



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
West Coast Region
7600 Sand Point Way N.E., Bldg. 1
Seattle, Washington 98115

NMFS Tracking No.:
NWR-2013-10358

January 22, 2014

Daniel M Mathis
Federal Highway Administration
Suite 501, Evergreen Plaza
711 South Capitol Way
Olympia, Washington 98501-1284

Re: Reinitiation of Endangered Species Act Section 7 Consultation for the State Route 520 Bridge Replacement Project, King County, Washington. (HUC 171100120302, Lake Washington)

Dear Mr. Mathis:

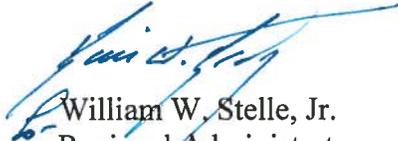
The National Marine Fisheries Service (NMFS) recently reviewed your request to reinitiate our Endangered Species Act (ESA) consultation for the State Route (SR) 520 Bridge Replacement Project in King County, Washington. On May 20, 2011, the NMFS completed formal consultation on this project and issued a biological opinion (Opinion) (refer to NMFS Tracking Number: NWR-2010-5723). The Opinion concluded that the proposed action would not jeopardize the continued existence of the Puget Sound (PS) Chinook salmon (*Oncorhynchus tshawytscha*) Evolutionarily Significant Unit (ESU) and the PS Distinct Population Segment (DPS) of steelhead (*O. mykiss*) and is not likely to destroy or adversely modify PS Chinook critical habitat. This action is funded in part by the Federal Highway Administration (FHWA), and is being carried out by the Washington State Department of Transportation (WSDOT).

The NMFS has completed two previous reinitiations for this project; the east approach and the floating bridge portions of the project (refer to NMFS Tracking Number: NWR-2011-5917), and the west connection bridge (WCB) and the west staging area (refer to NMFS Tracking Number: NWR-2012-9537).

On July 26, 2013, the FHWA submitted a letter to the NMFS requesting an additional reinitiation of the consultation to address changes to the proposed action that could bear on the amount or extent of anticipated take. The attached supplemental Opinion analyzes the effects of the proposed changes, concludes that the project changes will not jeopardize the continued existence PS Chinook salmon or PS steelhead and is not likely to destroy or adversely modify PS Chinook salmon critical habitat, and reissues the incidental take statement.

This concludes the NMFS reinitiation of consultation for the proposed changes to the project. If you have questions regarding this consultation, please contact Michael Grady at (206) 526-4645 or by email at Michael.Grady@noaa.gov.

Sincerely,



William W. Stelle, Jr.
Regional Administrator

Supplemental Endangered Species Act (ESA) Section 7(a)(2) Biological Opinion

Reinitiation of State Route 520 Bridge Replacement Project
King County, Washington. (HUC 171100120302, Lake Washington)

NMFS Tracking Number: NWR-2013-10358

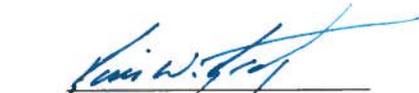
Action Agency: Federal Highway Administration

Affected Species and Determinations:

ESA-Listed Species	Status	Is Action Likely to Adversely Affect Species or Critical Habitat?	Is Action Likely To Jeopardize the Species?	Is Action Likely To Destroy or Adversely Modify Critical Habitat?
Puget Sound steelhead (<i>Oncorhynchus mykiss</i>)	Threatened	Yes	No	N/A
Puget Sound Chinook salmon (<i>O. tshawytscha</i>)	Threatened	Yes	No	No

Consultation Conducted By: National Marine Fisheries Service, West Coast Region

Issued By:


William W. Stelle, Jr.
Regional Administrator

Date: January 22, 2014

TABLE OF CONTENTS

1. INTRODUCTION	1
1.1 Background	1
1.2 Consultation History.....	1
1.3 Changes to the Proposed Action	2
1.4 Changes to the Action Area.....	3
2. ENDANGERED SPECIES ACT: SUPPLEMENTAL BIOLOGICAL OPINION AND INCIDENTAL TAKE STATEMENT	4
2.3 Changes to the Environmental Baseline.....	4
2.4 Changes to the Effects of the Proposed Action	5
2.4.1 Changes to the Effects on Species	5
2.4.2 Changes to the Effects on Critical Habitat.....	9
2.6 Supplemental Integration and Synthesis	10
2.6.1 Puget Sound Chinook Salmon ESU.....	10
2.6.2 Puget Sound Steelhead DPS	10
2.6.3 Puget Sound Chinook Salmon Critical Habitat.....	11
2.7 Conclusion.....	11
2.8 Incidental Take Statement	11
2.8.1 Amount or Extent of Take	12
2.8.2 Effect of the Take.....	14
2.8.3 Reasonable and Prudent Measures.....	15
2.8.4 Terms and Conditions	15
Additional References	17

1. INTRODUCTION

This Introduction Section provides information relevant to the other sections of this document and is incorporated by reference into Sections 2 and 3 below.

1.1 Background

The National Marine Fisheries Service (NMFS) prepared this supplemental biological opinion (Opinion) and incidental take statement in accordance with section 7(b) of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 *et seq.*), and implementing regulations at 50 C.F.R. 402. The Opinion and incidental take statement comply with the Data Quality Act (44 U.S.C. 3504(d)(1) *et seq.*) and underwent pre-dissemination review.

This Opinion incorporates by reference, supplements, and is intended to be attached to and read in conjunction with the May 20, 2011 Opinion and Essential Fish Habitat (EFH) consultation for the SR 520 Bridge Replacement Project, refer to NMFS Tracking Number: NWR-2010-5723 (original Opinion), as supplemented by two previous reinitiations of this consultation (refer to NMFS Tracking Numbers: NWR-2011-5917 and NWR-2012-9537). The sections that follow describe new information relevant to the original Opinion and are numbered to correspond with the sections of the original Opinion that they supplement.

The incidental take statement provided with this Opinion (Section 2.8) includes all elements of the statement provided with the original Opinion, as modified in accordance with the changes analyzed in this Opinion and changes from the two prior reinitiations. Therefore, this incidental take statement supersedes the original incidental take statement.

1.2 Consultation History

On May 20, 2011, the NMFS completed formal consultation on this project and issued the original Opinion, which concluded that the proposed action would not jeopardize the continued existence of the Puget Sound (PS) Chinook salmon (*Oncorhynchus tshawytscha*) Evolutionarily Significant Unit (ESU) or the PS Distinct Population Segment (DPS) of steelhead (*O. mykiss*) and is not likely to destroy or adversely modify PS Chinook critical habitat. The proposed action is funded in part by the Federal Highway Administration (FHWA), and is being carried- out by the Washington State Department of Transportation (WSDOT).

The NMFS has completed two previous reinitiations for this project: the east approach and the floating bridge portions of the project, and the west connection bridge (WCB) and the west staging area.

On July 26, 2013, the FHWA submitted a letter to the NMFS requesting an additional reinitiation of the consultation due to changes to the proposed action. After numerous meetings and email exchanges between the FHWA and the NMFS to clarify the effects of the proposed action on listed species and their habitats, the reinitiation package was deemed complete on October 1, 2013 and the formal consultation was reinitiated. This Opinion analyzes the effects of the proposed changes.

A complete record of this consultation is on file at the Oregon/Washington Coast Office in Lacey, WA.

1.3 Changes to the Proposed Action

West Approach Bridge North

The original design describes the West Approach as two bridges. The WSDOT is now splitting these two bridges into separate construction phases, the West Approach Bridge North (WABN) and the West Approach Bridge South (WABS). The WABN will connect the new floating bridge and east approach to the existing west approach. Table 1 summarizes the differences between the original design of the northern West Approach Bridge and the proposed WABN design.

Table 1. Changes to the West Approach Bridge North Design

Project Element	Original Design	Current Design
Timing	2013-2017	2014-2016
Work Bridge number of Piles	950	755
Work Bridge Overwater coverage	6.8 acres	5.2 acres
In-Water Drilled number of Shafts	139	91
Permanent Bridge Overwater coverage	12.6 acres	10.3 acres

Stormwater

In the original Opinion, we evaluated the WSDOT’s stormwater treatment plan for the final, fully built, SR 520 Bridge configuration which included high-efficiency sweeping. The WABN is the last phase of the project which currently has funding. Because of the uncertainty of future funding, the planned WABN configuration could be in place for several years. The WSDOT identified five acres of pollutant-generating impervious surface (PGIS) from the WABN configuration which cannot be routed to the MOHAI stormwater treatment facility, identified in the original Opinion. Therefore, the WSDOT will conduct high-efficiency sweeping once per month to treat stormwater from this five acres for the entire period between the completion of the WABN phase and the WABS phase. During the WABS phase, these areas will then be covered by lids and will no longer be pollutant-generating.

Kenmore Yard Site

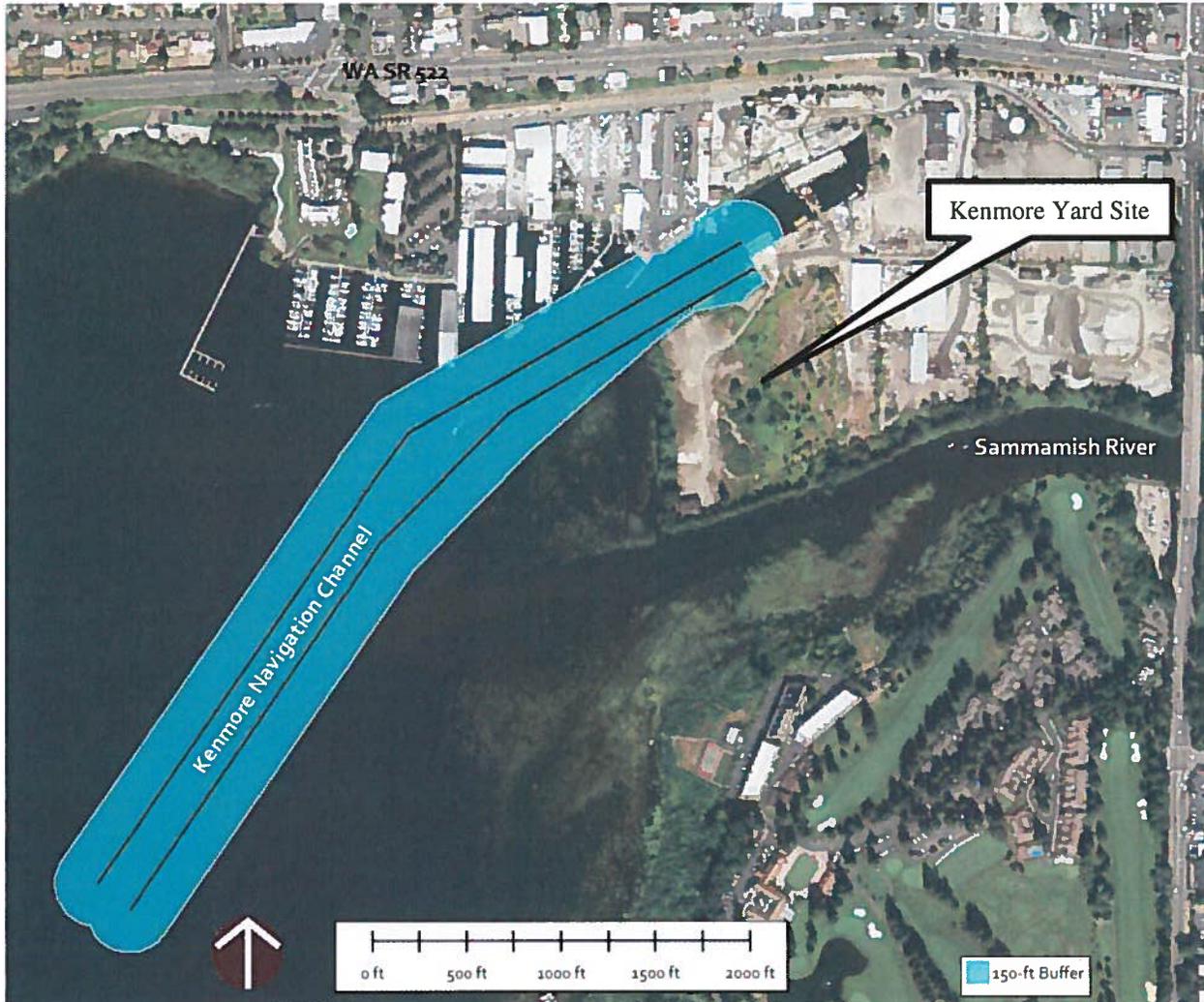
The WSDOT began using the Kenmore Yard site to construct pre-cast elements as part of the Floating Bridge and Landings (FB&L) phase of the project. They then barged these elements from Kenmore to the bridge site. The FHWA and the WSDOT determined that these activities would not affect listed species. On December 28, 2012, the Washington State Department of Ecology (Ecology) issued a Notice of Violation (NOV) (Docket No.9652) to the FB&L contractor, Kiewit/General/Manson (KGM), for visible sediment disturbances from tug operations on two occasions in the Kenmore Navigation Channel (KNC).

The WSDOT estimates there will be an average of one- to- two barge trips per day over the remainder of the project through 2016. However, there will be periods of more intense use and periods of no activity. The WSDOT estimates there will be up to 14 more occurrences of increased suspended sediment from tug and barge activities through the remainder of the project in 2016. Their estimate includes two events during the remainder of 2013 and four events per year from 2014 through 2016 (WSDOT 2013). The NMFS did not consider the effects of these occurrences in the original Opinion (2010/05723).

1.4 Changes to the Action Area

In addition to those areas described in Table 2 from the original Opinion, the action area now includes the Kenmore Yard Site and the portions of Lake Washington within 150 feet of the KNC to the action area (Figure 1).

Figure 1. Kenmore Yard Site and Navigation Channel



From WSDOT 2013

2. ENDANGERED SPECIES ACT: SUPPLEMENTAL BIOLOGICAL OPINION AND INCIDENTAL TAKE STATEMENT

2.3 Changes to the Environmental Baseline

The Kenmore Yard site's waterfront lot is approximately 14 acres and has approximately 2,000 linear feet of shoreline along Lake Washington. The lot includes 300 feet of timber bulkhead with a concrete wharf surface abutting the KNC to the north. The west (Lake Washington) and south (Sammamish River) -facing shores have a narrow buffer of riparian vegetation between the yard and the water bodies (Figure 1).

Ecology evaluated the sediment and water quality in the Kenmore area (Ecology 2013). The KNC sediment sampling shows the channel would not be a Model Toxics Control Act (MTCA)

cleanup site. All of the results from the navigation channel are below the freshwater Cleanup Screening Levels (CSL). Two phthalates were below CSL and above Sediment Cleanup Objectives (SCO): bis(2-ethylhexyl) phthalate and di-n-octyl phthalate. Using the Dredged Material Management Program (DMMP) screening guidance, there were no exceedances reported for metals, polycyclic aromatic hydrocarbons (PAHs), pesticides, or polychlorinated biphenyls (PCBs). There was one occurrence of dioxin that exceeded the DMMP guidance, was above the freshwater SCO, and was below the CSL. Overall, the report concludes that, from a toxics standpoint, the KNC is a fairly healthy nearshore environment (Ecology 2013).

The Kenmore shoreline is a migratory corridor for anadromous fish from the Sammamish River, including the north Lake Washington population of PS Chinook salmon and, potentially, small numbers of PS steelhead. Juvenile Chinook salmon also rear within this area where suitable habitat exists. The area contains two freshwater primary constituent elements (PCEs) of PS Chinook salmon critical habitat, rearing and migration. The development of the shoreline along the navigation channel and adjacent areas to the north has degraded these PCEs.

2.4 Changes to the Effects of the Proposed Action

2.4.1 Changes to the Effects on Species

The original Opinion quantified take for the different areas of the project for each construction year. Because of funding constraints, the WSDOT has implemented the project in phases. This has caused the impacts to occur in different construction years than the NMFS originally anticipated. However, the project has not exceeded the total amount of take anticipated in the original take statement for any of the areas of the project.

Suspended Sediment

At the West Approach, all in-water work will take place during the original in-water work window (September 1 to April 15) for turbidity-generating activities. Table 2, below, compares the impacts from suspended sediment in the original proposal to the current design. Overall, the new design will increase the area of the West Approach subjected to elevated suspended sediments in 2014 and 2016 (Tables 2 and 3) and increase the total area for suspended sediments by 18.2 acres. These changes are unlikely to result in increased effects to juvenile Chinook salmon or steelhead but will increase the likelihood of adult Chinook salmon altering their migration routes to avoid the turbidity and potentially experiencing sublethal physiological stress. (original Opinion, pp. 37-38).

Table 2. Changes in Suspended Sediment Exposure at the West Approach (Arboretum/ Foster Island)

Total Area (Acres) Exposed to Elevated Suspended Sediment per Construction Year								
West Approach (Arboretum/ Foster Island)	2012	2013	2014	2015	2016	2017	2018	Total
Original Design	0	19.5	17.3	25.6	N/A	19.5	22.4	104.3
Current Design	0	0	23.8	21.2	23.8	19.5	22.4	110.7
Net Change	0	-19.5	+6.5	-4.4	+23.8	0	0	+6.4

Table 3. Changes in Suspended Sediment Exposure at the West Approach (east of Foster Island)

Total Area (Acres) Exposed to Elevated Suspended Sediment per Construction Year								
West Approach (east of Foster Island)	2012	2013	2014	2015	2016	2017	2018	Total
Original Design	0	25.8	31.6	39.7	N/A	25.8	23.2	146.1
Current Design	0	9.3	44.7	19.5	35.4	25.8	23.2	157.9
Net Change	0	-16.5	+13.1	-20.2	+35.4	0	0	+11.8

For the Kenmore Channel, pulses of elevated suspended sediments from tug operations will occur episodically, up to 14 times over three and a half years. The NMFS cannot predict the timing of each pulse nor the number of individual fish that will be exposed. Not all exposed individuals will experience adverse effects. Therefore, the NMFS used the physical and temporal extent of elevated suspended sediments to evaluate the effects to PS Chinook salmon and PS steelhead.

Turbidity levels will never exceed five nephelometric turbidity units (NTUs) over background at 150 feet and beyond from the tug activity in the navigation channel. Each turbidity plume occurrence will affect approximately 0.5 acre. Of the 33 acres of Lake Washington within 150 feet of the navigation channel, up to seven total acres (from all 14 occurrences over three years) will be exposed to elevated suspended sediments. Exposure of PS Chinook salmon and PS steelhead will cause sublethal responses to elevated suspended sediments including the displacement from preferred habitats, altered migration routes, and increased physiological stress.

Impact Pile- Driving

The new design will significantly increase the area exposed to injurious levels of underwater sound (see Tables 4 and 5 below). However, because of the strict work windows for impact pile-driving, these increases will not affect any juvenile or adult Chinook salmon or juvenile steelhead. Because the work window does not avoid adult steelhead, the increased area will substantially increase their risk of exposure.

As described in the original Opinion, impact pile-driving will cause sublethal injury to small numbers of adult steelhead at the west approach in two constriction years. However, given the very low numbers of steelhead in Lake Washington (zero to four adults per year from 2008-2012), the greater risk is not likely to result in the project exceeding the 30 adult fish which experience sublethal injury we evaluated in the original Opinion.

Table 4. Changes in Exposure Underwater Sound at the West Approach (Arboretum/ Foster Island)

Total Area (Acres) Exposed to Cumulative Sound Exposure Levels Greater than 187dB per Construction Year								
West Approach (Arboretum/ Foster Island)	2012	2013	2014	2015	2016	2017	2018	Total
Original Design	0	1.3	0	1.6	0	0	0	2.9
Current Design	0	0	4.5	0	0	5.0	0	9.5
Net Change	0	-1.3	+4.5	-1.6	0	+5.0	0	+6.6

Table 5. Changes in Exposure Underwater Sound at the West Approach (east of Foster Island)

Total Area (Acres) Exposed to Cumulative Sound Exposure Levels Greater than 187dB per Construction Year								
West Approach (east of Foster Island)	2012	2013	2014	2015	2016	2017	2018	Total
Original Design	0	4.0	0	3.8	0	0	0	7.8
Current Design	0	4.9	8.0	0	0	7.7	0	20.6
Net Change	0	+0.9	+8.0	-3.8	0	+7.7	0	+12.8

Overwater Structures

Section 2.4.1.4 of the May 20, 2011 Opinion analyzes the effects of overwater structures on juvenile Chinook salmon. Tables 6 and 7, below, show the changes in the area of existing, new, and temporary structures for each construction year. The new design will result in less overwater shading than the original design in almost all construction years and will have a net reduction in permanent overwater cover compared to the original design. These changes will reduce the effects of shading on juvenile Chinook salmon migration from those considered in the original Opinion and will reduce the effects of shading on PCEs 2 and 3 of PS Chinook salmon critical habitat.

Table 6. Changes in Shading West Approach (Arboretum/ Foster Island)

Total Area of Overwater Coverage from Existing, New, and Temporary Structures (Acres)									
West Approach (Arboretum/ Foster Island)	Existing	2012	2013	2014	2015	2016	2017	2018	Permanent
Original Design	5.9	5.9	8.5	11.6	15.9	15.3	12.0	12.0	8.4
Current Design	5.9	5.9	5.9	6.8	11.5	11.5	11.9	11.9	8.0
Net Change	0	0	-2.6	-4.8	-4.4	-3.8	-0.1	-0.1	-0.4

Table 7. Changes in Shading West Approach (east of Foster Island)

Total Area of Overwater Coverage from Existing, New, and Temporary Structures (Acres)									
West Approach (east of Foster Island)	Existing	2012	2013	2014	2015	2016	2017	2018	Permanent
Original Design	5.6	5.6	8.3	15.8	19.1	17.4	13.9	13.9	10.6
Current Design	5.6	5.6	7.0	9.3	16.3	16.3	20.4	14.8	10.1
Net Change	0	0	-1.3	-6.5	-1.8	-1.1	+6.5	+0.9	-0.5

The number of in-water piles and columns is now lower than in the original consultation. On page 48 (section 2.4.1.4) of the May 20, 2011 Opinion, the NMFS established that juvenile Chinook salmon within five feet of in-water piles or columns will be subjected to higher rates of predation by smallmouth bass. Tables 8 and 9 below show the changes in the area of increased predation for each construction year. The reduction in the number of piles has reduced the area of increased predation during most construction years. For permanent in-water columns, the area of increased predation has increased in the West Approach (Arboretum/Foster Island) by 0.15 acre and decreased in the West Approach (east of Foster Island) by 0.05 acre. Given that: (1) every emigrating Chinook must cross under the SR 520 Bridge, (2) most will cross at the

West Approach (east of Foster Island), and (3) a very small percentage will choose to enter the poor quality habitat in the West Approach (Arboretum/Foster Island), the WABN design will reduce the long-term impacts from increased predator habitat.

Table 8. Changes in the Area of Increased Predation at the West Approach (Arboretum/Foster Island)

Total Area Within Five Feet of Columns and Piles from Existing, New, and Temporary Structures (Acres)									
West Approach (Arboretum/Foster Island)	Existing	2012	2013	2014	2015	2016	2017	2018	Permanent
Original Design	0.71	0.71	2.16	1.97	3.81	2.01	2.01	2.01	0.27
Current Design	0.71	0.71	0.71	1.83	1.89	1.89	2.49	2.05	0.42
Net Change	0	0	-1.45	-0.14	-1.92	-0.12	+0.48	+0.04	+0.15

Table 9. Changes in the Area of Increased Predation at the West Approach (east of Foster Island)

Total Area Within Five Feet of Columns and Piles from Existing, New, and Temporary Structures (Acres)									
West Approach (east of Foster Island)	Existing	2012	2013	2014	2015	2016	2017	2018	Permanent
Original Design	0.90	0.90	2.21	2.56	4.28	3.97	2.07	2.07	0.62
Current Design	0.90	0.90	0.98	2.23	2.23	1.53	2.23	1.95	0.57
Net Change	0	0	-1.23	-0.33	-2.05	-2.44	+0.16	-0.12	-0.05

2.4.2 Changes to the Effects on Critical Habitat

Freshwater Spawning Sites (PCE 1)

There is no freshwater spawning PCE in the analysis area for this consultation. The only spawning habitat that might be exposed to the effects of the action is at the Cedar River habitat restoration site (RM 5.3). The project changes described in this supplemental Opinion will not affect this primary constituent element (PCE) in any way.

Freshwater Rearing Sites and Freshwater Migration Corridors (PCE 2 and PCE 3)

The project changes will cause additional temporary effects on rearing habitat compared to the original Opinion. The WSDOT will schedule all impact pile-driving to avoid juvenile Chinook salmon rearing and juvenile and adult Chinook salmon rearing and migration. The increased

areas subjected to injurious levels of underwater sound from the WABN design will not affect the ability of these PCEs to provide for the conservation of PS Chinook salmon. Underwater sound levels will return to normal prior to Chinook salmon attempting to use the habitat.

As required from the original consultation, the WSDOT will schedule in-water work activities causing elevated suspended sediments to reduce fish exposure. Reducing fish exposure does not by itself eliminate effects of increased occurrence of elevated turbidity on the freshwater rearing and migration PCEs. However, avoiding areas and months most likely to be used by juvenile Chinook salmon for rearing and migration, reduces the risk of diminishing the conservation function of these two PCEs in the action area. Therefore, despite the increased number and area of anticipated occurrences of temporary turbidity plumes, the overall effects on these PCEs is no greater than originally considered. Therefore, elevated suspended sediments will temporarily degraded water quality and impair PCEs 2 and 3. However it will not cause permanent effects on these PCEs from the temporary increase of areas exposed to elevated turbidity and the re-suspended sediments.

Finally, the changed WABN design reduces the permanent area of overwater cover compared to that analyzed in the original Opinion. This change reduces predator habitat in the West Approach (east of Foster Island), the primary migratory corridor for juvenile Chinook salmon, thereby increasing the free passage element of the freshwater migration PCE.

2.6 Supplemental Integration and Synthesis

2.6.1 Puget Sound Chinook Salmon ESU

The activities in the KNC will increase the environmental effects of the action by increasing the number of occurrences of increased turbidity in habitat used by the Sammamish population of PS Chinook salmon, from those evaluated in the original Opinion. Specifically, there will be up to four instances per year of elevated suspended sediments, covering 0.5 acre each. Any Chinook salmon in these areas are reasonably certain to experience displacement from preferred habitats, altered migration routes, and potential physiological stress. The WABN design will also increase the areas experiencing increased suspended sediments and low levels of contaminants. Overall, the activities in the KNC and the WABN design changes will increase the areas experiencing increased suspended sediments by seven percent from the original Opinion. These changes to the levels of sublethal effects and small decreases in the permanent habitat impacts will not have an observable effect on the spatial structure, productivity, long-term abundance, or diversity of the Sammamish Chinook or the PS ESU as a whole.

2.6.2 Puget Sound Steelhead DPS

The status of the Lake Washington Basin population of steelhead is unchanged since the original consultation in that they are still are virtually extirpated (see section 2.6.2 from the original Opinion). The small changes in the levels of the sublethal effects of the action are unlikely to affect existing abundance, productivity, spatial structure, or diversity of the Lake Washington Basin steelhead population or the PS DPS as a whole.

2.6.3 Puget Sound Chinook Salmon Critical Habitat

The CHART rated the critical habitat in Lake Washington as having “medium” conservation value. The activity changes in the KNC and the WABN increase the number of minor, temporary effects of the proposed action on water quality, an essential element of the freshwater migration and rearing PCEs of critical habitat. However, these increases will be temporary and not bear on the conservation role of those PCEs in Lake Washington. In addition, design changes will also decrease the permanent effects of overwater structure, in turn reducing the extent of predator habitat in the primary migratory corridor for juvenile Chinook salmon compared to the design analyzed in the action analyzed in the original Opinion. These small changes do not alter the NMFS’ original determination that critical habitat will remain functional and retain the current ability for PCEs to serve the intended conservation role for the species. Therefore, the proposed action will not significantly reduce the conservation value of critical habitat at either the watershed or the ESU scale.

2.7 Conclusion

When compared to the original Opinion, the WABN design will increase the area temporarily exposed to elevated suspended sediments at the West Approach and KNC by 25.2 acres, temporarily expose up to seven acres of Lake Washington to low levels of contaminants suspended from disturbance of the KNC sediments, and increase the area temporarily subjected to injurious levels of underwater sound at the West Approach. The new design will also reduce the amount of shading and areas of increased predation within the primary migratory corridor for juvenile PS Chinook salmon, both during construction and long-term.

While the changes to the proposed design cause increases in temporary impacts from those evaluated in the original Opinion, they will also reduce the long-term, permanent adverse effects of the project. Therefore, the design changes do not alter the NMFS’ opinion that the proposed action is not likely to jeopardize the continued existence of PS Chinook salmon or PS steelhead or destroy or adversely modify PS Chinook salmon designated critical habitat.

2.8 Incidental Take Statement

Section 9 of the ESA and Federal regulation pursuant to section 4(d) of the ESA prohibit the take of endangered and threatened species, respectively, without a permit or 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 results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. 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 incidental take statement.

This incidental statement includes all elements from the statement provided with the original Opinion (refer to NMFS Tracking No.: NWR-2010-5723), as modified in accordance with the

changes analyzed in this Opinion and changes from the two prior consultation reinitiations (refer to NMFS Tracking Nos.: NWR-2011-5917 and NWR-2012-9537). Therefore, this statement supersedes the incidental take statement provided with the original Opinion.

2.8.1 Amount or Extent of Take

Effects of the action will coincide with the presence of PS Chinook salmon and PS steelhead such that the incidental take is reasonably certain to occur. Take from fish handling is reported as the number of fish. Take caused by elevated suspended sediments, elevated sound-pressure levels from impact pile-driving, predation from over-water structures and piles, and adverse water quality from stormwater discharges cannot be accurately quantified as a number of fish because the NMFS cannot predict, using the best available science, the number of PS Chinook salmon and PS steelhead that will be exposed to these stressors. Furthermore, even if the NMFS could estimate that number, the manner in which each exposed individual fish responds to that exposure cannot be predicted. In contrast, the number of fish affected by capture and handling can be estimated as provide below.

In circumstances where NMFS cannot estimate the amount of individual fish that would be injured or killed by the effects of the proposed action, the NMFS assesses the extent of take as an amount of modified habitat and exempts take based only on that extent. This extent is readily observable and therefore suffices to trigger the reinitiation of this consultation, if exceeded and necessary (see H.R. Rep. No 97-567, 97th Cong., 2d Sess. 27 (1982)).

Take from elevated suspended sediments is exempted for the following:

1. 105.9 acres in Portage Bay, with a maximum of 23.3 acres in any one construction year;
2. 110.7 acres at the West Approach (Arboretum and Foster Island), with a maximum of 26.5 acres in any one construction year;
3. 157.9 acres at the West Approach (east of Foster Island), with a maximum of 44.7 acres in any one construction year;
4. 18.1 acres at the east approach, with a maximum of 7.1 acres in any one construction year;
5. 2.2 acres at the DNR Parcel (south Lake Washington);
6. 2.1 acres at the Cedar River (RM 5.3);
7. 0.8 acre at Taylor Creek;
8. 3.1 acres at Seward Park;
9. 4.3 acres at Magnuson Park; and
10. 7.0 acres within and adjacent to the Kenmore navigation channel.

Take is exempted for exposure to contaminants within the 7.0 acres within and adjacent to the Kenmore navigation channel exposed to elevated suspended sediment.

Take from impact pile- driving (cumulative SEL greater than 187dB) is exempted for the following:

1. 3.5 acres in Portage Bay, with a maximum of 1.9 acres in any one construction year and a maximum of 0.2 acre in any one day;
2. 9.5 acres at the West Approach (Arboretum and Foster Island), with a maximum of 1.6 acres in any one construction year and a maximum of 0.1 acre in any one day
3. 20.6 acres at the West Approach (east of Foster Island), with a maximum of 4.0 acres in any one construction year and a maximum of 0.8 acre in any one day; and
4. 284.3 acres at the east approach, with a maximum of 150.2 acres in any one construction year and a maximum of 125.4 acres in any one day.

Take from increased shading from over-water structures is exempted for the areas shown in Table 10 below.

Table 10. Total Area of Overwater Coverage from Existing, New, and Temporary Structures (Acres)

Project Area	Existing	2012	2013	2014	2015	2016	2017	2018	Permanent
Portage Bay	3.1	3.1	8.9	8.9	11.1	9.3	5.2	9.6	7.6
Montlake Cut	0.2	0.2	0.2	0.2	0.2	0.2	0.4	0.4	0.4
West Approach (Arboretum/ Foster Island)	5.9	5.9	5.9	6.8	11.5	11.5	11.9	11.9	8.0
West Approach (east of Foster Island)	5.6	5.6	7.0	9.3	16.3	16.3	20.4	14.8	10.1
East Approach	0.7	2.3	2.3	2.3	2.0	1.3	1.3	1.3	1.3
Total	15.5	17.1	24.3	27.5	41.1	38.6	39.2	38.0	27.4

Take from increased smallmouth bass habitat at over-water structures is exempted for the areas shown in Table 11 below.

Table 11. Total Area Within Five Feet of Columns and Piles from Existing, New, and Temporary Structures (Acres)

Project Area	Existing	2012	2013	2014	2015	2016	2017	2018	Permanent
Portage Bay	0.37	0.37	3.15	3.05	3.63	1.50	2.14	2.14	0.25
Montlake Cut	0	0	0	0	0	0	0	0	0
West Approach (Arboretum/ Foster Island)	0.71	0.71	0.71	1.83	1.89	1.89	2.49	2.05	0.42
West Approach (east of Foster Island)	0.90	0.90	0.98	2.23	2.23	1.53	2.23	1.95	0.57
East Approach	0.06	0.17	0.19	0.17	0.03	0.03	0.03	0.03	0.03
Total	2.04	2.15	5.03	7.28	7.78	4.95	6.89	6.17	1.27

Take from fish handling is exempted for the following:

1. 18,834 juvenile Chinook salmon at the CTC site with 3,836 that will be injured or killed;
2. 274 residual Chinook salmon in Portage Bay with 14 that will be injured or killed; and
3. 1,433 juvenile and residual Chinook salmon at the east approach with 72 that will be injured or killed.

Take from stormwater discharges (dissolved zinc 5.6 mg/l over background concentrations and dissolved copper at 2.0 mg/l over background concentrations) is exempted for the following:

1. The area within 7.9 feet of the East Allison street outfall for dissolved zinc and within 4.4 feet for dissolved copper;
2. The area within 10.3 feet of the Portage Bay 1 outfall for dissolved zinc and within 2.2 feet for dissolved copper;
3. The area within 13.2 feet of the Portage Bay 2 outfall for dissolved zinc and within 4.9 feet for dissolved copper;
4. The area within 11.1 feet of the MOHAI outfall for dissolved zinc and within 6.7 feet for dissolved copper; and
5. The area within 70 feet of the 44 floating bridge outfalls for dissolved zinc and within 20 feet for dissolved copper.

2.8.2 Effect of the Take

The effects of take on PS Chinook salmon and PS steelhead is described in the May 20, 2011 Opinion.

2.8.3 Reasonable and Prudent Measures

“Reasonable and prudent measures” (RPMs) are nondiscretionary measures to minimize the amount or extent of incidental take (50 CFR 402.02). “Terms and conditions” implement the reasonable and prudent measures (50 CFR 402.14). These must be carried out for the exemption in section 7(o)(2) to apply.

The FHWA shall minimize take of PS Chinook salmon and PS steelhead. These reasonable and prudent measures are necessary and appropriate to minimize the take of PS Chinook salmon and PS steelhead. The FHWA shall:

1. minimize incidental take from elevated suspended sediment and contaminants;
2. minimize incidental take from elevated underwater sound;
3. minimize incidental take from predation associated with over-water structures;
4. minimize take from fish handling; and
5. minimize incidental take from elevated zinc and copper at stormwater discharges.

2.8.4 Terms and Conditions

1. To implement RPM 1, the FHWA shall:
 - a) monitor turbidity levels during in-water work to ensure that the turbidity does not exceed 5 NTUs above background at 150 feet from the source. The FHWA shall report the results of the turbidity monitoring to NMFS within 60 days of the completion of each in-water work season;
 - b) With the exception of vibratory driving of temporary piles and drilled shaft casings between August 1 and August 31, 2013, preclude any turbidity generating in-water work at the West Approach east of Foster Island between April 15 and September 1 in all construction years;
 - c) Visually monitor for turbidity during the operation of tugs in the Kenmore Navigation Channel (KNC);
 - d) If visual monitoring reveals increased turbidity in the KNC, continue monitoring to ensure that the plume does not extend more than 150 feet from the edge of the navigation channel; and
 - e) For every calendar year that the project uses the KNC, submit annual reports by March 31 of the following year, which include the dates of tug use in the channel, the total number of tug trips into and out of the channel, and the number of trips where turbidity was visually detected.
2. To implement RPM 2, the FHWA shall:
 - a) Use a vibratory hammer to drive piles to the maximum extent practicable;
 - b) Use a confined or unconfined bubble curtain with the same specifications as the bubble curtains from the test pile project for all impact pile-driving except up to 500 strikes per day at the east approach (to establish baseline sound levels);
 - c) Monitor at least 10 piles in Portage Bay, the west approach (Arboretum and Foster Island), and the east approach for each construction year. If the number of impact strikes required to reach bearing capacity increases by more than 50 percent from the

- average for four consecutive pilings, then additional five pilings will be monitored to confirm underwater noise levels.
- d) Monitor at least 20 piles in the west approach east of Foster Island for each construction year. At least 10 of these pile will be between the midpoint of the work bridge and its eastern terminus; and
 - e) Preclude any impact pile- driving at the west approach east of Foster Island between April 15 and October 8 in any construction year.
3. To implement RPM 3, the FHWA shall:
- a) Between April 15 and September 1 of any construction year, within the area of the west approach (east of Foster Island) between 15 and 27 feet deep, maintain at least a 100-foot unobstructed corridor between barges and between barges and work bridges to allow juvenile salmonid emigration. The 100-foot corridor can be relocated throughout the work window to accommodate construction sequencing;
 - b) Move any barges delivering or removing construction materials, equipment, or debris out of the primary migratory corridor (the area of the west approach (east of Foster Island) between 15 and 27 feet deep) as soon as possible after loading or off-loading;
 - c) For the east approach, from February to July, store barges at least 15 feet away from the temporary work bridge when not in use;
 - d) Construct the maintenance dock with open grating for at least one third of its width (approximately 4.5 feet); and
 - e) Preclude mooring barges in the Montlake Cut between April 15 and September 1.
4. To implement RPM 4, the FHWA shall:
- a) Submit a fish removal plan for the CTC and the cofferdams at least 60 days prior to any gate openings. The fish removal plan will follow the NMFS-approved WSDOT Fish Exclusion Protocols and Standards as closely as possible;
 - b) Document all PS Chinook salmon encountered during work area isolation by submitting an In-water Construction Monitoring Report (Appendix I) or equivalent to NMFS within 30 days of work area isolation;
 - c) To the maximum extent practical, preclude gate openings at the CTC site between May 15 and June 15; and
 - d) Provide the NMFS with a schedule of CTC gate openings and a description of the necessity of any openings between May 15 and June 15. The description will include the date of the next suitable tide cycle to launch the pontoons.
5. To implement RPM 5, the FHWA shall:
- a) Upon project completion, monitor stormwater discharges from the floating bridge and the MOHAI outfall for two years in order to accurately characterize stormwater BMP effectiveness and “end-of-pipe” effluent concentrations for treated and untreated stormwater runoff (total and dissolved copper, total and dissolved zinc; total suspended solids);
 - b) Submit to the NMFS a stormwater monitoring plan for the new floating bridge at least 90 days prior to opening the floating bridge to traffic and the stormwater monitoring plan for the MOHAI outfall at the 60 percent design milestone for the WABS phase of the project;

- c) Conduct high- efficiency sweeping between the floating bridge and the Montlake interchange during the time period between the completion of the WABN phase and the start of construction of the WABS phase; and
- d) Submit monitoring reports to the NMFS by the end of each calendar year.

Additional References

Ecology (Washington Department of Ecology). 2013. Kenmore Area Sediment & Water Characterization Environmental Evaluation Report. Prepared by Toxics Cleanup Program, Washington Department of Ecology Northwest Regional Office. Publication No. 13-09-174.