Supplement Analysis
for the
Columbia River Basin Tributary Habitat Restoration
(DOE/EA-2126/SA-85)

Murderers Creek Phase 2 Habitat Improvement Project
BPA project number 1984-021-00
BPA contract number 84041 REL 69

Bonneville Power Administration
Department of Energy

Introduction

In December 2020, Bonneville Power Administration (BPA) completed the Columbia River Basin Tributary Habitat Restoration Programmatic Environmental Assessment (DOE/EA-2126) (Programmatic EA). The Programmatic EA analyzed the potential impacts of implementing fish habitat restoration actions on Columbia River basin tributaries.

Consistent with the Programmatic EA, this supplement analysis (SA) analyzes the proposed Murderers Creek Phase 2 Habitat Improvement Project (project), which would implement specific restoration actions addressed in the Programmatic EA in the Murderers Creek watershed in Grant County, Oregon. Project objectives include increasing in-stream and floodplain habitat diversity and complexity, increasing the rate of channel evolution, and improving riparian vegetation diversity and health for the benefit of salmonids including Endangered Species Act (ESA)-listed steelhead trout (*Oncorhynchus mykiss*).

This SA analyzes the site-specific impacts of the proposed project to determine if they are within the scope of the analysis considered in the Programmatic EA. The SA also evaluates whether the proposed project presents substantial new circumstances or information about the significance of the adverse effects that bear on the analysis and that were not addressed by the Programmatic EA.

Proposed Activities

BPA proposes to fund the Oregon Department of Fish and Wildlife (ODFW) to implement habitat improvements along Murderers Creek in Grant County, Oregon (Figure 1). This Phase 2 project follows similar habitat improvement activities completed downstream of the Phase 2 project area in 2023, as part of Phase 1. The project would occur on land that is owned and managed by ODFW as part of the Phillip W. Schneider Wildlife Area (PWSWA). The South Fork John Day Watershed Council (SFJDWC) is a project partner. Murderers Creek is a tributary of the South Fork John Day River that provides spawning and rearing habitat and is designated critical habitat for ESA-listed Middle Columbia River (MCR) steelhead trout.

The PWSWA provides winter range for mule deer populations and year-round habitat for a variety of other wildlife. It encompasses more than 25,000 acres of ODFW deeded land and 27,000 acres of U.S. Bureau of Land Management (BLM) land. It is open to the public for seasonal recreation activities including wildlife viewing, photography, bird watching, hunting, hiking, and general sightseeing. The PWSWA is surrounded by a mix of private rural properties and land managed by the U.S. Forest Service that includes Malheur National Forest land to the east and Ochoco National Forest land to the west. The proposed project elements are located on ODFW land within the PWSWA and are not on BLM land.

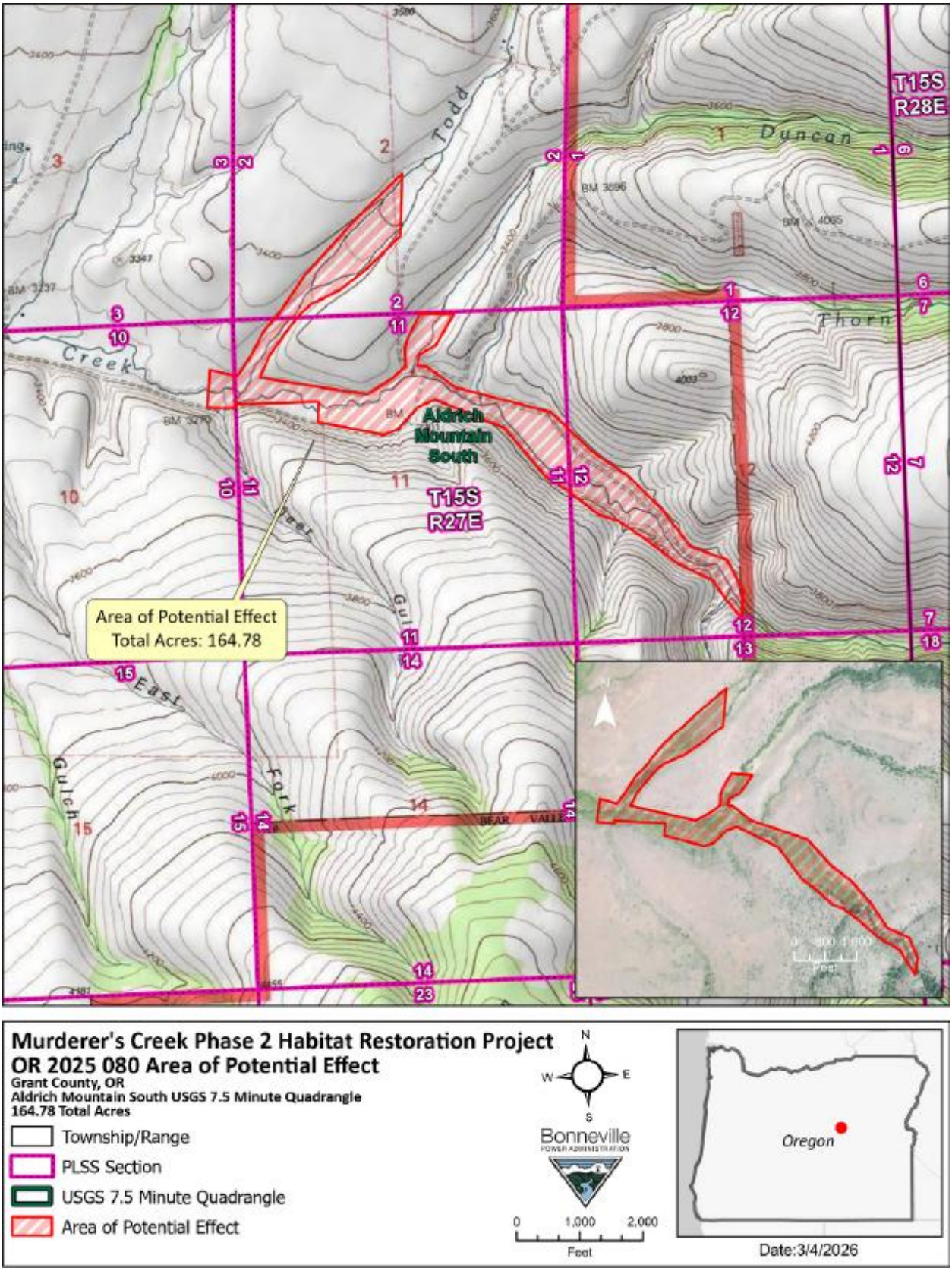

Figure 1. Murderers Creek Phase 2 Habitat Improvement Project Area.

Prior to the mid-1800s, the project area was a complex river-wetland corridor with multi-threaded channels, vegetated bars/islands/floodplains, beaver pond and wetland complexes, and a high degree of connection between surface water and groundwater. Land cover across the valley bottom included dense stands of deciduous vegetation including willow, alder, and cottonwood trees. Reductions in beaver populations, instream wood removal, stream channelization projects, riparian timber harvests, and past grazing management practices over decades altered and impaired natural stream processes and lowered groundwater levels.

The project begins approximately six miles upstream of the Murderers Creek confluence with the South Fork John Day River and would involve instream and riparian habitat improvements along approximately 2.5 miles of Murderers Creek, 0.8 miles of Todd Creek, and 0.3 miles of Duncan Creek; Todd and Duncan creeks flow into Murderers Creek in the project area. Primary project elements include the installation of approximately 67 beaver dam analogs (BDAs), 91 post-assisted log structures (PALS), 69 engineered log jams (ELJs), and 147 unanchored trees with rootwads. The project also involves removal of human-made berms that confine Murderers Creek flow, excavation of small pilot channels to increase the frequency and duration of floodplain activation, placement of channel fill to spread water onto the floodplain, and planting and maintenance of native vegetation. Together these elements are intended to provide habitat structure and complexity and raise water surface elevations, reduce water velocities, and increase lateral channel migration and floodplain activation for the benefit of salmonids including MCR steelhead trout.

The key project elements are further described below.

- BDAs and PALS: Approximately 32 BDAs and 60 PALS would be installed within Murderers, Todd, and Duncan creeks and an additional approximately 35 BDAs and 31 PALS would be installed in adjacent wetland or floodplain areas. Stream BDAs consist of untreated wood posts driven into the bottom across the width of the channel, with willow or juniper branches woven between posts and streambed material used to fill any gaps between branches. PALS consist of racking wood and tree branches placed in the channel bottom with wood posts driven into the channel at an angle to wedge the material and prevent buoyancy during high flows.

- ELJs: Approximately 24 channel-spanning log jams would be installed in Murderers and Todd creeks. These would consist of two rootwad trees embedded in the channel bottom parallel to flow and two whole trees placed on top, spanning the channel perpendicular to flow. The structures would be secured with untreated wooden posts driven into the channel bottom and placed crosswise over the trees. Racking wood and tree branches would be woven within the trees and posts to enhance stability, and alluvium would be placed throughout the structure to increase ballast.

  Approximately 25 mid-channel log jams and 20 bank-attached log jams would be installed in Murderers Creek. Mid-channel jams would consist of two whole trees placed in the middle of the channel with rootwads facing upstream, with untreated wood posts driven into the channel bed and placed crosswise over the trees and alluvium placed on top for ballast and to encourage island formation. The bank-attached jams would consist of a single rootwad installed into the bank with the exposed portion on the channel bottom, and a whole tree placed directly on top of the rootwad. Untreated wood posts would be driven into the channel bottom and placed crosswise over the tree for stability.

- Unanchored Large Wood: Approximately 147 whole trees with rootwads would be placed in Murderers and Todd creeks and adjacent floodplain areas to increase dynamic processes. These trees would be placed without anchoring in low-risk areas of the project site. Where placed in the stream, the wood would be placed low in the channel to maximize water contact.

- Artificial Feature Removal, Excavation, and Fill Placement: The project would remove artificial berms along Murderers Creek and one abutment for a former bridge to allow for increased floodplain engagement. Small starter channels would be excavated at several locations to promote floodplain activation and opportunity for development of multi-threaded channels over time. Fill would be placed at strategic locations in and adjacent to Murderers Creek and Todd Creek to help divert water onto the floodplain, expand off-channel wetlands, and encourage multi-threaded channels. Suitable material excavated for the berm removal and starter channel creation would be used for the channel fill and for habitat structure placement. The total earthwork (combined excavation and fill) is estimated to be approximately 2,700 cubic yards, with excavation and fill roughly balanced across the project.
- Vegetation Planting and Maintenance: The project includes seeding and planting native riparian vegetation in disturbed or unvegetated areas along the creeks and in the floodplain. This would include a mix of species suited to the conditions of the area including live willow cuttings and containerized plants that include cottonwood, alder, chokecherries, currant, mock orange, dogwood, and milkweed. Vegetation would be maintained over time, and herbicides would be applied to control invasive vegetation. Depressions in upland areas caused by tree/rootwad extraction for project large wood material would be smoothed and seeded with native grasses.
- Fencing: Seasonal livestock grazing is permitted in upland meadow areas along Murderers Creek in the project area. Approximately 3.1 miles of riparian fence would be expanded to protect the riparian corridor from livestock grazing in the project area and to assist with riparian vegetation establishment and long-term health.
- Juniper Harvest: Trees used for the stream habitat improvements would consist of western juniper harvested from ODFW property within the PWSWA in up to four separate upland areas totaling approximately 49 acres. Two of those locations, which together cover 16 acres, are on hillslopes above Murderers Creek at the upstream end of the stream project area. The other two harvest areas, which together cover 33 acres, are located on hillslopes above South Fork Road approximately 10 and 15 miles north of the stream improvements, between the stream improvements and the town of Dayville (Figures 2 and 3).

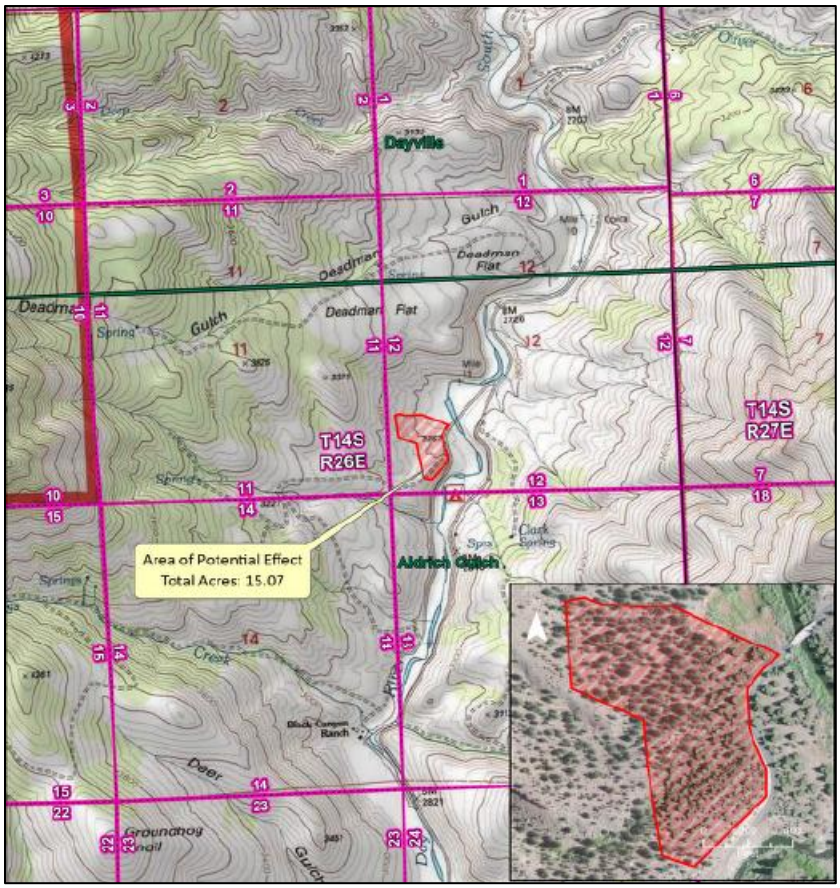

Figure 2. Juniper Harvest Area 10 Miles North of Stream Habitat Improvements.

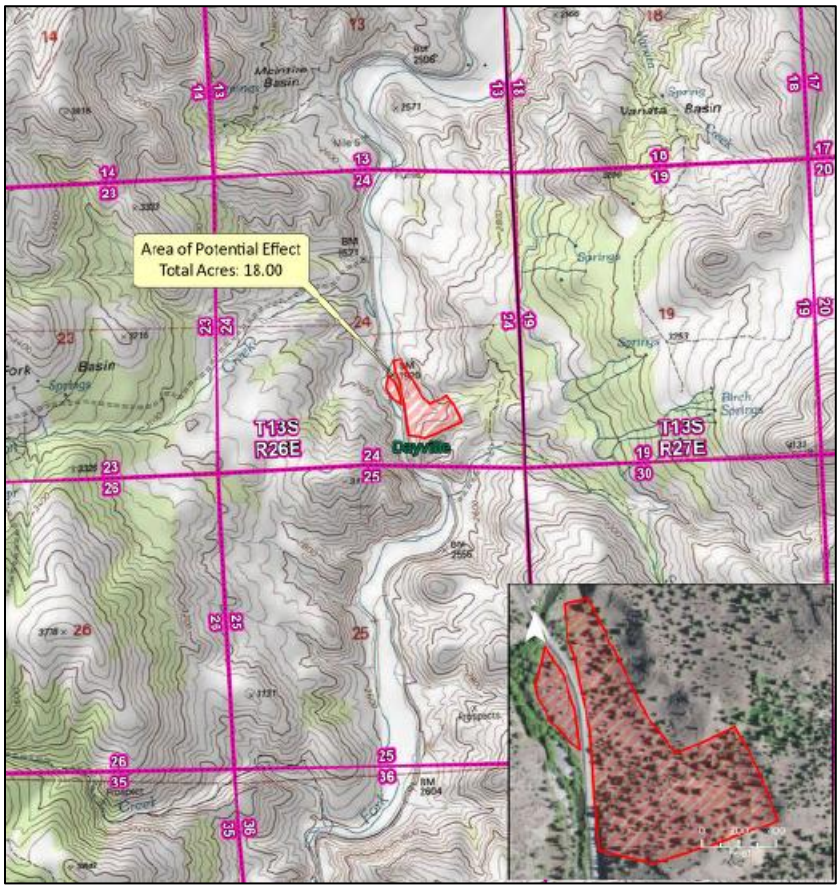

Figure 3. Juniper Harvest Area 15 Miles North of Stream Habitat Improvements.

Construction equipment would likely include excavators, haul trucks, dump trucks, and loaders. Juniper trees harvested for the stream habitat improvements would be removed with rootwads intact using excavators, with ground crews assisting in chainsaw operations. Much of the wood structure installation would be completed with an excavator operating from the bank, with a vibratory compactor attachment used to drive untreated wooden posts used for BDA, PALS, and ELJ support. Fish would be herded from instream work segments prior to in-water disturbance, and block nets would be set up at the upstream and downstream ends of specific work areas to prevent fish from entering those areas while work is occurring. ODFW district fish biologist personnel would be on-site to assist with fish exclusion.

Construction access would largely make use of existing roads and two-track access routes located near the stream habitat improvement and juniper harvest work areas. Equipment crossings of streams would primarily use well-armored existing stream crossings (fenced-off fords) that are used by the public. For one location where use of an existing crossing is not feasible, a temporary crossing with placed cobbles and gravels would be installed prior to use, and the number of crossings would be minimized.

In-water work is scheduled for the ODFW-recommended in-water work window of July 15th – August 31st. Tree harvest for project large wood would occur prior to in-water construction, and site stabilization and planting would be completed after in-stream work is finished, extending into the Fall.

Funding this project would fulfill commitments under the 2020 National Marine Fisheries Service (NMFS) Columbia River System Biological Opinion. This action also supports BPA's ongoing efforts to mitigate for effects of the Federal Columbia River Power System on fish and wildlife in the mainstem Columbia River and its tributaries pursuant to the Pacific Northwest Electric Power Planning and Conservation Act of 1980 (Northwest Power Act) (16 U.S.C. (USC) 839 et seq.).

Environmental Effects

The implementation of this project requires the use of construction crews and equipment which would disturb and displace soil in and along the creeks; remove and damage vegetation; produce noise and emissions from vehicles and equipment; and temporarily increase vehicular traffic and human activity in the project area. Chapter 3 of the Programmatic EA, as summarized in relevant parts below, discusses typical environmental disturbances and impacts stemming from habitat restoration in the Columbia River basin. Below is a description of the potential site-specific impacts of the project and an assessment of whether these impacts are consistent with those described in the Programmatic EA.

1. Fish and Aquatic Species

The effects of using mechanized equipment and working in and along Murderers Creek, Todd Creek, and Duncan Creek are consistent with the analysis in the Programmatic EA, Section 3.3.1 *("Fish and Aquatic Species"*). The Programmatic EA describes overall low impacts to fish and aquatic species after considering moderate short-term adverse effects and beneficial long-term improvements.

Murderers Creek provides spawning and rearing habitat and is designated critical habitat for ESA-listed MCR steelhead trout. Chinook salmon (*Onchorhynchus tshawytscha*) have been observed in lower Murderers Creek and may use the project area for juvenile rearing and migration. Redband trout, lamprey, and freshwater mussels also use the project area streams. BPA completed ESA Section 7 consultation on the effects of the project actions on ESA-listed fish species in its Habitat Improvement Program (HIP) programmatic consultation with NMFS, which found that such actions would likely adversely affect MCR steelhead trout and their designated critical habitat in the short term, but would not be likely to result in jeopardy to the species or result in destruction or adverse modification of their designated critical habitat.

In the short term, the project would expose, displace, reconfigure, or compact earth through the use of mechanized equipment within and along Murderers Creek, Todd Creek, and Duncan Creek, likely causing moderate, temporary sediment discharges. Project actions would be subject to the conservation measures from BPA's HIP programmatic biological opinions, such as installing temporary erosion and sediment controls before starting work, locating equipment fueling areas at least 150 feet from the

creeks, and working during the approved in-water work window to avoid impacts to fish at critical life stages. Though the amount of sediment discharged would temporarily be elevated above background levels, turbidity is expected to be below levels harmful to fish and at durations not anticipated to cause harm as evaluated in Section 3.3.1.2.1 of the Programmatic EA (*"Short-Term Effects to Fish and Aquatic Species from Construction Activities"*).

Some aquatic organisms that are not large enough to be salvaged from instream work areas (e.g., invertebrates) may be killed by excavation, fill placement, and wood habitat structure installations. Fish exclusion from active work areas with the use of herding techniques and block nets may be stressful for individual fish, but it would avoid exposing fish to more harmful effects of in-stream excavation, fill placement, and habitat structure installation. The newly constructed stream environment would be recolonized by fish and other aquatic organisms, with nearly all fish likely returning in a matter of hours to days, and with full returns likely following seasonal flushing flows. The anticipated amount of activity and aquatic species disturbance is consistent with the analysis in Section 3.3.1.2.1 (*"Short-Term Effects to Fish and Aquatic Species from Construction Activities"*). The Programmatic EA disclosed direct, harmful, and sometimes fatal impacts to aquatic species, including displacement of fish from their existing habitat during periods of isolation and from movement, sounds, and vibrations from human and mechanical activity.

Project implementation would have beneficial long-term effects on fish and aquatic species due to the improvements to the creeks' floodplain connections, increased quantity and quality of instream and off-channel habitat, and enhanced riparian vegetation. The beneficial effects are consistent with the analysis in Section 3.3.1.2.2 of the Programmatic EA (*"Effects to Fish and Aquatic Organisms unique to the Categories of Action"*).

2. Water Resources

The effects of the project on water resources are consistent with the analysis in Section 3.3.2 of the Programmatic EA (*"Water Resources"*), which describes overall low water resources impacts after considering moderate short-term adverse effects and beneficial long-term effects.

Construction in Murderers Creek, Todd Creek, and Duncan Creek would occur in the summer during a period of typically low flows. Dewatering is not proposed and flows would be maintained through the project sections of those creeks. Through channel and floodplain grading, excavation of starter channels, and addition of wood structures in the floodplain, the constructed project would increase the frequency and duration of stream flows accessing the floodplain and increase groundwater recharge and groundwater elevations in the floodplain in the long term.

Short-term adverse water quality impacts in the form of elevated suspended sediment and turbidity levels may occur as a result of stream and floodplain grading and wood habitat structure installation. Ground disturbance increases the potential for sediment mobilization when disturbed soils are exposed to precipitation, especially prior to vegetation re-establishment. Such effects are consistent with the analysis in Section 3.3.2.2.2.1 of the Programmatic EA (*"Sedimentation and Turbidity Effects"*). In-water work elements would be constructed with best management practices designed to minimize the severity and duration of temporary water quality impacts in accordance with the conditions of the U.S. Army Corps of Engineers (USACE) Clean Water Act Section 404 Permit (Nationwide Permit 27 for Aquatic Ecosystem Restoration, Enhancement, and Establishment Activities), a 401 Water Quality Certification issued by the Oregon Department of Environmental Quality (DEQ), and a permit issued by the Oregon Department of State Lands (DSL) under Oregon's Removal-Fill Law. An Erosion and Sediment Control Plan (ESCP) for all areas of construction activity would be implemented.

Over the long term, the project would increase floodplain connectivity, promote on-site sediment retention in the floodplain, and support diverse native vegetation establishment, all of which may benefit water quality in Murderers Creek, Todd Creek, and Duncan Creek. Considered together, the overall effects of the project on water resources would be low and consistent with the effects described in the Programmatic EA.

3. Vegetation

The effects of the project on vegetation are consistent with the analysis in Section 3.3.3 of the Programmatic EA (*"Vegetation"*), which describes overall moderate impacts to vegetation after considering moderate short-term adverse effects and highly beneficial long-term effects.

U.S. Fish and Wildlife Service's (USFWS's) Information for Planning and Conservation (IPaC) tool indicates no Federal ESA-listed plant species with ranges known or expected to overlap the project area. There are also no documented occurrences of state-listed plant species in the project area.

Trees with rootwads would be harvested for use in the stream habitat improvements. Tree removal would target western juniper and would occur on ODFW property in upland areas within four separate harvest units totaling approximately 49 acres. Smaller areas of riparian vegetation would be disturbed by grading and trampling from equipment working within and accessing stream and floodplain work areas from the nearby existing access roads. These activities would have moderate short-term impacts on vegetation.

The project includes seeding and planting of native riparian vegetation in disturbed or unvegetated areas along the creeks and in the floodplain. The long-term effects of the project on vegetation would be beneficial, as the improvements to the stream floodplain connections, raising of the water table, increases in fine sediment retention, and vegetation plantings would all support native vegetation establishment and higher vegetative diversity than under the existing conditions. Taken together, the overall effects of the project on vegetation would be moderate and consistent with the effects described in the Programmatic EA.

4. Wetlands and Floodplains

Project activities would have impacts on wetlands and floodplains that are consistent with the analysis in Section 3.3.4 of the Programmatic EA (*"Wetlands and Floodplains"*), which describes low overall impacts to wetlands and floodplains after considering short-term adverse effects and beneficial long-term effects.

By design, some of the proposed construction activities would occur in wetlands and floodplain areas adjacent to Murderers Creek, Todd Creek, and Duncan Creek. Ground disturbance associated with earthwork, wood habitat structure installation, and heavy equipment operation would have short-term negative effects on wetlands, with approximately 0.8 acre of delineated wetlands impacted. The SFJDWC would obtain required permits issued by the USACE under Section 404 of the Clean Water Act (Nationwide Permit 27), a Section 401 Water Quality certification from the Oregon DEQ, and a Removal-Fill Permit from Oregon DSL for construction-related wetland impacts. Construction activities would be managed in accordance with permit conditions to minimize the area and duration of adverse wetland impacts.

The project would have long-term benefits to floodplain functions and wetlands adjacent to Murderers Creek, Todd Creek, and Duncan Creek. The proposed channel fill, floodplain excavation, and habitat structures are intended to raise water levels, slow high flows, and spread water onto the floodplain more frequently and for long durations than current conditions allow. Combined with proposed native vegetation plantings, this should expand and improve wetland functions over time. Considered together, the overall effects of the project on wetlands and floodplains would be low and consistent with the effects described in the Programmatic EA.

5. Wildlife

Potential wildlife impacts of the proposed project are consistent with the analysis in Section 3.3.5 of the Programmatic EA (*"Wildlife"*), which describes overall low impacts to wildlife after considering short-term adverse effects and beneficial long-term effects.

The project area is within the geographic range of the ESA-listed Endangered gray wolf (*Canis lupus*) and is within the ODFW-identified Bear Valley known wolf use area that generally covers much of southwestern Grant County. The project is not within gray wolf designated critical habitat, known denning areas, or areas of documented wolf sightings. While there is potential for gray wolves to be present in the PWSWA, the likelihood of wolves encountering project construction activity is expected to be low, and the project would not involve permanent elements that would negatively impact wolf habitat (e.g., increasing road/trail densities). BPA completed ESA Section 7 consultation on the effects of the project actions on ESA-listed wildlife species in its HIP programmatic consultation with USFWS, which found that such actions may affect but would not likely adversely affect gray wolf.

Oregon state Sensitive species known to be present in the PWSWA include Lewis's woodpecker (*Melanerpes lewis*), which has been observed in riparian areas and juniper and pine forests along the South Fork John Day River. There are no documented occurrences of this species along Murderers Creek in the project area.

In the short-term, construction activity could destroy the habitats of small animals and temporarily displace and deter larger wildlife from using the project area, due to noise and physical and visual disturbance from equipment operation and human activity. Abundant wildlife habitat is present in nearby areas surrounding the project and wildlife would likely re-occupy the site once construction is complete and vegetation in disturbed areas is re-established.

Juniper trees provide habitat structure for birds and small mammals, and that type of structure would be reduced by tree removal in the tree harvest areas. Bird nesting surveys would be performed prior to tree removal within the primary nesting season for migratory birds (April 15 – July 31). Removal of trees with observed nests would be avoided altogether or until after the nesting season has ended and the trees are no longer occupied.

In the long term, the proposed project would expand and improve wildlife habitat conditions in riparian areas through the increased frequency and duration of floodplain activation, the added wood structures, and vegetation plantings, all of which would promote a wider, wetter riparian corridor with increased habitat structure and vegetation diversity. This would benefit wildlife including birds, beaver, and amphibians. The overall effect of the project would be low and consistent with the effects evaluated in the Programmatic EA.

6. Geology and Soils

The effects of the proposed project are consistent with the analysis in Section 3.3.6 of the Programmatic EA (*"Geology and Soils"*), which describes moderate to high short-term effects but low overall effects after accounting for mitigation measures and long-term benefits. Project construction activities – including stream and floodplain grading, habitat structure installation, and tree harvest – would temporarily increase localized soil erosion potential. However, use of erosion and sediment control measures as proposed, including revegetation after construction, would mitigate these impacts.

Long-term improvements to site soil conditions may be expected from the project with the slowing and spreading of high flows onto the floodplain and restoring more natural stream processes. These actions are expected to increase the amount of fine sediment in the floodplain which is expected to help promote more successful establishment of vegetation, including woody riparian vegetation which would support soil stability. Considered together, the overall effects of the project on geology and soils would be low and consistent with the effects described in the Programmatic EA.

7. Transportation

The project's transportation impacts are consistent with the analysis in Section 3.3.7 of the Programmatic EA (*"Transportation"*), which describes low impacts given the temporary nature of any effects on roads. Access to the ODFW property from U.S. Highway 26 at Dayville is via South Fork Road and Murderers Creek Access Road, with two-track roads providing local access to proposed project work areas. Construction vehicles and equipment would access the site and work areas from these roads. No

closure of public roads is anticipated for construction, and any impacts to road traffic as construction equipment is entering or leaving the site would be minor and temporary. The overall effects of the project on transportation would be low and consistent with the effects described in the Programmatic EA.

8. Land Use and Recreation

Impacts to land use and recreation are consistent with the analysis in Section 3.3.8 of the Programmatic EA (*"Land Use and Recreation"*), which concludes that land use practices at underlying project sites would remain unchanged in most cases and that overall effects to land use and recreation would be low to moderate. The project is located on ODFW property within the PWSWA, which is managed by ODFW to provide winter range for mule deer and habitat for many other species, with permitted seasonal livestock grazing in places. It is open to the public for recreational activities including hiking, wildlife viewing, photography, and seasonal hunting.

The project would not change the existing use of the land as an ODFW-managed wildlife area. The proposed habitat improvements are consistent with ODFW goals and objectives for the area, as outlined in the management plan for the PWSWA, which include protecting, enhancing, and restoring high quality instream habitat, water quality and quantity, and riparian/wetland systems for resident and anadromous fish, native wildlife, and desirable non-native fish and wildlife (ODFW PSWSA Plan, 2006; Updated 2017).

The project area is remote and within the interior of the PWSWA, accessible only by primitive roads, and surrounded by land seasonally used for livestock grazing. Construction-related impacts to public recreation, including hiking and sightseeing, would be temporary and are expected to be minor. Murderers Creek, Todd Creek, and Duncan Creek are relatively small water bodies that are not conducive to recreational paddling (e.g., rafting or kayaking), and the installation of the stream habitat structures would not interfere with such uses. Juniper harvest activities at the two sites north of the stream project area would not involve work within the South Fork John Day River or along its banks and would not interfere with river recreational uses there.

Construction activity would be highest during the July 15th – August 31st in-water work window and would not interfere with use of public campgrounds, Fall deer or elk hunting seasons, or fishing opportunities. While recreation would be restricted within areas of active construction, the project would not prevent recreational access to surrounding portions of the PWSWA, including other portions of Murderers Creek upstream and downstream of the project site Considered together, the overall effects of the project on land use and recreation would be low and consistent with the effects described in the Programmatic EA.

9. Visual Resources

The effects of the proposed project on visual resources are consistent with the analysis in Section 3.3.9 of the Programmatic EA (*"Visual Resources"*), which describes the effects on scenic values to be low. Murderers Creek, Todd Creek, and Duncan Creek are not designated as national or state scenic waterways. Recreational users of the PWSWA using the Murderers Creek access road in the project area would be able to see construction vehicles, equipment, and human activity along the river and in its floodplain while construction work is occurring. The visual conditions of the project site after construction would also be temporarily altered, with exposed soils from grading visible after construction is complete. After vegetation is re-established following construction, the project site would have a natural riverine/wetland corridor appearance that would be compatible with the existing site features and visual character of the area. There would be no long-term adverse effects on visual resources.

Tree removal in the harvest units to supply wood for the stream restoration would alter visual conditions by reducing tree coverage in those areas, which currently have a relatively high density of western juniper relative to surrounding areas. The post-harvest landscape would remain generally consistent with the overall setting of the PWSWA, however, which includes a mix of grassland, shrub-

steppe, and forested areas of juniper and pine trees of varying densities. The two tree harvest units located north of the stream improvement area, between the stream work area and Dayville, are on hillslopes within ¼ mile of the South Fork John Day River, which is identified by the State of Oregon as a State Scenic Waterway. Tree removal in those areas would be conducted in accordance with Oregon's Scenic Waterway Rules in coordination with the Oregon Parks and Recreation Department. The overall effect of the project on visual resources would be low and consistent with the effects described in the Programmatic EA.

10. Air Quality, Noise, and Public Health and Safety

The effects of the project are consistent with the analysis in Section 3.3.10 of the Programmatic EA (*"Air Quality, Noise, and Public Health and Safety"*), which describes low impacts to air quality, noise, and public health and safety.

Air quality impacts from dust and exhaust emissions from construction vehicles and equipment would be temporary and localized in nature, with no short- or long-term violations of state air quality standards expected. Construction equipment operation would temporarily elevate noise above background levels during daylight hours while work is occurring. The proposed work areas are not adjacent to sensitive noise receptors such as residential neighborhoods, schools, or hospitals. Adequate signage and other routine safeguards would minimize risks to worker and public safety during construction, and the constructed project would not impact public health or safety over the long-term. Considered together, the overall effects of the project on air quality, noise, and public health and safety would be low and consistent with the effects described in the Programmatic EA.

11. Cultural Resources

The effects of the project on cultural resources are consistent with the analysis in Section 3.3.11 of the Programmatic EA (*"Cultural Resources"*). The Programmatic EA describes low impacts to cultural resources, with any potential effects being amenable to resolution through the Section 106 consultation process under the National Historic Preservation Act.

BPA initiated consultation and determined that the proposed project would have no adverse effect on historic properties on March 18, 2026 (BPA CR Project No. OR 2025 080). The consulting parties included the Confederated Tribes of the Warm Springs Reservation, Confederated Tribes of the Umatilla Indian Reservation, Burns-Paiute Tribe, Oregon State Historic Preservation Office (SHPO), and ODFW. An email reply was received from SHPO on April 3, 2026, indicating receipt of the determination letter and cultural resources survey report (SHPO Case No. 26-1188). Burns-Paiute Tribe replied on April 3, 2026, stating that they disagreed with the eligibility criteria for the sites and noting that sites eligible under Criterion D should also be eligible under Criteria A and B. No further information was supplied, and without connecting the sites to specific events or important persons in the past, they remain eligible under Criterion D until such information is made available. No other responses were received from SHPO or any other consulting parties during the 30-day comment period, which ended on April 17, 2026.

The following stipulations for site protection would be applied during construction:

- Where the existing access road intersects site boundaries, the road would be armored with protective matting within site boundaries, especially in low-lying areas. Equipment would be prohibited from traveling off-road within site boundaries, and construction would be limited to the dry season to prevent rutting. Cultural resources monitoring would occur during the installation of protective matting, and these areas would be monitored periodically during implementation. Low-lying areas that require protective matting would be identified by a professional archaeologist prior to construction.
- All archaeological site boundaries would be flagged prior to project implementation, and a 30-meter buffer established around each site. No ground-disturbing activities would occur within site boundaries or buffers except as outlined in BPA's March 18, 2026, consultation letter to SHPO and Tribes (BPA CR Project No. OR 2025 080).

- Protocols would be in place requiring that, if cultural material is inadvertently encountered during implementation, work must be stopped until the findings can be assessed by BPA in coordination with the appropriate consulting parties.

12. Socioeconomics

The effects of the project are consistent with the analysis in Section 3.3.13 of the Programmatic EA (*"Socioeconomics and Environmental Justice"*), which describes low socioeconomic impacts. The project is located on ODFW land managed as part of the PWSWA, which also includes U.S. Bureau of Land Management land. The PWSWA is surrounded by a mix of private rural properties, Malheur National Forest land to the east, and Ochoco National Forest land to the west. The project would result in small but temporary beneficial socioeconomic impacts by providing work for contract construction workers and increasing spending on food, fuel, lodging, and materials and local businesses. The project would not result in requirements for additional permanent employees or for individuals to leave the local area or relocate within it, nor would it affect housing availability for local populations, displace people, or eliminate residential suitability of any lands. Considered together, the overall effects of the project on socioeconomics would be low and consistent with the effects described in the Programmatic EA.

13. Climate Change

The effects of the project on climate change are consistent with the analysis in Section 3.3.14 of the Programmatic EA (*"Climate Change"*), which describes overall low effects to climate change. Due to the short duration of construction activities and the relatively small number of vehicles and equipment involved, project-related greenhouse gas emissions are expected to be low. The minimal contribution to climate change from construction-related emissions would be offset to some degree by the improvements to floodplain function, including a raised groundwater table, potential increases in carbon sequestration from improved wetland habitat, and potentially decreased stream temperatures from improved riparian vegetation success and groundwater inputs. Considered together, the overall effects of the project on climate change would be low and consistent with the effects described in the Programmatic EA.

Findings

BPA finds that the types of actions and the potential impacts related to the proposed Murderers Creek Phase 2 Habitat Improvement Project are similar to those analyzed in the Columbia River Basin Tributary Habitat Restoration Programmatic EA (DOE/EA-2126) and Finding of No Significant Impact. There are no substantial changes in the EA's Proposed Action and no substantial new circumstances or information about the significance of the adverse effects that bear on the analysis in the EA's Proposed Action or its impacts within the meaning of NEPA and the DOE NEPA Implementing Procedures. Therefore, no further NEPA analysis or documentation is required.

JOHN VLASTELICIA

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Date: 2026.05.14 16:26:18 -07'00'

John Vlastelicia
Environmental Protection Specialist

Concur:

SARAH BIEGEL

Digitally signed by SARAH BIEGEL
Date: 2026.05.14 16:36:19 -07'00'

Sarah T. Biegel
NEPA Compliance Officer