consist of sand, which extends to a maximum depth of 117 feet, with areas of silt, gravel, and basalt encountered intermittently. CRC has not observed flow through the outfall since it was installed.

When stormwater is released back into the river during the rainy season, typically from November through April, there may be total copper and total zinc concentrations near the outfall that are

above NMFS guidelines for salmonids until the water is diluted by the volume of water in the Columbia River.

UNAVOIDABLE IMPACTS OF THE PROJECT ON THE ENVIRONMENT

After applying the avoidance and minimization measures, there will still be unavoidable impacts to aquatic habitats. No natural upland habitats occur on the site; however, there could be in-air noise impacts during pile driving that extend beyond site boundaries. No additional noise effects are anticipated from operations and maintenance. The following table provides a summary of proposed impacts to aquatic habitat and shoreline jurisdiction.

Table 1. Aquatic Habitat Impact Summary.

In-Water Construction Impacts		
Location	Proposed Impact	Impact Size
Columbia River	Impact-Hammer Pile-Driving Noise	Up to 4.8 miles over ~5 to 10 days
	24, 20-inch steel piles (waterward of OHW) 12, 24-inch steel piles	52.3 square feet 37.7 square feet
Total In-Water Impacts:		90.0 square feet
Overwater Impacts		
Location	Proposed Impact	Impact Size
Columbia River	Grated Trestle (>60% light admittance)	6,029 square feet
	Concrete Trestle Platform (30'x29')	870 square feet
Total Overwater Impacts:		6,899 square feet
Potential Stormwater Impacts		
Location	Proposed Impact	Additional Impervious Surface Size
Columbia River (no stormwater has been observed discharging to the river)	Additional pollutant-generating impervious surfaces (treated in bioswales)	To be determined in stormwater report
Benefits to In-Water Habitat		
Location	Proposed Impact	Distance
Columbia River RM 82.5 to RM 127.5	Reduction of ~4 Barge/Tug Round Trips/Year	780 river miles/year

SUMMARY OF DIRECT EFFECTS

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

Terrestrial

- Construction noise from heavy equipment.

- Intermittent vibratory pile-driving noise that extends up to approximately 2.4 miles from the project site for about 5 to 10 days.
- Intermittent impact-hammer pile-driving noise that extends approximately 4.8 miles from the project site for about 5 to 10 days.

Columbia River

- Intermittent, underwater noise from vibratory pile driving estimated to extend as far as about 5 miles from the marine terminal for about 5 to 10 days.
- Intermittent, underwater noise from impact-hammer pile driving estimated to extend as far as about 5 miles from the marine terminal for about 5 to 10 days.
- Shading effects from 36 in-water piling (90.0 square feet).
- Benthic, epibenthic, and water-column impacts from 36 in-water piling.
- Shading effects from overwater structures (concrete platform and trestle totaling 6,899 square feet). These structures are from 10 to 12 feet above OHW and 21 to 23 feet above MLLW, so light will be able to penetrate beneath the structures.

SUMMARY OF DELAYED CONSEQUENCES

Indirect effects are defined as those negative effects that are caused by the project, but occur after project completion; they are listed below.

Terrestrial

- None.

Columbia River

- A potential for additional stormwater impacts from new pollutant-generating impervious surfaces; however, no discharge has been observed since the marine terminal was constructed.

EFFECTS FROM INTERDEPENDENT ACTIONS

Interdependent actions would not occur if the project was not constructed. There will be no effects from interdependent actions. Stockpiled materials will be located on the construction barge or on upland areas of the property. No traffic detours will be necessary during construction. BMPs will be followed to avoid effects from construction stormwater runoff.

EFFECTS FROM INTERRELATED ACTIONS

An average of 2 days mooring per barge load for 24 additional barge loads per year will equal an additional 48 days of water shading per year in deep-water habitat.

BENEFICIAL EFFECTS

CRC sometimes has to repair or maintain heavy equipment that travels with the barge, but there is no crane at the Woodland terminal that can lift it. In 2024, equipment on the barge required repairs four times, requiring a tugboat to take the barge to Portland so a large crane could remove the equipment; then a tugboat must take the barge back to Woodland. This requires two round trips of 90 river miles each, which equals 180 river miles per repair event, so in 2024, there was 780 river miles for repairs. These trips will no longer be necessary after a large crane is available at

the Woodland terminal. When a crane is installed at the Woodland terminal, repairs can be made onsite, and faster repair times result in fewer days for a barge to be moored in Woodland.

ACTION AREA BOUNDARIES

PROJECT VICINITY

The action area is defined as all areas to be affected directly and indirectly by the project. Terrestrial and underwater noise effects from impact-hammer pile driving are the farthest-reaching direct effects near the project site, and they define the extent of negative impacts near the site (see Sheets 7 and 8). In-air noise from 5 to 10 days of pile driving will extend about 4.8 miles from the proposed marine terminal and extend throughout most of the Woodland Bottoms east of the site, as well as Deer Island in Oregon northwest of the site, but it will stop at the Oregon hills to the west and Interstate 5 to the east, as described above in the noise assessment.

Underwater noise from 5 to 10 days of pile driving is estimated to extend as far as about 4 miles from the project site, which includes areas to the south at Bachelor Island, the Ridgefield National Wildlife Refuge, and Louse Island, areas to the west on the Oregon shoreline near Saint Helens, Columbia City, and Goat Island, and areas to the north on the Washington shoreline.

The action area in Cowlitz County jurisdiction is shown on Sheet 9. It includes the farthest-reaching effects for terrestrial habitats that are from in-air construction noise and for aquatic habitat from underwater pile-driving noise.

ENVIRONMENTAL SETTING

TERRESTRIAL HABITAT CONDITIONS IN THE ACTION AREA

The Columbia River floodplain east of the project site is an area called the Woodland Bottoms (approximately 6 miles long and 2 to 3 miles wide) which is protected from flooding by a system of dikes, sloughs, and pump stations. The Woodland Bottoms area is primarily used for producing agricultural crops, with some livestock grazing. On the east side of the Woodland Bottoms, about 3 miles from the project site, is the City of Woodland, Interstate 5, the lowest reach of the Lewis River, and residential areas. Downstream (north) of the site (~RM 82.5) are two side channels that create Martin Island and Burke Island, which are not protected by dikes. Upstream (south), about 3 miles from the site, is the south end of the Woodland Bottoms, the mouth of the Lewis River, and the Ridgefield National Wildlife Refuge.

West of the project site, on the Oregon side of the river, the floodplain is narrow, but widens as the river travels downstream where a series of side channels has created Deer Island (mostly protected by dikes) and Goat Island. Much of Deer Island is used for agriculture, and Goat Island, the smaller of the two and nearest the Columbia River, is undeveloped and largely forested with deciduous trees.

Across the river from the project site are three industrial marine terminals and two pile dikes (jetties). In Oregon, just upstream of the project site, are the communities of Columbia City and St. Helens. There are numerous marine terminals, industrial sites, and pile dikes in this reach. The adjacent property to the north of the project site is a large RV park with lawn to the shoreline. The

adjacent property to the south has been used as a dredge-spoil disposal site, and spoils have been hauled out periodically. Property east of Dike Road is used for crop production. There is no natural terrestrial habitat on the project site with the exception of a few cottonwood trees and some understory in the northwest and southwest corners..

AQUATIC HABITAT CONDITIONS IN ACTION AREA

In general, aquatic habitat in the lower Columbia River has been degraded since western civilization arrived. Dam construction changed many of the baseline conditions, including habitat-forming processes, habitat types, primary productivity, the food web, access to habitats, and predation. Diking, dredging, and channelization of the Columbia River, an extensive drainage system of sloughs, and extensive fill placement have separated the river from its former floodplain area, causing the loss of shallow-water and wetland habitats used for salmonid rearing. Industrialization and urbanization have also created impacts related to chemical contamination of water and sediments that become incorporated into the food web.

The project site is located at RM 82.5, which is outside of the influence of salt water from the ocean, but it is influenced by tides. Borings completed for this investigation indicate the site has alluvial sand 49 to 59.5 feet deep at the mooring dolphins. The geotechnical report written for the original marine terminal states that substrate at this location consists of sand. The marine terminal is located in water deep enough so that it does not have to be dredged, and it is outside of the maintained navigational channel. No sediment sampling has been performed at this location, and Ecology records do not indicate other sampling efforts.

Aquatic habitat in the action area also includes the Columbia River between Woodland and the current off-loading facility in Portland, Oregon where beneficial effects will occur. This includes shallow and deep waters, as well as the active channel margin.

The current 2018 303(d) list (approved Aug. 26, 2022) shows no water-quality impairments within the Columbia River in the project area (Ecology 2025). There were no reported sediment-quality impairments in the vicinity.

SPECIES LISTINGS

Information on federally endangered, threatened, proposed, and candidate species and critical habitat protected under the ESA were obtained from the following agencies:

- NMFS website research for species lists (NMFS 2025a).
- Northwest Indian Fisheries Commission website research for species presence in the action area (NWIFC 2025).
- U.S. Fish and Wildlife Service website research for species and habitats on the *IPaC - Information, Planning, and Conservation System* (USFWS 2025).

NO-EFFECT DETERMINATIONS

The following species shown on the USFWS IPaC list that either do not have suitable habitat in the action area or will not be affected by the project. They will not be addressed in the remaining sections of this report.

Table 32. Endangered, Threatened, Proposed and Candidate Species with a No-Effect Determination.

Species, ESU, or DPS	Federal Status
Columbian White-Tailed Deer (<i>Odocoileus virginianus leucurus</i>)	Threatened
Marbled Murrelet (<i>Brachyramphus marmoratus</i>)	Threatened
Northern Spotted Owl (<i>Strix occidentalis caurina</i>)	Threatened
Streaked Horned Lark (<i>Eremophila alpestris strigata</i>)	Threatened
Yellow-Billed Cuckoo – Western DPS (<i>Coccyzus americanus</i>)	Threatened
Northwestern Pond Turtle (<i>Actinemys marmorata</i>)	Proposed Threatened

COLUMBIAN WHITE-TAILED DEER

Columbian white-tailed deer are largely restricted to islands and floodplains along the lower Columbia River. In these areas, they inhabit riparian forest, brushland, and pasture in bottomlands about 10 feet above sea level, although they may be found at or below 33 feet in elevation. Many of the islands in the river used by these deer retain this native plant community, with cottonwoods and willows as the co-dominant species. Columbian white-tailed deer have relatively small home ranges and they are not migratory.

The marine terminal site and the Woodland Bottoms have no habitat that meets Columbian white-tailed deer requirements. The nearest suitable habitat in the action area is northwest of the project site in Oregon on Goat Island and portions of Deer Island. Columbia Land Trust is a partner in deer conservation and has procured hundreds of acres of land to restore habitats on Deer Island. Thirty-seven deer were moved there between 2020 and 2022 (Azerrad 2023).

Intermittent and temporary pile-driving noise may be above background levels on Deer Island for 5 to 10 days. Although pile driving will exceed the baseline noise in the area, other intermittent sounds near Deer Island are likely to be similar, so pile-driving noise is not likely to stand out. Therefore, the project will have no effect on Columbian white-tailed deer.

MARBLED MURRELETS AND NORTHERN SPOTTED OWLS

The USFWS IPaC report lists marbled murrelets and northern spotted owls. These species need old-growth or mature forested areas, which do not occur in or near the action area (Federal Register 2007, 1992). The project will have no effect on marbled murrelets or northern spotted owls.

STREAKED HORNED LARK

There is no suitable habitat for streaked horned larks within the project site, because there are no extensive, flat areas of mostly bare ground with large viewsheds. The site does not have large

areas of nearly bare ground not used by the facility, so the site is unsuitable for nesting or foraging (Federal Register 2012). Within the action area, there are plowed fields that are likely to be disturbed by farm practices during the April through August nesting season, so it is unlikely to be used for breeding by streaked horned larks. Streaked horned larks have been seen in agricultural fields of ryegrass in the Willamette Valley, but they have not been reported on fields in Washington. Because streaked horned larks are very unlikely to be present in the action area during the 5 to 10 days of pile driving noise, the project will have no effect on streaked horned larks.

YELLOW-BILLED CUCKOO

The yellow-billed cuckoo is a neotropical migrant that winters in South America and breeds west of the Rocky Mountains in North America from Mexico to southern British Columbia. They are secretive birds that are in the Pacific Northwest for the nesting season from June through August, then they migrate south (Federal Register 2013). Within the action area, the forested portions of Goat Island and Deer Island may have suitable habitat for the yellow-billed cuckoo that could experience in-air noise from impact-hammer pile driving from October 1 through December 15, but yellow-billed cuckoos will not be present during that time of year and will not be exposed to pile-driving noise. Therefore, the project will have no effect on the Western DPS of the yellow-billed cuckoo.

NORTHWESTERN POND TURTLE

In Washington, northwestern pond turtles are only known to inhabit ponds and lakes, particularly around dense vegetation, which provides a high density of prey that include invertebrates and aquatic animals, as well as aquatic plants and safe nursery habitat for young turtles with plenty of food and cover (WDFW 2024). Submerged logs and cut banks provide protection from underwater predators and underwater refugia. These turtles spend a great deal of time basking on logs at the surface of ponds, and they may occur within 500 feet of aquatic areas to disperse or aestivate. In Washington, when they are in upland habitats, they occur near open areas that receive extensive sun exposure (ODFW 2023).

At and near the project site, there is no suitable aquatic habitat for these turtles because there are no lakes or ponds with a high density of food, cover, and aquatic refugia with open areas and logs for basking. The nearest suitable habitat in the action area may be northwest of the project site in Oregon on Goat Island and portions of Deer Island where Columbia Land Trust procured hundreds of acres of land to restore habitats for multiple species (Azerrad 2023).

Intermittent and temporary pile-driving noise may be above background levels on Deer Island for 5 to 10 days. Although pile driving will exceed the baseline noise in the area, other intermittent sounds near Deer Island are likely to be similar, so pile-driving noise is not likely to stand out. For the reasons discussed above, the project will have no effect on northwestern pond turtles.

SPECIES WITH SUITABLE HABITAT IN THE ACTION AREA

The following table shows federally endangered, threatened, proposed, and candidate species that may occur within the action area of the project.

Table 4. Endangered, Threatened, Proposed and Candidate Species with Suitable Habitat in the Action Area.

Species, ESU, or DPS	Federal Status
Chinook Salmon (<i>Onchorhynchus tshawytscha</i>)	
Lower Columbia River Chinook ESU	Threatened
Upper Willamette River Chinook ESU	Threatened
Upper Columbia River Spring-run Chinook ESU	Endangered
Snake River Spring-run Chinook ESU	Threatened
Snake River Fall-run Chinook ESU	Threatened
Chum Salmon (<i>Onchorhynchus keta</i>)	
Columbia River Chum Salmon ESU	Threatened
Coho Salmon (<i>Onchorhynchus kisutch</i>)	
Lower Columbia River Coho Salmon ESU	Threatened
Sockeye Salmon (<i>Onchorhynchus nerka</i>)	
Snake River Sockeye DPS	Endangered
Steelhead (<i>Onchorhynchus mykiss</i>)	
Lower Columbia River Steelhead DPS	Threatened
Upper Willamette River Steelhead DPS	Threatened
Middle Columbia River Steelhead DPS	Threatened
Upper Columbia River Steelhead DPS	Threatened
Snake River Basin Steelhead DPS	Endangered
North American Green Sturgeon - Southern DPS (<i>Acipenser medirostris</i>)	Threatened
Eulachon (Columbia River Smelt), Southern DPS (<i>Thaleichthys pacificus</i>)	Threatened
Bull Trout – Columbia River DPS (<i>Salvelinus confluentus</i>)	Threatened
Monarch Butterfly (<i>Danaus plexippus</i>)	Proposed Threatened
Suckley’s Cuckoo Bumble Bee (<i>Actinemyx marmorata</i>)	Proposed Endangered

EFFECTS TO SPECIES IN THE ACTION AREA

NOISE EFFECTS ON FISH

Background information about underwater noise can be found in the previous discussion in the *Action Area* section. The Practical Spreading Loss model was used to estimate noise levels created by pile driving during construction at the marine terminal.

VIBRATORY PILE DRIVING EFFECTS ON FISH

Vibratory pile-driving noise levels for each type of steel piling were compared with injury and behavioral thresholds for fish. Vibratory pile-driving noise is not known to produce noise levels above injury thresholds for fish (WSDOT 2025); however, it will produce noise levels above behavioral thresholds. Noise levels are obtained from the previous noise table. Distances to fish

behavioral thresholds set by NMFS are shown in the following table and on Sheet 7. Pile driving is estimated to take 5 to 10 days.

Table 5. Distances that Vibratory Pile-Driving Noise Will Exceed Behavioral Disturbance Levels for Fish.

Hollow Steel Piles	Distance (meters)	Vibratory Pile Driving Noise Levels	Fish Behavior (150 dB _{RMS} Threshold)
20-inch	10 meters	177 dB _{RMS}	1,359 meters 4,458 feet 0.84 miles 3.3 sq miles
24-inch	10 meters	178 dB _{RMS}	1,359 meters 4,458 feet 0.84 miles 3.3 sq miles

Behavioral distances were calculated using the Practical Spreading Loss Model.

IMPACT-HAMMER PILE DRIVING EFFECTS ON FISH

Impact-hammer pile driving will occur over a period of 5 to 10 days between October 1 and December 15. A confined bubble curtain will be used to reduce underwater noise impacts, resulting in an estimated 5 dB reduction in noise, as discussed in the *Action Area* section of this BA.

Noise levels and noise distances were estimated using the NMFS Underwater Noise Calculator sheets (see Appendix C). Assumptions for number of pile strikes per day were provided by the applicant. Noise levels of peak, cumulative SEL, and RMS are from sources stated in the Action Area section. The table below summarizes distances noise is estimated to be above behavioral and injury levels for fish.

Table 6. Distances that Impact-Hammer Pile Driving Noise Will Exceed Injury or Behavioral Disturbance Thresholds for Fish.

Hollow Steel Piles	Impact-Hammer Pile Driving w/Confined Bubble Curtain	Fish Injury (206 dB _{Peak} Threshold)	Fish Injury > 2 grams ¹ (187 dB _{cumulSEL} Threshold)	Fish Behavior (150 dB _{RMS} Threshold)
20-inch @ 10 meters	203 dB _{peak} 182 dB _{RMS} 171 dB _{SEL} 191 dB _{cumulativeSEL}	6 meters 16 feet	18 meters 59 feet	1,359 meters 4,458 feet 0.84 miles
24-inch @ 10 meters	205 dB _{peak} 182 dB _{RMS} 174 dB _{SEL} 194 dB _{cumulativeSEL}	9 meters 20 feet	29 meters 95 feet	1,359 meters 4,458 feet 0.84 miles

¹ = Fish less than 2 grams are not expected in the action area during the October 1 through December 15 work window (Gayle Kreitman, NMFS Fisheries Biologist, email May 1, 2013).

Fish Injury

Impact-hammer pile driving will occur for a total of 5 to 10 days and will create sound pressure levels high enough to injure fish from peak noise levels while driving the 20-inch and 24-inch piles for distances of 16 and 20 feet, respectively.

Using a confined bubble curtain, this project will also create cumulative noise levels above the 187 dB fish-injury threshold for fish larger than 2 grams at 59 and 95 feet from the 20-inch and 24-inch piles, respectively. According to a NMFS fisheries biologist, fish less than 2 grams are not expected in the action area during the October 1 through December 15 work window (Gayle Kreitman, NMFS, email May 1, 2013).

Fish Behavioral Effects

Impact-hammer pile driving will occur for a total of 5 to 10 days and will create sound pressure levels that will be above the fish behavioral threshold. Behavioral responses can include a startle response, feeding disruption, area avoidance, or they may not detect predators (WSDOT 2025). The farthest extent of behavioral disturbance will extend to 0.84 miles while driving 24-inch piles with the impact-hammer or with vibratory pile driving (see Sheet 8). This distance is based on the dB_{RMS} noise levels, which are the same for both pile sizes.

SALMON AND STEELHEAD

PILE DRIVING NOISE

Each of the 13 listed ESUs/DPSs of salmon and steelhead occur within the Columbia River and the action area and could be present in the area of underwater noise effects during one or more life-history stages during the in-water work window from October 1 through December 15.

The in-water work window for the project (October 1 through December 15) avoids the peaks of juvenile migrations during the spring and summer (see Appendix D). Fish less than 2 grams are not expected in the action area during the October 1 through December 15 work window (Gayle Kreitman, NMFS Fisheries Biologist, email May 1, 2013).

Peak adult migrations that do not occur within the in-water work window include Chinook (May, June, and July), sockeye (June and July), and steelhead (April through July). Based on NMFS information in Appendix D, Lower Columbia River Chinook, coho, and chum ESUs/DPSs could be present as adults during the in-water work window. Four of the five Chinook ESUs, sockeye, and all 5 steelhead DPSs will not be present.

According to NMFS calculation sheets, impact hammer pile driving will be above the injury threshold for 20-inch and 24-inch impact hammer pile driving for the injury radii of 16 and 20 feet, respectively, for 5 to 10 days between October 1 and December 15. Adult and juvenile salmon and steelhead are very unlikely to be within the injury radii during pile driving because of the activity associated with pile driving, so injuries are unlikely to occur. Any salmon and steelhead may have behavioral responses that can include a startle response, feeding disruption, area avoidance, or they may not detect predators (WSDOT 2025). Therefore, *underwater pile-driving noise may affect and is not likely to adversely affect 13 salmon and steelhead ESUs/DPSs.*

STORMWATER RUNOFF

This analysis will be updated when the preliminary stormwater report is completed. It is anticipated that there will be minimal if any stormwater runoff during the rainy season due to sandy soil conditions that allow for significant infiltration. No runoff is expected during the dry seasons from May through October. The only expected runoff into the river will be during the rainy season when there is more than one day of heavy precipitation. Stormwater runoff from the site will be treated in bioswales, and the applicant has not observed stormwater discharge into the river since the facility was constructed. Stormwater will be treated before being released into the river, and the large volume of the river will quickly dilute any remaining pollutants that could be harmful to aquatic life to concentrations that are not harmful. Salmon and steelhead may be temporarily affected by stormwater runoff for short periods of time, but it will be a rare occurrence, and effects will be insignificant because there will be stormwater treatment and dilution will occur quickly.

SHADING AND MIGRATORY PATHWAY OBSTRUCTION

Barge mooring in deep-water habitat will increase by about 48 days per year and there will be 24 additional piles in shallow-water habitat that will create shade and places for piscivorous fish (primarily pikeminnow and bass) to hide and ambush juvenile fish. Piles in deep-water habitat that will support the new platform will create obstructions for migrating juvenile salmon and steelhead that will increase their migratory pathway because they swim around shaded areas or structures. Proposed overwater structures are mostly grated for light admittance and high enough above the water level that shading will be minimal.

Piling in shallow-water habitat will create ambush sites for predators to eat juvenile salmonids that migrate in shallow-water habitat, so the ESA effect determination for Chinook and chum will be that the project *may affect and is likely to adversely affect the Lower Columbia River Chinook ESU and Lower Columbia Chum ESU*.

Piling and the additional 48 days per year of barge mooring in deep-water habitat will compel juvenile migrants to travel around the additional 48 days of moored barges per year. This creates additional effort and adds to the migration route, which in NMFS' recent opinions *may affect and is not likely to adversely affect 11 ESUs/DPSs except the Lower Columbia River Chinook ESU and Lower Columbia Chum ESU*.

BENEFICIAL EFFECTS

Eliminating tug/barge trips between Woodland and Portland to unload and repair heavy equipment that travels with the barge will avoid aquatic impacts. This will reduce petroleum-based pollution from diesel emissions to the air and water, and there will be fewer days that the barge will be moored in Woodland.

EFFECT DETERMINATIONS FOR SALMON AND STEELHEAD

The project *may affect and is likely to adversely affect the 13 ESUs/DPSs* due to and increased predation on juvenile Chinook and chum from piscivorous fish using new piling in shallow-water habitat to ambush smaller juveniles, as well as increasing migration distances for larger juveniles. ELS expects that the NMFS biological opinion for this project will make the same determination

that they have made for similar projects and that “*the project will not jeopardize the continued existence of the species.*”

NORTH AMERICAN GREEN STURGEON

Green sturgeon enter the Columbia River as adults and subadults and their peak occurrence is from June into mid-October. They prefer brackish water greater than 15 feet deep near the mouth of the Columbia River in the lower estuary but some can stray into freshwater. They are not susceptible to avian or fish predation in the Columbia River because of their size.

PILE DRIVING NOISE

North American green sturgeon generally stay near the mouth of the Columbia River in the lower estuary from June through mid-October (see Appendix D). Few, if any, green sturgeon are expected in the action area during piling installation, but if present, they would be subadults or adults (larger than 2 grams).

If adults are migrating or foraging in the action area during impact-hammer pile driving, they could be injured, there may be a startle response, feeding disruption, or they may avoid the area. Green sturgeon are unlikely to be present during pile driving because the proposed work window avoids times they are likely to be present, and they typically stay in brackish water in the estuary; therefore, noise effects are discountable. Underwater noise *may affect, but is not likely to adversely affect* North American green sturgeon.

STORMWATER RUNOFF

This analysis will be conducted when the preliminary stormwater report is completed, and details are described above in the salmon and steelhead section. If there is a discharge, green sturgeon near the outfall may be temporarily affected by treated stormwater runoff for short periods of time if there is a discharge, but they tend to stay in deep water and stormwater will have been diluted before reaching deep water, so effects will be insignificant. Green sturgeon are rare outside brackish water, so effects will also be discountable. *Stormwater discharge may affect and is not likely to adversely affect green sturgeon.*

SHADING AND MIGRATORY PATHWAY OBSTRUCTION

Shading discussions are described above in the salmon and steelhead section. Shading will not affect green sturgeon feeding behavior, because they are typically bottom feeders accustomed to low-light conditions, and their food sources will not be significantly affected by the project. Food sources in the Columbia River are not considered a limiting factor for this species. For these reasons, shading from the project will have *no effect* on green sturgeon.

BENEFICIAL EFFECTS

Eliminating tug/barge trips between Woodland and Portland to unload and repair heavy equipment that travels with the barge will create beneficial aquatic effects. This project will reduce petroleum-based pollution from diesel emissions to the air and water, and it will reduce the number of days the barge will be moored in Woodland. *Reduced travel miles will reduce pollutants*

discharging to the river through tug/barge emissions, so the project may affect and is not likely to adversely affect green sturgeon.

EFFECT DETERMINATION FOR NORTH AMERICAN GREEN STURGEON

There will be potential negative effects from pile driving, temporary and infrequent stormwater discharges, and there will be benefits from reduced tug/barge travel and moorage days in Woodland. Therefore, the project *may affect and is not likely to adversely affect North American green sturgeon.*

EULACHON

Eulachon use the action area for spawning and migration. The in-water work window is typically shortened to October 1 through December 15 to avoid the eulachon spawning season in late December. Eulachon are unlikely to be present in the action area during pile driving; however, Appendix D shows that early migration and spawning could take place in December (NMFS 2011); but in recent decades, eulachon enter the river in January through March because they wait for cooler water temperatures. Eggs hatch into larvae (20 to 40 days) after spawning.

PILE DRIVING NOISE

Because it takes for 20 to 40 days for eggs to hatch, it is very unlikely that larvae will be exposed to pile-driving noise. No information could be found on noise effects to eulachon eggs or larvae.

There are no known reports of injury from pile driving to fish that do not have swim bladders (NMFS 2012), and eulachon do not have swim bladders. If adults are present during construction, it could cause changes in migration or spawning behavior. Eulachon are unlikely to be present during pile driving, so effects are discountable. Therefore, underwater noise *may affect, but is not likely to adversely affect eulachon.*

STORMWATER RUNOFF

This analysis will be conducted after the preliminary stormwater report is completed. For the reasons stated above for salmon/steelhead and green sturgeon, *stormwater discharge may affect and is not likely to adversely affect eulachon.*

SHADING AND MIGRATORY PATHWAY OBSTRUCTION

There is no discussion in NMFS biological opinions for projects in the lower Columbia River that indicate shading affects eulachon spawning or migration. For these reasons, shading from the project will have *no effect* on eulachon.

BENEFICIAL EFFECTS

Eliminating tug/barge trips between Woodland and Portland to unload and repair heavy equipment that travels with the barge will avoid aquatic impacts. This will reduce petroleum-based pollution from diesel emissions to the air and water, and it will reduce barge moorage in Woodland. *Reduced travel miles will reduce pollutants discharging to the river, so the project may affect and is not likely to adversely affect eulachon.*

EFFECT DETERMINATION FOR EULACHON

There will be potential negative effects from temporary and infrequent stormwater discharges, and it will reduce barge moorage in Woodland. Therefore, the project *may affect and is not likely to adversely affect eulachon*.

BULL TROUT

Bull trout are rare in the mainstem Columbia River. When present, they are subadults and adults that use the river for migration, foraging, and overwintering.

NOISE EFFECTS ON BULL TROUT

Bull trout in the mainstem Columbia River occur as subadults and adults, so they weigh more than 2 grams. Injury levels will be exceeded in a radius of up to 20 feet, and behavioral disturbances in the aquatic portion of the action area will last only 5 to 10 days, and behavioral effects may be similar to other fish described above. Bull trout are very rare in the action area, so effects are discountable. For these reasons, underwater noise *may affect, but is not likely to adversely affect bull trout*.

STORMWATER RUNOFF

This analysis will be conducted after the preliminary stormwater report is completed. For the reasons stated above for salmon/steelhead, and because bull trout are rare in the action area, *stormwater discharge may affect and is not likely to adversely affect bull trout*.

SHADING

Bull trout prey on small fish, so they could use the new piling to ambush their prey. Therefore, piling from the project could help their foraging efforts and could have a positive effect on bull trout foraging. Therefore, *additional piling may affect and is not likely to adversely affect bull trout*.

BENEFICIAL EFFECTS

Eliminating tug/barge trips between Woodland and Portland to unload and repair heavy equipment that travels with the barge will avoid aquatic impacts. This will reduce petroleum-based pollution from diesel emissions to the air and water, and it will reduce barge moorage in Woodland. *Reduced travel miles will reduce pollutants discharging to the river, so the project may affect and is not likely to adversely affect bull trout*.

EFFECT DETERMINATION FOR BULL TROUT

There will be potential negative effects from temporary and infrequent stormwater discharges, and there will be benefits from no tug/barge travel to Portland with diesel emissions to air and water. Therefore, the project *may affect and is not likely to adversely affect bull trout*.

MONARCH BUTTERFLY AND SUCKLEY'S CUCKOO BUMBLE BEE

These species are proposed for federal listing, which is not expected until at least 2026. County permits will be issued before these species are listed, so they will not be addressed in this document.

SUMMARY OF EFFECT DETERMINATIONS

The project is **likely to adversely affect** the following listed species and designated critical habitat:

- Salmon and Steelhead – 13 ESUs/DPSs and their designated critical habitat
 - Lower Columbia River Chinook ESU
 - Upper Columbia River Spring-run Chinook ESU
 - Upper Willamette River Chinook ESU
 - Snake River Spring-run Chinook ESU
 - Snake River Fall-run Chinook ESU
 - Columbia River Chum Salmon ESU
 - Lower Columbia River Coho Salmon ESU
 - Snake River Sockeye DPS
 - Lower Columbia River Steelhead DPS
 - Middle Columbia River Steelhead DPS
 - Upper Columbia River Steelhead DPS
 - Upper Willamette River Steelhead DPS
 - Snake River Basin Steelhead DPS

The project **may affect**, but is **not likely to adversely affect** the following listed species or their designated critical habitat:

- North American Green Sturgeon – Southern DPS
- Eulachon – Southern DPS and its designated critical habitat
- Bull Trout – Columbia River DPS and its designated critical habitat

ELS' professional opinion is that NMFS and USFWS will determine that the project is **not likely to jeopardize federally listed species**.

REFERENCES

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FIGURES

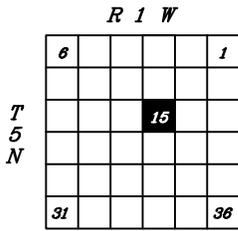
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SITE

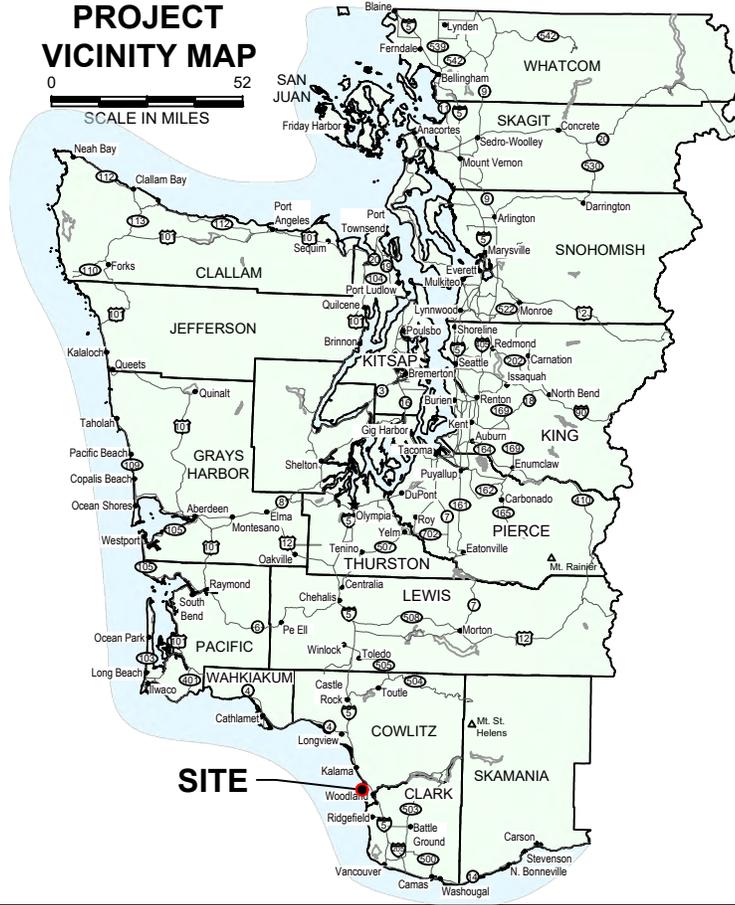
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LOCATION MAP

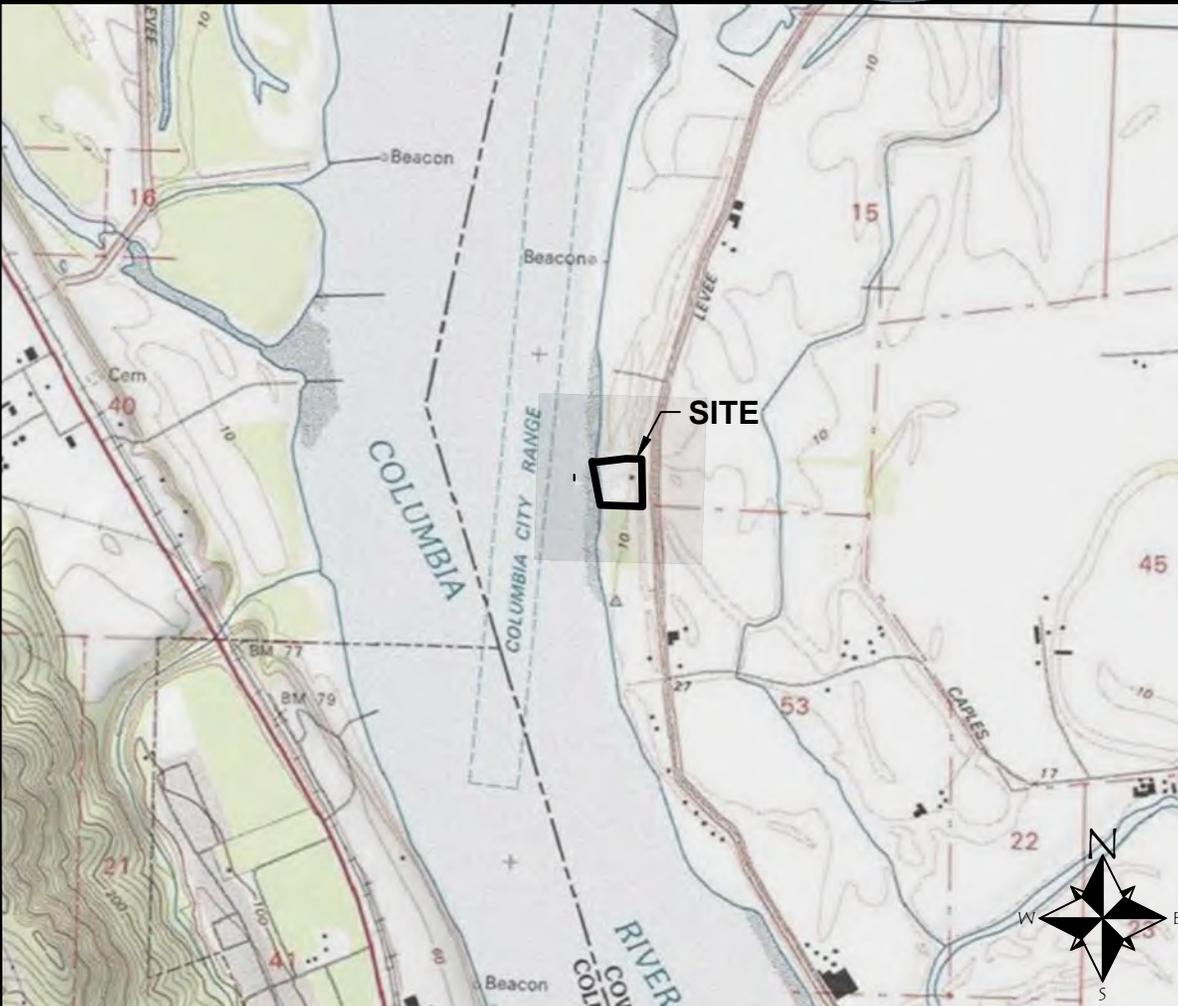


NOTE:
Quadrangle topographic map from USGS.

PROJECT VICINITY MAP



SITE



PROPOSED: In-water work
IN Columbia River
NEAR: Woodland
COUNTY: Cowlitz
STATE: WA
SHEET 1 OF 7
DATE: 8/18/25

VICINITY MAP
APPLICANT: Columbia River Carbonates
PROJECT NAME: Phase 2 Blending & Storage Facility
REFERENCE #: NWS-2013-834
SITE LOCATION ADDRESS:
1902 Dike Road
Woodland, WA 98674

PURPOSE:
Construct Access Trestle
DATUM: NAD83
ADJACENT PROPERTY OWNERS:
See JARPA

SCALE IN FEET

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

Ecological Land Services

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LEGEND:

- Approx. Site Boundary
- Approx. OHWM-under SMA (Shorelines Management Act)
- Approx. Corps OHW 12.7' Elevation

100
50
0

SCALE IN FEET

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

PURPOSE:
Construct Access Trestle

DATUM: NAD83

ADJACENT PROPERTY OWNERS:
See JARPA

APPLICANT: Existing - ESA
Columbia River Carbonates

PROJECT NAME: Phase 2 Blending & Storage Facility

REFERENCE #: NWS-2013-834

SITE LOCATION ADDRESS:
1902 Dike Road
Woodland, WA 98674

PROPOSED: In-water work

IN: Columbia River

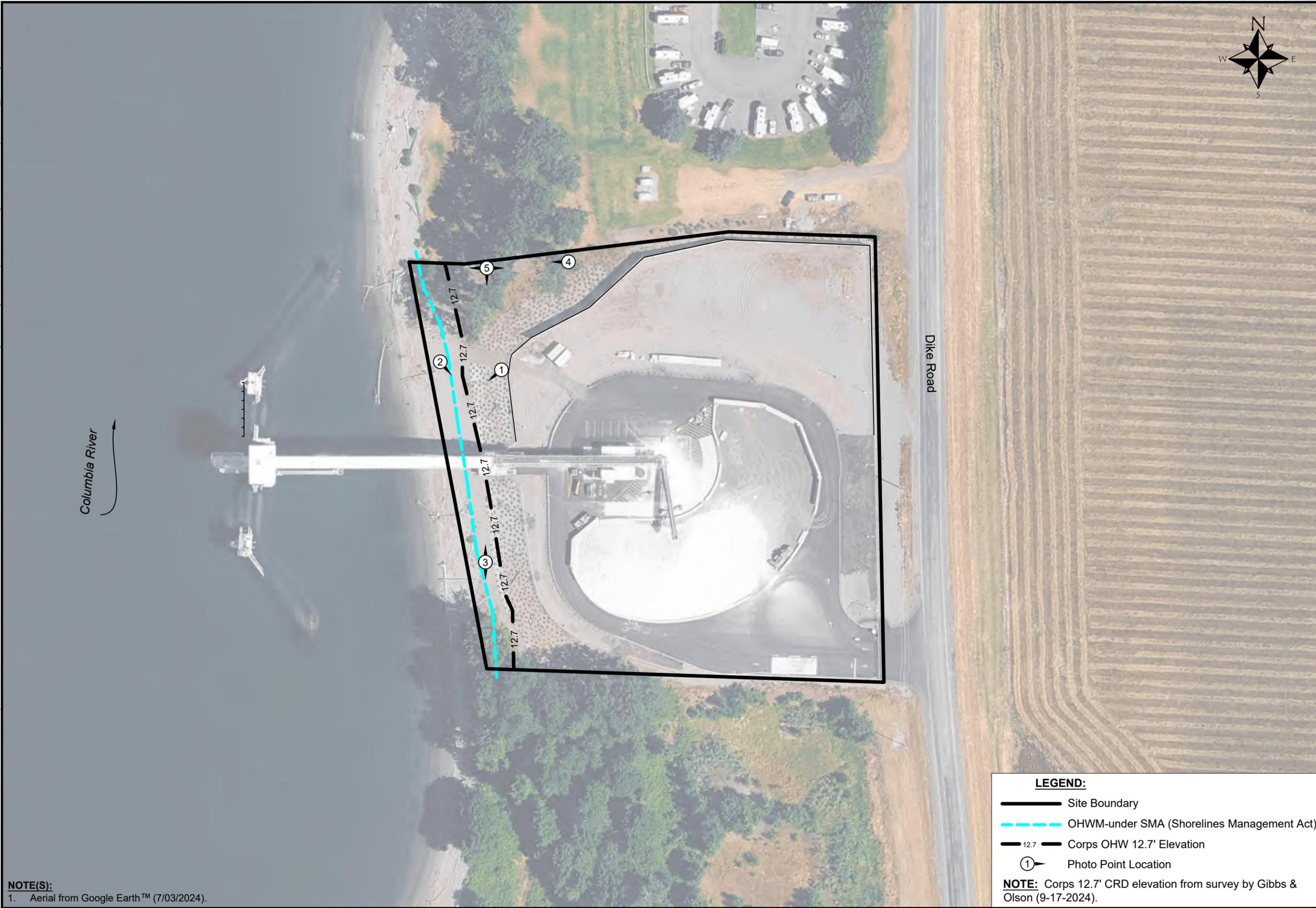
NEAR: Woodland

COUNTY: Cowlitz

STATE: WA

SHEET 2 OF 7

DATE: 8/18/25



Columbia River

Dike Road



LEGEND:

- Site Boundary
- OHWM-under SMA (Shorelines Management Act)
- Corps OHW 12.7' Elevation
- Photo Point Location

NOTE: Corps 12.7' CRD elevation from survey by Gibbs & Olson (9-17-2024).



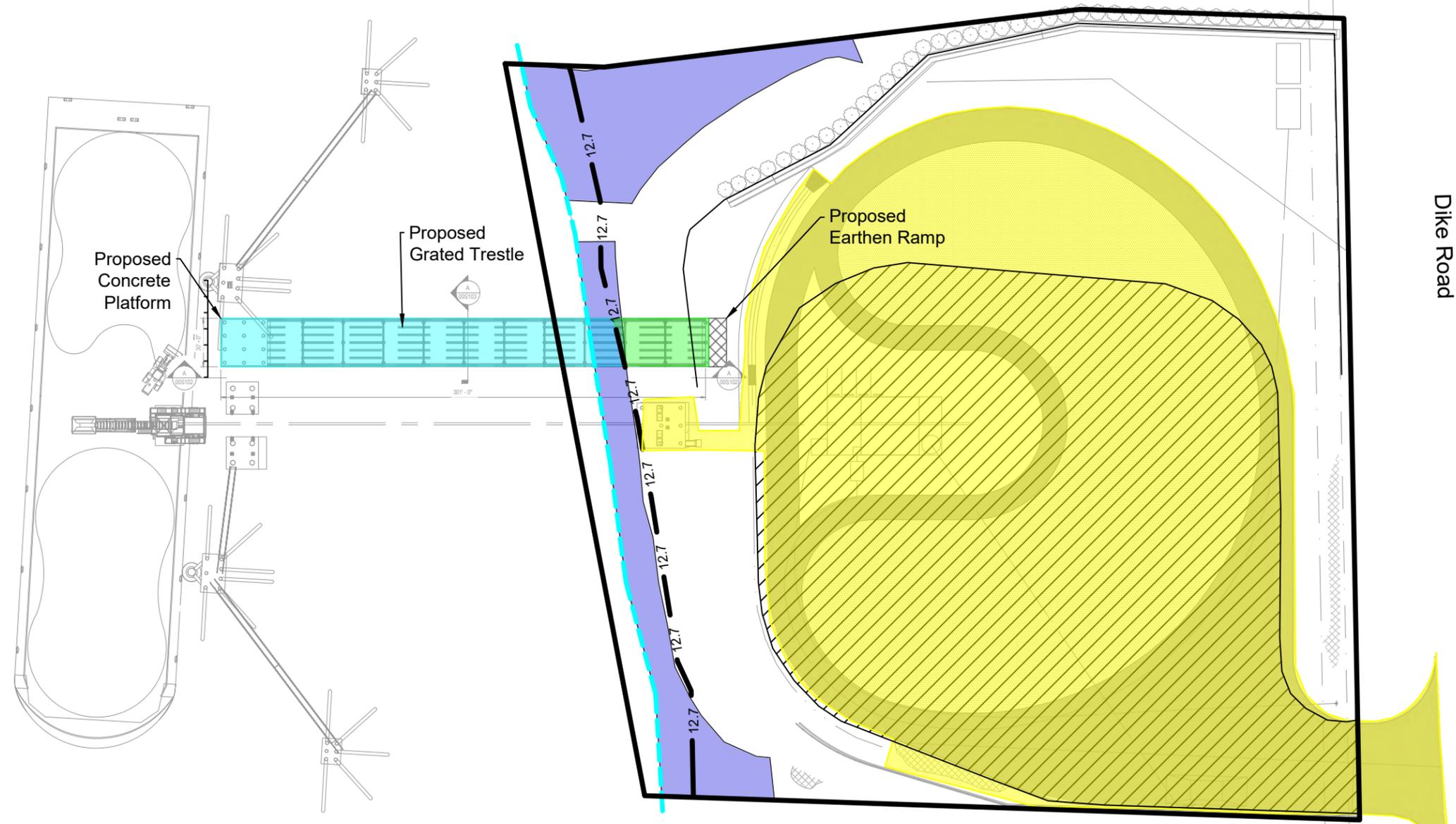
1157 3rd Ave., Suite 220A
 Longview, WA 98632
 Phone: (360) 578-1371



NOTE(S):
 1. Aerial from Google Earth™ (7/03/2024).

<p>PROPOSED:In-water work IN Columbia River NEAR: Woodland COUNTY: Cowlitz SHEET 3 OF 7 DATE: 8/18/25</p>	<p>Existing Conditions Plan View - ESA APPLICANT: Columbia River Carbonates PROJECT NAME: Phase 2 Blending & Storage Facility REFERENCE #: NWS-2013-834 SITE LOCATION ADDRESS: 1902 Dike Road Woodland, WA 98674</p>	<p>PURPOSE: Construct Access Trestle DATUM: NAD83 ADJACENT PROPERTY OWNERS: See JARPA</p>
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Columbia River



Dike Road

LEGEND:

- Site Boundary
- OHWM-under SMA (Shorelines Management Act)
- Corps OHW 12.7' Elevation
- Proposed Mitigation Area (18,191 sq. ft. / 0.42 ac.)
- Proposed Work Area (133,798 sq. ft. / 3.07 ac.)
- Existing Work Area (99,235 sq. ft. / 2.28 ac.)
- Trestle and Concrete Platform Impact Waterward of OHW (7,324 sq. ft. / 0.17 ac.)
- Trestle Impact Landward of OHW (1,648 sq. ft. / 0.04 ac.)



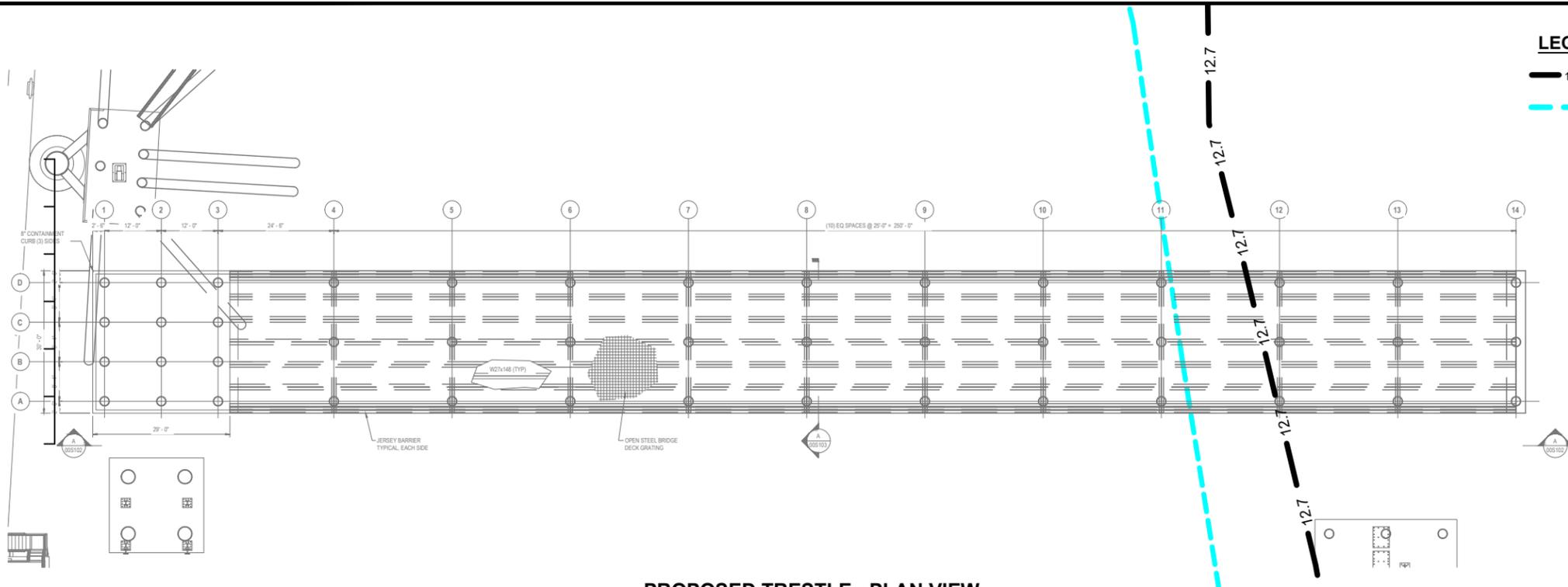
1157 3rd Ave., Suite 220A
 Longview, WA 98632
 Phone: (360) 578-1371



NOTE: Corps 12.7' CRD elevation from survey by Gibbs & Olson (9-17-2024).

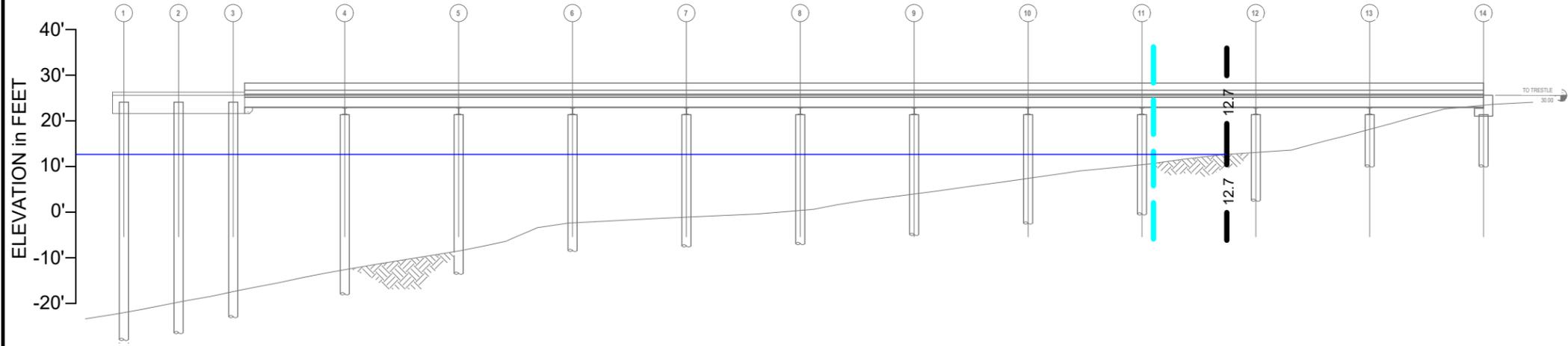
<p>PURPOSE: Construct Access Trestle</p> <p>DATUM: NAD83</p> <p>ADJACENT PROPERTY OWNERS: See JARPA</p>	<p>PROPOSED CONDITIONS</p> <p>APPLICANT: Columbia River Carbonates</p> <p>PROJECT NAME: Phase 2 Blending & Storage Facility</p> <p>REFERENCE #: NWS-2013-834</p> <p>SITE LOCATION ADDRESS: 1902 Dike Road Woodland, WA 98674</p>	<p>PROPOSED: In-water work</p> <p>IN Columbia River</p> <p>NEAR: Woodland</p> <p>COUNTY: Cowlitz</p> <p>STATE: WA</p> <p>SHEET 4 OF 7</p> <p>DATE: 8/18/25</p>
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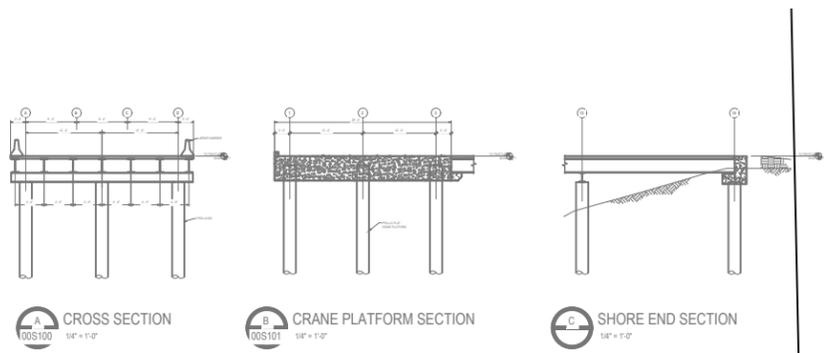


PROPOSED TRESTLE - PLAN VIEW

LEGEND:
 — 12.7 — Corps OHW 12.7' Elevation
 - - - - - OHWM-under SMA (Shoreline Management Act)



PROPOSED TRESTLE - ELEVATION VIEW



PROPOSED TRESTLE - SECTIONS

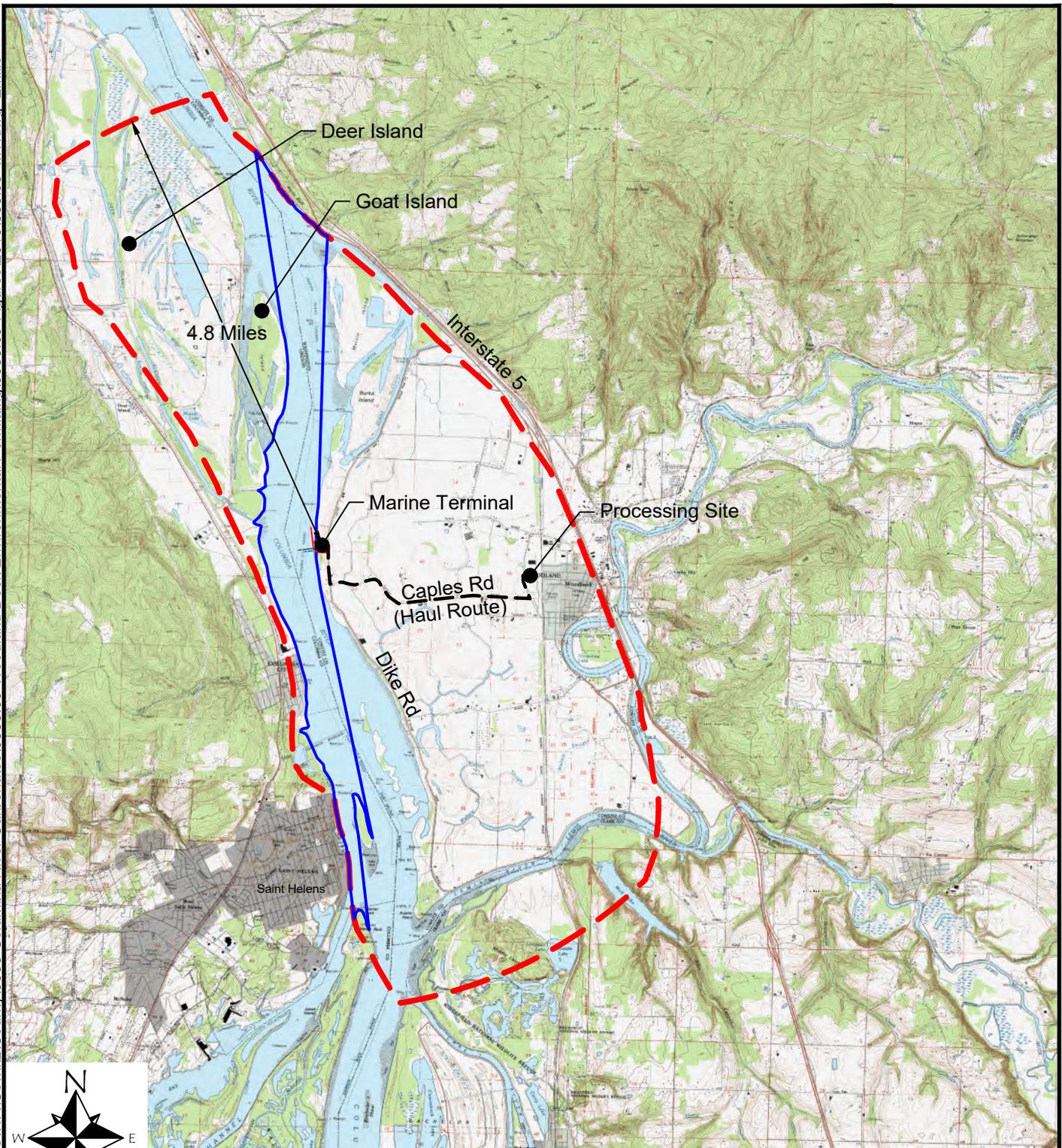
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APPLICANT: Columbia River Carbonates
PROJECT NAME: Phase 2 Blending & Storage Facility
REFERENCE #: NWS-2013-834
SITE LOCATION ADDRESS: 1902 Dike Road, Woodland, WA 98674
IN Columbia River
NEAR: Woodland
COUNTY: Cowlitz
STATE: WA
SHEET 5 OF 7
DATE: 8/18/25

PURPOSE: Construct Access Trestle
DATUM: NAD83
ADJACENT PROPERTY OWNERS: See JARPA
 1157 3rd Ave., Suite 220A
 Longview, WA 98632
 Phone: (360) 578-1371



NOTE:
 1. Corps 12.7' CRD elevation will be provided Trestle site plan from CRC (12/11/2024).

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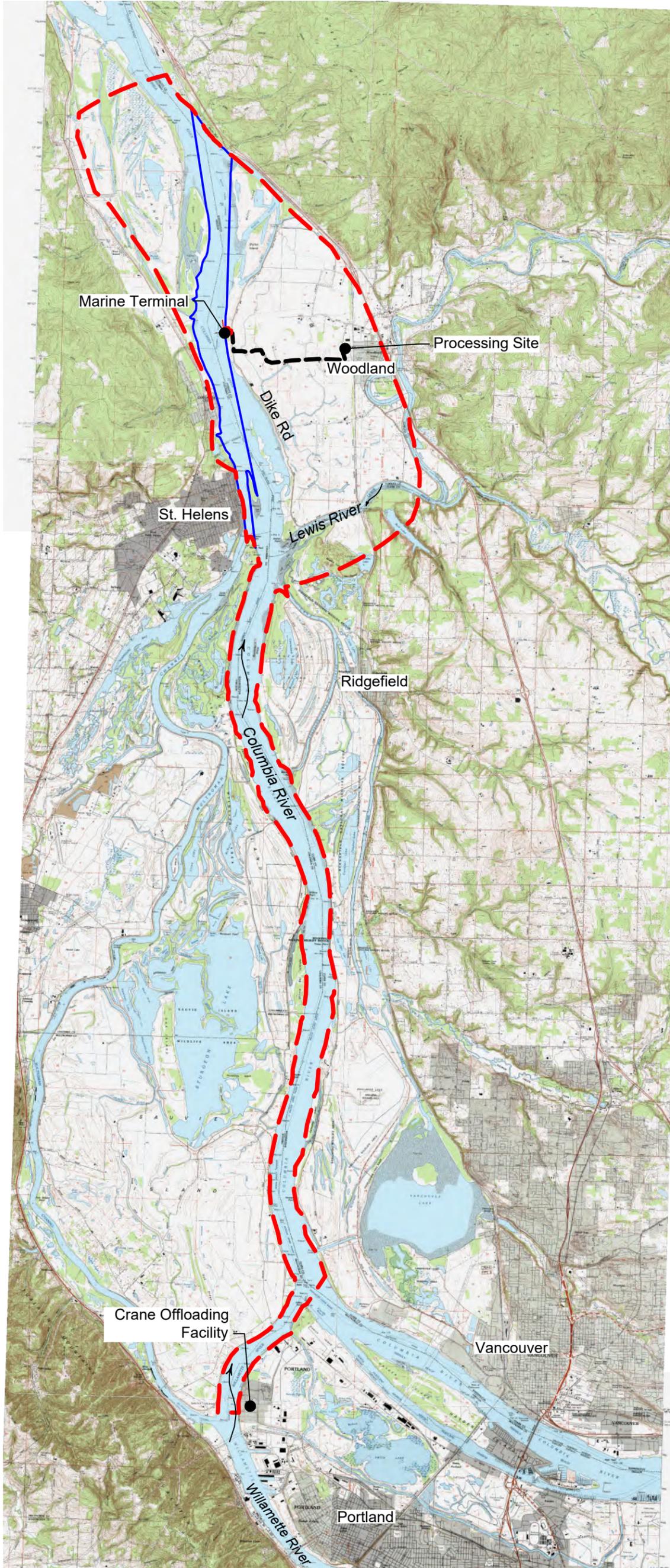


1157 3rd Ave., Suite 220A
Longview, WA 98632
Phone: (360) 578-1371

LEGEND:

- In-Air Pile Driving Noise
- Underwater Noise

<p>PURPOSE: Construct Access Trestle</p> <p>DATUM: NAD27/NAD83</p> <p>ADJACENT PROPERTY OWNERS: See JARPA</p>	<p style="text-align: center;">CONSTRUCTION NOISE IMPACTS</p> <p>APPLICANT: Columbia River Carbonates</p> <p>PROJECT NAME: Phase 2 Blending & Storage Facility</p> <p>REFERENCE #: NWS-2013-834</p> <p>SITE LOCATION ADDRESS: 1902 Dike Road Woodland, WA 98674</p>	<p>PROPOSED: In-water work</p> <p>IN Columbia River</p> <p>NEAR: Woodland</p> <p>COUNTY: Cowlitz STATE: WA</p> <p>SHEET 6 OF 7</p> <p>DATE: 8/18/25</p>
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LEGEND:
--- Action Area
— Underwater Noise



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

PURPOSE:
 Construct Access Trestle
DATUM: NAD27/NGVD 29
ADJACENT PROPERTY OWNERS:
 See JARPA

ACTION AREA
APPLICANT: Columbia River Carbonates
PROJECT NAME: Phase 2 Blending & Storage Facility
REFERENCE #: NWS-2013-834
SITE LOCATION ADDRESS:
 1902 Dike Road
 Woodland, WA 98674

PROPOSED: In-water work
IN Columbia River
NEAR: Woodland
COUNTY: Cowlitz **STATE:** WA
SHEET 7 OF 7
DATE: 8/18/25

APPENDIX A

Confined Bubble Curtain Details

Bubble Curtain Type II

The Bubble curtain will be made out of an HD PE pipe sleeve that fits over the 24" pile and reaches from a point above water to the ground elevation below water. Sleeve diameter is to be determined based on information from Dr. John Stadler. Current thinking is around 34" OD +/- . Wall thickness is approximately 1 3/8". The HD PE sleeve will have a bubbler ring attached to the interior wall at the bottom . The bubbler ring will have 2 rows of 1/16" diameter holes spaced at 1 1/2" center to center per the perforation detail on Sheet G 21. This will be a steel tubular ring with an air supply fitting. The ring will have a steel pipe section welded on the bottom to not only provide weight but allow for some penetration into the subsoil. The HD PE sleeve will have centralizer spacers to hold a consistent space for bubble transfer around the pile. The diameter of this Sleeve will enable the removal up through the trestle installation template.

Equipment List

1. 1000 cfm @ 150 psi oil free compressor or larger
2. 50' of 3" diameter pneumatic hose
3. 200' of 2" diameter pneumatic hose
4. Primary manifold system , including valves, flow meters and pressure gauges
5. Bubbler ring with appropriate hole sizes and spacings
6. ~20' of 34" diameter HD PE (1 3/8" wall thickness)
7. 2 or 3 sets of spacers/centralizers
8. Seating ring

Air Pressure and Flow Requirements

Each bubbler ring requires approximately 320 scfm @ 100 psi. The compressor will deliver 1000 scfm @ 150 cfm . Air flow from the compressor to the ring assemblies must not be restricted so as to reduce the flow or pressure below required amount. The following is a compilation of the restrictions from the compressor to one ring using 1000 cfm from the compressor to the manifold and 400 cfm from the manifold to the ring assembly.

Item	PSI Drop
50' 3" hose	0.265
2.5" Gate Valve	0.104
Flow Meter	5.6
100' 2" hose	0.68
40 water depth (max)	17.8
 TOTAL DROP	 24.45 psi loss based on 400 scfm delivery to ring
 150 - 24.45 = 125.55 psi, well within the parameters	

Figure F.1. Contractor's Specifications for Confined Bubble Curtain used on Plum b Piles

WORK SHEET

Project Hoop Canal Bend
Type of Work TYPE 2 BEAVER CURTAIN

Estimator G Davis
Date 10-9-03

SERIAL
Item No. 051
Sheet No. 1

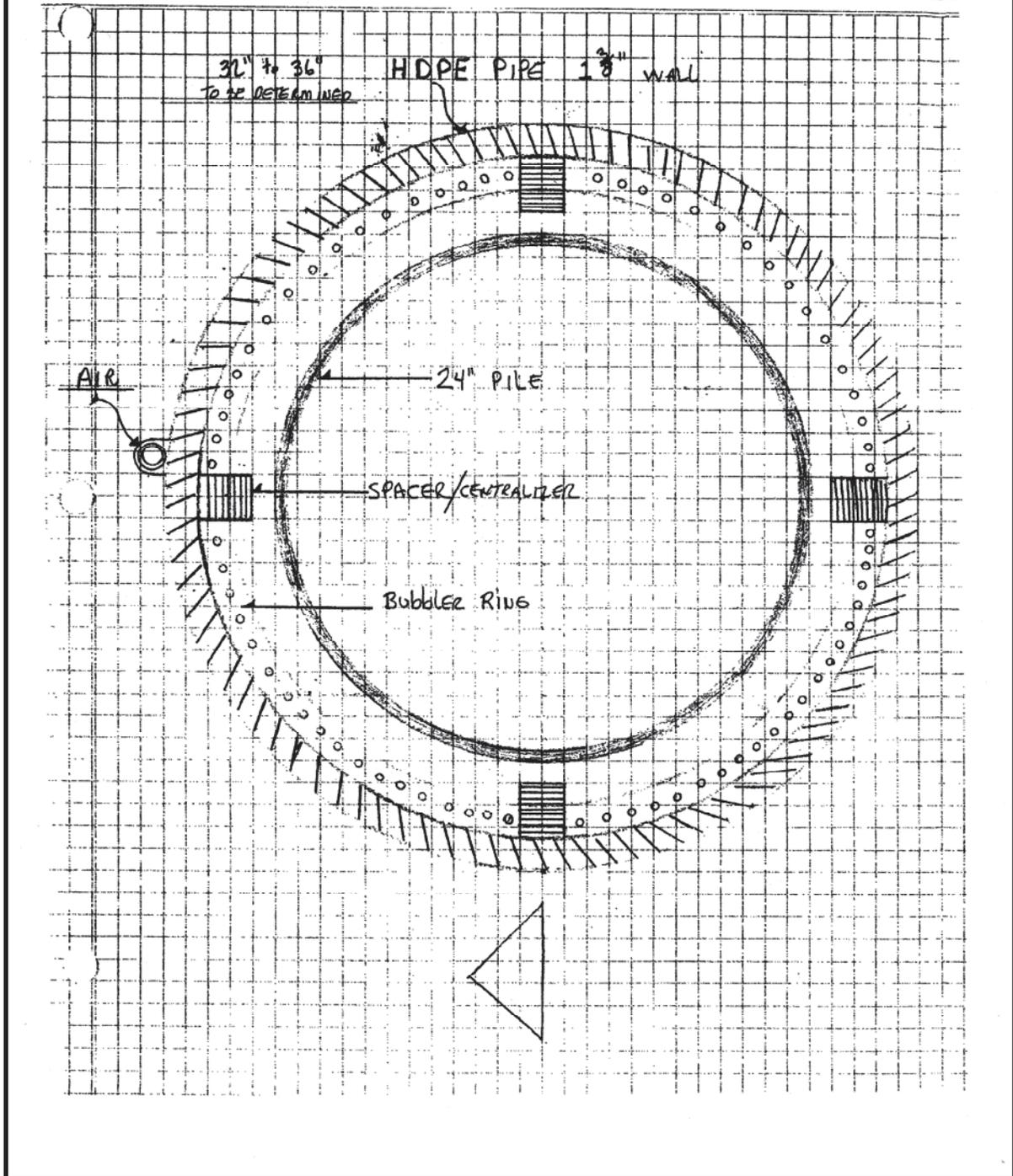


Figure F.2. Contractor's Plan View Drawing of Bubble Ring for Confined Bubble Curtain used on Plumb Piles

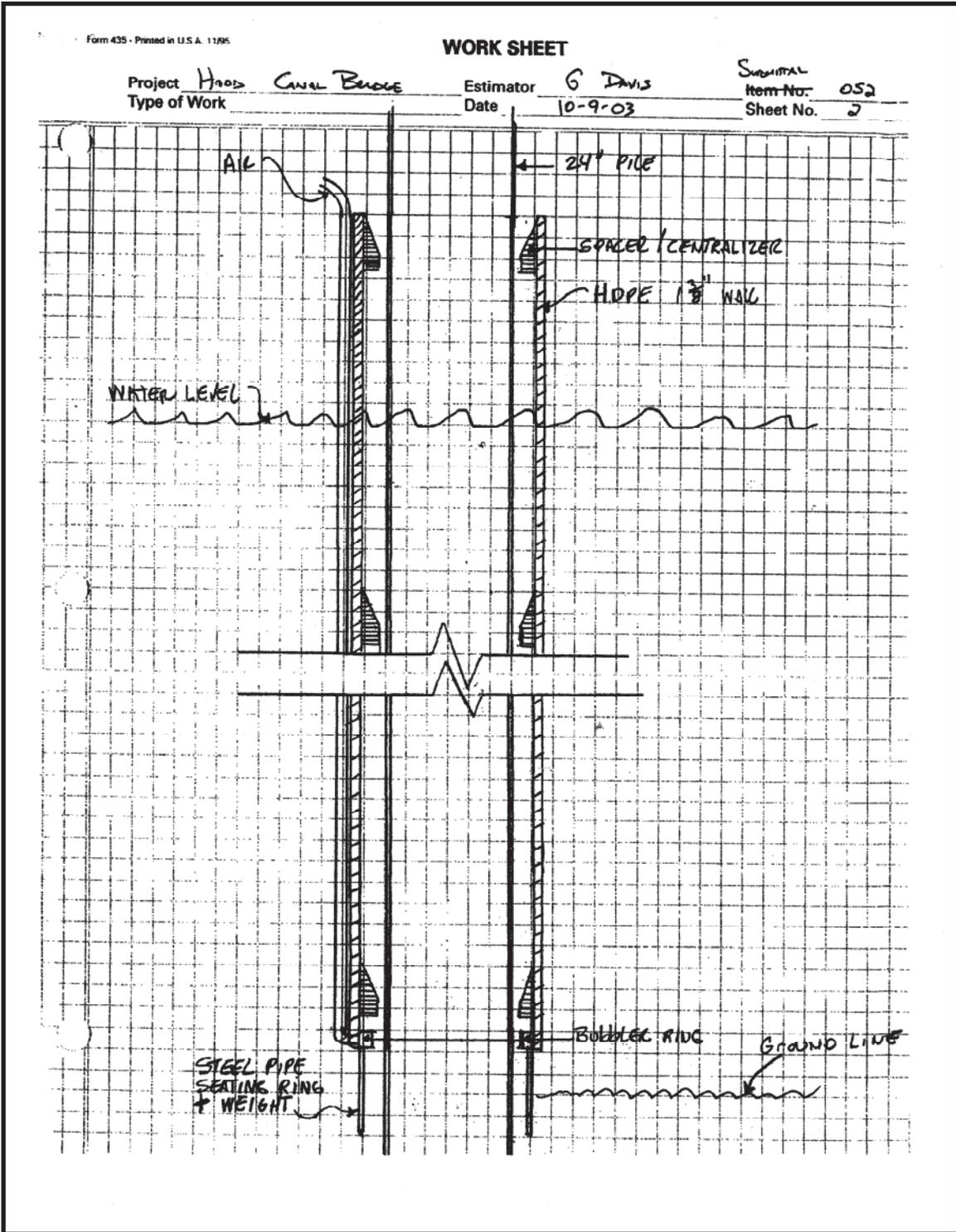


Figure F.3. Contractor's Side View Drawing of Bubble Ring for Confined Bubble Curtain used on Plumb Piles



Figure F.4 . Type II Confined Bubble Curtain Sleeve Showing Air Supply Connection, Bubble Ring, Metal Extension to Contact Substrate

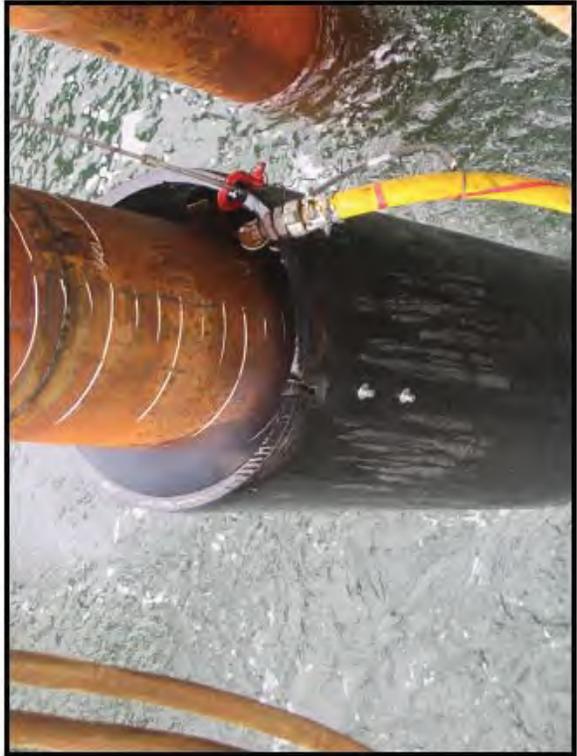
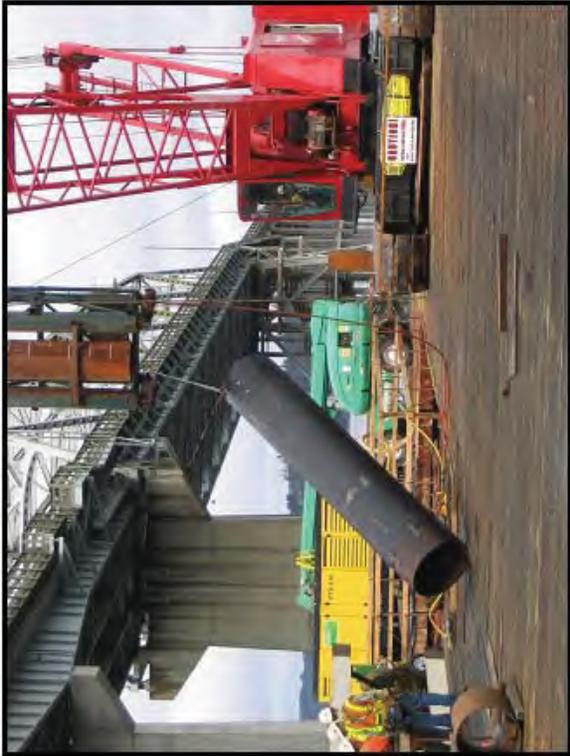


Figure F.5. Type II Confined Bubble Curtain Sleeve Deployed During Driving a Plum b Pile

APPENDIX B

Engineering Memorandum on Platform Material



Technical Memorandum

Date: Tuesday, April 24, 2018

Project: Columbia River Carbonates Marine Terminal

To: Columbia River Carbonates, Attn: Reed Sherar

From: Jenny Carlson, PE, SE

Subject: Light Permeable Surfaces for In-water Structures

Introduction

Columbia River Carbonates (CRC) is proposing a new marine terminal on the Columbia River near Woodland, WA. The proposed in-water structures are designed to have either concrete or steel deck solid horizontal surfaces. It is our understanding a regulatory agency has requested the solid surfaces be replaced with a surface that is light permeable, such as open steel framing. This memorandum is intended to explain the purposes and design criteria for the in-water structures for the proposed marine terminal and how revising the proposed structure details to incorporate light permeable construction for horizontal surfaces will impact their design, construction, and use.

I am the structural engineer of record for the design of the in-water structures including the dolphins, hoist tower platforms, and the pedestrian access catwalks. I have been designing similar in-water structures on the Columbia River for 25 years. I will address each of the structure types and the feasibility for providing light permeable construction below.

Dolphins

There are four dolphin structures proposed for the CRC marine terminal. Two of the structures are mooring dolphins, one each at the extreme upstream and downstream ends of the terminal. The dolphin structures consist of steel pipe piles driven into the river bottom at angles (“batter” piles), a pile “cap”, and a bollard or capstan. The bollard is used to tie marine vessel mooring ropes or “lines” around so the vessel cannot move away from the terminal. We anticipate the tension (pulling) load in the mooring line will be 70 metric tons (MT), or approximately 154,000 pounds. The pile cap is a horizontal structure that ties all the piles and the bollard together. The cap provides a path for loads to travel from the bollard to the piles, which are anchored in the ground.

The other two dolphin structures proposed are breasting dolphins in the central area of the terminal berthline. These dolphin structures also consist of batter piles driven into the river bottom, a pile cap, and a small bollard. In addition, there will be a fender system mounted on the side of the dolphin facing away from the shoreline. The fender system will consist of rubber elements that compress and absorb load when a marine vessel berths or “parks” against dolphin. The vessel can only stop by bumping into the dolphin, causing an impact load. The



anticipated impact load for the breasting dolphin is approximately 300,000 pounds. The small bollard will be used for “spring” lines, which are mooring ropes that run almost parallel to the vessel and keep it from moving up and down stream. The load on the bollard will be approximately 40,000 pounds. Similar to the mooring dolphins, the pile cap is a horizontal structure that ties the piles, bollard, and fender system together and provides a load path from the bollard and fender system to the piles.

The material chosen for the pile cap construction for all of the dolphins is solid concrete that is 4 feet thick. Concrete was chosen for this design because it is relatively homogeneous and provides a simple solution for large loads to be passed from the point of application (bollard or fender system) to the point of resistance (piles). The tops of the piles must be held tightly in position, to prevent rotation of the pile tops. We call this “fixity”. Casting the piles into the deep concrete cap accomplishes this requirement. Another consideration for the use of a concrete pile cap is that it is difficult to install piles precisely where they need to be. A concrete cap is accommodating for out of tolerance piles.

It is possible to design an open steel framed pile cap that would provide adequate structural integrity for these dolphins. However, the load path between the bollards, fender system, and piles would be complex to design. The piles are battered in different directions to allow mooring loads in various directions. Tying the piles to the steel framing at an angle to ensure fixity and allowing for out of tolerance pile installation would require field framing and cutting to make sure the steel pieces fit together. Then extensive on site welding would be required between the piles and framing. The welders would be working over the water and likely during bad weather conditions. This will impact the integrity of the welds and the performance of the structure. The steel framing will likely be at least 4 feet deep, heavy sections, and quite closely spaced. The permeability of the pile cap will be very limited. The steel will also require coating to prevent corrosion, which will create a long term maintenance requirement. It is anticipated the cost of design and construction will increase if a steel frame pile cap is used.

Hoist Tower Platforms

The proposed tubular gallery conveyor system will be supported over the water between two steel framed towers. The proposed towers will extend approximately 70 feet above the platforms which support them. There will be a hoist system with counterweights built into the tops of the two towers which will raise and lower the tubular gallery between the towers as unloading operations require. The weight from the tower steel, counterweights, and tubular gallery will be about 250,000 pounds on each of the tower support platforms. The horizontal loads from wind and earthquakes on the towers that will be resisted by the support platforms will be approximately 50,000 pounds on each platform.

The support platforms are horizontal deck type structures supported by vertical pipe piles. The material chosen for the support platform deck is solid concrete that is 4 feet thick. The reasons for choosing concrete are similar to the reasons stated above for the mooring dolphins. Concrete provides a simple load path from application to resistance, develops pile top fixity, and accommodates out of tolerance pile installation.



I have never seen an open steel frame used in lieu of concrete for a support platform deck over water for towers of this size. The magnitude of the loads being applied to the deck by each column in the tower will require very heavy and closely spaced steel beams and extensive field welding to transfer these loads through steel framing and into the piles. Permeability of the deck will be very limited. It is anticipated the cost of design and construction will be significantly higher to use steel framing for this hoist platform deck.

Catwalks

There are approximately 220 feet of 3 foot wide pedestrian walkways between the in-water structures proposed for this marine terminal. The catwalks are required to allow terminal personnel to assist in mooring vessels. The catwalks will be supported by long-span open steel tubular trusses. Two mid-span supports are proposed. Each mid-span support will be comprised of two battered pipe piles with a horizontal steel cap beam. The proposed deck material is "expanded metal" steel, which has minor openings and serrations for slip resistance.

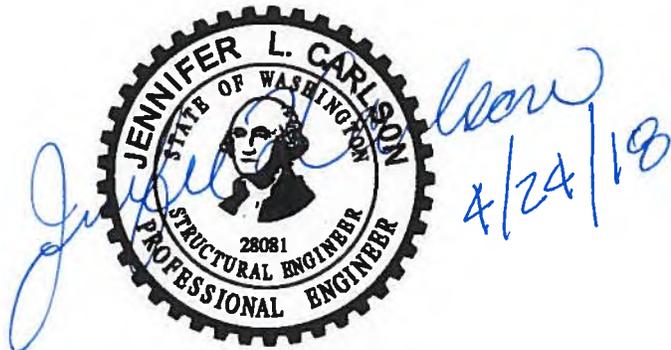
We understand a regulatory agency has requested the deck material be revised to a material with a minimum of 60% open area to allow light penetration. This could be done by installing a fiberglass grating product meeting the 60% requirement with embedded grit for slip resistance. There would be minor impact on design or overall construction cost to make this revision. Similar grating has been used successfully on recent Columbia River over-water catwalk installations.

Conclusion

The design complexities, performance concerns, and cost impacts associated with replacing solid horizontal concrete surfaces with open steel framing for the dolphins and hoist support platforms are significant. I would recommend discussing the issues addressed above with the regulatory agency and request approval to not make this design change. Revising the deck material for the catwalks to incorporate 60% open area is a reasonable design change that I would recommend CRC consider instituting.

Sincerely,

Jenny Carlson, PE, SE



APPENDIX C

NMFS Underwater Noise Calculator Output Forms

Model last updated January 26, 2009

Project Title	CRC Phase 2
Pile information (size, type, number, pile strikes, etc.)	20-inch, impact hammer, no attenuation

Fill in green cells: estimated sound levels and distances at which they were measured, estimated number of pile strikes per day, and transmission loss constant.

	Acoustic Metric			
	Peak	SEL	RMS	Effective Quiet
Measured single strike level (dB)	208	176	187	150
Distance (m)	10	10	10	

Estimated number of strikes	100
-----------------------------	-----

Cumulative SEL at measured distance	196
-------------------------------------	-----

	Distance (m) to threshold			
	Onset of Physical Injury			Behavior
	Peak dB	Cumulative SEL dB**		RMS dB
		Fish ≥ 2 g	Fish < 2 g	
Transmission loss constant (15 if unknown)	206	187	183	150
	15	14	40	74
				2929

** This calculation assumes that single strike SELs < 150 dB do not accumulate to cause injury (Effective Quiet)

Notes (source for estimates, etc.)

(This model was last updated January 26, 2009)

Model last updated January 26, 2009

Project Title	
Pile information (size, type, number, pile strikes, etc.)	24" inch steel WITH attenuation

Fill in green cells: estimated sound levels and distances at which they were measured, estimated number of pile strikes per day, and transmission loss constant.

	Acoustic Metric			
	Peak	SEL	RMS	Effective Quiet
Measured single strike level (dB)	205	174	182	150
Distance (m)	10	10	10	

Estimated number of strikes	100
-----------------------------	-----

Cumulative SEL at measured distance	194
-------------------------------------	-----

	Distance (m) to threshold			
	Onset of Physical Injury			Behavior
	Peak dB	Cumulative SEL dB**		RMS dB
		Fish ≥ 2 g	Fish < 2 g	
Transmission loss constant (15 if unknown)	206	187	183	150
	15	9	29	54
				1359

** This calculation assumes that single strike SELs < 150 dB do not accumulate to cause injury (Effective Quiet)

Notes (source for estimates, etc.)

(This model was last updated January 26, 2009)

APPENDIX D

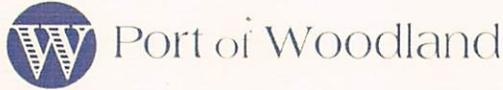
Listed Species in the Lower Columbia River by Life Stage

Table D-1. ESA-listed Fish Species in the Lower Columbia River by Life Stage (NMFS 2011).

Species	Life Stage	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Eulachon (Southern DPS)													
	Adult migr. & holding												
	Adult spawning												
	Egg incubation												
	Larvae emigration												
Green Sturgeon (Southern DPS)													
	Subadult Rearing (& Overwintering)												
Chinook Salmon													
Lower Columbia River	Adult migr. & holding												
	Juvenile rearing												
	Juvenile emigration												
Upper Columbia River	Adult migr. & holding												
	Juvenile rearing												
	Juvenile emigration												
Upper Willamette River	Adult migr. & holding												
	Juvenile rearing												
	Juvenile emigration												
Snake River Spring/Summer	Adult migr. & holding												
	Juvenile rearing												
	Juvenile emigration												
Snake River Fall	Adult migr. & holding												
	Juvenile rearing												
	Juvenile emigration												
Chum Salmon													
Columbia River	Adult migr. & holding												
	Juvenile rearing												
	Juvenile emigration												
Coho Salmon													
Columbia River	Adult migr. & holding												
	Juvenile rearing												
	Juvenile emigration												
Sockeye Salmon													
Columbia River	Adult migr. & holding												
	Juvenile rearing												
	Juvenile emigration												
Steelhead													
Lower Columbia River	Adult migr. & holding												
	Juvenile rearing												
	Juvenile emigration												
Middle Columbia River	Adult migr. & holding												
	Juvenile rearing												
	Juvenile emigration												
Upper Columbia River	Adult migr. & holding												
	Juvenile rearing												
	Juvenile emigration												
Upper Willamette River	Adult migr. & holding												
	Juvenile rearing												
	Juvenile emigration												
Snake River	Adult migr. & holding												
	Juvenile rearing												
	Juvenile emigration												

 = Present
  = Relatively Abundant
  = Peak Occurrence
 Source: NMFS 2011

Exhibit 6: Port of Woodland Commission Letter of Support



April 3, 2025

Columbia River Carbonates
1903 Dike Road
Woodland, WA 98674

Dear Brady Wale:

The Port of Woodland owns property directly next to the Columbia River Carbonates at 1881 Dike Road as well as the Port's future marine terminal properties north of their site. As an economic development agency, the Port has had a long relationship with Columbia River Carbonates starting in the early 1980s. CRC is a valuable company to the region, supporting our mills to the north, and products that travel far and wide throughout our region and country.

CRC's advancement in improving their existing dock facility is supported by the Port of Woodland. The impacts of their terminal on our adjacent property have been minimal. The additional barge frequency and material unloading would impact on the community through additional job creation, job retention, and support new industries that utilize the additional product needed with this expansion.

The additional transportation impact in combination with the minimal transportation that the Port anticipates at its future marine terminals, will be addressed through improved transportation corridors like Dike Road, Dike Access Road, and the city streets of Schurman Way and N. Pekin. N. Pekin is already slated for a full revamp of improvements and Schurman Way, a main arterial road for the City, is already of an industrial standard for traffic. Other onsite improvements at the terminal site will meet the needs of the company for many years to come.

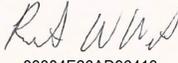
The Port supports this new endeavor by CRC and looks forward to working with them for their continued success.

Sincerely,

Paul Cline

Signed by:

4639C486455E418...
Robert D. Rich

Signed by:

33384E26AD96413...
Robert Wile

PORT OF WOODLAND COMMISSION

Bob Wile
1608 Guild Road, Woodland, WA, 98674

Paul Cline
Phone: 360.225.6555

Robert Rich
Website: www.portofwoodland.com



Tuesday, July 29, 2025

Cowlitz County Building and Planning
207 4th Avenue N
Kelso, Washington 98626
Attn: Cody Crytzer, Senior Environmental Planner

RE: CRC Marine Terminal Expansion Needs
Columbia River Carbonates
(Woodland Terminal Blending & Storage Facility)

Columbia River Carbonates (CRC) is seeking an expansion to the upland storage and an increase in barge trips to our recently completed Marine Terminal, also known as the Woodland Terminal Blending & Storage Facility. There are several driving factors that necessitate this expansion. We have grown significantly since the permitting phase for the original project was submitted in 2013. When the original project was conceived, CRC processed approximately 120,000 tons per year of material. Currently CRC processes nearly 300,000 tons of material annually. The limited size of the current stockpile makes logistics complicated, necessitating transporting the material to a stockpile at the processing facility before being transported for processing, which increases the chances for contamination from the environment.

The existing storage facility can only handle two barges worth of material. This only amounts to a few weeks of storage. In winter months during bad weather or when the barge must be serviced, the material must be transported multiple times to move it to an emergency stockpile, and then transported again to bring it into the plant.

There is also a potential client (Atlas Agro) that has approached CRC about needing product in excess of 200,000 tons per year. This client has plans to make significant investments in a more environmentally sustainable fertilizer plant in eastern Washington. Logistically we are the best suited to supply them with raw material. Even if this client does not build their facility, CRC has observed a 6% annual growth in product demand over the time we have been in business. Regardless of



COLUMBIA RIVER CARBONATES

300 North Pekin Road
Woodland, WA 98674
Phone: 360-225-6505

the new potential client, we would need the additional trips and upland storage capability just to handle typical growth in the near future.

Please contact me with any questions at (360) 225-4105 or at the above address.

Sincerely,

A handwritten signature in black ink that reads "Braden Wade". The signature is written in a cursive, flowing style.

Braden Wade, Engineering Manager

Exhibit 8: Columbia River Carbonates Proposed Change of Permit Conditions Summary

Columbia River Carbonates Existing Permit Conditions and Proposed Permitting Summary

The following table analyses the previously permitted project conditions set forth in Cowlitz County permits, against the newly proposed changes to operations and what was previously considered as the “auxiliary stockpile.”

Existing Permit Conditions per HE Decision	Proposed Conditions and Requests
Follow up noise study	Complete and in compliance with noise ordinance
Stockpiling, loading, hauling, and trucking operations, and other upland operations and activities, excluding barge unloading and maintenance, are restricted to the normal hours of operation of 7:00 am to 6:00 pm, Monday through Friday, excluding state holidays.	No new proposals are included for upland hours of operations.
Construction work, upland operations or barge unloading outside of normal hours of operation may be approved by the Director of Building and Planning provided that: a. Provide 14 days notice, applicant provides evidence that urgent business requires the change, all equipment utilizes backup alarms or lights, and no approval under this condition shall be allowed for barge unloading that is prohibited by Condition No. 15 (which are the barge unloading hours of operation. See row below).	This condition is understood to likely be included in the new SSDP. CRC agrees with this condition and likes the flexibility for upland hours of operation to be changed at the discretion of the Director.
Barge unloading is restricted to normal hours of operation of 7:00 am to 10:00 pm Monday through Friday, excluding State holidays. Barge mooring operations and barge offloading operations are prohibited during the following holiday weekends: Memorial Day, Independence Day, and Labor Day. (definition of holiday weekends). The applicant shall coordinate with the Director of Building and Planning and the WDFW to identify other weeks of expected peak salmon and steelhead runs and will use best efforts to schedule barge operations to avoid those weeks which shall be no more than four (4) weeks per year.	CRC is requesting an increase of barge offload days to include Saturday and Sunday and for operations to be 24 hours per day. CRC will still follow the State holiday closures and peak salmon and steelhead closures as previously required by the HE decision.
No more than 24 barges shall be unloaded each calendar year. Barges must be promptly removed as soon as practicable once unloading is complete.	Requesting 48 barges per year to accommodate additional 200,000 tons of material per potential client needs.
The northwest corner of the property described as the “Auxiliary Stockpile” shall not be used without applicant making application for a new SSDP for the use of the area.	Requesting to use the auxiliary stockpile to now accommodate an additional 200,000 tons of material per year to supply a potential client request. The auxiliary stockpile will expand on-the-ground storage by approximately 35,000 tons. The applicant owns the property, and it is no longer the “Landels Property.” <ol style="list-style-type: none"> 1. Increase the asphalt stockpile pad from 37,867 square feet (approximately 40,000 tons of storage) to approximately 83,000 square feet to 102,000 square feet. 2. Expand asphalt haul road on north and west sides. 3. Reconstruct the biofiltration swale.
The haul trucks shall only use the route addressed in the Environmental Review (Dike Road South to Caples Road, and then east to north Pekin Road), without an amendment to the SSDP.	CRC will continue to use this trucking route. No changes proposed.



ABD Engineering & Design

Architectural Acoustics • AV Design • Noise & Vibration

November 7, 2024

Brady Wale
Columbia River Carbonates
300 N Pekin Dr.
Woodland, WA 98674
360-225-4105 | bwale@carbonates.com

Re: Columbia River Carbonates – Marine Terminal Noise Study

Introduction

This report summarizes the results of a noise study conducted by ABD Engineering & Design, Inc. (ABD) to determine if the current operation of CRC’s Marine Terminal facility in Woodland, Washington is in compliance with the applicable state noise regulations as required under the conditions of approval imposed by the amended Conditions of Approval (Permit 13-06-0570, Appeal 15-07-3229) issued by Cowlitz County:

“11. Maximum permissible noise levels shall be in accordance with the provisions of WAC Chapter 173-60.”

As shown in this report, it was determined that the site is operating in compliance with the WAC noise criteria and the Conditions of Approval related to noise.

Background

The Columbia River Carbonates (CRC) Marine Terminal facility is located at 1901 Dike Road, Woodland, WA, 98674. When the site was permitted in 2015, several Conditions of Approval were applied by Cowlitz County per Appeal No. 15-07-3229 on Permit No. 13-06-0570. That decision indicated that the facility must comply with the noise regulations found in the Washington Administrative Code, Title 173 Department of Ecology, Chapter 60 Maximum Environmental Noise Levels. It also required the installation of several noise reduction measures.

One of the conditions indicated in the Conditions of Approval was that following the start of operations, a noise study must be conducted within six months. The construction of the facility was completed in August 2024, and the facility has been in a testing phase since that time.

This report details ABD’s measurements, analysis, and conclusions regarding the noise levels at the CRC Marine Terminal facility. This fulfills condition 11.a of the Conditions of Approval.

Terminology

When dealing with sound, the physical quantity is expressed as sound pressure level, and the perceived level is expressed as loudness. Sound pressure level is measured in units called decibels (abbreviated dB). Decibels are power ratios that are quantified using logarithmic units¹. Audible sound occurs over a wide frequency range, from approximately 20 Hertz (Hz) to 20,000 Hz. Human hearing does not respond equally to sounds at different frequencies (or pitches) – a high-frequency sound will generally be perceived as louder than a low-frequency sound of the same decibel level². A frequency weighting can be applied to sound level measurements to accommodate this variation in frequency sensitivity of human hearing to provide a single-number rating that has some correlation with the sensitivity of the human ear. When the weighting is applied, the resulting sound level measurements are said to be “A-weighted” and the decibel level is abbreviated dBA.

Table 1 lists some commonly encountered noises, their A-weighted sound pressure levels, and associated subjective evaluations:

Table 1. Noise source comparison

Subjective Evaluation		A-weighted Decibels	Examples
Deafening		140 dBA	Near jet engine
		130 dBA	Threshold of Pain
		120 dBA	Threshold of Feeling – rock band
		110 dBA	Chainsaw (at 3 ft)
Very Loud		100 dBA	Loud auto horn (at 10 ft)
		90 dBA	OSHA 8-hour Noise Exposure Limit
Loud		80 dBA	Shouting (at 3 ft)
		70 dBA	Busy office
Moderate		60 dBA	Conversational speech (at 3 ft)
		50 dBA	Average office
Faint		40 dBA	Soft radio music in apartment
		30 dBA	Average residence without stereo playing
Very Faint	20 dBA	Average whisper	
	10 dBA	Human breathing	
Threshold of Hearing	0 dBA	Threshold of Audibility	

Adapted from *Concepts in Architectural Acoustics* by M. David Egan (1972) and *Architectural Acoustics: Principles and Design* by M. Mehta, J. Johnson, and J. Rocafort (1999)

It is helpful to have some idea of the qualitative experience of changes in noise levels – this is illustrated in Table 2.

¹ Because decibels are a logarithmic unit, when several decibel levels are combined, logarithmic addition is used instead of typical arithmetic addition. For instance, 40 dB + 40 dB = 43.0 dB, 50 dB + 50 dB = 53.0 dB, and 40 dB + 50 dB = 50.4 dB, which rounds to 50 dB.

² D.W. Robinson and R.S. Dadson, “A Re-Determination of the Equal-Loudness Relations for Pure Tones,” *British Journal of Applied Physics*, vol. 7, pp. 166-181, 1956. (Adopted by the International Standards Organization as Recommendation R-226.)

Table 2. Subjective effects of changes in sound levels

Change in Sound Level	Change in Apparent Loudness
3 dB	Just perceptible
5 dB	Clearly perceptible
10 dB	Twice or half as loud
20 dB	Much louder or quieter

Table 12.2 in *Engineering Principles of Acoustics* by Douglas D. Reynolds (1981)

Since noise tends to fluctuate over time, especially for environmental measurements, the A-weighted sound level alone is not sufficient to describe the noise environment at a given location. Therefore, statistical sound levels (also called percentile levels or L_n) are used to describe the time-varying characteristics of the sound.

The relevant statistical metrics for this project are the hourly $L_{2.5}$, $L_{8.33}$, and L_{25} sound levels, which represent the sound level exceeded for 2.5% (1.5 minutes), 8.33% (5 minutes), and 25% (15 minutes) of an hour, respectively. For instance, if the hourly L_{25} of a measurement is 55 dBA, this means the sound level was 55 dBA or louder for a total of 15 minutes (usually spread out over the hour), and quieter than 55 dBA for the other 45 minutes of the hour.

The statistical sound levels are typically interpreted as follows:

- $L_{2.5}$ level – generally corresponds to short-term noise events, such as loud horns or aircraft pass-bys.
- $L_{8.33}$ level – provides a measure of loud sounds that occur more frequently.
- L_{25} level – represents more continuous noise.

In addition to the statistical limits, the WAC noise code also includes a limit on the L_{max} noise level, which is the loudest 1-second average A-weighted level during the measurement period.

Conditions of Approval

In the Conditions of Approval (CoA), condition 11 indicates that “Maximum permissible noise levels shall be in accordance with the provisions of WAC Chapter 173-60.” The State noise ordinance is discussed in the following section.

In addition, the CoA requires that haul trucks only operate between 7 a.m. and 6 p.m. (condition 12), and barge unloading only occurs between 7 a.m. and 10 p.m. (condition 15). A 15 foot tall sound wall is also required on the north edge of the property (condition 11.b).

A copy of the Conditions of Approval is included in Appendix B for reference.

Washington Administrative Code

WAC 173-60 – Maximum Environmental Noise Levels is the statewide noise code. It is noted that these regulations apply to all noise-generating facilities. However, the relevant noise limits depend on the usage of both the source and receiving properties.

The WAC noise limits apply at a *receiving property* which are classified under different EDNAs, and levels can be measured at any point within that property. The WAC regulations define several types of EDNA³, or “environmental designation for noise abatement.” A Class A EDNA

³ WAC 173-60-030(1), Identification of environments.

is a property used for human habitation, including residential and camping facilities. A Class C EDNA is a property with high-noise economic activity, including industrial and storage facilities. The Marine Terminal facility would be classified as the Source Property and a Class C EDNA, and the nearby RV park is the Receiving Property and a Class A EDNA. The properties to the south and east are unoccupied industrial or agricultural, and are not noise-sensitive.

The noise level criteria for noise generated by the site are shown in Table 3. In addition to the time limitations given in the WAC, the table also includes the corresponding common metric that is measured by a sound level meter. Figure 1 shows the general layout of the site, the locations of the closest residences, and the relevant property lines. A copy of WAC 173-60 is included in Appendix C for reference.

Table 3. WAC “Maximum Permissible Environmental Noise Levels” for a Class C EDNA source property and Class A EDNA receiving property

WAC 173-60-040(2) <i>Allowable Noise Levels in Any One Hour Daytime, 7 a.m. to 10 p.m.</i>		
Allowable Time Period in WAC	Common Metric	Maximum Level
Longer than 15 minutes	L ₂₅	60 dBA
Between 5 and 15 minutes	L _{8.33}	65 dBA
Between 1.5 and 5 minutes	L _{2.5}	70 dBA
Less than 1.5 minutes	L _{max}	75 dBA



Figure 1. Area layout and property lines

Sound Level Measurements

ABD performed sound level measurements around the site from the afternoon of October 24 to the afternoon on October 25, 2024. During this time, the facility was operated normally.

Facility Operations

Typical Operation

Barges with piles of carbonate rock material arrive approximately once every 2 weeks, and are docked at the moorage area. A front-end loader (FEL) on the barge scoops up carbonate and deposits it in a hopper, which feeds a conveyor belt system. The conveyor belt runs from the hopper over several towers to the central pivot point, where the material falls down a chute onto a luffing conveyor. This conveyor rotates, extends in and out, and moves up and down to stack material radially in the storage area. Unloading the barge takes approximately 3 days to complete, and this operation occurs only between 7 a.m. and 10 p.m. on weekdays.

In the storage area, a separate FEL moves some material into a convenient stockpile. Haul trucks enter the site, and the FEL transfers material into the truck beds. The trucks drive around the perimeter of the site following the one-way restrictions, and exit the site towards the main facility. Haul trucks were observed to run as often as every 5 minutes, but sometimes less frequently. Haul truck operations only occur between 7 a.m. and 4 p.m.

Conditions During Sound Measurements

The long-term measurements started in late morning on Thursday 10/24. Shortly after measurements began, the conveyor was halted for approximately an hour for maintenance. After resuming operation, it was noted that there was the sound of a worn bearing from the end of the luffing conveyor. The conveyor was run in this condition from approximately noon to 3 p.m., at which time operations were halted again to replace the conveyor motor. The conveyor was restarted at 5 p.m. and ran until shortly before 10 p.m.

On Friday 10/25, the conveyor was started shortly after 7 a.m. and ran continuously until at least 6 p.m. when the measurements were complete.

ABD was onsite during the afternoon of 10/24 and performed attended measurements at all sound level meter locations. Attended measurements were also conducted prior to the end of the measurement period on 10/25.

Per discussion with the facility engineering manager and observations, vibration-damping material was installed both at the hopper on the barge, and at the pivot point between the transfer and luffing conveyors.

The FEL on the barge loads a hopper feeding the conveyor system. It was noted that due to space restrictions on the barge, the FEL has limited space to move and is therefore slower at the beginning of the 3-day unloading period (including when these measurements were taken). Therefore, after the FEL dumps a load of material in the hopper, there is a short gap until the next load is emptied. This means that there are short periods when the conveyor is running empty between scoops. As more space is made on the barge, the FEL can move faster, and can load the hopper such that the conveyor will run with material more continuously. Because the conveyor had a duty cycle greater than 50%, the maximum and statistical levels would be similar at the beginning and end of the unloading process.

As indicated in Figure 2, ABD observed that a large concrete sound wall approximately 15 feet tall was installed along the north edge of the site (condition 11.b).



Figure 2. Site layout and sources

Measurement Locations

Measurements were taken at four locations on the RV park property, as well as an additional measurement near the conveyor pivot for reference purposes. As shown in Figure 3, these measurements are indicated by the distance from the sound wall, and the reference measurement location is labeled with *Ref*. Continuous measurements were made with Soft dB Piccolo II sound level meters, which conform to ANSI S1.4 Type 2 specifications. At the *Ref* location, continuous measurements were made with a Larson Davis model 831 sound level meter, which conforms to ANSI S1.4 Type 1 specifications. Attended measurements were made at all meters using a Larson Davis model 831 meter, and audio recordings were made at the *Ref* location.

No measurements were taken to the south of the facility, as that property is another industrial facility, and is not noise-sensitive. The land to the east of the facility is agricultural field, which is also not noise-sensitive.



Figure 3. Sound measurement locations

As can be seen in the figure, the measurement locations were located on the RV property. The distances given in the figure indicate the distance from the sound wall. There is approximately a 10 ft buffer between the sound wall and property line, so the points are at 5, 90, 230, and 365 feet from the property line. The *Ref* location was used to determine when the site was active.

Measured Sound Levels

As discussed in the *Washington Administrative Code* section above, there are four relevant noise metrics for the Washington noise ordinance, which are the hourly L_{25} , $L_{8.33}$, and $L_{2.5}$ statistical noise levels and the L_{max} level. The measured noise levels for each of these metrics are presented in Figure 4, Figure 5, Figure 6, and Figure 7, respectively. Tables showing the measured levels are also presented in Appendix A at the end of this report. The graphs show the hourly statistical and maximum levels at each of the four receiver measurement locations. The cyan line indicates the WAC noise limit for that metric during times in which the site was active.

Noise from the CRC facility was not the only noise measured by the sound level meters. Because the receiving property is an active RV park, there were several local noise sources that affected levels at individual meters, as well as some other sources such as planes that affected levels at multiple meters but were unrelated to the activities from the CRC facility. These are discussed in more detail in the following section. For clarity, these sources have been removed from the data and the hourly levels recalculated for the data presented in the graphs. Both the original and adjusted values are shown in Appendix A.

It is also noted that the CRC facility is not active after 10:00 p.m. or before 7:00 a.m., in compliance with the conditions of approval. Therefore, the levels measured at night are generated by sources other than CRC, and thus are not governed by the WAC limits.

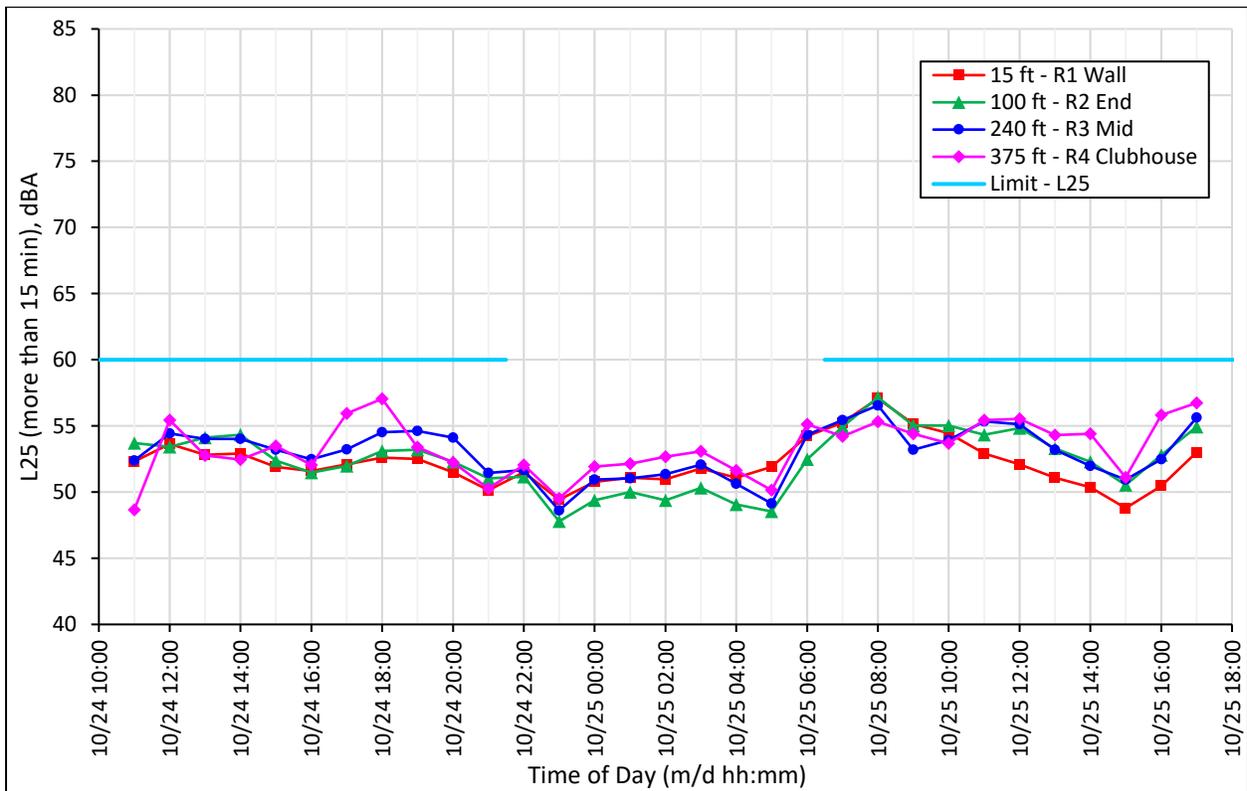


Figure 4. Measured hourly L₂₅ levels (sound present for more than 15 minutes)

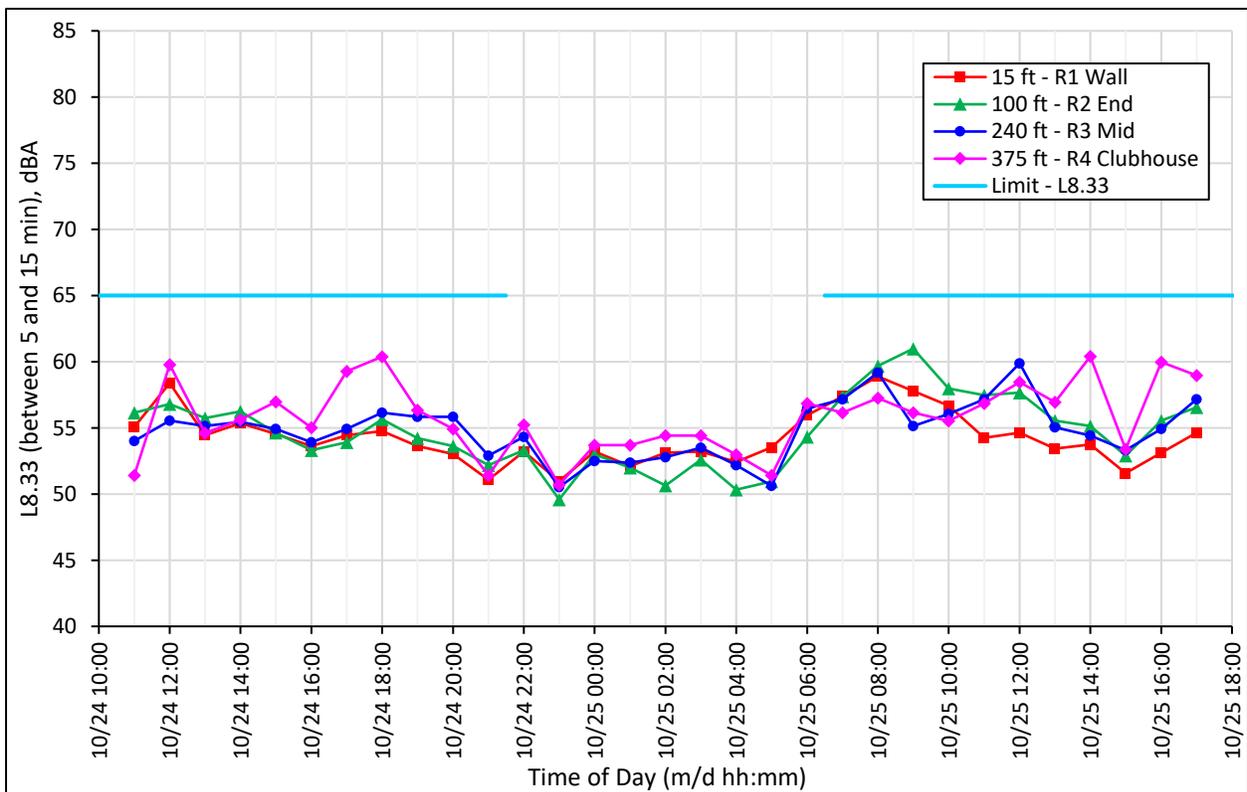


Figure 5. Measured hourly L_{8.33} levels (sound present between 5 and 15 minutes)

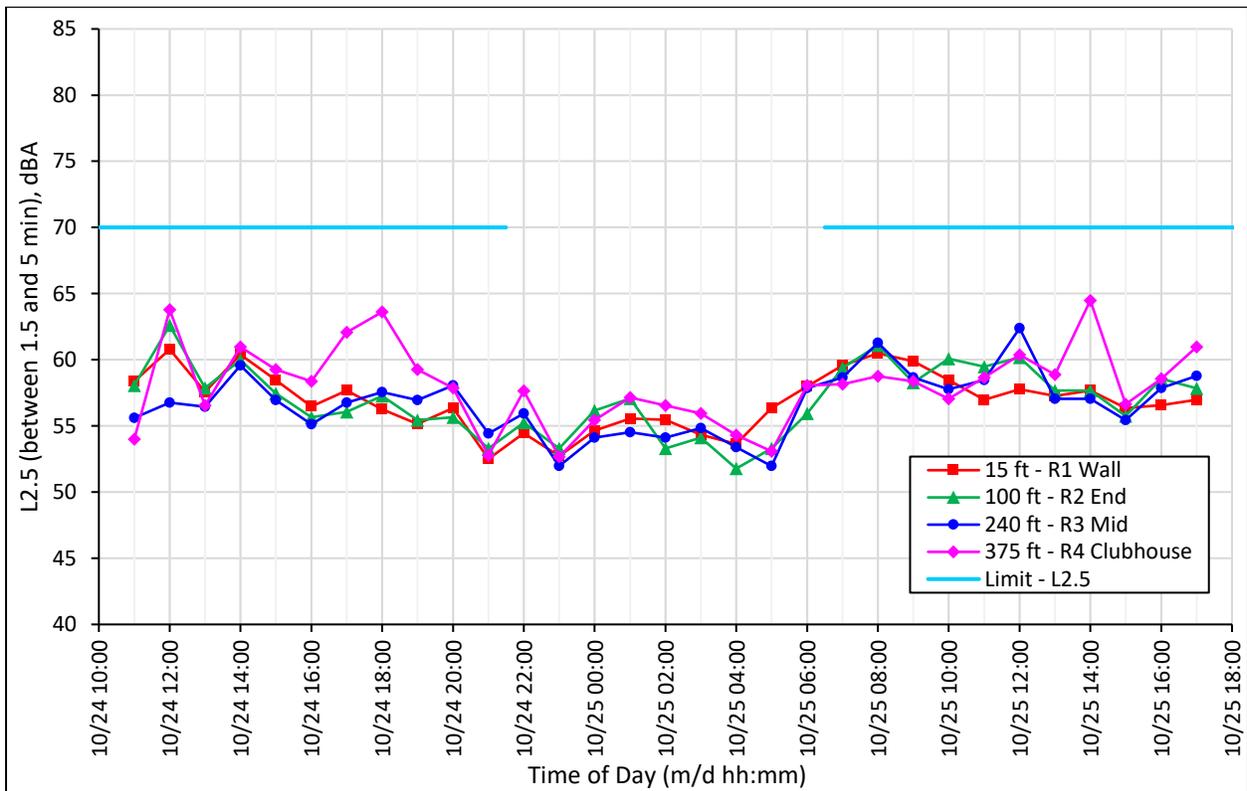


Figure 6. Measured hourly $L_{2.5}$ levels (sound present between 1.5 and 5 minutes)

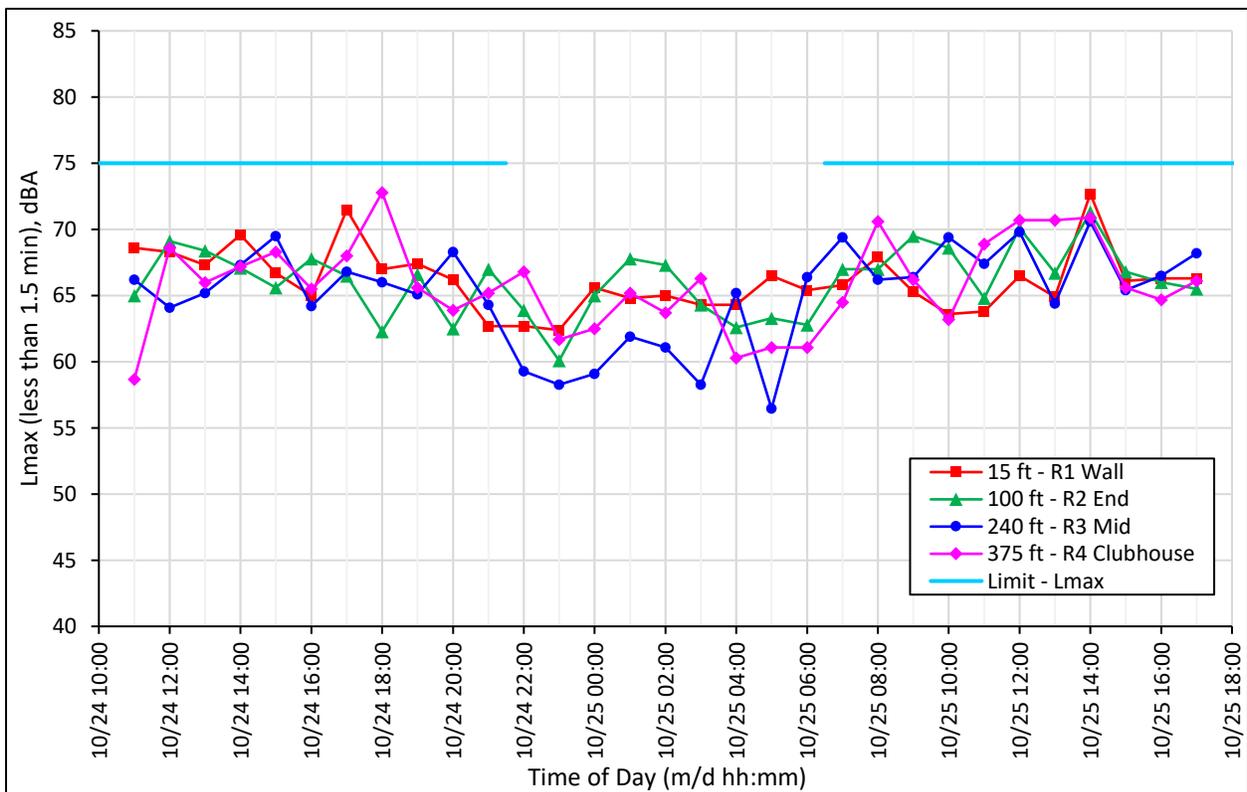


Figure 7. Measured hourly L_{max} levels (sound present less than 1.5 minutes)

Discussion of Measured Noise Levels

Several extraneous noise sources affected the measured levels. These sources were determined to be not related to the CRC operations based on relative levels, spectra, and when various sources were operating.

Figure 8 presents an example 1-hour period near the beginning of the measurement demonstrating several different noise sources and their effects on the measured levels.

- 12:06-12:13 – the CRC site was inactive (the black line for the *Ref* meter is low), but the levels at all of the meters at the RV park were elevated. The green line is highest, which indicates that this was a noise source near to the *R2* meter at the southern-most row of RVs. This was likely a generator or a truck engine on one of the RVs. This section of data was removed from all meters to calculate the adjusted hourly levels for the 12:00 hour.
- 12:15-12:20 – the spikes in the data for the *Ref* meter are pass-bys of haul trucks which had been loaded by the FEL from the stockpile. As can be seen, there is no correlation between these spikes and the levels at the RV park – this activity is essentially inaudible.
- 12:24-12:36 – the levels at meter *R4* are elevated, but none of the others are affected. The elevated levels do not correspond with times when the CRC facility was active. Additionally, the levels vary widely from 50 to 70 dBA. This indicates that the noise source is talking or children playing at the clubhouse patio, which is near to the *R4* meter. This section of data was removed from the *R4* data only to calculate the adjusted hourly levels for the 12:00 hour.
- 12:28 – as shown by the increase in level of the *Ref* meter (black line) to 65 dBA, the conveyor was started at the CRC facility. As noted in the *Conditions During Sound Measurements* section above, this is the period when the conveyor was being run with a squeaky bearing. A small increase in levels at some of the meters can be seen compared to the ambient data prior.
- 12:44 – carbonate material began running over the conveyor. As noted in the *Conditions During Sound Measurements* section, the hopper on the barge will empty before the FEL can load the next scoop, so material flows in approximately 60-second intervals with short gaps. The increase in level up to 75 dBA at the *Ref* location is due to rocks falling from the upper conveyor down a short chute onto the luffing conveyor at the pivot point. Vibration-damping rubber has been installed on this chute to eliminate rock-on-metal contact, which significantly reduces noise. There is also a short burst of noise from the barge as the FEL loads material into the hopper (which is also covered with vibration-damping rubber), which can be seen as the small spikes in level at the *R1-R4* locations about 30 seconds before the rockfall at the pivot point chute (there is no wall between the barge and RV park, so the hopper loading noise is louder than the chute rockfall noise). A slight increase in the *R1-R4* levels can be seen as the rockfall occurs at the chute – this is audible but not especially noticeable at the RV park. It is noted that the sound of rocks falling from the end of the conveyor onto the stockpile is barely audible at the *Ref* point, and inaudible at the RV park.

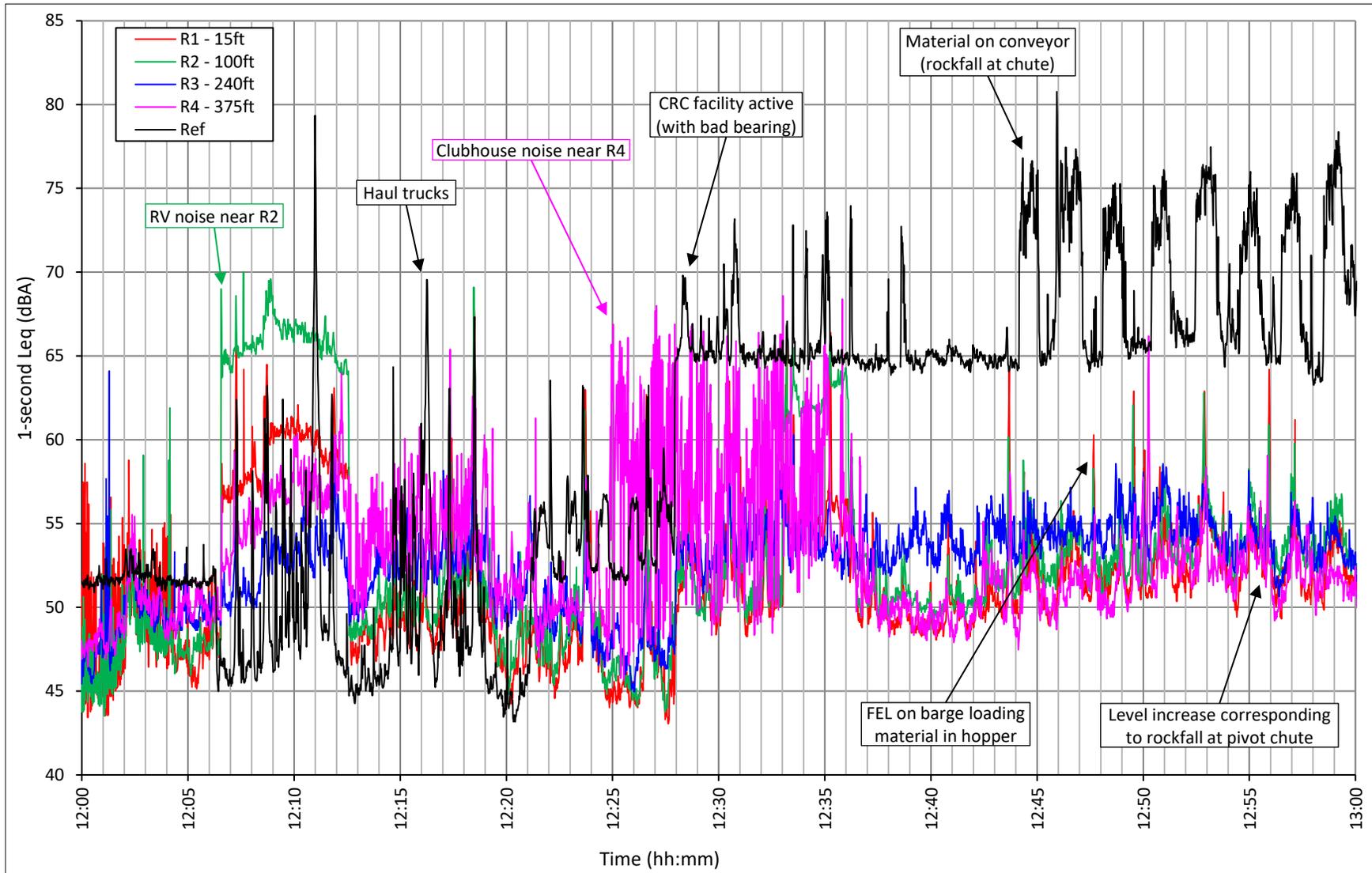


Figure 8. One hour level comparison illustrating extraneous sound sources and effect of CRC facility noise, Thursday 10/24/24, 12:00 p.m. to 1:00 p.m.

Compliance with Conditions of Approval

Compliance with State Noise Regulation

As shown in Figure 4 through Figure 7 and Appendix A, with sources unrelated to the CRC removed from the data, the noise levels measured on the RV park property were below the WAC criteria for all four metrics when the facility was in operation. Therefore, the facility is in compliance with the WAC 173-60-040 noise regulation. This noise study thus fulfills condition 11.a of the 2015 Conditions of Approval.

Compliance with Other Conditions Related to Noise

A noise wall of approximately 15 feet is installed along the north property line, which satisfies condition 11.b. Haul truck operations occur only between 7:00 a.m. and 4:00 p.m. Monday through Friday, which meets condition 12. Barge unloading operations occur only between 7:00 a.m. and 10:00 p.m. Monday through Friday, which meets condition 15. FELs are equipped with white-noise backup alarms, which meets conditions 13.c and 14.

If you have any questions, please contact us.

Sincerely,

ABD Engineering & Design, Inc.

Per:



Benjamin Wolf, INCE Bd. Cert.

Senior Acoustical Consultant



cc: Lauren Slattery, Melinda Miller, Marci Boks – ABD

Appendix A - Measured and Adjusted Hourly Noise Levels

CRC Marine Terminal

Thursday, October 24, 2024, 11:00 a.m.

through

Friday, October 25, 2024, 6:00 p.m.

Hourly L₂₅ Measurements

Hour beginning	15ft (R1)	100ft (R2)	280ft (R3)	375ft (R4)	Ref	WAC L ₂₅ Limit	Notes
10/24/2024 11:00	52.3	53.7	52.5	48.7	54.9	60	
10/24/2024 12:00	53.6	54.5 53.4	54.4	55.4	64.4	60	Removed RV noise near R2
10/24/2024 13:00	52.8	54.1	54.0	52.8	72.2	60	
10/24/2024 14:00	52.9	54.3	54.0	52.5	70.9	60	
10/24/2024 15:00	51.9	52.4	53.2	53.5	56.6	60	
10/24/2024 16:00	51.6	51.5	52.5	52.6 52.0	57.9	60	Removed clubhouse noise near R4
10/24/2024 17:00	52.1	52.0	53.2	56.2 55.9	61.1	60	Removed clubhouse noise near R4
10/24/2024 18:00	52.6	53.1	54.5	58.4 57.0	68.6	60	Removed clubhouse noise near R4
10/24/2024 19:00	52.5	53.2	54.6	58.3 53.4	68.4	60	Removed clubhouse noise near R4
10/24/2024 20:00	51.5	52.3	54.1	52.6 52.3	66.4	60	Removed clubhouse noise near R4
10/24/2024 21:00	50.1	51.1	51.5	50.3	63.8	60	
10/24/2024 22:00	51.5	51.2	51.7	52.0	52.6	50	CRC site inactive
10/24/2024 23:00	49.4	47.8	48.6	49.5	48.5	50	CRC site inactive
10/25/2024 0:00	50.8	49.4	50.9	51.9	49.7	50	CRC site inactive
10/25/2024 1:00	51.1	50.0	51.0	52.1	50.9	50	CRC site inactive
10/25/2024 2:00	51.0	49.4	51.3	52.7	49.8	50	CRC site inactive
10/25/2024 3:00	51.8	50.3	52.1	53.1	50.2	50	CRC site inactive
10/25/2024 4:00	51.1	49.1	50.6	51.6	48.7	50	CRC site inactive
10/25/2024 5:00	51.9	48.5	49.1	50.2	49.4	50	CRC site inactive
10/25/2024 6:00	54.2	52.5	54.3	55.1	55.6	50	CRC site inactive
10/25/2024 7:00	55.3	54.9	55.4	54.2	66.6	60	
10/25/2024 8:00	57.1	57.2	56.6	55.3	73.8	60	
10/25/2024 9:00	55.2	55.0	53.2	54.4	65.7	60	
10/25/2024 10:00	54.4	55.0	53.9	53.7	61.2	60	
10/25/2024 11:00	52.9	54.3	55.3	55.4	62.7	60	
10/25/2024 12:00	52.1	54.8	55.1	55.5	69.0	60	
10/25/2024 13:00	51.1	53.3	53.2	54.3	68.5	60	
10/25/2024 14:00	50.4	52.3	52.0	54.4	66.9	60	
10/25/2024 15:00	48.8	50.5	50.9	51.1	63.0	60	
10/25/2024 16:00	50.5	52.8	52.5	55.8	66.8	60	
10/25/2024 17:00	53.0	54.9	55.7	56.7	71.8	60	

Hourly L_{8,33} Measurements

Hour beginning	15ft (R1)	100ft (R2)	280ft (R3)	375ft (R4)	Ref	WAC L _{8,33} Limit	Notes
10/24/2024 11:00	55.1	56.2	54.1	51.4	60.4	65	
10/24/2024 12:00	58.4	64.9 56.8	55.5	59.8	65.6	65	Removed RV noise near R2
10/24/2024 13:00	54.5	55.7	55.1	54.6	74.6	65	
10/24/2024 14:00	55.4	56.3	55.4	55.6	74.3	65	
10/24/2024 15:00	54.5	54.6	54.9	57.0	58.1	65	
10/24/2024 16:00	53.6	53.3	53.9	56.5 55.0	60.2	65	Removed clubhouse noise near R4
10/24/2024 17:00	54.4	53.9	54.9	60.1 59.3	66.2	65	Removed clubhouse noise near R4
10/24/2024 18:00	54.7	55.6	56.1	62.9 60.4	73.9	65	Removed clubhouse noise near R4
10/24/2024 19:00	53.6	54.2	55.8	61.1 56.3	71.1	65	Removed clubhouse noise near R4
10/24/2024 20:00	53.0	53.6	55.8	55.8 54.9	69.7	65	Removed clubhouse noise near R4
10/24/2024 21:00	51.1	52.2	52.9	51.4	67.7	65	
10/24/2024 22:00	53.2	53.3	54.3	55.2	55.0	55	CRC site inactive
10/24/2024 23:00	51.0	49.6	50.5	50.7	50.2	55	CRC site inactive
10/25/2024 0:00	53.2	53.0	52.5	53.7	54.1	55	CRC site inactive
10/25/2024 1:00	52.1	52.0	52.4	53.7	52.9	55	CRC site inactive
10/25/2024 2:00	53.1	50.6	52.8	54.4	52.7	55	CRC site inactive
10/25/2024 3:00	53.2	52.6	53.5	54.4	53.6	55	CRC site inactive
10/25/2024 4:00	52.4	50.3	52.2	53.0	50.3	55	CRC site inactive
10/25/2024 5:00	53.5	50.9	50.6	51.4	52.2	55	CRC site inactive
10/25/2024 6:00	56.0	54.3	56.5	56.8	58.4	55	CRC site inactive
10/25/2024 7:00	57.4	57.4	57.2	56.1	72.7	65	
10/25/2024 8:00	58.9	59.7	59.2	57.3	78.5	65	
10/25/2024 9:00	57.8	61.0	55.1	56.1	70.0	65	
10/25/2024 10:00	56.7	58.0	56.0	55.5	64.7	65	
10/25/2024 11:00	54.2	57.5	57.2	56.8	69.9	65	
10/25/2024 12:00	54.6	57.7	59.9	58.5	72.4	65	
10/25/2024 13:00	53.4	55.5	55.0	56.9	71.4	65	
10/25/2024 14:00	53.7	55.1	54.4	60.4	70.5	65	
10/25/2024 15:00	51.6	52.9	53.3	53.4	66.9	65	
10/25/2024 16:00	53.1	55.5	54.9	60.0	70.3	65	
10/25/2024 17:00	54.6	56.6	57.5	59.0	73.7	65	

Columbia River Carbonates – Marine Terminal Noise Study

November 7, 2024

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Hourly L_{2.5} Measurements

Hour beginning	15ft (R1)	100ft (R2)	280ft (R3)	375ft (R4)	Ref	WAC L _{2.5} Limit	Notes
10/24/2024 11:00	58.4	58.1	55.8	54.0	66.6	70	
10/24/2024 12:00	60.8	66.6 62.6	56.8	63.8	68.6	70	Removed RV noise near R2
10/24/2024 13:00	57.6	57.9	56.5	57.4 56.5	76.4	70	Removed clubhouse noise near R4
10/24/2024 14:00	60.4	60.0	59.6	61.0	76.7	70	
10/24/2024 15:00	58.5	57.5	57.0	59.3	61.2	70	
10/24/2024 16:00	56.5	55.6	55.1	60.5 58.4	71.7	70	Removed clubhouse noise near R4
10/24/2024 17:00	57.7	56.1	56.8	64.2 62.1	71.8	70	Removed clubhouse noise near R4
10/24/2024 18:00	56.3	57.3	57.6	68.9 63.6	76.5	70	Removed clubhouse noise near R4
10/24/2024 19:00	55.2	55.4	57.0	64.7 59.3	73.1	70	Removed clubhouse noise near R4
10/24/2024 20:00	56.4	55.6	58.1	60.1 57.9	72.3	70	Removed clubhouse noise near R4
10/24/2024 21:00	52.5	53.3	54.4	52.8	70.0	70	
10/24/2024 22:00	54.4	55.2	55.9	57.7	57.5	60	CRC site inactive
10/24/2024 23:00	52.7	53.3	52.0	52.7	54.5	60	CRC site inactive
10/25/2024 0:00	54.6	56.2	54.1	55.4	57.0	60	CRC site inactive
10/25/2024 1:00	55.6	57.1	54.5	57.2	57.5	60	CRC site inactive
10/25/2024 2:00	55.5	53.3	54.1	56.5	55.2	60	CRC site inactive
10/25/2024 3:00	54.3	54.1	54.8	55.9	55.0	60	CRC site inactive
10/25/2024 4:00	53.6	51.8	53.4	54.3	51.8	60	CRC site inactive
10/25/2024 5:00	56.4	53.3	52.0	53.1	54.6	60	CRC site inactive
10/25/2024 6:00	58.0	56.0	57.9	58.1	59.3	60	CRC site inactive
10/25/2024 7:00	59.6	59.4	58.7	58.2	76.0	70	
10/25/2024 8:00	60.5	61.1	61.3	58.8	80.5	70	
10/25/2024 9:00	59.9	65.7 58.3	58.7	58.4	72.9	70	Removed RV noise near R2
10/25/2024 10:00	58.5	60.1	57.8	57.0	72.4	70	
10/25/2024 11:00	57.0	59.5	58.5	58.7	73.3	70	
10/25/2024 12:00	57.8	60.2	62.4	61.5 60.4	75.2	70	Removed clubhouse noise near R4
10/25/2024 13:00	57.3	57.7	57.1	58.9	73.5	70	
10/25/2024 14:00	57.7	57.7	57.1	64.5	73.2	70	
10/25/2024 15:00	56.4	55.8	55.4	56.6	69.6	70	
10/25/2024 16:00	56.6	58.6	57.9	63.1 58.6	72.5	70	Removed clubhouse noise near R4
10/25/2024 17:00	57.0	57.8	60.1 58.8	61.0	75.2	70	Removed RV and dog noise near R3

Columbia River Carbonates – Marine Terminal Noise Study

November 7, 2024

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Hourly L_{max} Measurements

Hour beginning	15ft (R1)	100ft (R2)	280ft (R3)	375ft (R4)	Ref	WAC L _{max} Limit	Notes
10/24/2024 11:00	68.6	65.0	66.2	58.7	85.6	75	
10/24/2024 12:00	68.3	70.0 69.1	64.1	68.6	80.2	75	Removed RV noise near R2
10/24/2024 13:00	67.3	68.4	65.2	66.0	81.7	75	Removed clubhouse noise near R4
10/24/2024 14:00	69.6	67.1	67.3	67.2	82.4	75	
10/24/2024 15:00	66.7	65.6	69.5	68.3	74.1	75	
10/24/2024 16:00	65.0	67.8	64.2	65.5	83.0	75	Removed clubhouse noise near R4
10/24/2024 17:00	71.5	66.5	66.8	68.0	79.8	75	Removed clubhouse noise near R4
10/24/2024 18:00	67.0	62.3	66.0	72.8	81.4	75	Removed clubhouse noise near R4
10/24/2024 19:00	67.4	66.6	65.1	65.6	79.2	75	Removed clubhouse noise near R4
10/24/2024 20:00	70.3 66.2	75.3 62.5	78.1 68.3	75.4 63.9	82.5	75	Removed clubhouse noise near R4, plane flyover
10/24/2024 21:00	62.7	67.0	64.3	65.2	79.7	75	
10/24/2024 22:00	62.7	63.9	59.3	66.8	66.7	65	CRC site inactive
10/24/2024 23:00	62.4	60.1	58.3	61.7	62.8	65	CRC site inactive
10/25/2024 0:00	65.6	65.0	59.1	62.5	67.8	65	CRC site inactive
10/25/2024 1:00	64.8	67.8	61.9	65.2	68.2	65	CRC site inactive
10/25/2024 2:00	65.0	67.3	61.1	63.7	68.5	65	CRC site inactive
10/25/2024 3:00	64.3	64.3	58.3	66.3	65.5	65	CRC site inactive
10/25/2024 4:00	64.3	62.6	65.2	60.3	61.2	65	CRC site inactive
10/25/2024 5:00	66.5	63.3	56.5	61.1	64.6	65	CRC site inactive
10/25/2024 6:00	65.4	62.8	66.4	61.1	66.4	65	CRC site inactive
10/25/2024 7:00	65.8	67.0	69.4	64.5	83.1	75	
10/25/2024 8:00	67.9	67.0	66.2	70.6	84.3	75	
10/25/2024 9:00	65.3	69.5	66.4	66.2	87.1	75	
10/25/2024 10:00	63.6	73.8 68.6	69.4	63.2	91.5	75	Removed RV noise near R2
10/25/2024 11:00	63.8	64.8	67.4	68.9	82.9	75	
10/25/2024 12:00	66.5	70.1	78.1 69.8	81.4 70.7	80.4	75	Removed RV noise near R3, clubhouse noise near R4
10/25/2024 13:00	64.9	66.7	64.4	70.7	82.5	75	
10/25/2024 14:00	72.7	71.3	70.6	70.9	82.5	75	
10/25/2024 15:00	66.1	66.8	65.4	65.6	76.3	75	
10/25/2024 16:00	66.3	66.0	66.5	72.5 64.7	79.7	75	Removed clubhouse noise near R4
10/25/2024 17:00	66.3	65.5	74.8 68.2	66.1	80.2	75	Removed RV and dog noise near R3

Appendix B - Conditions of Approval

Amended Conditions of Approval

Permit No. 13-06-0570

Appeal No. 15-07-3229

Columbia River Carbonates Woodland Marine Terminal

December 11, 2015

COWLITZ COUNTY HEARING EXAMINER

299 N.W. CENTER STREET
P.O. BOX 939
CHEHALIS, WASHINGTON 98532
PHONE: (360) 748-3386
FAX: (360) 748-9533

December 11, 2015

VIA EMAIL

Mr. Charles A. Klinge
Stephens & Klinge, LLP
Plaza Center Bellevue
10900 NE 8th Street, Suite 1325
Bellevue, Washington 98004

Mr. Robert G. Casey
Attorney at Law
1200 Wells Fargo Plaza
1201 Pacific Avenue
Tacoma, Washington 98402

Mr. Douglas Jensen
Cowlitz County Prosecutor's Office
First Floor
312 SW 1st Avenue
Kelso, Washington 98626

Re: Columbia River Carbonates Woodland Marine Terminal
Appeal No. 15-07-3229
Hearing No. 13-06-0570

Dear Counsel:

I am in receipt of CRC's Motion for Clarification and /or Reconsideration with respect to Condition No. 11(b) to my Decision.

The Rules of Procedure before the Hearing Examiner allow me to (a) deny the petition; (b) grant the petition and issue an amended decision; or (c) grant the petition for reconsideration and allow all parties an opportunity to respond.

In this instance I am confident that I have sufficient information based upon the record established during the hearing, supplemented by the information provided by CRC, that I do not need further response from the other parties. I will therefore not ask the other parties to respond to the Motion.

My Condition No. 11(b) is the result of a critical misunderstanding as to the height of the stockpile. Had I correctly understood its estimated height I would not have imposed this condition. CRC's Motion is therefore well founded.

Mr. Charles A. Klinge
Mr. Robert G. Casey
Mr. Douglas Jensen
December 11, 2015
Page 2

Re: Columbia River Carbonates Woodland Marine Terminal
Appeal No. 15-07-3229
Hearing No. 13-06-0570

CRC's offered remedy is to enhance the buffering along the project's north boundary and, if possible, to extend the enhanced buffer along the north boundary of the adjoining Landel Property. This offered solution is consistent with CABT's earlier request that required buffering be extended into the Landel Property. The suggested remedy therefore offers a two-fold improvement over my original condition. I conclude that this remedy equals and probably surpasses the intended benefit of Condition 11(b), and in a manner that is consistent with the requests of CABT. Accordingly, I conclude that the Motion for Clarification and/or Reconsideration should be granted and the project's Conditions of Approval shall be amended as suggested by CRC.

Enclosed herewith is my Order Granting Reconsideration.

Very truly yours,



Mark C. Scheibmeir
Cowlitz County Hearing Examiner

MCS:klf
Encl.

cc: Mr. Ron Melin, w/encl.
Ms. Elaine Placido, w/encl.

BEFORE THE HEARING EXAMINER
FOR COWLITZ COUNTY

In the Matter of Applications for Shoreline
Conditional Use Permit and Shoreline Substantial
Development Permit for

Appeal No. 15-07-3229
Permit No. 13-06-0570

**Columbia River Carbonates Woodland Marine
Terminal**

ORDER GRANTING APPLICANT
CRC'S MOTION FOR CLARIFICATION
AND/OR RECONSIDERATION

THIS MATTER comes before the Hearing Examiner upon the Motion of the Applicant,
CRC, for clarification and/or reconsideration of Condition No. 11(b) of the Project's Conditions
for Approval. The Applicant requests that Condition No. 11(b) be revised and, as a result, that
Condition Nos. 10 and 21 also be revised to reflect the revisions to Condition No. 11(b).

Having reviewed the Applicant's Motion, and having considered the accompanying
Declarations of Larry Shatuck and Kerry Standlee, the Hearing Examiner now makes the
following:

FINDINGS OF FACT

1. Condition No. 11(b) states:

The applicant shall construct a wall along the north boundary of
the stockpile area equal in height to the stockpile material.

2. The estimated height of the stockpile is 41 feet.

3. Condition No. 11(b) would therefore require the construction of a wall at least 41
feet in height.

4. Condition No. 11(b) is the result of a misunderstanding of the estimated height of
the stockpile. Had the Hearing Examiner correctly understood the stockpile's estimated height
the condition would not have been imposed.

*Order Granting Applicant
CRC's Motion for Clarification a/
and/or Reconsideration - 1*

**COWLITZ COUNTY HEARING EXAMINER
299 N.W. CENTER ST. / P.O. BOX 939
CHEHALIS, WASHINGTON 98532
Phone: 360-748-3386/Fax: 748-9533**

1 Condition No. 10 shall be amended to read:

2 The slope at the north property line shall be landscaped according
3 the specifications in the Landscape Plan (SEPA Checklist
4 Exhibit O). Adjacent to this landscaped slope and continuing to
5 the northwest corner top of riprap, the applicant will create a 10
6 foot buffer. The Applicant shall extend the 10 foot buffer east
7 across the Landels property. A row of shore pines shall be planted
8 in the buffer at 10 feet on center along with similar landscaping.
9 Landscaping and fencing shall be maintained in good condition at
10 all times.

11 Condition No. 11(b) shall be amended to read:

12 The Applicant shall construct a sound wall along the north side of
13 both the Applicant's and Landels properties at the south side of the
14 10 foot buffer required by Condition No. 10. A wall of suitable
15 sound reduction material shall be constructed on an earthen berm
16 and the total height of the berm and wall shall be 15 feet above
17 existing grade. The Applicant shall demonstrate that it has
18 permission to locate the sound wall and landscaping on the
19 adjacent property to the northwest (Landels property). The
20 Applicant shall construct a retaining wall nine feet in height at the
21 location shown in the plan drawings along the north edge of the
22 stockpile area and immediately adjacent thereto. The Applicant
23 shall install a luffing conveyor to drop the rock on the stockpile - a
24 conveyor that adjusts up and down. Compliance with these
25 requirements is subject to compliance with building permit and any
other permit requirements.

Condition No. 21 shall be amended to read:

Prior to issuance of construction permits, the applicant shall demonstrate that it has permission to place fill on the adjacent property to the northeast (Landels property) as shown in the plans. Otherwise, the applicant shall propose a final design that avoids the fill on the Landels property. Other than the potential fill, stormwater system, sound wall, and landscaping, this permit approval does not authorize any activities on the Landels property related to the marine terminal. Any such expansion of marine terminal activities would require full compliance with all applicable permit requirements.

Attached hereto is a complete set of the Conditions of Approval as amended.

1 DATED this 11th day of December, 2015.

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4 _____
5 Mark C. Scheibmeir
6 Cowlitz County Hearing Examiner
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*Order Granting Applicant
CRC's Motion for Clarification a\
and/or Reconsideration - 4*

**COWLITZ COUNTY HEARING EXAMINER
299 N.W. CENTER ST. / P.O. BOX 939
CHEHALIS, WASHINGTON 98532
Phone: 360-748-3386/Fax: 748-9533**

AMENDED CONDITIONS OF APPROVAL:

1. Construction shall proceed in compliance with the plans, specifications and supporting documents submitted to this department and stamped as received on June 20, 2013 and the revised mitigation plan dated December 15, 2014. Any proposed changes or modifications to these plans and specifications, including those required by other agencies, shall require additional regulatory review and approval by the Department of Building and Planning prior to implementation.
2. The off-site mitigation site shall be preserved and protected in perpetuity by recording a conservation easement or some other means.
3. The newly-created public access area at the off-site mitigation site shall be maintained in good condition for as long as Columbia River Carbonates or future owner/operators of the barge import and stockpile facility, and the Woodland plant site, are in operation.
4. Construction waterward of the OHWM shall be tied to the work window schedule and conditions of other federal and state agencies, provided such conditions are consistent with and pertinent to the SMA and SMP goals, policies and regulations. Pursuant to this condition, the applicant shall provide the Building and Planning Department with copies of all local, state and federal permits associated with the project.
5. Stormwater and erosion control must be provided in accordance with the applicable Chapters of Title 16 of the Cowlitz County Code. Additionally, the applicant is responsible for compliance with all other applicable local, state and federal stormwater and erosion control permitting requirements.
6. In the event of the discovery of cultural and/or archeological sites during construction, the project shall be halted and the applicant shall immediately notify the Washington State Department of Archaeology and Historic Preservation and copy such notification to the Cowlitz County Department of Building and Planning.
7. Any spills, soil or debris accidentally entering the water during construction shall be immediately removed by approved methods. All project work shall cease immediately until cleanup of such spills is completed. If a spill does occur, or if an oil sheen or distressed or dying fish are observed in the project vicinity, the permittee shall immediately contact DOE at its Southwest Regional Spill Response Office, (360) 407-6300.
8. The permittee shall provide a copy of the permit, conditions, and drawings to all contractors performing any of the authorized work.
9. Significant light or glare shall not be cast onto adjacent properties or the Columbia River.
10. The slope at the north property line shall be landscaped according the specifications in the Landscape Plan (SEPA Checklist Exhibit O). Adjacent to this landscaped slope and continuing to the northwest corner top of riprap, the applicant will create a 10 foot buffer. The Applicant shall extend the 10 foot buffer east across the Landels property. A row of shore pines shall be planted in the buffer at 10 feet on center along with similar landscaping. Landscaping and fencing shall be maintained in good condition at all times.
11. Maximum permissible noise levels shall be in accordance with the provisions of WAC Chapter 173-60.

- a. Applicant shall undertake a follow-up noise study within six months of the start of operations. All equipment will be in operation and moving equipment (for example loaders) will operate at their closest working position to the receiving positions at the RV park. The County and CABT will be notified not less than two weeks in advance of the date and time of the noise study and shall be allowed to undertake their own noise studies at the same time.
 - b. The Applicant shall construct a sound wall along the north side of both the Applicant's and Landels properties at the south side of the 10 foot buffer required by Condition No. 10. A wall of suitable sound reduction material shall be constructed on an earthen berm and the total height of the berm and wall shall be 15 feet above existing grade. The Applicant shall demonstrate that it has permission to locate the sound wall and landscaping on the adjacent property to the northwest (Landels property). The Applicant shall construct a retaining wall nine feet in height at the location shown in the plan drawings along the north edge of the stockpile area and immediately adjacent thereto. The Applicant shall install a luffing conveyor to drop the rock on the stockpile - a conveyor that adjusts up and down. Compliance with these requirements is subject to compliance with building permit and any other permit requirements.
 - c. Construction activities shall be limited to the hours of 7:00 a.m. to 6:00 p.m., Monday through Friday.
12. Stockpiling, loading, hauling, and trucking operations, and other upland operations and activities, excluding barge unloading and maintenance, are restricted to the normal hours of operation of 7:00 am to 6:00 p.m., Monday thru Friday, excluding State holidays.
13. Construction work, upland operations or barge unloading outside of normal hours of operation may be approved by the Director of Building and Planning provided that:
 - a. The applicant provides at last fourteen (14) days' notice to the County prior to the event or as much notice as reasonably possible under the circumstances;
 - b. The applicant provides evidence that an urgent business need requires delivery of products outside of normal operating hours; and
 - c. All equipment shall utilize broadband back-up alarms or reverse-activated strobe lights conforming to Mining Safety and Health Administration (MSHA) requirements.
 - d. No approval under this condition shall be allowed for barge unloading that is prohibited by Condition No. 15.
14. Maintenance activities may be performed outside the normal hours of operation, provided that no equipment with narrow-band back-up alarms is used. Noise levels for activities performed outside normal hours of operation shall comply with the maximum permissible environmental noise levels identified in WAC 173-60-040.
15. Barge unloading is restricted to the normal hours of operation of 7:00 a.m. to 10:00 p.m., Monday through Friday, excluding State holidays. Barge mooring operations and barge offloading operations are prohibited during the following holiday weekends: Memorial Day, Independence Day, and Labor Day. For purposes of this condition, holiday weekend means the three-day weekend for Memorial Day and Labor Day. And, for purposes of this condition, holiday weekend in relation to Independence Day depends on the year and means: (1) the entire week when the Day falls on a Wednesday; (2) a four day weekend when the Day falls on a Tuesday or Thursday; (3) a three-day weekend including Friday when the Day falls on a Friday or Saturday; and, (4) a three-day weekend including Monday when the Day falls on a Sunday or Monday. The applicant shall coordinate with the Director of Building and Planning and the Washington State Department of Fish and Wildlife to identify other weeks of expected

peak salmon and steelhead runs and will use best efforts to schedule barge operations to avoid those weeks which shall be no more than four (4) weeks per year.

No more than 24 barges shall be unloaded each calendar year. Barges must be promptly removed as soon as practicable once unloading is completed.

16. Representatives from this department shall be allowed to inspect the authorized activity at any time deemed necessary to ensure that the project is being, or has been, accomplished in accordance with the terms and conditions of this permit.
17. The permittee shall maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. The permittee shall notify this department immediately should the authorized activity cease or be abandoned. Such action may require restoration of the area.
18. The applicant shall comply with Construction and Operation Regulations in the Cowlitz County Shoreline Master Program (attached to permit).
19. Construction activities shall be commenced within four years after the effective date of the substantial development permit, and authorization to conduct development activities shall terminate seven years after the effective date of the substantial development permit.
20. The applicant shall prepare a Fugitive Dust Control Plan during the final design stage, including implementation of a wheel wash system, and shall obtain and keep in force an Authority to Operate permit from the Southwest Clean Air Agency.
21. Prior to issuance of construction permits, the applicant shall demonstrate that it has permission to place fill on the adjacent property to the northeast (Landels property) as shown in the plans. Otherwise, the applicant shall propose a final design that avoids the fill on the Landels property. Other than the potential fill, stormwater system, sound wall, and landscaping, this permit approval does not authorize any activities on the Landels property related to the marine terminal. Any such expansion of marine terminal activities would require full compliance with all applicable permit requirements.
22. The northwest corner of the property described as the "Auxiliary Stockpile" shall not be used without applicant making application for a new Shoreline Substantial Development permit for the use of the area.
23. The barges used by the applicant shall not take in or discharge ballast into the Columbia River.
24. The haul trucks shall only use the route addressed in the Environmental Review (Dike Road South to Caples Road, and then east to north Pekin Road), without an amendment to the Shorelines Substantial Development Permit.

Appendix C - WAC Noise Regulation

Washington Administrative Code
Title 173 – Department of Ecology
Chapter 60 – Maximum Environmental Noise Levels

Chapter 173-60 WAC

Last Update: 12/6/00

MAXIMUM ENVIRONMENTAL NOISE LEVELS

WAC Sections

HTML	PDF	173-60-010	Authority and purpose.
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HTML	PDF	173-60-110	Cooperation with local government.
HTML	PDF	173-60-120	Effective date.

[PDF](#) **173-60-010**

Authority and purpose.

These rules are adopted pursuant to chapter **70.107** RCW, the Noise Control Act of 1974, in order to establish maximum noise levels permissible in identified environments, and thereby to provide use standards relating to the reception of noise within such environments. Vessels, as defined in RCW **88.12.010**(21) and regulated for noise under chapter **88.12** RCW (Regulation of recreational vessels), shall be exempt from chapter **173-60** WAC.

[Statutory Authority: Chapter **70.107** RCW. WSR 94-12-001 (Order 92-41), § 173-60-010, filed 5/18/94, effective 6/18/94; Order 74-32, § 173-60-010, filed 4/22/75, effective 9/1/75.]

Definitions.

- (1) "Background sound level" means the level of all sounds in a given environment, independent of the specific source being measured.
- (2) "dBA" means the sound pressure level in decibels measured using the "A" weighting network on a sound level meter. The sound pressure level, in decibels, of a sound is 20 times the logarithm to the base 10 of the ratio of the pressure of the sound to a reference pressure of 20 micropascals.
- (3) "Department" means the department of ecology.
- (4) "Director" means the director of the department of ecology.
- (5) "Distribution facilities" means any facility used for distribution of commodities to final consumers, including facilities of utilities that convey water, waste water, natural gas, and electricity.
- (6) "EDNA" means the environmental designation for noise abatement, being an area or zone (environment) within which maximum permissible noise levels are established.
- (7) "Existing" means a process, event, or activity in an established area, producing sound subject to or exempt from this chapter, prior to the effective date of September 1, 1975.
- (8) "Local government" means county or city government or any combination of the two.
- (9) "Noise" means the intensity, duration and character of sounds, from any and all sources.
- (10) "Person" means any individual, corporation, partnership, association, governmental body, state agency or other entity whatsoever.
- (11) "Property boundary" means the surveyed line at ground surface, which separates the real property owned, rented, or leased by one or more persons, from that owned, rented, or leased by one or more other persons, and its vertical extension.
- (12) "Racing event" means any motor vehicle competition conducted under a permit issued by a governmental authority having jurisdiction or, if such permit is not required, then under the auspices of a recognized sanctioning body.
- (13) "Receiving property" means real property within which the maximum permissible noise levels specified herein shall not be exceeded from sources outside such property.
- (14) "Sound level meter" means a device which measures sound pressure levels and conforms to Type 1 or Type 2 as specified in the American National Standards Institute Specification S1.4-1971.

[Statutory Authority: Chapter **70.107** RCW. WSR 94-12-001 (Order 92-41), § 173-60-020, filed 5/18/94, effective 6/18/94; WSR 83-15-046 (Order DE 82-42), § 173-60-020, filed 7/19/83; Order DE 77-1, § 173-60-020, filed 6/1/77; Order 74-32, § 173-60-020, filed 4/22/75, effective 9/1/75.]

Identification of environments.

- (1) Except when included within specific prior designations as provided in subsections (2), (3), and (4) of this section, the EDNA of any property shall be based on the following typical uses, taking into consideration the present, future, and historical usage, as well as the usage of adjacent and other lands in the vicinity.
 - (a) Class A EDNA - Lands where human beings reside and sleep. Typically, Class A EDNA

will be the following types of property used for human habitation:

- (i) Residential
- (ii) Multiple family living accommodations
- (iii) Recreational and entertainment, (e.g., camps, parks, camping facilities, and resorts)
- (iv) Community service, (e.g., orphanages, homes for the aged, hospitals, health and

correctional facilities)

(b) Class B EDNA - Lands involving uses requiring protection against noise interference with speech. Typically, Class B EDNA will be the following types of property:

- (i) Commercial living accommodations
- (ii) Commercial dining establishments
- (iii) Motor vehicle services
- (iv) Retail services
- (v) Banks and office buildings
- (vi) Miscellaneous commercial services, property not used for human habitation
- (vii) Recreation and entertainment, property not used for human habitation (e.g., theaters,

stadiums, fairgrounds, and amusement parks)

(viii) Community services, property not used for human habitation (e.g., educational, religious, governmental, cultural and recreational facilities).

(c) Class C EDNA - Lands involving economic activities of such a nature that higher noise levels than experienced in other areas is normally to be anticipated. Persons working in these areas are normally covered by noise control regulations of the department of labor and industries. Uses typical of Class A EDNA are generally not permitted within such areas. Typically, Class C EDNA will be the following types of property:

(i) Storage, warehouse, and distribution facilities.

(ii) Industrial property used for the production and fabrication of durable and nondurable man-made goods

(iii) Agricultural and silvicultural property used for the production of crops, wood products, or livestock.

(d) Where there is neither a zoning ordinance in effect nor an adopted comprehensive plan, the legislative authority of local government may, by ordinance or resolution, designate specifically described EDNAs which conform to the above use criteria and, upon departmental approval, EDNAs so designated shall be as set forth in such local determination.

(e) Where no specific prior designation of EDNAs has been made, the appropriate EDNA for properties involved in any enforcement activity will be determined by the investigating official on the basis of the criteria of (a), (b), and (c) of this subsection.

(2) In areas covered by a local zoning ordinance, the legislative authority of the local government may, by ordinance or resolution designate EDNAs to conform with the zoning ordinance as follows:

- (a) Residential zones - Class A EDNA
- (b) Commercial zones - Class B EDNA
- (c) Industrial zones - Class C EDNA

Upon approval by the department, EDNAs so designated shall be as set forth in such local determination. EDNA designations shall be amended as necessary to conform to zone changes under the zoning ordinance.

(3) In areas not covered by a local zoning ordinance but within the coverage of an adopted comprehensive plan the legislative authority of the local government may, by ordinance or resolution designate EDNAs to conform with the comprehensive plan as follows:

- (a) Residential areas - Class A EDNA
- (b) Commercial areas - Class B EDNA
- (c) Industrial areas - Class C EDNA

Upon approval by the department EDNAs so designated shall be as set forth in such local determination. EDNA designations shall be amended as necessary to conform to changes in the comprehensive plan.

(4) The department recognizes that on certain lands, serenity, tranquility, or quiet are an essential part of the quality of the environment and serve an important public need. Special designation of such lands with appropriate noise level standards by local government may be adopted subject to approval by the department. The director may make such special designation pursuant to the procedures of the Administrative Procedure Act, chapter 34.04 RCW.

[Order 74-32, § 173-60-030, filed 4/22/75, effective 9/1/75.]

PDF 173-60-040

Maximum permissible environmental noise levels.

(1) No person shall cause or permit noise to intrude into the property of another person which noise exceeds the maximum permissible noise levels set forth below in this section.

(2)(a) The noise limitations established are as set forth in the following table after any applicable adjustments provided for herein are applied.

EDNA OF NOISE SOURCE	EDNA OF RECEIVING PROPERTY		
	Class A	Class B	Class C
CLASS A	55 dBA	57 dBA	60 dBA
CLASS B	57	60	65
CLASS C	60	65	70

(b) Between the hours of 10:00 p.m. and 7:00 a.m. the noise limitations of the foregoing table shall be reduced by 10 dBA for receiving property within Class A EDNAs.

(c) At any hour of the day or night the applicable noise limitations in (a) and (b) above may be exceeded for any receiving property by no more than:

- (i) 5 dBA for a total of 15 minutes in any one-hour period; or
- (ii) 10 dBA for a total of 5 minutes in any one-hour period; or
- (iii) 15 dBA for a total of 1.5 minutes in any one-hour period.

[Order 74-32, § 173-60-040, filed 4/22/75, effective 9/1/75.]

PDF 173-60-050

Exemptions.

(1) The following shall be exempt from the provisions of WAC 173-60-040 between the hours of 7:00 a.m. and 10:00 p.m.:

- (a) Sounds originating from residential property relating to temporary projects for the maintenance or repair of homes, grounds and appurtenances.
- (b) Sounds created by the discharge of firearms on authorized shooting ranges.
- (c) Sounds created by blasting.

(d) Sounds created by aircraft engine testing and maintenance not related to flight operations: Provided, That aircraft testing and maintenance shall be conducted at remote sites whenever possible.

(e) Sounds created by the installation or repair of essential utility services.

(2) The following shall be exempt from the provisions of WAC **173-60-040** (2)(b):

(a) Noise from electrical substations and existing stationary equipment used in the conveyance of water, waste water, and natural gas by a utility.

(b) Noise from existing industrial installations which exceed the standards contained in these regulations and which, over the previous three years, have consistently operated in excess of 15 hours per day as a consequence of process necessity and/or demonstrated routine normal operation. Changes in working hours, which would affect exemptions under this regulation, require approval of the department.

(3) The following shall be exempt from the provisions of WAC **173-60-040**, except insofar as such provisions relate to the reception of noise within Class A EDNAs between the hours of 10:00 p.m. and 7:00 a.m.

(a) Sounds originating from temporary construction sites as a result of construction activity.

(b) Sounds originating from forest harvesting and silvicultural activity.

(4) The following shall be exempt from all provisions of WAC **173-60-040**:

(a) Sounds created by motor vehicles when regulated by chapter **173-62** WAC.

(b) Sounds originating from aircraft in flight and sounds that originate at airports which are directly related to flight operations.

(c) Sounds created by surface carriers engaged in interstate commerce by railroad.

(d) Sounds created by warning devices not operating continuously for more than five minutes, or bells, chimes, and carillons.

(e) Sounds created by safety and protective devices where noise suppression would defeat the intent of the device or is not economically feasible.

(f) Sounds created by emergency equipment and work necessary in the interests of law enforcement or for health safety or welfare of the community.

(g) Sounds originating from motor vehicle racing events at existing authorized facilities.

(h) Sounds originating from officially sanctioned parades and other public events.

(i) Sounds emitted from petroleum refinery boilers during startup of said boilers: Provided, That the startup operation is performed during daytime hours whenever possible.

(j) Sounds created by the discharge of firearms in the course of hunting.

(k) Sounds caused by natural phenomena and unamplified human voices.

(l) Sounds created by motor vehicles, licensed or unlicensed, when operated off public highways EXCEPT when such sounds are received in Class A EDNAs.

(m) Sounds originating from existing natural gas transmission and distribution facilities. However, in circumstances where such sounds impact EDNA Class A environments and complaints are received, the director or his designee may take action to abate by application of EDNA Class C source limits to the facility under the requirements of WAC 173-60-050(5).

(6) Nothing in these exemptions is intended to preclude the department from requiring installation of the best available noise abatement technology consistent with economic feasibility. The establishment of any such requirement shall be subject to the provisions of the Administrative Procedure Act, chapter **34.04** RCW.

[Statutory Authority: Chapter **70.107** RCW. WSR 94-12-001 (Order 92-41), § 173-60-050, filed 5/18/94, effective 6/18/94; WSR 83-15-046 (Order DE 82-42), § 173-60-050, filed 7/19/83; Order DE 77-1, § 173-60-050, filed 6/2/77; Order 75-18, § 173-60-050, filed 8/1/75; Order 74-32, § 173-60-050, filed 4/22/75, effective 9/1/75.]

PDF **173-60-060**

Nuisance regulations not prohibited.

Nothing in this chapter or the exemptions provided herein, shall be construed as preventing local government from regulating noise from any source as a nuisance. Local resolutions, ordinances, rules or regulations regulating noise on such a basis shall not be deemed inconsistent with this chapter by the department.

[Order 74-32, § 173-60-060, filed 4/22/75, effective 9/1/75.]

PDF **173-60-070**

Reserved.

Reserved.

[Statutory Authority: Chapter **70.107** RCW. WSR 00-24-134 (Order 00-24), § 173-60-070, filed 12/6/00, effective 1/6/01; WSR 94-12-001 (Order 92-41), § 173-60-070, filed 5/18/94, effective 6/18/94; Order DE 77-1, § 173-60-070, filed 6/1/77; Order 74-32, § 173-60-070, filed 4/22/75, effective 9/1/75.]

PDF **173-60-080**

Variances and implementation schedules.

(1) Variances may be granted to any person from any particular requirement of this chapter, if findings are made that immediate compliance with such requirement cannot be achieved because of special circumstances rendering immediate compliance unreasonable in light of economic or physical factors, encroachment [encroachment] upon an existing noise source, or because of nonavailability of feasible technology or control methods. Any such variance or renewal thereof shall be granted only for the minimum time period found to be necessary under the facts and circumstances.

(2) An implementation schedule for achieving compliance with this chapter shall be incorporated into any variance issued.

(3) Variances shall be issued only upon application in writing and after providing such information as may be requested. No variance shall be issued for a period of more than 30 days except upon due notice to the public with opportunity to comment. Public hearings may be held, when substantial public interest is shown, at the discretion of the issuing agency.

(4) Sources of noise, subject to this chapter, upon which construction begins after the effective date hereof shall immediately comply with the requirements of this chapter, except in extraordinary circumstances where overriding considerations of public interest dictate the issuance of a variance.

[Order 74-32, § 173-60-080, filed 4/22/75, effective 9/1/75.]

PDF 173-60-090

Enforcement policy.

Noise measurement for the purposes of enforcing the provisions of WAC **173-060-040** shall be measured in dBA with a sound level meter with the point of measurement being at any point within the receiving property. Such enforcement shall be undertaken only upon receipt of a complaint made by a person who resides, owns property, or is employed in the area affected by the noise complained of, EXCEPT for parks, recreational areas, and wildlife sanctuaries. For enforcement purposes pursuant to RCW **70.107.050**, each day, defined as the 24-hour period beginning at 12:01 a.m., in which violation of the noise control regulations (chapter **173-60** WAC) occurs, shall constitute a separate violation.

[Order DE 76-5, § 173-60-090, filed 2/5/76; Order 74-32, § 173-60-090, filed 4/22/75, effective 9/1/75.]

PDF 173-60-100

Appeals.

Any person aggrieved by any decision of the department in relation to the enforcement of the maximum permissible noise levels provided for herein, the granting or denial of a variance or the approval or disapproval of a local resolution or ordinance for noise abatement and control may appeal to the pollution control hearings board pursuant to chapter **43.21B** RCW under the procedures of chapter **371-08** WAC.

[Order 74-32, § 173-60-100, filed 4/22/75, effective 9/1/75.]

PDF 173-60-110

Cooperation with local government.

(1) The department conceives the function of noise abatement and control to be primarily the role of local government and intends actively to encourage local government to adopt measures for noise abatement and control. Wherever such measures are made effective and are being actively enforced, the department does not intend to engage directly in enforcement activities.

(2) No ordinance or resolution of any local government which imposes noise control requirements differing from those adopted by the department shall be effective unless and until approved by the director. If approval is denied, the department, following submission of such local ordinance or resolution to the department, shall deliver its statement or order of denial, designating in detail the specific provision(s) found to be objectionable and the precise grounds upon which the denial is based, and shall submit to the local government, the department's suggested modification.

(3) The department shall encourage all local governments enforcing noise ordinances pursuant to this chapter to consider noise criteria and land use planning and zoning.

[Statutory Authority: Chapter **70.107** RCW. WSR 87-06-056 (Order 86-40), § 173-60-110, filed 3/4/87; Order 74-32, § 173-60-110, filed 4/22/75, effective 9/1/75.]

PDF **173-60-120**

Effective date.

This chapter shall become effective on September 1, 1975. It is the intention of the department to periodically review the provisions hereof as new information becomes available for the purpose of making amendments as appropriate.

[Order 74-32, § 173-60-120, filed 4/22/75, effective 9/1/75.]

**CULTURAL RESOURCES SURVEY OF THE PROPOSED
COLUMBIA RIVER CARBONATES PROJECT AREA,
WOODLAND, WASHINGTON**

By:
Dana L. Holschuh, B.A.
Michael Smith, B.A.
and
Alexander Gall, M.A., R.P.A.

Report Prepared for:
Urling Planning Associates LLC
P.O. Box 1213
Longview, WA 98632

May 2nd, 2012

County: Cowlitz
Legal Desc.: T5N, R1W, SW ¼ Section 15 and NW ¼ Section 22, W.M.
USGS Quad.: Deer Island, OR-WA, USGS 7.5-minute Series Quad.
Project Acreage: Approximately 3.75 acres
Result: (-)

Archaeological Services of Clark County Survey Report No. 12758

ARCHAEOLOGICAL SERVICES OF CLARK COUNTY, LLC
2464 NE Stapleton Rd, Ste 3 Vancouver, WA 98661 (360) 260-8614 Fax (360) 260-0129

ARCHAEOLOGICAL SERVICES OF CLARK COUNTY, LLC

2464 NE Stapleton Rd, Ste 3 Vancouver, WA 98661 (360) 260-8614 Fax (360) 260-0129

Applicant's Name: Columbia River Carbonates

File/Permit Number: ASCC # 12758

Project Location: 1903 Dike Road, Woodland, WA

Quadrangle: Deer Island, OR-WA, USGS 7.5-minute Series Quad.

Township/Range/Section: T5N, R1W, SW ¼ Section of 15 and NW ¼ of Section 22, W.M.

Number of Acres: Approximately 3.75 acres

Description of Proposed Activity: The applicant proposes to construct a barge unloading conveyor with associated improvements on a parcel in Woodland, Washington.

FINDINGS
POSITIVE
NEGATIVE X

FIELD INSPECTION:

Dates of inspection: April 24th, 2012

Introduction

This report details the findings of a cultural resources survey carried out by Archaeological Services of Clark County, LLC (ASCC) at the Columbia River Carbonates project area located at 1903 Dike Road in Woodland, Washington. This project's area of potential effect (APE), hereafter referred to as the project area, consists of a single L-shaped parcel along the Columbia River (Figure 1).

The proposed project would subject the project area to ground disturbance via the construction of the proposed barge unloading conveyor facility as well as the placement of fill materials adjacent to the shoreline, which requires permitting from Cowlitz County, the Washington Department of Fish and Wildlife (WDFW) and the U.S. Army Corps of Engineers (USACE).

Any federal nexus triggers Section 106 of the National Historic Preservation Act (NHPA), which requires federal agencies to consider the effects of their undertakings on cultural resources. Pursuant to Section 106, the purpose of this study is to identify any historic properties, including prehistoric cultural resources, which may be adversely affected by the proposed project. The APE for this project, as defined by 36 CFR 800.16 (d), consists of:

the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist. The area of potential effects is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking. (36 CFR 800.16)

The project area encompasses the entire parcel # WB1503-005. Having carried out the field survey and related research, ASCC has identified no cultural resources that would be adversely affected by the proposed project.

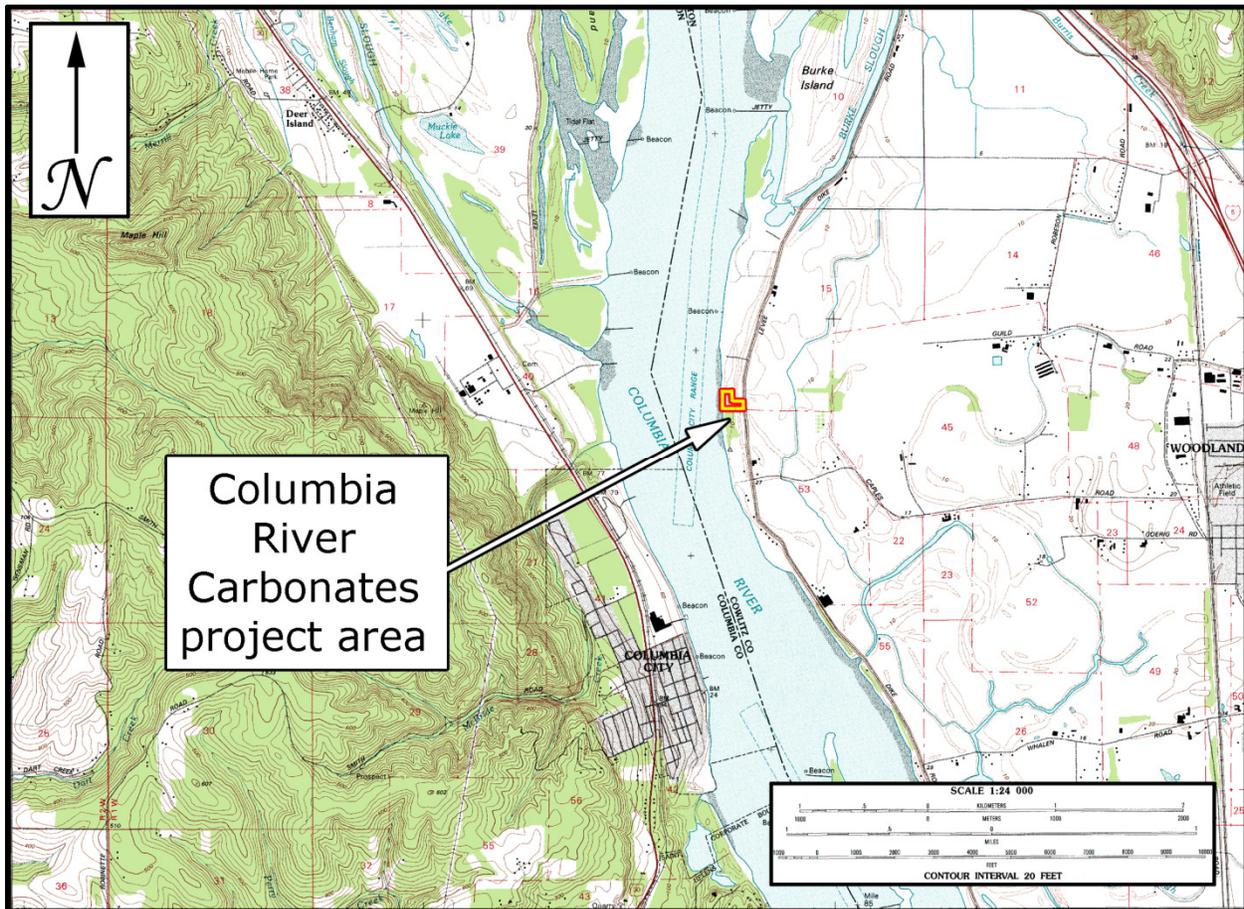


Figure 1. A portion of the Deer Island, OR-WA, USGS 7.5-minute series quadrangle overlaid with the project area.

Description of the Project Area

The proposed Columbia River Carbonates project area encompasses approximately 5 acres of land in the Woodland Bottoms area of southwestern Cowlitz County, Washington. The project area is located along the eastern shore of the Columbia River, approximately 2.65 miles (4.26 km) west of Interstate-5, approximately 1.05 miles (1.7 km) southwest of Burke Island and approximately 2.49 miles (4.33 km) northwest of central Woodland (Figure 1). The roughly L-shaped project area is bordered on the north by a parcel containing a single-family residence with several outbuildings, and on the south by a large undeveloped parcel containing what appears to be a borrow pit, with standing water at the time of the current survey. It is bordered on the east by Dike Road SW and on the west by the Columbia River (Figure 2).

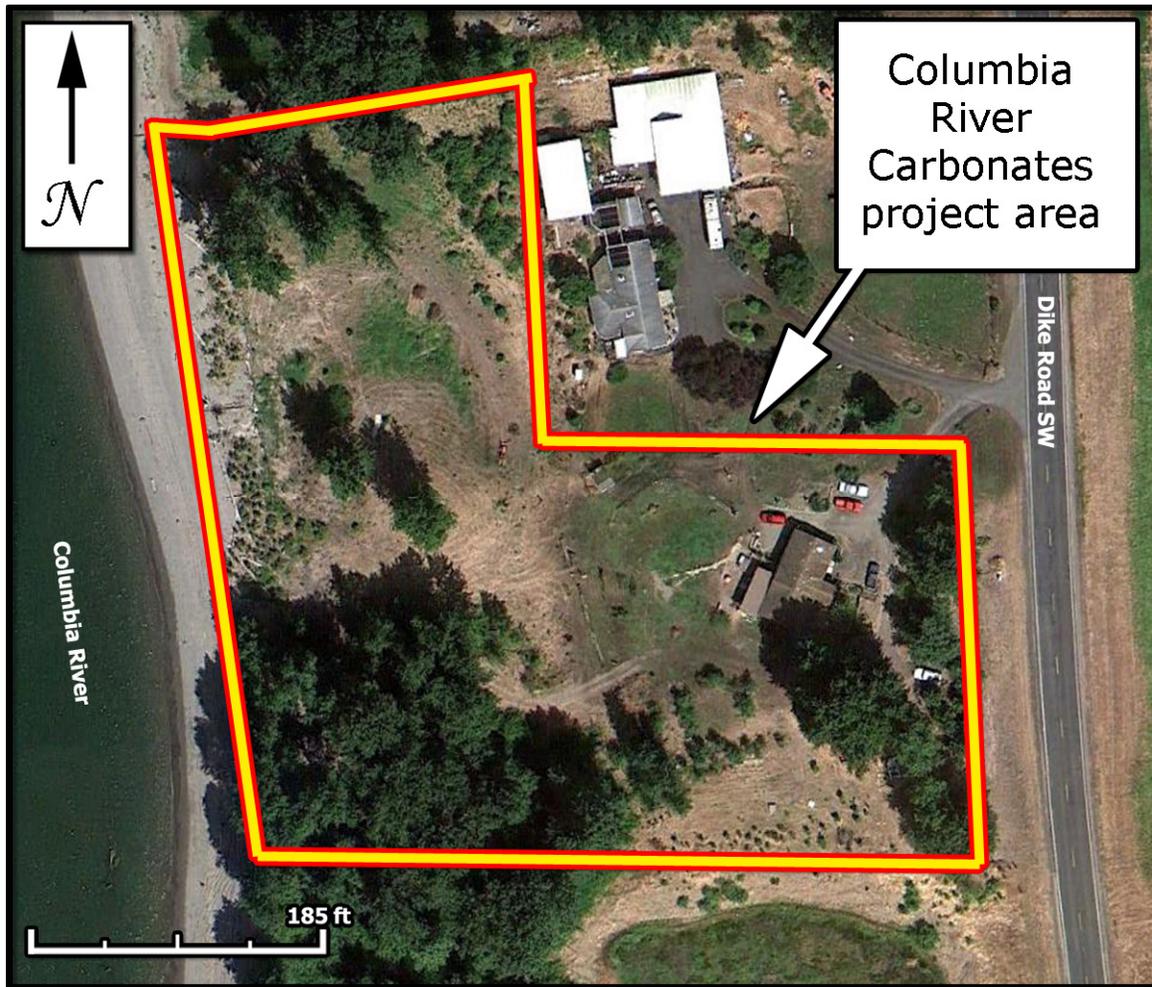


Figure 2. 2011 Aerial photomap of the project area, showing project area conditions. ASCC observed standing water in the central portion of the project area and within a large depression on the parcel to the south

The project area is located within the Columbia River floodplain, and contains both wooded and open areas. The parcel is accessed from Dike Road SW by a gravel driveway which leads to a single-family residence in the southeastern portion of the project area on a residential terrace over the river (Figure 2). This terrace sits at approximately 22 feet (6.07 m) above mean sea level (amsl). From the residence, a dirt road leads west/southwest, descending a moderate slope to the floodplain at an elevation of approximately 14 feet (4.27 m) amsl. A wooded area characterized by overgrown understory of blackberry and other bushes is located in the southwestern portion of the parcel, while the remainder is characterized by moderately undulating, open terrain with predominantly grassy vegetation and sporadic stands of trees (Figure 2, 4). An area of standing water was observed in the low-lying central portion of the parcel (Figure 5).

The proposed project entails the construction of a barge unloading conveyor system. The system will consist of a pivoting gangway extending into the Columbia River, with breasting and mooring dolphins connected via walkway to the north and south (Figure 3). The gangway will support a luffing barge unloading conveyor that will access a proposed stockpile within the project area. In order to stabilize the landform, approximately 50,000 yards of fill materials will be imported. The construction of the barge and conveyor will entail the placement of 37 stabilized pilings measuring 24 inches in diameter, with 3/4-inch walls: Six to support each of the two mooring dolphins, 8 to support each of the two breasting dolphins and 9 placed above the high-water line. An additional 8 stabilized pilings measuring 36 inches in diameter with 1-inch walls will be placed to support the hoist tower (Figure 3). All pilings will be installed via vibratory hammer and will extend through mineral soils and into the bedrock (Shatuck, personal communication).



Figure 4. North-facing view of the open portion of the parcel, cement retaining wall visible on right



Figure 5. South-facing view of parcel, taken from northern boundary

Terrain across the project area is undulating, characterized by mounds and dips in the terrain, signs of modern or historic earthmoving. A retaining wall of cement blocks runs roughly north-south across the western edge of the residential terrace in the southern portion of the project area (Figure 4). Cleared areas in the southern, wooded area have been used for camping and recreation, leaving evidence in the form of campfire pits (Figure 6). Aside from the standing water in the central portion, the Columbia River was the only observed waterway within the project area, and serves as prominent feature for the parcel.



Figure 6. Photograph of sandy beach in southeastern portion of the project area.



Figure 7. East-facing view of residential area in southeastern portion of the project area



Figure 8. South-facing view along the eastern boundary of the large parcel (shore of Columbia River) during pedestrian survey.

Environment

The project area is located in the northern reach of the Portland Basin, a structural depression centered on the confluence of the Willamette and Columbia Rivers. The basin is part of the larger Puget-Willamette Lowland, which represents the southern end of a coastal trough that runs from southeastern Alaska to the south end of the Willamette Valley (Ames 1994: 5). As the Columbia River exits the Columbia Gorge to the east and enters the Portland Basin, the river becomes marked by extensive alluvial bottom lands, sloughs, lakes, and islands composed of low-lying alluvium. The project area is located immediately east of the Columbia River, in an area known as the Woodland Bottoms. The Woodland Bottoms consists of low-lying floodplain historically characterized by extensive wetlands marked by slow-moving sloughs and old channel banks.

The landscape is gently undulating, with slight rises and shallow swales, the result of seasonal flooding before the construction of hydroelectric/flood control dams on the Columbia River and its major tributaries. This topography resulted in many former lakes, sloughs, and levees that occupied the area in the past, many of which have been filled-in and leveled from modern land use activities.

The project area lies within the *Tsuga heterophylla* vegetation zone, an extensive forested zone widespread throughout western Washington and Oregon in wet maritime climates ranging between sea level and about 700 m (2296 ft) elevation (Franklin and Dyrness 1988). Typical vegetation dominants in this zone include Douglas fir (*Pseudotsuga menziesii*), western hemlock (*Tsuga heterophylla*), and western red cedar (*Thuja plicata*), with few hardwood species. In specialized habitats, such as riparian zones or recently disturbed areas, red alder (*Alnus rubra*), bigleaf maple (*Acer macrophyllum*), and golden chinkapin (*Castanopsis chrysophylla*) are widespread. Along major watercourses, black cottonwood (*Populus trichocarpa*) and Oregon ash (*Fraxinus latifolia*) are dominant woodland species. Common forest understory plants throughout the zone include vine maple (*Acer circinatum*), hawthorn (*Crataegus douglasii*), wild rose (*Rosa gymnocarpa*), blackberry (*Rubus ursinus*), thimbleberry (*Rubus parviflorus*), and snowberry (*Symphoricarpos albus*) (Franklin and Dyrness 1973).

Vegetation varied across the project area. In the northern, open grassy area ASCC observed Himalayan blackberry, cottonwood, and various grasses and other forbs. In the southern, forested portion of the project area, ASCC observed Douglas fir, cottonwood, alder, holly, and both Himalayan and Cascade blackberries.

Soils

Soils within the project area were mapped by Pringle (1983) in *Soil Survey of Cowlitz County, Washington* as belonging to the Caples series. The Caples series consists of very deep, artificially drained soils, formed in mixed alluvium, commonly found on flood plains (Pringle 1983). In a typical profile, this soil consists of approximately 4 inches

(10.16 cm) of dark brown silty clay loam, underlain by approximately 20 inches (50.8 cm) of mottled gray silty clay loam (Pringle 1983).

A geotechnical investigation was performed on the parcel in 2010. The results of this investigation present the soil profile in the upland portion of the project area as coarse gray sand, underlain by silt (Reed 2010). The results of the geotechnical borings reveal that the off-shore soils consist of coarse gray sand to a depth of approximately 15 feet (4.57 m), at which it is underlain by approximately 6.5 feet (1.98 m) of gray silt before turning back to coarse sand until bedrock was encountered at approximately 40 feet (12.2 m) below surface (Reed 2010).

Archaeological Research Design and Survey Methods

This survey consisted of two phases. The first phase consisted of background research to identify any previously recorded historic properties, including archaeological sites, which could be affected by project activities. ASCC used this background research to determine the probability of encountering archaeological resources in the field and to establish an interpretive context for any materials encountered. As detailed below under *Previous Archaeology*, no archaeological sites have been previously recorded within a one-mile radius of the project area.

The second phase was a field inspection of the project area that sought to identify any and all cultural resources located within the project's APE, as well as any previously recorded cultural resources within the project's sightline. The field inspection, which entailed a visual impact assessment, a pedestrian surface survey, and subsurface testing, was carried out by Alexander Gall, M.A., Dana Holschuh, B.A. and Michael Smith, B.A., on April 24th, 2012. Mr. Gall oversaw and directed all aspects of the project.

Background Research

ASCC carried out ethnographic, historic, and archaeological background research using materials from the Washington State Department of Archaeology and Historic Preservation (DAHP) as well as resources located at the ASCC library and online. Materials reviewed included Washington State Archaeological Site Inventory files, cultural resource survey reports, General Land Offices (GLO) survey maps, various county road maps, tax assessor maps, Cowlitz County GIS, and the Washington Information System for Architectural and Archaeological Records Data (WISAARD).

The goal of this background research was to identify previously recorded cultural resources within a mile of the project, to determine the number of archaeological surveys that have occurred in that vicinity, to determine the likelihood of finding archaeological materials in the project areas, and to establish an archaeological/historic context for the project areas in general.

Ethnographic Overview

At the time of Euro-American contact, the indigenous peoples of the Lewis River Basin could be loosely classified into two main ethno-linguistic groups: the Chinookan-speaking Multnomah and the Sahaptin-speaking Western Klikitat, or Taitnapam.

The term “Chinook” refers to both a linguistic classification as well as a cultural one (Ruby and Brown 1976). Early on, Euro-American traders used the term to refer to the indigenous people living on the Pacific shore from Willapa Bay to Tillamook Head, along the Columbia River from its mouth to The Dalles, and a short distance up the Willamette to its falls (Silverstein 1990). Today, the classification of the Chinook subgroups is a result of both cultural-geographical and linguistic divisions. Broadly, the Lower Chinook, who lived near the Pacific Coast, are distinguished from the Upper Chinook, who lived along the Columbia River and its tributaries.

The Multnomah sub-group of the Upper Chinook occupied the Columbia River from near Deer Island to just east of the Washougal River (Silverstein 1990). Multnomah villages were recorded on both sides of the Columbia River. The first recorded Multnomah villages include the settlements on Wappato Island, now Sauvie Island (recorded in William Broughton’s trip log, 1792) (Jones 1972), and two settlements recorded by Lewis and Clark: *Shoto*, located along Vancouver Lake, and *Cathlapottle*, located near the mouths of Lake River and the Lewis River (Silverstein 1990). The names of the villages also refer to smaller ethnic and political subgroups within the Multnomah linguistic group. Euro-American explorers therefore referred to the villagers living near the mouth of the Lewis River as the Cathlapottle or Cattlepottle, a name also applied to the river itself (GLO 1854).

By the late 18th-century, the Chinookan peoples of the lower Columbia had come into contact with Euro-American traders who plied the Northwest Coast trading with the natives, primarily in furs. Disease introduced to the native populations decimated the population within a single generation. Smallpox, dysentery, and malaria reduced the population by as much as 75% to 90% by some estimates, thus destroying the traditional lifeways of the Chinook prior to the arrival of the first permanent Euro-American settlers to the region (Hajda as cited in Ames 1994).

Also occupying the upper portions of the Lewis River and Cowlitz River drainages were speakers of Sahaptin, a language primarily spoken to the east of the Cascades by plateau cultures such as the Yakama, Palouse, and Umatilla. Euro-American observers used the generic term “Klikitat” to describe Sahaptin-speaking peoples living west of the Cascades (Ray 1974). Along the upper Lewis and Cowlitz rivers, these peoples were generally referred to as the Taitnapam, or Western Klikitat. It is generally thought that the Klikitat began arriving in western Washington when the Chinook, devastated by Euro-American diseases, abandoned many of their traditional territories (Hajda 1990; McClure and Mack 1996).

The Klikitat subsistence pattern was oriented largely around open grasslands and prairies, which contained animal and plant resources and served as inland lines of communication and commerce (Norton 1999). Klikitat peoples are thought to have maintained the open grasslands and prairies through periodic burning. The Klikitat wintered in the valleys of the Klikitat, White Salmon, Little White Salmon, Wind, and Lewis Rivers (Curtis 1911). With the ripening of the first roots and greens in spring, small groups would move to seasonal camps associated with a particular resource and stay, dependent on the availability of the resource. Like their Chinookan-speaking neighbors to the south and west, the Klikitat would converge in great numbers at fisheries during the heights of the spring and summer salmon runs. As the summer progressed into fall, the people would move higher into the uplands to take advantage of ripening berries and available game. With the end of the berry season, the people would reunite in social gathering locations before dispersing to their respective winter village sites. Movement between resource concentrations was quite fluid depending on need and resource availability (Boyd and Hajda 1987).

Moving into former Chinookan territories such as the Lewis River Basin, Sahaptin-speaking newcomers such as the Taitnapam may have adopted many of the practices of neighboring riverine groups such as the Cowlitz, a Salish-speaking people who lived to the north of the project area along the Cowlitz River and its tributaries (Hajda 1990). Most sources do not associate the Cowlitz with the North Fork Lewis River until after about the mid-1800s, when the Sahaptin-speaking Taitnapam, already intermarried with neighboring Cowlitz villages, became known as Cowlitz people themselves (*ibid.*).

The Cowlitz centered their tribal territories on major salmon streams (Hajda 1990). The Cowlitz also had access to the productive inland prairies that were maintained through burning (Boyd, ed. 1999). Salish-speaking groups practiced extensive trade with each other; Cowlitz and Upper Chehalis would trade surplus camas for sturgeon and other maritime staples with the Lower Chehalis, the Quinault, and groups along the Columbia River (Hajda 1990). Dentalium shells served as the primary medium of exchange when direct goods-for-goods trading was not an option. Intermarriage between the groups encouraged such productive relationships although conflict sometimes disrupted these relationships (Hajda 1990).

Historic Overview

The first undisputed contact between Europeans and the indigenous people of the Pacific Northwest is recorded in 1792, when British naval officer George Vancouver explored Puget Sound. In what would become Clark County, the Lewis and Clark Expedition documented interaction with Chinookan peoples in 1805 and 1806 while traveling on the Columbia River (Ames 1994).

Through the early 1800s, the booming fur trade fed Euro-American interests in the region, increasing direct contact and trade with the native inhabitants. In 1825, the Hudson's Bay Company (HBC) established Fort Vancouver, the first permanent non-

native settlement in the Pacific Northwest. As the regional nexus of the fur trade, the fort served as an important foothold for subsequent Euro-American settlement.

The growing Euro-American population in the Pacific Northwest led in 1848 to the creation by U.S. Congress of the Oregon Territory, which included the present states of Washington, Oregon, and Idaho. Euro-American settlement of the region was hastened by the Donation Land Claim Act of 1850, which granted acreage to every adult U.S. citizen who arrived in the territory prior to 1850 and homesteaded a claim for four years.

The earliest map depicting the project area is the 1854 General Land Office (GLO) map for Township 5 North, Range 1 West, Willamette Meridian. Land in the vicinity of the project area, on the east side of the Columbia River, is labeled “Rich bottom land mostly prairie and subject to inundation from summer floods...timbered along rivers and sloughs with balmgilead (*sic*), ash, oak, willow &c” (GLO 1854). Natural aspects of the landscape including rivers and mountains are depicted, but no improvements are shown (Figure 9). The land in the vicinity of the project area is divided into two parcels, measuring 33.16 and 38.21 acres, neither of which with an attributed owner. This map also depicts the U-shaped portion of Lewis River that is known today as Horseshoe Lake, labeled “Catapootle River, in its current configuration to the south-southeast of the project area. An unnamed slough is located to the east of the project area, in approximately the same configuration at present-day Dike Road (Figure 9).

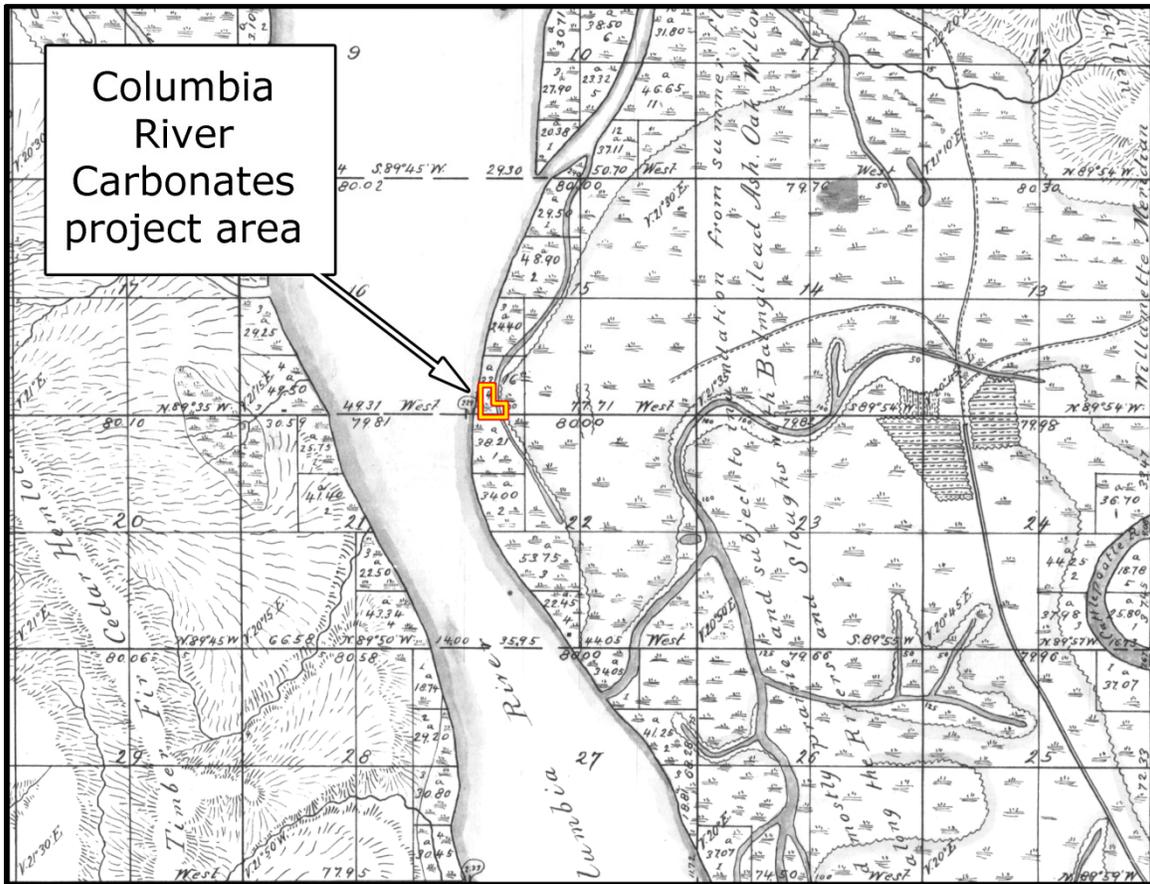


Figure 9. 1854 General Land Office (GLO) map of T5N, R1W, W.M. with project area overlaid.

Woodland is one of the oldest communities in Washington State. In 1845, upon his retirement from the Hudson's Bay Company, Adolphus Lee Lewes and his brother Fred established a land claim on the banks of a river east of the present city of Woodland. The river became known as the Lewis after its original settler. Within a few years, many other settlers followed to take advantage of Donation Land Claims, settling on the Lewis River "Bottoms". Among those that settled around 1850 were Squire and Millie Bozarth, Solomon Strong and Judge Columbia Lancaster (Talley 2011).

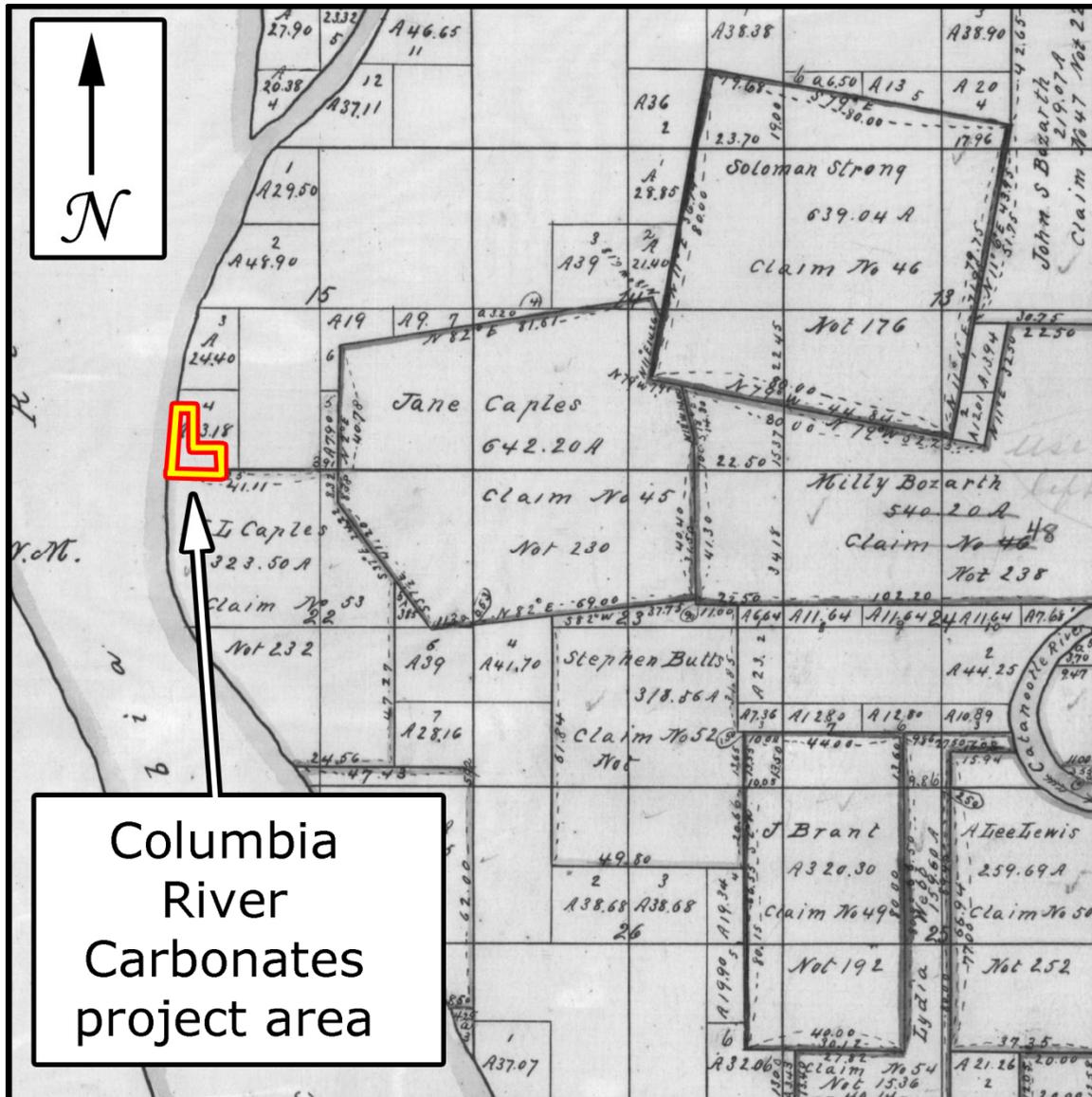


Figure 10. 1864 General Land Office (GLO) map of T5N, R1W, W.M. with project area overlaid.

The 1864 GLO map depicts the vicinity of the project area divided into numerous parcels and donation land claims (DLCs). The project area straddles the boundaries of a parcel measuring 33.18 acres in the northern portion and the 323.5-acre donation land claim (DLC) attributed to H.L. Caples (Claim No. 53) in the southern (GLO 1864) (Figure 10). Henry L. Caples came to Woodland in 1852. Caples served on the Washington Legislature during the 1850s and 60s and eventually moved his family to Vancouver in 1864 (Columbian 1989).

The 1895 Map of Cowlitz County shows increasing division of land in the vicinity of the project area. The town of Woodland is platted to the southeast, and the BNSF railroad

tracks are depicted in their present configuration (Lane 1895). The town of Woodland continued to grow throughout the 1900s. Aerial photomaps reveal that the project parcel and surrounding area has changed very little in recent years, and the residence in the southern portion has been in its current position since at least the early 1990s.

Previous Archaeology

Background research revealed that there have been no previous cultural resource surveys and there are no previously recorded archaeological sites within one mile of the project area. The closest previously recorded site is located approximately 3.64 miles (5.86 km) southeast of the project area. Site number 45CL27 is located on a terrace north of East Fork Lewis River. The site was recorded in 1953 and consists of projectile points, stone bowls and fire-cracked rock (Munsell 1953). The site is unevaluated for inclusion on the National Register of Historic Places (NRHP).

Historic Properties

There is one previously recorded historic barn within one mile of the project area. The Augustus Pushmeier Barn is located at 1342 Dike Road (approximately 0.59 miles [0.96 km] north/northeast of the project area) and is recorded on the Washington State Heritage Barn Register. Built in 1920, the barn had been in continuous use until 2009, when it was rebuilt and later recorded (Bellika 2010).

The closest property included on the NRHP is the Hulda Klager Lilac Gardens, approximately 2.63 miles (4.24 km) south/southeast of the project area. Included on the register in 1975, the gardens are significant as the private laboratory and showplace of Hulda Klager (1863-1960), a well-known experimental gardener who has been credited with the development of over 250 new varieties of lilac; she was the recipient of the Washington State Federation of Garden Clubs first horticultural award (NRHP 2012).

Visual Impact Assessment

In accordance with Section 106, ASCC assessed the project's indirect (visual) impact on any significant historic properties. The proposed project is located in a primarily undeveloped, residential and agricultural setting with sparse development. According to background research and observations in the field, the project does not lie within sight of any NRHP-eligible properties. Given these facts, ASCC judged that the proposed project should have no adverse visual effect on known historic properties.

Surface Investigation

The surface investigation consisted of a pedestrian survey of the project area, walking parallel, adjacent transects spaced roughly 10 meters apart (Figure 11). This walkover was used to locate the boundaries of the project area, to assess the landforms for archaeological potential, to evaluate the extent of modern ground disturbance, to determine locations for shovel test probes, and to inspect the project area for archaeological materials. Observations were recorded in field notes.

Soil visibility across the project area as a whole was moderate, approximately 35%, with most mineral soils visible within the dirt road leading west from the residential area to the river, on the sandy beach adjacent to the Columbia River along the eastern border and in scattered bare patches across the project area (Figures 6, 8). Tree bases, trails, rodent mounds, and patchily vegetated areas also provided areas of visibility.

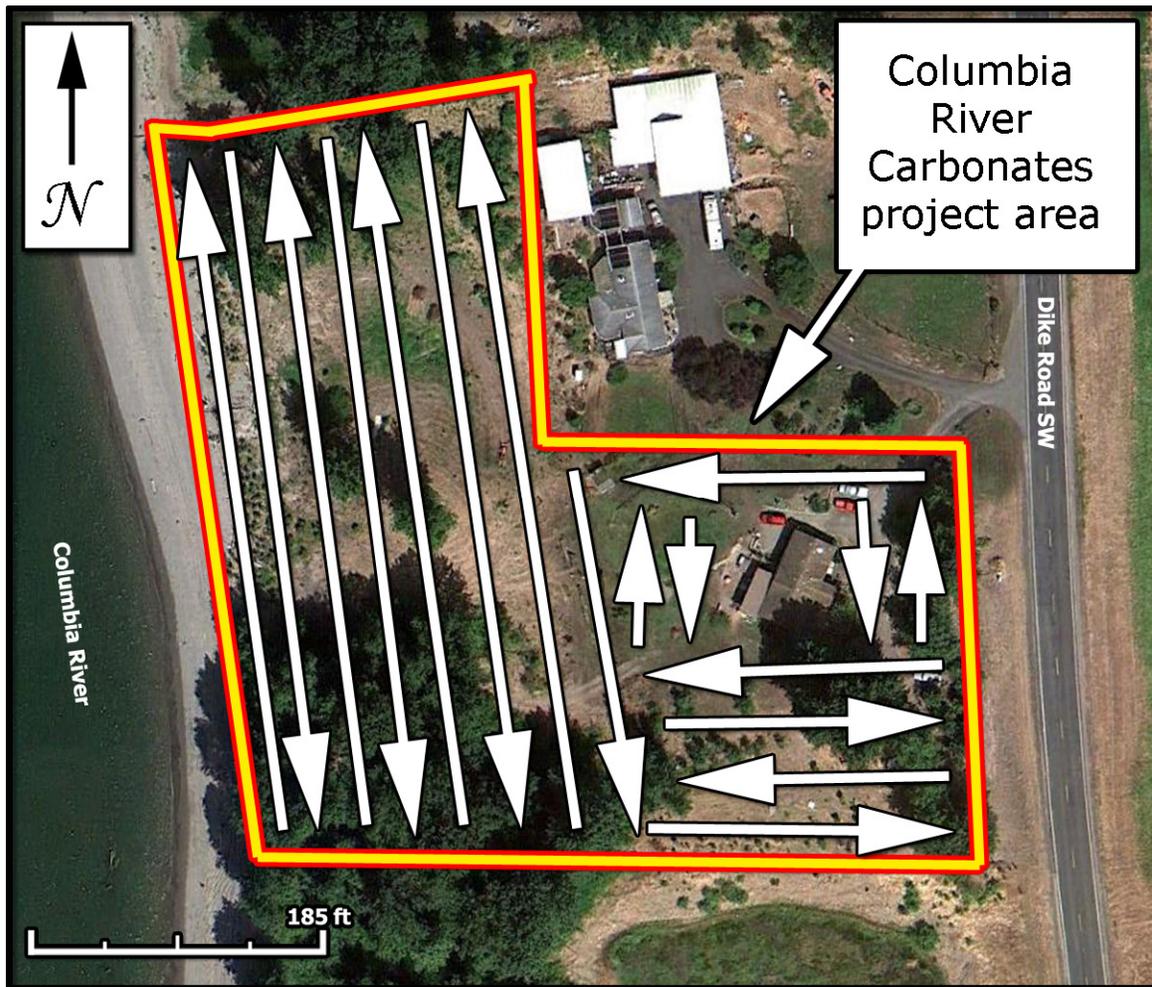


Figure 11. Aerial photomap showing transects walked during surface investigation.

Subsurface Investigation

The subsurface investigation entailed the excavation of eight (8) STPs, placed across the landform so as to provide a sufficient sampling of the project area (Figure 13). Each STP was excavated by shovel as a cylindrical hole measuring approximately 50cm in diameter and to an average of 80 cm below ground surface. STP 1, in the northeastern portion of the project area, was augered to a final depth of 2 meters below ground surface, in order to observe deeply buried sediments. All excavated soils were screened through nested 1/4-inch and 1/8-inch (6mm) stainless steel mesh. Detailed notes on the subsurface excavations, including location information, descriptions of soil types, texture, color, and the presence or absence of cultural materials, were kept in field notes. ASCC maintained a digital record of excavations using a Canon Power Shot digital camera and a Garmin 60CSx GPS unit.



Figure 12. West-facing view of STP-4 in progress.

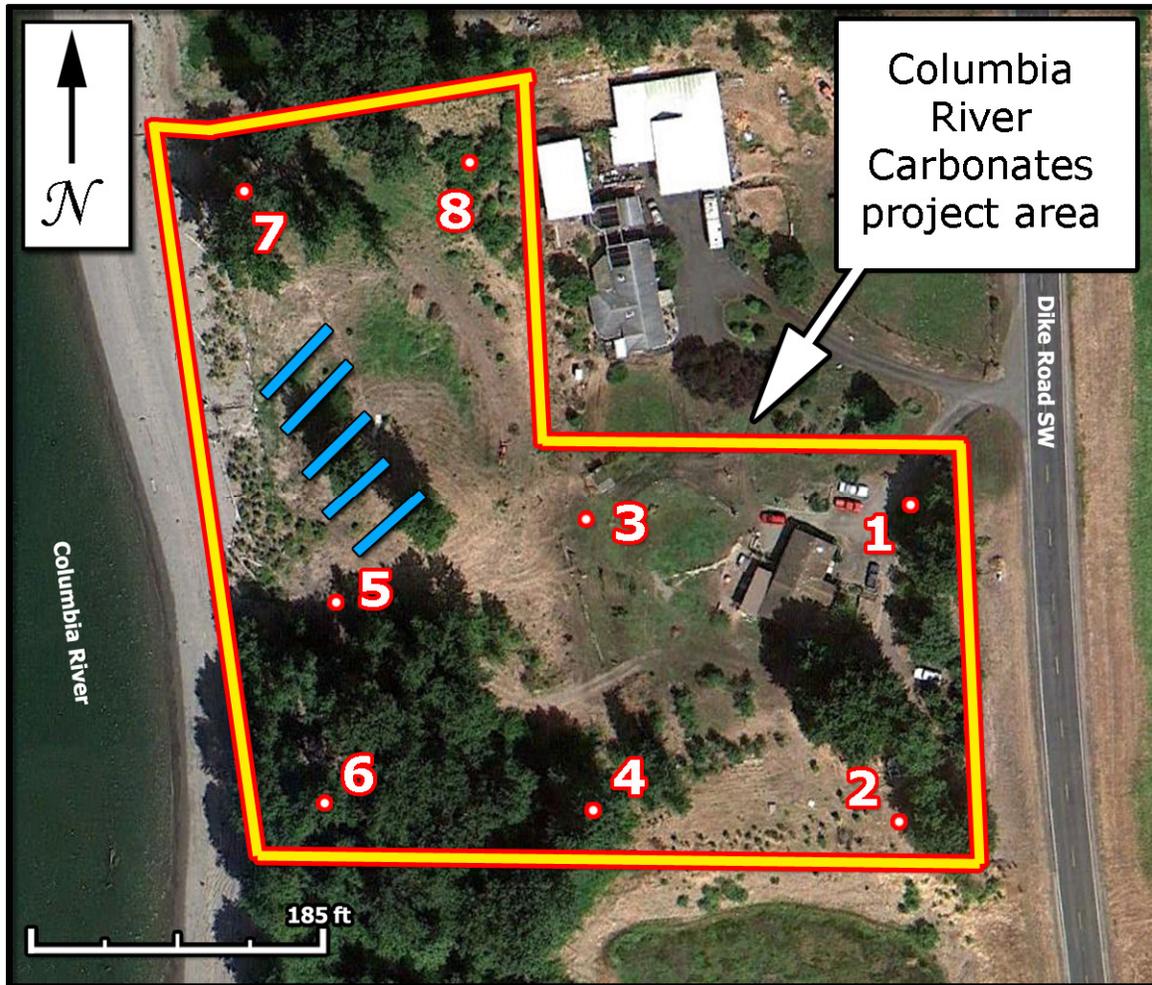


Figure 13. Aerial photomap showing locations of negative STPs excavated during the subsurface investigation, approximate location of the standing water observed during the survey is indicated with blue lines.

During the subsurface investigation, ASCC identified a single ferrous fence post within STP-4, along the southern boundary of the project area (Figure 15). The post was observed approximately 15cm below the ground surface and it extended to approximately 60 cm below ground surface, where it was removed to complete the remainder of the hole. It is likely that this post is associated with the property-line fence that runs east-west approximately 3 meters south of this STP and the post is likely modern. While modern debris was observed on the ground surface across the project area, no historic or pre-historic cultural materials were observed during the either the surface or subsurface portion of this survey.

With the exception of STP4, soils across the project area appeared to retain integrity, although they differed slightly from the descriptions of Caples silt loam given by Pringle (1983). ASCC observed soil profiles consisting of an upper stratum of brown sandy

loam, underlain by coarse gray sand to the final depth of excavation. This layer of dark topsoil was observed in grassy areas. The coarse gray sand extended to the final depth of 2 meters below ground surface in the profile of STP 1 (Figure 14). Soils were consistent with the descriptions given by Reed (2010).



Figure 14. Profile of STP-1, excavated to 85 cm below ground surface (bgs), augered to 2 meters bgs.



Figure 15. Ferrous fence post observed in STP-4.



Figure 16. Profile of STP-3.

Summary and Recommendations

ASCC has carried out a records review, visual impact assessment, pedestrian survey, and subsurface survey of the Columbia River Carbonates project area. The results of geotechnical work on the parcel and within the river indicate that the soils encountered by ASCC extend across the entire parcel, including the submerged portion. No cultural resources were identified during this survey. **As a result of the investigation detailed in this report, ASCC has concluded that the proposed project, as currently planned, will have no adverse effect on significant historic properties, including archaeological sites.**

Project coordinators should bear in mind that a survey is by definition a sampling process that cannot completely rule out the presence of archaeological materials on-site. To prepare for the possibility that archaeological materials are discovered during project activities, ASCC recommends that project coordinators develop and implement an inadvertent discovery plan, such as the one provided below.

Sample Inadvertent Discovery Plan

In the event of an inadvertent discovery of potentially significant archaeological materials (bones, shell, stone tools, hearths, etc.) and/or human remains during project activities, all work in the immediate vicinity should stop, the area must be secured, and the discovery must be reported to the Department of Archaeology and Historic Preservation (DAHP)

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(360-586-3065) and all relevant Native American tribes. In the event human remains are identified, local law enforcement, the county medical examiner, State Physical Anthropologist at DAHP (360-586-3534), and the affected Tribes should be contacted immediately. Compliance with all applicable laws pertaining to archaeological resources (RCW 27.53, 27.44 and WAC 25-48) and human remains (RCW 68.50) is required.

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COLUMBIA RIVER CARBONATES PROPOSED COLUMBIA RIVER BARGE FACILITY HYDRAULIC AND GEOMORPHIC ASSESSMENT



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October 9, 2015



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1. INTRODUCTION

Columbia River Carbonates (CRC) is planning a materials-handling facility along the Columbia River near Woodland, WA. The proposed facility is located adjacent to the Columbia River at about River Mile (RM) 82.7 near Woodland, WA (Figure 1-1). Environmental permitting for facility construction requires the identification and characterization of potential environmental impacts and development of appropriate mitigation measures. WEST Consultants, Inc. (WEST) was contracted by CRC to provide information related to the hydraulic, geomorphic, and sediment transport characteristics of the Columbia River adjacent to the project site and to identify any impacts the proposed project may have on these characteristics. This memorandum documents the results of the assessments completed by WEST.

Unless otherwise noted, all elevations defined within this report are referenced to the North American Vertical Datum of 1988 (NAVD88).



Figure 1-1. Project Location Map

2. HYDRAULIC AND SEDIMENT TRANSPORT ANALYSIS

In the following sections, the methods used to create hydraulic models of the project site for existing and proposed conditions are described.

2.1. *Duplicate Effective Model*

A hydraulic model to represent the existing Federal Emergency Management Agency (FEMA) 1% annual chance flood (base flood) water surface elevation (WSE) profile was developed. This model is referred to as a “Duplicate Effective Model” (DEM). The purpose of the model is to demonstrate that it properly represents the regulatory base flood WSE profile and significant differences between the effective FEMA base flood WSE profile and the DEM either do not exist or are rationally explained. An existing US Army Corps of Engineers (USACE) River Analysis System [HEC-RAS, (USACE, 2010)] model used to complete a hydraulic analysis of the Columbia River as part of the Columbia River Treaty (USACE, 2011) was used as the basis for the DEM. The Columbia River Treaty model was obtained by WEST and converted from an unsteady to a steady state model with a downstream boundary condition equal to an elevation of -0.21 feet NAVD88, which is the Mean Lower Low Water (MLLW) elevation of National Oceanic and Atmospheric Administration (NOAA) tidal gage 9439040 located near Astoria, Oregon. The conversion was completed by entering in known base flood WSEs near the study area identified from the Columbia County, OR Flood Insurance Study (FEMA, 2010), then calibrating the flow until the calculated WSE profile closely matched the flood insurance study (FIS) WSE profile. The calibration effort resulted in a discharge of 782,200 cfs. This discharge compares favorably to the maximum observed discharge values for the February 1996 flood, which is assumed by many entities to be a surrogate for the 100-year base flood. On February 10, 1996, the Columbia River discharge peaked at a flow of 864,000 cfs at USGS gage 14246900 – Columbia River at Beaver Army Terminal near Quincy, Oregon. This gage is downstream of the project site, and the Cowlitz River flows into the Columbia River between the project site and the aforementioned USGS gage. On February 10, 1996, the discharge from the Cowlitz River into the Columbia River was measured to be 63,500 cfs at USGS gage 14243000 – Cowlitz River at Castle Rock, Washington. Subtracting the flow of the Castle Rock gage from the flow at the Quincy, Oregon gage yields a discharge of 800,500 cfs, which is similar to the base flood discharge value calculated for the project site. Table 2-1 summarizes the FEMA and calculated WSEs as well as the difference between the two values. As seen in the table, there is close agreement between the FEMA WSE values and those calculated by the DEM.

Table 2-1. DEM Calibration Results

FEMA XS	RM	FEMA WSE (ft)	DEM Calculated WSE (ft)	Delta (ft)
AM	85.21	26.1	26.0	-0.1
AL	84.62	25.9	25.8	-0.1
AJ	83.83	25.6	25.5	-0.1
AI	83.43	25.4	25.4	0.0
AH	82.94	25.3	25.3	0.0
AG	82.44	25.2	25.2	0.0
AF	81.97	25.0	25.0	0.0
AE	81.47	24.9	24.9	0.0
AD	80.87	24.7	24.9	0.2
AC	80.38	24.6	24.8	0.2

Three additional flow scenarios were added to the DEM for use in sediment transport calculations discussed in Section 4.3. The first of the additional flow scenarios modeled the Ordinary High Water (OHW) event. According to the preliminary construction plan set provided by CRC, the OHW occurs at elevation 14.0 feet. Similar to the base flood calibration effort, the OHW scenario discharge was varied until the WSE reached 14.0 feet at the project site. The discharge required to produce an elevation of 14.0 feet at the project site was 450,200 cfs. The second of the additional flow scenarios modeled the MLLW event. According to the preliminary construction plan set provided by CRC, the MLLW occurs at elevation 3.3 feet. Similar to the base flood and OWH calibration efforts, the MLLW scenario discharge was varied until the WSE reached 3.3 feet at the project site. The discharge required to produce an elevation of 3.3 feet at the project site was 179,600 cfs. The final additional flow scenario modeled the 500-year flood event. Similar to the three aforementioned calibration efforts, the 500-year discharge was varied until the WSEs at the FEMA cross sections shown in Table 2-1 matched the 500-year WSEs shown on the flood profiles in the Columbia County, OR FIS (FEMA, 2010). The discharge required to reproduce the 500-year FEMA FIS WSEs at the project site was 858,200 cfs.

These three discharge scenarios were carried through to the Existing Conditions Model (Section 2.2) and the Proposed Conditions Model (Section 2.3) to assess the impact of the proposed structures on the sediment transport potential within the Columbia River in the vicinity of the project site. The impacts to the WSEs were not evaluated for the three scenarios in the Existing Conditions Model or the Proposed Conditions Model. An electronic version of the DEM is included on the DVD provided in Appendix A.

2.2. Existing Conditions Model

The Existing Conditions Model is a modification of the DEM that reflects any modifications that have occurred in the area of interest since the completion of the effective FEMA FIS up to the present. Fourteen cross sections not present in the DEM were incorporated into the Existing Conditions Model to more accurately represent the hydraulics in the area of interest. An overview of the DEM, Existing Conditions Model, and effective FEMA FIS cross section locations is provided in Figure 2-1. The 14 cross section locations added to the model are shown in greater detail in Figure 2-2.

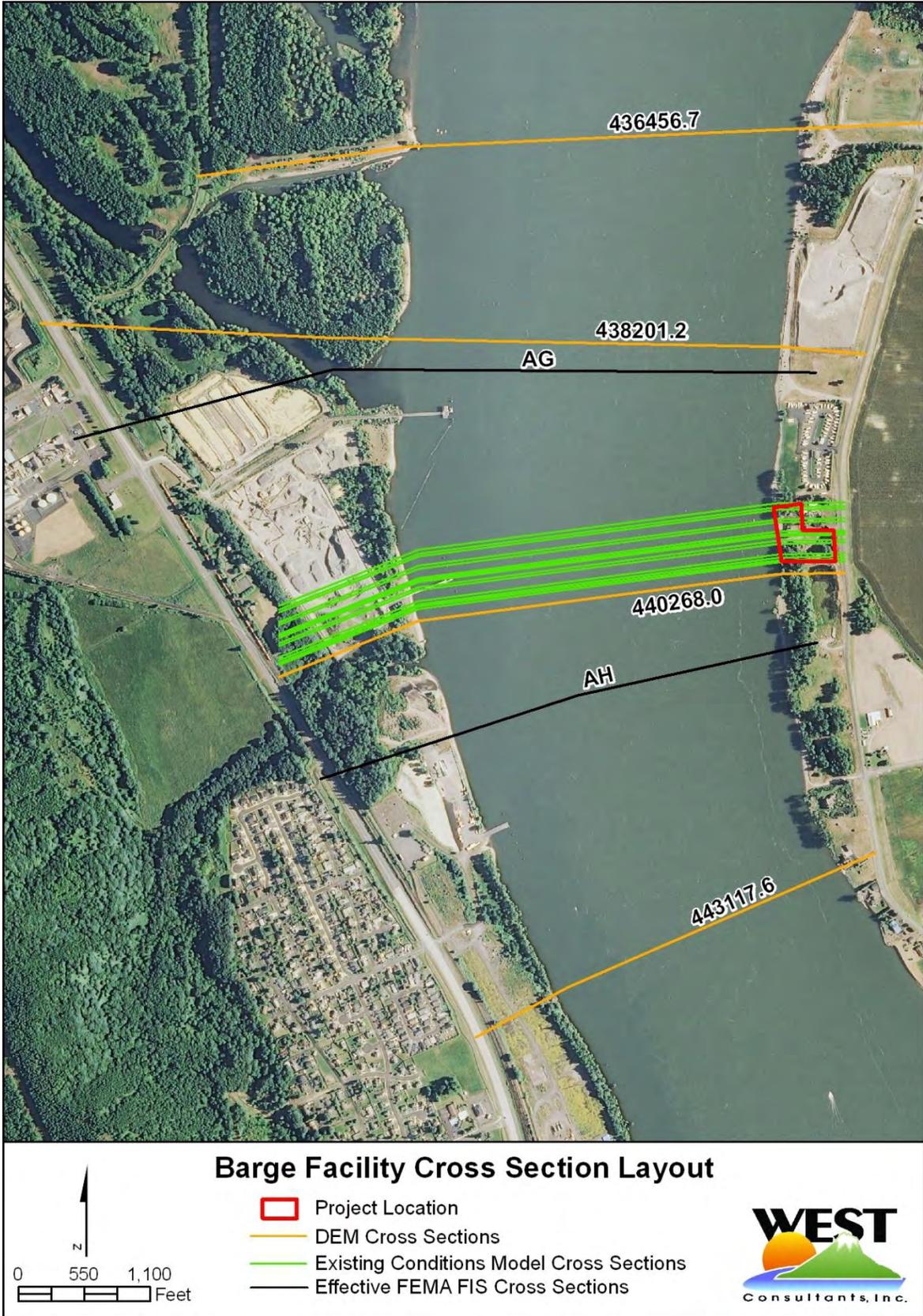


Figure 2-1. Cross Section Layout



Figure 2-2. Cross Section Layout at Project Site

The geometry for the 14 additional cross sections was determined using two sources of information. Overbank data was based on a digital elevation model that encompassed the project area (USACE, 2010). Due to their relatively close proximity, the bathymetric data was copied from XS 440268.0 to each of the 14 cross sections. A slight adjustment to the bathymetric data was made to accommodate the changes in top width between the bank stations. The adjustment calculations are shown in an Excel spreadsheet, included in Appendix A. The geometry and hydraulic characteristics, such as top of bank location and ineffective flow areas, of the existing cross sections copied from the DEM were not changed. A comparison of the base flood WSEs computed using the DEM and Existing Conditions Model are summarized in Table 2-2. The WSEs calculated by the two models are very similar. The slight differences noted between the two model WSEs are attributed to the interpolation of the DEM values for cross sections 439677.8 through 440170.2. An electronic version of the Existing Conditions Model is included on the DVD in Appendix A.

Table 2-2. Existing Conditions Model Results

Station	Base Flood WSEs		
	DEM (ft)	Existing Conditions Model (ft)	Delta (ft)
436456.7	25.22	25.22	0.00
438201.2	25.34	25.34	0.00
439677.8	25.40*	25.40	0.00
439710.9	25.41*	25.40	-0.01
439734.6	25.41*	25.41	0.00
439812.3	25.41*	25.41	0.00
439838.2	25.41*	25.41	0.00
439914.0	25.41*	25.42	0.01
439932.4	25.42*	25.42	0.00
439948.5	25.42*	25.42	0.00
439990.2	25.42*	25.42	0.00
440013.9	25.42*	25.42	0.00
440104.2	25.42*	25.42	0.00
440131.2	25.42*	25.43	0.01
440152.3	25.42*	25.43	0.01
440170.2	25.43*	25.43	0.00
440268.0	25.43	25.43	0.00
443117.6	25.51	25.51	0.00

*Indicates interpolated value.

2.3. Proposed Conditions Model

The Proposed Conditions Model was developed by revising the Existing Conditions Model to reflect the addition of proposed structures. The proposed project includes many changes to the project site, as detailed in the proposed plans contained on the DVD in Appendix A. The following items that are a part of the proposed plans have the potential to impact the hydraulic characteristics within the project area:

- Placement of fill material throughout the property, bringing the finished grade elevation of the property to 28.0 feet.
- Construction of a transfer tower on the right bank of the Columbia River having a bottom of slab elevation of 24.5 feet. The transfer tower is supported by nine 2-foot diameter piers.
- Construction of a hoist tower in the Columbia River located approximately 240 feet from the right bank. The hoist tower will have a bottom of slab elevation of 26.5 feet and is supported by four 3-foot diameter piers.
- Construction of five mooring dolphins spaced between 90 and 110 feet apart along the Columbia River. The mooring dolphins are between approximately 200 to 240 feet from the Columbia River right bank. The mooring dolphins will be supported by six 2-foot diameter piers.

Block obstructions were added to Cross Sections 439710.9, 439734.6 439812.3 439838.2, 439914.0, 439932.4, 439948.5, 439990.2, 440013.9, 440104.2, 440131.2, and 440152.3 to simulate the placement of fill to a finished grade elevation of 28.0 ft. Additional block obstructions were added to Cross Sections 439734.6, 439838.2, 440013.9, and 440131.2 to simulate mooring dolphin piers. Block obstructions were also added to Cross Section 439932.4 to simulate the hoist tower support structure (piers only) and the transfer tower piers and deck (as if they were completely blocked with debris). The transfer tower piers and deck are simulated as completely blocked obstructions because the base flood WSE is calculated to be higher than the deck bottom elevation, in contrast to the plans provided by CRC in which the base flood elevation is assumed to be lower than the deck bottom elevation. Therefore, the transfer tower structure was conservatively assumed to be completely blocked, even though an opening between the piers exists. The base flood WSEs simulated using the Proposed Conditions Model and Existing Conditions Model are compared in Table 2-3. The results indicate that the proposed conditions will not cause an increase in the WSE near the project site. An electronic version of the Proposed Conditions Model is included on the DVD in Appendix A.

Table 2-3. Proposed Conditions Model Results

Station	Base Flood WSEs		
	Existing Conditions Model (ft)	Proposed Conditions Model (ft)	Delta (ft)
436456.7	25.22	25.22	0.00
438201.2	25.34	25.34	0.00
439677.8	25.40	25.40	0.00
439710.9	25.40	25.40	0.00
439734.6	25.41	25.40	-0.01
439812.3	25.41	25.40	-0.01
439838.2	25.41	25.40	-0.01
439914.0	25.42	25.41	-0.01
439932.4	25.42	25.41	-0.01
439948.5	25.42	25.41	-0.01
439990.2	25.42	25.42	0.00
440013.9	25.42	25.42	0.00
440104.2	25.42	25.42	0.00
440131.2	25.43	25.42	-0.01
440152.3	25.43	25.42	-0.01
440170.2	25.43	25.42	-0.01
440268.0	25.43	25.42	-0.01
443117.6	25.51	25.51	0.00

3. EROSION PROTECTION REQUIREMENTS

An evaluation of requirements for erosion protection at the project site was conducted. It is proposed that erosion protection for the project would be accomplished with the use of a bioengineered treatment. Erosion control measures must withstand forces due to both floods and waves. A factor of safety of 1.5 was used in the protection structure sizing calculations.

3.1. Rock Sizing Based on Flooding Conditions

An evaluation was conducted for the base flood event to define the minimum median grain size for rock that may be used as part of the bioengineered shore protection. The design guidance presented in HEC-23 (FHWA, 2009) was used to size the rock to resist the river flow forces. The design guidance in HEC-23 is based on the methodology developed by the USACE and is documented in EM 1110-2-1601 (USACE, 1994). Therefore, the rock size was estimated using CHANLPRO software (USACE, 1999). The calculations results are summarized in Table 3-1 and show that a minimum D₅₀ of 6 inches is required to protect the banks for the base flood event.

Table 3-1. Summary of Calculations for Flooding Conditions

Maximum Velocity (ft/s)	Flow Depth (ft)	Flow Top Width (ft)	Bend Radius (ft)	Calculated D ₅₀ (in)
4.65	71.32	3361.28	68,640	6

3.2. Rock Sizing Based on Wave Conditions

An evaluation was also conducted to investigate the erosive potential of waves. The required weight of rock to resist wave forces was computed using the Hudson relationship, as documented in EM 1110-2-1100, Coastal Engineering Manual (USACE, 2008). The Hudson relationship is:

$$W = \frac{\gamma_r H^3}{K_D (S_r - 1)^3 \cot \theta}$$

where W is the weight in pounds of an individual rock in the primary cover layer; γ_r is the unit weight of the rock, 165 lb/ft³, H is the design wave height in feet at the structure site; S_r is the specific gravity (2.65) of the rock; θ is the slope angle (26.57 degrees) measured from horizontal; and K_D is a stability coefficient (2.2) that varies primarily with the rock shape, surface roughness, edge sharpness, and degree of interlocking obtained in placement. A spherical grain diameter (D) for the calculated grain weight (W) was then calculated using the following relationship:

$$D = \left(\frac{6W}{3.14\gamma_r} \right)^{1/3}$$

3.2.1. Wind-Generated Waves

A wave height (H) for wind-generated waves was calculated using the restricted fetch limited equation documented in Automated Coastal Engineering System Technical Reference (USACE, 1992). The wave is assumed to be breaking on the structure. The highest sustained wind speed recorded at the Portland International Airport in Portland, Oregon is 44 miles per hour. These winds originated from the northwest direction, which is the same direction as the longest fetch distance for the project site. The Portland International Airport is located approximately 24 miles southeast of the project site and has topographic features generally similar to those found at the project site. The results of the calculations for the wind-generated wave conditions are summarized in Table 3-2 and show that a D_{50} of 16 inches is required to protect the banks from wind-generated waves.

Table 3-2. Summary of Calculations for Wind-Generated Wave Conditions

Fetch (ft)	Wind Speed (mph)	Depth (ft)	Wave Height (ft)	D_{50} (in)
21,859	44	71.32	2.5	16

3.2.2. Ship-Generated Waves

A ship-generated wave height (H) was estimated using an equation documented in Wave-Height Predictive Techniques for Commercial Tows on the Upper Mississippi River - Illinois Waterway System (USACE, 1999). The characteristics associated with the ship-generated wave, including wave celerity, Froude number, wave propagation angle, and wave period, were determined using the information and equations provided in EM 1110-2-1100 (USACE, 2008). The ship was assumed to be traveling at a speed of 14 knots in the center of the navigation channel, which is 1,320 feet from the base of the shore at the project site. The results of the calculations for the ship-generated wave conditions are summarized in Table 3-3 and show that a D_{50} of 19 inches is required to protect the banks from ship-generated waves.

Table 3-3. Summary of Calculations for Ship-Generated Wave Conditions

Distance to Bank (ft)	Ship Speed (knots)	Depth (ft)	Wave Height (ft)	D_{50} (in)
1,320	14	71.32	2.9	19

3.3. Structure Sizing and Shaping

Based upon a review of the three methods used to predict median grain sizes for the shore erosion protection, a minimum D_{50} of 19 inches is recommended for the rock. The structure requires special design to prevent undermining. It is noted that MSE retaining walls are proposed on the north and south ends of the property. The preliminary design drawings for the MSE retaining walls indicate that the footing toe for the walls will be placed two feet below the ground surface. Considering the proximity of the river to the MSE retaining walls, it can be expected that the portions of the exposed walls will be inundated by floods. Scour along the walls is possible during these flood events. Procedures for defining the scour potential along MSE retaining walls and other longitudinal structures are a topic of ongoing research and to date have not been defined in literature. Therefore, a simple method used to predict scour in channels was used to estimate the

scour depth at the wall. The U.S. Bureau of Reclamation (USBR) outlined a procedure to predict scour based on an equation relating flow depth, mean velocity, and critical velocity, which is the velocity at which particle motion is initiated. This equation is shown below.

$$d_s = d_m \left(\frac{V_m}{V_c} - 1 \right) \quad (\text{USBR, 1984})$$

where d_s is the scour depth in feet, d_m is the mean depth in feet, V_m is the mean velocity in feet per second, and V_c is the critical velocity in feet per second. Using a d_m of 7.4 feet and a V_m of 1.9 feet per second, as calculated by the HEC-RAS model for the base flood, and a critical velocity of 1.5 feet per second for fine sand (USBR, 1984), the scour depth, d_s , was calculated to be 2.0 feet. Assuming that the flow obstruction created by the wall could possibly increase the amount of scour, a safety factor of 1.5 was added to the calculated scour depth, resulting in an estimated wall scour depth of 3.0 feet during the base flood.

Two generalized scour countermeasures are outlined that will resist the estimated amount of scour at the base of the MSE retaining walls. The first scour countermeasure alternative is to place rock at the base of the wall in the same manner in which rock is placed at the base of the embankment slope and to maintain the two foot buried depth of the retaining wall. The second alternative is to not place rock at the base of the wall but to increase the depth of the buried wall from two feet to five feet in locations with flow depths greater than two feet during the base flood and from two feet to three feet in locations with flow depths less than two feet during the base flood. For example, in Figure 3-1, two general flow depths are shown. To the riverward (left) side of station 4510, the flow depth is approximately six feet. To the landward (right) of station 4510, the flow depth is approximately 1.5 feet. Therefore, the portion of the MSE retaining wall riverward of station 4510 at this cross section should be buried at least five feet. The portion of the MSE retaining wall landward of station 4510 should be buried at least two feet.

It is noted that the preliminary construction plans indicate that the MSE retaining walls are to be constructed on the property line. If the retaining walls are not moved away from the property line, any scour that occurs at the base of the walls would develop on the neighboring properties. Should the construction plans be altered and the MSE retaining walls be moved away from the property line, they should be moved inward 10 feet to allow sufficient room for accommodation of scour within the extents of the CRC property. A proposed design schematic for the southwest corner of the project site with the retaining wall moved in 10 feet, rock placed at the base of the wall, and a wall depth of two feet is shown in Figure 3-2. A detail for the northwest corner for the same situation is shown in Figure 3-3. Figure 3-4 shows the retaining wall on the property line with no rock protection and a MSE retaining wall depth of five feet. A detail for the northwest corner for the same situation is shown in Figure 3-5.

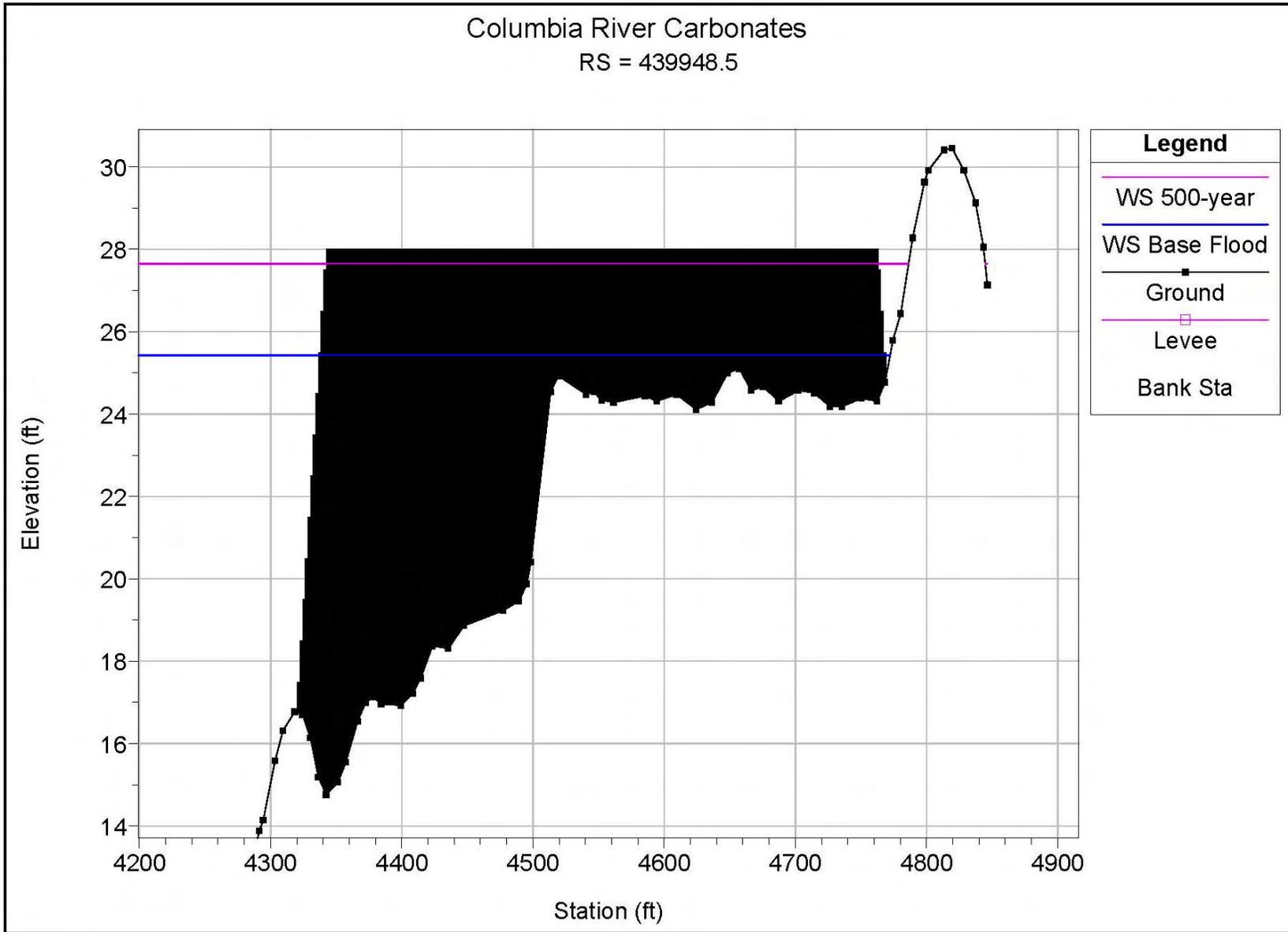


Figure 3-1. Typical Ground and Fill Elevation Difference

SOUTHWEST CORNER BIO-ENGINEERED STREAMBANK PROTECTION STRUCTURE DETAIL

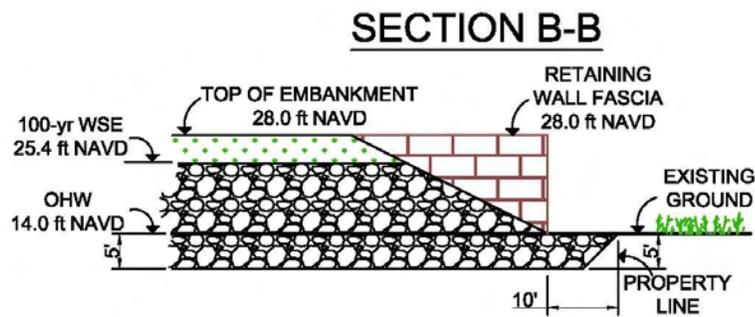
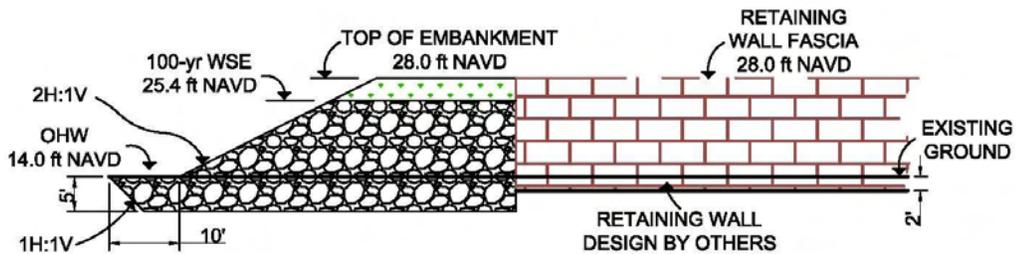
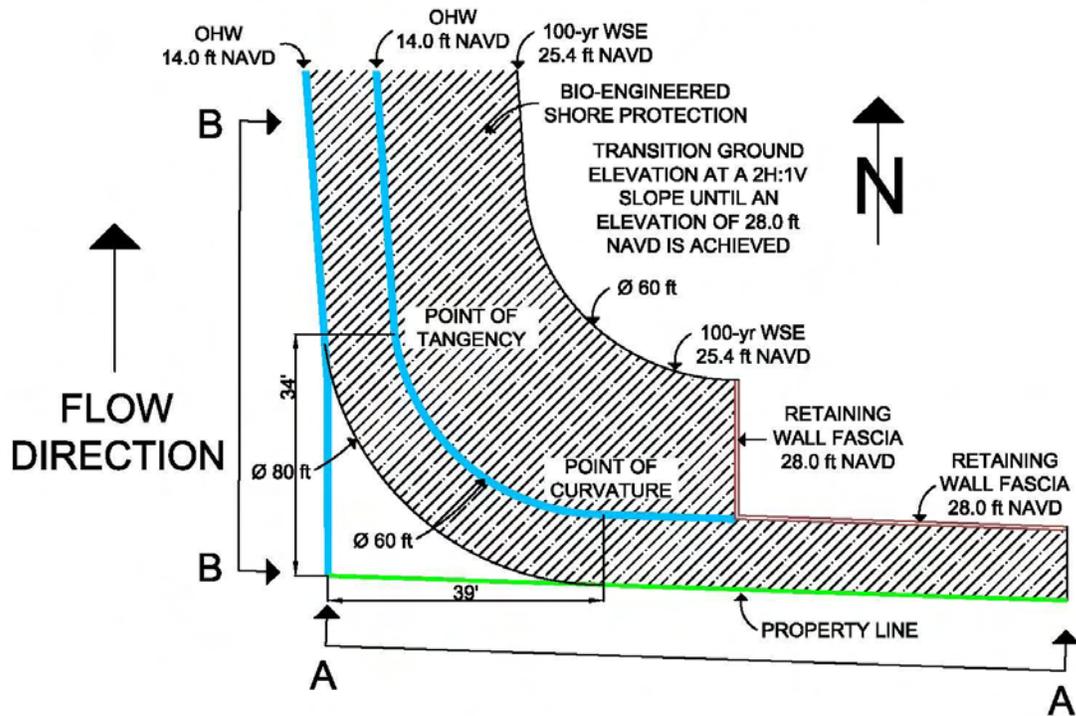


Figure 3-2. Bioengineered Shore-Protection Structure Detail with MSE Retaining Wall Set Back from Property Line – Southwest Corner

NORTHWEST CORNER BIO-ENGINEERED STREAMBANK PROTECTION STRUCTURE DETAIL

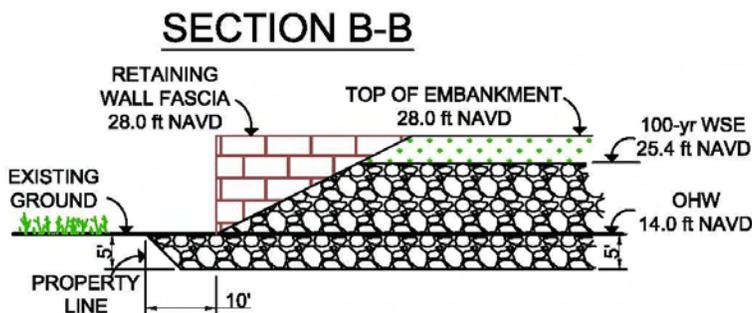
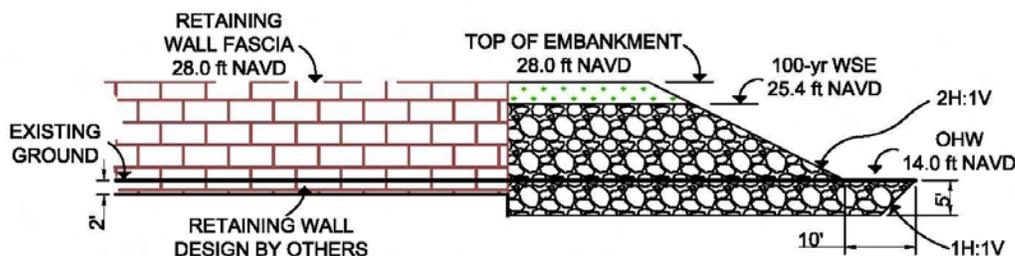
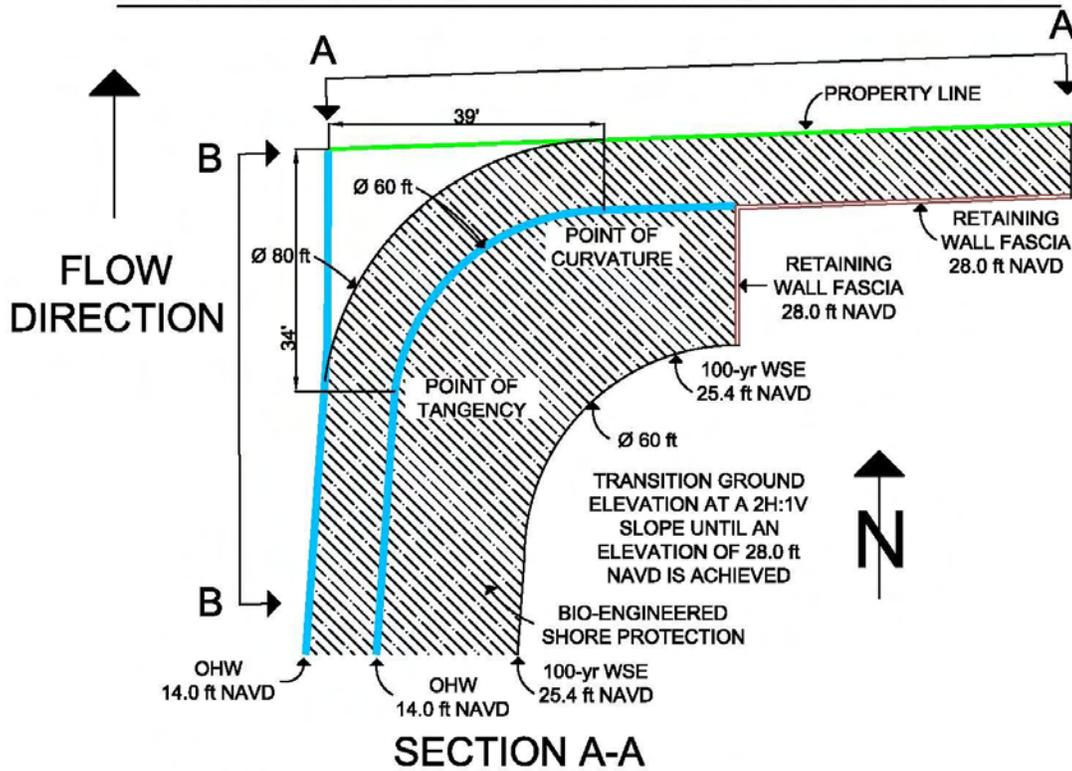
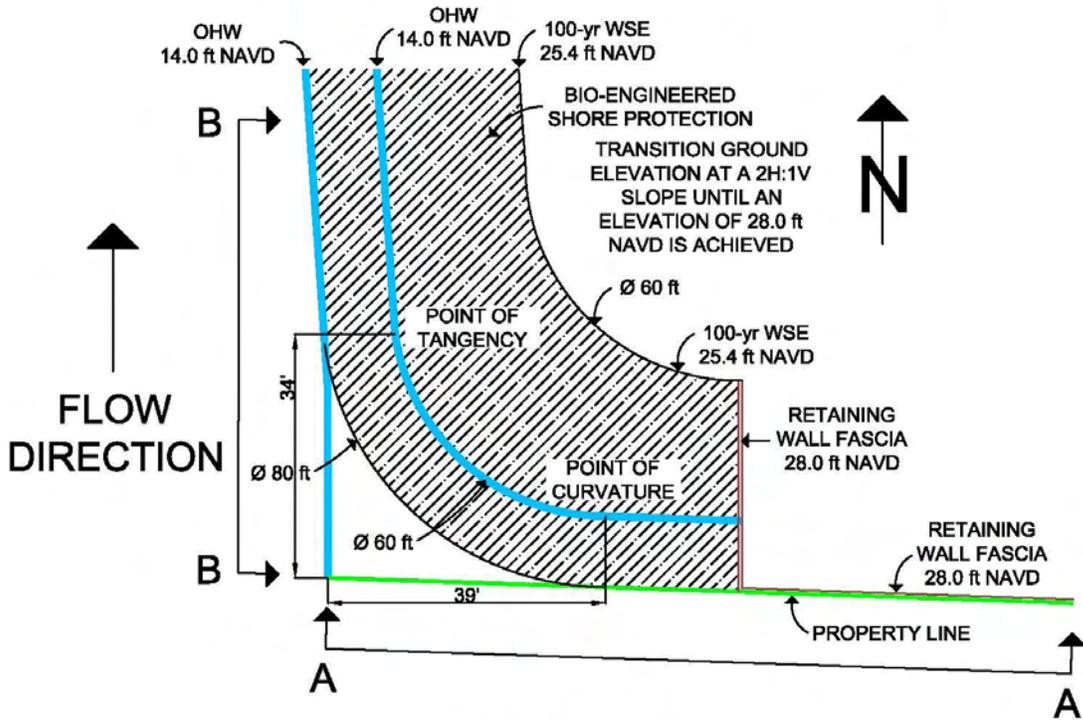
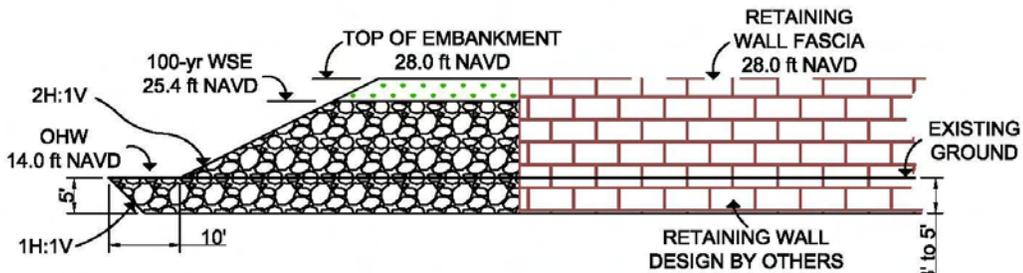


Figure 3-3. Bioengineered Shore-Protection Structure Detail with MSE Retaining Wall Set Back from Property Line – Northwest Corner

SOUTHWEST CORNER BIO-ENGINEERED STREAMBANK PROTECTION STRUCTURE DETAIL



SECTION A-A



SECTION B-B

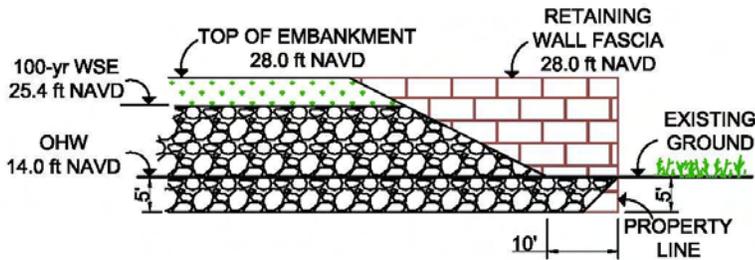


Figure 3-4. Bioengineered Shore-Protection Structure Detail with MSE Retaining Wall on Property Line – Southwest Corner

NORTHWEST CORNER BIO-ENGINEERED STREAMBANK PROTECTION STRUCTURE DETAIL

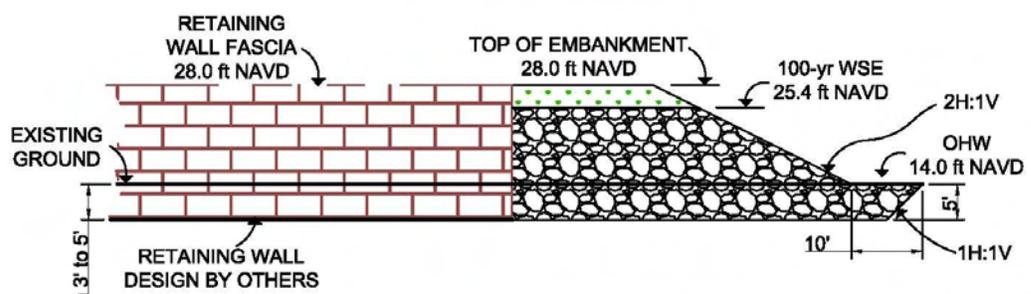
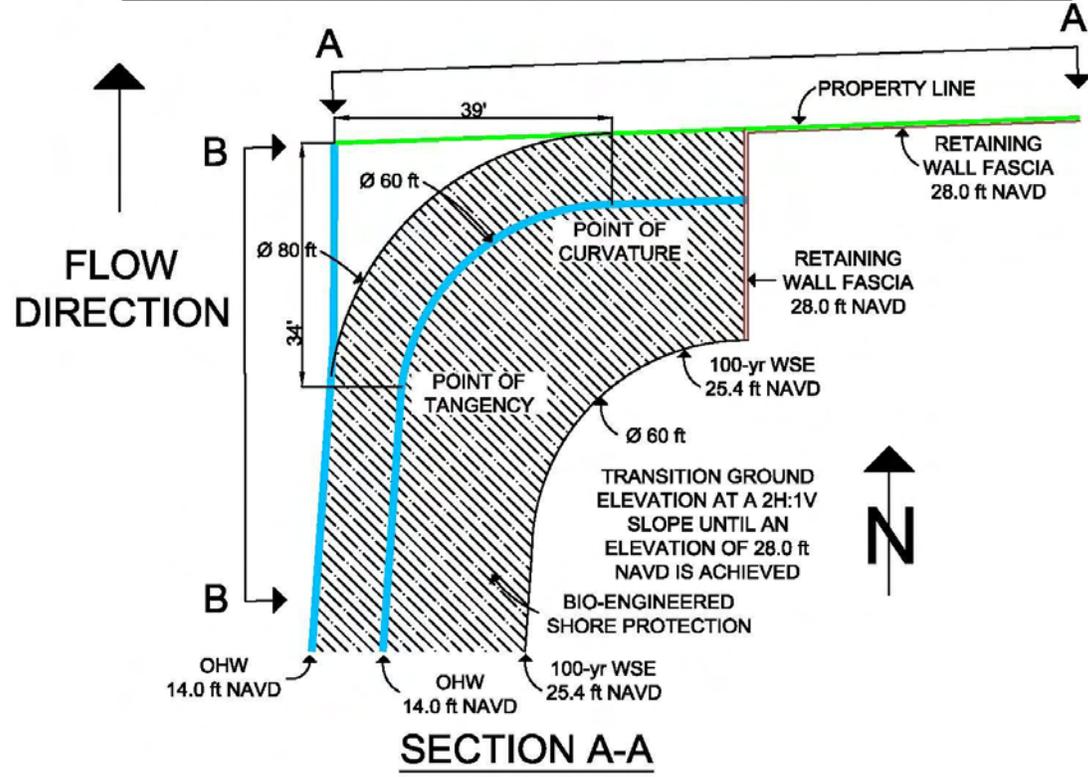


Figure 3-5. Bioengineered Shore-Protection Structure Detail with MSE Retaining Wall on Property Line – Northwest Corner

3.4. Pier Scour Evaluation

The proposed structure has piles supporting both the hoist tower and the transfer tower. Pier 1 (hoist tower) and Pier 2 (transfer tower) are located in the main channel and are simulated as circular piers. Pier 1 has a diameter of 3.0 feet and Pier 2 has a diameter of 2.0 feet. The potential pier scour depth, y_s , for both piers was estimated using the Colorado State University (CSU) equation (FHWA, 2001):

$$y_s = 2.0 K_1 K_2 K_3 K_4 \left(\frac{a}{y_1} \right)^{0.65} \left(\frac{V_1}{\sqrt{g y_1}} \right)^{0.43} y_1$$

where K_1 is a correction factor for pier shape; K_2 is a correction factor for angle of attack of flow; K_3 is a correction factor for the bed condition; K_4 is a correction factor for bed armoring; a is the projected pier width; y_1 is the depth of flow just upstream of the pier, excluding local scour; V_1 is the approach velocity; and g is the gravitational force.

To determine if small dunes were appropriate for selection of the K_3 factor, van Rijn's equation (van Rijn, 1984) for dune height was used:

$$\Delta_d = 0.11h \left(\frac{d_{50}}{h} \right)^{0.3} (1 - e^{-0.5T})(25 - T)$$

where Δ_d is the dune height (m); h is the average water depth (m); d_{50} is the median grain size diameter of the bed material (m); and T is the temperature ($^{\circ}\text{C}$). The calculated dune height of 0.9 m is within the range classified as small dunes (0.6 m to 3 m) in HEC-18 (FHWA, 2001).

Pier scour calculations for the 100-year (Base Flood) and 500-year floods are summarized in Table 3-4 and Table 3-5, respectively.

Table 3-4. Pier Scour Summary – 100-year (Base Flood) Event

Pier	Diameter (ft)	Depth (ft)	Velocity (ft/s)	Scour Depth (ft)	Ground Elevation (ft)	Scour Elevation (ft)
1	3.0	29.8	1.7	4.3	-12.3	-16.6
2	2.0	29.8	1.7	3.3	-9.6	-12.9

Table 3-5. Pier Scour Summary – 500-year Event

Pier	Diameter (ft)	Depth (ft)	Velocity (ft/s)	Scour Depth (ft)	Ground Elevation (ft)	Scour Elevation (ft)
1	3.0	30.5	1.8	4.4	-12.3	-16.7
2	2.0	30.5	1.8	3.4	-9.6	-13.0

Both Piers 1 and 2 will be driven to a depth of -71.0 ft, at which point bedrock is encountered.

4. GEOMORPHIC EVALUATION

4.1. *Analysis of Historic Aerial Photographs*

An analysis of current and historic aerial imagery was conducted to provide information about historic bankline locations, channel migration trends, and channel migration rates through time. Current and historic aerial imagery covering the study area was obtained from the USACE, Portland District. Historic aerial imagery was available for 2011, 2009, 2006, 2003, 1983, 1973, 1966, and 1939. The 2011, 2009, 2006, and 2003 aerial imagery was automatically rectified during its capture using GPS systems aboard the plane that captured the images. The 1983, 1973, 1966, and 1939 aerial imagery was rectified to the 2011 aerial imagery using ArcGIS. The 2011, 2009, 2006, and 2003 aerial images are the highest quality and resolution while the other historic images are of lower quality and resolution. Lower image quality and resolution makes the delineation of the channel banklines less certain. The georectified images are included on the DVD in Appendix A.

The channel banklines were digitized as shapefiles in ArcEditor Version 10.0 at a consistent scale of 1:3,000. Often, channel banklines are simply digitized as the edge of water from aerial imagery. While this method is fairly common, variations in water level between subsequent sets of imagery can have a significant influence on the resulting data evaluations, possibly causing erroneous results, and therefore must be used carefully. Channel banklines can also be identified based on the edge of vegetation line along the channel. The vegetation line was regarded to be a more consistent indicator of the bankline location after a review of the aerial images obtained for this study. The channel banklines digitized using the edge of vegetation as the indicator provided the foundation from which subsequent historic channel migration evaluations were made. The historic channel bankline locations identified are shown in Figure 4-1.



Figure 4-1. Historic Channel Bankline Locations

A number of potential error sources exist that could affect the digitized channel bankline location. These generally fall into two categories (FGDC, 1998):

- systematic image registration component
- random feature identification and digitization component

The systematic error component primarily relates to the rectification process for the aerial imagery. While modern image capture techniques and equipment allow for the automatic ortho-rectification of imagery during initial capture, this process was completed manually for the pre-2003 imagery. Several steps are involved with the conversion of historic aerial photographs to a final ortho-image product that is compatible with GIS and ready to be used in the channel bankline migration assessment. During the initial collection phase, photographs are taken from camera equipment mounted to an aircraft flying at a fixed elevation. The scale of the photographs is determined by the elevation of the airplane and resolution of the camera equipment. Next, the developed images are scanned at a chosen resolution (in dots per inch) that is reasonable for the source image (i.e., such that the quality/resolution of the original image is maintained). Finally, the image is ortho-rectified using GIS or other appropriate mapping software. This involves identification of matching points between the imagery being rectified and previously rectified source imagery. The identification of match points allows the software to warp the image using a linear, quadratic, or cubic transformation such that the match points chosen on the image being rectified match exactly or closely with the match points identified on the source image. During this process match points cannot always be exactly matched through the warping process, thus resulting in error in the rectification process.

The random error component includes operator error during the bankline delineation process. At the map scale of 1:3,000 used for digitization, a distance of 0.1 inches is equivalent to 25 feet on the ground. At this scale, the width of the line within ArcGIS that is used to delineate the banklines is equivalent to approximately 8 feet on the ground. While digitizing at a larger scale may help reduce this type of error, it is ultimately impractical due to the varying level of quality of the multiple imagery datasets used in this process (i.e., while a larger scale renders objects larger on the screen of the ArcGIS operator, they become more pixilated and therefore more difficult to interpret). While the higher quality datasets may support use of a slightly larger scale, this is not possible across all available imagery data and a consistent scale is necessary to avoid influencing measured changes between years of data with digitizing scale error. As a result, small changes may be the result of operator error rather than actual channel migration.

Due to the number and type of error sources, the actual amount of error associated with the analysis of historic aerial imagery is unknown; therefore, the resulting data evaluations must be carefully considered.

Bank migration distances and rates were calculated for the time periods spanning the eight years selected for analysis. The average eroded distance compared to the 2011 bankline location was calculated as follows. The area between the historic bankline of interest and the 2011 bankline contained between the northern and southern property boundaries was defined as a polygon in ArcGIS. The polygon area was divided by the stream distance between the northern and southern property boundaries (450 feet) to calculate an average erosion width between the historic bankline

of interest and the 2011 bankline. An incremental erosion width per year was also calculated. This metric represents the amount of erosion that occurs between the year of interest and the most recent previous year (e.g., between 1973 and 1983, the eroded width averaged 1.8 feet per year for each of the 10 years within that timeframe). Incremental erosion widths were calculated by first calculating the area between one year and the next most recent year, then dividing the calculated area by the amount of time that passed between the two years. The calculated erosion rates are summarized in Table 4-1.

Table 4-1. Calculated Bank Erosion Rates

Year	Area Lost in Reach* (ft ²)	Bank Length (ft)	Average Eroded Distance Compared to 2011* (ft)	Incremental Erosion Distance Per Year ⁺ (ft)
2011	-	-	-	11.3
2009	10181	450	23	-1.4
2006	8253	450	18	5.8
2003	16049	450	36	-1.4
1983	3275	450	7	1.8
1973	11433	450	25	-8.4
1966	-15039	450	-33	1.7
1939	5976	450	13	-

*A negative value indicates that the bankline moved towards the stream for the year of interest in comparison to the 2011 bankline location

⁺ A negative value indicates that the bankline moved towards the stream for the year of interest in comparison to the previous analysis year

As shown in the incremental erosion distance results in Table 4-1, the bank has alternated between advancing and retreating incremental erosion distance trends. A possible explanation for the differing trends is that the bankline area on the project site was historically used as a placement area for material dredged from the Columbia River navigation channel. The site is currently listed as an inactive site by the USACE (2012); however, it is not known when the site status changed from active to inactive or whether the site will become active in the future. Dredged material placement areas, according to the USACE (2012), are shown in Figure 4-2. The dredged material placement area near the project site is shown in Figure 4-3. Therefore, the change in bankline location may be directly related to the placement of fill, followed by the fill material erosion, followed by numerous additional material placement and erosion cycles. The above analyses viewed in concert with an understanding of the method chosen to represent the bankline location; specifically, the use of the edge of vegetation, allows for a conclusion that the bankline location is in general equilibrium near the study area.

One potential point of concern is that the transfer tower, hoist tower, and conveyor belt structures will impede the USACE from placing of dredged material in this area. While the site is currently listed as an inactive site, the USACE may activate the site in the future. It is recommended that CRC contact the USACE regarding this matter.

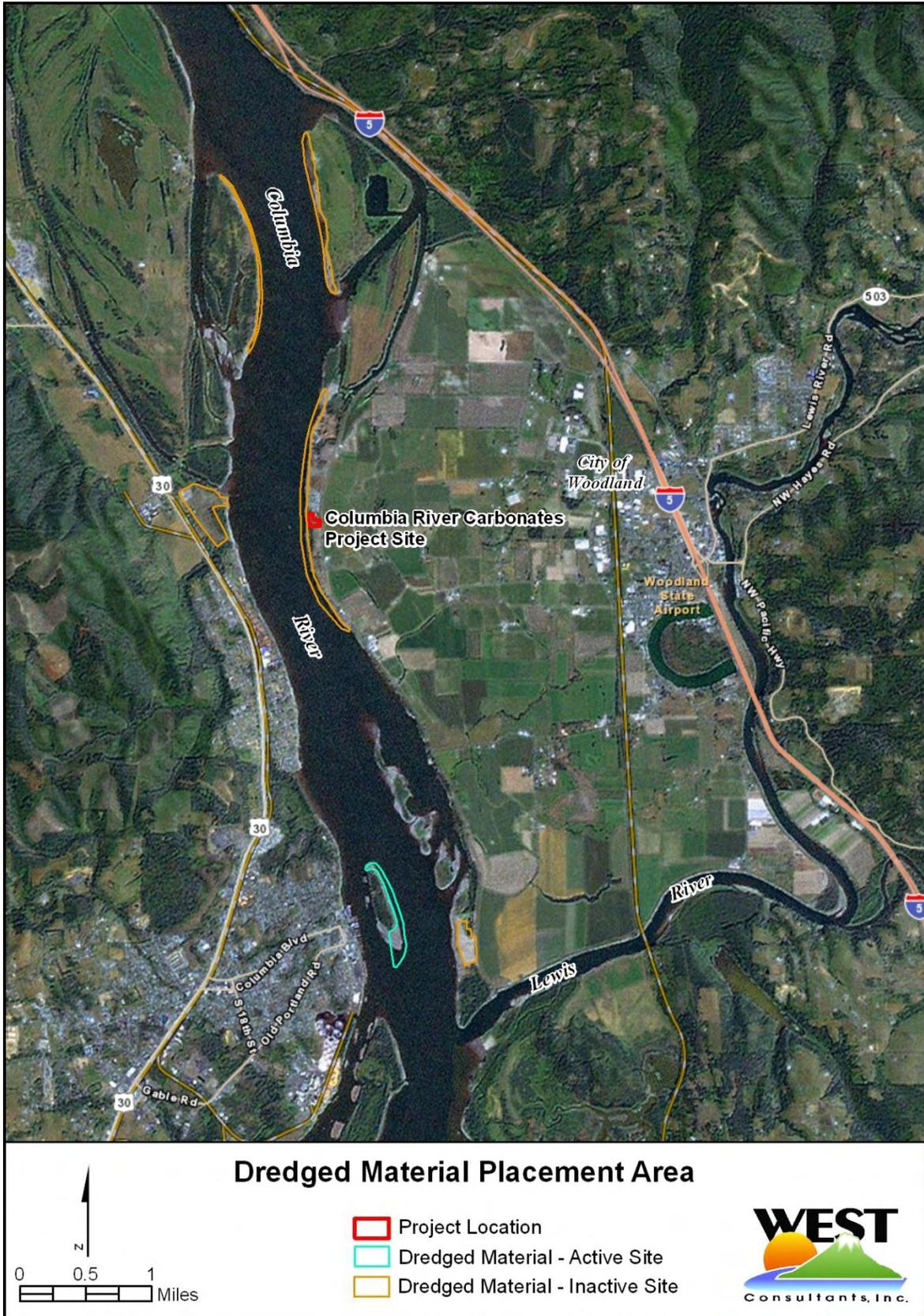


Figure 4-2. Dredged Material Placement Area



Figure 4-3. Dredged Material Placement Area at Project Site

4.2. Sediment Characteristics

The characteristics of bed and suspended sediment found near the project site were investigated to assess potential impacts of the project on the channel geomorphology. Sediment grain size data for the channel bed material of the Columbia River is available at several locations near the project site from the Washington State Department of Ecology's Environmental Information Management (EIM) database. The samples were collected during three studies, completed in 1989, 1990, and 1997. The median grain size of the bed sediment near the project site was measured to be 0.35 mm (Washington State Department of Ecology, 2012), which is classified as a medium sand according to the Wentworth scale. An environmental impact statement completed by the USACE is in agreement, as it stated that 95 percent of all bed material in the Columbia River is sand-sized (USACE, 2003). A geotechnical investigation was also completed for the project site by GRI (2010). As part of this investigation, borings within the Columbia River bed and banks were collected and indicated a layer of sand at least 10 feet deep on the bed of the Columbia River at the project site. Based on the uniform assessment from these three data sources that sand is the dominant bed material for the Columbia River near the project site, all calculations completed as part of this report used sand-sized particles having a D_{50} of 0.35 mm.

Suspended sediment data are available from USGS gage 14246900, *Columbia River at Beaver Army Terminal near Quincy, OR* (RM 53.8) for the years 1977 and 1990 through present. An assessment of the suspended sediment data from USGS gage 14246900 indicates that 80 percent of the suspended sediment is silt or clay. This agrees with the conclusion of the environmental impact statement completed by the USACE, which stated that 70 to 90 percent of the suspended sediment is silt or clay (USACE, 2003). Therefore, a majority of the suspended sediment in the system is transported as washload and will not have an impact at the project site due to the proposed conditions. Only sand-sized particles transported in suspension may impact the project site. The potential impacts of the proposed project on the transport of sand-sized particles are discussed in Section 4.3.

4.3. Deposition Potential Analysis

4.3.1. Based on Shear Stress Assessments

To provide a quantitative indication as to ability of the Columbia River to transport the sand-sized sediment found near the project site, calculated shear stresses defined from the Existing Conditions Model and Proposed Conditions Model were compared to the incipient motion threshold values for fine sand, as published by Chang (1988). The shear stresses were calculated by the HEC-RAS models for two situations at Cross Section 439932.4. The first situation for which shear stresses were calculated is the average shear stress value for the cross section. The second situation is based upon a flow distribution output for Cross Section 439932.4. Within a HEC-RAS model, the hydraulics within equally-spaced sections of a cross section can be assessed. The channel of the Columbia River was split into 30 equally-spaced sections for Cross Section 439932.4. This allowed for the hydraulics at the project location to be assessed more precisely. The results of the comparisons are provided in Table 4-2. As shown in Table 4-2, all of the cross sectional average shear stress values are the same for the existing and proposed conditions. The cross sectional average shear stress values are also equal to or greater than the threshold values for incipient motion of sand for all of the scenarios, indicating that sand will not be deposited on average

throughout the cross section for the modeled flow scenarios. The shear stress at the project location during the 500-year flood and base flood flow scenarios is sufficient to transport fine sand in both the Existing Conditions Model and Proposed Conditions Model. However, the shear stress at the project location during the OHW flow scenario does not have the ability to transport fine sand in the Proposed Conditions Model while it does maintain the ability to do so in the Existing Conditions Model. The MLLW flow scenario does not have the capacity to transport fine sand in either the Existing Conditions Model or Proposed Conditions Model.

A comparison of the shear stress values for the existing and proposed conditions at the project location indicates that shear stresses are decreased due to the proposed project for all of the flow scenarios considered. This indicates that the proposed conditions will have a reduced ability to transport sediment in the vicinity of the project. It is possible that the structures constructed as part of the project may induce temporary sediment deposition during low flow conditions in the local vicinity of the project site. The proposed conditions will not cause general aggradation of the channel, or geomorphic impacts.

It is noted that because the hydraulic model used to determine the velocity and shear stress characteristics is one-dimensional in nature, it does not have the explicit ability to calculate velocity distributions in two dimensions; therefore, the shear stress values must be viewed with caution. A two-dimensional modeling effort could be conducted to provide a more detailed investigation of the volume and extent of deposition that could result due to the proposed project.

Table 4-2. Shear Stress Summaries

Model	Flow Scenario	Item	Shear Stress (lb/ft ²)	Transportable?
-	-	Threshold Values	0.03	-
Existing	500-year Flood	Cross Sectional Average	0.17	Yes
Proposed	500-year Flood	Cross Sectional Average	0.17	Yes
Existing	500-year Flood	Project Location	0.11	Yes
Proposed	500-year Flood	Project Location	0.05	Yes
Existing	Base Flood	Cross Sectional Average	0.16	Yes
Proposed	Base Flood	Cross Sectional Average	0.16	Yes
Existing	Base Flood	Project Location	0.10	Yes
Proposed	Base Flood	Project Location	0.04	Yes
Existing	OHW	Cross Sectional Average	0.09	Yes
Proposed	OHW	Cross Sectional Average	0.09	Yes
Existing	OHW	Project Location	0.04	Yes
Proposed	OHW	Project Location	0.02	No
Existing	MLLW	Cross Sectional Average	0.03	Yes
Proposed	MLLW	Cross Sectional Average	0.03	Yes
Existing	MLLW	Project Location	0.01	No
Proposed	MLLW	Project Location	0.00	No

4.3.2. Based on Project Location with Columbia River Planform

Localized areas of sediment may naturally form near the project site as a result of its location. As seen on Figure 1-1, the project site is located on the inside of a bend, which is an expected location for sediment deposition along a river. However, historic aerial imagery does not show sandbars or other signs of sediment deposition near the project site. Therefore, it is concluded that the location is not susceptible to general aggradation and sandbar formation due to the location of the project at the inside of a channel bend.

5. CONCLUSIONS

In support of an environmental impact assessment for the proposed Columbia River Carbonates barge facility, WEST obtained and evaluated available data to define the hydraulic, geomorphic, and sediment transport characteristics of the Columbia River within the vicinity of the proposed project site. Hydraulic models were created to simulate the current and proposed conditions near the project site. The model results indicate that a change in water surface elevation during the 1% annual chance flood (base flood) event is not expected to occur as a result of the project. The minimum rock size necessary to protect the stream bank against the base flood hydraulic loadings was also calculated. The calculation results indicate that a minimum median rock size diameter of 19 inches is necessary to protect the banks from flood and wave action forces. Detail drawings depicting the layout of the edges of the bioengineered shore-protection structure for various MSE retaining wall locations, depths, and scour countermeasures are displayed in Figure 3-2 through Figure 3-5. The structure configuration within these figures was designed to minimize the risk of flanking of the riprap and undermining of the MSE retaining wall. A scour potential evaluation of the piers supporting the barge unloading conveyor indicates was also conducted. The piers should be driven to a depth sufficient to withstand scour during the 500-year flood. An assessment of historic aerial images indicates that the channel bankline maintains a relatively consistent location near the study area. While localized deposition may occur in the vicinity of project structures during low flows, large events will have the capacity to mobilize and transport fine sands found on the bed of the Columbia River. While the proposed conditions may cause local deposition, general aggradation of the channel will not occur. Two-dimensional modeling would be required to provide a detailed investigation about the volume and extent of deposition that may occur in the vicinity of the proposed project. In summary, the materials-handling facility project proposed by Columbia River Carbonates is not expected to cause significant changes to the hydraulic, geomorphic, or sediment transport characteristics within and along the Columbia River near the project site.

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