

# Finding of No Significant Impact

## Wallooskee-Youngs Confluence Restoration Project

Bonneville Power Administration

DOE/EA-197

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July 2015

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### Summary

Bonneville Power Administration (BPA) announces its environmental findings for the Wallooskee-Youngs Confluence Restoration Project. The project involves funding Astoria Wetlands, LLC (Astoria Wetlands) to restore a tidal marsh in the Columbia River estuary to improve salmon and steelhead habitat. Implementing the project would restore 193 acres of tidal wetlands by modifying a levee and allowing tidal influence to return to the area, creating a network of tidal channels, and reestablishing native vegetation communities. Implementing the project would also require actions to reinforce a state highway and utilities on or near the project area.

BPA has prepared an environmental assessment (EA) evaluating the Proposed Action and the No Action Alternative. Based on the analysis in the EA, BPA has determined that the Proposed Action is not a major federal action significantly affecting the quality of the human environment, within the meaning of the National Environmental Policy Act (NEPA) of 1969 (42 United States Code [USC] 4321 *et seq.*). Therefore, the preparation of an environmental impact statement (EIS) is not required and BPA is issuing this Finding of No Significant Impact (FONSI) for the Proposed Action. The Proposed Action is not the type of action that normally requires preparation of an EIS and is not without precedent.

The comments received on the Draft EA and responses to the comments are included in the Final EA. The Final EA also identifies clarifications made to the Draft EA.

The FONSI includes a statement of findings on how the Proposed Action impacts environmental and human resources. Impacts to environmental and human resources would be avoided where possible and minimized by the mitigation measures included in the EA and Mitigation Action Plan where there is no practical alternative. The Mitigation Action Plan, which is attached, lists all the mitigation measures that BPA and its contractors are committed to implementing.

### Public Availability

This FONSI will be mailed directly to individuals who previously requested it, a notification of availability will be mailed to other potentially affected parties, and the Final EA and FONSI will be posted on BPA's project at [www.bpa.gov/goto/WallooskeeYoungs](http://www.bpa.gov/goto/WallooskeeYoungs).

## Project Background

Under the Northwest Power Act, 16 USC § 839b(h)(10)(A), BPA has an obligation to protect, mitigate, and enhance fish and wildlife, and their habitats, affected by the development and operation of the Federal Columbia River Power System (FCRPS). To help accomplish this, the Act requires BPA to fund fish and wildlife protection, mitigation, and enhancement actions consistent with the Northwest Power and Conservation Council's (Council) Fish and Wildlife Program, the purposes of the Act, and other environmental laws. Under this program, the Council reviews habitat improvement (or restoration) plans submitted by various entities, and makes recommendations to BPA about which fish and wildlife projects to fund. The proposed project is part of the Cowlitz Indian Tribe Restoration Program, which was reviewed by the Council and the Independent Scientific Review Panel in November 2013. The Council recommended that BPA fund the Cowlitz Indian Tribe's Program. In addition, the proposed project received a detailed review by two other groups: the Project Review Committee and the Expert Regional Technical Group.

In addition to Northwest Power Act obligations, BPA, as a federal agency, also must comply with the Endangered Species Act (ESA). Compliance with the ESA includes taking actions to improve Columbia River estuary habitat for salmon and steelhead as part of mitigation outlined in the National Oceanic and Atmospheric Administration Fisheries' 2008 Biological Opinion for Federal Columbia River Power System Operation, supplemented in 2010 and 2014, (FCRPS BiOp). In the FCRPS BiOp, BPA and the U.S. Army Corps of Engineers agreed to implement habitat improvements in the Columbia River estuary to benefit salmon and steelhead listed for protection under the ESA. Reasonable and Prudent Alternative 37 of the FCRPS BiOp stipulates that the BPA and the U.S. Army Corps of Engineers provide survival benefits for listed salmon and steelhead species in the Columbia River estuary. Survival benefits for juvenile salmon and steelhead include increasing available rearing habitat, cover and forage opportunities, and high flow refugia habitat in the Columbia River estuary.

## Proposed Action

Under the Proposed Action, BPA would fund the Wallooskee-Youngs Confluence Restoration Project. Funding the project would allow for restoring and enhancing tidal marsh processes and habitats through levee breaching and tidal channel construction, vegetation enhancement in adjacent riparian areas, and the re-introduction of native species throughout the site. The project would also include constructing improvements for BPA infrastructure currently protected by the levee, modification of the Oregon Department of Transportation's (ODOT) drainage associated with state highway Oregon Route 202 (OR 202), and construction of wind-wave mitigation features for OR 202. Once complete, the Cowlitz Indian Tribe would own and maintain the property to preserve it perpetually as naturally functioning fish and wildlife habitat. Construction is expected to take place in 2015 and 2016. Details of the Proposed Action are presented in Chapter 2 of the EA.

## No Action Alternative

Under the No Action Alternative, BPA would not fund the Wallooskee-Youngs Confluence Restoration Project, and the project would not be constructed as described. The conservation easement protecting the property would remain, limiting the uses of the property available to the property owner, Astoria Wetlands, and its successors. The site would remain as levee-protected floodplain, albeit with a degraded levee. Levee maintenance would likely not occur, and the levee would continue to degrade. The BPA towers and access road would not be upgraded unless there became an apparent threat from

flooding and reduced access to the towers, and ODOT wind-wave mitigation with subsequent stormwater improvements would not occur. In addition, BPA would not use the project to help it satisfy its fish and wildlife obligations under the Northwest Power Act or FCRPS BiOp obligations under RPA 37. Clatsop County would not quitclaim its right to maintain the levee in favor of the United States. The Cowlitz Indian Tribe would not conduct long-term stewardship and the site would not be maintained to benefit fish and wildlife.

Under the No Action Alternative the levee would continue degrading due to lack of maintenance and natural processes. It would likely breach during a high water or storm event, causing waters to flood into the site. The uncontrolled flooding of the site would put at risk the reliability of the BPA transmission system and prevent land access for maintenance or repairs. OR 202 would also be put at risk through exposure to tidal inundation without appropriate protection measures. If the levee was left to deteriorate and not immediately fixed, the site would transition to a tidal marsh with a degraded ditch and limited relic channel network that would provide limited fish habitat value. Emergency actions involving in-water work may be necessary to fix levee breaches. These actions could impact listed fish species through construction activities as well as by isolation of fish behind the levee network once the emergency action was completed.

## Significance of Potential Impacts of the Proposed Action

To determine whether the Proposed Action has the potential to cause significant environmental effects, the potential impacts of this alternative on human and natural resources were evaluated and presented in Chapter 3 of the EA. Effects or impacts are generally discussed as construction related effects (direct) that would occur during construction and long-term effects (indirect) that would occur as a result of the project being implemented and the associated stewardship actions. Cumulative impacts are also evaluated. To evaluate potential impacts, four impact levels were used – high, moderate, low, and no impact. These impact levels are based on the considerations of context and intensity defined in Council on Environmental Quality regulations (40 Code of Federal Regulations (CFR) 1508.27). High impacts could be considered significant impacts, if not mitigated, while moderate and low impacts are not. The Proposed Action would have no significant impacts.

The following discussion provides a summary of the Proposed Action’s potential impacts and the reasons these impacts would not be significant.

### Geology and Soils

Impacts to soils and geology would be low-to-moderate and have a long term beneficial effect.

- Mitigation measures (e.g., sediment barriers, reseeded disturbed areas, decompacting haul routes, and minimizing non-native fill) would minimize potential erosion, compaction, and native materials displacement impacts to soils and geology during and following construction.
- Construction would cause the mixing of soil horizons due to excavation activities associated with the creation of the tidal channel network. Soils would be excavated, graded, and relocated within the restoration areas to restore typical floodplain topography.
- The reintroduction of tidal influence would restore soil forming processes within the levee protected floodplain and over time soil accretion would balance with erosional forces to establish a self-sustaining marsh ecosystem and counter subsidence that occurred within the area after the levee was built in the early 1900’s.

## Vegetation and Wetlands

Impacts to vegetation as a result of implementing the proposed project are low. Impacts to wetlands would be moderate and beneficial due to an increase in wetland functions and values.

- Invasive species within the site would be actively controlled mechanically and with herbicides as outlined in the *Biological Assessment for the Wallooskee-Youngs Confluence Restoration Project* and a native species community established through passive recolonization and planting.
- The restoration of tidal inundation to 161 acres levee protected freshwater wetland (equivalent to the area within the levee protected floodplain below 8.5 feet in elevation) would increase the wetland functions and values due to the restoration of a hydrologic regime appropriate for the site and creation of a large contiguous tidal wetland.
- The restoration would include excavation of new channel networks (8.41 acres) and 9,202 linear feet (2.5 acres) of ditch networks would be filled.
- Six acres of uplands would be converted to tidal wetlands and channels through levee lowering and breaching.
- Pilot channel excavation would convert 0.13 acres of tidal wetland to tidal channel.
- Infrastructure improvements would impact 1.76-acres of freshwater wetlands; these impacts would be offset by the creation of a large contiguous tidal wetland with improved hydrologic, water quality, and biologic functions and values that would result from project implementation.
- A low quality wetland ditch (approximately 0.1 acres) along OR 202 would be converted to a non-wetland ditch to filter runoff from OR 202 and improve the water quality treatment.

## Water Resources

Impacts to water resources would be moderate due to short-term localized impacts associated with construction. Long-term impacts to water resources would be low and beneficial.

- Mitigation measures (e.g., sediment barriers, reseeded disturbed areas, and tidal levee breach sequencing) would minimize potential water quality impacts to adjacent waters during construction.
- Localized impacts to hydrology, associated dewatering for construction and channel modification, would occur during construction as drainage patterns within the site are altered but would not impact surrounding areas.
- Infrastructure such as OR 202 and the BPA transmission towers and other utilities would be reinforced so that it is afforded long-term protection against flooding.
- Runoff from OR 202 would be routed through new culverts under OR 202 and a private drive and captured in a new vegetated treatment swale to maintain water quality treatment for highway runoff.
- Reestablishing floodplain connectivity would improve the water quality functions provided by the site and provide additional flood storage capacity not currently available.
- Flow, sedimentation, and erosion patterns within the Wallooskee and Youngs rivers would not be altered, and so nearby development such as homes and boat docks would not be affected.

## Fish and Wildlife

Impacts to fish and wildlife would be low and occur during the construction phase only. After construction the project would provide long-term beneficial effects to fish and other aquatic organisms.

- Mitigation measures (e.g., work area isolation, fish salvage, passive fish evacuation, and construction sequencing) would minimize construction related impacts to fish species listed under the ESA and other fish and aquatic organisms.
- Although common wildlife species would be impacted during construction through habitat and nesting disturbances and possible injury or death of smaller species that remain in the area, most impacts would be temporary and associated with construction. No impacts to wildlife species listed under the ESA would occur.
- Restoration of the tidal marsh would have a substantial long-term beneficial effect to all salmon and steelhead within the estuary due to increased availability of intertidal and shallow water rearing and foraging habitat, increased prey base production, and availability of high water refugia within the new channels and newly accessed intertidal floodplain.
- The improved wetland and riparian areas would provide a high quality habitat for many wildlife species dependent on tidal marsh.

## Land Use and Recreation

Impacts to land use and recreation would be low.

- Of the 222 acres mapped within the site as farmlands of statewide importance, 173 acres (163 acres of levee protected floodplain that will be exposed to tidal inundation as measured from the highest measure tide elevation of 11.9 feet and 10 acres of adjacent uplands that will be restored to riparian buffer) would be converted from farmland to tidal marsh or enhanced riparian buffer.
- Construction impacts to recreation would be limited to increased traffic or temporary road closures on OR 202 and construction could temporarily affect the recreational experience for some water-based recreational users on the Wallooskee and Youngs rivers.
- Recreation, including fishing and hunting, within the project area would be considered during the development of the Management Plan prepared by the Cowlitz Indian Tribe and public input sought at that time.
- Upon project completion ownership of the property would transfer from Astoria Wetlands to the Cowlitz Indian Tribe.
- BPA transmission access easements would be relocated to Farm Lane.

## Cultural Resources

Impacts to cultural resources would be low.

- Impacts to the two archeological resources identified within the project area would be minimized by designating avoidance areas adjacent to sensitive resources.
- Impacts to any resources on the site but not yet identified would be minimized through the implementation of an inadvertent discovery plan during construction.

## Aesthetics and Visual Resources

Impacts to Aesthetics and Visual Resources would be moderate.

- Construction impacts on visual resources would occur as a result of the staging of equipment and large scale ground disturbance and would be minimized by maintaining areas of undisturbed vegetation and seeding areas when they reach finished grade.
- Impacts to aesthetics and visual resources would primarily occur due to a change in aesthetic character from agricultural to natural open space.
- Visual impacts from the BPA tower pads and access roads would be minimized by covering the tower pad side slopes with native soil and vegetation and placing the low-water access road at the lowest elevation feasible.
- A sheet pile wall wave mitigation feature would be installed along OR 202 and would impact views as the wall would extend 4 to 5 feet above the road surface elevation along approximately 500 linear feet of highway.

## Air Quality and Climate Change

Impacts to air quality and climate change would be low.

- Air quality impacts would be limited to the construction site, would be temporary in nature, and would not result in violations of air quality standards.
- Mitigation measures (e.g. use of water trucks to control dust during construction and turning off construction equipment when not in use) would minimize impacts to air quality.
- Greenhouse gas emissions would be far below the U.S. Environmental Protection Agency mandatory reporting threshold of 25,000 metric tons or more and would not represent a substantial change from current conditions.
- The conversion of the site from farmland to tidal wetland would facilitate the sequestration and storage of carbon within the site thereby mitigating increases in greenhouse gases and associated climate change.
- The restoration of tidal marsh soil forming process, accretion, would position the site to better respond to sea level rise associated with climate change.

## Noise, Hazardous Waste, and Public Health and Safety

Impacts to Noise, Hazardous Waste, and Public Health and Safety would be low to moderate.

- Construction related noise would be discernable up to 2,000 feet away and would be mitigated by limiting the construction activities to normal daytime hours where feasible.
- Noise generating activities at night would be limited to only those necessary to accommodate tidal schedules, such as for dewatering pumps or other equipment.
- There are no known occurrences of hazardous materials or reported contamination within the project area; implementation of spill prevention and response measures and staging and fueling restrictions would avoid, minimize, or mitigate potential impacts to public health and safety.
- All herbicide applications would be conducted in accordance with the biological assessment requirements and application methods would be utilized that eliminate drift to neighboring properties.

- Short-term construction activities, including operation of heavy equipment and work in hazardous environments (e.g., adjacent to water) and increased construction traffic, have the potential to impact public health and safety during implementation of the Proposed Action.
- Drainage along OR 202 would be maintained at the current standard to facilitate continued safe use of the highway and mitigate for potential runoff of hazardous materials into adjacent waters.
- Access to the BPA transmission towers would be maintained through the development of a low-water access road and a safe work platform surrounding each tower, allowing the continued safe and reliable operation of the transmission system

## Transportation

Impacts to transportation would be low.

- Construction is expected to increase traffic along OR 202 in the project area by less than 1 percent.
- There would be short-term closures of a single traffic lane on OR 202 for work associated with filling the concrete cattle pass, for installation of the sheet pile wall, and for associated drainage improvements. These closures would be of limited duration (intermittently for 2-3 weeks) and would be managed to minimize disruptions in traffic flow.
- The existing access roads within the levee-protected floodplain would be removed and replaced with a low-water access road constructed to withstand tidal inundation and provide access to BPA tower pads during low tides.

## Socioeconomics

Impacts to socioeconomics would be low.

- To the extent practicable, local labor and material would be used to construct the project.
- There would be no long-term effect on population, housing, or employment and property taxes would continue to be paid by the Cowlitz Indian Tribe.

## Floodplain Statement of Findings

This Floodplain Statement of Findings was prepared in accordance with 10 C.F.R. Part 1022. An assessment of impacts to floodplains is included in Chapters 3 and 4 of the EA. No comments were received specifically related to impacts to floodplains. Comments were received regarding potential impacts to home sites south of the project area along the Wallooskee River associated with the restoration of floodplain function and are addressed in the response to comments included in the final EA. The FEMA-mapped 100 year floodplain covers the entire restoration area and portions of OR 202. The Proposed Action would result in the restoration of floodplain functions to 169 acres of this mapped floodplain through levee breaching (163 acres of levee protected floodplain and 6 acres of lowered levee). Infrastructure within the floodplain including the BPA access road and two transmission towers and OR 202 would be protected. Impacts to floodplains would be beneficial and result in increased floodplain capacity and a minor reduction in base flood levels of approximately 0.1 feet. No increases in base flood water levels were predicted for the area analyzed including for adjacent levee systems and areas east of OR 202. Reduced water levels, though minor, would result from the increased hydrologic

connectivity of flood conveyance associated with the restored floodplain (ESA 2014) and the result in low and beneficial effects to floodplain functions.

## Determination

Based on the information in the EA, as summarized here, BPA determines that the Proposed Action is not a major federal action significantly affecting the quality of the human environment within the meaning of NEPA (42 USC 4321 *et seq.*). Therefore, an EIS will not be prepared and BPA is issuing this FONSI for the Proposed Action.

Issued in Portland, Oregon

/s/ David K. Kennedy, for  
F. Lorraine Bodi  
Vice President  
Environment, Fish and Wildlife

July 7, 2015  
Date



# Mitigation Action Plan

## Wallooskee-Youngs Confluence Restoration Project

Bonneville Power Administration

DOE/EA-1974

July 2015

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### Mitigation Action Plan

This Mitigation Action Plan (MAP) is part of the Finding of No Significant Impact (FONSI) for the Wallooskee-Youngs Confluence Restoration Project. The project would restore a tidal marsh in the Columbia River estuary to improve salmon and steelhead habitat.

This MAP is for the Proposed Action and includes all of the integral elements and commitments made in the Environmental Assessment (EA) to mitigate any potential adverse environmental impacts. Best Management Practices (BMPs) from *Biological Assessment for the Wallooskee-Youngs Confluence Restoration Project* and BMPs, Terms and Conditions, and Conservation Measures from the *Biological Opinion for the Wallooskee-Youngs Confluence Restoration Project* are also required to be implemented as they will reduce potential construction related impacts to fish species listed under the Endangered Species Act (ESA) and are incorporated by reference into this EA and MAP.

BPA and its contractor, Astoria Wetlands, are responsible for implementing the mitigation measures during various phases of project construction. Relevant portions of this MAP will be included in the construction contract specifications. This will obligate the contractor to implement the mitigation measures identified in the MAP that relate to contractor responsibilities during and after construction. If you have any general questions about the project, contact the Project Manager, Jason Karnezis: toll-free telephone 800-282-3713, direct telephone 503-230-3098, or e-mail [jpkarnezis@bpa.gov](mailto:jpkarnezis@bpa.gov). If you have questions about the MAP, contact Jesse Wilson, Contract Environmental Protection Specialist, David Evans and Associates: toll-free telephone 800-282-3713, direct telephone 503-230-4506, or e-mail [jcwilson@bpa.gov](mailto:jcwilson@bpa.gov), or the BPA Supervisory Environmental Protection Specialist, Donald Rose: toll-free telephone 800-282-3713, direct telephone 503-230-3796, or e-mail [dlrose@bpa.gov](mailto:dlrose@bpa.gov). This MAP may be amended if revisions are needed due to new information or if there are any significant project changes.

## Mitigation Measures

Minimization and mitigation measures have been identified to reduce potential impacts associated with the Proposed Action, and are provided in the Mitigation Action Plan Table. Additional BMPs identified through the Endangered Species Act consultation are also included.

### Mitigation Action Plan Table

Resource	Environmental Design Feature-Mitigation Measure
Geology and Soils	<ul style="list-style-type: none"> <li>• Use sediment barriers such as silt fences, straw matting/bales, or straw wattles, as necessary, to minimize soil loss in all work areas.</li> <li>• Minimize the size of the disturbance area, to the extent practicable.</li> <li>• Use water trucks to apply water as needed to the construction area for dust control.</li> <li>• Track, seed, and mulch disturbed areas immediately as they reach finish grade.</li> <li>• Cover disturbed areas if they are expected to remain inactive for more than 5 days. Seeding would take place only when brought to finish grade.</li> <li>• Final-grade the channel excavation spoils placed in the levee-protected floodplain to promote sheet flow and prevent the creation of rills and gullies.</li> <li>• Phase construction activities so that all infrastructure protection and restoration work is done within the levee-protected floodplain prior to levee breaching.</li> <li>• Monitor, inspect, and daily log erosion control measures and site water management features.</li> <li>• Sequence levee breaching with the tide cycle to minimize erosion potential and direct soils mobilized by water into the site.</li> <li>• Decompact farm roads, staging areas, and haul routes within the project area by ripping or disking these areas after excavation and grading activities are complete.</li> <li>• Deposit non-native soils (crushed rock layer) excavated for the BPA low-water access road within areas of prior soil disturbance in uplands.</li> <li>• Place riprap protection found along the exterior of the levee within the bottom of the borrow ditch prior to ditch filling to effectively remove this material from the site.</li> <li>• Limit the use of non-native material to areas where no other practical alternative exists for infrastructure protection.</li> <li>• Cover the BPA tower pads side slopes with imported soils to allow for vegetation recruitments and limit the exposure of riprap armoring on the surface of the restored area.</li> <li>• Place soil and vegetation removed for OR 202 riprap protections on top of the riprap to fill voids and encourage vegetation to establishment.</li> </ul>

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| Vegetation and Wetlands | <ul style="list-style-type: none"><li>• Inspect equipment and wash as needed to remove vegetation and dirt clods that may contain invasive weed seeds.</li><li>• Plant the riparian corridor with the riparian seed mix and with native shrubs and trees.</li><li>• Seed disturbed areas with the floodplain seed mix following construction to the final grades.</li><li>• Mechanically remove invasive species on the project site.</li><li>• Treat invasive species with herbicide approved for use in upland or aquatic environments and do so in accordance with label requirements and applicable ESA coverage.</li><li>• Time construction and manage water to provide dry working conditions to the greatest extent possible.</li><li>• Seed Wetland 3 with native species upon the completion of construction activities.</li><li>• Utilize steel plates or wood mats when heavy equipment access into Wetland 2 is required.</li></ul> |
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| Water Resources | <ul style="list-style-type: none"><li>• Stage construction equipment (when feasible) and supplies within designated staging areas or in an upland area away from the floodplain, wetland, and other water resources.</li><li>• Store construction fuel within designated staging areas and refuel equipment within staging areas before departing for the work location. In order to minimize heavy equipment travel through the site and along the levee refueling may occur at the work location via pickup truck with appropriate containment devices. Ensure a spill kit is available, and lay disposable absorbent mat “diapers” on the ground beneath equipment during the fueling operations.</li><li>• Use water trucks to apply water as needed to the construction area for dust control.</li><li>• Wash all heavy equipment before it is delivered to the job site. Heavy equipment working below the mean higher high water elevation must be steam or pressure washed to ensure it is free of any chemical, soil, and other potential contaminants. Inspect machinery daily for fuel or lubricant leaks.</li><li>• Minimize the size of the disturbance area, to the extent practicable.</li><li>• Use sediment barriers such as silt fences, straw matting/bales, or straw wattles, as necessary to intercept any surface flow that might transport sediment to the Youngs or Wallooskee rivers. Install straw wattles or other filtration BMP along the downgradient toe of stockpiles adjacent to the borrow ditches to be filled.</li><li>• Monitor, inspect, and daily log erosion control measures and site water management features.</li><li>• Track, seed, and mulch disturbed areas immediately as they reach finish grade.</li><li>• Cover disturbed areas if they are expected to remain inactive for more than 5 days. Seeding would take place only when brought to finish grade.</li></ul> |
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	<ul style="list-style-type: none"> <li>• Final-grade the channel excavation spoils placed in the levee-protected floodplain to promote sheet flow and prevent the creation of rills and gullies.</li> <li>• Phase construction activities so that all infrastructure protection and restoration work is done within the levee-protected floodplain prior to levee breaching.</li> <li>• Sequence levee breaching with the tide cycle to minimize erosion potential and direct soils mobilized by water into the site.</li> <li>• Protect and retain native riparian/wetland vegetation, to the extent practicable, by depicting these communities on construction drawings and avoiding construction activities in these areas. Protect and retain native riparian/wetland vegetation, to the extent practicable by depicting these communities on construction drawings and avoiding construction activities in these areas.</li> <li>• Retrofit hydraulically-operated equipment that may work below the mean higher high water with fluids approved for work in aquatic environments.</li> </ul>
Fish and Wildlife	<ul style="list-style-type: none"> <li>• Minimize the size of the disturbance area, to the extent practicable.</li> <li>• Seine all existing relic tidal channels twice immediately prior to filling or excavation in order to remove fish and other aquatic species from work areas.</li> <li>• Ensure all fish handling complies with National Marine Fisheries Service (NMFS) protocols for handling listed fish species.</li> <li>• Grade channels to avoid and minimize fish stranding during low tide.</li> <li>• Place riprap and invasive vegetation material at the bottom of the borrow ditch prior to filling with native substrate material in order to allow for natural channel forming processes.</li> <li>• In fish-bearing waters, conduct work within the in-water work window from June 1-October 15 and November 1-February 28 unless otherwise approved by Oregon Department of Fish and Wildlife and NMFS.</li> <li>• Operate machinery for in-water work from the top of levee or within adjacent levee-protected floodplain, to the extent practicable.</li> <li>• Protect and retain native riparian/wetland vegetation, to the extent practicable, by depicting these communities on construction drawings and avoiding construction activities in these areas.</li> <li>• Use a vibratory pile driver to reduce sound levels during sheet pile driving.</li> <li>• Comply with any additional BMPs from the approved Biological Opinion.<sup>i</sup></li> </ul>
Land Use and Recreation	<ul style="list-style-type: none"> <li>• Post public notifications as needed to inform the public of the potential effects of construction activities.</li> </ul>
Cultural Resources	<ul style="list-style-type: none"> <li>• Identify avoidance areas on plan sets and place “sensitive area” signage adjacent to sensitive resource.</li> <li>• Implement the BPA Inadvertent Discovery Plan if unanticipated</li> </ul>

	<p>archaeological or historical resources are encountered during construction. As required by the plan, halt all ground-disturbing activity in the vicinity of the find and immediately notify BPA cultural resource staff. Implement mitigation measures as required by BPA.</p>
Aesthetics and Visual Resources	<ul style="list-style-type: none"> <li>• Use water trucks to apply water as needed to the construction area for dust control.</li> <li>• Protect and retain native riparian/wetland vegetation, to the extent practicable, by depicting these communities on construction drawings and avoiding construction activities in these areas.</li> <li>• Minimize the size of the disturbance area, to the extent practicable.</li> <li>• Seed disturbed areas with floodplain seed mix immediately as they reach finish grade.</li> </ul>
Air Quality and Climate Change	<ul style="list-style-type: none"> <li>• Use water trucks to apply water as needed to the construction area for dust control.</li> <li>• Reduce the speeds (for example, to 5 mph) of construction vehicles on access roads to minimize dust, if necessary.</li> <li>• Implement idling restrictions during construction to minimize air quality impacts.</li> <li>• Inspect, maintain, and replace (if defective) mufflers and other emission control devices on all equipment.</li> </ul>
Noise	<ul style="list-style-type: none"> <li>• Limit construction activities to normal daytime working hours where feasible. At night, activities generating noise would be limited to only those necessary, such as for dewatering pumps or equipment use when needed to accommodate tidal schedules.</li> </ul>
Hazardous Waste	<ul style="list-style-type: none"> <li>• Stage construction equipment (when feasible) and supplies within designated staging areas or in an upland area away from the floodplain, wetland and other water resources</li> <li>• Store construction fuel within designated staging areas and refuel equipment within staging areas before departing for the work location. In order to minimize heavy equipment travel through the site and along the levee refueling may occur at the work location via pickup truck with appropriate containment devices. Ensure a spill kit is available, and lay disposable absorbent mat “diapers” on the ground beneath equipment during the fueling operations.</li> <li>• Retrofit hydraulically-operated equipment that may work below the mean higher high water with fluids approved for work in aquatic environments.</li> <li>• Ensure spill containment and cleanup materials are readily available at the work site and staging areas at all times.</li> <li>• Inspect machinery daily for fuel or lubricant leaks.</li> <li>• Do not perform vehicle and equipment maintenance, other than emergency repair, on the project site unless approved by a BPA environmental representative.</li> <li>• Observe appropriate spill containment measures and buffer distances</li> </ul>

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	<p>for fueling and hazardous material storage.</p> <ul style="list-style-type: none"> <li>• Do not use contaminated sediments in construction activities.</li> <li>• Dispose of non-hazardous wastes in approved landfills.</li> <li>• Dispose of hazardous wastes according to applicable federal and state laws.</li> </ul>
Public Health and Safety	<ul style="list-style-type: none"> <li>• Locate equipment staged adjacent to OR 202 as far as possible from travel lanes, and mark to ensure motorists can readily identify the staging location.</li> </ul>
Transportation	<ul style="list-style-type: none"> <li>• Post traffic control signs on OR 202 to alert motorists of trucks turning to and from Farm Lane.</li> <li>• Use flaggers when needed, in and around the staging area adjacent to OR 202 and during OR 202 lane closures, to direct traffic and avoid vehicle conflicts.</li> <li>• Locate equipment staged adjacent to OR 202 as far as possible from travel lanes, and mark to ensure motorists can readily identify the staging location.</li> <li>• Repair damage to Farm Lane, as needed, after construction is complete.</li> </ul>
Socioeconomics	<ul style="list-style-type: none"> <li>• Use local labor and materials, to the extent practicable.</li> </ul>

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<sup>i</sup> Best Management Practices included in the *Biological Assessment for the Wallooskee-Youngs Confluence Restoration Project* and Best Management Practices, Terms and Conditions, and Conservation Measures from the *Biological Opinion for the Wallooskee-Youngs Confluence Restoration Project* are incorporated by reference into this MAP.