BIOLOGICAL ASSESSMENT

Mount Rainier Fryingpan Creek
Bridge Replacement Project
Sunrise, Pierce County, Washington

February 21, 2023

MOUNT RAINIER NATIONAL PARK

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EXECUTIVE SUMMARY

The purpose of this biological assessment is to identify potential impacts of the proposed Mount Rainier Fryingpan Creek Bridge Improvement Project on: (1) fish and wildlife species and their critical habitats listed under the federal Endangered Species Act (ESA), and (2) fish habitat designated by the Pacific Fisheries Management Council as requiring protection under the Magnuson-Stevens Fishery Conservation and Management Act. Biological assessments are prepared as required under Section 7(c) of the ESA to ensure that any action authorized, funded, or carried out by a federal agency is not likely to jeopardize the continued existence of an endangered or threatened species, or result in the destruction or adverse modification of critical habitat of a protected species.

The National Park Service (NPS), in cooperation with the Federal Highway Administration (FHWA), is proposing to replace the deteriorated Fryingpan Creek Bridge within Mount Rainier National Park (the park) to ensure sustainable vehicular access to the Sunrise area of the park. The 2020 Bridge Inspection Report (FHWA 2020) appraised the Fryingpan Creek Bridge as "seriously deficient or presents a safety hazard but can remain open at reduced loads or with frequent inspections." The NPS is proposing to construct a new bridge approximately 50 feet downstream from the existing bridge to allow for a longer bridge that would span the 100-year floodplain with minimal encroachment. The bridge would be approximately 220-feet long with a waterway opening of 207 feet from face-of-abutment to face-of-abutment on the new alignment. This would make the new bridge approximately 92 feet longer than the existing bridge.

Impacts resulting from the proposed activities that pertain to ESA-listed species include:

- Temporary impacts from noise and vibration resulting from excavation and blasting to install new road alignment and bridge abutments
- Temporary noise impacts resulting from increased human activity and construction equipment
- Temporary increases in turbidity to adjacent wetlands and adjacent Fryingpan Creek resulting from construction activities
- Placement of riprap at the bridge abutments
- Temporary sedimentation during removal of the old bridge structure, including old abutments
- A net increase of total impervious surfaces at the project site (of 0.4 acres), resulting in increased stormwater runoff and potential pollutant loading at adjacent drainages
- Temporary impacts to two wetlands and their associated buffers, including the removal of vegetation and disturbing and trampling of soils, with subsequent mitigation and restoration efforts, such as replanting with native species to reclaim native habitat functions for present wildlife species
- Loss of 0.01 acre of wetland habitat, 0.2 acres of wetland buffer habitat, and 0.2 acres of Fryingpan Creek buffer due to construction of the new road alignment, including the permanent removal of vegetation and construction of impervious surfaces where these habitats currently exist
- Improvement in floodplain and habitat functions with an increased bridge span from 128 feet to 220 feet, accommodating the construction of bridge abutments outside of the Fryingpan Creek floodplain
- Temporary and permanent disturbance to soils and 2.3 acres of vegetation for the construction of the new bridge alignment and expanded parking lot and culvert replacements, including the removal of some large, mature trees

- Temporary and permanent impacts to adjacent streams

This biological assessment analyzes these project impacts and how they would likely affect any ESA-listed species and critical habitat that could potentially be present within the action area of the project.

Information gathered from existing literature, as well as from the U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) databases, indicates that 11 federally listed threatened, endangered, or candidate species may be present within the action area of the Mount Rainier Fryingpan Creek Bridge Replacement Project. Consultation with USFWS and NMFS was conducted during preparation of this document. Table 1 lists these species, their federally listed status, and the effect determination for the project. Table 2 lists critical habitat present in the action area and the effect determination on critical habitat resulting from proposed project, and Table 3 presents the Essential Fish Habitat (EFH) present and the effects determination for each.

Table 1. Species Assessed in this Document, Current Federal Listing Status, and Effect Determination as a Result of the Proposed Project

Common Name	Scientific Name	Federal Status	Effect Determination
Bull trout	*Salvelinus confluentus*	Threatened	May affect, likely to adversely affect
Steelhead trout (Puget Sound DPS)	*Oncorhynchus mykiss*	Threatened	May affect, likely to adversely affect
Chinook salmon (Puget Sound ESU)	*Oncorhynchus tshawytscha*	Threatened	May affect, likely to adversely affect
Northern spotted owl	*Strix occidentalis caurina*	Threatened	May affect, not likely to adversely affect
Marbled murrelet	*Brachyramphus marmoratus*	Threatened	May affect, not likely to adversely affect
Yellow-billed cuckoo (Western DPS)	*Coccyzus americanus*	Threatened	No effect
Mount Rainier white-tailed ptarmigan	*Lagopus leucura rainierensis*	Proposed Threatened	No jeopardy; No effect
Gray wolf (Western DPS)	*Canis lupus*	Endangered	May affect, not likely to adversely affect
North American wolverine	*Gulo gulo luscus*	Proposed Threatened	No jeopardy; May affect, not likely to adversely affect
Monarch Butterfly	*Danaus plexippus*	Candidate	No effect
Whitebark Pine	*Pinus albicaulis*	Threatened	No effect

DPS = Distinct Population Segment
ESU = Evolutionarily Significant Unit

Table 2. Effect Determinations as a Result of the Proposed Project for Critical Habitat of ESA-listed Species Assessed in this Document.

Common Name	Effect Determination
Bull trout	May affect, likely to adversely affect
Steelhead trout (Puget Sound DPS)	May affect, not likely to adversely affect
Chinook salmon (Puget Sound ESU)	May affect, not likely to adversely affect
Northern spotted owl	No effect
Marbled murrelet	No effect
Yellow-billed cuckoo (Western DPS)	No effect
Gray wolf (Western DPS)	No effect
Mount Rainier white-tailed ptarmigan	None designated
North American wolverine	None designated
Monarch butterfly	None designated
Whitebark pine	None designated

DPS = Distinct Population Segment
ESU = Evolutionarily Significant Unit

Table 3. Essential Fish Habitat (EFH) Assessed in this Document are Species of Fishes with Designated EFH in the Action Area

Common Name	Effect Determination
Chinook salmon (Puget Sound ESU)	May adversely affect
Coho salmon	May adversely affect
Pink salmon	May adversely affect

ESU = Evolutionarily Significant Unit

1. INTRODUCTION

The Endangered Species Act (ESA) makes it illegal for any authority, agency, or private individual subject to the jurisdiction of the United States to "take" or "harm" any species of fish or wildlife that is listed as threatened or endangered without specific authorization. "Take" is defined under the ESA as "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct." "Harm" is defined as "an act that actually kills or injures a protected species." Harm can arise from significant habitat modification or degradation where it kills or injures protected species by significantly impairing essential behavioral patterns, including breeding, spawning, rearing, migrating, feeding, or sheltering.

Section 7 of the ESA requires federal agencies to ensure that their actions do not jeopardize the continued existence of an endangered or threatened species or their critical habitats. Federal actions include providing funding for a project or issuing various types of permits. To initiate review of a project or action, an agency, or its representative, requests a list of endangered or threatened species from the U.S. Fish and Wildlife Service (USFWS) and the National Oceanic and Atmospheric Administration Fisheries (NOAA Fisheries, formerly National Marine Fisheries Service [NMFS]). If a listed species is known to occur in the project vicinity, the lead agency, or its designee, must complete a Biological Assessment (BA) describing how a proposed action would affect the species. If the BA determines that a listed species is likely to be harmed by the proposed action, the proponent must enter into formal consultation with USFWS and NOAA Fisheries to ensure that its actions will conserve the species and its critical habitats.

The Federal Highway Administration (FHWA) identified in an August 2020 bridge inspection that the steel deck arch bridge, discussed herein as the Fryingpan Creek Bridge, is in fair to poor condition. Serious deficiencies and safety hazards were identified in the inspection, but the bridge can remain open with more frequent inspections or at reduced loads. Based on the results of the inspection, the bridge is in need of replacement or repairs.

The National Park Service (NPS) along with FHWA have prepared an environmental assessment as part of the National Environmental Policy Act compliance requirements. More detail and documentation on the project purpose, need, proposed action, and review of project alternatives may be viewed in the environmental assessment (NPS 2023).

This project involves work within or near numerous sensitive areas including Fryingpan Creek, the presence of ESA-listed species and their habitat, wetlands and their buffers, and adjacent mature upland forest. This report serves to document baseline environmental conditions and the likelihood of presence of ESA-listed species and/or their associated critical habitats. This report also outlines the potential impacts of the proposed activities, as they pertain to ESA-listed species, and the effect determinations of how these impacts are expected to affect ESA-listed species.

Information regarding the potential occurrence of listed and proposed listed species and critical habitat, and which species need to be addressed in the BA, was obtained from the USFWS (2023; see Appendix B), and the NOAA Fisheries (2016, see Appendix B). These species are discussed further below. This BA addresses the occurrence of these species within the action area (see Section 2.4 for clarification on action area), the presence or absence of their habitat, the presence or absence of designated critical habitat, and the potential for effects of the proposed development on these species or habitats.

The analysis in this BA is based on review of pertinent background literature and best professional judgment and experience. Information was also obtained from the Priority Habitats and Species (PHS; WDFW 2022a) and SalmonScape (WDFW 2022b) databases maintained by the Washington Department of Fish and Wildlife.

1.1 CONSULTATION HISTORY

Prior to preparing this BA, a list of federally listed threatened, endangered, candidate, and proposed species potentially occurring in the action area was obtained from the USFWS using the Information, Planning, and Conservation System (IPAC) website (USFWS 2023). Informal consultations have occurred with the USFWS throughout the Fryingpan Creek Bridge project. Coordination between USFWS and the project team occurred during a July 15, 2022 site visit, through several phone calls, and also on September 15, 2022. Discussion around action area determinations and anticipated construction activities and their seasonality/work window and potential impacts were all included in these meetings.

2. PROJECT INFORMATION

2.1 PROJECT LOCATION

Fryingpan Creek Bridge is located approximately four miles west of the White River entrance area in Mount Rainier National Park (Figure 1). It is part of Sunrise Road, crossing Fryingpan Creek approximately 2,000 feet southwest of the confluence of Fryingpan Creek with the White River (Fryingpan Creek River Mile 0.4).

2.2 PROJECT DESCRIPTION

There are three alternatives for the management of the Fryingpan Creek Bridge: the no-action alternative, alternative B/proposed action, "new bridge on a new alignment downstream of the existing bridge," and alternative C, "new bridge on the existing alignment with a wider bridge and longer span." Alternative B, or the "new bridge on a new alignment downstream of the existing bridge" is the proposed action , and the alternative analyzed in this document. For more information regarding the various alternatives considered for construction and their impacts see the environmental assessment (NPS 2023).

The project area would encompass all activities associated with this project. The project area is an approximately 7.5-acre area along Sunrise Road East surrounding the bridge and includes the roadway, associated infrastructure and appurtenances (parking, signage, drainage, bridge, etc.), as well as portions of undeveloped areas, such as Fryingpan Creek and the surrounding forest (Figure 2). The developed portions with the project area generally consist of the road, parking, bridge infrastructure, trails, and roadside drainage swales, catch basins and culverts. The vegetated areas within the project area are described in detail throughout this report but primarily consist of sub-alpine and riparian forested conditions. The project area is a separate area of analysis from the action area, which encompass the area of all direct and indirect effects of the proposed action. The action area is further discussed in this document in Section 2.4.

Overall, the project area ranges in approximate elevation from 3,800 to 3,900 feet located within the forested zones just below the lower limits of the sub-alpine zone in the West Cascades ecoregion.

Construction activities for the proposed action would be completed in three phases — preconstruction phase (which includes geotechnical investigations and tree clearing), construction phase (which includes bridge construction, existing bridge removal, roadway construction, parking area construction), and the post-construction phase (which includes restoration and revegetation of disturbed areas). See table 5 for proposed sequence of construction activities for this project. After the pre-construction activities are complete, it is anticipated that the proposed action would require two to three construction seasons to complete. The construction season for this area would occur during snow-free periods (spring, summer, and fall). Uncontrollable or unpredictable events, such as early fall snowstorms or unusually deep snowpacks in the spring, could shorten the construction season, which may result in a longer overall construction period for the project. Sunrise Road is generally open from late-May to mid-October, but this timing varies year-to-year based on snow conditions. The maximum estimated total number of construction days is 320 days over 4-5 seasons (June-September) depending on the approved in-water work window. The proposed in-water work window is June 15 – August 15. For a 4-season project, the total in-water work days estimated are 120-180 days total over 3 seasons. Note the first season is estimated to be limited to upland work (tree clearing) with no in-water work proposed.

The proposed action is to construct a new longer permanent bridge approximately 50 feet downstream from the existing bridge (Figure 3). The bridge would be approximately 220 feet long with a waterway opening of 207 feet from face-of-abutment to face-of-abutment on the new alignment, allowing the bridge to span the 100-year floodplain. The new longer bridge and abutment locations would expand the channel

migration zone and floodplain under the bridge crossing, which is currently constricted by the existing abutments. Construction activities to access, excavate, install, and remove existing and new bridge components would encroach into the active waterway. The flow of Fryingpan Creek is measured by FHWA using design storm events. Fryingpan Creek design storm events are as follows: 2 year = 589 CFS, 50 year = 1,350 CFS, 100 year =1,730 CFS, 500 year = 2,180 CFS.

The new bridge would be a single-span bridge constructed of steel and concrete with stone facing on portions of the bridge abutments. It would be 33-feet-wide and have two 10-foot travel lanes with 2-foot-wide shoulders on each side. There would be one 5-foot-wide pedestrian sidewalk on the south (upstream) side with a 9-inch stone curb. This design would comply with Architectural Barriers Act (ABA) requirements for sidewalks. Railings would be installed on both sides of the bridge. The railing would be steel and would be designed for visibility through the railing for drivers and pedestrians.

The stone facing on the abutments of the existing bridge would be salvaged for the construction of stone masonry features on the new permanent bridge. On the new bridge, the walls extending from the end of the bridge along the road would be stone veneer. If there is not enough salvaged stone, then the top and inside of the walls would be veneer and the outside walls would be finished with form-lined concrete. The wing walls below the driving surface of the bridge would be form-lined concrete. The molds for the form-lined concrete would be shaped from the existing bridge to resemble the existing stone veneer. The bridge would be designed to ensure compatibility with the Mount Rainier National Historic Landmark District (NHLD) to the greatest extent practicable.

Stone riprap would be placed at the base of the new bridge abutments to protect the abutments from scour and erosion. Although the proposed bridge length would allow for the bridge abutments to be placed completely outside the floodplain and the active Fryingpan Creek channel, the riprap would be placed adjacent to the channel for scour protection. Woody debris may be placed downstream of the riprap to reduce the energy of the flow and provide protection of the channel banks while also providing improved aquatic habitat within Fryingpan Creek.

Abutment construction and existing abutment removal will occur below the ordinary high-water mark (OHWM). All work occurring below ordinary OHWM will occur in work zone isolation areas. Depending on the velocity and depth of waterway flows, the methods usually can involve the installation of sandbags, possibly jersey barriers, fish capture and relocation (completed by the Park biologists as described in this document), and the pumping of water to upland areas to keep the area dry. Although equipment will be below the OHWM, none of the equipment will be in active running waters. No permanent structures (proposed abutments or rip-rap) will be placed below OHWM in Fryingpan Creek. All impacts below OHWM are temporary.

These temporary impacts are as follows:

1. Abutment Construction
    a. The workplace isolation methods for abutment construction (sand bags, concrete barriers) are estimated to impact an area of approximately 92 square yards (sy).
    b. The area to be isolated is estimated to be 228 sy.
    c. Temporary pilings will be installed below the OHWM to support temporary work platforms. Only the piles will be below OHWM. The support platforms are above the OHWM. The temporary piling will require the removal of an estimated total of 30 cubic yards (cy) of streambed material and soil from 2 locations and the installation of an estimated total of 30 cy of concrete at two locations.
    d. The temporary pilings will be removed when no longer needed and the holes backfilled and reclaimed with conserved streambed material.

e. The workplace isolation measures will be installed and removed during the in-water work window every year as needed. They will not remain over the winter.

2. Existing Abutment Removal
   It is anticipated that the workplace isolation methods will be like those implemented for the new abutment construction. Areas of impact are unknown at that time as FHWA is presently working through the anticipated abutment removal process. The workplace isolation measures will be installed and removed during the in-water work window each year as needed. They will not remain over the winter.

Building a new bridge slightly downstream would require changing the historic alignment of Sunrise Road at the east and west approaches to the bridge; however, the realigned portion of the roadway would be designed to blend into the existing roadway. Historic roadside rock barriers would be moved during construction and placed along the new road alignment when construction is complete.

The existing roadside parking area would be eliminated during the construction of the new alignment. A new trailhead parking area would be established on the west side of the bridge to provide consolidated parking that replaces existing parking. The new parking area would use part of the current road alignment and would also expand into the adjacent forest. The new parking area would be separated from the roadway, provide ABA-accessible sidewalks and parking spaces, and between 15 to 40 designated parking spaces. The new parking area would improve safety by removing parking spaces that require backing into the road and pedestrians would not need to cross the road to access the bridge or trailhead from the parking lot. The final design may be modified to avoid or minimize impacts to park resources and to meet budget requirements. Informal parking along the roadway on the west side of the bridge would be eliminated. A retaining wall and an ABA-accessible sidewalk would surround the parking area. Other proposed improvements in this area include installing a restroom facility or vault toilet adjacent to the parking area and placing additional interpretive signs at the trailhead. On the east side of the bridge, a few parallel parking spaces would also be provided.

2.2.1 Construction Activities

2.2.1.1 Preconstruction Phase

Preconstruction work is planned to occur over two fall seasons. Geotechnical investigations (subsurface drilling) at the new alignment location would be done during the first season to obtain information on soil properties to refine the bridge abutment and retaining wall locations. The geotechnical investigation work would take approximately 10 weeks and would be scheduled between September (after Labor Day) and November. No more than 16 boreholes would be needed, eight on each side of the creek for the abutments. The total borehole depths are not known at this time but would not exceed 160 feet. Up to four additional boreholes would be needed in the proposed parking area. Sediment and erosion controls would be installed prior to the start of the geotechnical investigations. To provide a passable trail to the boring locations, a path would be cleared for the drill rig by removing vegetation and leveling uneven ground using a backhoe, tracked excavator, or a bulldozer. After the investigation is complete, the area would be stabilized by re-contouring, and as appropriate, mulching and/or seed-broadcasting the disturbed areas to prevent erosion. (Note, a more robust revegetation effort would be conducted after all construction activities are completed. See Section 2.2.1.3 below.)

During the second year, any remaining trees within the 2.3-acre clearing limits that were not removed for the geotechnical investigations would be removed between October 1 and March 14 (outside of the nesting season for northern spotted owl (*Strix occidentalis caurina*), marbled murrelet (*Brachyramphus marmoratus*), and migratory birds) to prepare for construction, which would begin the following spring.

Tree clearing would be limited to what is required to implement the project. Retention of forested habitat is a key objective of the park for ecological as well as historic landscape purposes. Tree clearing would occur in a closed canopy forest with a fair number of younger trees occurring in high density low understory cover in many areas. No more than 925 trees total would be removed. This would include approximately 922 living trees, of which an estimated 72 trees would be between 18- and 40-inches diameter at breast height (DBH), up to six would be greater than 40 inches DBH, and two additional dead trees that are between 18 and 40 inches DBH would be removed. Park crews counted all trees greater than 1" DBH and characterized them as being either <18", 18-40", >40" DBH. The tree counts were based on initial field inventory, summarized to a per acre density and extrapolated to the full project area to provide an estimate of the number and size of trees to be removed. Any hazard trees identified during construction would be removed following park management plans. Tree removal will be limited to what is necessary to implement the project and retention of native vegetation and mature trees will remain a priority.

In total the project proposes:

- 2.3 acres of vegetation clearing
- 0.6 acres of permanent vegetation removal (new impervious surface)
- 1.7 acres of temporary vegetation removal (revegetation)
- 0.2 acres of new vegetation (converted from roadway obliteration areas)
- 0.4 acres of net permanent impact

The 0.6 acres of permanent impacts include 0.4 acres of coniferous forest, 0.1 acres of roadside ditch vegetation, and 0.1 acres of steep shrubland. The 1.7 acres of temporary impacts include 1.3 acres of coniferous forest, 0.3 acres of roadside ditch vegetation, and 0.1 acre of steep shrubland.

2.2.1.2 Construction Phase

This project would require extensive in-water work. The proposed in-water work window is June 15 to August 15. Consultation with the agencies will determine this in-water work window to help avoid impacts to listed species that potentially occur within the project action area. The in-water work would drive the schedule of the proposed project. If the in-water work window is shortened (less than 8 weeks), it increases the likelihood that additional construction seasons may be needed to complete the project, which would result in more overall impacts to listed species.

Bridge Construction

During construction of the new bridge and roadway alignment, the existing Fryingpan Creek Bridge would be retained to allow for continued visitor and staff access to the Sunrise area; however, once construction of the new bridge is complete, the existing bridge and roadway would be removed and the disturbed area rehabilitated.

The construction of the new bridge would begin in the spring following completion of preconstruction activities. The bridge construction would include site preparation, construction of temporary supports for the new bridge, abutment construction, installation of steel girders, and bridge deck construction.

Site preparation would include installing additional sediment and erosion controls, staking the limits of the project area, and earthwork to remove remaining vegetation (shrubs and herbaceous vegetation) and bedrock. Following the site preparation, equipment and materials would be moved into designated staging areas, and traffic control mechanisms would be set up.

The existing Summerland Trailhead parking area, a gravel pullout just east of the NPS maintenance yard entrance, and one lane of Sunrise Road within the project area would be used for equipment staging areas and closed to public access. Additional paved or graveled roadside pullouts may be used for staging areas, as necessary and subject to park approval. These additional staging areas would not occur at other trailheads (except for Summerland Trailhead). Access to the Summerland Trailhead, which provides access to the spur trail to the Wonderland Trail from the Fryingpan Creek Bridge parking area, would be closed during bridge construction. Visitors would be directed to alternate trail access points to avoid the active construction area. The closest alternate access to the Wonderland Trail is the roadside access on Sunrise Road approximately 0.75 mile to the northwest from the Summerland Trailhead.

One lane of Sunrise Road would remain open during bridge construction via the existing roadway. Traffic delays of 20 to 30 minutes would be necessary during construction to accommodate one-way traffic. Short-term closures may be needed at additional times for site safety, including during the setting of bridge girders and blasting activity, if required. Temporary road closures for rock blasting are anticipated to be from a half an hour up to one hour in duration, two times per day, for a total of up to ten days. Additional closures may be authorized during the shoulder seasons (before Memorial Day and after Labor Day) if needed to minimize the overall number of years for project construction. If these closures are implemented, the park would inform the public and concessioners of delays and closures through various means and media.

Blasting may be required due to shallow bedrock in the project area. Heavy equipment would be used to excavate and remove the bedrock to the maximum extent practicable, but whatever cannot be completed with these methods would require blasting. The need for blasting would be determined based on results of geotechnical investigations; blasting would be minimized to the extent possible. It is anticipated that blasting would be primarily in the vicinity of the new bridge abutments and parking area expansion but could include other portions of the project area. Blasting would occur during early earthwork to access the bridge footings; therefore, it is likely that the blasting would occur in the first 30 days of earthwork.

Timing is dependent on when project construction begins, but blasting work would be timed to occur within the designated in-water work window, from July 15 to August 15; however, an extended work window will likely be required and is being requested for the proposed project activities (June 15 to August 15). Approximately two blasts per day are anticipated, for a total of up to ten blasts (this number would be further refined based on the results of the geotechnical investigations). Blasting would not occur in-water; however, some debris may be dislodged adjacent to Fryingpan Creek and may inadvertently fall into the water. To reduce impacts, blast mats would be laid over the top of the shot to prevent flyrock and other debris and disperse some of the sound from the blast.

Any construction activities proposed below the ordinary high-water mark (OHWM) (referred to as "in-water work") of Fryingpan Creek would take place in work zone isolation areas. The OHWM is the line present on the shore established by the presence and action of water where the characteristics (e.g., soil, vegetation, presence of litter/debris) are visibly different from those of the upland area beyond it.

Temporary isolation work zones would be required to install piles to support temporary work platforms for bridge construction. Two work zones would be isolated with supersacks (heavy-duty bulk bags that would be placed to create a berm, see photograph to the right) and dewatered. A grouping of four temporary steel piles would be installed (via impact hammer) for each work zone. Once the above-water structure is constructed, the supersack berms would be removed and water would resume flowing around the piles throughout construction. This process would be repeated to deconstruct the platforms and remove the piles by crane.

Temporary isolation work zones would also be required for bridge abutment construction and demolition. To create a dewatered isolation work zone, a diversion berm would be constructed in the water around the

proposed work sites using supersacks or a cofferdam placed via an excavator or similar heavy equipment. All diversion berms would be installed at the beginning of the in-water work window, as established through ESA Section 7 consultations to minimize impacts on affected species and removed before the in-water work window ends each season.

The isolation zones would then be reinstalled again before construction begins. This would occur each year until construction is complete. At the end of the in-water work window, all equipment would be removed from the creek, and the diversion berms would be carefully disassembled. During berm removal, the work zones would be slowly rewatered and monitored to prevent sediment discharge. The only items to remain through the winter between construction seasons would be the bridge supports. Each temporary isolation work zone may require up to four creek crossings with tracked equipment (excavator or similar) before being dewatered.

Fish will be removed from work exclusion areas prior to dewatering or as it is slowly dewatered with methods such as hand or dip-nets, seining, or trapping, consistent with measures identified through the ESA Section 7 consultation process. Fish capture would be conducted by or supervised by a qualified fisheries biologist with experience in work area isolation and competent to ensure the safe handling of all fish. Fish capture activities would be completed during periods of the day with the coolest air and water temperatures possible, normally early in the morning to minimize stress and injury of species present. Staff would install block nets above and below the project area and would conduct fish removal with seine and kick nets first, and then electrofishing only if necessary. Use of electrofishing would be conducted in a manner consistent with the NOAA Guidelines for Electrofishing Waters Containing Salmonids Listed Under the Endangered Species Act. Electrofishing would not be conducted if naturally occurring high turbidity limits the visibility of fish. Use of electrofishing would start at a low voltage to push fish out of the project area rather than trying to immobilize them. Low level electrofishing of the work area following dewatering would occur in areas with low turbidity, such as small pools or areas where fish removal with a net is not possible. Electrofishing would be discontinued immediately if fish are killed or injured. Machine settings would be checked and adjusted for water temperature and conductivity as needed. If buckets are used to transport fish, staff would minimize the time fish are in a transport bucket. Buckets would be kept in shaded areas or covered with a canopy. Staff would limit the number of fish within a bucket and would ensure that fish are of a comparable size to minimize potential for predation. Aerators may be used, or water would be replaced in the buckets at least every 15 minutes with cold clear water. Staff would release fish in an area upstream with adequate cover and flow refuge. Downstream release may also occur if provided it is outside of the area influenced by construction activities. Water from within the isolation zone would be pumped and discharged to an upland location for infiltration to prevent turbid water from entering Fryingpan Creek. At no time will work zone isolation areas extend across the entire width of Fryingpan Creek.

Prior to the construction of the new bridge abutments, shoring (temporarily propping up) of the existing bridge may be required during excavation and construction. Shoring would keep the existing bridge stable and allow it to remain open to traffic during construction. Constructing new deeper foundation and bridge abutments (2 to 4 drilled shafts per abutment), placing concrete pile caps on top of drilled shafts, installing geotextile and riprap at base of abutments for scour protection, and demolishing the existing bridge foundations/abutments would occur within the isolation work zones. Upon completion of the abutments, the steel girders would be erected, and the bridge deck constructed.

Fryingpan Creek would flow in its channel around the work zones during construction to allow for aquatic organism passage and turbidity would be monitored. Work would be stopped if the turbidity exceeds the limits set by permitting requirements. Upon completion of the new bridge, the area around the new abutments would be rewatered and the water diversions would be removed. All work in the channel, including water diversion removal, would occur during the in-water work window (June 15 – August 15).

Roadway Construction Phase

Roadway construction would include replacing the culverts, placing and compacting the road base, asphalt paving, line striping, and sign installation.

Within the project area, there are five culverts located along Sunrise Road that convey water under the road. These culverts would be replaced with larger culverts during roadway construction to improve site drainage. The culvert west of Fryingpan Creek is a stream-bearing feature and must be replaced during the project's established in-water work window. The remaining culverts are cross culverts (carrying stormwater drainage only) and can be replaced at any time during construction. Although these five culverts are not fish bearing, they could provide aquatic organism passage. Because of this, exclusion and trapping would be conducted per state and federal guidelines, as applicable. With the exception of the work timing restrictions and aquatic species protections, culvert replacement would generally be the same for the five culverts in the project area. If flowing water is present, the culvert would be isolated and dewatered. This would require the installation of sandbag berms placed by hand or with the aid of tracked construction equipment operating from outside the stream. Sandbags would be filled with streambed/bank material from the work zone to limit the potential introduction or spread of invasive plants from outside sources, and then restored to its original location post-construction. One culvert (Culvert D at Road Station 15+65) requires replacement to provide aquatic organism passage, the other culverts are ditch relief culverts that are currently 18" diameter and will be replaced with 24" diameter culverts.

Once the berms are installed and the park has performed aquatic species trapping/relocation (if needed), the work zone would be dewatered and water from within the isolation zone would be pumped and discharged to an upland location for infiltration to prevent turbid water from entering the waterway. If flowing water is present, turbidity would be monitored. The asphalt would then be cut (if needed), the old culvert excavated and removed, and the new culvert installed. The historic headwalls associated with the culverts would be modified in accordance with the *Secretary of the Interior's Standards for Treatment of Historic Properties* to accommodate the larger culverts and maintained or rebuilt to preserve these contributing elements to the historic Sunrise Road. The repair of culvert headwalls would be in kind and include repointing and resetting of stone, as needed. Repointing and resetting the stone would consist of relaying the original stone and completing masonry work, matching color, joint width, and orientation. Once work below the OHWM is complete in each location, the isolation work zones would be disassembled and slowly rewatered and monitored to prevent sediment discharge.

Approximately 930 feet of the existing curvilinear arrangement of the roadway would be realigned (340 feet on the east approach and 590 feet on the west approach). The roadway construction activities would include construction of supporting walls and slope stabilization, grubbing and grading the road corridor, placement of base materials for the road surface, road paving, and installation of guard walls. The project includes new asphalt surface matching the existing pavement width. Existing asphalt pavement and base material would be removed by a cold milling process, followed by sweeping. A course of recycled aggregate base using asphalt concrete pavement millings and recycled aggregate from the existing pavement structure would be placed and then compacted with a vibratory or compression roller. Asphalt concrete mix would be applied in lifts using typical paving equipment and rollers. The aggregate base would be improved where needed to allow for better roadway performance. The final steps would include striping the road lanes and installing signs.

After the new alignment is constructed, the old roadway approaches would be obliterated. Asphalt and other materials would be properly disposed of outside the park. This area would be recontoured and restored to match native ground to the extent practicable.

Existing Bridge Removal

After the new bridge and road alignment construction are completed, isolation work zones and debris containment zones would be established around the existing bridge abutments. It is estimated that the existing stone on the bridge is approximately two feet thick. Prior to removal of the stone, shoring of the existing abutment may be required to ensure that the abutment remains stable during stone removal. The existing bridge, including the steel and masonry, would be dismantled and material would be recycled or reused to the extent practicable. Excavation would be needed below the existing footings to remove the abutment. The holes in the stream would be backfilled and the area restored with naturally occurring stream material. The isolation work zones would be removed upon completion of the bridge removal. Water diversion would be removed, and the work zone rewatered. All work in the channel, including water diversion removal, would occur during the in-water work window (June 15-August 15).

Trailhead Parking Area Construction

The new parking area construction would be similar to the roadway construction. Following any required blasting, the area for the new parking would be grubbed and graded. Supporting walls and stabilizing slopes would be constructed, as appropriate to control runoff and erosion. A base material would be laid for the parking area surface. The guard walls guard rails, drainage, concrete curb, and sidewalks would be installed. The parking area would then be paved and striped, and signs installed. The parking area construction would also include work to install an accessible toilet facility and interpretive signs or seating areas, pending the final design. This work may be completed in phases based on site constraints and funding availability.

2.2.1.3 Post-Construction Activities Phase

After construction, disturbed areas would be restored and revegetated. The disturbed areas would be revegetated using native materials and appropriate techniques. Boulders or other structures would be placed to prevent parking outside of designated parking areas. These boulders would be placed in similar locations and would have a similar look to the historic boulder alignments along the Sunrise Road corridor.

2.3 CONSERVATION MEASURES

The proposed project (Figure 3) incorporates a number of design features that would avoid, limit, or mitigate impacts to the wetlands and wetland buffers, stream channels, forested habitats, turbidity and noise impacts to fish and wildlife species with suitable habitat present within or adjacent to the area.

The following measures would be incorporated into the project to minimize or avoid impacts to streams, fish, wildlife, and associated habitats:

General

- To minimize the amount of ground disturbance, staging and stockpiling areas would be located in previously disturbed sites, including the roadway and gravel pullouts, away from visitor use areas to the extent possible. Staging and stockpiling areas would be restored to pre-construction conditions following construction.
- Construction zones would be identified and fenced with construction fencing or similar material prior to any construction activity. The fencing would define the construction zone and confine activity to the minimum area required for construction. All protection measures identified in this document would be clearly stated in the construction plan specifications and workers would be instructed to avoid conducting activities beyond the construction zone as defined by the construction zone fencing.

- Construction activities would be limited to daytime hours.
- Fugitive dust generated by construction would be controlled by spraying water on the construction site, if necessary. Vehicle speed on unpaved roads would be limited to further reduce the generation of fugitive dust.
- To reduce air pollution and noise, construction equipment and vehicles would be well-maintained and properly functioning and equipment idling would be limited to only what is necessary for safety and/or mechanical reasons. Equipment and vehicles would also be checked for leaking oil and fluids.
- Confinement techniques (e.g., temporary containment barriers, debris shields) would be used during the removal of the existing bridge and portions of the existing road to prevent construction debris (including lead-based paint) from entering Fryingpan Creek and the surrounding environment.
- At the end of each day, the active construction zone would be left in a state that minimizes the obstruction of wildlife movement through the area (i.e., covering holes) and avoids unintentionally attracting wildlife.
- The parking area and surrounding areas would be designed to minimize small wildlife entrapment. Design elements could include a wall design that directs small wildlife away from the parking area and towards the ditch and/or culvert that would contain small openings, or the bottom of a barrier wall that will allow for the passage of wildlife.
- Based on results of geotechnical investigations, any necessary blasting would be minimized to the extent possible to meet project objectives for the site-specific conditions.
- Blasting would not occur in-water; however, to reduce impacts from flyrock that might move towards the water, blast mats would be laid over the top of the shot to prevent flyrock and disperse some of the sound from the blast.

Floodplains and Wetlands

- Wetlands would be avoided to the extent possible. Silt fencing would be installed around wetlands prior to construction to minimize impacts on wetland soils and vegetation from heavy equipment.
- Erosion and stormwater runoff would be mitigated through measures such as sediment traps, silt fences, and regular inspection of construction areas for erosion.
- A construction spill prevention, control, and countermeasures plan would be developed and implemented.
- Heavy equipment hydraulic fluid lines would be filled with biodegradable hydraulic oil alternatives.
- Equipment stationed in the dewatered work zones that cannot be readily relocated (i.e., pumps and generators) would be kept in place and refueled or serviced within a secondary containment system. All other equipment must be removed and serviced in a designated, protected area to reduce threats to water quality from vehicle fluid spills. Designated areas would not directly connect to groundwater, surface water, or the storm drain system. The service area would be designated with berms, sandbags, or other barriers. Secondary containment, such as a drain pan, to catch spills or leaks would be used when removing or changing fluids. Fluids would be stored in appropriate containers with covers and properly recycled or disposed of offsite.

- No fuel storage containers would be allowed on the project site. Fuel would be delivered to the site only in pick-up trucks designed for fuel hauling, but it would not be otherwise stored on site.
- Since the culverts to be replaced are in intermittent streams and ditches, culvert construction work would occur when these features are not watered, if possible, to minimize impacts on water quality.
- Once the berms for an isolated work zone are installed, the work zone would be dewatered. The water would be pumped and discharged to an upland location for infiltration to prevent turbid water from entering the waterway. The pump intake would be screened with mesh sized to prevent unintended intake of fish at any life stage.
- Turbidity would be monitored during in-water work. Work would be stopped if the turbidity exceeds the limits set by permitting requirements.
- All work in Fryingpan Creek, including water diversion removal, would occur during the in-water work window.

Vegetation

- Existing vegetation would be retained to the extent possible. Vegetation outside of the areas that will become impervious surfaces (road and parking areas) will be retained to the greatest extent practicable. Removal of specimen trees — those that are a focal point of the landscape — and trees with a diameter at breast height (DBH) of 18 inches or more would be avoided where feasible.
- To avoid transport of nonnative species to the project area, all construction vehicles would be washed and inspected prior to use.
- Site preparation for revegetation will include surface mulching and vertical mulching, as appropriate, reusing topsoil, logs and other materials harvested from the site when possible. Re-contouring and revegetation of disturbed areas would take place following construction. Revegetation efforts would strive to reconstruct the natural spacing, abundance, and diversity of native plant species using native species. All disturbed areas would be restored as nearly as possible to natural conditions after construction activities are completed.
- Standard best management practices for weed control methods would be implemented to minimize the introduction or spread of noxious weeds.
- All material sources and materials, such as topsoil, incorporated into the work area would be certified to be free from noxious weeds, invasive plants, and other deleterious materials by a federal, state, or local public agency. Commercial certifications may be acceptable if materials have been certified through the North American Weed Free Forage Program standard or a similarly recognized certification process. Certifications must include comprehensive lists of introduced plant species located at the material source site. All certifications will be evaluated by park vegetation specialists for approval.
- All fill and excavated materials would be tarped when stockpiled to reduce potential for invasive species establishment.
- During and after construction and following revegetation, restored areas would be monitored and managed to prevent colonization by nonnative invasive species.
- Ground protection mats, or similar, would be placed in the construction areas to reduce trampling impacts on vegetation from heavy machinery, when possible.

Special-status Species

- Construction workers and supervisors would be informed of the occurrence and status of special-status species (including federally listed species) and would be advised of the potential impacts on the species and potential penalties for taking or harming a special-status species. Contract provisions would require the cessation of construction activities if a special-status species is discovered in the project action area and until park staff re-evaluates the project. This would allow modification of the contract to include protection measures determined necessary to protect the discovery.
- All blasting and in-water work would be conducted in compliance with the designated in-water work window for bull trout and following all avoidance, minimization, and conservation measures resulting from US Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) ESA consultation to minimize impacts on bull trout, Puget Sound steelhead, Puget Sound Chinook salmon, pink salmon, and coho salmon. The NPS is proposing an in-water work window of June 15 to August 15. Timing of construction activities would be coordinated to avoid disturbance to spawning activities of bull trout (including the disturbance of salmonid eggs and fry incubating within stream gravels) by conducting as much in-water work as possible between July 16 and August 15.
- The NPS shall ensure that fish capture and removal operations are conducted by a qualified biologist, and that all staff participating in the operation have the necessary knowledge, skills, and abilities to ensure safe handling of fish. Fish capture and removal operations shall take all appropriate steps to minimize the amount and duration of fish handling. The NPS shall document and report the following: the number, approximate size, life stage, and date of all bull trout encountered during fish capture and removal operations and the location and estimate of the area where fish removal occurs. The NPS shall submit a project monitoring report for each year of construction work via email to the Washington Fish and Wildlife Office in Lacey, Washington at WashingtonFWO@fws.gov (USFWS Terms & Conditions from Biological Opinion).
- Prior to the in-water work, park biologists would set up block netting ahead of the work to keep fish out of the work area, then remove fish and aquatic species between the netting. Once stream exclusion areas are established, biologists would perform additional fish and aquatic species trapping and relocation, as necessary, before dewatering.
- To the extent possible, current year northern spotted owl surveys would be performed and preliminary results provided in early June of that year. Active owl territories would be based on the most recent information available and may change during a season as new information is gained. If surveys reveal activity centers have shifted, then construction work would stop and consultation with USFWS would be re-initiated.
- Tree removal would be done outside of the northern spotted owl and marbled murrelet nesting seasons (March 15 to September 30 and April 1 to September 23, respectively) and the Migratory Bird Treaty Act nesting season (early April – mid August in Washington) unless the appropriate surveys are conducted, and no listed species are present and no active nesting is occurring in trees proposed for removal. Removal of large trees (18 inches DBH and greater) is proposed to occur in association with the geotechnical investigation and the fall prior to construction and would occur no earlier than the day after Labor Day.
- If wolf dens or rendezvous areas are documented (e.g., through WDFW tracking, NPS surveys, or confirmed wildlife sighting reports) within one mile of the action area during the years prior to or during project implementation, the NPS will reinitiate consultation with the USFWS to determine whether additional conservation measures are needed and if formal consultation is required.

- If an active wolf den or rendezvous site becomes established, no ground-disturbing work would occur within 0.25 mile, as needed, until wolves are no longer using the area for denning or as a rendezvous site.
- The contractor would be required to keep all waste and contaminants contained and remove them daily from the work site. Food and other wildlife attractants would be contained to minimize risk of attracting nest predators (i.e., corvids). Other mitigation measures to prevent human-wildlife conflict will include the following: feeding or approaching wildlife will be prohibited; a litter control program will be implemented during construction to eliminate the accumulation of trash; and all food items will be stored inside vehicles, trailers, or wildlife-resistant receptacles except during actual use to prevent attracting wildlife.

2.4 ACTION AREA

The action area reviewed for potential impacts to listed species was selected to encompass all direct and indirect effects of the proposed action as required under the Code of Federal Regulations (CFR) Title 50, Subchapter 402, sections 02 and 14(h)(2).

The project area contains both terrestrial and riverine areas where construction would occur or construction process would have an impact. The action area for the project encompasses both the entirety of the construction footprint, and the maximum extent of the areas of temporary and long-term impacts, which constitute the areas that are subject to direct and indirect effects of the proposed project (Figure 2). The following paragraphs explain the expected extent of the indirect impacts associated with this project that helped define the action area.

A traffic analysis conducted at the park measured the Sunrise Road annual average daily traffic volume of 661 vehicles per day, or generally light traffic, which measures about 50 decibels (dBA) at 100 feet. The other major consideration of baseline noise would be the sounds of the flowing creek, which typically measures approximately 40 dBA at 100 feet. The project is expected to implement construction techniques that would include blasting, which can reach 126 dBA, impact pile driving, which can reach 105 dBA, and jackhammers, which can reach 96 dBA at 50 feet. These are the three loudest anticipated construction activities. Estimates of construction activity sound levels can be found in chapter 7 of the Washington Department of Transportation (WSDOT 2013) Biological Assessment Manual. In addition, preliminary blasting studies conducted for another project within Mount Rainier National Park found that at 70 meters (230 feet) away from the blast site, the peak maximum sound level (LA_{peak}) of a test blast measured 116.9 dBA, which is consistent with this project's noise estimates, as outlined below (MORA 2021).

Using the WSDOT (2013) guidelines for determining the area of impact due to noise at a project site, construction noise can be assumed to not exceed 126 dBA at 50 feet from the project area. Based on the forested characteristics of the site, the project area is characterized as "soft," which can potentially reduce noise levels by as much as 5 dB for every 100 feet of vegetation (USDOT 1995). The WSDOT Terrestrial Noise Calculator excel analysis spreadsheet was used to determine the distance that construction noise would travel before it attenuates to background noise levels. Using construction noise inputs, estimated baseline levels, and site characteristics, noise would attenuate back to background levels at an estimated 5,036 feet, or 0.95 miles. This 0.95-mile measurement is used as the radius of noise impacts for the proposed project activities (Figure 2).

The aquatic portion of the action area was defined by estimating the distance at which project-related noise, as well as project-related turbidity, would attenuate to the baseline levels. The aquatic portion of the action area includes Fryingpan Creek, in which work would take place such as the abutment removal and dewatering for the installation of new bridge elements. In-water noise caused by pile driving would

not travel around bends in the river, and therefore would not extend past approximately 600 feet downstream and 1,000 feet upstream, where the river bends. This in-water noise distance also assumes a sufficient water column is present to transport the noise, which may not be the case when pile driving is occurring. Flow of Fryingpan Creek is variable throughout the year and water levels may be low enough such that sound within the water from pile driving may not extend more than a few hundred feet upstream and downstream.

Potential increases to water turbidity and sediment are expected to be the furthest downstream impacts of the proposed project activities. Estimates of downstream effects to water quality are based on previous consultations with reviewing agencies and a turbidity study of similar construction work within the park. An in-water project repairing barbs within the White River found that turbidity increased as a direct result of construction activities 0.5 miles downstream from where construction was occurring (NPS 2019). The potential increases in turbidity would similarly be expected to extend approximately 0.5 mile downstream of construction for this project. This includes a small portion of the White River, which Fryingpan Creek flows into to the northeast. This is the furthest extent of the aquatic portion of the action area. The White River may be subject to some minor temporary increases in turbidity and sedimentation during construction activities. This was determined to be an appropriate area for potential impacts because best management practices would reduce impacts to water quality as the distance from the project area increases.

3. SPECIES AND HABITAT INFORMATION

The following information is based on information gathered during an investigation of the project area and vicinity on August 24 and September 16, 2021, and on review of the background information listed above and information on listed species from available sources.

3.1 BASELINE CONDITIONS

3.1.1 General Site Description and Biological Assemblage Use

The project area consists of an approximately 7.5-acre portion of land that includes Sunrise Road, the Fryingpan Creek Bridge, paved parking areas, subalpine coniferous forest, areas of steep subalpine shrubland, and riparian zones associated with Fryingpan Creek. The proposed project would replace the Fryingpan Creek Bridge. The following sections summarize the results of background research and field investigations used to support the analyses and determinations.

The project area contains many habitat types, including alluvial riverbed, terraced riparian floodplain, steep-sloped subalpine shrubland, coniferous forest, and ditch habitat associated with the edge of Sunrise Road. The topography within the project area varies and includes steep slopes, terraces, seeps, streams, and wetlands.

The dominant mature tree species throughout the forested areas at the project area include Douglas-fir (*Pseudotsuga menziesii*), Pacific silver fir (*Abies amabilis*), western hemlock (*Tsuga heterophylla*), Engelmann spruce (*Picea engelmannii*), and subalpine fir (*Abies lasiocarpa*). The most common understory species at the project area included Sitka alder (*Alnus viridis* ssp. *sinuata*), devils' club (*Oplopanax horridus*), oak fern (*Gymnocarpium dryopteris*), vanilla leaf (*Achlys triphylla*), black currant (*Ribes lacustre*), oval-leaf blueberry (*Vaccinium ovalifolium*), dwarf bramble (*Rubus lasiococcus*), thimbleberry (*Rubus parviflorus*), and salmonberry (*Rubus spectabilis*). Other dominant species found nearer to the road edges included western red cedar (*Thuja plicata*), white rhododendron (*Rhododendron albiflorum*), whitebark raspberry (*Rubus leucodermis*), salmonberry, twinflower (*Linnea borealis*), Oregon boxleaf (*Paxistima myrsinites*), pearly everlasting (*Anaphalis margaritacea*), and sword fern (*Polystichum munitum*). Non-native species encountered include Canada thistle (*Cirsium arvense*), which was found in open sunny patches in the steep-sloped subalpine shrubland zone. For further reading on the vegetation communities found at the project area, refer to the Botanical Report (NPS 2022).

A wetland and stream delineation were conducted by AECOM (2022) and documented the presence of two wetlands, three unnamed intermittent streams, and four potentially jurisdictional ditches within the project area. The two delineated wetlands include a scrub-shrub, slope, category III wetland that drains overland to Fryingpan Creek, and a forested, riverine/slope, category II wetland that drains to a stream named Stream 7 and then Fryingpan Creek. The identified streams are small, non-fish-bearing, seasonal tributaries to Fryingpan Creek. The four potentially jurisdictional ditches are small, non-fish-bearing roadside ditches on the uphill side of Sunrise Road, measuring approximately 2 feet wide with silt to gravel bottoms. Further reading on these areas can be found in the wetland delineation report.

3.2 PROPOSED, THREATENED, ENDANGERED, AND CANDIDATE SPECIES IN THE ACTION AREA

Information regarding endangered and threatened species to address in this document was compiled from agency web sites (USFWS 2023, WDFW 2022a, 2022b).

Threatened and endangered species under the jurisdiction of USFWS with the potential to occur within the project action area include bull trout (*Salvelinus confluentus*), northern spotted owl (*Strix occidentalis*

caurina), marbled murrelet (*Brachyramphus marmoratus*), yellow-billed cuckoo (*Coccyzus americanus*), gray wolf (*Canis lupus*), and whitebark pine (*Pinus albicaulis)* (USFWS 2023). The USFWS (2023) list also indicates the presence of bull trout critical habitat in the project area. The North American wolverine (*Gulo gulo*), a proposed threatened species, and the monarch butterfly (*Danaus plexippus*), a candidate species, are also listed. The WDFW (2022a) PHS online mapper indicates bull trout, northern spotted owl, North American wolverine, and the western distinct population segment (DPS) of the gray wolf as present in the vicinity of the project area (Table 1; Appendix B).

Whitebark pine is listed as a threatened species federally and is listed as potentially occurring in the project area on the USFWS IPAC map; however, the lower range of whitebark pine typically begins at 4,800 feet (Ward et al 2006), which is at higher elevation than the project area. Further, no whitebark pine was found during tree surveys of the project area (NPS 2022), and additionally, no whitebark pine areas have been mapped in the vicinity of the project action area (Cottone and Ettl 2001). As a result, we expect **no effect** on whitebark pine, and they will not be discussed further in this document.

The Mount Rainier white-tailed ptarmigan (*Lagopus leucura rainierensis*) is listed as proposed threatened federally but is not listed as potentially occurring within the project area on the USFWS IPAC map. This cryptic alpine bird is generally thought to be associated with alpine areas with moist low-saturated vegetation near snowbanks, streams, and boulder fields during breeding season, and avalanche chutes and other forest openings in alpine and subalpine areas (USFWS 2021a). Because their preferred habitats are not present within the project area, we do not expect them to occur there, and as a result we expect **no effect** on Mount Rainier white-tailed ptarmigan, and they will not be discussed further in this document.

The NOAA Fisheries list (2016; appendix B) includes the Puget Sound evolutionarily significant unit (ESU) of Chinook salmon (hereafter “Chinook”), and Puget Sound distinct population segment (DPS) steelhead trout (hereafter “steelhead”). Critical habitat for Chinook, steelhead, and bull trout occurs in the White River, with the closest critical habitat for Chinook and steelhead approximately 10 and 11 miles downstream of the project area, respectively (Federal Register 2005). Critical habitat for bull trout also occurs within Fryingpan Creek at the project area (Federal Register 2010).

4. STATUS, ENVIRONMENTAL BASELINE AND EFFECT DETERMINATIONS FOR SPECIES WITH A LIKELIHOOD OF PRESENCE IN THE ACTION AREA

4.1 AQUATIC ENVIRONMENTAL BASELINE CONDITIONS IN THE ACTION AREA

Baseline stream conditions in the immediate aquatic area of Fryingpan Creek bridge involve a largely natural and dynamic hydrology and channel bed conditions in the creek, highly influenced by seasonal runoff from storms and summer glacial melting that results in a mixed substrate from glacial flour to gravel and small to large cobble and small to medium boulders. The immediate channel vicinity beneath the bridge includes a constricted channel resulting from the existing bridge abutments. Side channels with varying temperatures have been noted nearby suggesting the local influence of groundwater sustaining side channel inflows in addition to the cold glacial runoff in the main channel (Quantum Spatial Inc. et al. 2020).

Riparian conditions upstream and near the bridge are largely old growth coniferous forest and floodplains limited by steep rock ledge borders, with the channel widening into a more braided channel beginning downstream of the bridge. A channel evulsion is visible downstream flowing into the forest as the area appears to be a geologically historic dynamic confluence with the White River.

A detailed summary of habitat conditions within Fryingpan Creek is provided below from Marks et al. (2020).

> *The creek is almost entirely bordered by an old growth coniferous forest, and the water is cooled year round by glacial melt water from Fryingpan Glacier. In addition to the glacial influenced main-stem flow, there are several smaller non-glacial tributaries contributing flow along Fryingpan's nearly 4.7 mile length.*
>
> *Typical of headwater streams, substrate bedding consists mainly of Tertiary sedimentary rock and other products created by ancient volcanic activity. Substrate size within active river channels is typically large; consisting primarily of large gravels, cobble and boulders.*
>
> *Significant quantities of LWD [large woody debris] are present within the channel migration zone; however, a considerable amount of the larger wood which is deposited during high flow events and settles on the higher bars is detached from, or perched well above active channels during average flow regimes, thereby reducing any habitat creating interactions.*
>
> *The first 1.4 miles of Fryingpan consists of a large active braided channel that is low-to-moderate gradient. Several patches of excellent spawning gravel are available throughout this lower reach of the creek.*
>
> *Considerable amounts of LWD are present in the channel, although a great deal of it doesn't interact with the stream during average seasonal flows. Nevertheless, ample amounts of LWD are embedded in the creek channel creating beneficial fish habitat. In addition to spawning habitat, numerous pools and side channels are located throughout this lower reach; providing excellent rearing habitat for juvenile fish.*

4.1.1 Bull Trout (*Salvelinus confluentus*)

4.1.1.1 Status and Summary of Species Biology

Bull trout were listed as a threatened species by the USFWS on November 1, 1999. Bull trout are native facultatively anadromous (can have a marine migratory life stage, but not required), iteroparous (can spawn multiple times) char, typically found in high, glacially fed watersheds or near cold perennial springs, although individual fish can reside as juveniles to adults in headwaters, migrate downstream throughout larger river systems, reservoirs and into the marine shoreline before migrating upstream to cold headwaters to spawn (Rieman and McIntyre 1993, 1995).

Bull trout are a federally listed species and species biology is summarized in the Federal Register (2010). Bull trout exhibit a number of possible life histories from resident stream to fluvial or adfluvial migrations (to larger rivers or lakes respectively) or anadromous forms migrating to coastal waters. Bull trout then require migratory pathways for these life histories. As highly predatory fish:

> *Habitats must provide the necessary aquatic and adjacent terrestrial conditions to harbor prey species in sufficient quantity and diversity to meet the physiological requirements necessary to maintain bull trout populations. An abundant food base, including a broad array of terrestrial organisms of riparian origin, aquatic macroinvertebrates, and forage fish, supports individual and population growth and allows for normal bull trout behavior. Federal Register (2010)*

Spawning and juvenile rearing streams require cold water (approximately less than 48.2º F or 9º C) during summer months. Varied riffle habitats and habitats with woody debris provide for juvenile rearing, and increasing depths of riffles and pools provide additional rearing areas for subsequent age cohorts. Springs, seeps, groundwater sources, and subsurface water connectivity (hyporheic flows) contribute to water quality and quantity and provide thermal refugia. Seeps are a primary constituent element (PCE) for bull trout (USFWS 2010) and may be important near the Fryingpan Creek Bridge location as nearby groundwater inflows have been noted and numerous redds identified in the immediate vicinity of the bridge (Quantum Spatial Inc. et al. 2020).

Stability of stream channels is thought to be important for repeated use by bull trout; however, dynamic stream channels such as Fryingpan Creek can still provide stable summer spawning areas. Spawning in Fryingpan Creek "occurs primarily during the month of September, however, spawning has been observed taking place from the last week of August through the second week of October" (Marks et al. 2021).

Local status information on bull trout juveniles and adults was recently summarized by the USFWS (2021b) for the core area of the park with specific information related to the White River basin:

> *Some sampling indicates most rearing is confined to the upper reaches of the basin. Other sampling indicates that few juveniles are found in Park streams in the White River watershed, leading to a working hypothesis that juvenile fish leave these streams quickly and rear in the mainstem or downstream tributaries with richer prey bases. The mainstem reaches of the White, Carbon, and Puyallup Rivers provide the primary freshwater foraging, migration, and overwintering habitat for migratory bull trout within this core area.*
>
> *With fewer than 10 local populations, the USFWS's 2015 five-year review indicates that Puyallup core area is considered to have a substantial and imminent threat of extinction, with a final ranking of "At Risk".*

Bull trout populations in Fryingpan Creek were sampled and results summarized in USFWS (2021b). Findings here indicate a population estimate of 844 bull trout greater than 100 mm within the anadromous reach of Fryingpan Creek, with a greater number juvenile and smaller fish, and most of the total less than 200 mm. Age at maturity for bull trout depends on life history with resident fish maturing at smaller sizes, so cohort maturity distribution was not clear from the fish sampled.

4.1.1.2 Direct Effects to Bull Trout

Potential impacts to listed fish in Fryingpan Creek (primarily expected to be bull trout) would be due to placement of dry isolation work areas intended to remove fish from the immediate vicinity of in-water work. Placement of these isolation work areas would require access to the stream channel by tracked construction equipment for construction followed by draining of the isolation areas. Fish present in these work areas would be removed prior to installation through the methods described in Section 2.2.1.2.

Longer term indirect effects would largely be beneficial as the existing channel constriction is eliminated and stream channel and floodplain areas are restored in the vicinity of the existing bridge abutments.

Primary direct effects from the proposed instream construction activities to listed fish would include:

- Displacement or aversion of fish from habitat areas near construction due to movement and sound and periodic in-water activities.
- Handling and physiological impacts to individual fish of netting and electrofishing removal from the isolation zones.
- Disruption and disorientation of individual fish's feeding station holding and/or pre-spawning behavior due to relocation from the isolation zones.
- Exposure to physiological stress from water quality impacts downstream of the isolation areas as initial and ongoing dewatering is conducted during the duration of the use of the isolation areas.
- Interruption of redd aeration flows and physical damage to any eggs that could potentially be within the isolation areas, or potentially downstream exposed to sedimentation of downstream turbidity due to instream construction.

4.1.1.3 Bull Trout Conclusion and Effect Determination

Bull trout presence of a presumed wide range of cohort ages and life histories has been well documented by USFWS (2021b), MORA (2020), and Marks et al. (2021, 2020) within Fryingpan Creek at the construction site location at river mile 0.4 beneath both the existing bridge and at the proposed new bridge location, and in reaches downstream. Given the expected presence of fish here and downstream within the effects of fish exclusion and water quality impacts, the effect determination is **may affect, likely to adversely affect** bull trout.

4.1.1.4 Designated Bull Trout Critical Habitat

Bull trout critical habitat was designated by the USFWS on January 14, 2010 (Federal Register 2010). The upper extent of critical habitat in Fryingpan Creek occurs at the falls at approximately river mile 1.7. This reach incorporates the Fryingpan Creek bridge location at river mile 0.4. Primary Constituent Elements (Federal Register 2010) for critical habitat for bull trout include:

1) Springs, seeps, groundwater sources, and subsurface water connectivity (hyporheic flows) to contribute to water quality and quantity and provide thermal refugia.

2) *Migration habitats with minimal physical, biological, or water quality impediments between spawning, rearing, overwintering, and freshwater and marine foraging habitats, including but not limited to permanent, partial, intermittent, or seasonal barriers.*

3) *An abundant food base, including terrestrial organisms of riparian origin, aquatic macroinvertebrates, and forage fish.*

4) *Complex river, stream, lake, reservoir, and marine shoreline aquatic environments, and processes that establish and maintain these aquatic environments, with features such as large wood, side channels, pools, undercut banks and unembedded substrates, to provide a variety of depths, gradients, velocities, and structure.*

5) *Water temperatures ranging from 2 to 15 °C (36 to 59 °F), with adequate thermal refugia available for temperatures that exceed the upper end of this range. Specific temperatures within this range will depend on bull trout life-history stage and form; geography; elevation; diurnal and seasonal variation; shading, such as that provided by riparian habitat; streamflow; and local groundwater influence.*

6) *In spawning and rearing areas, substrate of sufficient amount, size, and composition to ensure success of egg and embryo overwinter survival, fry emergence, and young-of-the-year and juvenile survival. A minimal amount of fine sediment, generally ranging in size from silt to coarse sand, embedded in larger substrates, is characteristic of these conditions. The size and amounts of fine sediment suitable to bull trout will likely vary from system to system.*

7) *A natural hydrograph, including peak, high, low, and base flows within historic and seasonal ranges or, if flows are controlled, minimal flow departure from a natural hydrograph.*

8) *Sufficient water quality and quantity such that normal reproduction, growth, and survival are not inhibited.*

9) *Sufficiently low levels of occurrence of nonnative predatory (e.g., lake trout, walleye, northern pike, smallmouth bass); interbreeding (e.g., brook trout); or competing (e.g., brown trout) species that, if present, are adequately temporally and spatially isolated from bull trout.*

Bull trout critical habitat is designated within Fryingpan Creek from the mouth at the confluence with the White River to the anadromous barrier at RM 1.7. Given the extensive instream work activity during construction at the site described above and potential levels of associated construction-related turbidity transmitted downstream, the effect determination is **may affect, likely to adversely affect** bull trout critical habitat**.**

4.1.2 Puget Sound Steelhead (*Oncorhynchus mykiss*)

4.1.2.1 Status and Summary of Species Biology

Steelhead were listed as a threatened species in 2007, with a revision in 2014 to include the White River Winter Supplementation Program (Federal Register 2014a). Steelhead are anadromous forms of rainbow trout that migrate to the ocean for growth to larger size before returning to natal streams to spawn. As they migrate to sea, they may occur within the action area. Steelhead critical habitat in the White River extends in the White River to a point 11.3 miles below the Fryingpan Creek bridge (Federal Register 2016a). Steelhead have not been identified in the White River within the park boundaries. The Washington Department of Fish and Wildlife Salmonscape database identifies presumed presence of steelhead to a point approximately one mile downstream of Fryingpan Creek.

Steelhead stocks and run timing are summarized in Puyallup Tribal Fisheries (Marks et al. 2021):

> *The principal stock of steelhead returning to the Puyallup and White River system are winter-run. However, a few summer-run strays, likely from the Green or Skykomish rivers, are caught annually during August and September in the lower Puyallup; as well as the USACE trap on the White River. Therefore, steelhead are often present in the watershed throughout the year. The main run of hatchery origin winter steelhead (Voights Creek production ceased in 2009) enters the Puyallup River in November, with the peak of the run occurring in mid-December.*
>
> *On the White River, steelhead are occasionally caught in the USACE trap as early as late December. Although, most fish don't start migrating towards the upper reaches until March. The winter run continues through June, with peak migration occurring in mid-to-late April, through early May. Puyallup Tribal Fisheries spawning ground data shows peak spawning takes place in the upper Puyallup and White River basins in late April to early May; and in the lower White River, peak spawning occurs typically in mid-to-late May.*

The Federal Register (2013) notes all "occupied areas in the overall Puyallup River subbasin contain spawning, rearing, or migration PCEs [principal constituent elements] for this DPS [distinct population segment]," and that "all of the occupied watersheds in the Puyallup subbasin were of high conservation value to the DPS."

4.1.2.2 Direct Effects to Steelhead

While steelhead have not been documented in the immediate vicinity of Fryingpan Creek, their presence may be possible as they are a species that tends to move upstream into smaller stream systems, such as Fryingpan Creek. As such, direct effects to steelhead that may be in the immediate vicinity of the project would be similar to those identified above for bull trout.

4.1.2.3 Steelhead Conclusion and Effect Determination

Because steelhead are presumed to be present in the White River at any time of the year (Marks 2021) and presumed to be present up to a point approximately 3.3 miles downstream of the Fryingpan Creek bridge (WDFW 2022b), the potential for their nearby presence cannot be discounted. Because of their potential presence at the bridge and the extensive in-stream work to be conducted, the effect determination is **may affect, likely to adversely affect** steelhead.

4.1.2.4 Designated Steelhead Critical Habitat

Steelhead critical habitat in the White River extends in the White River to a point 11.3 miles below the Fryingpan Creek bridge (Federal Register 2016a). Because the potential downstream impacts of the project will be limited to transmission of turbidity with an effect approximately 0.5 miles downstream of the project, the effect determination is **may affect, not likely to adversely affect** steelhead critical habitat.

4.1.3 Puget Sound Chinook Salmon (*Oncorhynchus tshawytscha*)

4.1.3.1 Status and Summary of Species Biology

The Puget Sound Chinook salmon Evolutionarily Significant Unit (ESU) was listed as a threatened species on March 24, 1999, and threatened status was reaffirmed in 2005 and updated in 2014 (NMFS 2014).

Chinook inhabit major river systems throughout the Puget Sound, and commonly migrate to the ocean as young of the year or yearling juveniles, rearing first within natal estuaries and then along nearshore marine habitats, foraging to gain size for greater survival before migrating to open ocean (Groot and Margolis 2003).

Chinook critical habitat is designated in the upper White River to a point approximately 9.6 miles downstream of Fryingpan Creek Bridge (Federal Register 2005). Important freshwater PCEs for chinook salmon include:

1) Freshwater spawning sites with water quantity and quality conditions for spawning and incubation and larval development
2) Freshwater rearing sites with water quantity and floodplain connectivity, water quality and foraging, and cover for protection, and
3) Freshwater migration corridors free of obstruction but with water quantity and quality and cover to support migration.

Chinook stocks in the Upper White River include the Puget Sound unique stock of spring Chinook, along with the more common but smaller run of fall Chinook. These early migrating adult stocks are the only existing spring run Chinook in Puget Sound. The upstream migrating adults spring Chinook enter in April and spawn in the upper White River as well as some in the lower White River (Marks et al. 2020). The spawning site selection and remaining freshwater lifecycle generally remains the same as for fall run Chinook. Marks et al. (2020, 2021) provide a summary of spring and fall run Chinook biology in the upper White River.

Spring Chinook are particularly important in the upper White River as they are the "only Spring Chinook stock existing in the Puget Sound region and are unique due to their genetic and life history traits." (Marks et al. 2021). Regarding return and spawning timing and locations of upper White River Spring Chinook, Marks et al. (2021) report:

> *Spring Chinook typically enter the freshwater river system as early as April, but have been documented as early as March. Springers hold in the river during spring and summer while their gonads mature. Spawning commences as early as mid-August (typically September); with the earlier spawn timing generally occurring higher in the watershed. Adults largely return as three-to-four-year-olds; however, the age of adult Chinook returning to spawn can range between two-to-five years. The majority of documented spawning occurs in the mid-to-larger tributaries such as the Huckleberry Creek, and the Greenwater and Clearwater rivers. However, mainstem spawning of has been documented throughout the upper mainstem White River by PTF biologists via radio telemetry studies, and observations made during annual spawning ground surveys.*

In an inventory of fishes in the park, MORA (2020) report juvenile Chinook have been documented in the upper White River at the Park boundary. The Washington Department of Fish and Wildlife Salmonscape database identifies presumed presence of Chinook to a point approximately one mile downstream of Fryingpan Creek.

4.1.3.2 Direct Effects to Chinook

While Chinook have not been documented in the immediate vicinity of Fryingpan Creek, their presence may be remotely possible – existing observations of Chinook are approximately 8 miles downstream of the project area and their further upstream migration is generally more likely than for steelhead.

As such, direct effects to Chinook that may be in the immediate vicinity of the project would be similar to those identified above for bull trout, but their presence in the immediate area can be considered much less likely.

4.1.3.3 Chinook Conclusion and Effect Determination

Chinook presence has only been documented to a point approximately eight miles downstream but presumed to be present up to a point approximately 3.3 miles downstream of the Fryingpan Creek bridge (WDFW 2022b). Assuming their presence near the project area and within the range of possible downstream turbidity is possible, the effect determination is **may affect, likely to adversely affect** Chinook salmon.

4.1.3.4 Designated Chinook Critical Habitat

Chinook critical habitat is designated in the upper White River to a point approximately 9.6 miles downstream of Fryingpan Creek Bridge (Federal Register 2005).

Because the potential downstream impacts of the project will be limited to transmission of turbidity with an effect approximately 0.5 miles downstream of the project, the effect determination is **may affect, not likely to adversely affect** Chinook critical habitat.

4.2 Federally Listed Terrestrial Species and Critical Habitat

4.2.1 Northern Spotted Owl (*Strix occidentalis caurina*)

4.2.1.1 Status and Summary of Species Biology

The USFWS lists the northern spotted owl as a threatened species, and the state of Washington lists it as endangered. The USFWS (1990) listed the spotted owl as threatened in 1990 due to a reduction in suitable forest habitat across its range. In recent years, competition with the non-native barred owl (*Strix varia*) has also been identified as a primary cause of population declines (Dugger et al. 2016).

The northern spotted owl is a primarily nocturnal, non-migratory bird that establishes a territory that it defends from other owl and avian species. Although an individual owl's territory can exceed 6,000 acres (USFWS 1992a), a 1.8-mile radius circle is delineated around a site center for forest management purposes. The inner 0.7-mile radius is considered to be the core area of the owl management circle. Spotted owls are typically associated with old-growth conifer forest habitat with areas of moderate to high canopy closure; a multilayered, multispecies canopy dominated by large overstory trees; a high incidence of large trees with large cavities, broken tops, and other indications of decadence; numerous large snags; heavy accumulations of logs and other woody debris on the forest floor; and considerable open space within and beneath the canopy (Thomas et al. 1990). While these characteristics are typically found in old growth forests, they are sometimes also found in younger forests, especially when larger remnant trees are present, and spotted owls may be found in these younger forests with old growth characteristics.

Within Mount Rainier National Park, the nesting season is defined as occurring from March 15 through September 30. Egg laying, incubation, and brooding of nestlings takes place between March 15 and July 31, defined as the early nesting season. During the late nesting season (August 1 through September 30), spotted owl fledglings have left the nest and are able to fly short distances, but still depend on adults for feeding and remain close to the nest site (Forsman et al. 1984). After this nesting period, juvenile owls typically disperse from their natal sites and may move between many suitable forested areas for two to five years before beginning to establish and defend their own territories (Forsman et al. 2002).

Within the park, there are approximately 33,000 hectares (ha) of suitable spotted owl habitat (forest ≥100-years old; elevation ≤1463 meters; ≥40% canopy cover) (Mangan et al. 2019). The WDFW (2022a) PHS mapper also indicates spotted owl as occurring within the project area. Surveys have been conducted within the park to assess for the presence of spotted owls since 1997 as part of an ongoing demography study. As of 2021, 35 historic spotted owl territories are currently monitored within the park for this demography study. In 2021, only a single spotted owl male was detected within the park, at an owl site located southwest of Mount Rainier. In 2022 a single spotted owl (sex unknown) was detected in the park at an owl site located southeast of Mount Rainier.

The park constitutes approximately 40% of the Rainier Spotted Owl Demographic Study Area (DSA). The monitoring efforts within the Rainier DSA indicate that population reductions have resulted in the loss of approximately 97% of the previously occupied owl territories in the study area (Mitchell et al. 2021). Competition with barred owls is implicated as the primary cause for this decline, particularly within the park, where no widespread habitat loss has taken place since the start of monitoring efforts (Bagnall et al. 2019). Barred owls are widespread throughout the park and have been detected at 94% of historic spotted owl territories (Bagnall et al. 2019, Mitchell et al. 2021).

Although spotted owl habitat in the park is restricted to a relatively narrow band around the perimeter of Mount Rainer, this habitat currently supports a small population of spotted owls and is considered essential for the long-term conservation of the species. In the Northern Spotted Owl Recovery Plan, USFWS identified suitable owl habitat in the park as part of a network of "Managed Owl Conservation Areas" in western Washington and considers these areas essential for spotted owl recovery (USFWS 2008a).

One historic spotted owl management circle (White River-Upper) overlaps with the proposed action area. The site center is approximately 0.3 miles from the project area. This site is monitored for spotted owl occupancy annually, and has not had spotted owl detections in recent years (Mitchell et al. 2021). One owl pair was detected approximately 5 miles away from the project area (at the Dewey Creek owl site) in 2019. Figure 4 shows the project area and action area in relation to the nearby historic spotted owl site centers and core habitat circles. Approximately 1,200 acres of suitable spotted owl habitat intersects with the proposed action area and all of the proposed project area is within mapped suitable spotted owl habitat.

In the context of recent historical data of spotted owls, it is possible that spotted owls could begin to reoccupy and use the habitat in the vicinity of the proposed project area, but recent trends and data would indicate this is very unlikely (Bagnall et al. 2019, Dugger et al. 2016, Mangan et al. 2019, Mitchell et al. 2021).

4.2.1.2 Direct Effects to Northern Spotted Owls

Because spotted owls have not been detected near the proposed project area for many years, the primary concerns for impacts to spotted owls are loss of potential habitat and widespread noise from loud construction activities, such as blasting and pile driving. The permanent habitat loss under the proposed activities would be approximately 0.4 acres of roadside coniferous forest, as well as temporary impacts to 1.3 acres of roadside coniferous forest. These temporary impacts will change the character and habitat functions of the existing roadside coniferous forest to a younger-aged plant community until they reach a mature stage of growth decades later.

Approximately 72 of the trees that are proposed for removal are 18 to 40 inches dbh, and approximately, but no more than six additional trees are greater than 40 inches dbh. At least three of these trees greater than 40 inches dbh and slated for removal were also identified as trees of special conservation interest due to their size and structure. These old, mature trees contain habitat elements, such as shaded roosting sites,

foraging habitat, and dispersal habitat, which could potentially be used by spotted owls. Although no owls have been detected at the project area in recent years, the occasional dispersing individual owl or owls from nearby territories could move into these areas and use the existing mature forest for a portion of a season. It should be noted that this portion of forested habitat is immediately adjacent to a primary road corridor that experiences relatively high levels of human and vehicular disturbance. In addition, the surrounding area of undisturbed forest will continue to provide high quality habitat that would still be expected to provide suitable nesting, roosting, foraging, and dispersal areas for northern spotted owls. The suitable spotted owl habitat mapped by the park within the proposed project action area represents an approximate 1,209-acre-portion of the approximately 82,060 acres of overall spotted owl habitat mapped within the Park boundaries (Figure 6), while the proposed alteration to forested habitat in the project area is 1.7 acres within the larger context of this available habitat.

Increased noise and human presence from the proposed construction activities could result in disturbance to individual owls, but the lack of spotted owls in the area in recent years makes this unlikely. Noise and activity from construction during the breeding season has the potential to affect normal breeding and roosting behaviors of spotted owls. As mentioned above, the loudest proposed activities include the use of jackhammers, pile driving, and blasting. Other construction activities would raise noise levels from the typical baseline levels but would not be expected to extend out any significant distance from the project area.

If required for construction, blasting would be scheduled within the in-water work window, which is during the northern spotted owl nesting season. Blasting could affect any owls foraging or roosting within or near the project area. Although project timing would attempt to avoid blasting during the early nesting season, logistics with snow, as well as timing restrictions for other ESA-listed species, such as bull trout, may require blasting during this time. This could result in potential disturbance to spotted owls if they are actively incubating eggs or brooding hatchlings at nearby sites such as the White River spotted owl site (Figure 4). However, this site would have some marginal attenuation from the site's topography and densely forested vegetation, and occupancy of other nearby sites has not been confirmed for many years. Ongoing spotted owl monitoring would provide early evidence of any active use by spotted owls at the project area.

As mentioned above, the White River-Upper historic spotted owl site center is located approximately 0.3 miles to the west of the project area. Because nesting has not been documented for several years at this site (individual male detected in 2000), individual dispersing owls would be the most likely to be within the action area during the proposed activities. In the unlikely event that individual spotted owls forage or roost near the project area, they may be flushed away from a foraging perch or roosting site by project noise and human activity. Flush responses such as these, that occur outside of an active nest site, are considered to be insignificant and discountable because the owls are simply moving away from the source of disturbance, rather than being forced to flush away from an active nest site. A negative effect on breeding occurs when noise or project activity causes a spotted owl to become so agitated that it flushes away from an active nest site or aborts a feeding attempt during incubation or brooding of nestlings. Such events are considered important because they have the potential to result in reduced hatching success, fitness, or survival of juveniles.

Some studies (Awbrey and Bowles 1990, Delaney et al. 1990) suggest that exposure to sound levels above 92 dBA may begin to cause a flight response to nesting spotted owls. These sound levels could potentially be reached at historic site centers during activities such as blasting or pile driving. Although extremely unlikely, nesting owls present during these activities could potentially exhibit flight responses, which could result in negative impacts to the nesting attempt. Construction activities would be restricted to daytime hours. This would avoid potential impacts to spotted owls during nighttime foraging activities. Continuation of regular spotted owl monitoring efforts at nearby historic site centers would also help to ensure impacts to any owl present within the action area would be avoided or minimized.

No indirect or cumulative effects, nor effects of interrelated or interdependent actions that are reasonably certain to occur were identified within the vicinity of the proposed project.

4.2.1.3 Northern Spotted Owl Conclusion and Effect Determination

Considering the recent documented status of the spotted owl in the project action area, and the direct, indirect, and cumulative effects of the proposed action, it is expected that the Fryingpan Creek Bridge Project **may affect, and is not likely to adversely affect** the northern spotted owl. This determination is based on the rationale that there is low likelihood that nesting spotted owls would be present but undetected; however, there would be some impacts to suitable habitat associated with the proposed action, including removal of large, mature, potential nesting trees near the road corridor, which would result in the permanent loss of potential nesting habitat, even with the implementation of conservation measures to minimize the effects of noise disturbance and vegetation alteration. The surrounding forest would continue to provide suitable habitat for northern spotted owl nesting, roosting, foraging and dispersal.

In terms of noise created by the proposed activities, although unlikely, any potentially undetected nesting spotted owls that are present during blasting in the early nesting season could be exposed to noise levels that result in a flight response that could impact nesting outcomes. If blasting takes place within the late nesting season, the WSDOT (2013) BA guidance concludes that disturbance effects are considered discountable. Further, if blasting were to take place outside of the nesting season, these disturbances would also be considered discountable. With these rationales in mind, combined with the fact that owl surveys are conducted regularly at the project action area and no owls have been detected near the action area in many years, the effects from noise resulting from the proposed project activities would be discountable, and would likely only impact individual dispersing owls. Should spotted owls reoccupy the White River Upper site (the nearest territory to the project area) in 2023, blasting occurring after the nesting season would still be considered a discountable impact, per the WSDOT (2013) guidance. If new information shows that spotted owls become active within the construction boundaries or action area, USFWS would be contacted to reinitiate consultation and determine if additional conservation measures are necessary.

4.2.1.4 Designated Northern Spotted Owl Critical Habitat

No designated critical habitat for northern spotted owls is present within the action area. The USFWS originally designated critical habitat for the northern spotted owl in 1992. The 1992 designation was superseded by a revision to the critical habitat designation in 2008 (USFWS 2008b). Under both designations, critical habitat was not designated in national parks. However, adjacent national forest lands that border the park are designated as critical habitat. The primary constituent elements identified in the spotted owl critical habitat final rule include forest types that support the spotted owl across its geographic range when they occur in concert with (a) nesting, roosting, foraging, and/or dispersal habitat, or (b) lands capable of developing one or more of these habitats in the future (USFWS 2008b). Actions associated with the Fryingpan Creek Bridge Project would have no direct or indirect effects to the primary constituent elements of spotted owl critical habitat. Therefore, the proposed action would have **no effect** on designated northern spotted owl critical habitat.

4.2.2 Marbled Murrelet (*Brachyramphus marmoratus*)

4.2.2.1 Status and Summary of Species Biology

Marbled murrelets are an elusive member of the alcidae (auks) bird family. They were federally listed as threatened in 1992 and listed as endangered in Washington state in 2016. They spend the majority of their time on marine waters, except during the nesting period where they have been observed flying as far inland as 52 miles to nest on wide mossy branches of old-growth trees (Ralph et al. 1995, Nelson 1997).

Nests are typically created by creating a depression in moss or duff found on flat platforms, high in large trees. In Washington, the murrelet breeding season typically occurs between April 1 and September 23 (USFWS 2012a).

Murrelet populations have declined in recent years, with the removal of old-growth forests where murrelets nest being one of the main contributors to population losses (USFWS 1992). Between the years of 2001 to 2016 in the Puget Sound and Strait of Juan de Fuca in Washington State Conservation Zone 1, monitoring of marbled murrelets has indicated a statistically significant decline of 4.9% in an already reduced population (Lynch et al. 2017). Because of these declines, activities that reduce nesting success and/or adult survivorship are especially consequential to the overall population (Falxa et al. 2009). Further, much of the land within 50 miles from the coast of marine murrelet habitat in the western Washington region has been converted into urbanized landscapes, increasing the importance of any remaining potential nesting habitat within the accessible inland range of murrelets.

The Marbled Murrelet Recovery Plan (USFWS 1997) identifies six "Marbled Murrelet Conservation Zones," and Mount Rainier National Park is in Conservation Zone 1. Marbled murrelets are known to occur within the park, and surveys conducted between 1994 and 2011 confirmed murrelet presence within the Carbon, Mowich, Puyallup and Nisqually River basins (NPS 2009). In Washington, all suitable habitat within 55 miles of marine waters is considered potentially usable by marbled murrelets (Raphael et al 2006). This results in the nearly all of the park, including the project area and action area, being located within the potential range of marbled murrelets. There are an estimated 26,000 acres of potential marbled murrelet nesting habitat located within the park (Raphael et al 2006). In contrast, many of the areas outside of the park have been logged over the last 100 years, leading to far fewer areas of primary, old growth forest remaining.

The action area is not located within marbled murrelet suitable habitat as shown on park maps. The closest mapped habitat is approximately 1 mile northeast of the project area, adjacent to the White River. There are, however, many trees found within the project area that meet the definition of marbled murrelet nesting trees (WDNR 2004, Mack et al 2003, USFWS 2012b). The WSDOT (2013) guidance indicates suitable murrelet habitat as:

> *"…conifer-dominated stands with suitable nesting structure. Potential nest trees are conifer trees located within a minimum 5-acre coniferous-dominated stand within 70 miles of marine waters that support at least one 4-inch wide platform located at least 33 feet above the ground, with horizontal and vertical cover."*

As discussed above, approximately 72 of the trees that are proposed for removal are 18 to 40 inches dbh, and at least six additional trees are greater than 40 inches dbh. Approximately, but no more than three trees greater than 40 inches dbh and slated for removal were identified as trees of special conservation interest due to their size and structure, which includes the presence of potential murrelet nesting platforms. Murrelets have been known to nest in stands with large, remnant trees in patches of younger forest, and the smallest diameter tree recorded with murrelet nesting was 19 inches dbh (Mack et al 2003).

Regular audio-visual surveys and some radar surveys have taken place in the park to assess for the presence of murrelets (ABR 2009, NPS 2009). Throughout the park there have been hundreds of documented detections of murrelets including occupancy behaviors (such as subcanopy flights). Marbled murrelets have been documented within four watersheds: the Carbon, Mowich, Puyallup, and Nisqually River Basins (NPS 2009). No formal murrelet surveys have been conducted at or in the vicinity of the Fryingpan Creek project area. The park has expanded the use of autonomous recording units (ARU) as part of the northern spotted owl monitoring program. Although the primary intent of the ARU devices is to detect northern spotted owls, they have been shown capable of also detecting other species, including marbled murrelet.

4.2.2.2 Direct Effects to Marbled Murrelets

The most applicable direct effects to marbled murrelets from the proposed project activities would include the potential loss of suitable nesting habitat, as well as potential impacts due to project-related noise.

Although murrelets have not been confirmed at the Fryingpan Creek project action area, individual murrelets that use the surrounding area could potentially be disturbed by construction noise. There is limited information concerning murrelet vulnerability to disturbance effects. In general, responses to noise disturbance at nest sites have been modifications of posture and on-nest behaviors without flushing or abandoning the nest (Long and Ralph 1998; Hébert and Golightly 2006). Disturbance occurs when noise or project activity causes a murrelet to become so agitated that it flushes away from an active nest site or aborts a feeding attempt during incubation or brooding of nestlings. Such events have the potential to result in reduced hatching success, fitness, or survival of juveniles. Overall, it appears that murrelets are not easily disrupted from nesting attempts by human disturbance except when confronted at or very near the nest itself (NPS 2021). These studies relating to general construction noise and disturbance to murrelets (Hebert and Golightly 2006) seem to indicate that noises from activities such as chainsaws would result in behavioral changes to murrelets as they incubate on a nest, but would not necessarily cause a flight response, or failed nesting attempts. There are, however, some reports that indicate disturbance within 35 yards of a nest tree as subtle as vehicles passing by or car doors slamming could lead to abandoned food delivery attempts or flights responses (USFWS 2003, Hamer and Nelson 1998).

Current WSDOT (2013) guidance indicates that blasting within 0.25 of suitable murrelet nesting habitat during the nesting season would result in the likely harassment of murrelets, while blasting within 300 feet of suitable murrelet nesting trees during the nesting season could result in the direct injury and/or mortality of individual birds. This does not apply if blasting takes place outside the nesting season. If blasting activities occur outside of the nesting season, then the effects are unlikely to impact murrelets, as they are unlikely to be using interior forested habitat during these periods of the year. Under the proposed plan, however, there is potential for blasting and pile driving to occur within the nesting season for marbled murrelets.

As outlined above, blasting would take place over a 30-day period, but would be limited to two blasts per day, with a total of no more than 10 blasts. Additionally, the installation of up to 16 piles using impact pile driving could also occur within the nesting period. These activities could potentially directly affect murrelet chicks in the event they are occupying a tree adjacent to the action area and could also result in other adverse impacts such as flight responses in nesting adults, or nest abandonment. Dooling and Popper (2007) reported that birds exposed to a single impulse of noise at 140 dB or greater are likely to suffer hearing damage; however, based on estimated noise level from blasting and the general height of murrelet nests, that would not be expected to occur to any potentially present murrelets within the action area.

The proposed activities also include the removal of three or more trees with platform structure potentially suitable for murrelet nesting. These trees provide increasingly unique habitat characteristics in the context of the surrounding forests of the region. Further, the forest found at the action area is approximately 46 miles from the marine waters of Puget Sound, indicating potential accessibility by murrelets for nesting. These trees, however, are located outside of the mapped suitable habitat for marbled murrelets (Figure 5). The removal of these mature trees means the removal of potential nesting platforms that could potentially be accessed by murrelets in the region.

It should be noted that this portion of forested habitat is immediately adjacent to a primary road corridor that currently experiences relatively high levels of human and vehicular disturbance. In addition, the surrounding area of undisturbed forest will continue to provide high quality habitat that would still be expected to provide suitable nesting opportunities, including suitable nesting platforms in large trees, for

marbled murrelets. Suitable marbled murrelet habitat mapped by the Park does not exist within the proposed project action area, and the proposed alteration of forested habitat in the project area represents an approximate 1.7-acre area outside of the approximately 26,000 acres of marbled murrelet habitat mapped within the Park boundaries (Figure 6).

No indirect or cumulative effects, nor effects of interrelated or interdependent actions that are reasonably certain to occur were identified within the vicinity of the proposed project.

4.2.2.3 Marbled Murrelet Conclusion and Effect Determination

The old-growth forest in the park and the adjacent wilderness areas provide high quality murrelet nesting habitat that is mostly free from development and the presence of people. Washington DOT (2013) guidance indicates the removal of suitable habitat that creates new canopy gaps equal to or greater than 0.25 acres; or the removal of trees within suitable habitat that have 4-inch wide platforms that are greater than 33 feet high results in a likely to adversely affect impact on marbled murrelets. Loud construction activities such as blasting and pile driving also have the potential to cause negative impacts to nesting murrelets if they are present in the vicinity of the project action area. However, based on previous park survey efforts and consultation with USFWS, there is a very low likelihood of murrelet presence within the project construction limits and larger action area, which is located on the northeast side of Mount Rainier, due to distance to marine waters and topographic features that are present between marine waters and the proposed action area.

Although the trees proposed for removal include up to three large trees with structure suitable for murrelet nesting platforms, and the anticipated project noise, due to the location of the project action area on and along a primary road and the low likelihood of individual murrelets occurring within the action area it is expected that the proposed project **may affect, and is not likely to adversely affect** the marbled murrelet. If new information shows that marbled murrelets become active within the construction boundaries or action area, USFWS would be contacted to reinitiate consultation and additional conservation measures (such as timing restrictions) may be implemented.

4.2.2.4 Designated Marbled Murrelet Critical Habitat

There is no designated marbled murrelet critical habitat within the action area. The USFWS designated critical habitat for the marbled murrelet in 1996 (USFWS 1996). Critical habitat was not designated in national parks. However, adjacent national forest lands that border the park are designated as critical habitat. The primary constituent elements identified in the marbled murrelet critical habitat rule include (1) individual trees with potential nesting platforms, and (2) forested areas within 0.5 mile of individual trees with potential nesting platforms, and a canopy height of at least one-half the site potential tree height. This includes all such forests, regardless of contiguity (USFWS 1996). Actions associated with the Fryingpan Creek Bridge Project would have no direct or indirect effects to the primary constituent elements of designated marbled murrelet critical habitat. Therefore, the proposed action would have **no effect** on designated marbled murrelet critical habitat.

4.2.3 Yellow–Billed Cuckoo (*Coccyzus americanus*)

4.2.3.1 Status and Summary of Species Biology

In October 2014, the USFWS listed the western distinct population segment (DPS) of the yellow-billed cuckoo as a threatened species (Federal Register 2014b). In western North America, the yellow-billed cuckoo typically occupies forested streamside habitat, particularly where dominated by willows and cottonwoods that form open woodlands with dense, low vegetation; they are generally absent from large, urban areas and dense forests (Seattle Audubon Society 2022).

Yellow-billed cuckoos apparently have been extirpated as a breeding population in Washington, with only occasional sightings over the last 20 years (Seattle Audubon Society 2022; Smith et al. 1997). Historically, they nested along wooded rivers in eastern Washington, as well as at least six areas of western Washington including: (1) the vicinity of Bellingham and Marietta in Whatcom County; (2) the Mount Vernon area in Skagit County; (3) the area around Lake Washington and Seattle in King County; (4) the Tacoma area in Pierce County; (5) the vicinity of Grays Harbor in Grays Harbor County; and (6) the lower Columbia River in the vicinity of Vancouver and Ridgefield in Clark County. Breeding in the state was last fully confirmed in 1923, but likely continued until at least the early 1940s (Seattle Audubon Society 2022, Smith et al. 1997, Wiles and Kalasz 2017).

Only 4 observations of yellow-billed cuckoos have occurred in western Washington since the 1950s, and none of these were associated with probable breeding pairs (Wiles and Kalasz 2017). No observations of this species have ever been made in the vicinity of the project action area or the park (Wiles and Kalasz 2017). Although cuckoos currently appear to be functionally extinct in Washington, it is possible that very small numbers of vagrant individuals or breeding pairs may occur in the state and are yet to be discovered due to a lack of surveys for the species.

Forest cover directly adjacent to the Fryingpan Creek corridor within the action area consists primarily of some patches of red alder, interspersed among more shrub-dominated habitat and older forest cover types (NPS 2022). Although some areas along Fryingpan Creek may have vegetative communities similar to those preferred by yellow-billed cuckoos, because yellow-billed cuckoos are not known to occur regularly in Washington, and none of the proposed critical habitat is located in Washington (Federal Register 2014c, 2014d), it is unlikely this species would occur anywhere within the action area, other than an occasional transient individual.

4.2.3.2 Yellow-Billed Cuckoo Conclusion and Effect Determination

Yellow-billed cuckoos have never been documented in the park. This species is considered essentially extirpated in Washington state. Based on the species' very rare historical record of occurrence in the state, the general lack of suitable nesting habitat, lack of documented presence within the Park or the proposed action area, there would be **no effect** on yellow-billed cuckoo.

4.2.3.3 Designated Yellow-Billed Cuckoo Critical Habitat

No designated yellow-billed cuckoo critical habitat is present within the action area. The USFWS designated critical habitat for the yellow-billed cuckoo in 2014 (Federal Register 2014c, 2014d). Critical habitat was not designated in national parks, nor was critical habitat designated within Washington State. Therefore, the proposed action would have **no effect** on designated yellow-billed cuckoo critical habitat.

4.2.4 Gray Wolf (*Canis lupus*)

4.2.4.1 Status and Summary of Species Biology

Gray wolves (*Canis lupus*) nearly became extinct in the lower 48 states in the early part of the 20th century. Predator-control programs, loss of habitat, and loss of prey resulted in the elimination of wolves throughout most of the lower 48 states (USFWS 2022a). In Washington State, the wolf population was virtually eliminated by the 1930s and was believed to be extirpated in the state by the 1930s, but has gradually rebounded since 2008, when the first new resident pack was documented in Okanogan County in north-central Washington (WDFW et al. 2019). Dispersing wolves from increasing populations in Idaho, Montana, and British Columbia, Canada, were likely responsible for the documented reports of wolves in northern Washington during the 1990s to early 2000s (USFWS 2022a). Since 2008, wolves have continued to naturally recolonize the state via dispersal from resident Washington packs and

neighboring states and provinces. Habitat loss and human conflict remain the primary threats to gray wolf populations.

Gray wolves have been classified as endangered in all or part of Washington since the species was first listed in 1974. In 2011, the federal government ended the protection for wolves in the eastern third of the state but preserved it for those in the western two-thirds. On March 15, 2019, the USFWS published a proposed rule to remove the wolf from the list of threatened and endangered wildlife based on their review of best available scientific and commercial information and concluded that the currently listed populations no longer meet the definition of threatened or endangered species under ESA (Federal Register 2019). The Final Rule to remove gray wolves from the List of Endangered and Threatened Wildlife was published on November 3, 2020. The final rule went into effect on January 4, 2021 and wolves in Washington State were delisted from the Federal Endangered Species Act statewide, until February 10, 2022, when a U.S. District Judge's order overturned this decision.

Gray wolves have widespread territories and may travel up to 30 miles in a single day. Territories can exceed 1,500 square miles, depending on prey availability and prey movements (USFWS 2022a). The nearest known established wolf pack in Washington is the Teanaway pack located near Cle Elum (WDFW et al. 2019), which is located to the north of I-90 many miles from the project area. With the construction of the I-90 wildlife crossing and ample suitable habitat located within the park (Mesler 2015), it is possible that gray wolves could occasionally use the project area and its associated action area. A recent camera trap survey noted the presence of elk and deer near the project area (Cascades Carnivore Project 2022), which provides foraging opportunities for wolves; however no individual wolves were detected during these surveys.

4.2.4.2 Direct Effects to Gray Wolves

As with the previous wildlife species discussed, the most applicable direct effects to gray wolves from the proposed project activities include potential disturbance to wolves from project noise and activity and the removal of roadside forested habitat.

One study in Canada measured the impacts on wolf dispersal before, during, and after a road widening project and discovered that wolves tended to cross roads less frequently during active construction and after road widening took place (Lesmerises et al 2013). Researchers suggested that wolves can tolerate human disturbance and activity in some contexts but need to hide in vegetative cover nearby when human activity is high. Displacement of individual wolves from areas of high noise disturbance from the proposed project activities and human presence is not anticipated to have measurable population effects due to the large home ranges typically occupied by individual wolves, as well as the amount of suitable habitat available in the adjacent areas. Road widening is not proposed as part of the Fryingpan Bridge Improvement Project, however we may expect similar impacts to wolves as outlined above from the proposed habitat alterations.

The project proposes to permanently remove 0.4 acres of roadside coniferous forest and would cause temporary impacts to 1.3 acres of coniferous forest. These impacts will change the character and habitat functions of the existing coniferous forest to a younger-aged plant community until vegetation reaches a mature stage of growth many years later. These existing coniferous forest areas could potentially be used as dispersal habitat by individual wolves. In the context of the landscape adjacent to the project action area, this is a small portion of the overall available wolf habitat and would not have a significant impact on the general availability of foraging opportunities, dispersal habitat, or other related habitat features. Because wolves are known to use a variety of forest types, it would be expected that any individual wolves that happened to use the project action area before construction activities, could likely still use the project action area in a similar capacity after the vegetation removal occurs.

One indirect effect on gray wolves that could occur as a result of the proposed activities is the removal of vegetation that is within prey species habitat, and changes to local habitat use, resulting in a potential reduction of foraging opportunities for wolves within the action area. A recent large mammal study of the area determined that many elk, which are a primary prey species for wolves, are present in the vicinity of the project action area. The removal of large, mature trees, as well as many smaller trees, as proposed to allow for project construction, could discourage elk from using the project area during construction and could change how these species use the area until forest communities develop the same level of old-growth characteristics as before project impacts. The proposed replacement of the existing bridge with a longer bridge would provide for a wider area beneath the bridge that may facilitate wildlife travel through the area by providing an improved wildlife crossing opportunity separate from the Sunrise Road in this location.

4.2.4.3 Gray Wolf Conclusion and Effect Determination

As discussed above, no individual gray wolves have been recently detected within the action area; however, a known wolf pack exists outside of the park on the north side of I-90, which is within dispersing distance from the action area. Though the pack is approximately 37 miles from the park, wolves are known to regularly travel long distances, especially dispersing males. The proposed activities may temporarily discourage wolves from using the action area because of project noise and due to the removal of roadside vegetation that is proposed to allow construction of the new bridge and relocated parking area. Although the proposed action would remove vegetation and result in potential noise disturbance during construction, it is unlikely that individual wolves would be present within the action area during the proposed activities. Additionally, if an active wolf den or rendezvous site becomes established, no ground-disturbing work would occur within 0.25 mile, as needed, until wolves are no longer using the area for denning or as a rendezvous site.

Also, the action area is adjacent to extensive suitable habitat that would continue to be available to wolves should they be present within the park during project activities. Accordingly, it is expected that the proposed activities **may affect, but are not likely to adversely affect** gray wolves.

4.2.4.4 Designated Gray Wolf Critical Habitat

No designated gray wolf critical habitat is present within the action area. As of the time of preparing this report, critical habitat for gray wolves had only been designated in Michigan and Minnesota (Federal Register 1978). Critical habitat was not designated in national parks, nor was critical habitat designated within Washington State. Therefore, the proposed action would have **no effect** on designated gray wolf critical habitat.

4.2.5 North American Wolverine (*Gulo gulo*)

4.2.5.1 Status and Summary of Species Biology

In 2013, the USFWS proposed threatened status for the North American wolverine, but the proposed rule was withdrawn in 2016 and 2020 (Federal Register 2013, 2016, 2020). A Montana District Court issued a ruling in May of 2022 that the USFWS must reexamine the 2020 withdrawal, reinstating the proposed protections to wolverines (Center for Biological Diversity 2022). Wolverines are generally associated with alpine vegetation and climatic conditions (Aubry et al. 2016). They tend to inhabit remote areas near the timberline and give birth to young during winter in subnivean dens (Magoun and Copeland 1997). It is also suspected that wolverines are sensitive to human disturbance at natal and maternal den sites.

Wolverines are generally opportunistic feeders, and can rely on a variety of food types, including primarily carrion, but also small animals and birds, fruits, berries, and insects, using their keen sense of smell to detect food sources deep beneath snow (Hornocker and Hash 1981).

In 2020, wolverines reproduced in the park for the first time in over a century. Recent large mammal camera surveys performed near the proposed project area confirmed that wolverines use the habitats in the vicinity of the project and action area (Cascades Carnivore Project 2022). While the majority of a wolverine's life is spent in remote, alpine locations, wolverines are also known to disperse across great distances (Hornocker and Hash 1981), which could include the proposed action area. Highways and roads are a source of wolverine mortality, one of the offspring from 2020 was struck and killed by a car on a highway east of the park and a different male was killed on I-90. Wolverines exist in the United States as small and semi-isolated subpopulations that rely on large dispersal patterns for the maintenance of the larger metapopulation (USFWS 2022b). This would suggest that any existing subpopulations are important to the species as a whole.

4.2.5.2 Direct Effects to Wolverines

Because of their reclusive nature, there is not a great deal of literature concerning the effects of human disturbance on wolverines. Similar to the potential direct effects to gray wolves from the proposed project activities, the most applicable direct effects to wolverines from the proposed project activities would include potential disturbance from project noise and activity and the removal of vegetation within roadside forested habitat.

Although little is known about the specific effects of human presence and repeated disturbance to wolverine behavior (USFWS 2011), it is expected that there is a threshold level of increased human disturbance that would result in negative effects to the quality of nearby habitats to wolverines present and would cause temporal and spatial displacement of individual wolverines. In one study, Scrafford et al. (2017) found that wolverines could potentially be tolerant of loud development activities such as active logging operations, but were more likely to avoid areas of heavy human disturbance. Displacement of individual wolverines or females with kits from areas of high noise disturbance because of the proposed project activities and human presence is not anticipated to have measurable population effects due to the large home ranges typically occupied by individual wolverines, as well as the amount of suitable habitat available in adjacent areas.

In addition, the effects due to project-related noise are not anticipated to impact natal den sites of wolverines. Because wolverines generally den in higher alpine areas, direct effects to breeding individuals within the action area would be unlikely. Further, construction activities would be reduced during February to May as a result of snow (when wolverines typically are denning), thus project noise would not likely impact any denning individuals.

Project noise, especially blasting, could potentially deter dispersing individuals as they traverse the landscape through the action area. This effect would likely only impact single dispersing individuals that are traveling to other alpine habitats.

The project proposes to remove 0.4 acres of coniferous forest vegetation and would cause temporary impacts to 1.3 acres of coniferous forest. These impacts will change the character and habitat functions of the existing roadside coniferous forest to a younger-aged plant community until vegetation reaches a mature stage of growth many years later. The existing coniferous forest areas could potentially be used as dispersal habitat by individual wolverines. In the context of the landscape adjacent to the project and action area this is a small portion of the overall available habitat. This would not have a significant impact on wolverines' ability to disperse across the landscape in the vicinity of the project action area.

4.2.5.3 North American Wolverine Conclusion and Effect Determination

Wolverines have been recently confirmed within the vicinity of the action area, and wolverines are also known to disperse through suitable habitats over very long distances. The proposed activities could discourage wolverines from using the action area due to project noise and the removal of roadside vegetation within suitable habitat. Although it is unlikely that individual wolverines would be present within the action area during the proposed activities, and due to the availability of extensive suitable habitat adjacent to the project area and action area, the proposed activities **will not jeopardize the continued existence** of the North American wolverine.

4.2.5.4 Designated Wolverine Critical Habitat

At the time of preparing this report no critical habitat has been designated for North American Wolverine. Consequently, the proposed project would not impact critical habitat for North American Wolverine.

4.2.6 Monarch Butterfly (*Danaus plexippus*)

4.2.6.1 Status and Summary of Species Biology

A candidate species, the monarch butterfly (*Danaus plexippus*) is not federally listed as threatened or endangered. Although the USFWS indicated it currently meets the criteria for listing, the monarch butterfly was not listed to devote resources to higher-priority listing actions (USFWS 2020). Review of the species' status will continue annually until its status is no longer candidate species. Range-wide fragmentation and degradation of habitat are the main factors in the current decline of monarch butterfly populations (USFWS 2022c).

The monarch is widespread throughout the contiguous United States and is known to occur in Washington, although monarchs are generally found east of the Cascade Crest. Habitat requirements include sufficient amounts of milkweed, as well as a variety of other nectar-producing plant abundance for nectar foraging, and generally herbaceous and sparsely vegetated plant communities, typically near wetlands and riparian areas (USFWS 2020). Although milkweed is often associated with roadside habitat, which could potentially be found along Sunrise Road and the existing bridge over Fryingpan Creek at the project area, there are no reports of native milkweeds west of the Cascade Crest in Washington, other than those that were likely planted in the Seattle Area (The Xerces Society 2018). Additionally, botanical studies at the project area (NPS 2022) further support the conclusion that no milkweed is present at the project area, and likely not within the action area. It is not expected that monarch butterflies would use the action area due to the nonexistence of their preferred forage, the lack of open, herbaceous habitat, and the generally forested nature of the action area.

4.2.6.2 Monarch Butterfly Conclusion and Effect Determination

Because no preferred forage, nor suitable habitat structure is present within the action area, and the project does not propose to remove any large areas of grassy foraging areas containing milkweed and other nectar-producing grassland plants, the proposed project activities would have **no effect** on monarch butterflies.

4.2.6.3 Designated Monarch Butterfly Critical Habitat

At the time of preparing this report no critical habitat has been designated for the monarch butterfly. Consequently, the proposed project would not impact critical habitat for the monarch butterfly.

5. REFERENCES AND LITERATURE CITED

ABR, Inc. 2009. *Radar surveys for marbled murrelets in Mt. Rainier National Park*, 2009. An unpublished report submitted to the National Park Service Mount Rainier National Park, Ashford WA. Prepared by ABR Inc., Forest Grove, OR. November 2009. 17 pp.

AECOM. 2022. *Wetland and Stream Delineation Report for Fryingpan Creek Bridge Replacement Project*. Prepared for U.S Department of Transportation, Western Federal Highway Administration. 74 pp.

Aubry, K.B., J. Rohrer, C.M. Raley, and S. Fitkin. 2016. *Wolverine Distribution and Ecology in the North Cascades Ecosystem: Final Progress Report (February 9, 2016).* Available at: https://wolverinefoundation.org/wp-content/uploads/2011/02/NorthCascadesWolverineStudy_Final-Progress-Report2012-2016.pdf.

Awbrey, F.T., and A.E. Bowles. 1990. *The effects of aircraft noise and sonic booms on raptors: a preliminary model and a synthesis on the literature on disturbance.* U.S. Air Force, Patterson Air Force Base, Ohio.

Bagnall, K.B., and W.M. King, T. Chestnut, and M. Wagner. 2019. *Spotted owl monitoring in Mount Rainier National Park, 2019 annual report.* National Park Service unpublished report 17 pp.

Cascades Carnivore Project. 2022. *Large Mammal Surveys for Federal Lands Transportation Program: State Highway 123 Rehabilitation Project and Fryingpan Creek Bridge Replacement Project.* April 2022.

Center for Biological Diversity. 2022. "Court Restores Wolverine Protections While Agency Reconsiders Endangered Species Decision." https://biologicaldiversity.org/w/news/press-releases/court-restores-wolverine-protections-while-agency-reconsiders-endangered-species-decision-2022-05-27/. May 27, 2022.

Cottone, N.Q.; Ettl, G.J. 2001. Estimating populations of whitebark pine in Mount Rainier National Park, Washington, using aerial photography. *Northwest Science*. 75: 397–406.

Delaney, D.K., T.G. Grubb, P. Beier, L.L. Pater, and M.H. Reiser. 1999. Effects of helicopter noise on Mexican Spotted Owls. Journal of Wildlife Management 63:60-76.

Dooling, R.J.; Popper, A.N. 2007. *The Effects of Highway Noise on Birds, a report prepared for the California Department of Transportation Division of Environmental Analysis.* 74 pages.

Dugger, Katie M., Eric D. Forsman, Alan B. Franklin, Raymond J. Davis, Gary C. White, Carl J. Schwarz, Kenneth P. Burnham, James D. Nichols, James E. Hines, Charles B. Yackulic, Paul F. Doherty, Jr., Larissa Bailey, Darren A. Clark, Steven H. Ackers, Lawrence S. Andrews, Benjamin Augustine, Brian L. Biswell, Jennifer Blakesley, Peter C. Carlson, Matthew J. Clement, Lowell V. Diller, Elizabeth M. Glenn, Adam Green, Scott A. Gremel, Dale R. Herter, J. Mark Higley, Jeremy Hobson, Rob B. Horn, Kathryn P. Huyvaert, Christopher McCafferty, Trent McDonald, Kevin McDonnell, Gail S. Olson, Janice A. Reid, Jeremy Rockweit, Viviana Ruiz, Jessica Saenz, Stan G. Sovern. 2016. The effects of habitat, climate, and Barred Owls on long-term demography of Northern Spotted Owls. *The Condor*. Volume 118, Issue 1. 1 February 2016. Pages 57–116. https://doi.org/10.1650/CONDOR-15-24.1

Falxa, G.A., J. Baldwin, D. Lynch, S.K. Nelson, S.L. Miller, S.F. Pearson, M.G. Raphael, C. Strong, T. Bloxton, B. Galleher, B. Hogoboom, M. Lance, and R. Young. 2009. *Marbled murrelet effectiveness monitoring. Northwest Forest Plan: 2008 summary report.* 19 pp.

Federal Highway Administration (FHWA). 2006. *Highway construction noise handbook.* Chapter 9. Construction equipment noise levels and ranges. U.S. Department of Transportation Federal Highway Administration Office of Natural and Human Environment. Washington, D.C. August 2006. http://www.fhwa.dot.gov/environment/noise/handbook/.

Federal Highway Administration (FHWA). 2020. *Bridge Inspection Report, Fryingpan Creek Bridge Sunrise Road over Fryingpan Creek, Mount Rainier National Park.* August 2020.

Federal Register. 1978. U.S. Department of the Interior, Fish and Wildlife Service. 43 FR 9607 9615. Reclassification of the Gray Wolf in the U.S. and Mexico with Determination of Critical Habitat in Michigan and Minnesota. Vol. 43, No. 47. March 9, 1978

Federal Register. 2005. U.S. Department of Commerce, National Oceanic and Atmospheric Administration. 50 CFR Part 226: Endangered and Threatened Species; Critical habitat for 12 Evolutionarily Significant Units (ESUs) of salmon and steelhead (Oncorhynchus spp.) in Washington, Oregon and Idaho. Vol. 70, No. 170.

Federal Register. 2010. U.S. Department of the Interior, Fish and Wildlife Service. 50 CFR Part 17: Endangered and Threatened Wildlife and Plants; Revised Designation of Critical Habitat for Bull Trout in the Coterminous United States; Final Rule. Vol. 75, No. 200: 63935.

Federal Register. 2013. U.S. Department of the Interior, Fish and Wildlife Service. 50 CFR Part 17: Endangered and Threatened Wildlife and Plants; Threatened Status for the Distinct Population Segment of the North American Wolverine Occurring in the Contiguous United States; Establishment of a Nonessential Experimental Population of the North American Wolverine in Colorado, Wyoming, and New Mexico; Proposed Rules. Vol. 78, No. 23: 7864-7890. February 4, 2013.

Federal Register. 2014a. U.S. Department of Commerce, National Oceanic and Atmospheric Administration. 50 CFR Parts 223 and 224: Endangered and Threatened Wildlife; Final Rule To Revise the Code of Federal Regulations for Species Under the Jurisdiction of the National Marine Fisheries Service. Vol. 79, No. 71: 20802-20817. April 14, 2014.

Federal Register. 2014b. U.S. Department of the Interior, Fish and Wildlife Service. 50 CFR Part 17: Endangered and Threatened Wildlife and Plants; Determination of Threatened Status for the Western Distinct Population Segment of the Yellow-billed Cuckoo *(Coccyzus americanus);* Final Rule. Vol. 79, No. 192: 59992-60038. October 3, 2014.

Federal Register. 2014c. U.S. Department of the Interior, Fish and Wildlife Service. 50 CFR Part 17: Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the Western Distinct Population Segment of the Yellow-Billed Cuckoo; Proposed Rule. Vol. 79, No. 158: 48548-48652. August 15, 2014.

Federal Register. 2014d. U.S. Department of the Interior, Fish and Wildlife Service. 50 CFR Part 17: Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the Western Distinct Population Segment of the Yellow-Billed Cuckoo (*Coccyzus americanus*); Proposed Rule; reopening of comment period. Vol. 79, No. 218: 67154-67155. November 12, 2014.

Federal Register. 2016a. U.S. Department of Commerce, National Oceanic and Atmospheric Administration. 50 CFR Parts 223 and 226: Endangered and Threatened Species; Designation of Critical Habitat for Lower Columbia Coho Salmon and Puget Sound Steelhead; Final Rule. Vol. 81, No. 36: 9302-9303. February 24, 2016.

Federal Register. 2016b. U.S. Department of the Interior, Fish and Wildlife Service. 50 CFR Part 17: Endangered and Threatened Wildlife and Plants; Proposed Rule for the North American Wolverine; Proposed rule; reopening of comment period. Vol. 81, No. 201: 71670-71671. October 18, 2016.

Federal Register. 2019. U.S. Department of the Interior, Fish and Wildlife Service. 50 CFR Part 17: Endangered and Threatened Wildlife and Plants; Removing the gray wolf (*Canis lupus*) from the list of endangered and threatened wildlife; Proposed rule. Vol. 84, No. 51: 9648-9687. March 15, 2019.

Federal Register. 2020. U.S. Department of the Interior, Fish and Wildlife Service. 50 CFR Part 17: Endangered and Threatened Wildlife and Plants; Withdrawal of the Proposed Rule for the North American Wolverine. Vol. 85, No. 198. October 13, 2020.

Forsman, E.D., E.C. Meslow, and H.M. Wight. 1984. Distribution and biology of the spotted owl in Oregon. *Wildlife Monographs* 87:1-64.

Forsman, E.D., R.G. Anthony, J.A. Reid, P.J. Loschl, S.G. Sovern, M. Taylor, B.L. Biswell, A. Ellingson, E.C. Meslow, G.S. Miller, K.A. Swindle, J.A. Thrailkill, F.F. Wagner, and D. E. Seaman. 2002. Natal and breeding dispersal of northern spotted owls. *Wildlife Monographs* 149:1-35.

Groot, C., and L. Margolis. 2003. *Pacific Salmon Life Histories.* UBC Press, Vancouver BC, Canada.

Hamer, T.E., and S.K. Nelson. 1998. *Effects of disturbance on nesting marbled murrelets: summary of preliminary results.* An unpublished report prepared for U.S. Fish and Wildlife Service, Portland, OR. January 1998. Hamer Environmental, Mount Vernon, Washington and Oregon State University, Corvallis. 24 pp.

Hébert, P.N. and R.T. Golightly. 2006. *Movements, nesting, and response to anthropogenic disturbance of Marbled Murrelets (Brachyramphus marmoratus) in Redwood National and State Parks, California.* Unpublished report, Department of Wildlife, Humboldt State University, Arcata, California and California Department of Fish and Game Report 2006-02, Sacramento, CA.

Hornocker, M. G., and H. S. Hash. 1981. Ecology of the wolverine in northwestern Montana. *Can. J. Zool.* 59: 1286-1301.

Lesmerises, Frédéric, Christian Dussault, and Martin-Hugues St-Laurent. 2013. "Major roadwork impacts the space use behavior of gray wolf." *Landscape and Urban Planning* 112 (2013): 18-25.

Long, L. and C.J. Ralph. 1998. *Regulation and observation of human disturbance near nesting marbled murrelets.* USDA Forest Service, Pacific Southwest Research Station, Redwood Sciences Laboratory, Arcata, CA.

Lynch, D., J. Baldwin, M.M. Lance, S.K. Nelson, S.F. Pearson, M.G. Raphael, C. Strong, and R. Young. 2017. *Marbled murrelet effectiveness monitoring. Northwest Forest Plan: 2016 summary report.* 19 pp.

Mack, D.E., W.P. Ritchie, S.K. Nelson, E. Kuo-Harrison, P. Harrison, and T.E. Hamer. 2003. *Methods for surveying marbled murrelets in forests: a revised protocol for land management and research.* Pacific Seabird Group. Portland, OR. 60 pp.

Mangan, A.O., Chestnut, T., Vogleler, J.C., Breckheimer, I.K., King, W.M., Bagnall, K.E., Dugger, K.M. 2019. Barred Owls reduce occupancy and breeding propensity of Northern Spotted Owl in a Washington old-growth forest. *The Condor.* Volume 121, Issue 3. 1 August, 2019. https://doi.org/10.1093/condor/duz031

Magoun, A.J., and J.P. Copeland. 1998. Characteristics of wolverine reproductive den sites. *Journal of Wildlife Management* 62:1313-1320.

Marks, E.L., R.C. Ladley, B.E. Smith, A.G. Berger, and K. Williamson. 2020. *Puyallup Tribal Fisheries Annual Salmon, Steelhead And Bull Trout Report: Puyallup/White River Watershed—Water Resource Inventory Area 10, 2019-2020.* Puyallup Tribal Fisheries, Puyallup, WA.

Marks, E.L., R.C. Ladley, B.E. Smith, A.G. Berger, and K. Williamson. 2021. Puya*llup Tribal Fisheries Annual Salmon, Steelhead And Bull Trout Report: Puyallup/White River Watershed—Water Resource Inventory Area 10, 2020-2021.* Puyallup Tribal Fisheries, Puyallup, WA.

Mount Rainier National Park (MORA). 2020. *Mount Rainier National Park Fryingpan Creek Aquatic Resources.* Internal Report 12/2020 v2. Ashford, WA. 98304

Mount Rainier National Park (MORA). 2021. *Wonderland Trail Repair Blast Noise.* Internal Report September 2021. Ashford, WA. 98304

Mesler, J.I. 2015. *Modeling Habitat Suitability and Connectivity of Gray Wolf (Canis lupus) Populations in the Pacific Northwest.* Thesis, Humboldt State University. July 2015.

Mitchell, S., Rhea-Fournier, D., Chestnut, T. 2021. *Northern spotted owl monitoring at Mount Rainier National Park, 2021 annual report draft.* National Park Service unpublished report 25 pp.

National Park Service (NPS). 2009. *Mount Rainier National Park marbled murrelet 2009 progress report.* Draft report prepared by J. Dhundale. August 2009. National Park Service Mount Rainier National Park, Ashford, WA. 23 pp.

National Park Service (NPS). 2019. *White River Repair Project Monitoring Report.* Prepared by Lofgren, R. Kenyon, T. Symonovicz, C. February 2019. National Park Service Mount Rainier National Park, Ashford, WA. 14 pp.

National Park Service (NPS). 2021. *Mount Rainier National Park Lahar Detection System Environmental Assessment*. May.

National Park Service (NPS). 2022b. Final Botanical Survey Report for Mount Rainier Fryingpan Creek Bridge Project Sunrise, Pierce County, Washington. Prepared for the National Park Service by Raedeke Associates, Inc. October 2022.

National Park Service (NPS). 2023. *Fryingpan Creek Bridge Improvement Project Environmental Assessment.* February 2023. Prepared for the National Park Service by EA Engineering, Science, and Technology, Inc.

Nelson, S.K. 1997. Marbled murrelet (Brachyramphus marmoratus). In: (A. Poole and F. Gill, eds.). *Birds of North America, No. 276.* The Academy of Natural Sciences, Philadelphia, Pennsylvania, and the American Ornithologists Union, Washington D.C.

NOAA Fisheries. 2016. Status of ESA listings & critical habitat designations for West Coast salmon & steelhead. Available at: https://www.fisheries.noaa.gov/resource/document/status-esa-listings-and-critical-habitat-designations-west-coast-salmon-and. West Coast Region. Updated July 1, 2016.

NOAA Fisheries. 2017. Essential Fish Habitat (EFH). Available at: http://www.westcoast.fisheries.noaa.gov/habitat/fish_habitat/efh_consultations_go.html . Accessed August 2022.

Pacific Fishery Management Council. 2014. Identification and description of essential fish habitat, adverse impacts, and recommended conservation measures for salmon. Appendix A in *Pacific Fishery Management Council, Amendment 14 to the Pacific Coast Salmon Plan.* Pacific Fishery Management Council, Portland Oregon.

Quantum Spatial Inc., Williamson, K., Puyallup Tribe of Indians. 2020. Te*chnical Data Report – Puyallup River and White River Thermal Infrared Project.* Corvallis, OR.

Ralph, C.J.; G.L. Hunt, Jr., M.G. Raphael, and J.F. Piatt, Technical Editors. 1995. *Ecology and conservation of the Marbled Murrelet.* Gen. Tech. Rep. PSW-GTR-152. Albany, CA: Pacific Southwest Research Station, Forest Service, U.S. Department of Agriculture. 420 pp.

Raphael, M.G., G.M. Gelleher, M.H. Huff, S.L. Miller, S.K. Nelson, and R. Young. 2006. Spatially-explicit estimates of potential nesting habitat for the marbled murrelet. Chapter 5 in: *Marbled Murrelet Effectiveness Monitoring Team; M. Huff, Tech. Coord. Northwest Forest Plan – The first 10 years (19942003): Status and trend of populations and nesting habitat for the marbled murrelet.* Gen. Tech. Report PNW-GTR-650. Portland, OR: USDA Forest Service, Pacific Northwest Research Station.

Rieman, B.E., and J.D. McIntyre. 1993. *Demographic and habitat requirements for conservation of bull trout.* USDA Forest Service, Intermountain Research Station, General Technical Report INT-302.

Rieman, B.E., and J.D. McIntyre. 1995. *Occurrence of bull trout in naturally fragmented habitat patches of varied size.* Transactions of the American Fisheries Society. Vol. 124 (3):285-296.

Scrafford, M.A., T. Avgar, B. Abercrombie, J. Tigner, and M.S. Boyce. 2017. Wolverine habitat selection in response to anthropogenic disturbance in the western Canadian boreal forest. *Forest Ecology and Management* 395:27–36. http://dx.doi.org/10.1016/j.foreco.2017.03.029.

Seattle Audubon Society. 2022. BirdWeb: yellow-billed cuckoo. Available at: http://birdweb.org/Birdweb/bird/yellow-billed_cuckoo. Accessed September, 2022.

Smith, M.R., P.W. Mattocks Jr., and K.M. Cassidy. 1997. Breeding birds of Washington State. Volume 4 In *Washington State Gap Analysis - Final Report* (K.M. Cassidy, C.E. Grue, M.R. Smith, and K.M. Dvornich, eds.). Seattle Audubon Society Publications in Zoology No. 1, Seattle, Washington. 538 pp.

Thomas, J.W., E.D. Forsman, J.B. Lint, E.C. Meslow, B.R. Noon, and J. Verner. 1990. *A conservation strategy for the northern spotted owl. Interagency Scientific Committee to address the conservation of the northern spotted owl.* USDA Forest Service, USDI Bureau of Land Management, USDI Fish and Wildlife Service, and USDI National Park Service. Portland, Oregon. 458 pp.

US Department of Transporation (USDOT). 1995. *Highway Traffic Noise Analyses and Abatement: Policy and Guidance.* U.S. Department of Transportation, Federal Highway Administration, Office of Environment and Planning, Noise and Air Quality Branch, Washington, D.C.

U.S. Fish and Wildlife Service (USFWS). 1990. Endangered and threatened wildlife and plants; determination of threatened status for the northern spotted owl. *Federal Register* Vol. 55. 123: 26114-26194. June 26, 1990.

U.S. Fish and Wildlife Service (USFWS). 1992a. *Draft final recovery plan for the northern spotted owl.* U.S. Fish and Wildlife Service. 2 Volumes. Portland, Oregon. 662 pp. + xiii.

U.S. Fish and Wildlife Service (USFWS). 1992b. Endangered and threatened wildlife and plants; determination of threatened status for the Washington, Oregon, and California population of marbled murrelet. *Federal Register* Vol. 57:4532845337. October 1, 1992.

U.S. Fish and Wildlife Service (USFWS). 1997. *Recovery Plan for the Threatened Marbled Murrelet (Brachyramphus marmoratus) in Washington, Oregon, and California.* Portland, Oregon. 203 pp.

U.S. Fish and Wildlife Service (USFWS). 2008a. Fin*al recovery plan for the northern spotted owl, Strix occidentalis caurina.* U.S. Fish and Wildlife Service, Portland, Oregon. xii + 142 pp.

U.S. Fish and Wildlife Service (USFWS). 2008b. Endangered and threatened wildlife and plants; revised designation of critical habitat for the northern spotted owl; Final Rule. *Federal Register*. Vol. 73, No. 157. Wednesday, August 13, 2008: 47326-47522.

U.S. Fish and Wildlife Service (USFWS). 2010. *Bull trout final critical habitat justification: rationale for why habitat is essential, and documentation of occupancy.* Portland, OR.

U.S. Fish and Wildlife Service (USFWS). 2012a. *Marbled Murrelet Nesting Season and Analytical Framework for Section 7 Consultation in Washington.* Washington Fish and Wildlife Office. Lacey, WA. June 20, 2012.

U.S. Fish and Wildlife Service (USFWS). 2012b. Gui*dance for Identifying Marbled Murrelet Nest Trees in Washington State.* Washington Fish and Wildlife Office. Lacey, WA. 26 April 2012.

U.S. Fish and Wildlife Service (USFWS). 2012c. *Recommended Fish Exclusion, Capture, Handling, and Electroshocking Protocols and Standards.* Washington Fish and Wildlife Office. Lacey, WA. 17 pp. June 19, 2012.

U.S Fish and Wildlife Service (USFWS). 2020. Press Release: U.S. Fish and Wildlife Service Finds Endangered Species Act Listing for Monarch Butterfly Warranted but Precluded. December 15, 2020. Available at: https://www.fws.gov/news/ShowNews.cfm?ref=u.s.-fish-and-wildlife-service-finds-endangered-species-act-listing-for-&_ID=36817

U.S. Fish and Wildlife Service (USFWS). 2021a. *Mount Rainier White-tailed ptarmigan (Lagopus leucura rainierensis).* Species Status Assessment. Version 1.

U.S. Fish and Wildlife Service (USFWS). 2021b. *Bull Trout Abundance and Fish Assemblage in Fryingpan Creek, Mount Rainier National Park.* U.S. Fish and Wildlife Service Western Washington Fish and Wildlife Conservation Office, Lacey, WA.

U.S. Fish and Wildlife Service (USFWS). 2021c. *Biological Opinion and Concurrence for the Wonderland Trail Repair Project.* Ref. 01EWFW00-2021-F-0787.

U.S. Fish and Wildlife Service (USFWS). 2022a. Gray wolf. Environmental Conservation Online System. Available at: https://ecos.fws.gov/ecp/species/4488#crithab. Accessed September 2022.

U.S. Fish and Wildlife Service (USFWS). 2022b. North American Wolverine. Environmental Conservation Online System. Available at: https://ecos.fws.gov/ecp/species/5123#lifeHistory

U.S. Fish and Wildlife Service (USFWS). 2022c. Monarch Butterfly. Environmental Conservation Online System. Available at: https://ecos.fws.gov/ecp/species/9743. Accessed September 2022.

U.S. Fish and Wildlife Service (USFWS). 2023. Natural resources of concern. Information, Planning, and Conservation System (IPAC). http://ecos.fws.gov/ipac/. Accessed February, 2023.

Ward K., Shoal, R., and Aubry C. 2006. *Whitebark pine in Washington and Oregon: a synthesis of current studies and historical data.* Pacific Northwest Region, USDA Forest Service.

Washington Department of Fish and Wildlife. 2022a. PHS on the web. Available at: https://geodataservices.wdfw.wa.gov/hp/phs/. Accessed August 2022.

Washington Department of Fish and Wildlife. 2022b. SalmonScape. http://apps.wdfw.wa.gov/salmonscape/map.html. Accessed August, 2022.

Washington Department of Fish and Wildlife, Confederated Colville Tribes, Spokane Tribe of Indians, USDA-APHIS Wildlife Services, and U.S. Fish and Wildlife Service. 2019. *Washington Gray Wolf Conservation and Management 2018 Annual Report.* Washington Department of Fish and Wildlife, Ellensburg, WA, USA. Available at: https://wdfw.wa.gov/publications/02062.

Washington Department of Transportation. 2013. *Advanced training manual – biological assessment preparation for transportation projects.* Environmental Affairs Office, Olympia, Washington. Updated August 2020.

Washington State Department of Natural Resources. 2004. *Forest Practices Board Manual. Section 15.* Guidelines for Estimating the Number of Marbled Murrelet Nesting Platforms. pp. 1-7.

Wiles, G. J., and K. S. Kalasz. 2017. *Status report for the Yellow-billed Cuckoo in Washington.* Washington Department of Fish and Wildlife, Olympia, Washington. 32+ iv pp.

The Xerces Society. 2018. *Managing for Monarchs in the West: Best Management Practices for Conserving the Monarch Butterfly and its Habitat.* 106+vi pp. Portland.

6. FIGURES AND TABLES

Figure 1. Regional and Vicinity Map

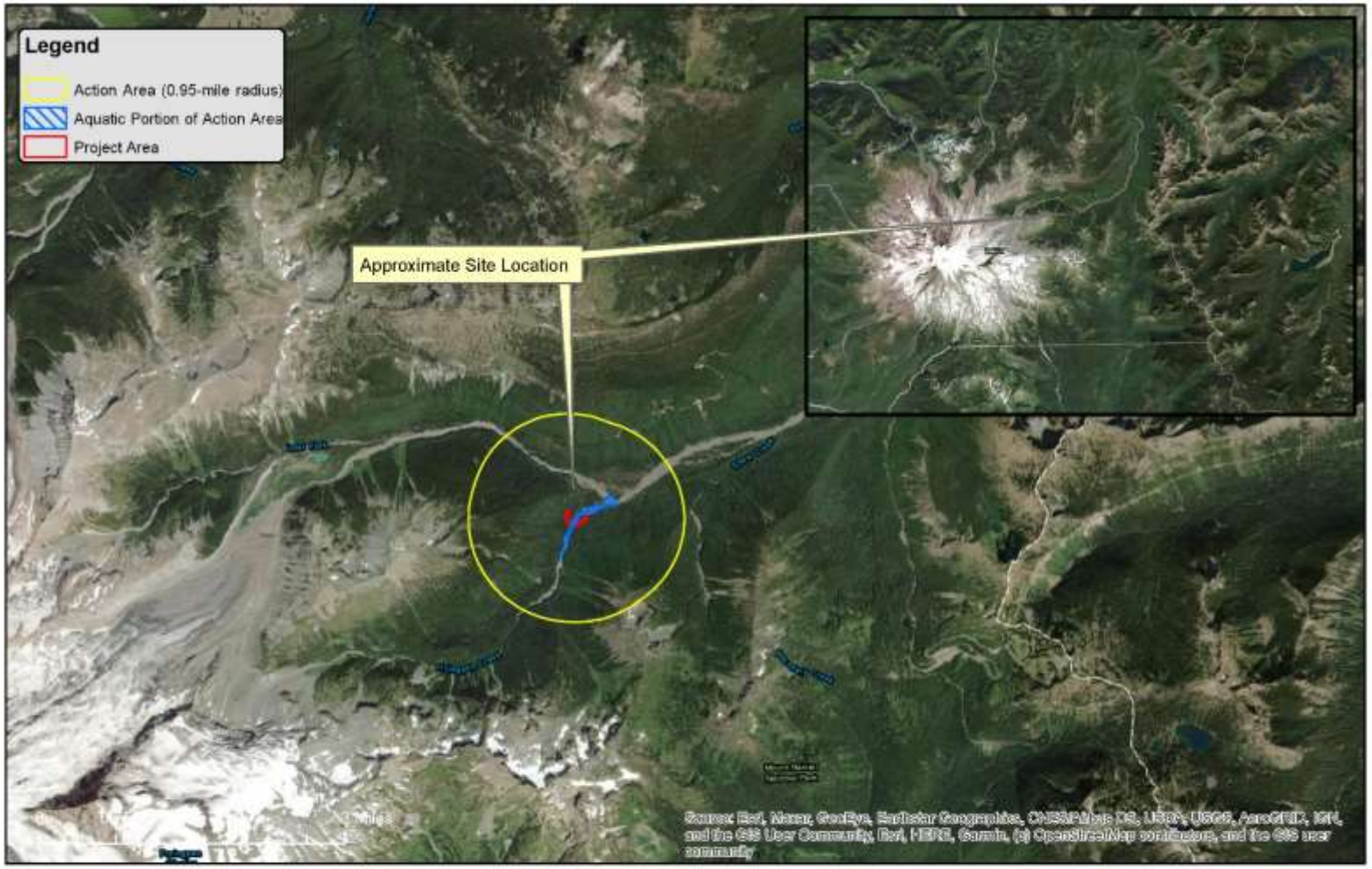

Figure 1 - Regional and Vicinity Map
Mount Rainier Fryingpan Creek Bridge Project

Pierce County, WA

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Map Created By: A. Rossi Date Created: 6 February, 2023

Figure 2. Action Area and Existing Conditions

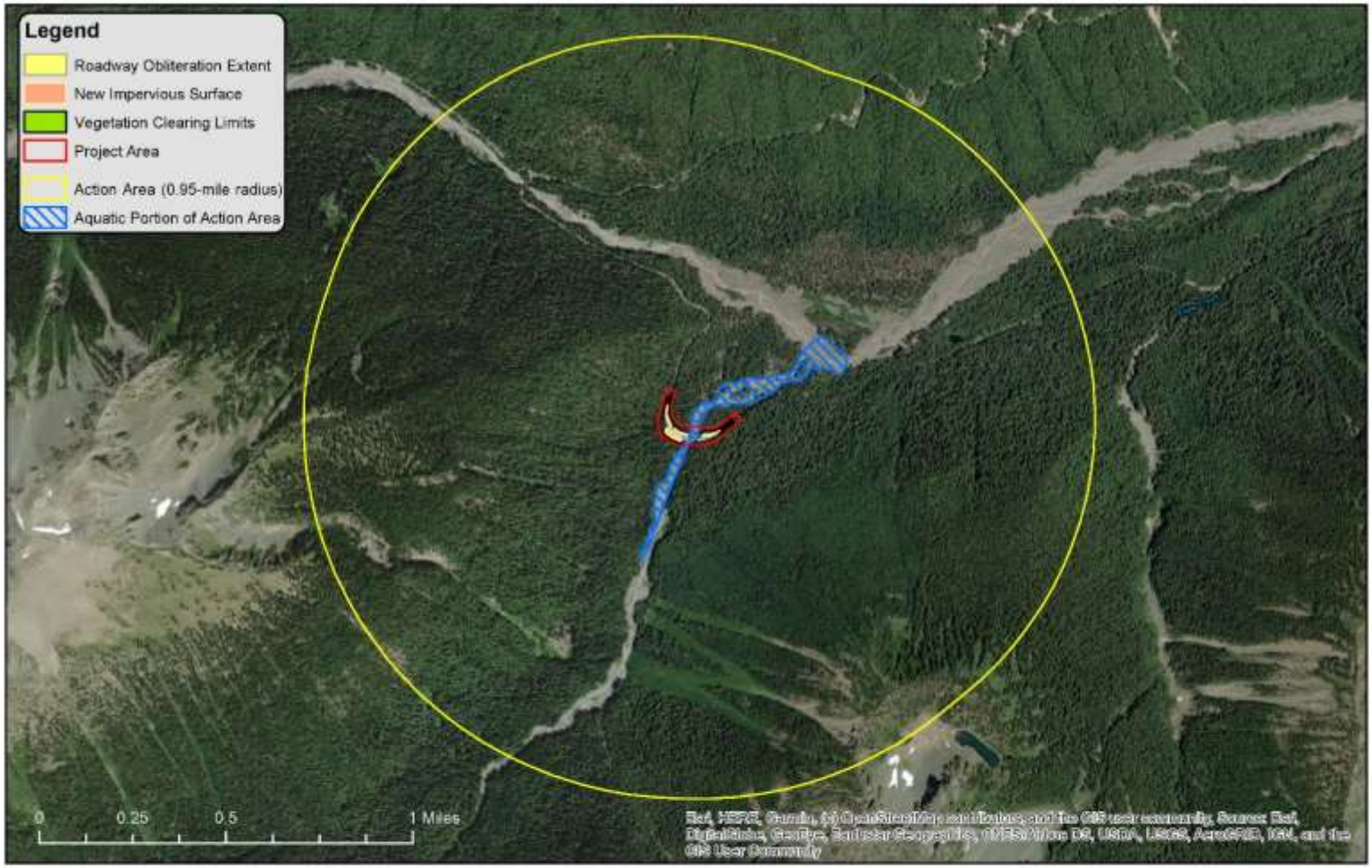

Figure 2. Project Action Area and Existing Conditions
Mount Rainier Fryingpan Creek Bridge Project

Pierce County, WA

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Map Created By: A. Rossi Date Created: 19 October, 2022

Figure 3. Proposed Site Plan

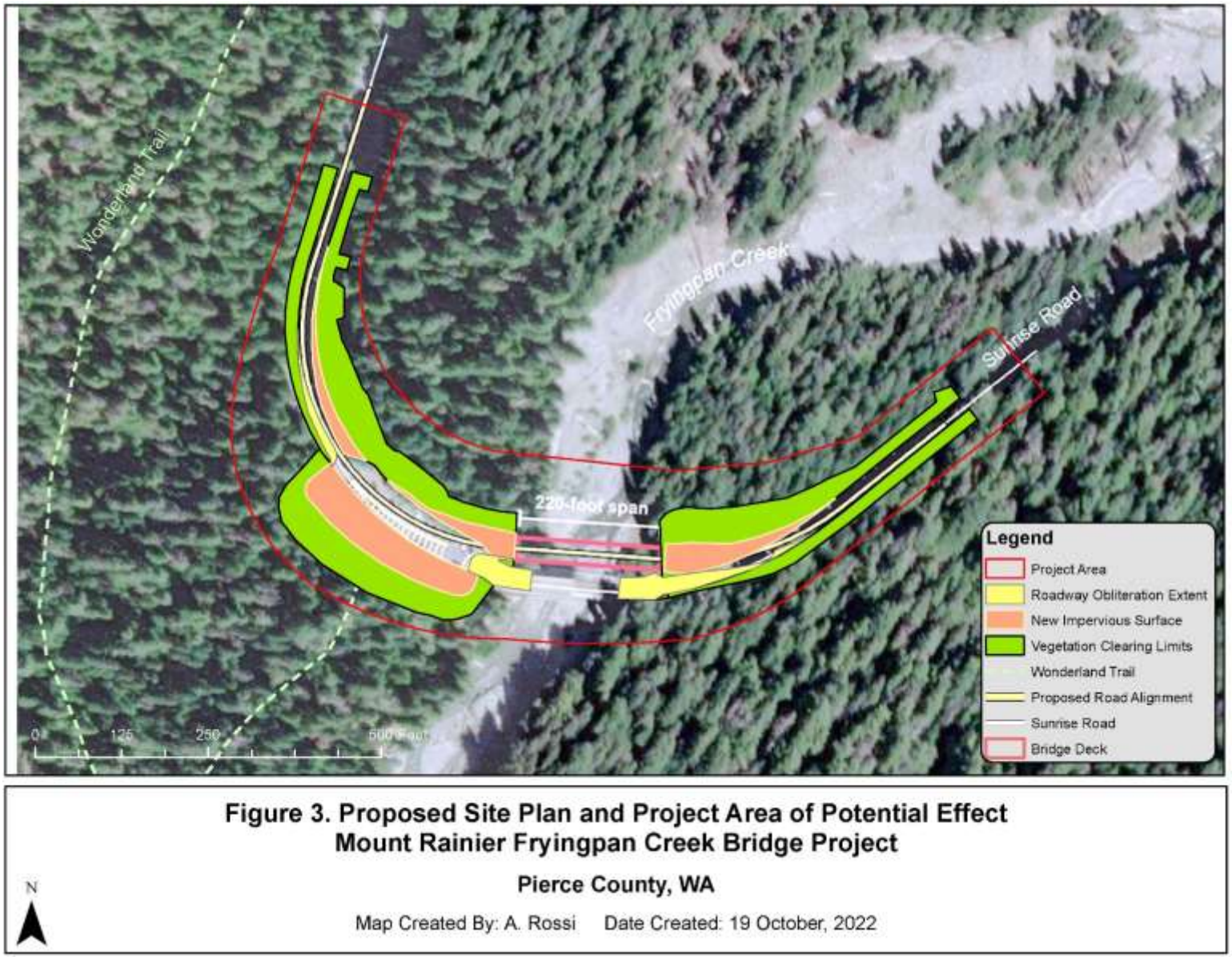

Figure 4. Spotted Owl Sites and Suitable Habitat in Relation to the Project Area & Action Area (Confidential)

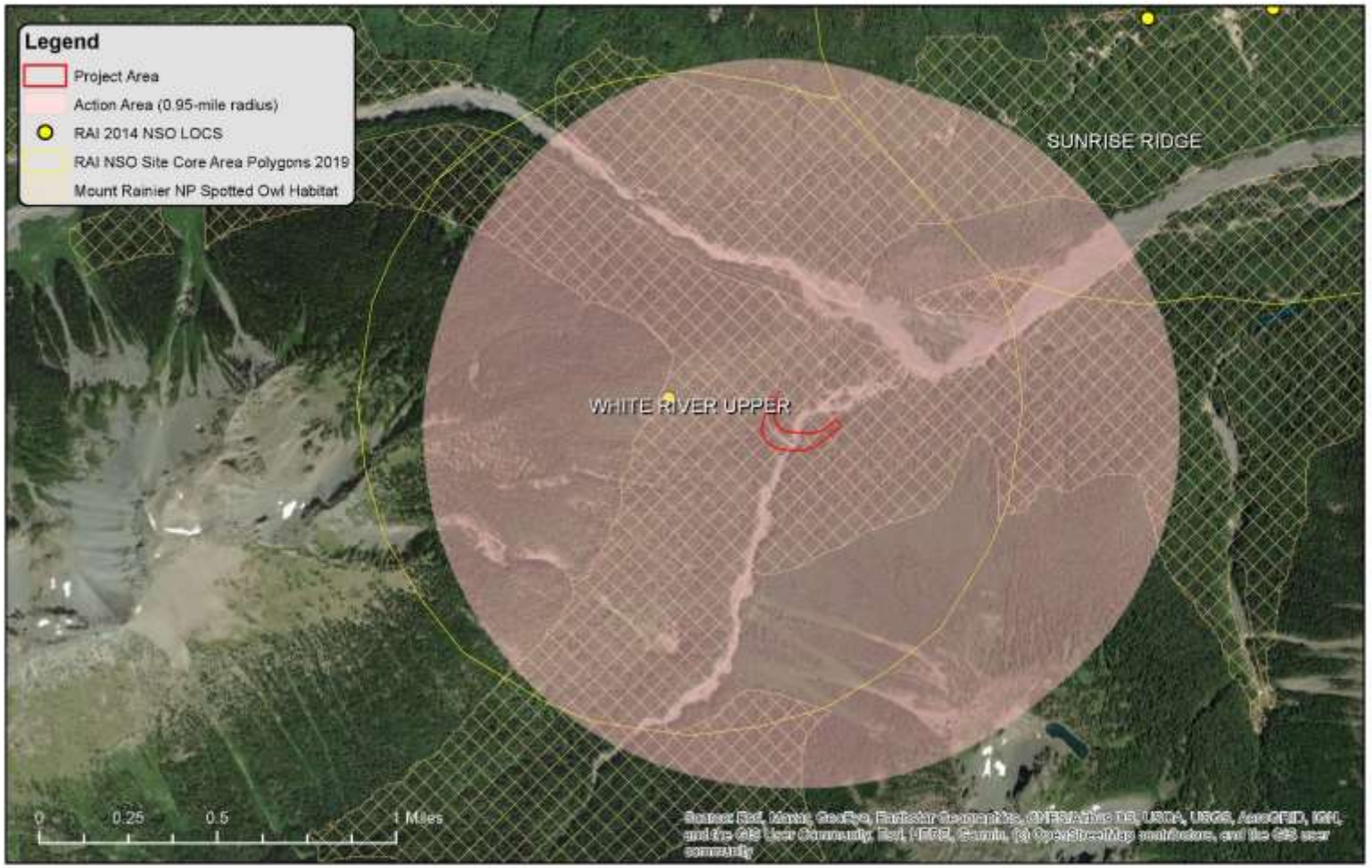

Figure 4 - Spotted Owl Historic Site Locations and Suitable Habitat in Relation to Project Area and Action Area
Mount Rainier Fryingpan Creek Bridge Project
Pierce County, WA
Map Created By: A. Rossi Date Created: 6 February, 2023

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Figure 5. NPS-Mapped Marbled Murrelet Suitable Habitat in Relation to the Project Area and Action Area

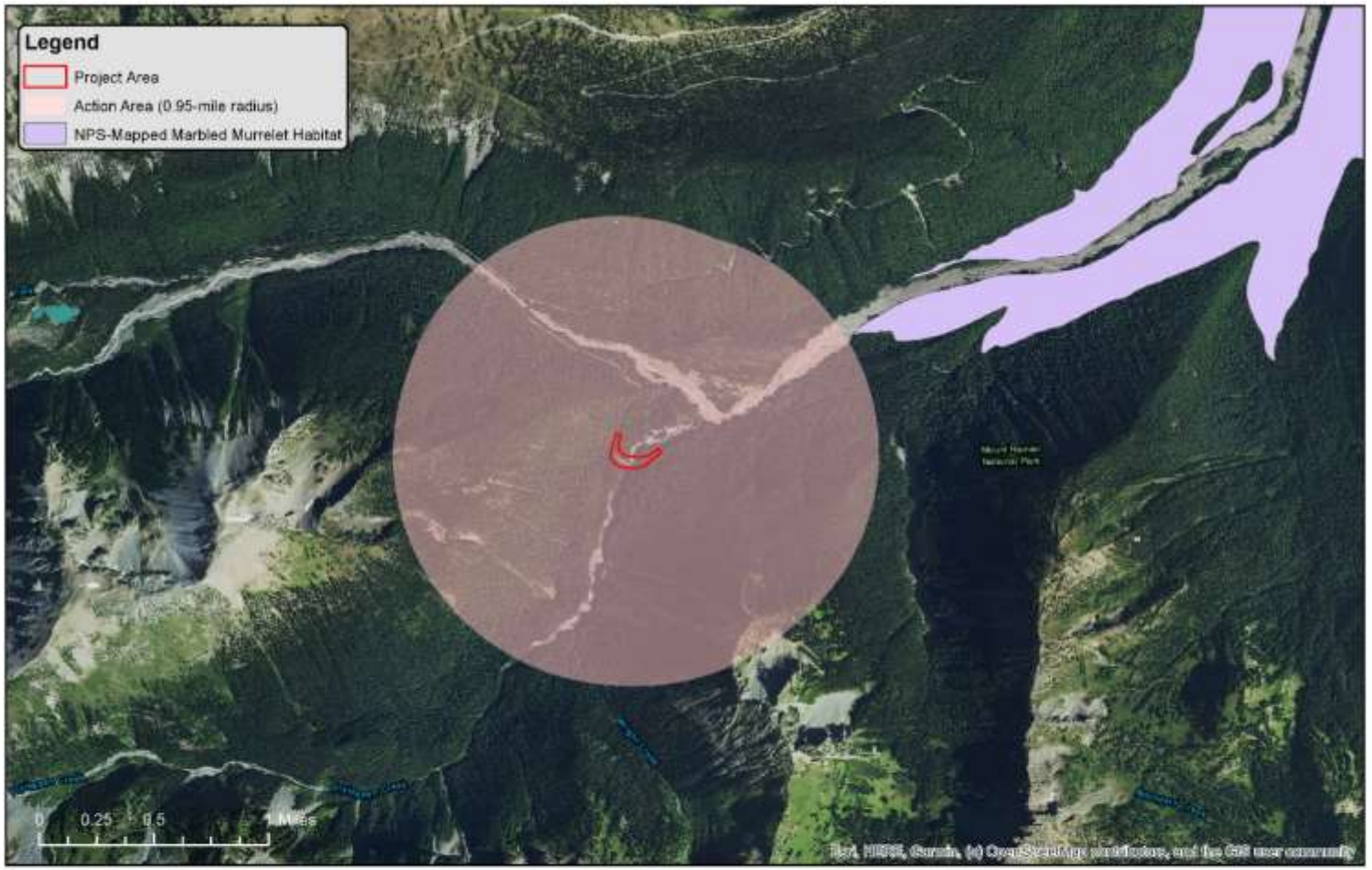

Figure 5 - NPS Mapped Marbled Murrelet Suitable Habitat in Relation to Project Area and Action Area
Mount Rainier Fryingpan Creek Bridge Project
Pierce County, WA
Map Created By: A. Rossi Date Created: 19 October, 2022

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Figure 6. Regional Marbled Murrelet and Spotted Owl Habitat Context

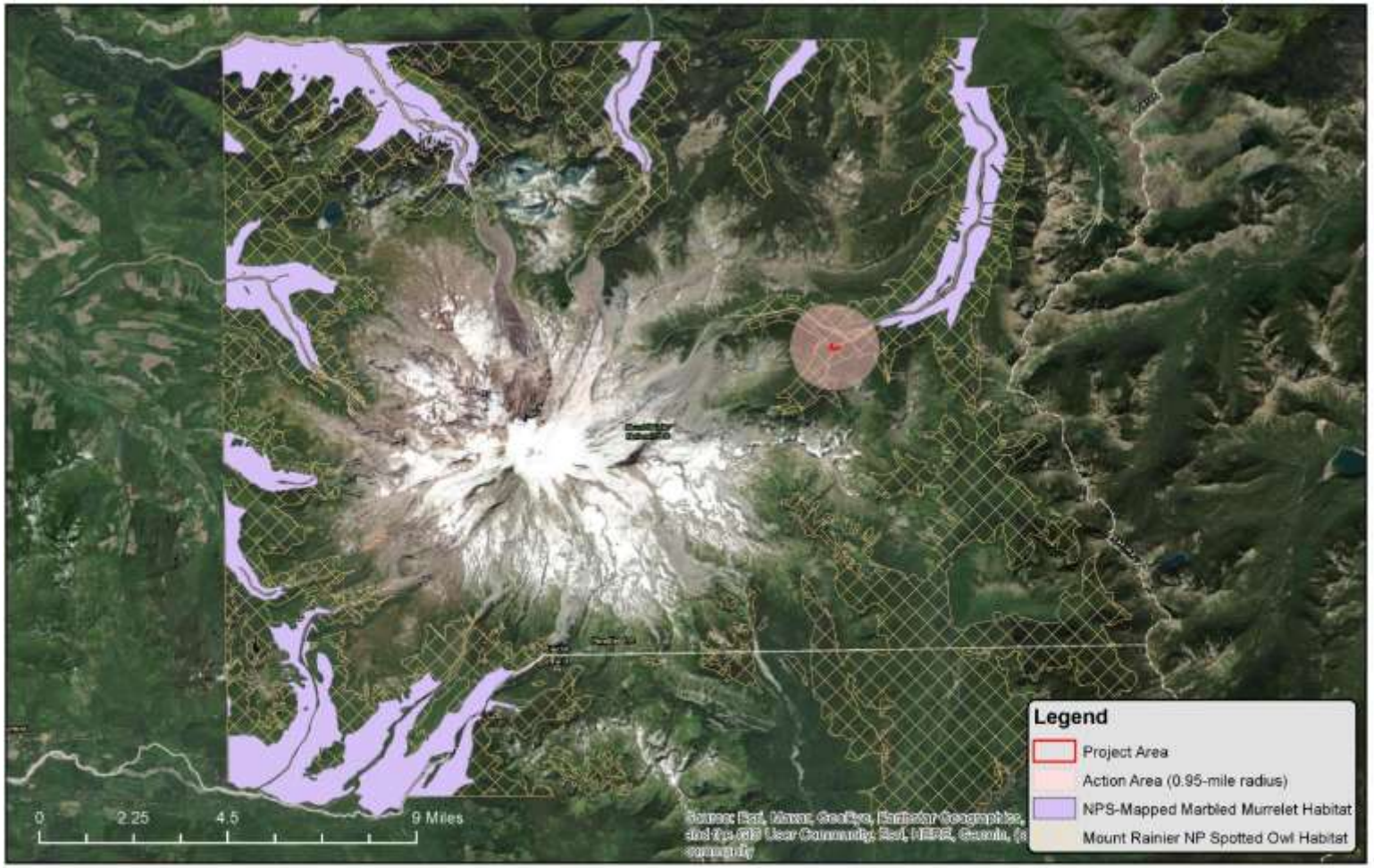

Table 4. Worksheet for Overall Effect Determinations for Each Affected Species, Habitat, and EFH.

Regulatory Jurisdiction	Species	Federal Status	Overall Species/Critical Habitat Effect Determination for Project
USFWS	Bull trout (*Salvelinus confluentus*)	Threatened	May affect, likely to adversely affect
	Bull trout critical habitat	Designated	May affect, likely to adversely affect
NOAA Fisheries	Steelhead trout (*Oncorhynchus mykiss*)	Threatened	May affect, likely to adversely affect
	Steelhead trout critical habitat	Designated	May affect, not likely to adversely affect
NOAA Fisheries	Chinook salmon (*Oncorhynchus tshawytscha*)	Threatened	May affect, likely to adversely affect
	Chinook salmon critical habitat	Designated	May affect, not likely to adversely affect
USFWS	Northern spotted owl (*Strix occidentalis caurina*)	Threatened	May affect, not likely to adversely affect
	Northern spotted owl critical habitat	Threatened	No effect
USFWS	Marbled murrelet (*Brachyramphus marmoratus*)	Threatened	May affect, not likely to adversely affect
	Marbled murrelet critical habitat	Designated	No effect
USFWS	Yellow-billed cuckoo (Western DPS) (*Coccyzus americanus*)	Threatened	No effect
	Yellow-billed cuckoo (wDPS) critical habitat	Designated	No effect
USFWS	Mount Rainier white-tailed ptarmigan (*Lagopus leucura rainierensis*)	Proposed Threatened	No effect
	Mount Rainier white-tailed ptarmigan critical habitat	--	--
USFWS	Gray wolf (Western DPS) (*Canis lupus*)	Endangered	May affect, not likely to adversely affect
	Gray wolf (Western DPS) critical habitat	Designated	No effect
USFWS	North American wolverine (*Gulo gulo luscus*)	Proposed Threatened	May affect, not likely to adversely affect
	North American wolverine critical habitat	N/A	--
USFWS	Monarch butterfly (*Danaus plexippus*)	Candidate	No effect
	Monarch butterfly critical habitat	N/A	--
USFWS	Whitebark pine (*Pinus albicaulis*)	Threatened	No effect
	Whitebark pine critical habitat	N/A	--
NOAA Fisheries	Chinook, coho, pink salmon (*Oncorhynchus tshawytscha, O. kisutch, O. gorbuscha*)	Essential Fish Habitat	May adversely affect

Table 5. Anticipated Project Timeline for the Fryingpan Creek Bridge Improvement Project (Proposed Action)

Construction Activity	Details	Construction Phase
Geotechnical Investigation	▪ Conduct nesting bird survey ▪ Install sediment and erosion controls ▪ Clear a path for drill rig access, including removal of select large trees, vegetation, and uneven ground ▪ Conduct geotechnical drilling (up to 16 boreholes for the abutments and 4 for the parking area) ▪ Stabilize disturbed area	▪ Preconstruction year 1 ▪ September to November (or until snowfall) ▪ Tree removal after Labor Day
Large Tree Removal within Construction Limits[1]	▪ Remove remaining trees within the 2.3-acre clearing limits that were not removed during the geotechnical investigation – No more than 924 trees total (922 living trees, 72 between18 to 40 inch DBH, 6 greater than 40 inch DBH and two dead trees between 18 to 40 inch DBH)	▪ Preconstruction year 2 ▪ Between October 1 and March 14
Site Preparation and Vegetation Removal	▪ Install sediment and erosion controls and stake project limits ▪ Remove remaining vegetation as needed within the 2.3-acre clearing limits	▪ Construction year 1 ▪ Duration of construction season (snow-free periods -spring, summer, and fall)
Mobilization and Staging	▪ Mobilize equipment to the site ▪ Set up traffic control for lane closures (staging area) ▪ Stage equipment and materials in designated staging areas	▪ Each construction year ▪ Beginning of each construction season

Construction Activity	Details	Construction Phase
Access – Pioneering Earthwork	▪ Complete grubbing within the 2.3-acre clearing limits ▪ Perform excavation to build road to new bridge location ▪ Mechanically remove exposed bedrock to the maximum extent possible ▪ Use blasting techniques to remove remaining bedrock outcrops if needed for the abutments and parking area	▪ Construction year 1 ▪ Duration of construction season ▪ *Blasting, if needed, would occur during the in-water work window.*[2]
Access – Construct Temporary Bridge Supports for New Bridge	▪ *Install temporary diversions and isolation work zones* ▪ *Install temporary shoring to stabilize existing bridge abutments during in-water construction* ▪ Install temporary piles in dewatered work zones ▪ Construct temporary work platforms on piles ▪ *Rewater work zone around temporary bridge supports and remove water diversions*	▪ Construction year 1 ▪ During in-water work window.
Bridge Construction	▪ Construct new bridge on new alignment – Construct drilled shafts (2 to 4 per abutment) – Install concrete pile cap on top of the drilled shafts – Construct new bridge abutments (abutments are outside OHWM) – Install riprap armoring – approximately two thirds *would be buried, and one third exposed.* – Erect steel girders and construct bridge deck	▪ Construction (multiple years) ▪ Duration of construction season. ▪ Water work during the in-water work window

Construction Activity	Details	Construction Phase
Roadway Construction Phase 1	▪ Remove asphalt, as needed ▪ *Replace/install new culverts* – *Install diversions, if needed* – Cut and remove asphalt, as needed – *Remove/replace/install culverts and headwalls along new alignment section, subject to final design and permitting* – *Remove diversion and rewater* ▪ Excavate and build embankment for road ▪ Construct new supporting walls and stabilize slopes	▪ Construction ▪ Duration of construction season. ▪ In-water culvert work during the in-water work window. ▪ Would need to occur before existing bridge can be dismantled.
Roadway Construction Phase 2	▪ Place and compact road base on new alignment ▪ Asphalt paving on new alignment, approximately 340 feet long on east side of bridge and 590 feet on west side of bridge. ▪ Conduct asphalt milling - the portion of the existing roadway where the new alignment ties into the existing. The limits of this milling go to the first and last culvert replacements. ▪ Excavate roadway ▪ *Replace remaining culverts along existing alignment further from bridge.* ▪ Install guard walls ▪ Install aggregate base ▪ Conduct asphalt paving	▪ Construction ▪ Duration of construction season. ▪ In-water culvert work during the in-water work window.

Construction Activity	Details	Construction Phase
Existing Bridge Removal	▪ *Set up isolation work zones around existing bridge footings* ▪ Install debris containment ▪ Salvage masonry ▪ *Install temporary shoring to stabilize existing bridge abutments after stone removal during in-water construction* ▪ Dismantle and dispose of bridge ▪ *Excavate below the existing footings to remove the abutment* ▪ *Backfill holes and restore area with appropriately sized stream material* ▪ *Perform site restoration* ▪ *Rewater work zone/remove water diversions*	▪ Construction, following completion of new bridge ▪ During in-water work window.
Roadway Removal	▪ Decommission approaches and obliterate old roadway ▪ Recontour and restore to match native ground	▪ Construction ▪ Post-Bridge Construction
Trailhead Parking Area Construction	▪ Pending final design - Install drainage - Conduct excavation and build embankment - Install retaining walls, curb/sidewalk, and guard wall - Place and compact parking area base - Conduct asphalt paving	▪ Construction – once area is no longer needed for bridge construction staging ▪ Duration of construction season
Stripe and install signs	▪ Stripe and install signs for final roadway and new parking area ▪ Shift traffic to new road/bridge	▪ Final year of construction following completion of final road and parking area paving ▪ Duration of construction season
Site Restoration	▪ Revegetate 1.7 acres, as appropriate ▪ 0.6 acres of permanent vegetation loss (e.g., in area of new road alignment, bridge approach and parking area).	▪ Duration of construction season

Construction Activity	Details	Construction Phase
Revegetation (throughout as needed, final revegetation)	▪ Hydroseed disturbed areas, as needed ▪ Plant wetland species per the NPS-approved revegetation plan. Site would be monitored to ensure revegetation efforts are succeeding and invasive plants are not becoming established or spreading in disturbed areas ▪ Place boulders	▪ Post-construction ▪ Duration of construction season
Final Project Clean-up	▪ Return to normal administrative and public access	▪ Final step of post-construction

Text in italics indicates in-water work

[1] DBH = diameter at breast height. Estimates are based upon inventory within the project area that was available in July 2022

[2] The in-water work is defined as "any activity below the ordinary high-water mark (OHWM)." These activities would be conducted during the in-water work window determined through ESA consultation (June 15 to August 15 proposed).

APPENDIX A: ESSENTIAL FISH HABITAT ASSESSMENT

ACTION AGENCY: NATIONAL PARK SERVICE (NPS)

PROJECT NAME: FRYINGPAN CREEK BRIDGE REPLACEMENT

ESSENTIAL FISH HABITAT BACKGROUND

The Magnuson-Stevens Fishery Conservation and Management Act (MSA) includes a mandate that NOAA Fisheries must identify essential fish habitat (EFH) for federally managed marine fish, and federal agencies must consult with NOAA Fisheries on all activities, or proposed activities, authorized, funded, or undertaken by the agency that may adversely affect EFH. The Pacific Fishery Management Council (PFMC) has designated EFH for the Pacific salmon fishery, federally managed ground fishes, and coastal pelagic fisheries (NOAA Fisheries 2017). The majority of EFH is marine based, though EFH is also designated for inland portions of the range for anadromous Pacific salmon.

EFH is defined by the MSA as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." Essential Fish Habitat is identified by USGS hydrologic unit 17110014 Puyallup River, and include Chinook and coho salmon, and Puget Sound Pink Salmon (PFMC 1999).

DESCRIPTION OF THE PROPOSED ACTION

The description of the proposed action and the associated conservation measures designed to minimize impacts to listed fish species and critical habitats are described in the previous sections of this document.

IDENTIFICATION OF ESSENTIAL FISH HABITAT IN THE PROJECT ACTION AREA

EFH has been designated to protect waters and substrates necessary for fish spawning, breeding, feeding, or growth to maturity (MSA § 3(10)). Freshwater EFH for Pacific salmon includes all those streams, lakes, ponds, wetlands, and other water bodies currently, or historically accessible to salmon in Washington, Oregon, Idaho, and California, except areas upstream of certain impassable artificial barriers, and longstanding, naturally impassable barriers. The geographic extent of freshwater EFH is specifically inclusive of all aquatic habitats within entire watersheds. For this action, the Puyallup River basin (USGS hydrologic unit number 17110014) is identified as EFH for Chinook salmon (*Oncorhynchus tshawytscha*), coho salmon (*O. kisutch*), and pink salmon (*O. gorbuscha*). Within the Upper White River, these three EFH species also occur downstream of the Fryingpan Creek Bridge project area.

Chinook salmon

As described in the previous sections, the number of Puget Sound Chinook that spawn in the upper White River within the park is somewhat known from counts taken from the Buckley Fish Trap operated by the Army Corps of Engineers (see Marks et al., 2022). Chinook adults have been observed by Puyallup Tribal Fisheries and NPS staff as high up in the White River as Sunrise Creek, approximately 9 miles downstream of the Fryingpan Creek project area.

Coho salmon

Coho salmon are also transported above the Buckley Fish Trap and have been observed by Puyallup Tribal Fisheries and NPS staff as high up in the upper White River as Silver Springs (outside of The Park boundaries), approximately 11 miles downstream of the Fryingpan Creek project area (Marks et al. 2022). Additionally, in September 2022, Puyallup Tribal Fisheries and NPS staff documented spawning Coho in Hidden Springs, approximately 4 miles downstream of the proposed project area.

Pink salmon

Pink salmon likewise are transported above the Buckley Fish Trap and have been observed by Puyallup Tribal Fisheries and NPS staff as high up in the White River as Sunrise Creek, approximately 9 miles downstream of the Fryingpan Creek project area.

POTENTIAL ADVERSE EFFECTS OF PROPOSED PROJECT

Potential impacts due to the project are described in previous sections of this document. In addition to these impacts, the PFMC (2014) was consulted for categories of potential impacts to salmon essential fish habitat due to construction/urbanization, road building and maintenance, and pollutant (turbidity) discharges. It should be noted that all but the finest suspended sediments have been shown to fall out of downstream waters within about 0.5 miles of a construction site, such that turbidity impacts farther downstream are likely to be insignificant. These potential impacts and related conservation measures were included in the summary of impacts in the sections above.

ESSENTIAL FISH HABITAT CONSERVATION MEASURES

The description of conservation measures designed to minimize impacts to listed fish species and critical habitats are described in the previous sections of this document. See Section 2.3 for a list of resource protection measures.

CONCLUSION AND EFFECT DETERMINATION

Based on the project impacts we conclude that the proposed action may adversely affect EFH for Chinook, coho, and pink salmon. Considering the distance of potential presence of Chinook, coho, and pink salmon, the limited downstream and temporary impacts to turbidity, and the proposed conservation measures overall impacts to EFH and fish species will likely be limited in scope and duration.

APPENDIX B: AGENCY SPECIES LISTS

NOAA Fisheries Status of ESA Listings & Critical Habitat Designations for West Coast Salmon & Steelhead

USFWS List of Threatened and Endangered Species

WDFW Priority and Habitats and Species on the Web Report

APPENDIX C: SITE PHOTOS

Photo 1. Parking lot area on the western side of the bridge

Photo 2. Stream conditions south (upstream) of the bridge

Photo 3. Typical forest characteristics found at the project site

Photo 4. Forested habitat along the banks of Fryingpan Ck. north (downstream) of the bridge

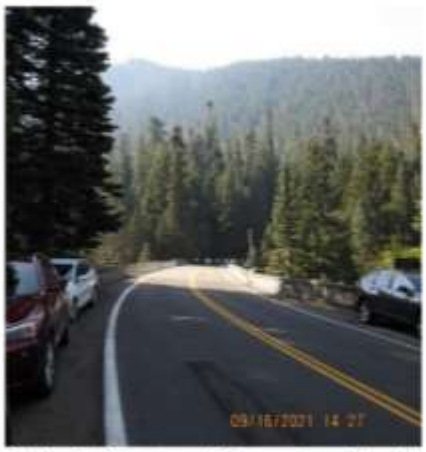

Photo 5. Road conditions along the top surface of the bridge

Photo 6. One of the larger mature trees found at the project site