UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
West Coast Region
1201 NE Lloyd Boulevard, Suite 1100
PORTLAND, OR 97232-1274

Refer to NMFS No.:
WCRO-2023-00178

January 19, 2024

Kevin Skerl
Deputy Superintendent
Mount Rainier National Park
55210 238th Avenue
East Ashford, Washington 98304

Re: Endangered Species Act Section 7(a)(2) Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Response for the Mount Rainier Fryingpan Creek Bridge Replacement Project

Dear Mr. Skerl:

This letter responds to your February 21, 2023, request for initiation of consultation with the National Marine Fisheries Service (NMFS) pursuant to Section 7 of the Endangered Species Act (ESA) for the replacement of the Fryingpan Creek Bridge, located at 46.888262, -121.609380. Your request qualified for our expedited review and analysis because it met our screening criteria and contained all required information on, and analysis of, your proposed action and its potential effects to listed species and designated critical habitat.

We reviewed the National Park Service consultation request and related initiation package. Where relevant, we have adopted the information and analyses you have provided and/or referenced but only after our independent, science-based evaluation confirmed they meet our regulatory and scientific standards.

We adopt by reference the following sections of the Biological Assessment titled "Mount Rainier Fryingpan Creek Bridge Replacement Project, Sunrise, Pierce County, Washington", dated February 21, 2023, project edited by NPS:

- 2.1 Project Location, 2.2 Project Description, and 2.3 Conservation Measures (pp 1-12) for the *Proposed Action*.
- 2.4 Action Area (pp 12-13), **in part**, for the *Action Area*
- Sections 3 and 4.1, pp 13-21, "Species and Habitat Information", and "Aquatic Environmental Baseline Conditions in the Action Area" for the Environmental Baseline
- 4.1, pp 15-21 "Aquatic Environmental Baseline Conditions in the Action Area", **in part**, for the Effects of the Action on Listed Species and Critical Habitat.

This document can be found in the NOAA Repository, along with this Biological Opinion, associated with WCRO-2023-00178.

Consultation History

NMFS received a request for consultation on February 24, 2023. More information was requested July 7, 2023. Subsequent emails were exchanged. A revised BA was provided Sept 1, 2023. The project was initiated the same day.

On July 5, 2022, the U.S. District Court for the Northern District of California issued an order vacating the 2019 regulations that were revised or added to 50 CFR part 402 in 2019 ("2019 Regulations," see 84 FR 44976, August 27, 2019) without making a finding on the merits. On September 21, 2022, the U.S. Court of Appeals for the Ninth Circuit granted a temporary stay of the district court's July 5 order. On November 14, 2022, the Northern District of California issued an order granting the government's request for voluntary remand without vacating the 2019 regulations. The District Court issued a slightly amended order two days later on November 16, 2022. As a result, the 2019 regulations remain in effect, and we are applying the 2019 regulations here. For purposes of this consultation and in an abundance of caution, we considered whether the substantive analysis and conclusions articulated in the biological opinion and incidental take statement would be any different under the pre-2019 regulations. We have determined that our analysis and conclusions would not be any different.

Proposed Action:

Section 2.2 of the project Biological Assessment fully describes the proposed action. We summarize here.

The National Park Service (NPS) proposes to replace an existing two-lane bridge (128-foot span) over Fryingpan Creek with a full-spanning bridge (220-foot span). The bridge is within Mount Rainer National Park. The replacement bridge will be located approximately 50 feet north (downstream) of the existing bridge. This action would be funded, administered, and have construction overseen by the US Federal Highway Administration (FHWA). The proposed action would also have associated Clean Water Act (CWA) permitting for in-water work through the US Army Corps of Engineers (Corps). Additional associated elements in this proposed action include: clearing and replanting vegetation; the creation of a new parking area for access to the Summerland Trail; and replacing four (4) culverts. See Figure 1 below. All construction is estimated to take 320 days over 4-5 seasons (June-Sept). In-water work would occur between June 15-August 15th over three seasons, for a maximum of 180 days.

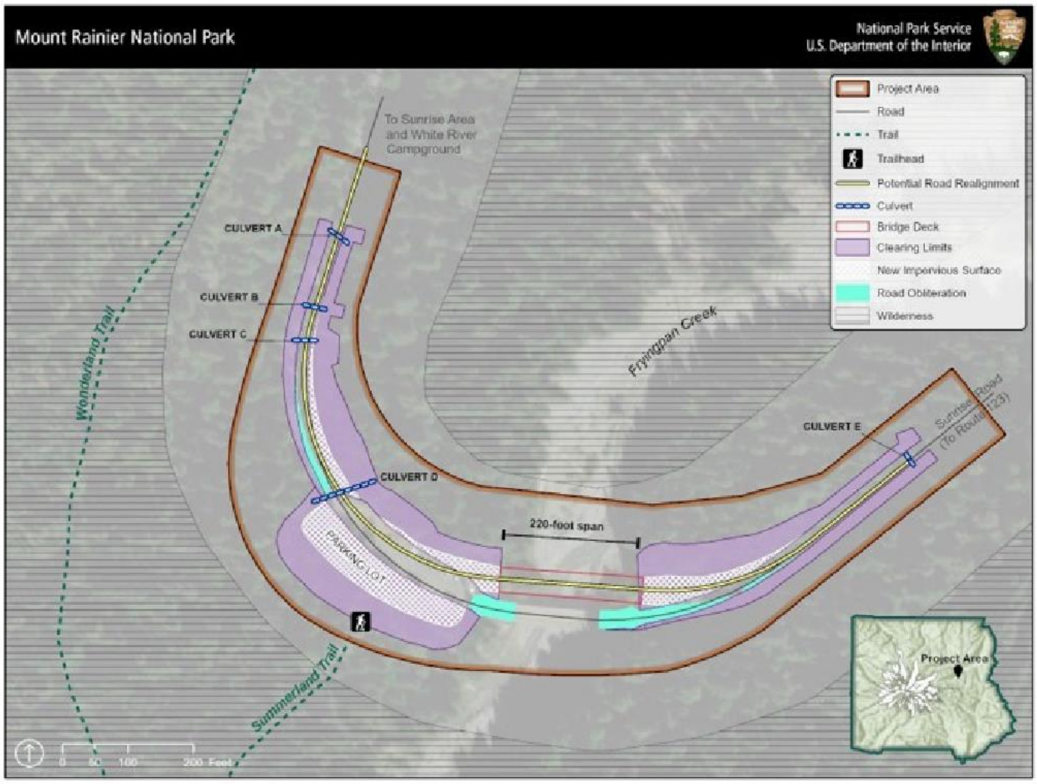

Figure 1. Fryingpan creek bridge proposed replacement bridge project area showing clearing limits in purple, culvert replacements, and proposed parking area.

We examined the status of each species that would be adversely affected by the proposed action to inform the description of the species' "reproduction, numbers, or distribution" as described in 50 CFR 402.02. We also examined the condition of critical habitat throughout the designated area and discuss the function of the physical or biological features essential to the conservation of the species that create the conservation value of that habitat.

<u>Rangewide Status of the Species and Critical Habitat</u>

We examined the status of each species that would be adversely affected by the proposed action to inform the description of the species' "reproduction, numbers, or distribution" as described in 50 CFR 402.02. We also examined the condition of critical habitat throughout the designated area and discuss the function of the physical or biological features essential to the conservation of the species that create the conservation value of that habitat. We supplement the status of species and critical habitat provided in the BA with NMFS' status information.

Table 1, below provides a summary of listing and recovery plan information, status summaries and limiting factors for the species addressed in this opinion. More information can be found in recovery plans and status reviews for these species. Acronyms appearing in the table include DPS (Distinct Population Segment), ESU (Evolutionarily Significant Unit), ICTRT (Interior Columbia Technical Recovery Team), MPG (Multiple Population Grouping), NWFSC

(Northwest Fisheries Science Center), TRT (Technical Recovery Team), and VSP (Viable Salmonid Population).

We note here that the status of species and designated critical habitats, range wide, are both adversely affected by climate change.

Table 1. Rangewide status of PS Chinook and Steelhead Species and Critical Habitats

Puget Sound Chinook salmon	Threatened 6/28/05 (70 FR 37159)	Shared Strategy for Puget Sound 2007 NMFS 2006	Williams et al. 2016; Ford 2022	This ESU comprises 22 populations distributed over five geographic areas. All Puget Sound Chinook salmon populations continue to remain well below the TRT planning ranges for recovery escapement levels. Most populations also remain consistently below the spawner–recruit levels identified by the TRT as necessary for recovery. Across the ESU, most populations have increased somewhat in abundance since the last status review in 2016, but have small negative trends over the past 15 years. Productivity remains low in most populations. Overall, the Puget Sound Chinook salmon ESU remains at "moderate" risk of extinction.	• Degraded floodplain and in-river channel structure • Degraded estuarine conditions and loss of estuarine habitat • Degraded riparian areas and loss of in-river large woody debris • Excessive fine-grained sediment in spawning gravel • Degraded water quality and temperature • Degraded nearshore conditions • Impaired passage for migrating fish • Severely altered flow regime
Puget Sound Chinook salmon critical habitat	9/02/05 70 FR 52630	• Critical habitat for Puget Sound Chinook salmon includes 1,683 miles of streams, 41 square mile of lakes, and 2,182 miles of nearshore marine habitat in Puget Sounds. The Puget Sound Chinook salmon ESU has 61 freshwater and 19 marine areas within its range. Of the freshwater watersheds, 41 are rated high conservation value, 12 low conservation value, and eight received a medium rating. Of the marine areas, all 19 are ranked with high conservation value.			

Puget Sound steelhead	**Threatened 5/11/07**	**NMFS 2019**	**Williams et al. 2016; Ford 2022**	**This DPS comprises 32 populations. Viability of has improved somewhat since the PSTRT concluded that the DPS was at very low viability, as were all three of its constituent MPGs, and many of its 32 DIPs (Hard et al. 2015). Increases in spawner abundance were observed in a number of populations over the last five years within the Central & South Puget Sound and the Hood Canal & Strait of Juan de Fuca MPGs, primarily among smaller populations. There were also declines for summer- and winter-run populations in the Snohomish River basin. In fact, all summer-run steelhead populations in the Northern Cascades MPG are likely at a very high demographic risk.**	• **Continued destruction and modification of habitat** • **Widespread declines in adult abundance despite significant reductions in harvest** • **Threats to diversity posed by use of two hatchery steelhead stocks** • **Declining diversity in the DPS, including the uncertain but weak status of summer-run fish** • **A reduction in spatial structure** • **Reduced habitat quality** • **Urbanization** • **Dikes, hardening of banks with riprap, and channelization**
Puget Sound steelhead critical habitat	2/24/16 81 FR 9252	• Critical habitat for Puget Sound steelhead includes 2,031 stream miles. Nearshore and offshore marine waters were not designated for this species. There are 66 watersheds within the range of this DPS. Nine watersheds received a low conservation value rating, 16 received a medium rating, and 41 received a high rating to the DPS.			

Action Area

"Action area" means all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 CFR 402.02). Section 2.4 of BA describes the action area of the project and is summarized as follows:

The action area encompasses upland areas where clearing and paving will occur, riparian areas next to Fryingpan creek, as well as in-water areas, it also includes areas subject noise from pile driving and blasting. The aquatic portion of the action area was defined by estimating the distance where noise and turbidity would attenuate to the baseline levels within Fryingpan Creek. In-water noise caused by pile driving would not travel around bends of the river, thus the area of noise impact would extend 600 feet downstream and 1,000 feet upstream. Fryingpan Creek is perennial. Flow occurs year round, including during construction. Turbidity effects from construction and potential increases in turbidity could extend 0.5 miles downstream, including a small portion of the White River.

To this description of the action area, NMFS supplements:

Washington law (WAC 173-201A-200) indicates for that waters above 100 cubic feet per second (cfs) flow at the time of construction, the point of compliance shall be 300 feet downstream of the activity causing the turbidity exceedance. Based on hydrographs submitted by the NPS of Fryingpan creek, this >100 cfs statute is applicable. Low flow typically ranges between 50-100 cfs, but rain events cause this stream to exceed 100 cfs.

Stormwater effects caused by harmful runoff from pollution generating impervious surface (PGIS) would likely be the farthest-reaching effect of this proposed action. The action area contains the lower portion of Fryingpan Creek which is a tributary to the White River; the White River is a tributary to the Puyallup River. Based on fate and transport approach to understanding downstream movement of stormwater contaminants such as PAHs and 6ppd/q, and that no stormwater treatment is proposed for the new or existing PGIS, NMFS expects the action area to extend well downstream, and include designated critical habitat for PS Chinook salmon and PS steelhead.

Environmental Baseline

The "environmental baseline" refers to the condition of the listed species or its designated critical habitat in the action area, without the consequences to the listed species or designated critical habitat caused by the proposed action. The environmental baseline includes the past and present impacts of all Federal, State, or private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action area that have already undergone formal or early section 7 consultations, and the impact of State or private actions which are contemporaneous with the consultation in process. The consequences to listed species or designated critical habitat from ongoing agency activities or existing agency facilities that are not within the agency's discretion to modify are part of the environmental baseline.

Section 3.1, 4.1.2, and 4.1.3 describe the environmental baseline of the action area and to this NMFS added information from the 2021-2022 Puyallup Tribe Fisheries Report, Personal communication with the Senior Puyallup Fisheries Biologist, and WDFW SalmonScape data.

An excerpt describing habitat of Fryingpan Creek from the 2021-2022 Puyallup Tribe Fisheries Report (p 156) (emphases added):

> *Fryingpan Creek is a moderate sized right bank tributary to the Upper White River. This headwaters creek is surveyed for bull trout from early September-to-mid October* ***However, steelhead are quite capable of ascending to this headwater tributary to spawn; therefore, this should not preclude the possibility of steelhead utilization within this stream.*** *Fryingpan does host a population of resident cutthroat and bull trout (below), and provides excellent rearing and spawning habitat for these two species. Fryingpan enters the White River north of Sunrise Park Road at approximately RM 70.5. Fryingpan provides approximately 1.7 miles of anadromous usage. A falls (following page) located at approximately RM 1.7 blocks any further upstream migration. 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 mainstem flow, there are several smaller nonglacial 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 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-tomoderate 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.*

The proposed construction area at the current bridge location is approximately 0.4 river miles upstream from the confluence of Fryingpan and the White River. The construction area contains approximately 0.25 of Sunrise Park Road, including the current bridge over Fryingpan Creek, a small parking lot for trail access, and the road corridor with culverts and associated infrastructure. Surrounding the road corridor are many habitat types, including alluvial riverbed, terraced riparian floodplain, steep-sloped subalpine shrubland, coniferous forest, and ditch habitat associated with the edge of Sunrise Park Road. The forest surrounding the road and in the riparian corridor of Fryingpan Creek is mature (an old growth forest) and includes Douglas-fir, silver fir, western hemlock, Engelmann spruce, and subalpine fir. Several trees within the proposed road clearing corridor exceed 40 inches diameter and breast height (dbh). See Figure 2 below. Two wetlands exist on site to the northeast of the road and drain to Fryingpan Creek.

Figure 2. Frying pan Creek bridge and surrounding habitat as viewed looking upstream.

Species and Critical Habitat within the Action Area

All anadromous fish in the action area are trapped and trucked above the Mud Mountain Dam. Located over 30 river miles downstream of the bridge. Fryingpan Creek has not been a documented area of high use for either PS Steelhead or Chinook, though both species may be present. This stream, does contribute cold water to a system that has high recovery potential if targeted actions are implemented in the NMFS recovery plans. Lower reaches within the White River are more populated with Chinook salmon, and steelhead have a higher likelihood of using this action area than Chinook salmon.

PS Steelhead: The main 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 occur. The main run of winter steelhead enters the Puyallup in November, with peak migration mid-December.

Steelhead critical habitat is located 11.3 miles downstream of the Fryingpan Creek Bridge in the upper White River.

The Federal Register designation of critical habitat for PS steelhead notes (69 FR 74572) 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."

WDFW SalmonScape documents the nearest presence of winter steelhead (distribution type = gradient accessible) up to the confluence of the White River and Klickitat Creek, 3.4 river miles downstream of the project site. As highlighted above, the 2021-2022 Puyallup Tribal Fisheries Report, states "steelhead are quite capable of ascending to this headwater tributary to spawn; therefore, this should not preclude the possibility of steelhead utilization within this stream."

From the 2021-2022 Fishery report details seasonality of steelhead within this upper system. "Steelhead are often present in the watershed throughout the year…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." This is the time adult steelhead would most likely be in the action area. Juveniles may be present year-round.** "The majority of young wild winter steelhead migrate to saltwater after 2 years in freshwater (81.6%). Approximately 2.5% of the steelhead sampled spent 1 year in freshwater, 15.6% three-years, and less than 0.25% four-years before out-migrating" (Puyallup Tribe 2021-2022).

According to Ford et al. (2022), the spawning count of natural origin steelhead for the entire Puyallup system has been extremely low since the 1990s. The 5-year geometric mean natural spawner counts have ranged from 72 to 201 total. 5 year geometric mean for the White River has lingered around 500 and lower since the 1990s (See Figure 3 below). Steelhead in this system are dominated by hatchery returns from the White River Winter Steelhead Supplementation Program (also part of the DPS). The Puyallup tribe releases 60,000 hatchery steelhead from this facility each year. Recent steelhead runs have collapsed in in the Puyallup. 2022 brought the lowest returns in 80 years. (July 26, 2023 pers. comm. Puyallup Tribe Senior Fish Biologist). The Puyallup and White river populations of PS Steelhead are priority winter-run populations for the recovery of the South-Central MPG (NMFS 2019). Target abundance for the White River population is ~12,000 and for the Puyallup the target is ~15,000. The graphs below demonstrate that actual abundance is well below recovery goals.

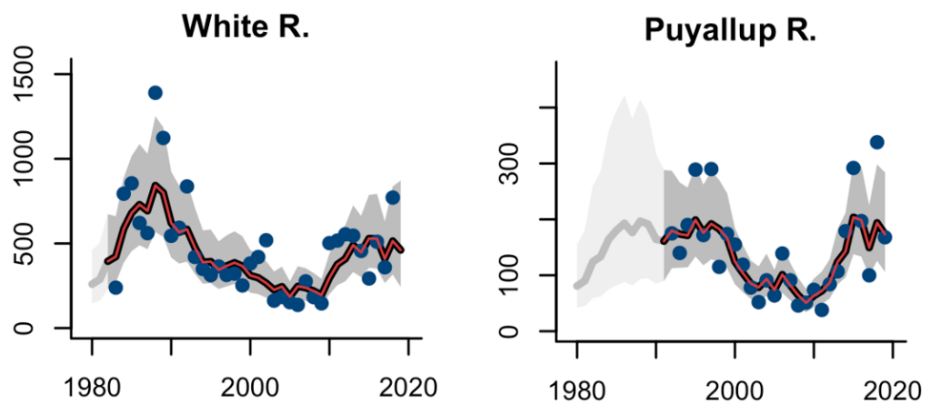

Figure 3. Abundance of natural origin spawning steelhead in White and Puyallup Rivers since the 1980s (Ford 2022).

PS Chinook: Both spring and fall Chinook runs exist on the White River. These, according to a Puyallup Tribe Fish biologist, Chinook typically spawn in the tributaries of the White River system. The more robust run of these two is the spring (August 7, 2023 pers. comm.) White River Spring Chinook are the only Spring Chinook stock existing in the south Puget Sound region and are unique due to their genetic and life-history traits (WDFW et al. 1996).

WDFW SalmonScape documents the nearest presence of fall Chinook (distribution type = gradient accessible) up to the confluence of the White River and Klickitat Creek, 3.4 river miles downstream of the project site. Spring Chinook are documented as being transported and trucked from Mud Mountain Dam up to the Silver Springs campground, then released. This occurs approximately 9 miles downstream of the Fryingpan bridge.

According to a Puyallup Tribe Senior Fish Biologist, the spring run of Chinook in the White River is robust. Fryingpan creek could support spring Chinook. However, Frypingpan itself is difficult to survey during spawning season due to the murky glacial water. Juvenile Chinook have been documented in the upper White River at the Park boundary (MORA 2020). Yearling life histories of Chinook have been seen within this system, as well, meaning some juveniles stay for a year or more (July 26, 2023 pers. comm.). Overall, spring and fall PS Chinook could utilize Fryingpan creek for spawning or rearing, and their presence has been confirmed a few confluences downstream. If they use Fryingpan creek, juveniles could be present year-round.

From the 2021-2022 Puyallup Fishery 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. Puyallup River Fall Chinook typically enter the Lower Puyallup River in June, and continue to move through the system as late as November. The majority of tributary spawning activity occurs from September through late October. Spawning also first starts typically in the upper watershed. **Adult Chinook present in the action area would likely be present in September-October for fall-run, and April-May for spring-run. Juveniles could be present year-round.**

According to Ford et al. (2022), the spawning count of natural origin PS Chinook for the Puyallup has declined drastically since the 1990s, from 5-year geometric mean spawner counts in the 2000s between 1990 and 1999, but dropping sharply to counts around 500 for the past 20 years. White River spring Chinook has a natural origin spawning count that has increased since the 1990s, but not substantially so, with a 5-year geometric mean of around 1000 since the 2000s (up from only 200 in the 90s). Additionally, Chinook in these systems are dominated by hatchery returns. See Figure 4 below. The Puyallup fall and White river spring Chinook, with low returns, are at genetic and demographic risk of extinction and far from meeting their recovery goals outlined by NMFS in the 2007 recovery plan (NMFS 2007).

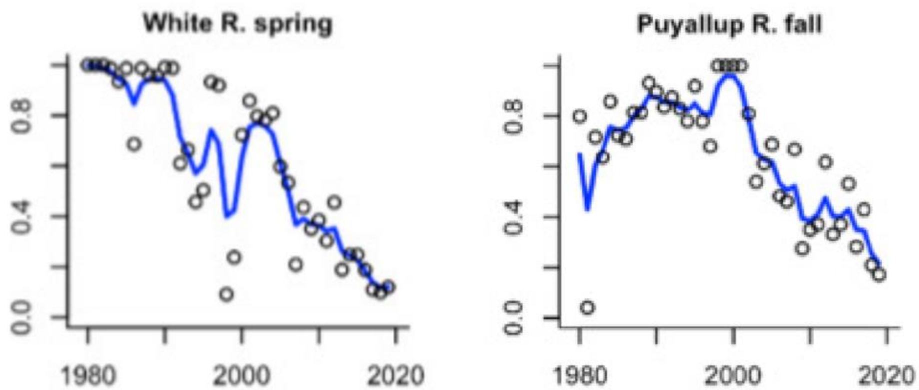

Figure 4. Estimated fraction of natural-origin spawning Chinook over the last 40 years in the White and Puyallup Rivers (Ford 2022.)

Chinook critical habitat begins 9.6 miles downstream of the current bridge, in the upper White River.

Effects of the Action

Under the ESA, "effects of the action" are all consequences to listed species or critical habitat that are caused by the proposed action, including the consequences of other activities that are caused by the proposed action. A consequence is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action (see 50 CFR 402.17). In our analysis, which describes the effects of the proposed action, we considered 50 CFR 402.17(a) and (b).

The biological assessment provides an assessment of the effects of the proposed action on PS Chinook and PS steelhead species in Section 4.1.1.2, as similar to those direct effects on Bull Trout. This section of the initiation package is adopted here (50 CFR 402.14(h)(3)).

A critical habitat analysis was not included in the BA. NMFS does not concur with NPS' not likely to adversely affect determination regarding PS Steelhead and PS Chinook critical habitat. We supplement the effects on species and critical habitat with the following additional presentation of effects:

The Puyallup and White River PS Chinook (spring and fall run), the Puyallup and White River PS steelhead (winter run), and possibly PS steelhead summer-run strays from other systems would be affected by the proposed action. The effects of construction will be temporary, and will not impact more than three cohorts of the affected populations. Long term impacts will occur associated with the new and replacement structures that will affect all life stages and many cohorts of both species' populations for the design life of the structures (an estimated 50 years).

Construction timing for in water work is proposed between June 15th and August 15th over three seasons (years). This is prior to peak spawning time for fall-run Chinook (Sept-Oct), and avoids peak spawning for spring-run Chinook (April-May). However, eggs (hatch after ~12 weeks) and fry from of spring-run Chinook could be present in the action area. Yearling juvenile Chinook (which overwinter in freshwater) could also be present at any time. Winter steelhead adults are most likely to be within the action area April through mid-June, with peak spawning mid to late May. Thus, adult spawning will be avoided by the in-water construction window, but eggs (hatch after ~2-6 weeks) and fry as well as yearling juvenile steelhead could be present.

Effects pathways are summarized and each discussed below:

Temporary construction effects to fry/juveniles of Chinook and Steelhead resulting from:

- Dewatering and Fish Relocation
- Noise from Pile Driving and Upland Blasting
- Construction/Disturbance

The active project footprint for in-water work as depicted in the BA includes approximately 330 linear ft of stream channel, extending from approximately 100 ft above the proposed new bridge location to approximately 100 ft below the existing bridge location. This project footprint represents the area below OHWM that will be directly exposed to temporary disruption. Turbidity could extend farther downstream.

Long term effects to all life stages of Chinook and Steelhead resulting from:

- Riparian Habitat Changes – conversion from mature forest to more impervious and pertaining to the growth of replanted areas
- Existence of the full-spanning replacement bridge and other replacement structures (including overwater cover and abutments)
- Stormwater

Dewatering and Fish Relocation:

Because work will occur when salmon redds could be in the action area, actions associated with the two proposed dewatered areas have the potential to harm and kill juvenile salmon and steelhead as well as kill any eggs in the sediment. Dewatered areas will not span the full channel, so fish passage is not expected to be diminished from this activity. Fish relocation at these dewatered areas would occur prior to dewatering and involve netting, potential electroshocking, handing, and relocating listed species. Fish relocation activities pose a risk of injury or mortality to rearing juvenile salmonids. Electroshocking would be used as a last-resort. Once captured, listed fish would be transported and released by a qualified fisheries biologist to suitable in-stream locations within Fryingpan creek outside the action area. The use of a pump to dewater could entrain juveniles on the mesh of the pump intake. Any fish collecting gear, whether passive (Hubert 1996) or active (Hayes et al. 1996) has some associated risk to fish, including stress, disease transmission, injury, or death. Supersack berm placement, creek crossing before dewatering, as well as dewatering would kill eggs in the sediment associated with a redd or redds. Creek crossing with heavy equipment and supersack placement would crush eggs, if present, aquatic invertebrates which juvenile steelhead and Chinook feed on, and potentially crush juvenile fish. Crossings would also cause elevated turbidity which could kill eggs downstream and harm juveniles. Though some juvenile fish may be injured or killed during salvage and relocation, effects to handled and relocated fish will primarily be the loss of fitness due to increased stress and disruption to normal feeding behaviors. No density data for either species exists for Fryingpan creek, and it may be quite low based on baseline information in the section above. It is expected that no more than 150 juveniles of each species would be salvaged from the dewatered areas each year. And from that, no more than 5% mortality would occur as a result of this activity (8 juveniles, steelhead and Chinook combined). The number of eggs killed/made unviable would be unknown, even during construction. But if one steelhead redd were destroyed, this would constitute a loss of 2,5000-10,000 eggs, and if one Chinook redd were destroyed, 3,000-14,000 eggs would be lost. Due to the glacial runoff that feeds Fryingpan creek, the location of any potential redds would be difficult to discern. NMFS does not expect more than 1 redd of either species to be present at this location each ear. NMFS also does not expect a (one) mature adult of either species to be salvaged.

Noise from Pile Driving, Drilling, and Upland Blasting

Noise created by pile driving within the channel, drilling shafts for the abutmants,2 and upland blasting will create elevated sound levels underwater. It is well established that elevated sound can cause injuries to fish swim bladders and internal organs and temporary and permanent hearing damage (Hastings et al. 1996; Popper and Clarke 1976; Scholik and Yan. 2002). Elevated sound levels, like those in pile driving, can also harm fish eggs and larvae, reducing viability in eggs and killing small fish (Banner and Hyatt 1973). These effects would presumably extend across the width of the wetted stream channel and as far as the sound wave can travel within the line of site upstream and downstream. Water levels will likely be low during summer in-water work for pile driving. Thus, sound from these activities will likely dissipate to levels below those which cause behavioral changes within a few hundred feet. The degree to which normal behavior patterns are altered by pile driving is less known, although it is likely that salmon and steelhead, that are resident within the action area are more likely to sustain an injury than fish that are migrating up or downstream. Primarily, the effect from noise will be on behavioral changes to juveniles or adults exposed, causing reduced fitness due to changed behavior, temporary migration out of the area, loss of forage, and increased stress.

Construction/Disturbance

In-water work during the construction of the replacement bridge and deconstruction of the old bridge will physically disturb sediments and the water column as well as the adjacent streambank areas. This will include disturbance caused by heavy machinery in the water, as well as humans working within the channel. Creation and removal of temporary structures as well as increased scour caused by their presence will increase suspended solids within the water column.

Increases in sediment may affect fish in a variety of ways. High concentrations of suspended sediment can disrupt normal feeding behavior and efficiency (Cordone and Kelley 1961, Bjornn et al. 1977, Berg and Northcote 1985), reduce growth rates (Crouse et al. 1981), and increase plasma cortisol levels (Servizi and Martens 1992). High and prolonged turbidity concentrations can reduce dissolved oxygen in the water column, result in reduced respiratory functions, reduce tolerance to diseases, and can also cause fish mortality ((Sigler, Bjornn, & Everest., 1984), Berg and Northcote 1985, Gregory1993; Velagic 1995, (Waters, 1995). Even small pulses of turbid water can cause salmonids to disperse from established territories (Waters 1995), which can displace fish into less suitable habitat and/or increase competition and predation, thus decreasing chances of survival. Increased sediment deposition can fill pools thereby reducing the amount of potential cover and habitat available, and smother coarse substrate particles which can impair macroinvertebrate composition and abundance ((Sigler, Bjornn, & Everest., 1984) (Alexander and Hansen 1986).

Rapid accumulation of sediments has detrimental effects on salmonid life cycle. The survival of eggs is dependent on well-supplied oxygenated water through the streambed gravels. The seepage of fine sediments into spawning beds leads to suffocation of eggs (Greig et al. 2005). Once the eggs are hatched, the alevins needs to make its way through the gravels to the open streams and if the intra gravel passages are blocked with fine sediments, the emerging fish are trapped (Phillips & Campbell, 1962). The increased level of fine sediment accumulation affects both the macroinvertebrates and primary producers. The increased levels of sediments cause clogging of gravel interstices and may decrease the flow of oxygenated water within the gravel bed.

Extended periods of high turbidity can reduce primary productivity of an aquatic area (Cloern 1987) and may cause fish to suffer stress, reduced gill function and feeding ability (Benfield & Minello, 1996);(Nightingale & Simenstad, 2001). However, the amount of sediment mobilized by construction activities during this project is expected to be localized and dissipate quickly due to a narrow wetted with and summer low-flows. NMFS expects Washington law (WAC 173-201A-200) to be followed, which dictates that, at the point of compliance 300 feet downstream of in-water work, turbidity shall not exceed 10 NTU (nephelometric turbidity units) over background levels or a 20% increase if background is greater than 50 NTUs.

Fryingpan Creek has primarily cobble substrate, which will reduce turbidity compared to a stream with finer sediments, but movement of the cobble will result in suspended sediment sitting below and around those stones. Settled sediment could bury and kill eggs and newly hatched alevins downstream of the turbidity source. Disturbance would also reduce forage by reducing invertebrate abundance. The use of dewatered areas will overall decrease the area of disturbance and elevated turbidity.

Some “in-water” work will occur above the active channel (wetted channel), but still below OHW. Work out of the flowing channel will drastically reduce associated effects, but will still likely harm invertebrates in the moist sediment, thereby reducing forage.

Riparian Habitat Changes / Vegetation Clearing

Construction and road widening will remove up to 2.3 acres of late succession habitat, including some large and mature trees. See Figure 1 above for clearing limits (in purple). 1.7 acres will be revegetated with appropriate site-specific native plants. The rest (0.6 acres) will be permanently converted to PGIS. Overall, there will be a conversion of late succession habitat to early succession/disturbed site and impervious surface. Clearing of vegetation with large equipment will destabilize and disturb soil, making more likely to erode in the future and less able to support a healthy community representative of the forest around it. Once vegetation has reestablished, erosion risk will be reduced, but still be higher for several years. Eroded soil reaching Fryingpan Creek will have similar effects as the construction/disturbance section above. On-site conservation measures listed in Section 2.3 of the BA will greatly reduce the potential erosion effects. Placement of boulders along the new road corridor will prevent visitors from parking on the newly planted/disturbed areas. Overall, the loss of riparian and forest vegetation associated with the replacement structures and new clearing areas will continue to impact individual fishes at this site for the next 50 years. Slowly, replanted areas will mature to replace the high-value habitat currently at the site. Vegetation eliminated will not regrow, and areas converted to herbaceous cover alongside the road and parking area will also have little benefit to listed species.

Trees alongside streams provide shade, shielding water from UV light and reducing water temperature. They provide a thermal buffer, keeping temperatures from dropping as far compared to open sites while maintaining an overall lower maximum and mean temperature (Malcom et al. 2008). The majority of the salmon and steelhead life cycle is spent at less than 15 degrees Celsius and temperatures exceeding 20 degrees can cause adverse effects (Welch et al. 1995). While Fryingpan Creek is glacially fed, and temperatures would not likely exceed a threshold safe for salmonids at this location, increased heating due to cleared tall riparian trees may cause those thresholds to be exceeded sooner downstream. Impervious paving and creation of new impervious would also heat water before it drains to the creek, as opposed to water runoff from a forested area.

Riparian vegetation strongly influences the quality of habitat for salmonids. A reduction in riparian vegetation, particularly those old and tall trees, will reduce habitat quality and thereby reduce fitness of steelhead and Chinook. Riparian trees provide salmonids with food through input of both detritus which feeds invertebrates, and direct contribution of invertebrates. Large logs and root wads from fallen trees in the channel create dynamic habitat which creates scour and pooling. This habitat heterogeneity creates area of thermal refuge as well as appropriate sorting of spawning substrate, for the creation of redds. These large woody inputs also provide habitat for more invertebrates (Meehan et al. 1977). Removal of the proposed riparian vegetation (up to 924 trees) would reduce forage, increase temperature, and remove future woody inputs that contribute to spawning and foraging success of both steelhead and Chinook. Eventual regrowth of vegetation in the replanted areas would replace habitat lost, but this will occur over many decades.

Existence of the full-spanning replacement bridge and other replacement structures (including overwater cover and abutments)

The bridge replacement will ensure that this area is used and accessed via vehicle for the next estimated 50 years. Impacts associated with site use such as foot traffic and vehicle noise disturbance will continue. These could cause turbidity to the creek at the bridge location as well as behavioral changes of individual fish in the channel, such as reduced use of the area. The conversion to a bridge fully spanning the channel will reduce scour and allow for Fryingpan creek to flow and change in more natural way. This will improve passage conditions by avoiding concentration of flow and channelization. It will reduce scour and thereby sedimentation associated with abutments because they would be positioned outside the active stream channel. It will also increase the structure's climate change resiliency, reducing the chance of a catastrophic failure of the structure due to a storm event or other natural disaster.

The replacement bridge would perpetuate a large area of shadow over the channel. Studies have found that PS Chinook smolts avoid shaded areas beneath man-made structures. This causes delays in migration, loss of refugia and rearing grounds, and possible increased predation. Juvenile salmonids stop at the edge of the structures in the Puget Sound Nearshore and avoid swimming into their shadow or underneath them (Heiser and Finn 1970; Simenstad 1988; Ono 2010). No information was located about bridge shadows in freshwater streams, but a stark shadow may have a similar effect.

The new bridge abutments and rip rap proposed for around these abutments would continue to displace riverine and channel habitat during times of high flow. There would be a simplification of stream habitat around the bridge abutments, though they do encroach less on the stream that the current abutments. Simplified stream reaches typically produce limited macroinvertebrate prey and provide poor functional habitat for rearing juvenile salmonids (Florsheim *et al*. 2008). These structures would reduce forage and cover for juvenile Chinook and steelhead. Overall habitat function at the bridge crossing will improve due to the full spanning nature of the design, but will continue to have associated effects similar to those of the old bridge, including shading, and some structures (primarily rip-rap) that alter the channel habitat.

Upland structures that will be new or replaced on site, including the road, parking spots, boulders, ditches, and replaced culverts, will have ongoing effects on listed species through continued elimination of habitat that contributes to the overall health of the river. Temperature and amount of runoff from the area of these structures will continue to be higher due to continued elimination of natural riparian and upland. Deforested areas would not provide a thermal buffer. Land use has direct effects on stream habitat. Fewer invertebrates and allochthonous inputs will go into the stream due to eliminated habitat. Thus, fitness of individuals and potential overall population carrying capacity would be slightly surprised for both species due to the depreciation of habitat quality.

Stormwater

The proposed project addresses runoff concerns *during* construction, but post construction stormwater treatment measures to address road runoff are not proposed as part of the project. A total of 1.37 acres of pollution generating impervious surface (PGIS) will be created or re-paved as part of the proposed action. NMFS expects that this impervious will be associated with the site/project for the next 50 years. Runoff from the roadway, parking lot, and bridge will discharge directly into Fryingpan Creek.

Published work identified stormwater from roadways and streets as causing a high percentage of rapid mortality of adult coho salmon in the wild (Scholz et al. 2011) and laboratory settings (McIntyre et al. 2018). Subsequent laboratory studies showed this morality also occurred in juvenile coho salmon (Chow et al. 2019) as well as to juvenile steelhead and Chinook salmon. Recent publications have identified a degradation product of tires (6PPD-quinone) as the causal factor in salmonid mortalities at concentrations of less than a part per billion (Peter et al. 2018, Tian et al. 2020). The parent compound (6PPD) is widely used by multiple tire manufacturers and the tire shreds/dust that produce the degradation product have been found to be ubiquitous where both rural and urban roadways drain into waterways (Feist et al. 2018, Sutton et al. 2019).

Recent evaluations of exposures of these contaminants on juvenile steelhead and Chinook salmon resulted in mortality French et al. (2022) exposed juvenile steelhead, coho, sockeye, and Chinook to 24 hours of untreated urban runoff and found mortality rates of 95-100% for coho, 4-42% for steelhead, 0-13% for Chinook, and 0% for sockeye. Brinkman et al (2022) showed acute toxicity of 6ppd in sub-adult rainbow trout, with 100% mortality rate at concentration of 1 microgram per liter. Lo et al. (2023) also identified mortality in juvenile Chinook due to 6ppd. While the proposed action is not in an urban setting, tire wear particles and PAHs from fuel and oil dripping from vehicles, as well as vehicular exhaust, occurs with traffic, and increases with the volume of vehicles on roads and parking lots. We infer, because no treatment occurs with the proposed action, that both species will be exposed to and adversely affected by stormwater.

Without post-construction measures to treat or redirect stormwater derived from the 1.37 acres of pollution generating impervious surfaces associated with this bridge replacement project, steelhead and Chinook in the action area will be exposed to contaminated stormwater runoff originating from the bridge, parking area, and roadway. Pollutants in post-construction runoff at the replacement bridge are expected to include oil, grease, polycyclic aromatic hydrocarbons (PAH), 6ppd, and other toxic chemicals associated with tires and vehicles. Concentration levels and toxicity will be seasonally affected by rainfall patterns. The highest concentration levels of constituents and chemical mixtures that are toxic to fish and aquatic life in stormwater runoff are expected to occur at the point of discharge. First-flush rain events after long periods of no rain will also have higher concentrations of pollutants.

Critical Habitat

Water quality, a feature of critical habitat supporting multiple lifestages (spawing habitats, rearing habitats, and migration habitats) will be adversely affected by the routine discharge of untreated stormwater. This degradation is particularly harmful to rearing values as the juvenile lifestages are most sensitive to health effects of PAHs and 6ppd. Critical habitat in the White River supports a genetically essential component of PS Chinook ESU, creating uniquely high conservation value of this critical habitat. This river also supports White River steelhead; the

Puyallup critical habitat supports Puyallup River steelhead. Each of these populations trended negatively in the most recent viability review. The addition of untreated stormwater incrementally impairs water quality, which has previously been identified as "good to excellent" in the White River, but as not fully supporting natural salmonid reproduction in some reaches of the Puyallup River (WCC 1999).

Other project effects are constrained to areas well above designated critical habitat.

Cumulative Effects

"Cumulative effects" are those effects of future state or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation (50 CFR 402.02 and 402.17(a)). Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the ESA.

A portion of the action area is within federal ownership, limiting the range of non-federal actions and effects in that area. Based on the fate and transport approach to the action area, though, the remainder of the action area is likely to be affected over time by an array of non-federal upland uses associated with human population growth uses that contribute stormwater, reduce baseflows, and impair riparian values. The Puyallup system was evaluated for potential changes in flow and temperature due to climate change – scenarios 2030-2059. Wade et al (2013) predicted that steelhead in the Puyallup, of all the Pacific Northwest systems analyzed, would not be exposed to greatly reduced flows or very high temperatures, however. Climate impacts are still predicted to increase flow variation (lower low flows, higher high flows) and increase temperatures. Federally protected headwaters and glacial contributions to flow play a large factor in the climate resiliency of this system. Within the full range of the action area climate effects are likely to increase air and water temperatures, increase the risk of wildfire, and modify the hydrograph with longer periods of low flow and greater peaks in floods.

While this bridge and parking project rebuilds the roadway and parking lot, the expanded parking area would allow for more visitors in and near Fryingpan Creek. However, current conditions are such that visitors are simply parking in an unsafe manner along the road. It is unlikely that this project would expressly draw more visitors to the park and cause additional effects to ESA listed species than those already occurring from vehicles and hikers.

Integration and Synthesis

The Integration and Synthesis section is the final step in our assessment of the risk posed to species and critical habitat as a result of implementing the proposed action. In this section, we add the effects of the action to the environmental baseline and the cumulative effects, taking into account the status of the species and critical habitat, to formulate the agency's biological opinion as to whether the proposed action is likely to: (1) Reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing its numbers, reproduction, or distribution; or (2) appreciably diminish the value of designated or proposed critical habitat as a whole for the conservation of the species.

PS steelhead and PS Chinook are listed as threatened under the ESA. White River spring Chinook are a priority population for recovery of the ESU, and productivity hovers just at replacement (lambda ~1.0), falling short of the 1.4 target growth rate. Both White River and Puyallup River steelhead are priority populations for recovery of the DPS, and both populations are notably below recovery targets for abundance and productivity. Extensive loss of habitat due to dams, land use changes, and degraded conditions associated with those land use changes. Though natural stock of steelhead and Chinook are present within the While/Puyallup system, the populations are drastically depressed and far from reaching recovery goals set forth in NMFS' recovery plans (NMFS 2019, NMFS 2007). See baseline section above for numeric details. The riverine areas around this project site provide pristine conditions for both species, but downstream conditions are the largest factor contributing to low numbers within the National Park. Removal of the Mud Mountain and Electron dams are identified in the recovery strategy for the Central and Sound Puget Sound Steelhead MPG. All ESA and EFH listed anadromous fish must be trucked above the Mud Mountain high-head dam in order to spawn in the action area of this project.

To the above, we add the project's effects on species and designated habitat. This project is likely to adversely affect one cohort of PS Chinook and PS steelhead via construction effects that injure or kill some redds or juvenile fish during dewatering of the worksite, and decrease health or fitness of additional fish during construction by exposing them to noise and disturbance. It also creates adverse health, reduced fitness, or reduced survival among some members of all foreseeable cohorts due to an increase in untreated stormwater. Because the productivity of natural origin spawners is low for both species, compared to recovery goals, the project effects must be carefully considered in relation to the survival of the species.

While the temporary effects are outside of designated critical habitat, Fryingpan Creek is a tributary to the White River which supports the southernmost population of Spring Chinook salmon. We add the stormwater to the baseline conditions of the White River and Puyallup River. Because water quality is not identified as a limiting factor in the White River, the additional increment does not appreciably reduce the conservation role of water quality in the action area for PS Chinook salmon. While water quality is a limiting factor in some reaches of the Puyallup River, however. The additional increment of water quality impairment from new input of untreated stormwater, when added to the baseline, could further impair recovery potential of designated critical habitat for Puget Sound steelhead, in the action area. But, the additional increment of stormwater input is likely too diffuse, with health responses too latent, for NMFS to attribute appreciable declines in the populations to the proposed action.

Stormwater runoff can be effectively treated by infiltrating the road runoff through soil media containing organic matter, which results in removal of toxins and contaminants, including 6ppd. (WA Dept of Ecology 2022, McIntrye 2015, Spromberg 2016, Fardel et al. 2020). Unlike traditional stormwater collection and conveyance practices, such as storm drain systems with direct outfalls to waterways, vegetated filter strips at the edges of paved surfaces or vegetated swales (i.e., bioswales) can collect and convey stormwater in ways that infiltrate into soils with large amounts of organic matter that bind or otherwise remove contaminants from the stormwater before it reaches a stream (WA Dept of Ecology 2022, McIntrye et al. 2015).

Conclusion

After reviewing and analyzing the current status of the listed species and critical habitat, the environmental baseline within the action area, the effects of the proposed action, the effects of other activities caused by the proposed action, and cumulative effects, it is NMFS' biological opinion that the proposed action is not likely to jeopardize the continued existence of PS steelhead or PS Chinook.

INCIDENTAL TAKE STATEMENT

Section 9 of the ESA and Federal regulations pursuant to section 4(d) of the ESA prohibit the take of endangered and threatened species, respectively, without a special exemption. "Take" is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. "Harm" is further defined by regulation to include significant habitat modification or degradation that actually kills or injures fish or wildlife by significantly impairing essential behavioral patterns, including breeding, spawning, rearing, migrating, feeding, or sheltering (50 CFR 222.102). "Incidental take" is defined by regulation as takings that result from, but are not the purpose of, carrying out an otherwise lawful activity conducted by the Federal agency or applicant (50 CFR 402.02). Section 7(b)(4) and section 7(o)(2) provide that taking that is incidental to an otherwise lawful agency action is not considered to be prohibited taking under the ESA if that action is performed in compliance with the terms and conditions of this ITS.

Amount or Extent of Take

In the biological opinion, NMFS determined that incidental take is reasonably certain to occur as follows:

NMFS has determined that incidental take is reasonably certain to occur in Table 2 below:

Table 2. Incidental take pathways and associated indicators in the amount or extent thereof.

Incidental Take Pathway	Amount or Extent of Incidental Take
Harm, injury, or death to PS steelhead and Chinook caused by **in-water construction.**	330 feet of stream reach and downstream of the active construction area where elevated turbidity occurs in Fryingpan Creek for up to 180 days over three years from June 15th to Aug 15th.
Harm, injury, or death to PS steelhead and PS Chinook from **dewatering and fish relocation**	Harm of up to 150 total juveniles of either species, Injury or death of up to 8 individuals (total) of both species Harm of 1 mature adult of either species. Destruction of 1 redd.
Harm to PS steelhead and PS Chinook caused by **Noise**	Maximum extent ranging up and downstream to the next bend of Fryingpan Creek. Maximum of 16 piles driven and 10 blasts (maximum 2 blasts per day), up to 16 boring holes. Blasting and drilling could occur outside the IWWW and above the OHWM.
Harm to PS steelhead and PS Chinook caused by **riparian habitat alteration and vegetation clearing**	Removal of up-to 2.3 acres of vegetation, up to 924 trees, including riparian vegetation along Fryingpan creek. Permeant loss of 0.6 acres of forest and 50 years to regrow mature forested vegetation replanted areas.
Harm to steelhead, Chinook, bocaccio, yelloweye, and SRKW caused by **stormwater input from PGIS**	50 years of untreated stormwater from 1.37 acres of PGIS from the roadway, replaced bridge, and new impervious.

**In-water work is proposed between June 15-August 15th over three seasons, for a maximum of 180 days.*

Effect of the Take

In the biological opinion, NMFS determined that the amount or extent of anticipated take, coupled with other effects of the proposed action, is not likely to result in jeopardy to the species or destruction or adverse modification of critical habitat.

Reasonable and Prudent Measures

"Reasonable and prudent measures" are measures that are necessary or appropriate to minimize the impact of the amount or extent of incidental take (50 CFR 402.02).

1. Reduce harm and mortality to listed species resulting from fish relocation and dewatering activities.
2. Minimize harm to species during construction.
3. Reduce harm to listed species caused by clearing of mature riparian vegetation.
4. Minimize harm and mortality to listed species resulting from untreated stormwater runoff from PGIS on site.
5. Prepare and submit reports that summarize the effects of construction, fish relocation, and dewatering activities, and post-construction monitoring/site performance.

Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the ESA, the Federal action agency must comply (or must ensure that any applicant complies) with the following terms and conditions. The National Park Service or its contractor has a continuing duty to monitor the impacts of incidental take and must report the progress of the action and its impact on the species as specified in this ITS (50 CFR 402.14). If the entity to whom a term and condition is directed does not comply with the following terms and conditions, protective coverage for the proposed action would likely lapse.

1. The following terms and conditions implement RPM 1 (relocation/dewatering).
   a. Captured fish shall be kept in water to the maximum extent possible during relocation activities. They shall be kept in cool, shaded, aerated water protected from excessive noise, jostling, or overcrowding. Fish shall not be removed from this water except when released. To avoid predation, use at least two containers and segregate young-of-year fish from larger age classes and other potential aquatic predators. Captured salmonids shall be relocated, as soon as possible, to a location which will allow for adequate survival of transported fish.
   b. If any salmonids are found dead or injured any time during construction, the biologist on site shall contact NMFS biologist Nissa Rudh by phone within 24 hours at (360)-701-9699, or the NMFS Central Puget Sound Office in Lacey Washington at (503) 230-5400.
      i. All ESA listed salmonid mortalities will be retained until further direction is provided by the NMFS biologist listed above.
      ii. Tissue samples are to be acquired from each mortality prior to freezing the carcass per the methods identified in the NMFS Southwest Fisheries Science Center Genetic Repository protocols.
   c. If samples are taken, NMFS will specify where to send them at that time. Pumps used in the waterway shall be screened and maintained throughout construction to comply with NMFS' Fish Screening Criteria for Pump Intakes (NMFS 1996).
   d. Fill supersacks for isolation with clean/washed gravel that will be appropriate for later streambed material. This will minimize turbidity and potential introduction of invasive species.
   e. Do not use AquaDams as an alternative isolation BMP. This will avoid heated water input into Fryingpan Creek.

2. The following terms and conditions implement RPM 2 (construction).
   a. When working in the active channel, turbidity monitoring shall occur at 300 feet downstream of construction (at the WAC point of compliance). Monitoring shall ensure turbidity does not exceed 10 NTU over background when the background is 50 NTU or less; or A 20 percent increase in turbidity when the background turbidity is more than 50 NTU.
      i. If either threshold above are exceeded, stop work until turbidity falls below thresholds.

b. Begin all pile driving and blasting activities with a “soft start”, to give juvenile and adult fishes in the area a chance to swim away from the noise. Blasting may be proceeded with an airgun or airhorn used several times.
c. Use non-plastic biodegradable materials for construction BMPs, such as coir logs and fiber rolls. Do not place any permanent standard geotextile on site.
d. Minimize stream crossings and in-stream work.

3. The following terms and conditions implement RPM 3 (riparian vegetation).
    a. Remove vegetation (particularly large diameter trees) only when absolutely necessary for project completion, especially within 200 feet of Fryingpan Creek.
    b. All trees over 18” dbh felled shall be left on-site or placed as large woody debris (LWD) within a river/stream upon completion of construction to meet the objectives of the site restoration plan, consistent with the surrounding forest.
        i. Material can be temporarily stored off site.
        ii. Amount of material returned will result in *at least* an average of 11 tons per acre of felled wood, consistent with this forest type and associated surface fuel volumes, with adjustments to local site conditions of needed. Wood shall be left consistent with Kopper 2022.
        iii. Trees may be moved away from areas of active construction.
        iv. Felled trees will be retained or returned in the area to meet coarse woody debris objectives for ecological purposes and consistent with adjacent forest conditions (11 tons per acre). This may require some trees to be removed to avoid creating artificially high downed tree density on the forest floor that could contribute to undesirable fuel loading or elevated risk of beetle infestation that could put the adjacent healthy forest at risk.
        v. NMFS preference is for larger trees be placed in the riparian, near or below the OHWM. This placement should be completed consistent with aquatic habitat and hydrologic data to meet desired ecological conditions.
        vi. Trees may be delimbed as necessary.
        vii. Felled trees >18” in excess of what is required for on-site revegetation and restoration objectives shall be utilized by the NPS, FHWA, or given to Traditionally Associated Tribes or other conservation groups. Trees shall be used for habitat enhancement activities (preferred) or other non-commercial use. NPS shall prioritize uses that actively support restoration goals. Trees shall only be disposed of if necessary by policy or to protect surrounding habitat.
        viii. No selling or burning of cut vegetation is shall occur.
    c. Wash all construction vehicles (all vehicles that will be on disturbed soil) to remove invasive species prior to driving from their previous location to the project location.
    d. Monitor revegetated areas to maintain 75% survival in the first 2 years. 50% survival is required thereafter. Dead plants must be replaced to achieve the allotted percent survival.
    e. If hydoseeding, a native seed mix shall be used.

4. The following terms and conditions implement RPM 4 (untreated stormwater).
    a. Design and install low impact development (LID) stormwater treatment approaches to evapotranspiration, infiltrate, and treat stormwater runoff from all 1.37 acres of PGIS associated with the proposed action to achieve Washington Department of Ecology's "Basic Treatment" level, as defined in Ecology's Stormwater Management Manual for Western Washington.
    b. LID stormwawer treatment must be designed to handle, at least, the predevelopment runoff for a 10-year 24-hour storm event and meet Basic Treatment standards specified by Ecology.
    c. Bridge runoff must also be treated, as above, prior to discharging into Fryingpan Creek.
    d. Perform inspections of road runoff consistent with NPS road maintenance program to ensure effectiveness of LID treatment methods during storm events.
    e. Modify or replace the system if, at any point, the treatment train no longer meets Ecology Basic Treatment standards for suspended solids.
    f. Before construction begins, submit design plans, a rational for how/why the proposed treatment(s) meets the criteria above. Include a maintenance, and monitoring plan to ensure continued treatment success for the design life of the project (50 years) Nissa.rudh@noaa.gov and consutationupdates@noaa.gov

5. The following terms and conditions implement RPM 5 (summarize effects).
    a. NPS and/or FHWA shall provide written reports following each construction season/year to consutationupdates@noaa.gov and cc Nissa.rudh@noaa.gov They shall contain the following information:
        i. Construction Related Activities – include the dates construction began and was completed, a discussion and photographs of any unanticipated effects or unanticipated levels of effects on steelhead or Chinook, a description of any and all measures taken to minimize those unanticipated effects had any visible effect on listed fish.
        ii. Fish Relocation and Dewatering activities – the number, approximate size, life stage, and date of *all* fish species encountered during capture and relocation operations. The location(s) and estimate of the area where fish removal occurred as well as the location(s) of release.
        iii. Post-construction BMP photos.
    b. NPS and/or FHWA shall provide a final report at 5 years post-construction with results of water quality monitoring and vegetation restoration to consutationupdates@noaa.gov and cc Nissa.Rudh@noaa.gov They shall contain the following information:
        i. Post-construction stormwater treatment performance in regards to specifications in Term and Condition 4 above.
        ii. Vegetation restoration performance including a percentage success of plantings within 200 feet of the OHWM as well as upland. Also, a description of any changes or supplemental plantings that were used to meet the success criteria in Term and Condition 3, above.
        iii. A description of any other adaptive changes that took place on site, rationale, and how they were implemented.

Conservation Recommendations

Section 7(a)(1) of the ESA directs Federal agencies to use their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of the threatened and endangered species. Specifically, conservation recommendations are suggestions regarding discretionary measures to minimize or avoid adverse effects of a proposed action on listed species or critical habitat or regarding the development of information (50 CFR 402.02).

1. Do not place rip-rap or other armoring material around the abutments of the replacement bridge. If armoring is needed, the entire span should be widened.
2. If feasible, push in-water construction farther back in the work window to minimize the chance of eggs and alevins present in potential redds.
3. Design the parking area with permeable pavers to increase infiltration of stormwater. Erect a sign on site that outlines the benefits of LID stormwater treatment to aquatic life in Fryingpan Creek.
4. Reduce the area of clearing around the parking lot as much as possible.
5. Fence park visitors out of replanted areas for, at a minimum, the first 2 years. Indicate replanting has occurred with signage.
6. Drop inlets used to control stormwater/meltwater runoff should have escape ramps or the floor must be level with the outlet pipe so animals can escape.
7. Incorporate stormwater treatment goals for all untreated PSIG runoff throughout the Mount Rainer NP into the national park’s capital improvement plan.

Reinitiation of Consultation

Reinitiation of consultation is required and shall be requested by [*name of action agency*] or by NMFS, where discretionary Federal involvement or control over the action has been retained or is authorized by law and (1) the amount or extent of incidental taking specified in the ITS is exceeded, (2) new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered; (3) the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this biological opinion; or if (4) a new species is listed or critical habitat designated that may be affected by the identified action.

MAGNUSON–STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT ESSENTIAL FISH HABITAT CONSULTATION

NMFS also reviewed the proposed action for potential effects on essential fish habitat (EFH) designated under the Magnuson-Stevens Fishery Conservation and Management Act (MSA), including conservation measures and any determination you made regarding the potential effects of the action. This review was conducted pursuant to section 305(b) of the MSA, implementing regulations at 50 CFR 600.920, and agency guidance for use of the ESA consultation process to complete EFH consultation.

The action area, including Fryingpan Creek at the project site, is documented EFH for Pacific Coast Salmon, specifically Chinook, Pink, and Coho salmon.

The proposed action and action area for this consultation are described in Section 1 (ESA Biological Opinion) of this document. Fryingpan creek is a perennial creek with flow typically ranging between 50-100 cubic feet per second. Fryingpan creek is a tributary of the White River, and is headwaters stream for EFH, with anadromy ending at a waterfall about a mile upstream from the project site.

We evaluated the action area for potential Habitat Areas of Particular Concern (HAPCs) for salmon. HAPCs are areas identified with increased scrutiny, study, or mitigation planning compared to surrounding areas because they represent high priority areas for conservation, management, or research and are necessary for healthy ecosystems and sustainable fisheries. The following HAPCs are present within the action area:

<u>Complex Channels and Floodplains</u>: Both complex channels and floodplains provide valuable habitat for all Pacific salmon species. Complex channels consist of meandering, island-braided, pool-riffle and forced pool-riffle channels. Complex floodplain habitats consist of wetlands, oxbows, side channels, sloughs and beaver ponds, and steeper, more constrained channels with high levels of large woody debris (LWD). Densities of spawning and rearing salmon are highest in areas of high-quality, naturally-functioning floodplain habitat and in areas with LWD, compared to anthropogenically modified floodplains.

Complex floodplain habitats are dynamic systems that change over time. As such, the habitat-forming processes that create and maintain these habitats (e.g., erosion and aggradation, input of large wood from riparian forests) should be considered integral to the habitat.

<u>Thermal Refugia</u>: Thermal refugia typically include coolwater tributaries, lateral seeps, side channels, tributary junctions, deep pools, areas of groundwater upwelling, and other mainstem river habitats that are cooler than surrounding waters (≥2° C cooler). Spatial scales can range from entire tributaries (e.g., spring-fed streams), to stream reaches, to highly localized pockets of water only a few square meters in size embedded within larger rivers.

Thermal refugia provide areas to escape high water temperatures and are critical to salmon survival, especially during hot, dry summers in California, Idaho, and eastern Oregon and Washington. Thermal refugia also provide important holding and rearing habitat for adults and juveniles.

Thermal refugia are susceptible to blockage by artificial barriers. Reduced flows can also reduce or eliminate access to refugia. Loss of structural elements such as large wood can also influence the formation of thermal refugia.

<u>Spawning Habitat</u>: Salmon spawning habitat is typically defined as low gradient stream reaches (<3%), containing clean gravel with low levels of fine sediment and high inter gravel flow. Many spawning areas have been well defined by historical and current spawner surveys, and detailed maps exist for some watersheds. Spawning habitat is especially sensitive to stress and

degradation by a number of land- and water-use activities that affect the quality, quantity, and stability of spawning habitat (e.g., sediment deposition from land disturbance, streambank armoring, water withdrawals).

Adverse Effects on Essential Fish Habitat

The proposed action would result in both detrimental and beneficial effects on EFH for Pacific Salmon. The effects on Chinook (an EFH species) and steelhead (not EFH) were analyzed in the ESA Opinion above. Pink salmon (odd year), not ESA listed but an EFH species, are a particularly important run to the white river and with increased returns, significant numbers of pink salmon have been transported above Mud Mountain Dam to spawn in the Upper White River, and the West Fork White River (Puyallup Tribe, 2021).

Habitat impacts will result from temporary construction in and around the creek, long term site disturbance and removal of mature vegetation, including riparian vegetation, replacement and expansion of road and infrastructure, and the replacement of the current bridge with a bridge that spans the full channel. Long term effects (not associated with construction) would affect EFH for a period associated with the design life of the proposed structures, an estimated 50 years. The extend of effects spans downstream so far as stormwater inputs are detectable from runoff at the project site. See action area above.

Effects to Salmon HAPCs

<u>Complex Channels and Floodplains</u>: Fryingpan creek has a very complex channel with high quality spawning substrate as well as lots of large woody debris. Temporary construction would degrade the quality of channel habitat while disturbance and raised turbidity occur. Long term, however, the replacement of the bridge with a full spanning bridge would relieve current construction of the channel, which channelizes flow and creates additional scour. The new bridge will allow for increased channel complexity, supporting salmonid migration, spawning, and rearing.

<u>Thermal Refugia</u>: Fryingpan creek is a glacially fed stream with very cold temperatures, contributing cold water to the White River. While temporary construction would likely not change this, the removal of vegetation and increase of PGIS will contribute to warming of water within this system. A decrease in shading over the water and increased contribution of runoff from the road and cleared landscape will contribute to warmer water in the creek. While this will likely not exceed threshold temperatures for harm to salmonids, it could contribute slightly to an overall increase in temperature downstream, in areas already naturally warmer and on the cusp of healthy salmonid thermal regimes.

<u>Spawning Habitat</u>: Fryingpan creek and the White River farther downstream is accessible and high-quality spawning habitat for salmonids. While EFH species have not been documented in Fryingpan itself, there is nothing preventing their access to this site and glacial melt water obscures the visibility so surveying for these species is difficult. The Puyallup tribe fisheries report (2022) documents Fryingpan as having "excellent rearing habitat for juvenile fish" and "several patches of excellent spawning gravel are available throughout the lower reach".

Disturbance and siltation, in particular, during construction will adversely effect EFH. Following construction, the action area would continue to be affected by the new bridge via shading, while increasing the quality of spawning habitat due to the restored channel complexity as described above. Sediment type and quality would likely not change or be improved long term from this project. A change in land use will occur due to clearing of upland and riparian vegetation and increase in PGIS. Land use is tied directly to habitat quality, particularly if there is little or no riparian buffer.

Pollutants of Concern (POCs) in stormwater from the PGIS would have a long term negative affect on EFH for the life of the bridge and associated structures. These POCs would drain, untreated, into Fryingpan Creek and travel downstream in the system. By continuing inputs that degrade water quality and expanding stormwater runoff, the habitat would be depreciated by some amount, proportion to the acres of PGIS (1.37), seasonality, and the size of rain events. Coho juveniles and adults are particularly sensitive to 6ppd and die rapidly if exposed to runoff from PGIS (French et al. 2022, Sholz et al 2011). See the *Stormwater* section above for more information.

The chronic, episodic, and enduring diminishments of EFH created by this project would continue incrementally degrade the function of EFH in the action area. The enduring improvements resulting from a channel spanning bridge would continue to improve habitat and the natural flow of Fryingpan creek, when compared with previous conditions. Long term structures, particularly PGIS and the bridge structures could constrain the carrying capacity for EFH within the action area.

EFH Conservation Recommendations

NMFS recommends the following conservation measures to reduce effects to essential fish habitat:

1. No not install any permanent lighting within 100 feet of OHW. If lighting is installed, minimize lumens and angle fixtures down to reduce light pollution reaching aquatic habitat.
2. Install stormwater treatment to meet Ecology’s “Enhanced Treatment” to treat heavy metals, and/or oils.

This letter underwent pre-dissemination review using standards for utility, integrity, and objectivity in compliance with applicable guidelines issued under the Data Quality Act (section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001, Public Law 106-554). The biological opinion will be available through NOAA Institutional Repository. A complete record of this consultation is on file at the Oregon Washington Coastal Office, Central Puget Sound Branch, Lacey Washington.

Please contact Nissa Rudh at 360-701-9699 or Nissa.Rudh@noaa.gov if you have any questions concerning this consultation, or if you require additional information.

Sincerely,

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