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-2021-00159

July 13, 2021

Shaneka Owens
Federal Highway Administration
Oregon Division
530 Center Street NE, Suite 420
Salem, Oregon 97301

Re: Endangered Species Act Section 7 Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Response for the Earthquake Ready Burnside Bridge Replacement (EQRB) (HUC 170800), Multnomah County, Oregon

Dear Ms. Owens:

This letter responds to your January 29, 2021, request for initiation of consultation with the National Marine Fisheries Service (NMFS) pursuant to Section 7 of the Endangered Species Act (ESA) on the effects of the proposed action to replace the Burnside Bridge (EQRB) as described in the above titled Biological Assessment (BA) (FHWA 2021).

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 Federal Highway Administration's (FHWA) consultation request and related initiation package, including the BA and additional supplemental information, which is available on file at the NMFS Oregon Washington Coastal Office in Portland, Oregon. Where relevant, we adopted the information and analyses provided in the BA, but only after our independent, science-based evaluation confirmed they meet our regulatory and scientific standards. We adopt by reference here the following sections of the BA:

- Section 3 for the description of the proposed action, including the purpose and need;
- Section 5 for the description of the action area, and
- Section 6 for the status of species and critical habitat;
- Section 7 for the environmental baseline;
- Section 8 for the effects of the proposed action and cumulative effects.

The FHWA notified the National Marine Fisheries Service (NMFS) of the impending bridge replacement and proposed action during a natural resources meeting in March of 2020, at the consultant's office (HDR) in Portland. Follow-up meetings were held with NMFS on a monthly basis during production of the BA.

The FHWA submitted the BA for this proposed action on January 29, 2021. This BA went through three preliminary reviews by ODOT, FHWA and NMFS prior to this final submittal.

The FHWA is proposing to replace the Burnside Bridge over the Willamette River and ensure that it is seismically stable as described in Section 3 of the BA. The purpose of the project is to build a seismically resilient Burnside Street lifeline crossing over the Willamette River that will remain fully operational and accessible for vehicles and other modes of transportation following a major Cascadia Subduction Zone earthquake. The project is needed to provide a reliable crossing for emergency response, evacuation, and economic recovery after an earthquake. Additionally, the bridge will provide a long-term safe crossing with low maintenance needs. Specifically, the FHWA would remove the existing bridge and build a new bridge on the same alignment, construct three temporary work bridges for construction access, upgrade pedestrian access and ensure that it is ADA complaint?, provide post project stormwater treatment, and provide floodplain compensatory off-setting. All work would occur on both sides of the bridge, and will require in-water work. The overall construction duration would be 60 months. The tentative project schedule shows construction beginning in 2024 and concluding in 2029-2030 at the earliest (5 in-water work seasons).

"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 5 of the BA describes the action area as follows (see also, BA, Figure 3 of Appendix A - Action Area):

- The project footprint of proposed construction actions is bound by limits of construction at the existing, new, and temporary bridge crossings; stormwater facilities; upland improvements; permanent and temporary lighting; and urban developed and traffic areas including approximately a one-block radius around the existing Burnside Bridge and W/E Burnside Street, from NW/SW 3rd Avenue on the west side of the river and NE/SE Grand Avenue on the east side. Other geographically distinct areas within the Project Area include the Linnton Mill Restoration Project mitigation bank and locations for off-site staging areas;
- The water quality zone of effect for stormwater constituents extends 113.7 miles downstream below the high tide line along the Willamette River and the Columbia River to the confluence to the Pacific Ocean. This zone also extends 100 feet upstream of the bridge due to backwatering of suspended sediments and pollutants under tidal influence.
- Based on the sinuosity of the Willamette River channel, underwater noise is likely to be blocked by physical barriers (e.g., bends in the river) approximately 7,930 feet upstream and to the outermost distance anticipated for the onset of behavioral effects downstream at a distance of 13,061 feet; and
- The area with potential temporarily increased levels of turbidity due to construction activities is based on the anticipated 300-foot mixing zone that will be authorized under the Section 401 water quality certification permit from DEQ. FHWA anticipates the authorized mixing zone of this large water body will extend a maximum of 300 feet downstream (and upstream to account for tidal influence) of turbidity-generating activities.

Reaching agreement on the description of the action area is desirable, but ultimately NMFS is responsible for this biological determination. In this case, NMFS concurs with the FHWA's description of the action area.

Table 6.1 in the BA lists the following 8 species of ESA-listed fish as likely to occur within the action areas as occurring within the action area, NMFS confirms that the following species are likely to occur in within that action area (BA, Table 6.1), and NMFS concurs with this list:

1. Lower Columbia River Chinook salmon
2. Upper Willamette River Chinook salmon
3. Columbia River chum salmon
4. Lower Columbia River coho salmon
5. Lower Columbia River steelhead
6. Upper Willamette River steelhead
7. Southern DPS green sturgeon
8. Southern DPS eulachon

The FHWA determined the proposed action may affect the above mentioned species, but didn't include the following species that will migrate through the lower part of the action area.

9. SR fall run Chinook salmon,
10. SR spring run Chinook salmon,
11. Middle Columbia River steelhead,
12. UCR steelhead,
13. SR steelhead,
14. SR sockeye salmon
15. Upper Columbia River spring-run Chinook salmon

NMFS determined the proposed action is also likely to adversely affect SR fall run Chinook salmon, SR spring run Chinook salmon, Middle Columbia River steelhead, UCR steelhead, SR steelhead, SR sockeye salmon, Upper Columbia River spring-run Chinook salmon, as well as their designated critical habitats as discussed below. All 7 of these species migrate through the lower part of the action area as adults and juveniles. Although these species are not in the project area, they migrate through the lower part of the action area and are subjected to effects associated with stormwater runoff and associated pollutants.

Most SR fall run Chinook salmon production historically came from large mainstem reaches that supported a subyearling, or "ocean-type," life history strategy. Adults migrated up the Columbia and Snake Rivers from July to August through November and spawned from late September to early October through November. Eggs developed rapidly in the relatively warm lower mainstem reaches of several tributary rivers, which facilitated emergence during late winter and early spring and accelerated growth such that juveniles could become smolts and migrate to the ocean in May and June (NMFS 2017a).

SR spring/summer run Chinook salmon generally exhibit a stream-type life-history, meaning that they reside in freshwater for a year or more before migrating toward the ocean, although some

populations exhibit variations from this pattern (e.g., Salmon River basin juveniles may spend less than 1 year in freshwater) (Copeland and Venditti 2009). Juvenile outmigrants generally pass downstream of Bonneville Dam from late April through early June. Yearling outmigrants are thought to spend relatively little time in the estuary compared to sub-yearling ocean-type fish, often travelling from Bonneville Dam (river mile [RM] 146) to a sampling site at RM 43 in 1 to 2 days. Adult SR spring-run Chinook salmon return to the Columbia River in early spring and pass Bonneville Dam beginning in early March through late May. Adult SR summer-run Chinook salmon return to the Columbia River from June through July. Adults from both runs hold in deep pools in the mainstem Columbia and Snake Rivers and the lower ends of the spawning tributaries until late summer, when they migrate into the higher elevation spawning reaches (NMFS 2017b).

Middle Columbia River steelhead adults enter freshwater between May and October and require several months to mature before spawning; winter steelhead enter freshwater between November and April and spawn shortly thereafter (NMFS 2020).

Summer rearing takes place primarily in the faster parts of pools, although young-of-the-year are abundant in glides and riffles. Winter rearing occurs more uniformly at lower densities across a wide range of fast and slow habitat types (NMFS 2020). Depending on water temperature, steelhead eggs may incubate for 1.5 to 4 months before hatching. Young steelhead typically rear in streams for some time (generally 2 years) before migrating to the ocean. Some juveniles move downstream to rear in larger tributaries and mainstem rivers. Most fish in this DPS spend 1 to 2 years in saltwater before re-entering freshwater (NMFS 2009a).

UCR steelhead adults return to the Columbia River in the late summer and early fall. Unlike spring-run Chinook salmon, most steelhead do not move upstream quickly to tributary spawning streams. A portion of the returning run overwinters in the mainstem Columbia River reservoirs, passing into tributaries to spawn in April and May of the following year. Spawning occurs in the late spring of the year following entry into the Columbia River. Juvenile steelhead generally spend 1 to 3 years rearing in freshwater before migrating to the ocean but have been documented spending as many as 7 years in freshwater before migrating. Most adult steelhead return to the upper Columbia River basin after 1 or 2 years at sea (NMFS 2020).

SR steelhead are generally classified as summer-run fish. Summer-run steelhead are sexually immature when they return to freshwater, and require several months to mature and spawn. Adult SRB steelhead generally enter the Columbia River from June to August (NMFS 2017a).

Smolts migrate downstream during spring runoff, which occurs from March to mid-June in the Snake River basin, depending on elevation. Juvenile outmigrating steelhead often reach Bonneville Dam by mid-May, and most travel rapidly (<5 days) through the estuary and into the ocean, although there is considerable variation in travel times and timing of estuarine and ocean entry between individual fish (NMFS 2017a).

SR sockeye adult salmon historically entered the Columbia River in June and July, migrated upstream through the Snake and Salmon Rivers, and arrived at the Sawtooth Valley lakes in August and September (Bjornn et al. 1968).

While pre-dam reports indicate that sockeye salmon smolts passed through the lower Snake River in May and June, PIT-tagged smolts from Redfish Lake passed Lower Granite Dam from mid-May to mid-July. SR sockeye salmon enter the estuary at a large size as a result of the long time they spend in the natal lakes before emigrating as juveniles to the ocean. They generally return as 4-year-old or older fish to their natal Sawtooth Valley Lake to spawn (NMFS 2015).

Upper Columbia River adult spring-run Chinook salmon begin returning from the ocean in April and May, with the run into the Columbia River peaking in mid-May. They enter the UCR tributaries from April through July. After migration, they hold in freshwater tributaries until spawning occurs in the late summer, peaking in mid-to-late August. Juvenile spring Chinook salmon spend a year in freshwater before migrating to saltwater in the spring of their second year of life (NMFS 2020).

According to the BA, Section 9.2, and supplemental information obtained, critical habitat for the Chinook salmon, chum salmon, sockeye, and coho ESUs, and steelhead DPSs, are also likely to be adversely affected by the proposed action due to:

- Water quality impacts from temporarily elevated turbidity or other contaminants that may result during construction
- Elevated underwater noise levels during construction may temporarily degrade the freshwater migration PBF of critical habitat at the Project Area
- Temporary aquatic habitat impacts associated with temporary work bridges, temporary piles, cofferdams, drilled shaft casings, dredging and riprap removal, and barges may temporarily degrade the freshwater migration and rearing PBFs of critical habitat at the Project Area.
- Permanent aquatic habitat impacts from a net increase in artificial fill within the functional floodplain from the replacement bridge and Eastbank Esplanade connection will be offset by the proposed measures for removal of the existing artificial fill and purchase of mitigation bank credits.
- The effects to habitat function from overwater shading will be minimal given the height of the replacement bridge and Eastbank Esplanade structures.
- Fish salvage activities may temporarily degrade the freshwater migration and rearing PBFs of critical habitat at the Project Area,
- Stormwater treatment BMPs will be designed to treat a design storm event, and storm events that exceed this level will result in discharge of untreated stormwater. This pollutant discharge will degrade the freshwater migration and estuarine PBFs.

We used information in Section 6.1 and 6.2 of the BA to examine the status of each species and the condition of critical habitat throughout the designated area, as described in 50 CFR 402.02, and supplemented that with additional information from NMFS (2020) for species and critical habitats in the lower Columbia River, including the function of the physical or biological features (PBFs) essential to the conservation of the species that create the conservation value of those critical habitats. We also considered information from conservation and recovery plans for those species (NMFS 2020) describing the presence, abundance, density or periodic occurrence of listed species and the condition and location of the species' habitat, including critical habitat, as described in 50 CFR 402.14(c)(1)(iii).

We used information in Section 7.1 and 7.2 of the BA to examine the "environmental baseline," including 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 actions 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 (50 CFR 402.02).

This environmental baseline includes impacts of the existing EQRB infrastructure that will also be analyzed as "effects of the action" due to the continued presence of the EQRB in the environment after the proposed rehabilitation is complete (see Thom 2018). 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 also part of the environmental baseline.

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). Because the proposed action will extend the useful life of the EQRB in a meaningful way, we also considered the future impacts associated with the presence of the EQRB in the environment separate from consideration of the impacts of construction necessary to replace the EQRB (see Thom 2018).

Section 8 of the BA provides a detailed discussion and comprehensive assessment of the effects of the proposed action, and are adopted here pursuant to 50 CFR 402.14(h)(3)(i). NMFS evaluated this section of the BA and after our independent, science-based evaluation determined that it meets our regulatory and scientific standards. A detailed discussion of the proposed action's potential impact on critical habitat is included in Section 6.1 of the BA.

"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. Section 8.2 of the BA describes cumulative effects in the immediate project area, and NMFS relied on information in NMFS 2014 and NMFS 2020 for cumulative effect information for the lower Columbia River and estuary part of the action area.

Integration and synthesis of information for the status of species, environmental baseline, effects of the action, and cumulative effects is the final step in our assessment of the risk posed to species and critical habitat as a result of implementing the proposed action. Here, 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 our 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.

As described in the BA, Sections 5.1, 5.2, and 6.1, information cited therein, individual UWR Chinook salmon, LCR Chinook salmon, UCR Chinook salmon, SR fall run Chinook salmon, SR spring run Chinook salmon, LCR steelhead, Middle Columbia River steelhead, UCR steelhead, UWR steelhead, and SR steelhead, SR sockeye salmon, LCR coho salmon, Columbia River chum salmon, green sturgeon, and Pacific eulachon use the action area to complete part of their life history requirements. Some salmon and steelhead migrate and rear in the action area, while others only migrate through, once as out-migrating juveniles and then again as adult fish on upstream spawning migration.

The status of each salmon and steelhead species, as well as Pacific eulachon and green sturgeon, addressed by this consultation varies considerably from very high risk of extinction (UWR and LCR Chinook salmon, SR Sockeye salmon), moderate to high risk (LCR coho salmon) to moderate risk (UWR and LCR steelhead). Similarly, the many individual populations affected by the proposed action vary considerably in their biological status. The species addressed in this opinion have declined due to numerous factors. A factor for decline that all these species share is degradation of freshwater and estuarine habitat. Human development of the Pacific Northwest has caused significant negative changes to stream and estuary habitat across the range of these species. Climate change is likely to exacerbate several of the ongoing habitat issues, in particular, increased summer temperatures, and decreased summer flows in the freshwater environment, ocean acidification, and sea level rise in the marine environment.

As described in Sections 7.1 and 7.2 of the BA, the environmental baseline for critical habitat within the action area in the immediate vicinity of the EQRB offers little in terms of conservation value to listed fish species under current conditions. The Willamette River has been repeatedly filled and dredged for development purposes, including historical side channels, back-waters, alcoves, periphery, and floodplain habitat. According to the City of Portland (2018), approximately 85 percent of the banks of the Willamette River in the central city reach (extending from north of the Fremont Bridge to Ross Island Bridge) are armored with seawalls, pilings, rock/fill, or riprap. The landscape surrounding the river is highly urbanized and is dominated by impervious surfaces, commercial development, and transportation infrastructure. Waterfront parks, residential land use, and industrial properties are also present. Piers 1, 2, 3, and 4 of the existing Burnside Bridge occupy approximately 15,400 square feet (0.35 acre) of area within the river. Due to construction of the existing bridge and seawalls that are part of the EQRB, historic riparian areas and adjacent floodplains are hydrologically disconnected from the mainstem Willamette River, to adequately provide the essential ecosystem functions associated with their natural or relatively undisturbed conditions, such as less extreme flooding, flood water retention, reduced erosion and sedimentation, reduced impacts from waves and storm surges, maintenance of water quality, ground water recharge, and provision of other physical and biological features necessary for ESA-listed fish to grow and thrive. Similarly, the EQRB and the seawall largely excludes ESA-listed fish from any remaining habitat on the land side of the EQRB, and limits their shallow water habitat options on the water side of the EQRB to the highly simplified, degraded, and unfavorable conditions where the affected rivers face the seawalls and bridge bents.

The environmental baseline for the action area farther downstream of the EQRB includes an increased likelihood of flooding, and an increased danger that pollutants and contaminants from developed areas will be flushed into the river. As described in NMFS (2020), the environmental baseline in the lower Columbia River is not meeting all biological requirements of individual fish of listed species, and critical habitat is not fulfilling its full conservation potential due to one or more impaired aquatic habitat functions related PBFs for water quality, substrate, off-channel habitat, channel conditions and dynamics, stream hydrology, and other habitat factors limiting the recovery of the species in that area. Similar to their impacts on species, current trends in climate and marine conditions are likely to place additional stress on the conservation value of critical habitats.

The design of the EQRB replacement as described in Section 3 of the BA is a key factor in our assessment of the construction impacts associated with the proposed action, and the management of post-construction stormwater discharge. As described in Section 8.1 of the BA, the effects of the upland construction will be relatively short term, including potential increased turbidity caused by erosion, stormwater run-off, and use of heavy machinery near a major waterbody; all of which will be minimized using construction BMPs intended to isolate the construction areas. These effects will also be relatively minor, and are expected to result in a small, temporary reduction in the use of the action area for feeding, resting, and refuge from predators by ESA-listed species, and in the conservation value of their critical habitats to support of those behaviors.

Post-construction operation and maintenance will result in increased stormwater runoff that will be managed through stormwater management facilities that will be designed, built, and maintained as described in NMFS (2021). However, despite being treated, post-construction stormwater runoff still contains a wide variety of pollutants and contaminants, including sediment, nutrients, metals, petroleum-related compounds, pesticides, particles of tire tread, and other chemical compounds. Some of those contaminants are persistent and can travel long distances in aquatic systems. Some are also likely to accumulate in species as they pass from one species to the next through the food web. Those constituents have been observed to harm fish that come into contact with them far downstream when they enter fish tissues at levels high enough to modify behavior, disrupt endocrine functions, or cause immunotoxic disease effects, either by themselves or through additive, interactive, and synergistic interactions with other contaminants in the river.

The volume of stormwater that would be discharged from the EQRB is small in comparison to the volume of streamflow downstream, and the impact of pollutants and contaminants in that discharge are also small when compared to the adverse effects caused by the contaminants in all historical or existing stormwater discharges. Nonetheless, this discharge will have an incremental effect on the pollutant levels at the watershed scale due to the sustained, long-term, and chronic nature of stormwater discharges, and due to the compounding effects of environmental processes that affect the fate and transport of those pollutants.

Commensurate with the relatively small amount of treated runoff that will be produced by the EQRB, and the large size of the Willamette River in this reach; the intensity and severity of this additional increment of adverse effect on species and critical habitats in the action area will be

very low. Moreover, any runoff from impervious surfaces adjacent to the EQRB that had previously been discharged into the footprint of the EQRB, and that was either untreated or under-treated relative to the methods prescribed in SLOPES; will now achieve the same level of stormwater treatment as the new impervious area itself, further minimizing the overall adverse effects of this action. Thus, the impacts of the proposed action on species and critical habitat is not expected to reduce the abundance, productivity, or genetic or spatial diversity of any affected population of Pacific salmon, southern green sturgeon, or eulachon, or reduce the conservation value of any of critical habitat PBFs considered here, at either the site, watershed or designation scale.

The effects of the continued existence of EQRB bridge into the foreseeable future are likely to be similar to those described as environmental baseline conditions including disconnection of the floodplain in the project area. The proximity of those effects to ESA-listed species and critical habitats will remain the same, as will the distribution, timing, nature, duration, frequency, intensity, and severity of the effects.

Cumulative effects will include actions by the City of Portland, the State of Oregon, and other entities that are likely to continue to undertake projects to improve habitat for listed anadromous species in the lower Willamette River that are likely to have a beneficial effect on listed species and their critical habitats.

The Portland Harbor Superfund Site located downstream from the bridge is expected to result in remediation of some existing contaminated river sediments which will benefit water and habitat quality.

Past actions have substantially impacted the natural functions of the Willamette River and adjacent habitats within the Project Area and broader watershed. These impacts have altered hydrology, filled wetlands, displaced fish and wildlife species, impacted water quality, and reduced the extent and quality of upland and aquatic habitat.

Conversely, as the human population grows, new residential and industrial growth will likely occur in the action area. We also used additional information from NMFS (2020) to complete this part of our analysis and conclude that overall, urban areas are likely to experience continued population growth while redevelopment and private restoration actions will begin to improve negative baseline conditions and, in rural areas, agricultural and forestry practices are also likely to continue at a scale similar to that in the past.

After reviewing and analyzing the current status of the 15 ESA-listed species and their designated critical habitats considered in this opinion, 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 the fifteen species considered in this opinion, or destroy or adversely modify their designated critical habitats.

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 (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

NMFS has determined that harm to juveniles and adults of all ESA-listed salmon and steelhead considered in this opinion will be caused by:

- Electrofishing and other fish salvage efforts within cofferdams and other isolated work areas.
- Decreased water quality and increased sediment, noise, light, and human presence during construction of the EQRB; and,
- Adverse effects associated with the presence of the EQRB in the environment, separate from effects caused by its construction, including, but not limited to, the impact of post-construction stormwater discharge and a range of hydraulic and hydrological impacts.

The distribution and abundance of fish that occur within an action area are affected by habitat quality, competition, predation, and the interaction of processes that influence genetic, population, and environmental characteristics. These biotic and environmental processes interact in ways that may be random or directional, and may operate across far broader temporal and spatial scales than are affected by the proposed action. Thus, the distribution and abundance of fish within the action area cannot be attributed entirely to habitat conditions, nor can NMFS precisely predict the number of fish that are reasonably certain to be injured or killed if their habitat is modified or degraded by the proposed action. In such circumstances, NMFS cannot provide an amount of take that would be caused by the proposed action.

1. The best available indicator for the extent of take associated with harm due to impaired feeding, resting, and refuge from predators caused by decreased water quality and increased dust, noise, light, and human presence during construction of the EQRB, is the extent of suspended sediment plumes.

   Specifically, the anticipated take will be exceeded if increased suspended sediment from construction activities that take place near a water body causes a suspended sediment plume

300 feet from the boundary of such activities to cause turbidity, as measured in nephelometric turbidity units (NTUs), to exceed 5 NTU over the background level.

The extent of a suspended sediment plume is an effective reinitiation trigger because it is a leading indicator for the most critical type of off-site damage caused by construction practices, turbidity monitoring is consistent with National Pollutant Discharge Elimination System (NPDES) requirements and Section 401 water quality certification requirements by the Oregon Department of Environmental Quality for construction activities will take place in or near water bodies, and the FHWA has contractual authority to take actions to address non-compliance.

2. The best available indicator for harm associated with the continuing presence of the EQRB in the environment is the as-built footprint for construction actions related to the total and increased size of the bridge footings.

   Specifically, the anticipated take for harm associated with the continued existence of the rehabilitated EQRB will be exceeded if the proposed action is completed in a way that results in an as-built footprint that results in footings that does not concur with size and volume shown by maps and drawings in Figures 4a, 4b, and 10 of the BA.

   The as-built footprint of the EQRB project is extent an effective reinitiation trigger because it is directly correlated to the area over which harm due to functional floodplain fill is likely to occur, as well as the level of impacts to species (the more area filled by the EQRB, the greater the loss of available habitat). Such drawings are required by the FHWA as part of the close-out process for completed work to identify whether actual conditions deviate from plans and specification documents, and the FHWA has authority to modify contracts or issue other directions as necessary to ensure that all contract terms have been met.

3. The best available indicator for harm associated with the impact of post-construction stormwater discharge are a combination of stormwater facility design, construction, and maintenance, and operations as described in NMFS (2014) because they will determine whether the stormwater treatment system is operated and maintained in way that continues to minimize the concentration of pollutants in stormwater runoff as designed, and thus reflect the amount of incidental take analyzed in the opinion.

4. The best available indicator for incidental take associated fish salvage due to electrofishing, seining, and use of minnow traps of isolated work areas and cofferdams during construction of the EQRB, is the estimated take associated with these isolated work areas. For EQRB there will be three isolated work areas associated with Piers 1 and 2 and the riprap removal. The dimensions of these areas are 106’ X 175’ (18,550 ft^2, or 1,722 m^2), 106’ X 175’ (18,550 ft^2, or 1,722 m^2), and 250’ X 20’ (5,000 ft^2, or 456 m^2) respectively. Using habitat densities of 0.07 Chinook salmon/m^3 and 0.08 steelhead/m^3 (Newton, J. M. and M. R. Brown. 2005; Earley, L.A., and M.R. Brown. 2013; and Reedy, Gary D. 1995) assuming they are equally spread through the water column and come from various habitat types upstream, we used average densities to calculate incidental take for 6 meters of depth. This section of the

Willamette River is bounded by seawalls and is similar to a large glide type habitat. It is estimated that within these isolated cofferdams that 3,313 fish could be isolated. We are assuming that these fish consist of UWR Chinook salmon and UWR steelhead. The totals would be 1,552 UWR Chinook salmon juveniles and 1,761 UWR steelhead juveniles.

Exceeding either of the indicators for extent of take will trigger the reinitiation provisions of this opinion.

Effect of the Take

NMFS has 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 nondiscretionary measures that are necessary or appropriate to minimize the impact of the amount or extent of incidental take (50 CFR 402.02). The FHWA shall:

1. Minimize incidental take from design, construction, in-water work, pile driving, of the EQRB by applying conditions to the proposed construction actions that avoid or minimize adverse effects to water quality and the ecology of aquatic systems.
2. Minimize incidental take from work area isolation by conducting fish salvage and release.
3. Minimize incidental take from post-construction stormwater.
4. Ensure completion of a monitoring and reporting program to confirm that the take exemption for the proposed action is not exceeded, and that the terms and conditions in this incidental take statement are effective in minimizing incidental take.

Terms and Conditions

The terms and conditions described below are non-discretionary, and the FHWA must comply with them in order to implement the RPMs (50 CFR 402.14). The FHWA 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. To implement reasonable and prudent measure #1 (design, construction, in-water work, pile driving, of the EQRB), the FHWA shall ensure that the EQRB rehabilitation is completed as follows:
    a. Carry out all relevant conservation measures as described in the BA.
    b. Turbidity: The FHWA must implement appropriate Best Management Practices (BMPs) to minimize turbidity during in-water work. Any activity that causes turbidity to exceed 10% above natural stream turbidity is prohibited except as specifically provided below:

i. Monitoring: Turbidity monitoring must be conducted and recorded as described below. Monitoring must occur at two hour intervals each day during daylight hours when in-water work is being conducted on the river side of the project area. A properly calibrated turbidimeter is required unless another monitoring method is proposed and authorized by DEQ.
    1. Representative Background Point: Applicant must take and record a turbidity measurement every two hours during in-water work at an undisturbed area. A background location shall be established at a representative location approximately 100 feet upcurrent of the in water activity unless otherwise authorized by DEQ. The background turbidity, location, date, tidal stage (if applicable) and time must be recorded immediately prior to monitoring downcurrent at the compliance point described below.
    2. Compliance Point: The Applicant must monitor every two hours. A compliance location shall be established at a representative location approximately 300 feet downcurrent from the disturbance at approximately mid-depth of the waterbody and within any visible plume. The turbidity, location, date, tidal stage (if applicable) and time must be recorded for each measurement.

ii. Compliance: The Applicant must compare turbidity monitoring results from the compliance points to the representative background levels taken during each two–hour monitoring interval. Pursuant to OAR 340-041-0036, short term exceedances of the turbidity water quality standard are allowed as follows:

Turbidity Level	Restrictions to Duration of Activity
0 to 4 NTU above background	No Restrictions
5 to 29 NTU above background	Work may continue maximum of 4 hours. If turbidity remains 5-29 NTU above background, stop work and modify BMPs. Work may resume when NTU is 0-5 above background.
30 to 49 NTU above background	Work may continue maximum of 2 hours. If turbidity remains 30-49 NTU above background, stop work and modify BMPs. Work may resume when NTU is 0-5 above background
50 NTU or more above background	Stop work immediately and inform NMFS

c. When the construction of EQRB is complete, the FHWA will ensure that all equipment is removed, temporary buildings and other infrastructure are removed, post-construction cleanup is complete, and that the project was completed with no unintended increase in the length, width, or height of any new or rehabilitated infrastructure, or reduction in the area affected by the project.

d. Prepare a post-construction stormwater management plan as described in NMFS (2014), and submit to NMFS for review and approval before beginning work on any new structural stormwater management facilities.
e. Timing of In-water Work. Work within the active channel of the Willamette River will be completed during the period of July 1 to October 31st, except for the following activities that will be done outside of the IWW at times: Barge use, wire saw demolition, placement of perched caissons, vibratory pile removal, isolated grouting at piers 2 and 3, and overwater work. All other in-water work must be completed within these dates unless otherwise approved in writing by NMFS.
f. Minimize Impact Area. Confine construction impacts to the minimum area necessary to achieve project goals.
g. Cessation of Work. Operations will cease under high flow conditions that may result in inundation of the project area, except for efforts to avoid or minimize resource damage.
h. Pollution and Erosion Control Plan. A pollution and erosion control plan will be prepared and carried out to prevent pollution related to construction operations. The plan must be available for inspection on request by FHWA or NMFS, contain the pertinent elements listed below, and meet requirements of all applicable laws and regulations:
    i. Practices to prevent erosion and sedimentation associated with access roads, stream crossings, construction sites, borrow pit operations, haul roads, equipment and material storage sites, fueling operations and staging areas.
    ii. A description of any hazardous products or materials that will be used, including procedures for inventory, storage, handling and monitoring.
    iii. A spill containment and control plan with notification procedures, specific clean up and disposal instructions for different products, quick response containment and clean up measures that will be available on the site, proposed methods for disposal of spilled materials, and employee training for spill containment.
    iv. Practices to prevent construction debris from dropping into any stream or waterbody and to remove any material that does drop with a minimum disturbance to the streambed and water quality.
i. Inspection of Erosion Controls. During construction, all erosion controls must be inspected daily during the rainy season and weekly during the dry season to ensure they are working adequately.
    i. If inspection shows that the erosion controls are ineffective, work crews must be mobilized immediately to make repairs, install replacements or install additional controls as necessary.
    ii. Sediment must be removed from erosion controls once it has reached 75% of the capacity of the control.
j. Construction Discharge Water. All discharge water created by construction (e.g., concrete washout, pumping for work area isolation, vehicle wash water) will be treated as follows:
    i. Water quality treatment. Design, build and maintain facilities to collect and treat all construction discharge water, using the best available technology applicable to site conditions, to remove debris, nutrients, sediment, petroleum products, metals and other pollutants likely to be present.

ii. Return flow. If construction discharge water is released using an outfall or diffuser port, velocities may not exceed four feet per second, and the maximum size of any aperture may not exceed one inch.

iii. Pollutants. Do not allow pollutants such as green concrete, contaminated water, silt, welding slag, sandblasting abrasive, or grout cured less than 48 hours to contact any waterbody, wetland or stream channel below OHW level.

k. Pre-construction Activity. Before significant alteration of the project area, the following actions are completed:

i. Marking. Flag the boundaries of clearing limits associated with site access and construction to prevent ground disturbance of riparian vegetation, wetlands and other sensitive sites beyond the flagged boundary.

ii. Emergency erosion controls. Ensure that the following materials for emergency erosion control are onsite.

1. A supply of sediment control materials (e.g., silt fence, straw bales).
2. An oil-absorbing floating boom whenever surface water is present.

iii. Erosion controls. Erosion controls must be in place and appropriately installed downslope of riparian areas to be disturbed until site restoration is complete.

l. Select Heavy Equipment with Care. Use of heavy equipment will be restricted as follows:

i. Choice of equipment. When heavy equipment must be used, the equipment selected must have the least adverse effects on the environment (e.g., minimally-sized, rubber-tired).

ii. Vehicle staging. Vehicles must be fueled, operated, maintained, and stored as follows:

1. Vehicle staging, cleaning, maintenance, refueling, and fuel storage must take place in a vehicle staging area 150 feet or more away from any stream, waterbody or wetland (unless within its own primary containment that is inspected daily). All vehicles operated within 150feet of any stream, waterbody or wetland must be inspected daily for fluid leaks before leaving the vehicle staging area. Any leaks detected must be repaired in the vehicle staging area before the vehicle resumes operation. Inspections must be documented in a record that is available for review on request by FHWA or NMFS.
2. All equipment operated instream must be cleaned before beginning operations below the bankfull elevation to remove all external oil, grease, dirt and mud.

iii. Stationary power equipment. Stationary power equipment (e.g., generators, cranes) operated within 150 feet of any stream, waterbody or wetland must be diapered to prevent leaks or have its own containment, unless otherwise approved in writing by NMFS.

m. Site Preparation. Native materials will be conserved for site restoration.

i. If possible, native material must be left where they are found.

ii. Materials that are removed, damaged, or destroyed must be replaced with a functional equivalent during site restoration.

iii. Any large wood, native vegetation, weed-free topsoil and native channel material displaced by construction must be stockpiled for use during site restoration.

n. Site restoration. Any significant disturbance of riparian vegetation, soils, streambanks, or stream channel must be cleaned up and restored after the action is complete. Although no single criterion is sufficient to measure restoration success, the intent is that the following features should be present in the upland parts of the project area, within reasonable limits of natural and management variation.
   i. Areas with signs of significant past erosion are completely stabilized and healed, bare soil spaces are small and well-dispersed.
   ii. Soil movement, such as active rills and soil deposition around plants or in small basins, is absent or slight and local.
   iii. Native woody and herbaceous vegetation, and germination microsites, are present and well distributed across the site.
   iv. Plants have normal, vigorous growth form, and a high probability of remaining vigorous, healthy and dominant over undesired competing vegetation.
   v. Plant litter is well distributed and effective in protecting the soil with little or no litter accumulated against vegetation as a result of active sheet erosion ("litter dams").
   vi. A continuous corridor of shrubs and trees appropriate to the site are present to provide shade and other habitat functions for the entire streambank.
o. Temporary access roads. Whenever possible, use existing routes that will minimize soil disturbance and compaction within 150-feet of any waterbody.
   i. Do not build temporary access routes on steep slopes, where grade, soil, or other features suggest a likelihood of excessive erosion (e.g., rills or gullies) or failure.
   ii. When the action is completed, obliterate all temporary access routes, stabilize the soil and restore the vegetation.
   iii. Restore temporary routes in wet or flooded areas before the end of the applicable in-water work period.
   iv. Whenever possible, eliminate the need for an access road by walking a tracked drill or spider into a survey site, or lower drilling equipment to a survey site using a crane.
p. Revegetation.
   i. Plant and seed disturbed areas before or at the beginning of the first growing season after construction.
   ii. Use a diverse assemblage of vegetation species native to the action area or region, including trees, shrubs, and herbaceous species. Vegetation, such as willow, sedge and rush mats, may be gathered from abandoned floodplains, stream channels, etc. When feasible, use vegetation salvaged from local areas scheduled for clearing due to development.
   iii. Use species native to the project area or region that will achieve shade and erosion control objectives, including forb, grass, shrub, or tree species that are appropriate for the site.

iv. Short-term stabilization measures may include use of non-native sterile seed mix if native seeds are not available, weed-free certified straw, jute matting, and similar methods.
v. Do not apply surface fertilizer within 50 feet of any wetland or water body.
vi. Install fencing as necessary to prevent access to revegetated sites by unauthorized persons.
vii. Do not use invasive or non-native species for site restoration.
viii. Conduct post-construction monitoring and treatment to remove or control invasive plants until native plant species are well-established.

q. Fish Screens.
   i. Submit to NMFS for review and approval fish screen designs for surface water diverted by gravity or by pumping at a rate that exceeds 3 cubic feet per second (cfs).
   ii. All other diversions will have a fish screen that meets the following specifications:
      1. An automated cleaning device with a minimum effective surface area of 2.5 square feet per cfs, and a nominal maximum approach velocity of 0.4 feet per second, or no automated cleaning device, a minimum effective surface area of 1 square foot per cfs, and a nominal maximum approach rate of 0.2 foot per second; and
      2. A round or square screen mesh that is no larger than 2.38 millimeters (mm) (0.094 inches) in the narrow dimension, or any other shape that is no larger than 1.75 mm (0.069 inches) in the narrow dimension.
      3. Each fish screen will be installed, operated, and maintained according to NMFS's fish screen criteria.

r. Barge use. Any barge used as a work platform to support construction must be:
   i. Large enough to remain stable under foreseeable loads and adverse conditions.
   ii. Inspected before arrival to ensure vessel and ballast are free of invasive species.
   iii. Secured, stabilized and maintained as necessary to ensure no loss of balance, stability, anchorage, or other condition that can result in release of contaminants or construction debris.
   iv. Any barge that is used to load, store, or transport contaminated sediment, extracted piles, or other materials that are likely to drain or dewater contaminants onto the barge deck must be equipped with an elevated bulwark or other walled enclosure on the deck, and scuppers that can be sealed to prevent release and resuspension of those contaminants. Any water collected in this way must be treated on land before it is returned to the surface water body, and contaminated sediments must be collected and disposed of in a landfill or confined disposal facility.

s. Painting and coating.
   i. Whenever practicable, ensure that painting, coating or other chemical applications are conducted at an approved off-site facility or within a designated staging area.

ii. The area where any painting or coating is done onsite must be isolated and contained as necessary to prevent dirt, rust, scale, solvent, paint, or other debris from entering aquatic and riparian habitat during pre-painting preparation, painting, coating, or any other activity that may have similar water quality effects.

iii. When painting or coating is done onsite and over the function floodplain or wetted channel, work area isolation must include negative pressure containment.

iv. All lead-based paint, blasting abrasive, solvents, or other hazardous waste material must be contained in an enclosure, collected and disposed of according to an appropriate hazardous waste treatment plan, including use of the best available technology to prevent fugitive emissions of any hazardous dust.

v. No lead-based paint may be newly-applied to any structure.

t. Pile use.

i. Pile installation. The following PDCs apply when ESA-listed fish are known or likely to be present during pile installation.

1. Piles may be installed or replaced with concrete, steel round pile 24-inches in diameter or smaller, steel H-pile designated as HP14 or less, or untreated wood.
2. Whenever possible, use a vibratory hammer to install pile; an impact hammer may not be used when juvenile ESA-listed fish weighing less than 2 grams are likely to be present.
3. When using an impact hammer to drive or proof steel piles, one of the following sound attenuation methods must be used to effectively dampen sound.
    a. Completely isolate the pile from flowing water by dewatering the area around the pile.
    b. If water velocity is 1.6 fps or less, surround the pile being driven with a bubble curtain, as described in NMFS and USFWS (2006), to distribute small air bubbles around 100% of the pile perimeter for the full depth of the water column.
    c. If water velocity is greater than 1.6 fps, surround the pile being driven by a confined bubble curtain that must distribute air bubbles around 100% of the pile perimeter for the full depth of the water column. 4. If FAHP determines that an experimental attenuation method is likely to provide as much or more attenuation as an already approved method, it may substitute the experimental method, provided that an attenuation and monitoring plan are developed collaboratively with NMFS, and NMFS to confirms that the effects of the experimental method are within the range of effects considered in this opinion.
        i. Monitoring is required to ensure the effectiveness of the technique or method.
        ii. The monitoring plan and implementation should include real-time monitoring so that in the event that

the method or technique is not adequate; attenuation can be continued using another approved technique.

4. Pile removal. Whenever possible, use a vibratory hammer to remove pile; when attempting to pull pile up directly with a crane, vibrate or wiggle the pile with the crane (referred to as "waking up" the pile) to loosen the adhering sediments before extraction.
    a. To remove a non-creosote pile, make every attempt short of excavation to remove each piling.
    b. If a pile in uncontaminated sediment is intractable or breaks, cut the pile or stump off at least 3-feet below the surface of the sediment.
    c. If a pile in contaminated sediment is intractable or breaks, cut the pile or stump off at the sediment line or, if it breaks within contaminated sediment, make no further effort to remove it and cover the hole with a cap of clean substrate appropriate for the site.
    d. If dredging is likely where broken piles are buried, use a global positioning system (GPS) device to note the location of all broken piles for future use in site debris characterization.

2. To implement reasonable and prudent measure #2 (work area isolation and fish salvage), the FHWA shall ensure that:

    a. Isolation of In-water Work Area. The work area will be well isolated from the active flowing stream using inflatable bags, sandbags, sheet pilings or similar materials

        i. After completion of the project, the existing isolation area should be rewatered in a way that will not degrade water quality or cause fish stranding.

        ii. An ODOT or ODFW biologist shall be on site to monitor for fish stranding during this process.

        iii. The existing flow downstream from the action area will be maintained throughout the construction.

    b. Capture and Release. Fish will be captured and released from the isolated area using trapping, seining, electrofishing or other methods as are prudent to minimize risk of injury.

        i. Fish capture will be supervised by a qualified fisheries biologist, with experience in work area isolation and competent to ensure the safe handling of fish.

        ii. If electrofishing equipment is used to capture fish, the capture team must comply with NMFS' electrofishing guidelines.

        iii. The capture team must handle ESA-listed fish with extreme care, keeping fish in water to the maximum extent possible during seining and transfer procedures to prevent the added stress of out-of-water handling.

        iv. Captured fish must be released as near as possible to capture sites.

        v. ESA-listed fish may not be transferred to anyone except NMFS personnel, unless otherwise approved in writing by NMFS.

        vi. Other Federal, state, and local permits necessary to conduct the capture and release activity must be obtained.

vii. The NMFS or its designated representative must be allowed to accompany the capture team during the capture and release activity, and must be allowed to inspect the team's capture and release records and facilities.
viii. If practicable, allow listed fish species to migrate out of the work area or remove fish before dewatering; otherwise remove fish from an exclusion area as it is slowly dewatered with methods such as hand or dip-nets, seining, or trapping with minnow traps.
viv. Monitor the nets frequently enough to ensure they stay secured to the banks and free of organic accumulation.
viv. Conduct fish capture activities during periods of the day with the coolest air and water temperatures possible, and only after other means of fish capture are determined to be not feasible or ineffective. This is normally early in the morning to minimize stress and injury of species present.

1. Follow the most recent version of NMFS (2000) electrofishing guidelines.
2. Do not electrofish when the water appears turbid, e.g., when objects are not visible at depth of 12 inches.
3. Do not intentionally contact fish with the anode.
4. Use direct current (DC) or pulsed direct current within the following ranges:
    a. If conductivity is less than 100 µs, use 900 to 1100 volts.
    b. If conductivity is between 100 and 300 µs, use 500 to 800 volts.
    c. If conductivity greater than 300 µs, use less than 400 volts.
5. Begin electrofishing with a minimum pulse width and recommended voltage, then gradually increase to the point where fish are immobilized.
6. Immediately discontinue electrofishing if fish are killed or injured, i.e., dark bands visible on the body, spinal deformations, significant de-scaling, torpid or inability to maintain upright attitude after sufficient recovery time. Recheck machine settings, water temperature and conductivity, and adjust or postpone procedures as necessary to reduce injuries.

x. If buckets are used to transport fish:

1. Minimize the time fish are in a transport bucket.
2. Keep buckets in shaded areas or, if no shade is available, covered by a canopy.
3. Limit the number of fish within a bucket; fish will be of relatively comparable size to minimize predation.
4. Use aerators or replace the water in the buckets at least every 15 minutes with cold clear water.
5. Release fish in an area upstream with adequate cover and flow refuge; downstream is acceptable provided the release site is below the influence of construction.
6. Carefully track and record mortality.

xi. Monitor and record fish presence, handling, and injury during all phases of fish capture and submit a fish salvage report to NMFS within 60 days of capture that documents date, time of day, fish handling procedures, air and water temperatures, and total numbers of each salmon, steelhead and eulachon handled, and numbers of ESA-listed fish injured or killed.

3. Stormwater management. All actions require post-construction stormwater management, except as follows:
   a. The following actions do not require any post-construction stormwater management:
      i. Signals or signs, including ATM signs.
      ii. Minor repairs or non-structural pavement preservation such as guard rails, patching, chip seal, grind/inlay, overlay, or other resurfacing; removal or plugging of scuppers in a way that benefits stormwater treatment.
      iii. On-street parking modifications that reduce pollution generating impervious surface (PGIS).
      iv. Emergency repair of slides and sinkholes where the purpose of reconstruction is limited to the area affected.
      v. Seismic retrofit to make a bridge more resistant to earthquake damage and does not otherwise affect the bridge deck or drainage, e.g., external post-tensioning, supplementary dampening.
      vi. To retrofit an existing facility as necessary to comply with Americans with Disabilities Act (ADA) standards for accessible design.
   b. Actions do not require post-construction stormwater management for water quality (i.e., to minimize the concentration of pollutants and contaminants) unless they will:
      i. Increase the contributing impervious area within the project area.
      ii. Construct new pavement that increases traffic capacity or widens the road prism.
      iii. Reconstruct pavement down to subgrade.
      iv. Rehabilitate or restore a bridge to repair structural or functional deficiencies that are too complicated to be corrected through normal maintenance.
      iv. Replace a culvert stream crossing, unless using trenchless technology that does not break through the roadway.
      v. Change stormwater conveyance.
   c. An effective post-construction stormwater management plan must be developed and carried out at any project site that requires stormwater management, including following information:
      i. Explain how highway runoff from all contributing impervious area that is within or contiguous with the project area will be managed using site sketches, drawings, specifications, calculations, or other information commensurate with the scope of the action.
      ii. Identify the pollutants and contaminants of concern.
      iii. Identify all contributing and non-contributing impervious areas that are within and contiguous with the project area.
      iv. Describe the BMPs that will be used to treat the identified pollutants and contaminates of concern, and the proposed maintenance activities and schedule for the treatment facilities.

v. Provide a justification for the capacity of the facilities provided based on the expected runoff volume, including, e.g., the design storm, BMP geometry, analyses of residence time, as appropriate.

vi. All stormwater quality treatment must be designed to accept 50% of the cumulative rainfall from the 2-year, 24-hour storm for that site, except as follows.

1. A continuous rainfall/runoff model may be used instead of the above runoff depths to calculate water quality treatment depth.

ix. Include the name, email address, telephone number of a person responsible for designing the stormwater management facilities so that NMFS may contact that person if additional information is necessary.

x. The proposed action will include a maintenance, repair, and component replacement plan that details what needs to be done, when, and by whom for each facility.

xi. Use low impact development practices to infiltrate or evaporate runoff to the maximum extent feasible. For runoff that cannot be infiltrated or evaporated and therefore will discharge into surface or subsurface waters, apply one or more of the following specific primary treatment practices, supplemented with appropriate soil amendments:

1. Bioretention cell
2. Bioslope, also known as an "ecology embankment"
3. Bioswale
4. Constructed wetlands
5. Infiltration pond
6. Media filter devices with demonstrated effectiveness.5
7. Porous pavement, with no soil amendments and appropriate maintenance

xii. When conveyance is necessary to discharge treated stormwater directly into surface water or a wetland, the following requirements apply:

1. Maintain natural drainage patterns.
2. To the maximum extent feasible, ensure that water quality treatment for highway runoff from all contributing impervious area is completed before commingling with offsite runoff for conveyance.
3. Prevent erosion of the flow path from the project to the receiving water and, if necessary, provide a discharge facility made entirely of manufactured elements (e.g., pipes, ditches, discharge facility protection) that extends at least to ordinary high water.

4. Ensure completion of a monitoring and reporting program to confirm that the take exemption for the proposed action is not exceeded, and that the terms and conditions in this incidental take statement are effective in minimizing incidental take.

a. Turbidity. The FHWA must record all turbidity monitoring required by subsection 1.b. above in daily logs. The daily logs must include calibration documentation; background NTUs; compliance point NTUs; comparison of the points in NTUs; location; date; time; and tidal stage (if applicable) for each reading. Additionally, a narrative must be prepared discussing all exceedances with subsequent monitoring, actions taken, and the effectiveness of the actions. The FHWA must

make available copies of daily logs for turbidity monitoring to DEQ, NMFS, USFWS, and ODFW upon request.

b. Project completion report. The FHWA must provide a report with the following information within 60 days of completing all construction:
   i. As-built drawings of the bridge bents and configuration in the EQRB corresponding to maps and drawings in figures 4a, 4b, and 10 of the BA Appendix, and a table or set of tables as necessary to summarize the final dimensions of the project footprint, including:
      (1) The total volume on internal bents in the functional floodplain and associated off-setting measures;
      (2) Dimensions of isolated work areas requiring fish salvage.
      (3) The final project CIA and associated BMP's with maintenance schedules;
      (4) A pile driving summary describing the locations, type, driving method, size and number of pile driven on the project.
      (5) Fish salvage records (species and numbers) including any data required under the NOAA Electrofishing Guidelines.
   ii. Evidence of compliance with fish screen criteria for any pump used
   iii. A summary of the results of pollution and erosion control inspections, including any erosion control failure, contaminant release, and correction effort.

c. Post Construction Stormwater Management. The FHWA must record all monitoring required by the Post-Construction Stormwater Management Plan described in subsection 3.c. above in an annual monitoring report for a period of three years after project completion.

d. Reporting. Submit all monitoring reports to: projectreports.wcr@noaa.gov, Attn: WCR-2021-00159

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).

NMFS offers the following conservation recommendation:

> Identify and implement habitat enhancement or restoration activities in the Willamette River that restore or create off-channel habitat or access to off-channel habitat, side channels, alcoves, wetlands, and floodplains.

Please notify NMFS if the FHWA carries out this recommendation so that we will be kept informed of actions that are intended to improve the conservation of listed species or their designated critical habitats.

Reinitiation of Consultation

Reinitiation of consultation is required and shall be requested by the FHWA 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.

ESSENTIAL FISH HABITAT

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. In this case, the entire action area is designated as EFH for Pacific salmon (PFMC 2014), and the Columbia River estuary is also designated as EFH for groundfish and coastal pelagic species (PFMC 1998, 2005), and as a Habitat Area of Particular Concern (HAPC) for all three types of EFH. NMFS concluded the proposed action would adversely affect EFH as follows:

1. Decreasing water quality and increasing dust, noise, light, and human presence during construction of the EQRB.
2. Adverse effects associated with the presence of the EQRB in the environment, separate from effects caused by its construction, including, but not limited to, the impact of post-construction stormwater discharge and a range of hydraulic and hydrological impacts.

The latter effects, in particular, will include water quality degradation caused by persistent pollutants and contaminants discharged into the Willamette River and the Columbia River as constituents of post-construction stormwater, and modified hydraulics and hydrology throughout the action area caused by the historic and continued presence of the EQRB and other bridge structures within that reach.

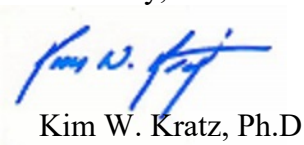
NMFS recommends that the FHWA carry out the following conservation recommendations to avoid, mitigate, or offset the impact of the proposed action on EFH:

1. Carry out Terms and Conditions to implement Reasonable and Prudent Measure 1, 3 and 4 from the ESA portion of this document.
2. Identify and implement habitat enhancement or restoration activities in the Willamette River that restore or create off-channel habitat or access to off-channel habitat, side channels, alcoves, wetlands, and floodplains.

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 https://repository.library.noaa.gov/. A complete record of this consultation is on file at the Oregon Washington Coastal Office, Portland, Oregon.

Please direct questions regarding this letter to Tom Loynes, tom.loynes@NOAA.gov, (503) 881-6023.

Sincerely,



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cc: John Raasch - ODOT Environmental Unit Manager
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Megan Neill – Engineering Services Manager
Cash Chesselet - FAHP Coordinator & NOAA Liaison - cash.chesselet@odot.state.or.us

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