

Chapter 8

Minimization and Mitigation Measures

This chapter describes measures to avoid, minimize, rectify, reduce, or compensate for potential adverse environmental impacts from construction and operation of the proposed export terminal. These measures include terminal design elements and regulatory-related requirements of permits/authorizations, and associated best management practices identified by the Applicant, and other measures proposed by Millennium Bulk Terminals—Longview, LLC (Applicant). These are referred to as *minimization measures* in this chapter. This chapter also identifies potential measures to avoid, minimize, and mitigate the adverse environmental impacts presented in Chapters 4, 5, and 6, of this Draft Environmental Impact Statement (Draft EIS) that could be required by the U.S. Army Corps of Engineers (Corps), and potential actions for other parties. These are referred to as *potential mitigation measures* in this chapter.

Consideration and adoption of mitigation is continuous throughout the National Environmental Policy Act (NEPA) process. For this Draft EIS, technical specialists involved in the impact analyses for the proposed export terminal developed a range of potential mitigation measures for consideration by the Corps. The Corps identified the measures to include in this Draft EIS with input from technical specialists, the NEPA cooperating agencies, and stakeholder comments received during the NEPA scoping process. The Corps also considered the Clean Water Act Section 404 and Rivers and Harbors Act Section 10 permitting process and potential mitigation measures developed through other processes, such as for compliance with Section 106 of the National Historic Preservation Act (Section 106) and federal and state agency permit authorizations. The Final EIS will present updated potential mitigation measures based on comments received on this Draft EIS. The Corps will document any mitigation requirements in the Record of Decision (ROD).

This chapter identifies the minimization measures proposed by the Applicant and potential mitigation measures identified by the Corps for the built environment (Chapter 4), natural environment (Chapter 5), and operational environment (Chapter 6). The measures would apply to the proposed export terminal at the On-Site Alternative or Off-Site Alternative locations unless otherwise stated. Potential mitigation measures were not identified by the Corps for land use, energy, geology and soils, surface water and floodplains, rail transportation, vessel transportation, and vibration. Based on the analysis presented in Chapters 4, 5, and 6 of this Draft EIS, the Corps determined impacts resulting from the construction and operation of the proposed export terminal likely would not require mitigation for these resources. No mitigation would be necessary under the No-Action Alternative if the Corps does not issue a Department of the Army permit under Clean Water Act Section 404 and Rivers and Harbors Act Section 10 for construction and operation of the proposed export terminal.

8.1 Built Environment

This section identifies the minimization measures proposed by the Applicant and potential mitigation measures identified by the Corps related to the built environment.

8.1.1 Social and Community Resources

The Applicant has proposed the following minimization measures related to social and community resources.

- Prior to beginning operations, the Applicant would prepare a fire response plan and submit the plan to the Cowlitz County Fire Marshal for review and approval.
- The Applicant would feed the firewater system from on-site wells, filling a 4-hour storage tank as recommended by Chapter 7 of the National Fire Protection Association 307 Standard for the Construction of Fire Protection of Marine Terminals, Piers, and Wharves.

The following are potential mitigation measures related to social and community resources.

- The Applicant could support implementation of a Quiet Zone to reduce impacts from noise on social and community resources including environmental justice populations. See the noise subsection (Section 8.3.2, *Noise*) for this potential mitigation measure.
- If a Quiet Zone is not approved for implementation, the Applicant could conduct a noise study to explore the feasibility to reduce impacts from noise on social and community resources including environmental justice populations. See the noise subsection (Section 8.3.2, *Noise*) for this potential mitigation measure.

8.1.2 Aesthetics

The Applicant has proposed the following minimization measures related to aesthetics.

- Typical industrial lighting would be provided and installed in a manner to prevent light and glare from spilling from the site.
- Night lighting would be restricted to the minimum required for operational and safety requirements and directed away from roads and sensitive viewpoints, where practicable.
- Light shields would be used to limit the spill of lighting where practicable.

The following are potential mitigation measures related to aesthetics.

- The Applicant could use directional lighting with full box cut-off fixtures, or equivalent, and use motion- or user-controlled light systems, where practicable and feasible.
- The Applicant could use colors to blend with or complement surrounding environment for non-safety-related structures and equipment, and use nonreflecting materials and finishes, where practicable and feasible.
- The Applicant could incorporate elements into the terminal's design to screen the terminal from nearby residential viewers at the Off-Site Alternative location. Because of the visual prominence of the terminal from Viewpoints 4 (Barlow Point) and 9 (West Longview), the Applicant could incorporate design components to screen views of the terminal from these viewers. Such components may include landscaping, berms, walls, or other measures deemed practicable and effective.

8.1.3 Cultural Resources

In compliance with Section 106, the Applicant would be required to comply with the provisions of any Memorandum of Agreement developed to address adverse effects of the proposed export terminal on historic properties. The following are potential mitigation measures related to cultural resources.

- To protect archaeological resources that may occur in subsurface deposits, the Applicant could have a qualified professional archaeologist monitor ground-disturbing activities. If archaeological resources are discovered, construction could be halted in the area until regulatory agencies determine the appropriate course of action.
- Because no fieldwork has been conducted at the Off-Site Alternative project area due to access limitations, archaeological investigations and a historic resources survey of the area could be conducted prior to construction. The results of this effort would be used to determine an appropriate course of action consistent with the requirements of Section 106.

8.1.4 Tribal Treaty Rights and Trust Responsibilities

Resources of tribal concern include cultural resources, water, vegetation, fish, and wildlife. Refer to Sections 8.1.3, *Cultural Resources*, 8.2.5, *Water Quality*, 8.2.6, *Vegetation*, and 8.2.7, *Fish and Wildlife*, in this chapter for mitigation measures related to these resources.

8.1.5 Hazardous Materials

The Applicant has identified the following minimization measures, which would likely be conditions of the stormwater pollution prevention plan under the National Pollutant Discharge Elimination System (NPDES) Construction Permit.

- Material delivery, storage, and containment would be used to prevent, reduce, or eliminate the discharge of pollutants to the storm water system or watercourses:
 - Storage of hazardous materials on site would be minimized to the extent feasible.
 - Materials would be stored in a designated area, and secondary containment would be installed where needed.
 - Refueling would occur in designated areas with appropriate spill control measures.
- Concrete waste and washout waters would be disposed of off site or in a suitably designed on-site facility and the contractor would:
 - Apply typical construction best management practices for working over, in, and near water, including checking equipment for leaks and other problems that could result in discharge of petroleum-based products, hydraulic fluid, or other material to the Columbia River.
 - Inspect fuel hoses, oil or fuel transfer valves, and fittings on a regular basis for drips or leaks in order to prevent spills into the surface water.
 - Keep, store, handle, and use all fuel and chemicals in a fashion which avoids entry into the water.
 - Have a spill containment kit, including oil-absorbent materials, on site to be used in the event of a spill or if any oil product is observed in the water.

The following are potential mitigation measures related to hazardous materials.

- The Applicant could locate spill response kits near construction and operations areas. See the water quality subsection (Section 8.2.5, *Water Quality*) for details regarding this potential mitigation measure.
- To confirm whether contamination from past agricultural, motocross, and other uses has occurred in the Off-Site Alternative project area, prior to issuing grading permits, the Applicant could retain a professional consultant specializing in the sampling, identification, analysis, and handling of hazardous materials to perform screening soil sampling and analysis on the portions of the project area where ground-disturbing activities could occur. The screening investigation should be robust enough to demonstrate with statistical confidence the project area is suitable for development and soils, surface water, and groundwater affected by the Off-Site Alternative do not pose a threat to human health or the environment, or, if they do, that any identified contaminants are cleaned up in compliance with federal, state, and local regulations and requirements. The Applicant could provide the results of the analysis to the Corps, Washington State Department of Ecology (Ecology), and Cowlitz County as part of the grading permit application material, as necessary. If soil samples test positive for contaminants above Ecology and Environmental Protection Agency (EPA) levels protective of human health and the environment, the Applicant would coordinate cleanup with regulatory agencies.
- To characterize groundwater flow and quality beneath the Off-Site Alternative project area, prior to issuance of construction permits, the Applicant could retain a consultant specializing in the sampling necessary to characterize groundwater and determine groundwater flow and quality beneath the Off-Site Alternative project area. The Applicant could provide the results of the analysis to the Corps, Ecology, and Cowlitz County prior to the issuance of permits. If groundwater samples test positive for contaminants above levels identified by Ecology and EPA as protective of human health and the environment, the Applicant could coordinate potential remediation action with regulatory agencies.

8.1.6 Energy

The Applicant has proposed the following minimization measures related to energy.

- During construction, turn off construction vehicles rather than idling engines, when feasible.
- Where appropriate, implement energy conservation measures, such as energy-efficient electrical system specifications, lighting, mechanical equipment, and building insulation.
- Switch on lighting in unoccupied areas only when needed and turn off lighting automatically.
- Maximize energy efficiency in facility and equipment specifications and selection, such as electric motors that have high power factors, conveyor drives with “quiet drives” that require less power to operate, and life-cycle costs advantage of energy efficient components.
- Use power factor correction equipment in substations.
- Use conveyor idlers to specify rim drag to reduce conveyor start up power.
- Revert office equipment to standby mode or switch off when not in use.
- Match vehicle size to the need of the task.
- Choose vehicles based on fuel efficiency.

- Use controlled temperature settings on switch room and office air conditioning.
- Use automatic shutdown controls for idle plant and equipment.
- Manage energy load by using submetering of offices, workshops, conveyors stackers, reclaimers, and shiploaders.
- Use soft-start electric motors to minimize peak power demand.

8.2 Natural Environment

This section identifies the minimization measures proposed by the Applicant and potential mitigation measures identified by the Corps related to the natural environment.

8.2.1 Geology and Soils

The Applicant has identified the following minimization measures to implement during construction and operation of the proposed export terminal, which would likely be permit requirements for the terminal.

- A qualified geologist or engineer would monitor the fill placement during construction and conduct appropriate field tests to verify proper compaction of the fill soils.
- A site-specific preloading plan would be developed prior to initiating construction at the Off-Site Alternative location by the geotechnical engineer working with the civil and structural engineers. The plan would include measures to maintain proper site drainage, collection and treatment of water generated, volumes, and sources of fill sources, and staging of fills, setbacks from existing structures. The plan would also consider the short- and long-term impacts on adjacent structures and features, including, but not limited to, railroads, existing streets and utility connections, utilities, drainage features, landfills, hazardous materials, and buildings.
- Visual inspection would be conducted following abnormal seismic activity. These inspections would document whether the seismic activity resulted in changes to the surface conditions (i.e., soil settlement, structural damage). Should any ground setting or structural damage to facilities be observed during inspections, operations would cease until it is determined that operations can continue safely and without compromise to the operational function of the facility or until the facility is repaired such that the continued safe and functional operation of the facility can continue.
- Clearing, excavation, and grading would be limited to the areas necessary for construction and would not be completed far in advance of facility construction.
- Roads, parking areas, and other on-site vehicle transportation routes would be stabilized to reduce erosion caused by construction traffic or runoff.

8.2.2 Surface Water and Floodplains

The Applicant has identified the following minimization measures (design elements) to implement during construction and/or operations of the proposed export terminal.

- Based on site grading and drainage areas, five water quality ponds (wetponds) would treat runoff. In general, ponds would be sized for treatment of the volume and flow from the water

quality design storm event (72% of the 2-year storm). Additional storage would be provided in the coal storage area so runoff is always treated within the stockyard area, even for larger storm events. The ponds would be designed to provide settlement as the water passes through. Subsequently, water released from these ponds would be conveyed downstream to the existing pump station Outfall 002A and discharged into the Columbia River via an existing 30-inch steel pressure line. The ponds that treat runoff from the coal stockyard would harvest water for circulation around the project area for multiple uses, including dust control.

- The Western Washington Hydrology Model computer simulation for facility sizing would be used. Because of the project area's flat nature, some surface ponding would occur in both the yard areas and open conveyance systems. The piped conveyance systems would be sloped at a 0.50% minimum.
- Additional water storage would be provided in the coal storage area in the event of a larger storm event. Water volumes exceeding the demands for reuse would be treated and then discharged via Outfall 002A into the Columbia River.
- Roads, parking areas, and other on-site vehicle transportation routes would be stabilized to reduce erosion caused by construction traffic or runoff.

Potential mitigation measures have been identified that would protect wetlands, water quality, and aquatic species and their habitats. These measures would also protect surface water. Refer to the wetlands, water quality, vegetation, and fish and wildlife subsections for these measures.

8.2.3 Wetlands

The minimization measures described in this section (8.2, *Natural Environment*) would avoid or minimize impacts on wetlands during construction and operations. The following mitigation measure would reduce wetland impacts.

- The Applicant would prepare a compensatory mitigation plan in coordination with the Corps, Ecology, and Cowlitz County to offset the proposed export terminal's unavoidable adverse impacts on waters of the United States, including wetlands. Mitigation actions included in the compensatory mitigation plan could take place at multiple locations and involve both permittee-provided mitigation and the purchase of credits from an approved mitigation bank or in-lieu fee program. The compensatory mitigation plan would also outline measures to protect and preserve the functions and values of existing wetlands that would remain post-construction, adjacent to the project area, that may result from construction and operations such as maintaining the hydrologic inputs and water quality functions of the wetlands.

8.2.4 Groundwater

The Applicant identified the following minimization measures (design elements) to implement during construction and/or operations. These measures would reduce impacts on surface water quality and thus, groundwater via infiltration.

- Enclose conveyor galleries and rotary unloader building and transfer towers.
- Include washdown collection sumps for settlement of sediment.
- Regularly clean out and maintain washdown collection sumps.
- Include containment around refueling, fuel storage, chemicals, and hazardous materials.

- Include oil/water separators on drainage systems and vehicle washdown pad.
- Design docks to contain spillage, with rainfall runoff and washdown water contained and pumped to the upland water treatment facilities.
- Design systems to collect and treat all runoff and washdown water for on-site reuse (dust suppression, washdown water or fire system needs) or discharge off site.

The Applicant has identified the following best management practices as part of the construction and operation of the proposed export terminal. The best management practices would likely be permit requirements for the terminal. Additional best management practices would be identified in the NPDES permit.

- Material delivery, storage and containment would be used to prevent, reduce, or eliminate the discharge of pollutants to the stormwater system or watercourses from material delivery and storage.
- A concrete washout area would be constructed near the entrance to the project area to prevent or reduce the discharge of pollutants to groundwater or stormwater from concrete waste.

The following is a potential mitigation measure related to groundwater.

- The Applicant could locate spill response kits near main construction and operations areas. See the water quality mitigation subsection (Section 8.2.5, *Water Quality*) for the full text of this potential mitigation measure.

8.2.5 Water Quality

The Applicant has identified the following minimization measures (best management practices and design elements) as part of construction and operation of the proposed export terminal. The best management practices would likely be permit requirements for the terminal.

- A ridge of compacted soil, or a ridge with an upslope swale, would be provided at the top or base of a disturbed slope or along the perimeter of a disturbed construction area to convey stormwater. The dike and/or swale would be used to intercept runoff from unprotected areas and direct it to areas where erosion can be controlled. This would be used to prevent storm runoff from entering the work area or sediment-laden runoff from leaving the construction site.
- The pads and berms would be made of low permeability engineered material. The use of low permeability engineered materials for formation of the pads and berms would control water from entering subsurface soil or groundwater.
- The stockyard and berms would be graded to allow water to drain and be collected for treatment and reuse.
- Drainage systems would be designed such that runoff within the project area would be collected for treatment before reuse or discharge and would be designed and constructed in accordance with the *Stormwater Management Manual for Western Washington* (Washington State Department of Ecology 2014).
- The dock area would be sealed to capture the washdown water and stormwater runoff, preventing it from flowing to the Columbia River without treatment.
- Existing piles would be removed slowly so as to minimize sediment disturbance and turbidity in the water column.

- Prior to pile extraction, the operator would “wake up” the pile to break the friction between the pile and substrate to minimize sediment disturbance.
- Stormwater, sediment, and erosion control best management practices would be installed in accordance with the *Stormwater Management Manual for Western Washington* (Washington State Department of Ecology 2014) and Cowlitz County. Water quality management would be performed in accordance with the requirements of the NPDES Industrial Stormwater General Permit. The site’s stormwater pollution prevention plan would provide details of the site best management practices.
- Material delivery, storage, and containment best management practices would be used to prevent, reduce, or eliminate the discharge of pollutants to the stormwater system or watercourses from material delivery and storage:
 - Storage of hazardous materials on site would be minimized to the extent feasible.
 - Materials would be stored in a designated area, and secondary containment would be installed where needed.
- Refueling would occur in designated areas with appropriate spill control measures.
- Typical construction best management practices for working over, in, and near water would be applied, including checking equipment for leaks and other potential problems resulting in discharge of petroleum-based products, hydraulic fluid, or other material to the Columbia River.
- Concrete waste and washout waters would be either carried off site or disposed of in a designated facility on site designed to contain the waste and washout water.
- Based on site grading and drainage areas, water quality ponds (wetponds) would treat runoff based on Ecology’s requirements. In general, the ponds would be sized for treatment of the volume and flow from the water quality design storm event (72% of the 2-year storm). Additional storage would be provided within the coal storage area so runoff is always treated within the stockyard area, even for larger storm events. The ponds would be designed to provide settlement as the water passes through. Subsequently, water released from these ponds would be conveyed downstream to the existing pump station Outfall 002A that discharges into the Columbia River via an existing 30-inch steel pressure line (for the On-Site Alternative where this infrastructure exists; the Off-Site Alternative would construct a new outfall). The ponds would treat runoff from the coal stockyard and would harvest water for circulation around the site for multiple uses, including dust control measures. Ecology’s criteria would be used as the basis of design, which uses the Western Washington Hydrology Model computer simulation for facility sizing. Because of the flat nature of the site, some surface ponding would occur in both the yard areas and open conveyance systems. The piped conveyance systems would be sloped at 0.50% minimum.
- The water system would be designed and constructed in accordance with or consideration of the latest edition of the following standards, where applicable: International Building Code, National Fire Protection Association, *Stormwater Management Manual for Western Washington* (Washington State Department of Ecology 2014), United States Department of Health Occupational Safety and Health Standards, and Washington State Department of Health.
- Where possible, extraction equipment would be kept out of the water to avoid “pinching” piles below the water line to minimize creosote release during extraction.

- During pile removal and pile-driving, a containment boom would be placed around the perimeter of the work area to capture wood debris and other materials released into the water as a result of construction activities. All accumulated debris would be collected and disposed of upland at an approved disposal site. Absorbent pads would be deployed should any sheen be observed.
- The work surface on a barge deck or pier would include a containment basin for pile and any sediment removed during pulling. Any sediment collected in the containment basin would be disposed of at an appropriate upland facility, as would all components of the basin (e.g., straw bales, geotextile fabric) and all piles removed.
- Upon removal from substrate, piles would be moved expeditiously from the water into the containment basin. The pile would not be shaken, hosed-off, stripped or scraped off, left hanging to drip or any other action intended to clean or remove adhering material from the pile.
- Project construction would limit the impact of turbidity to a defined mixing zone and would otherwise comply with Washington Administrative Code (WAC) 173-201A.
- All dredged material would be contained within a barge prior to flow lane disposal; dredged material would not be stockpiled on the riverbed.
- The contractor would remove any floating oil, sheen, or debris in the work area as necessary to prevent loss of materials from the site. The contractor would be responsible for retrieval of any floating oil, sheen, or debris from the work area and any damages resulting from the loss.
- Flow lane disposal would occur using a bottom-dump barge or hopper dredge. These systems release material below the surface, minimizing surface turbidity.
- For work adjacent to water, proper erosion control measures would be installed prior to any clearing, grading, demolition, or construction activities to prevent the uncontrolled discharge of turbid water or sediments into waters of the state. Erosion-control structures or devices would be regularly maintained and inspected to ensure their proper functioning throughout construction and operation of the proposed export terminal.
- Construction would be completed in compliance with Washington State Water Quality Standards (WAC 173-201A), including but not limited to prohibitions on discharge of oil, fuel, or chemicals into state waters, property maintenance of equipment to prevent spills, and appropriate spill response including corrective actions and reporting as outlined in permits and authorizations (Corps, Hydraulic Project Approval, 401 Water Quality Certification).
- The contractor would have a spill containment kit, including oil-absorbent materials, on site to be used in the event of a spill or if any oil product is observed in the water.
- All fuel and chemicals would be kept, stored, handled, and used in a fashion assuring no opportunity for entry of such fuel and chemicals into the water.
- The contractor would use tarps or other containment methods when cutting, drilling, or performing over-water construction that might generate a discharge to prevent debris, sawdust, concrete and asphalt rubble, and other materials from entering the water.
- The water treatment facility would be designed to treat all surface runoff and process water with capacity to store the water for reuse. Treatment would be as required to meet reuse quality or Ecology requirements for off-site discharge.

- Water released off site would be treated and would meet the requirements of Ecology and required discharge permits. Additional water storage would be provided in the materials storage area in the event of a larger storm event.
- Equipment would have properly functioning mufflers, engine-intake silencers, and engine closures according to federal standards; the contractor would inspect fuel hoses, oil or fuel transfer valves, and fittings on a regular basis for drips or leaks to prevent spills into the surface water.
- The contractor would retrieve any floating debris generated during construction using a skiff and a net. Debris would be disposed of at an appropriate upland facility. If necessary, a floating boom would be installed to collect any floated debris generated during in-water operations.

The following are potential mitigation measures related to water quality.

- The Applicant could locate spill response kits throughout the project area during construction and operations. The spill response kits would contain response equipment and personal protective equipment appropriate for hazardous materials to be stored and used during construction and operations. Site personnel could be trained in the storage, inventory, and deployment of items in the spill response kits. Spill response kits could be checked a minimum of four times per year to ensure proper/functioning condition, and would otherwise be maintained and replaced per manufacturer recommendations. Should a spill response kit be deployed, the Applicant could notify Cowlitz County and Ecology immediately. The Applicant could submit a map indicating the types and locations of spill response kits to Cowlitz County and Ecology for approval prior to beginning construction and operations.
- To limit the exposure of spilled coal to the terrestrial, aquatic, and built environments during coal handling, the Applicant could develop a containment and cleanup plan. The plan could be reviewed by Cowlitz County and Ecology and implemented prior to beginning operations.
- The Applicant could design systems to collect and treat all runoff and washdown water for on-site reuse (dust suppression, washdown water or fire system needs) or discharge off site.
- The Applicant could monitor coal dust emissions from the project area. See the air subsection (Section 8.3.3, *Air Quality*) for the full description of this potential mitigation measure.

8.2.6 Vegetation

The Applicant has identified the following minimization measures (design elements) to implement as part of the construction and operation of the proposed export terminal.

- Implement the following design elements (and related activities) to avoid and minimize potential impacts associated with coal dust.
 - Conveyors would be monitored for general status, washed down regularly, and cleaned using high-pressure water in the collection and containment areas, including belts.
 - Transfer points would be cleaned using high-pressure water as part of regular washdowns of underbelt plating, and water collection and containment system.
 - Rail car unloaders would be cleaned with dry fog and water spray systems.
 - Stockpiles would be:
 - Sprayed via a spray system controlled by local and remote weather stations.

- Managed via a controlled dropper from the stackers to manage height of piles.
- Cleaned along conveyor berms and sealed roadways.
- Shiploading equipment would discharge coal below deck of vessel and be washed by high-pressure water.
- All operational water would be collected and treated before being either stored for reuse or discharged to the Columbia River.

The following are potential mitigation measures related to vegetation.

- To ensure threatened, endangered, or rare plants are not affected, the Applicant could conduct rare plant surveys of the project area, including the ditches and stormwater conveyance features. This survey would identify rare plants in the project area that could be affected during construction; potential suitable habitat for rare plants exists in the project area. Surveys could be performed for those rare plants that may occur in Cowlitz County, according to the Washington Natural Heritage Program. Surveys could be performed prior to any project-related ground disturbance and during the appropriate survey windows for each species. Conducting the surveys prior to construction could ensure that any potential impacts on rare plants would be avoided or properly mitigated. If such plant species were found, the Applicant could notify and consult with the Washington State Department of Natural Resources (DNR), and the U.S. Fish and Wildlife Service (USFWS), if federally protected species are found. The Applicant and the agencies could work together to determine the appropriate conservation and mitigation measures should potential impacts on any rare plants be possible as a result of ground-disturbing activities.
- The Applicant could conduct an aquatic vegetation survey prior to construction. This survey would identify aquatic vegetation along the shoreline of the Columbia River that could be affected during construction. The Applicant could conduct an aquatic plant survey along the shoreline of the project area prior to commencing in-water work associated with construction of the docks and construction-related dredging, including all areas in the shallow water zone adjacent to the proposed docks. Conducting the surveys prior to construction could ensure that any potential impacts on aquatic vegetation would be avoided or properly mitigated. If areas of aquatic vegetation are found, the Applicant could notify DNR, Cowlitz County, and USFWS, and could work with these agencies to develop appropriate conservation or mitigation measures before beginning any in-water work.
- The Applicant could develop and implement a revegetation plan. Temporary vegetation removal could occur during construction for staging, storage of construction materials, and constructing the proposed export terminal structures. To mitigate temporary removal of vegetation in these areas, the Applicant could develop and implement a revegetation plan for the project area. The revegetation plan would include the use of native vegetation suitable for site conditions post-construction. This plan could be approved by Cowlitz County prior to implementation and be prepared consistent with the Cowlitz County Critical Areas Ordinance 19.15.170. The Applicant could monitor replanted vegetation and submit annual monitoring reports.
- The Applicant could monitor for noxious weeds during construction and operations. The Applicant could coordinate with the Cowlitz County Noxious Weed Control Board on the best approach to control/remove the noxious weeds and avoid and minimize the risk of colonization of adjacent areas if noxious weeds are detected during monitoring.

- The Applicant could monitor and reduce coal dust emissions from the project area. See the coal dust mitigation subsection (Section 8.3.3, *Air Quality*) for full text of this potential mitigation measure.
- The Applicant could develop and implement a coal spill containment and cleanup plan. See the water quality mitigation subsection (Section 8.2.5, *Water Quality*) for the full text of this potential mitigation measure.

8.2.7 Fish and Wildlife

The Applicant has identified the following minimization measures (best management practices and design elements) to implement as part of construction and operation of the proposed export terminal. The best management practices would likely be conditions or requirements of permits.

- Design the trestle to be long and narrow, and at a height above the ordinary high water mark (OHWM) to minimize shading in the shallow water zone. This design would minimize overall impacts in shallow water, including impacts on habitat connectivity along the shoreline.
- Locate the proposed docks entirely in deepwater habitat to minimize impacts on shallow water areas.
- Locate the berthing area where depths are already at least -20 feet Columbia River Datum to avoid habitat conversion from shallow to deepwater during dredging, and locate the berthing area in deepwater to minimize the scope of maintenance dredging.
- For material being transported to flow lane disposal sites, remove all debris (larger than 2 feet in any dimension) from the dredged sediment prior to disposal. Similar -sized debris floating in the dredging or disposal area would also be removed.
- Direct terminal lighting downward or at structures, and incorporate shielding to avoid spillage of light into aquatic areas.
- Include a pinpoint light source at the end of the shiploading boom, aimed straight down into the ship hold area to avoid a broader beam that could cause light spillage.
- Remove piles from two pile dikes near the proposed Docks 2 and 3 at the On-Site Alternative location slowly to minimize sediment disturbance and turbidity in the water column.
- Prepare a compensatory mitigation plan in coordination with the Corps, Ecology, and Cowlitz County to offset project impacts on aquatic habitats. Mitigation actions could be implemented at one or more locations to provide a wide range of ecological functions. A plan could include permittee-responsible mitigation or purchase of credits from a mitigation bank or in-lieu fee program.
- Provide a containment basin on the work surface on the barge deck or pier for piles and any sediment removed during pulling. Dispose of any sediment collected in the containment basin at an appropriate upland facility, as with all components of the basin (e.g., straw bales, geotextile fabric) and all piles removed.
- Upon removal from substrate, move the pile expeditiously from the water into the containment basin. The contractor would not shake, hose, strip, or scrape the pile, nor leave it hanging to drip or any other action intended to clean or remove adhering material from the pile.

- Limit the impact of turbidity to a defined mixing zone and would otherwise comply with WAC 173-201A.
- During hydraulic dredging, do not operate hydraulic pumps unless the dredge intake is within 3 feet of the bottom.
- Remove any floating oil, sheen, or debris within the work area as necessary to prevent loss of materials from the site. The Applicant would be responsible for retrieval of any floating oil, sheen, or debris from the work area and any damages resulting from the loss. The Applicant would also dispose of any floating debris collected at an appropriate upland facility.
- Dispose materials to the flow lane using a bottom-dump barge or hopper dredge. These systems release material below the surface, minimizing surface turbidity.
- Do not allow barges to ground out during construction.
- Do not allow land-based construction equipment to enter any shoreline body of water except as authorized.
- Store, handle, and use all fuel and chemicals in a fashion to ensure that they do not enter the water.
- Use activity-specific work windows designed to minimize specific impact mechanisms that may affect individual species (or populations within those species) of concern. These proposed work windows would protect species of concern while providing feasible construction periods for the in-water portion of construction.

The following are potential mitigation measures related to fish and wildlife.

- To minimize underwater noise impacts on fish during pile-driving, the Applicant could employ the best available noise attenuation methods during pile-driving. These methods may include, but are not limited to, confined bubble curtain, temporary noise attenuation pile, double-walled noise attenuation pile, or other similar technology. The Applicant is currently proposing use of a confined bubble curtain, but other methods may be found to be better at attenuating noise impacts during the Endangered Species Act Section 7 consultation or by the time construction begins. Should other methods in the future prove to attenuate underwater noise better than a confined bubble curtain, those methods could be employed.
- To minimize underwater noise impacts on fish during pile-driving, the Applicant could commence impact pile-driving using a "soft-start," or other similar method. The soft-start method is a method of slowly building energy of the pile-driver over the course of several pile strikes until full energy is reached. This soft-start method cues fish and wildlife to pile-driving commencing and allows them to move away from the pile-driving activity.
- To minimize the potential harm to marine mammals, diving birds, or fish, a professional biologist could observe the waters near pile-driving and dredging activities for signs of distress from fish and wildlife during these activities. If any fish or wildlife species were to show signs of distress during pile-driving, the biologist could issue a stop work order until the species are recovered, moved, or relocated from the area. The Applicant could immediately report any distressed fish or wildlife observed to the appropriate agencies, i.e., Washington Department of Fish and Wildlife (WDFW), USFWS, and National Marine Fisheries Service (NMFS), and determine the appropriate course of action.

- Should in-water work occur between December and May, the Applicant could conduct underwater surveys for eulachon (adult, eggs and larvae) within those areas where in-water work could occur (i.e., the two new docks and dredge prism). Surveys could be conducted starting in December when water temperatures are near 40 degrees Fahrenheit (°F) in the lower Columbia River, which appears to trigger river entry for adults, and continue through May, when larval eulachon have generally hatched and drifted out of the system. Survey design and results could be provided to WDFW and NMFS. Should adult or larval eulachon or eulachon eggs be observed and in-water work is proposed, the Applicant could coordinate with the fish and wildlife agencies on the appropriate measures to avoid and minimize impacts on eulachon.
- The Applicant could monitor and reduce coal dust emissions from the project area. See the air subsection (Section 8.3.3, *Air Quality*) for the full text of this potential mitigation measure.
- The Applicant could develop and implement a coal spill containment and cleanup plan. See the water quality subsection (Section 8.2.5, *Water Quality*) for the full text of this potential mitigation measure.

In addition, the Corps, as the lead federal agency, will be consulting under Section 7 of the federal Endangered Species Act with USFWS and NMFS. Additional measures may be identified under one or both of these processes that could avoid, minimize, or mitigate potential impacts on fish and fish habitat.

8.3 Operations

This section identifies the operations minimization measures proposed by the Applicant and potential mitigation measures identified by the Corps related to operations.

8.3.1 Transportation

The Applicant has proposed the following minimization measures related to transportation.

- To address vehicle delay impacts from increased rail traffic, before beginning operations, the Applicant would fund the implementation of an extension of the left-turn lane from Washington Way to Industrial Way at the Industrial Way/Washington Way intersection.
- To address vehicle delay safety impacts from increased rail traffic, before beginning operations, the Applicant would fund installation of crossing gates at the Reynolds Lead crossing of Industrial Way.

The following are potential mitigation measures related to transportation.

- To address vehicle delay impacts at the at-grade crossings on the Reynolds Lead and BNSF Spur, the Applicant could notify Cowlitz County, City of Longview, Cowlitz Fire District, City of Rainier (Oregon), Port of Longview, and Cowlitz-Wahkiakum Council of Governments before initiating each operational stage (Stage 1a, Stage 1b, and Stage 2) that would change average daily rail traffic on the Reynolds Lead and BNSF Spur and prepare a memorandum to document the changes to average daily rail traffic. The memorandum could be submitted to these agencies at least 6 months before the change in average daily rail traffic so these agencies are informed of potential changes in vehicle delay at the at-grade crossings from increased project-related rail traffic.

- The Longview Switching Company (LVSW) could implement track infrastructure improvements along the Reynolds Lead and BNSF Spur, which could benefit rail safety. Improvements could include installing traffic control systems, installing a new switch from the BNSF Spur to Reynolds Lead, upgrading rail, adding new main track, or adding siding.
- The Industrial Way/Oregon Way Intersection Project partners¹ could continue working to identify a preferred alternative to reduce vehicle delay and improve vehicle safety at the Industrial Way/Oregon Way intersection and implement the preferred alternative. Grade-separation of the intersection was recommended in the State Route 432 Highway Improvements and Rail Realignment Study (Cowlitz-Wahkiakum Council of Governments 2014). These agencies could also continue to evaluate alternatives to reduce vehicle delay and improve vehicle safety at the other public at-grade crossings along the Reynolds Lead and BNSF Spur, including the concepts identified in the State Route 432 Highway Improvements and Rail Realignment Study.

8.3.2 Noise

The Applicant has proposed the following minimization measures related to noise.

- Prior to the start of construction, the Applicant would develop a construction noise control plan to be implemented by the construction contractor. The plan would include limiting all construction activity that would exceed applicable regulations to daytime hours (7:00 a.m. to 10:00 p.m.) to ensure aggregate noise complies with WAC 173-60-50(3)(a) requirements. The plan would also identify the limited equipment or processes that would be allowed to operate during nighttime hours.
- Prior to the start of construction, the Applicant would implement a community inquiry system (phone, text, and email). The surrounding community would be broadly informed of the noise limits and how to file a complaint. The system would be monitored 24 hours a day, 7 days a week during construction. Complaints would be promptly investigated and actions taken as necessary to comply with noise level limits. Reports of complaints would be provided to the Cowlitz County Sheriff's Office on a monthly basis.
- To reduce rail noise along the Reynolds Lead, the Applicant would work with LVSW and other stakeholders to convert the Oregon Way and Industrial Way crossings to "quiet crossings." The Applicant would fund additional electronics, barricades, and crossing gates to convert the crossings to "quiet crossings."

The following are potential mitigation measures related to noise from export terminal operations and project-related rail traffic.

- Noise impacts from the proposed export terminal operations could be reduced through design or installing building sound insulation for residences exposed to noise levels above the applicable Washington State maximum permissible noise level. It is not known at this time whether terminal design could prevent noise levels from exceeding applicable standards at all noise-sensitive receptors.
- If agreed to by the property owner(s), the Applicant could monitor noise levels at the two residences nearest the project area. The Applicant could submit monthly noise reports to

¹ The project partners include Cowlitz County, Cowlitz Economic Development Council, Cowlitz-Wahkiakum Council of Governments, City of Longview, City of Kelso, and Port of Longview.

Cowlitz County Building and Planning Department. If the monitoring identifies a noise impact due to export terminal operations, the Applicant could attempt to reduce noise at the residences with modifications to terminal operations or installation of building sound insulation at the residences.

- To address noise from rail traffic on the Reynolds Lead, the City of Longview, LVSW, and interested parties could work with the Applicant to explore a Quiet Zone along the Reynolds Lead.
- To address moderate and severe noise impacts along the Reynolds Lead from project-related trains, before beginning full terminal operations, the Applicant could coordinate with the City of Longview, Cowlitz County, LVSW, and the affected community to inform interested parties on the Federal Railroad Administration (FRA) process to implement a Quiet Zone to include the 3rd Avenue and California Avenue crossings. The Applicant could assist interested parties in the preparation and submission of the Quiet Zone application to FRA. If the Quiet Zone is approved, the Applicant could fund the Quiet Zone improvements, which could include electronics, barricades, and crossing gates.
- If the Quiet Zone for the Reynolds Lead is not implemented, the Applicant could conduct a sound-reduction study to identify ways to mitigate the moderate and severe and impacts from project-related train noise along the Reynolds Lead and discuss findings with Cowlitz County.

8.3.3 Air Quality

As described previously, the Applicant has identified minimization measures (design elements) related to air quality to implement as part of the construction and operation of the export terminal.

- Rail car unloading:
 - The unloading station would be fully enclosed in a metal clad building.
 - A water spray system and/or dry fog system would be used to control dust.
- Conveyors and transfer points:
 - All belt conveyors and transfer points would be fully enclosed except the stockyard and shiploader conveyors due to operational requirements.
 - A water spray system would be used at conveyor transfer points.
 - Skirting would be installed at transfer points to control flow and spillage.
 - Transfer chutes would be enclosed in the transfer towers.
- Stock piles:
 - A spray system would wet the coal surface to control fugitive dust controlled by an on-site and remote weather monitoring system.
 - A controlled dropper on the stackers would manage height of the piles.
- Shiploading would include a vertically adjustable loading boom to decrease drop height, enclosed shiploader boom and loading spout, and discharge below the deck of the vessel, and capture.

The following are potential mitigation measures related to air quality.

- To address coal dust emissions, the Applicant could monitor coal dust during operation of the proposed export terminal at locations approved by the Southwest Clean Air Agency. If coal dust levels exceed an established level, the Applicant could take further actions to reduce coal dust emissions such as revising terminal operations or modifying terminal design. Potential locations to monitor coal dust include the coal piles, on the dock, where the rail line enters the terminal when coal operations begin, and at a location near the closest residences to the project area, if agreed to by the property owner(s). The Applicant could conduct monthly reviews of the emissions data and maintain a record of data for at least 5 years after full operations. If emissions data show exceedances of air quality standards, the Applicant could report this information to Southwest Clean Air Agency, Cowlitz County, and Ecology. The Applicant could gather 1 year of fence-line data on particulate matter with a diameter of 2.5 micrometers or less (PM_{2.5}) and particulate matter with a diameter of 10 micrometers or less (PM₁₀) prior to beginning operations and maintain the data as reference. This data could be reported to the Southwest Clean Air Agency, Cowlitz County, and Ecology.
- To address coal dust emissions, the Applicant could meet with the Southwest Clean Air Agency prior to the start of operations to design and implement a coal dust awareness and investigation system for community members in Cowlitz County. The system could receive complaints or concerns, investigate, respond, resolve and report findings to the complainant and Southwest Clean Air Agency. The system could be available during operation of the export terminal. The Applicant could operate the system or provide funding for Southwest Clean Air Agency to operate the system. A report could be submitted annually to Cowlitz County and the City of Longview and posted on Southwest Clean Air Agency website.
- To reduce emissions from construction equipment, the Applicant could provide a fuel efficiency training program to locomotive, vessel, and construction equipment operators, and implement the fuel efficiency measures during construction and operation of the proposed export terminal.
- To reduce emissions from vessel and locomotive idling in the project area, the Applicant could develop and implement an anti-idling policy.
- To reduce emissions in the project area, the Applicant could evaluate the use of electric cars for company cars, provide electric charging stations, and develop an incentive program for carpooling.

