Supplement Analysis
for the
Columbia Estuary Ecosystem Restoration Program EA
(DOE/EA-2006/SA-10)

Woodland Islands Habitat Restoration Project
BPA project number 2010-004-00; 2011-013-00
BPA contract number 82217; CR-341413

Bonneville Power Administration
Department of Energy

Introduction

Bonneville Power Administration (BPA) and the U.S. Army Corps of Engineers (USACE) are partners in the Columbia Estuary Ecosystem Restoration Program (Program), which is a collaboration intended to evaluate, protect, monitor, and restore fish and wildlife habitat in the Columbia River Estuary. In July 2016, BPA and USACE completed the Columbia Estuary Ecosystem Restoration Program Environmental Assessment (DOE/EA-2006) (Programmatic Estuary EA). The Programmatic Estuary EA streamlines the environmental review of routine actions with well understood and predictable environmental impacts common to restoration projects in the Columbia River estuary. The purpose of this Supplement Analysis (SA) is to provide site-specific information about an individual restoration project proposed under the Program.

Consistent with the Programmatic Estuary EA, this SA analyzes the proposed Woodland Islands Habitat Restoration Project, which would restore and expand shallow water habitat for fish and wildlife species on Woodland Islands which are located in the Columbia River between river mile (RM) 84 and RM 86 within Cowlitz County, WA. This SA analyzes the site-specific impacts of the project to determine if the project is within the scope of the analysis considered in the Programmatic Estuary EA. It also evaluates whether the proposed project presents significant new circumstances or information relevant to environmental concerns that were not addressed by the EA. The findings of this SA determine whether additional NEPA analysis is needed pursuant to 40 Code of Federal Regulations (CFR) § 1502.9(c).

Proposed Action

BPA proposes to fund the USACE and the community organization, Columbia River Estuary Study Taskforce (CREST), to place and grade sediment at two locations within the Lower Columbia River, from RM 84 to 86, adjacent to the Woodland Islands to establish juvenile rearing habitat for thirteen species of salmonids. The USACE would obtain sediment from ongoing dredging actions in the mainstem Lower Columbia River necessary for maintaining the Federal navigation channel (FNC), and place and grade the sediment on subtidal areas to raise the bathymetric elevation to increase shallow water habitat for juvenile salmonids. The deposited sediment would be graded to connect with the existing shoreline of the islands, and to establish new areas of submerged and unsubmerged lands. The submerged areas would be graded to establish a descending sloped shelf to provide shallow water rearing habitat attractive to salmonids. The unsubmerged areas would be graded to create areas of dredged material with topographic variation that would encourage development of native shrubs and ground cover to

benefit wildlife species. These unsubmerged areas would be allowed to revegetate naturally from ambient propagules and by targeted plantings of native plants.

Restoration activities associated with the proposed action have the following five overarching objectives:

Objective 1: Increase rearing/foraging habitat for juvenile salmonids

Objective 2: Increase flood refugia for juvenile and adult salmon

Objective 3: Increase floodplain habitat complexity

Objective 4: Increase quality riparian habitat

Objective 5: Decrease the amount and extent of non-native vegetation

The proposed action would improve habitat for salmon and steelhead listed under the Endangered Species Act (ESA), as well as other fish and wildlife. The proposed action is consistent with those considered in the Programmatic Estuary EA, including the following categories of action:

- Research, monitoring, and evaluation of estuary habitats, restoration sites, and species.
- Plant and protect native vegetation.
- Implement practices to beneficially use dredged material by removing/relocating previously placed materials to increase inundation or access to off-channel habitat or by strategically placing dredged materials to enhance or create wetlands or tidal marsh.
- Long-term maintenance of completed estuary restoration projects.
- Restoration related ground disturbance and earthwork associated primarily with levee removal, ditch filling, and tidal channel creation.
- Construction-related in-water work.

The proposed action is also consistent with the Columbia River Estuary (CRE) Module management actions, developed by the National Marine Fisheries Service to aid in the recovery of salmon and steelhead throughout the region listed below.

- CRE-1: Protect intact riparian areas in the estuary and restore riparian areas that are degraded.
- CRE-6: Beneficial use of dredged materials, including notching or scraping down of existing materials.
- CRE-9: Protect remaining high-quality off-channel habitat from degradation and restore degraded areas with high intrinsic potential for high-quality habitat.
- CRE-10: Re-establish or improve access to off-channel habitats.
- CRE-15: Reduce the introduction and spread of invasive plants.

The Woodland Islands Habitat Restoration Project has been in the planning and design stage for the last three years. The design was developed by USACE with input from the following agencies and technical groups: the National Marine Fisheries Service (NMFS); the U.S. Fish and Wildlife Service (USFWS); the Expert Regional Technical Group (ERTG); BPA; and CREST. The consensus by these various agencies is that the project would provide an overall environmental benefit through the increase in shallow water habitat for juvenile salmonids in the mainstem Lower Columbia River.

Proposed work for this restoration project includes placing dredged material (sand) on the back side of the middle Woodland Island to create low velocity shallow water and riparian shrub habitat. The created habitat would add to the existing habitat diversity, and would be compatible with the existing and created shallow water and wetland habitats on the back side of the island. Topographic complexity would be created by post-placement grading of the dredged material. The dredged material features

would be placed on the back side of the middle Woodland Island using the pipeline dredge Oregon, a 30-inch cutter-suction dredge owned by the Port of Portland. The source of the sand is planned to be the St. Helens Bar reach of the 43-foot authorized FNC. A pipeline system would be required to connect the dredge Oregon to the project site on the side-channel side of the island. This includes a submerged pipeline to cross the channel, a floating pipeline near the downstream end of the longitudinal pile dike, two cross-island pipelines, and a parallel-pipe discharge system. On the island, a landing beach, two cross-island access roads, and shoreline access road would be necessary to build and maintain the pipelines and to access the placement features.

Post-construction, a short-term revegetation effort is planned to use native plant species on all disturbed areas, including the temporary access roads, cross-island pipeline locations, and staging areas. Short-term stabilization measures may include the use of sterile seed mix and weed-free certified straw, jute matting, hydro seeding/tackifier and other similar techniques during any periods of inactivity or between phases until the planting and seeding plan is implemented. A monitoring plan is included in the project as a part of the adaptive management strategy.

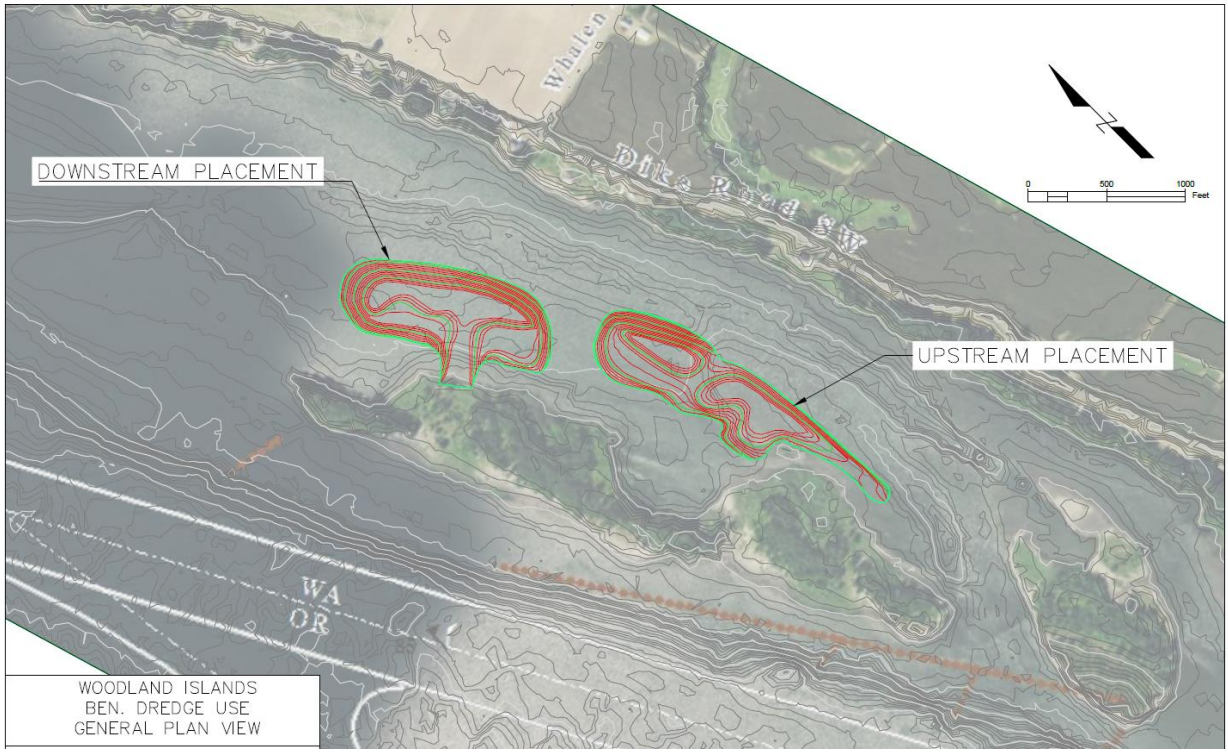

Figure 1. Woodland Islands Habitat Restoration Project

Environmental Effects

The typical environmental impacts associated with the Columbia Estuary Ecosystem Restoration Program are described in Chapter 3 of the Programmatic Estuary EA, and are incorporated by reference and summarized in this document. Below is a description of the potential site-specific impacts of the Woodland Islands Habitat Restoration Project and an assessment of whether these impacts are consistent with those described in the Programmatic Estuary EA.

1. **Fish**

While the proposed action would have temporary, short-term adverse impacts to individual fish, overall the action would result in a net benefit to individual fish, fish populations, and fish habitat. ESA-listed fish in the project area include chum, coho, Chinook, steelhead, sockeye, eulachon, and green sturgeon. In the project vicinity, the Columbia River is designated critical habitat for chum, coho, Chinook, steelhead, sockeye, and eulachon, and is essential fish habitat for coho and Chinook, per the Magnuson-Stevens Fishery Conservation and Management Act. The following paragraphs describe the impacts to fish and fish habitat in more detail.

Temporary, short-term impacts to fish and fish habitat could occur due to in-water construction work, including increased turbidity from the establishment of temporary access routes, placement of dredged material, and in-water post-placement grading. During or immediately after construction is completed, when rainfall or surface flow first enters onto newly disturbed soil, turbidity could be elevated temporarily in the island interior wetlands, the shoreline, placement area, adjacent side channel, and the mainstem Lower Columbia River. Efforts to avoid and minimize construction-related turbidity would include timing all in-water work to be completed during the in-water work window in coordination with ebbing and low tides to minimize turbidity impacts, and monitoring during construction to ensure background turbidity levels are in accordance with the specifications outlined in the National Marine Fisheries Service Biological Opinion received March 29, 2019. Therefore, turbidity impacts to fish and fish habitat are expected to be temporary and moderate.

The use of tracked machinery and vehicles during construction could pose a risk of accidental spills of fuel, lubricants, hydraulic fluids, or other contaminants. A spill would have the potential to carry contaminants to the adjacent side channel and mainstem Columbia River, exposing fish and fish habitat to toxic substances. However, Best Management Practices (BMPs) would be employed to avoid or minimize the potential for construction-related spills or discharges. These BMPs would include, but not be limited to: implementation of a Spill and Pollution Containment and Control Plan, adherence to terms and conditions of permits and other environmental authorizations, daily inspections of powered equipment for leaks, equipping tracked machinery and vehicles with ‘diapers’ and vegetable-based non-toxic hydraulic fluid, and washing tracked machinery and vehicles prior to arrival on site. Since the work would use BMPs and adhere to permit conditions, construction-related water quality impacts to fish and fish habitat would be temporary and low.

Overall, the project is expected to have moderate, beneficial effects on fish and fish habitat. Beneficial effects would far outweigh the temporary adverse impacts. These include: increased diversity of shallow water and wetland habitats; increased access to food, resting, and growth areas for juvenile salmonids and other native fish within the restored shallow water habitat (30 acres); and sediment flushing and increased detrital inputs to the habitat adjacent to the islands.

These impacts are consistent with the analysis in the Programmatic Estuary EA, Section 3.2.4, which concludes that impacts to fish would be moderate and beneficial because of the increased food web support, conversion of vegetation to more natural conditions, restored and improved hydrology, and enhanced water quality.

2. **Hydrology and Hydraulics**

Hydrology and hydraulic modeling were completed for the project to determine flow paths, water depths, and the inundation duration. The purpose of the modeling was to ensure that the project would achieve the restoration goals while protecting existing resources, adjacent property, and infrastructure. Expected impacts to the project area, adjacent side channel, and mainstem Lower Columbia River from the modeling results are discussed below.

The project includes the placement of 400,000 cubic yards dredged material along the northeast side of the middle Woodland Island, which is located in a Lower Columbia River side channel between the Washington shoreline and the northeast side of the Woodland Islands. The new shallow water habitat and graded contoured features would not be large enough to affect hydrology (e.g. tidal metrics, average water level) within the reach. Since most of the placed material would be within the hydraulic shadow of the existing islands, there would be a negligible impact to the conveyance capacity of the Columbia River in this reach, and no change to the water surface profile during large flood events.

On a more local scale, the placed material can be expected to result in local hydraulic changes both by restricting the flow area and increasing the shelter effect in the adjacent side channel. A two-dimensional hydrodynamic model was built using USACE's Adaptive Hydraulics (AdH) software to explore the existing and with-project impacts. The model results show spatial changes in the velocity data occurring primarily during high and low flood conditions with low or no impacts to river current during low river flow conditions. The impacts diminish with increasing distance from the channel thalweg and as discharge falls below 250,000 cubic feet per second (cfs).

After project completion, increased erosion, scour, and deposition could occur within the new shallow water habitat and along the middle Woodland Island shoreline. Design elements were incorporated to reduce erosion risk and increase shoreline resiliency. These design elements include: sediment placement and grading techniques to create topographic contours which reduce the risk of scour-producing shear stresses and sediment mobility; and strategically located and timed plantings of native vegetation to encourage revegetation of shoreline and shallow water habitat. Temporary erosion control measures would be installed prior to construction to protect the newly created habitat, shoreline, and riparian areas and would remain in place until the site is stabilized following construction. These measures would include, but not be limited to, fiber wattles, silt fences, jute matting, wood fiber mulch and soil binder, geotextiles, and placement of native vegetative slash produced during clearing and grubbing. Adverse impacts to hydrology and hydraulics within the project area are therefore expected to be moderate.

Impacts from construction-related turbidity and potential sediment plumes would be mitigated by timing all in-water work to be completed during the in-water work window in coordination with ebbing and low tides, and monitored during construction to ensure background levels are in accordance with the National Marine Fisheries Service Biological Opinion received March 29, 2019. The amount of sediment would be negligible relative to the vast area, high dilution levels, and existing sediment loading of the Columbia River, and adverse impacts would therefore be temporary and low.

These impacts are consistent with the analysis in the Programmatic Estuary EA, Section 3.3.3, which concludes that impacts to hydrology and hydraulics would be moderate. These impacts discussed in the Programmatic Estuary EA, Section 3.3.3 include: erosion, scour, and in-channel deposition; increased frequency and duration of inundation; localized changes in velocity, flow, and circulatory patterns; reconnection of channel habitats; and increased instream flows.

3. Water Quality

Over the long term, water quality in the project area and immediately downstream is expected to improve due to the placement of dredged material and raising of bed elevations along the northeast side of the middle Woodland Island. Placed material would raise approximately 20 acres of channel bed in the project area to elevation ranges considered intertidal or upland. Strategic plantings in new upland areas, along the shoreline, and in the shallow water habitat zone would facilitate the migration of existing native vegetation from the island shore to the exterior, and would allow the interior island wetlands to establish plant community assemblages that are suitable for the levels of salinity and tidal

inundation present in the newly established 20 acres of intertidal and upland habitat. Since daily tidal inundation would occur over a larger area, an increase in detrital export and flux that contributes to the food web for native fish species is expected in and around the Woodland Islands. This increased flow and flushing effect should also enhance nutrient exchange, increase wetland types, and increase habitat complexity for juvenile salmon and other estuarine aquatic species.

The use of tracked machinery and vehicles during construction could pose a risk of accidental spills of fuel, lubricants, hydraulic fluids, or other contaminants. A spill would have the potential to carry contaminants along the mainstem Lower Columbia River. Since the work would use BMPs, such as the implementation of a Spill and Pollution Containment and Control Plan, daily inspections of powered equipment for leaks, and adhere to the terms and conditions of Nationwide Permit 27, construction-related water quality impacts to water quality would be temporary and low.

The proposed dredge material placement would temporarily suspend small quantities of fine sediment that would manifest as a turbidity plume near the shoreline. The increased amount of suspended solid sediment would occur within a 100-foot radius of the deposition site, depending on river flow. Water quality conditions would be degraded temporarily during construction, which could inhibit safe passage of salmonids adjacent to the sediment placement locations. The USACE's proposed monitoring would reduce the potential for adverse effects to critical habitat outside of the 150-foot turbidity monitoring area. Sediment composition in the mainstem Columbia River tends to be about 95 percent coarse sand, with less than five percent fine sediment. During construction a small proportion of fine sediment deposition outside of the proposed placement footprints would occur for a period of hours to days before it is gradually eroded into the main channel. Although the proposed sediment placement would degrade conditions for migration and rearing of salmonids, thus potentially adversely affecting safe passage, the construction-related turbidity would be temporary, diluted by high flows, and monitored during construction to ensure background levels are in accordance with the National Marine Fisheries Service Biological Opinion received March 29, 2019.

The temporary and low to moderate impacts to water quality associated with the project are consistent with those described in the Programmatic Estuary EA, Section 3.4.3, which concludes that effects to water quality would be low to moderate and mitigated by sediment and erosion control practices. The impacts discussed in the Programmatic Estuary EA, Section 3.4.3 include: increased composition of native vegetation; increased riparian buffer width; increased vegetation cover; increased flows, tidal exchange, and flushing; increased channel complexity and alignment; and decreased composition, distribution, and quantity of invasive species.

4. Geomorphology, Soils, and Topography

The placement of 400,000 cubic yards of dredged material along the northeast shoreline of the middle Woodland Island and into the side channel would create peninsula-like features that effectively convert deeper water areas to shallow water and upland areas by increasing bed elevations. The total placement footprint would be approximately 30 acres, over which the bed elevations could be raised by as much as 15 feet. The placed material would result in the creation of an additional 20 acres of habitat at elevation ranges considered intertidal or upland, and the conversion of roughly 10% of the open water side channel. Maximum depths in the mainstem Lower Columbia River are expected to remain the same, while the average elevation in the side channel is expected to increase slightly.

An analysis of the existing terrain and with-project terrain including complex grading was completed to evaluate net increase in selected elevation ranges. The placement boundaries, nearly two-thirds of the existing area (20 of 32 acres) has bed elevations lower than the targeted shallow water depths, zero to 11 feet North American Vertical Datum (NAVD). With the use of dredged material, bed elevations are

raised such that less than 10% of the area is below zero feet NAVD, and an additional 8 acres with the shallow-water habitat zone area added. About 10 of the 32 acre footprint would be brought above 11 feet NAVD to increase stability and sheltering effect to the larger side-channel area.

The proposed placed features would provide additional protection to the existing shallow water alcoves, increasing accretion of fines and habitat development in those areas. As flow dynamics are changed, bed elevations are expected to adjust in response, yet maintain a similar degree of hydraulic resistance across the reach. There would be a concentration of flow within the side channel outside of the embayment areas, between the features and the WA shore, and a potential for slight bed degradation (less than 2 feet) as the system adjusts to the new hydromorphic regime. An AdH model was created to help quantify anticipated with-project changes in hydraulics and fluvial dynamics described in this section.

Periodic flood events would result in redistribution of the newly-placed material on and behind the islands, potentially eroding or burying established habitat areas. As the placed dredged material is exposed to periodic redistribution events, some of the material placed at higher elevations would mobilize and settle at lower elevations, ultimately expanding the extent of the shoreline wetlands. Material placed in the side channel area is expected to remain in the side channel area, without measurably increasing sediment deposition farther downstream.

Post-placement grading would create less smooth slopes, more stark transitions between different elevation zones, and increase the hydraulic connection between the side channel and the upstream embayment area. Over time, the peaks and troughs created from grading the placed sand are expected to smooth out as the system adjusts to the currents, wave action, tides, and periodic flood events. The eventual flattening out of shaped features is not considered an adverse effect and it would not adversely impact fluvial morphology of the system as a whole.

Mature native vegetation suitable for shrub, marsh, intertidal/sand, and submerged habitats would be planted for existing habitat elevation ranges in scrub-shrub wetlands, fringe/shoreline wetlands, and submerged aquatic vegetation would anchor the placed material and reduce both the potential for erosion and the rate of deformation of the graded features. Revegetation would further concentrate the accumulation of fine material into the marsh flat areas and other relatively low velocity areas, which is expected to facilitate plant growth and development and add to the benefits from plant anchoring and accretion of fines.

Direct short-term impacts to soils would result from temporary construction activities, including vegetation clearing, grading, and compaction of soils by heavy equipment during construction. Clearing and grading would remove both vegetation and topsoil. Compaction from heavy equipment degrades soil structure, reducing pore space needed to retain moisture and promote gas exchange.

Short-term construction-related impacts would include a temporary increase in soil erosion or temporarily elevated suspended sediments within the project area, adjacent side channel, or the mainstem Lower Columbia River. With the exception of the temporary access routes, the entire project area is located on sandy soils/organics and within the hydraulic shadow of the Woodland Islands. Working in low hydraulic velocity systems on sandy soils vastly reduces turbidity impacts compared to working in alluvial soils in higher flow velocities. To minimize temporary and localized turbidity during excavation of the tidal connections, particularly in the exterior marshplain where more alluvial soils predominate, all work would be conducted during ebbing tides, to the extent possible. Construction-related impacts would be additionally mitigated by the use of an erosion and sediment control plan implemented by a certified erosion control specialist.

Over the long term, impacts would be beneficial due to the restoration of the natural hydrological regime, soil-forming process, sediment flushing, and estuarine ecosystem function to the wetlands and shallow water habitat adjacent to the Woodland Islands.

Based on the impacts above, the project would have moderate temporary impacts in the short-term and long-term beneficial impacts to geomorphology, soils, and topography. Project impacts are consistent with those described in the Programmatic Estuary EA, Section 3.5.3, which predicted that construction would have moderate temporary effects, and that long-term impacts would be beneficial. The impacts discussed in the Programmatic Estuary EA, Section 3.5.3 include: temporary erosion and sedimentation; altered channel form, structure, and density; localized changes in velocity, flow, and circulatory patterns; restored sediment transport; and restored spatial and temporal connectivity of streams and wetlands.

5. Sediment Quality

Approximately 400,000 cubic yards of dredged material would be placed strategically on 32 acres of subtidal areas along the northeastern side of the middle Woodland Island to establish a rise in bathymetric elevation to provide quality shallow water habitat for juvenile salmonids. The material would be obtained from the St. Helens Bar reach of the 43-foot authorized FNC and transported to the project site using the pipeline dredge *Oregon*, a 30-inch cutter-suction dredge owned by the Port of Portland. The material would be pumped from the dredge *Oregon* through temporary 30-inch pipelines at a rate of 20,000 cubic yards per day, and graded with bulldozers and long-reach excavators to achieve target micro-topography and contours. These actions could temporarily loosen sediment within the placement area and the sediment could remain suspended in the water column for a period of hours to days before it is gradually eroded and redistributed within the adjacent side channel and mainstem Lower Columbia River. The construction-related turbidity would be temporary, diluted by high flows, and monitored during construction to ensure background levels are in accordance with the National Marine Fisheries Service Biological Opinion received March 29, 2019.

The composition of the sediment to be obtained from the St. Helens Bar reach is expected to be consistent with mainstem Lower Columbia River sediment (generally 95 percent coarse sand, with less than five percent fine sediment.) Since sediment dredged from the FNC is relatively clean with few chemical contaminants and contains a low percentage of fines smaller than sand, impacts to sediment quality would be temporary and low.

The impacts to sediment quality from the project would be low and are less than those described in the Programmatic Estuary EA, Section 3.6.3, which concluded that effects to sediment quality would be moderate. The impacts discussed in the Programmatic Estuary EA, Section 3.6.3 include: changing hydrologic flow patterns; floodplain and tidal reconnection; increasing organic materials in sediments; and introduction of pollutants.

6. Air Quality

Vehicle emissions during the transportation and operation of construction equipment could cause a minor temporary decrease in air quality for the duration of on-the-ground work. Impacts would be low and would not result in violations of state air-quality standards. As described in the Programmatic Estuary EA, Section 3.7.3, impacts on air quality would be low both in concentration and duration. The impacts discussed in the Programmatic Estuary EA, Section 3.7.3 include: temporary and localized increase in dust and pollutants, such as carbon monoxide, nitrogen dioxide, particulates, sulfur dioxide, ozone, or lead.

7. Wildlife

In the short term, noise and visual disturbance during construction would likely cause wildlife to avoid the project area during the construction period. If present during construction, nesting birds, smaller ground-dwelling mammals, reptiles, and amphibians could be harmed or killed incidentally during construction. Impacts to migratory birds and other wildlife would be minimized or avoided by observing timing restrictions and other measures developed by CREST, BPA, NMFS, and USFWS. These measures were included in USACE's ESA consultation with NMFS concerning impacts to ESA-listed fish (BiOp received March 29, 2019), and USACE's ESA consultation with USFWS concerning impacts to terrestrial species (informal consultation concluded July 5, 2018).

The Woodland Islands are within the historic range of Columbia River Distinct Population Segment (DPS) of Columbian white-tailed deer, currently designated as threatened under the ESA. While the potential exists for individuals to be present during construction, the Woodland islands are not in proximity to any known Columbian white-tailed deer subpopulations, and therefore any individuals present are likely to be transient. There are no known occurrences of other ESA-listed terrestrial wildlife species or critical habitat on Woodland Islands.

Bald eagles are known to occur throughout the estuary and likely use the project area for nesting, roosting, and foraging. Bald eagle nests were not documented during biological surveys conducted on the island. Therefore, no impacts to individuals and/or potentially occupied nests are anticipated.

Long-term effects to wildlife are expected to be beneficial. The existing tidally submerged habitat is relatively uniform with sparse vegetation. Following completion of the project, more wetlands would be established on and around the project area, and the diversity of habitat types available to salmonids traversing this reach of the LCR would be increased. Wildlife that use wetland and riparian areas such as river otters, beavers, amphibians, waterfowl, shorebirds, and insect-eating birds would benefit from the improved breeding and feeding habitat expected from post-construction plantings in these locations. Additionally, upland and fringe wetland habitat restoration would benefit migratory birds such as eagles and osprey. Expansion of the partially submerged island footprint would benefit brown pelicans that are increasingly using the Columbia River estuary during the summer months.

These impacts from the project on wildlife would be moderate and beneficial and are consistent with the Programmatic Estuary EA, Section 3.8.3, which concluded that effects to wildlife would be moderate and beneficial. The impacts discussed in the Programmatic Estuary EA, Section 3.8.3 include: noise or visual disturbance to wildlife, displacement of individual animals, and habitat conversion.

8. Wetlands, Floodplains, and Vegetation

In the short term, construction would directly affect waters in the project area. Approximately 400,000 cubic yards of dredged material would be placed strategically in a side channel of the mainstem Lower Columbia River along the northeast side of the middle Woodland Island. The peaks and troughs created in the placed material from grading would create areas of cool and warmer waters, with more or less exposure to sunlight and/or shelter from current velocities in the side channel. Such variations in channel features would foster vegetation growth and increase the number and variety of plant and aquatic species within the project area. The placed material is expected to develop into a high quality foraging and rearing area for fish and shorebirds, and contribute to recovery efforts for ESA-listed species.

Temporary, short-term impacts to vegetation are anticipated for the creation of temporary access routes. Although temporary access routes would be surveyed and flagged for sensitive wetland areas and mature tree stands and avoided to the extent practicable, removal of vegetation from willow-

dominated, shrub wetland would be unavoidable. Following construction, a native revegetation effort would replant appropriate species for different elevation bands within temporary access routes, staging areas, and other areas disturbed during construction. Overall, the project would result in beneficial impacts due to an increase in native vegetation in riparian and wetland areas. Minimal adverse impacts on fringe wetland vegetation may occur during placement activities, but the ultimate expansion of suitable habitat for salmonid species and terrestrial species would outweigh any short-term impacts shoreline placement activity may have on the fringe vegetation. Additionally, wetland quality would improve due to the restoration of natural flow patterns and the planting with native trees, shrubs, grasses, and sedges.

These impacts are consistent with the Programmatic Estuary EA, Section 3.9.3, which predicted moderate and beneficial effects. The impacts discussed in the Programmatic Estuary EA, Section 3.8.3 include: alteration of wetland hydrology; restoration of wetland-forming processes; increased wetland area, habitat complexity, composition of native vegetation, riparian buffer area, vegetation cover, and quantity of tidal marsh habitat flows, tidal exchange, and flushing; and decreased composition, distribution, and quantity of invasive species.

Chapters 3, 4, and 5 of the Programmatic Estuary EA provide an assessment of impacts to floodplains and wetlands. Consistent with the Programmatic Estuary EA (including Section 3.9.9), the Woodland Islands Habitat Restoration Project would restore floodplain connectivity and function and improve wetland function and value, as described above. Additionally, the project would not result in floodplain development. While the project may impact wetlands in the short term, the overall long-term impacts would be beneficial, because the goal of the project is to create more wetland acreage and improve wetland quality, compared to the current condition. This Floodplain Statement of Findings was prepared in accordance with the Department of Energy's NEPA implementing regulations and in compliance with Floodplain and Wetland Environmental Review Requirements (10 Code of Federal Regulations 1021 and 1022).

9. Land Use and Recreation

Project construction would temporarily affect small areas of recreational uses. To allow for construction access, a temporary construction easement would be obtained to cross some private lands, and some of the lands currently managed as wildlife habitat would be temporarily transformed into temporary access roads and staging areas.

Disposal sites would not be required for this project. Construction activities consist of placing dredged material on the northeast side of the middle Woodland Island in a side channel to restore and expand shallow water habitat, grading the material to suitable topography, and revegetating the project area with mature, native plants. USACE currently manages the island as an important navigational feature, and would continue to work with the project sponsor and partners post-project to adaptively manage invasive species until native vegetation is well established. The proposed project would therefore not encourage or influence land use changes on the Woodland Islands or in the vicinity.

Recreational boaters seeking to utilize the side channel adjacent to the Woodland Islands during the approximate six week construction period would be temporarily unable to access the project area. This impact would be temporary, lasting only for the duration of placement and grading. Since the project is located on the northeast side of the middle Woodland Island there would be no impact on recreational or commercial use in the mainstem Lower Columbia River.

Before vegetation establishes, the large features constructed from dredged sand may attract boaters from nearby St. Helens and beyond as a new beach. As vegetation establishes and expands, more riparian shrub wetland habitat could attract greater numbers of ducks, fish, and other animals that are

targeted by recreational and commercial harvesters. Either scenario has the potential to increase use of the island, which may result in vegetation trampling, increased trash and debris, and wildlife disruption/displacement. Although the post-placement planting of mature vegetation would immediately help prevent further erosion of the project area, and thus maintaining the island's availability for the above-mentioned uses, the mature plantings would also decrease the appeal of the project area as a sandy beach for recreating. Although recreational use may temporarily increase immediately post-construction, recreational use of the island would not change in the long term, following establishment of vegetation.

Improvements to shallow water habitat adjacent to the Woodland Islands may have long-term beneficial effects to recreation in the side channel and island vicinity. Since the action would benefit fish, waterfowl, and other recreationally-managed species, fishing opportunities in the vicinity of the Woodland Islands could improve over time.

As noted in the Programmatic Estuary EA, the Coastal Zone Management Act (CZMA) includes a Federal consistency requirement for projects with potential impacts to coastal zones. The Woodland Island Habitat Restoration project is located outside of the coastal zone, and therefore not subject to Federal consistency review.

Based on the impacts above, the project would have low, temporary impacts in the short-term and long-term beneficial impacts to land use and recreation. These impacts are consistent with the Programmatic Estuary EA, Section 3.10, which described low to moderate impacts to land use and recreation. The impacts discussed in the Programmatic Estuary EA, Section 3.10.3 include: changes in land ownership, removal of drainage structures, and changes in access to recreational opportunities.

10. Cultural Resources

In a letter dated May 6, 2020, BPA sent a letter to the consulting parties of the Confederated Tribes of Siletz Indians, the Confederated Tribes of the Warm Springs Reservation of Oregon, the Confederated Tribes of Grand Ronde, the Confederated Tribes and Bands of the Yakama Nation, the Confederated Tribes of the Umatilla Indian Reservation, the Cowlitz Indian Tribe, the Nez Perce Tribe, USACE, and the Washington Department of Archaeology and Historic Preservation (DAHP). BPA informed the consulting parties of BPA's involvement as a funding agency, acknowledged USACE's role as the lead Federal agency, and referenced USACE's determination of no historic properties affected. BPA did not receive responses from the consulting parties.

Cultural resources impacts are consistent with the analysis in the Programmatic Estuary EA, Section 3.11.3. That is, the action would not impact historic properties, and impacts to cultural resources uncovered during construction would be mitigated by the use of Inadvertent Discovery Protocols. The impacts discussed in the Programmatic Estuary EA, Section 3.11.3 include: reestablishment of tidal channels, reestablishment of wetland and riparian plant communities, and removal of structures.

11. Socioeconomics

The project would result in small, temporary, beneficial impacts to socioeconomics by providing jobs for construction workers. Since fish habitat adjacent to the Woodland Islands in the side channel would be improved and expanded, long-term benefits to fisheries are expected in the form of improvement to fish runs and increased fishing opportunities. The action would not displace residents or degrade residential suitability; nor would it cause changes to the tax base. The shallow water habitat and adjacent stream channel would remain classified as waters of the State, and thus would be open to the public.

The expected socioeconomic impacts would be low, consistent with those described in the Programmatic Estuary EA, Section 3.12.3. The impacts discussed in the Programmatic Estuary EA, Section 3.12.3 include: short-term employment opportunities, local short-term traffic or lifestyle disruptions due to construction, land use conversion, and improvements to fisheries.

12. Visual Resources

The project area can be seen from observation points in Washington State along Dike Road and the Columbia River. Temporary visual impacts could occur during construction due to construction equipment being visible to individuals in boats on the river and residents and commuters north of the islands in Washington State along the shoreline of the Columbia River. In the short term, construction would temporarily leave areas of bare soil visible to people in boats in the side channel and the Columbia River. However, this impact would be mitigated by the installation of erosion and sediment control devices, and replanting of all areas impacted during project construction.

In the long term, completion of the Woodland Islands Habitat Restoration Project would increase hydrological connectivity with the Columbia River, resulting in an increase in the quality and size of the wetlands along the island shoreline. The project area would be revegetated with mature native plants and woody riparian vegetation, resulting in a more natural looking environment.

These impacts are consistent with the visual resources analysis in the Programmatic Estuary EA, Section 3.13.3, which characterized these effects as low to moderate. The impacts discussed in the Programmatic Estuary EA, Section 3.13.3 include: short-term visual impacts related to construction, and long-term impacts associated with changing the visual condition from a managed state to a more natural landscape.

13. Noise, Hazardous Waste, Public Health, and Safety

Noise level is expected to increase intermittently above ambient conditions during the approximate six week construction period. Construction activities associated with placement of sediment are anticipated to occur 5 days a week for, 24 hours a day. Requirements to minimize these effects, such as limiting sediment pumping and placement to daylight hours only, would be considered during the development of construction specifications. The project would not result in any long-term effects to ambient noise levels during operation.

The public could potentially access the side channel adjacent to the placement area by water craft during construction. Potential safety risks could be associated with encountering the dredge during sediment placement, and heavy equipment during grading activities. However, the use of signage and the presence of monitors during construction would prevent such encounters, and safety risks are therefore anticipated to be low.

This is consistent with the analysis in the Programmatic Estuary EA, Section 3.14.3, which described low effects to noise, hazardous waste, public health, and safety. The impacts discussed in the Programmatic Estuary EA, Section 3.14.3 include: short-term noise during construction and maintenance, and risks to safety due to change in hydrologic regime after construction.

14. Transportation and Infrastructure

The project would have temporary, short-term impacts on transportation and infrastructure during construction. During that time, traffic delays are expected along Dike Road on the Washington State shoreline. This would be mitigated by using traffic control and staging heavy equipment off of public roadways. This is consistent with or less than the effects in the Programmatic Estuary EA, Section 3.15.3, which described moderate effects to transportation.

A commercial fishing fleet and recreational boaters currently utilize the mainstem Lower Columbia River for access to the mouth of the Columbia River and to the Pacific Ocean. The proposed project takes place in a side channel between the Washington State shoreline and the northeast side of the middle Woodland Island and would therefore have no effect on boat navigation through the mainstem Lower Columbia River.

This is consistent with or less than the effects in the Programmatic Estuary EA, Section 3.15.3, which described low effects to navigation. The impacts discussed in the Programmatic Estuary EA, Section 3.15.3 include: changes in navigation, and potential damage to infrastructure due to changes in flow patterns.

15. Climate Change

Vehicles and equipment operating during construction and maintenance of the project could have negative impacts to climate change through release of greenhouse gases. However, over the long term, effects are expected to be positive, as the shallow water habitat and wetland restoration would create a carbon sink that would store carbon dioxide and help mitigate for the release of greenhouse gases.

Plantings would be adaptively managed to address long-term changes in climate (and resulting effects to salinity, surface-water elevation, and groundwater elevation). Temporary access routes, staging areas, and disturbed riparian areas would be replanted following construction, and would include short term stabilization measures during any periods of inactivity or between construction phases until the planting and seeding can occur. These areas would be planted with a variety of native species appropriate for different elevation bands to allow plants to adapt to a range of water levels, salinities, and other fluctuating environmental conditions. USACE, CREST, and project partners would monitor and maintain the plantings over the long term, replanting if necessary, and continuing to treat invasive species. Although climate change may increase temperatures, change precipitation patterns, cause more extreme weather events, and raise sea levels, these impacts would likely occur regardless of the Woodland Islands Habitat Restoration Project. After vegetation becomes established, the habitat it forms, as well as benthic habitat created by the placement, would likely help to buffer effects of climate change for species using the habitat.

Overall, the long-term impacts on climate change from the project are expected to be low and beneficial, consistent with the impacts described in the Programmatic Estuary EA, Section 3.16.3. The impacts discussed in the Programmatic Estuary EA, Section 3.16.3 include: both the release and sequestration of greenhouse gases, and the buffering of sea-level rise, particularly during extreme flows.

Findings

This SA finds that the types of actions and the potential impacts related to the proposed Woodland Islands Habitat Restoration Project have been examined, reviewed, and consulted upon and are similar to those analyzed in the Columbia Estuary Ecosystem Restoration Program Environmental Assessment (DOE/EA-2006) and Finding of No Significant Impact. There are no substantial changes in the proposed action and no significant new circumstances or information relevant to environmental concerns bearing on the proposed action or its impacts within the meaning of 10 CFR § 1021.314(c)(1) and 40 CFR §1502.9(c). Therefore, no further NEPA analysis or documentation is required.

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Reviewed by:

/s/ Chad Hamel
Chad Hamel
Supervisory Environmental Protection Specialist

Concur:

/s/ Sarah T. Biegel Date: *June 17, 2020*
Sarah T. Biegel
NEPA Compliance Officer