Earthquake Ready Burnside Bridge:
Supplemental Draft Environmental Impact Statement

Attachment F

Agency Letters

For other questions including those related to the Americans with Disabilities Act and Civil Rights Title VI accommodations, call 503-988-5050. You can also call Oregon Relay Service 7-1-1 or email burnsidebridge@multco.us. For information about this project in other languages please call 503-988-5970.

Para obtener información sobre este proyecto en español, ruso u otros idomas, llame al 503-988-5970 o envíe un correo electronico a burnsidebridge@multco.us.

Для получения информации об этом проекте на испанском, русском или других языках, свяжитесь с нами по телефону 503-988-5970 или по электронной почте: burnsidebridge@multco.us.

Multnomah County

Oregon Department of Transportation

ESA Determination of No Effect

Key Number: TBD w/ funding

Last Modified: Mar 11, 2021

Project Information:

Project Name	Route	Beg MP	End MP	Other Road / Path Name
Earthquake Ready Burnside Bridge Project	X - Other Road - X			W and E Burnside St.

Latitude (e.g. 45.4591° N)	Longitude (e.g. -123.8442° W)	ODOT Region	County	Proponent Agency
45.5231° N	-122.6653° W	Region 1	Multnomah	Federal Highway Administration

Select Predominant Project Type	6th Field HUC for Aquatic Species (Primary)	6th Field HUC for Aquatic Species (Secondary if applicable)
Bridge Replacement	170900120302 - Willamette River-Columbia River	

Federally Listed Species, Critical Habitat and Essential Fish Habitat Evaluated in the API:

Common Name, Scientific Name, Federal Status	Critical Habitat Presence	Determination of Effect
Plant, Water Howellia (Howellia aquatilis), Threatened	☐ Critical Habitat	Species and/or Critical Habitat Not Present, Absence Determination
Eulachon,Pacific (Thaleichthys pacificus), Threatened	☐ Critical Habitat	Species and/or Critical Habitat Present, Covered by an Individual Biological Opinion
Salmon, Chinook Lower Columbia River ESU (Oncorhynchus tshawytscha), Threatened	☐ Critical Habitat	Species and/or Critical Habitat Present, Covered by an Individual Biological Opinion
Salmon, Chinook Upper Willamette River ESU (Oncorhynchus tshawytscha), Threatened	☐ Critical Habitat	Species and/or Critical Habitat Present, Covered by an Individual Biological Opinion
Salmon, Chum Columbia River ESU (Oncorhynchus keta), Threatened	☐ Critical Habitat	Species and/or Critical Habitat Present, Covered by an Individual Biological Opinion
Salmon, Coho Lower Columbia River ESU (Oncorhynchuskisutch), Threatened	☐ Critical Habitat	Species and/or Critical Habitat Present, Covered by an Individual Biological Opinion
Steelhead Lower Columbia River DPS (Oncorhynchus mykiss), Threatened	☐ Critical Habitat	Species and/or Critical Habitat Present, Covered by an Individual Biological Opinion
Steelhead Upper Willamette River DPS (Oncorhynchus mykiss), Threatened	☐ Critical Habitat	Species and/or Critical Habitat Present, Covered by an Individual Biological Opinion
Sturgeon, Green Southern (Acipenser medirostris), Threatened	☐ Critical Habitat	Species and/or Critical Habitat Present, Covered by an Individual Biological Opinion
	☐ Critical Habitat	
	☐ Critical Habitat	
	☐ Critical Habitat	
	☐ Critical Habitat	
	☐ Critical Habitat	
	☐ Critical Habitat	

**Salmon & Steelhead - Columbia River Basin Group - Contains all of the Salmon & Steelhead ESU as listed: Chinook Salmon (Lower Columbia River, Snake River Fall Run, Snake River Spring/Summer Run, Upper Willamette River), Chum Salmon - Columbia River, Coho Salmon - Lower Columbia River, Sockeye Salmon - Snake River, Steelhead (Lower Columbia River, Middle Columbia River, Snake River Basin, Upper Willamette River)*

Essential Fish Habitat

Chinook Salmon	EFH Present, Covered by an Individual Biological Opinion	Coho Salmon	EFH Present, Covered by an Individual Biological Opinion
Coastal Pelagics	EFH Present, Covered by an Individual Biological Opinion	Groundfish	EFH Present, Covered by an Individual Biological Opinion

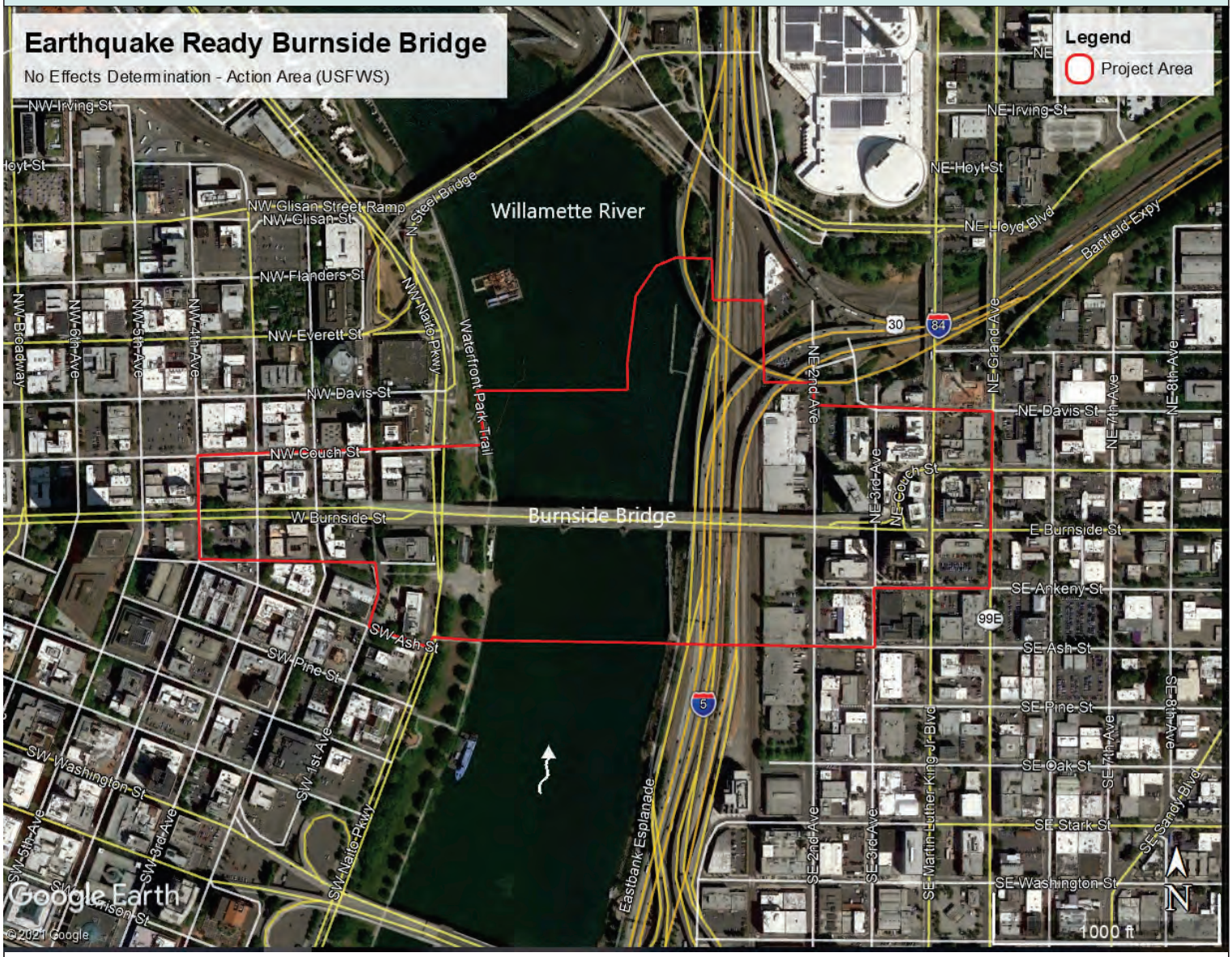
Data Sources and Survey Method(s) Utilized:

Data Source	Date:	Data Source	Date:
USFW Staff Contacted: Kevin Maurice, Wildlife Biologist	Oct 20, 2020	Species List - USFW Website	Jan 28, 2021
USFW Staff Contacted: Chris Allen, Aquatic Res. Div. Manager	Aug 20, 2020	Field Survey - Complete Assessment (HDR)	Jun 19, 2020
Streamnet	Jan 28, 2021	ORBIC	Mar 4, 2021

Field Survey Technique(s):

Field survey consisted of visual inspection of the bridge and areas within the Project Area that are not developed (i.e., paved, built). See attached for USFWS coordination email correspondence and IPaC list. A two-mile radius search of ORBIC records did not result in any occurrences of state or federal ESA floral or fauna species other than NMFS trust resources. (D. Simmons, ODOT, March 4, 2021).

API Map: **(portrait orientation or rotate 90 degrees before inserting)**



Provide Brief Project Description (1-2 Paragraphs)

Multnomah County will replace the existing Burnside Bridge over the Willamette River in the City of Portland, Oregon. The Federal Highway Administration will partially finance this Project and will serve as the lead federal action agency for the Project. The purpose of the Earthquake Ready Burnside Bridge 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.

It is anticipated that the Final EIS and Record of Decision publication is currently scheduled to occur in October 2021 and the final design will be completed thereafter. To provide an analysis of impacts using the most reasonable worst-case scenario for design and construction at the time, it is assumed that the project will completely remove and replace the existing bridge with a long-span, bascule lift bridge and construction of new Eastbank Esplanade connection ramps. A temporary detour bridge is not anticipated due to added time to the schedule and increased potential for impacts to the aquatic environment. Temporary work bridges will be constructed extending from the east and west banks of the Willamette River to provide access to the main river piers and the Eastbank Esplanade connection. For ESA compliance, the Project is being designed to meet design criteria set forth in the Endangered Species Act Programmatic Biological Opinion and Magnuson-Stevens Act Essential Fish Habitat Response for the Federal-Aid Highway Program in the State of Oregon (NOAA Fisheries 2012; FAHP programmatic). Permanent stormwater management for the Project will be designed to meet or exceed FAHP programmatic design criteria, including treatment of all of the Project's contributing impervious area. Where necessary, dredging may occur to reduce the riverbed elevation to approximately -40 feet (NAVD 88) to achieve a no net rise in flood elevation as required by the Federal Emergency Management Agency. On-site mitigation will include removal of Pier 4, riprap below the ordinary high water mark (OHWM), and riparian enhancements. Mitigation credits will also be purchased from the Linnton Mill Restoration Project mitigation bank located on the west bank of the Willamette River approximately 7.5 miles downstream of the existing bridge. Construction is expected to begin in 2024 and will take 5 years to complete, including in-water work to be conducted over five in-water work windows (IWWWs) developed for this Project

Additional Supportive Information:

No suitable habitat for USFWS ESA-listed trust resource species or designated or proposed critical habitat.

State Listed Species:

State ESA listed species were considered, but suitable habitat is not present.

Avoidance Measures Required (If Applicable):

Since no USFWS ESA-listed species are present, avoidance measures are not required.

Required Signatures:

This No Effect determination is based on the project as defined in the Design Acceptance Package (DAP). Changes in project scope or scale following DAP may invalidate this No Effect determination.

Individual Responsible for the No Effect Determination:	ODOT Reviewer	Individuals Responsible for Ensuring Implementation of Avoidance Measures: (Signatures only required if minimization measures are listed above)
Taya K. MacLean, ODOT Qualified Biologist, Parametrix, Last Certified 2016	Devin Simmons, Region 1 Biologist	Project OR District Manager, Organization

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USFWS Coordination: ESA, MBTA, and BGEPA

Project:	Earthquake Ready Burnside Bridge NEPA
Date:	Monday, April 05, 2021
To:	Megan Neill, Multnomah County – Project Manager
From:	Taya K. MacLean, Parametrix

Background

Multnomah County proposes to replace the existing Burnside Bridge over the Willamette River in the City of Portland, Oregon. The purpose of the Earthquake Ready Burnside Bridge Project (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.

The Federal Highway Administration (FHWA) will partially finance this project and will serve as the lead federal action agency for the project.

Introduction

The project team has coordinated with the U.S. Fish and Wildlife Service (USFWS) to document correspondence regarding the project's compliance with the Endangered Species Act (ESA), Bald and Golden Eagle Protection Act (BGEPA), Migratory Bird Treaty Act (MBTA), and additional wildlife considerations. This memorandum includes documentation of this correspondence with USFWS and the City of Portland (Attachment 1) for the project and provides recommended best management practices (BMPs) to avoid and minimize impacts to resources protected by USFWS.

Applicable Regulations

Endangered Species Act

The project is anticipated to result in no effect to USFWS-listed species, as there is no habitat in the project area for USFWS species protected under the ESA (Attachment 1). A no effects determination form has been provided to FHWA under separate cover to document this finding. Consultation under Section 7 of the ESA with USFWS and specific BMPs for ESA-listed species protected by USFWS will not be required for the project.

Bald and Golden Eagle Protection Act

Bald eagles forage along the length of the river year-round, including within the vicinity of the Burnside Bridge, but tend to avoid nesting in the most developed parts of the rivers, such as the

central reach of the Willamette. The closest known nests to the Burnside Bridge are approximately 4,000 meters away in the Balch Creek canyon in Forest Park and on Ross Island (Attachment 1). Therefore, those nests will not be affected by the project.

No golden eagles are known to nest in the project area or surrounding vicinity.

Migratory Bird Treaty Act
Though migratory birds are present in the project area, appropriate BMPs will be included to avoid and minimize impacts to migratory birds protected under the MBTA. Additionally, species considered include swallows and peregrine falcons. Swallows are known to nest on the bridge. During construction, hazing is allowed if nests have the potential to be disturbed. However, if an egg is laid, there are prohibitions for disturbance until chicks fledge or the nest can be determined to have failed. The closest peregrine falcon nesting sites to the Burnside Bridge are on the Fremont I-405 bridge and the Marquam I-5 bridge. Both of these nests were active in 2019. The avoidance and minimization measures listed below should ensure that the project remains in compliance with the MBTA.

Additional Wildlife Considerations

If possible, USFWS recommends that the project design team consider incorporating bat-friendly design elements into the new bridge design.

Avoidance and Minimization Best Management Practices

BMPs to prevent impacts to migratory birds, including swallows and bald eagles, may include:

- Coordinate with the U.S. Department of Agriculture (USDA) Animal and Plant Health Inspection Service (APHIS) for construction monitoring.
  - Prevent migratory bird nesting (i.e., harassment, exclusionary devices)
  - Removal of inactive nests as they are being built during construction
- Once an egg is laid, there are prohibitions for disturbing them (any bird) until chicks fledge or the nest can be determined to have failed.
- Follow clearing and grubbing seasonal restrictions:
  - Avoid disturbing migratory bird nesting habitat (shrubs, trees, structures) from March 1–September 1 of each year.
  - If avoidance is not possible, obtain approval from the engineer before felling trees or clearing vegetation that could disturb migratory bird habitat between March 1–September 1.
- Limit removal of large trees.
- Consider bat-friendly bridge design; include crevices where bats may roost.

Attachment 1. Agency Correspondence

Taya MacLean

From: Helzer, David <David.Helzer@portlandoregon.gov>
Sent: Friday, September 13, 2019 4:17 PM
To: Barksdale, Rachel
Cc: Lovell, Kaitlin; Prescott, Chris
Subject: RE: EQRB nesting data
Attachments: BaldEagleNestsBurnside.pdf

Hello Rachel:

Eagles: We maintain a map of bald eagle nests in the Portland Area; we do not regularly survey, so I would not represent it has comprehensive. That said, we have a pretty good idea, and the closest known nests to the Burnside Bridge are ~4000m away in Balch Creek canyon in Forest Park and on Ross Island. Bald and Golden Eagle Protection Act buffers extend 200m from nests, so the Burnside Bridge is well clear of the buffers for those two nests. Map attached. Eagles also forage along the length of the river year round. In recent decades, eagles have shied away from nesting in the most developed parts of the rivers, such as the central reach of the Willamette. But their population is steadily expanding.

Peregrines: The closest nesting sites to Burnside Bridge are Freemont I-405 bridge and Marquam I-5 bridge; both were active in 2019. I have seen falcon activity at the Hawthorne Bridge in the past, but do not know its status. Multnomah County should have current info for falcon use on Steel, Broadway and Morrison Bridges (I do not know of any occupancy on these county bridges). Ben White with ODOT is a good contact for falcons on ODOT's Portland bridges.

Please let me know if you need an further info.

Dave Helzer
Terrestrial Biologist
(he/him)

City of Portland Bureau of Environmental Services
1120 SW 5th Avenue, Room 1000, Portland, Oregon 97204
Phone: 503-823-2761
david.helzer@portlandoregon.gov
www.portlandoregon.gov/bes
News | Twitter | Facebook

From: Prescott, Chris <Chris.Prescott@portlandoregon.gov>
Sent: Friday, September 13, 2019 11:05 AM
To: Lovell, Kaitlin <Kaitlin.Lovell@portlandoregon.gov>; Rachel.Barksdale@hdrinc.com
Cc: Helzer, David <David.Helzer@portlandoregon.gov>
Subject: RE: EQRB nesting data

Hello Rachel:
Shallow water (I assume you mean in the Willamette) is available from our PortlandMaps web site:
https://gis-pdx.opendata.arcgis.com/datasets/willamette-river-bathymetry-2005

Dave Helzer may have data on nest sites for those species, but he is in the field for at least a few hours.

Please let me know if you need any help,

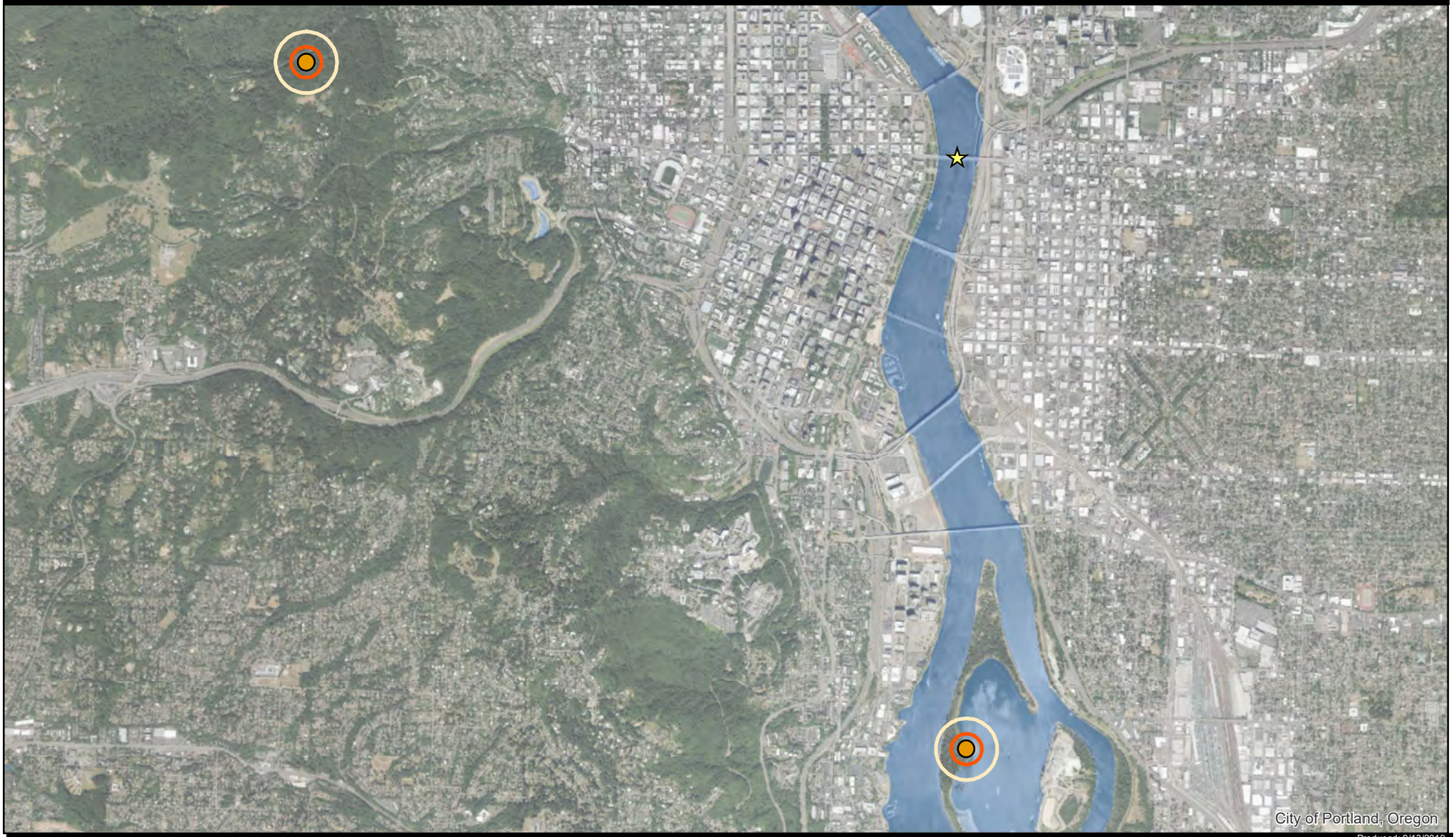
Chris Prescott
Watershed Ecologist
(he/him)

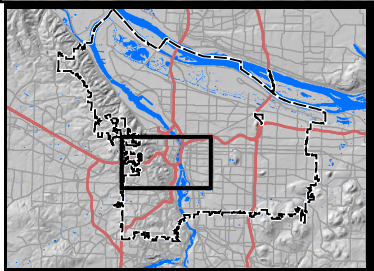
City of Portland Bureau of Environmental Services
1120 SW 5th Avenue, Room 1000, Portland, Oregon 97204
chris.prescott@portlandoregon.gov
www.portlandoregon.gov/bes/
(503) 865-6031 <- NOTE: new phone #

Begin forwarded message:

> **From:** "Barksdale, Rachel" <Rachel.Barksdale@hdrinc.com>
> **Date:** September 13, 2019 at 9:02:52 AM PDT
> **To:** "Lovell, Kaitlin" <Kaitlin.Lovell@portlandoregon.gov>
> **Subject: EQRB nesting data**
>
> Hi Kaitlin,
> During our last natural resources working group meeting, you mentioned that the City has some nesting data for bald eagles (and peregrine falcons?). Would you be able to share that data with me? Did you also say you had some shallow water habitat data? Anything you could send me regarding veg/wildlife/fish that I did not already include in my draft tech report would be greatly appreciated.
>
> Thank you!
>
> Rachel Barksdale
> *Environmental Scientist*
>
> HDR
> 1050 SW 6th Ave, Suite 1800
> Portland, OR 97204
> **D** 503.727.3905
> rachel.barksdale@hdrinc.com
>
> hdrinc.com/follow-us

Bald Eagle Nests and Buffers





Bald_Eagle_Nest_Sites

Bald_Eagle_Nest_330ft_100m

Bald_Eagle_Nest_660ft_200m

Burnside Bridge

Nest location data based on prior years. Eagle nest data down may not be inclusive of all occupied sites within map extent.

09.13.2019

N

0 550 1,100 Meters

1:35,312

ENVIRONMENTAL SERVICES
CITY OF PORTLAND
working for clean rivers

Document Path: C:\Users\dhelzer\Documents\ArcGIS\BaldEagleNests.mxd

Taya MacLean

From: Taya MacLean
Sent: Tuesday, October 20, 2020 12:21 PM
To: Maurice, Kevin
Cc: Shane Phelps; Jeff Heilman; Bauman, Brian S.
Subject: RE: [EXTERNAL] Earthquake Ready Burnside Bridge Replacement Project - USFWS Coordination

Thank you for the quick response, Kevin. I am coordinating with ODOT on the NE. We will keep our NE on file and will consider swallows and bats for the EQRB project.

Taya K. MacLean, MS, PWS
Senior Scientist

Parametrix
ENGINEERING . PLANNING . ENVIRONMENTAL SCIENCES
700 NE Multnomah St., Suite 1000
Portland, OR 97232
tmaclean@parametrix.com
503.416.6193 |Direct
503.307.5642 |Cellular

From: Maurice, Kevin <kevin_maurice@fws.gov>
Sent: Tuesday, October 20, 2020 10:14 AM
To: Taya MacLean <TMacLean@parametrix.com>
Subject: Re: [EXTERNAL] Earthquake Ready Burnside Bridge Replacement Project - USFWS Coordination

Hi! Since there is no mechanism within the Sec 7 consultation process to concur with a no effect determination you should document your logic train, the materials and information used to develop your NE determination and keep it on file incase there is a 3rd part challenge. Unlikely, and you will have a biological opinion from NMFS to lean on. As far as ESA listed species are concerned you're in a good place as I can't really think of any reason to consult informally on any USFWS jurisdiction listed species.
As far as MBTA goes it's unlikely you will have impacts but if swallows nest on the bridge or will be disturbed you are allowed to haze them so they wont set up housekeeping . Once an egg is laid though then there are prohibitions for disturbing them (any bird) until chicks fledge or the nest can be determined to have failed. Rock pigeons (formerly rock doves)(common pigeons) are not on the MBTA list of protected species and can be disturbed while nesting.

No worries about bald eagles the nest quite a ways away.

Has the site been surveyed for bats? Is there a bat friendly design element incorporated into the proposed new bridge?

For your NEPA and such the ODOT form should suffice. I believe ODOT has done this in the past.

If you have any questions feel free to call me. KJM

(my only phone) personal cell # 509/637-4037

From: Taya MacLean <TMacLean@parametrix.com>
Sent: Tuesday, October 20, 2020 9:29 AM
To: Maurice, Kevin <kevin_maurice@fws.gov>
Cc: Shane Phelps <sphelps@parametrix.com>; Jeff Heilman <JHeilman@parametrix.com>; Bauman, Brian S. <brian.bauman@hdrinc.com>
Subject: [EXTERNAL] Earthquake Ready Burnside Bridge Replacement Project - USFWS Coordination

Kevin,

We wanted to coordinate with you on ESA, MBTA, and BGEPA compliance for the Earthquake Ready Burnside Bridge Replacement Project in Portland. I believe you are aware of the project, but let me know if you need more project-specific information.

There is no habitat in the project area for USFWS species protected under the ESA. I have attached the IPaC report and an email from Chris Allen/USFWS regarding no effect to bull trout. We are planning to provide a letter of no effect (or to use the ODOT form for NE) to document compliance for USFWS protected species. Please verify this will be sufficient for ESA.

There are no golden eagles known to nest in the project area/vicinity – though bald eagles nest in the vicinity (known nests in Forest Park and Ross Island (>1.5 miles)). Though migratory birds are present in the project area, appropriate standard BMPs will be included to avoid and minimize impacts to migratory birds protected under the MBTA. BMPs may include measures to prevent birds (including eagles) from nesting or removal of successful nests from the construction area, coordination with USDA APHIS for construction monitoring, clearing and grubbing seasonal restrictions, and limiting removal of large trees. Please let us know if you have additional concerns regarding MBTA or BGEPA measures for the project.

Thank you,
Taya K. MacLean, MS, PWS
Senior Scientist

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ENGINEERING . PLANNING . ENVIRONMENTAL SCIENCES
700 NE Multnomah St., Suite 1000
Portland, OR 97232
tmaclean@parametrix.com
503.416.6193 |Direct
503.307.5642 |Cellular

Marine Mammal Protection Act Strategy

Project:	Earthquake Ready Burnside Bridge NEPA
Date:	Wednesday, May 05, 2021
To:	Megan Neill, Multnomah County – Project Manager
From:	Taya K. MacLean, Parametrix

Background

Multnomah County proposes to replace the existing Burnside Bridge over the Willamette River in the City of Portland, Oregon. The purpose of the Earthquake Ready Burnside Bridge Project (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.

Marine Mammal Protection Act Federal Nexus

The portion of the project area within the Willamette River overlaps with the range of the California sea lion (*Zalophus californianus*) and the Steller sea lion (*Eumetopias jubatus*). Both species are under the jurisdiction of the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NOAA Fisheries) under the Marine Mammal Protection Act (MMPA; 16 U.S.C. 1361 et seq). Harbor seals (*Phoca vitulina*), while found in the Lower Columbia River Estuary, are not known to frequent the Willamette River. The Federal Highway Administration (FHWA) is providing federal funding and therefore serves as the lead agency for the project.

Management Strategy

Parametrix has coordinated with the Oregon Department of Transportation (ODOT) representing FHWA, NOAA Fisheries, and Oregon Department of Fish and Wildlife (ODFW; Attachment 1) to determine the presence of marine mammals within the project area during in-water work activities and the potential for effects to marine mammals resulting from the project. The in-water work window designated for this project extends from July 1 through December 31. After careful consideration, it was determined that during this time, no take of marine mammals, as defined by the MMPA, is anticipated to occur. This determination was based on the following:

Biology

- Both species forage and migrate through the project area upstream to reach concentrated prey associated with Willamette Falls.

- Seasonal presence and abundance – Present from September through May with the peak occurring between March and May (per M. Blanchard, ODFW District Biologist, March 2020; Attachment 1).
  - Complete absence of individuals by both species before the beginning of the in-water work window (July 1) due to ocean feeding and breeding migration.
  - Before the end of the project's in-water work window (December 31) when in-water construction will occur, approximately five California sea lions will arrive within the project area, beginning in September (Attachment 1).

Behavior

- Construction activities during times of presence are not likely to result in the potential to disturb individual marine mammals by causing disruption of behavioral patterns or the potential to injure them.
  - Construction activities during times of presence include:
    - Pile driving (July 10–October 15) and all other in-water work during the ODFW in-water work window (July 1–October 31)
    - Drilled shaft casing placement during the extended in-water work window (November 1–December 31)
    - Year-round barge use, wire-saw demolition, pile removal, placement of perched caissons and grouting at Piers 2 and 3, isolated work, and overwater work
- There is not a reasonable potential to disturb marine mammals by causing disruption of behavioral patterns. This conclusion is based on:
  - Individuals are absent from the area during the breeding season.
  - The few individuals (five or fewer) that may pass through the project area during in-water activities are considered to be acclimated to anthropogenic activities including sound as evidenced by:
    - Underwater sound generated by the Burnside Bridge
    - Year-round motorized boat traffic
    - Frequent interaction with anglers and ODFW, including hazing

Avoidance and Minimization Measures

- The majority of in-water construction will occur during the annual period of absence.
- Monitoring by qualified biologist(s) will occur between September 1 and December 31 to avoid and minimize potential effects to the resident California sea lions (approximately five individuals) from construction activities. A "clear-zone" radius of 100 feet will be

maintained. Noise-generating activities will cease if individual(s) are observed within this zone and will not resume until individuals have vacated.

- If injury were to occur to any marine mammals protected under the MMPA, project shutdown would be required.

Permitting Considerations

It is anticipated that the project will result in a determination that no take of marine mammals will occur and that a MMPA permit will not be required. Construction activities during times of marine mammal presence are not likely to result in the potential to disturb individual marine mammals by causing disruption of behavioral patterns or the potential for injury. The avoidance and minimization measures outlined above will be implemented to avoid and minimize potential effects to marine mammals.

Coordination with ODFW, ODOT, NOAA Fisheries, and FHWA will be required within one year prior to the start of construction to verify that this strategy is still applicable and that no take is anticipated. If changes in yearly trends in marine mammal presence in the project area are detected by ODFW, a Letter of Authorization from NOAA Fisheries may be required for compliance with the MMPA to accommodate MMPA compliance over multiple years of construction.

Attachment 1. Agency Correspondence

Taya MacLean

From: Bauman, Brian S. <Brian.Bauman@hdrinc.com>
Sent: Monday, March 23, 2020 11:10 AM
To: Barksdale, Rachel; Taya MacLean
Subject: FW: EQRB milestones

May consider the information below

Brian Bauman
D 503.727.3908 **M** 503.289.1722

hdrinc.com/follow-us

From: Monica R Blanchard [mailto:Monica.R.Blanchard@state.or.us]
Sent: Friday, March 20, 2020 11:15 AM
To: Bauman, Brian S. <Brian.Bauman@hdrinc.com>
Cc: Tom Loynes - NOAA Affiliate <tom.loynes@noaa.gov>
Subject: RE: EQRB milestones

Brian,

The area around the bridge is mostly used by sea lions as a migration corridor and for foraging. There are no haul out areas that our crews have observed in the direct vicinity of the bridge. Our crew lead is checking with the Marine Mammal Stranding Network to see if they have any other observations regarding haul outs and I will let you know what I hear. The City crews also make trips in that area regularly and may have some data to share. There are animals present basically from September through May with the peak occurring between March and May.

Hope that helps, feel free to call or email if you need additional information.

Thanks,

Monica Blanchard
Assistant District Fish Biologist
North Willamette Watershed District
Oregon Department of Fish and Wildlife
17330 SE Evelyn St | Clackamas, OR 97015
Cell: 971.712.4172 | Office: 971.673.2040
(she/her/hers)

From: Bauman, Brian S. [mailto:Brian.Bauman@hdrinc.com]
Sent: Wednesday, March 18, 2020 3:55 PM
To: Monica Blanchard <Monica.R.Blanchard@state.or.us>
Cc: Tom Loynes - NOAA Affiliate <tom.loynes@noaa.gov>
Subject: FW: EQRB milestones

Good afternoon Monica

Can you help us out with some data regarding sea lion use in the stretch of the Willamette around the Burnside Bridge? Do you know if they haul out in the area? If they just transit through? Any ideas of timing when they would be in the area or numbers on individuals?

Thank you

Brian Bauman
D 503.727.3908 **M** 503.289.1722

hdrinc.com/follow-us

Taya MacLean

From: Michael L Brown <Michael.L.Brown@state.or.us>
Sent: Thursday, March 18, 2021 2:07 PM
To: Sheanna M Steingass; Mike Brown; Peter M Stevens; Taya MacLean
Cc: SIMMONS Devin; Bauman, Brian S.
Subject: RE: Lower Willamette Sea Lions mad Use?

Hi everyone, we typically do not do complete river survey's during this time frame (July 1- Oct 31) because this is outside of normal pinniped abundance in the Willamette River. In 2020 we started survey's October 30th and there was one Steller sea lion present in the lower Willamette River, so I would agree with Sheanna that less than five animals would be accurate. There is always a chance that random animals will come into the Willamette River but will usually leave fairly quickly back out to the Columbia River in this time frame.

Thank you,
Mike

Michael Brown
Marine Mammal Project leader
Marine Resources Program | Oregon Department of Fish and Wildlife
17330 SE Evelyn St. Clackamas, Or. 97015
(971) 673-6064 | michael.l.brown@state.or.us
http://www.dfw.state.or.us/MRP/

From: Sheanna M Steingass <Sheanna.M.Steingass@state.or.us>
Sent: Tuesday, March 16, 2021 10:43 AM
To: Mike Brown <michael.l.brown@state.or.us>; Peter M Stevens <Peter.M.Stevens@state.or.us>; Taya MacLean <TMacLean@parametrix.com>
Cc: SIMMONS Devin <devin.l.simmons@odot.state.or.us>; Bauman, Brian S. <Brian.Bauman@hdrinc.com>
Subject: RE: Lower Willamette Sea Lions mad Use?

Hi Peter,

Thanks for sending this along. This will be a bit difficult to estimate as we will be conducting removal efforts during these times when marine mammals are present. We will likely have very few animals present, if any in summer until August.

Based on previous presence I would estimate that less than five animals (Steller sea lions) would be present during this time. I have CC'ed our project leader Mike Brown for further input and confirmation.

Thank you,
Shea

Sheanna Steingass, PhD | Marine Mammal Program Leader
Oregon Department of Fish and Wildlife | *She/her/hers*

From: Peter M Stevens <Peter.M.Stevens@coho2.dfw.state.or.us>
Sent: Monday, March 15, 2021 3:22 PM
To: Taya MacLean <TMacLean@parametrix.com>
Cc: SIMMONS Devin <devin.l.simmons@odot.state.or.us>; Bauman, Brian S. <Brian.Bauman@hdrinc.com>; Sheanna

M Steingass <Sheanna.M.Steingass@coho2.dfw.state.or.us>
Subject: RE: Lower Willamette Sea Lions mad Use?

Taya,

I've copied Sheanna Steingass our MMP leader. She should be able to get you the numbers or put you in touch with the proper people to get them for you. Thanks.

Peter

From: Taya MacLean <TMacLean@parametrix.com>
Sent: Monday, March 15, 2021 1:48 PM
To: Peter M Stevens <Peter.M.Stevens@state.or.us>
Cc: SIMMONS Devin <devin.l.simmons@odot.state.or.us>; Bauman, Brian S. <Brian.Bauman@hdrinc.com>
Subject: RE: Lower Willamette Sea Lions mad Use?

Peter,

I wanted to follow up marine mammals in regards to the Earthquake Ready Burnside Bridge Replacement Project. ODFW previously estimated that 6 individual marine mammals may be present within the Willamette River/project area beginning in September through the end of the IWWW (Oct 31). For the project, we need to have the most recent numbers of individuals estimated to be within the project area during the published IWWW (July 1-Oct 31) and during the extended IWWW (Nov 1-Dec 31). Were you able to get updated numbers from ODFW on this following Devin's previous email?

Based on Devin's coordination w/ ODFW on previous projects, 6 individuals in the IWWW were estimated for I-5 rose quarter. Monica Blanchard/ODFW also stated that animals present basically from September through May with the peak occurring between March and May (attached). Can you please assist or point me in the direction of someone at ODFW that can assist with estimating the number of marine mammals in the project area during the project's IWWWs.

Thanks so much!
Taya K. MacLean, MS, PWS
Senior Scientist

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503.307.5642 |Cellular

From: SIMMONS Devin <devin.l.simmons@odot.state.or.us>
Sent: Monday, December 21, 2020 1:19 PM
To: Tom Loynes <tom.loynes@noaa.gov>; LOYNES Thomas M <Thomas.M.LOYNES@odot.state.or.us>; CHESSELET Cash <Cash.CHESSELET@odot.state.or.us>; GILLETTE Allen <Allen.GILLETTE@odot.state.or.us>; CALLAHAN Cindy <Cindy.Callahan@dot.gov>; Bauman, Brian S. (Brian.Bauman@hdrinc.com) <Brian.Bauman@hdrinc.com>; Taya MacLean <TMacLean@parametrix.com>; MCCONNELL Thomas E <Thomas.E.MCCONNELL@odot.state.or.us>; BUCKLAND Jeffrey G <Jeffrey.G.BUCKLAND@odot.state.or.us>; EASTMAN Sarah <Sarah.EASTMAN@odot.state.or.us>
Subject: FW: Lower Willamette Sea Lions mad Use?

FYI

I'll provide another update as the conversation progresses.

Thank you,

Devin

From: Peter M Stevens <Peter.M.Stevens@state.or.us>
Sent: Monday, December 21, 2020 11:52 AM
To: SIMMONS Devin <devin.l.simmons@odot.state.or.us>; WALCZAK Ben <Ben.Walczak@state.or.us>
Cc: WRIGHT Bryan E <Bryan.E.Wright@state.or.us>; BROWN Michael L <Michael.L.Brown@state.or.us>; STEINGASS Sheanna M <Sheanna.M.Steingass@state.or.us>
Subject: RE: Lower Willamette Sea Lions mad Use?

Devin,

Since the writing of this, ODFW has establish a Marine Mammal Program which has largely taken over Marine Mammal management from the District's (we are very grateful and thankful to have their expertise). I've copied several key people in that program here. They would probably be able to most easily and accurately review this document to see if it is still consistnet with timing, abundance and frequency of sea lion use of the lower Willamette.

Hope this is helpful.

Peter

From: SIMMONS Devin <devin.l.simmons@odot.state.or.us>
Sent: Wednesday, December 9, 2020 10:39 AM
To: STEVENS Peter M <Peter.M.Stevens@state.or.us>; WALCZAK Ben <Ben.Walczak@state.or.us>
Subject: Lower Willamette Sea Lions mad Use?

Hello,

A couple of years ago and with the help of NOAA I composed a BMP white paper that is now being used for three projects:

- I-205 Willamette River Bridge Replacement
- I-5 Rose Quarter (now moot due to elimination of IWW)
- Burnside Earthquake Ready Bridge Project

Due to anecdotal comments and a brief conversation with Tom Murtaugh just prior to his retirement please review the attached document.

At this time we are wondering about the timing, number of, and general frequency of sea-lion use (both species) in the Lower Willamette. The white paper was composed to guide our projects to conduct construction and avoid the need for MMPA permitting. Given recent anecdotes it seems best to revisit the document and possibly re-evaluate whether or not to obtain an IHA permit from NOAA.

Thank you,

Devin

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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,

Kim W. Kratz, Ph.D
Assistant Regional Administrator
Oregon Washington Coastal Office

cc: John Raasch - ODOT Environmental Unit Manager
Devin Simmons - ODOT Region 1 Biologist
Emily Cline – FHWA Environmental Manager
Cindy Callahan – FHWA Senior Biologist
Megan Neill – Engineering Services Manager
Cash Chesselet - FAHP Coordinator & NOAA Liaison - cash.chesselet@odot.state.or.us

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Project:	Earthquake Ready Burnside Bridge NEPA
Date:	Thursday, August 19, 2021
Subject:	Alternative Updates and Impacts on Sediment Analysis
To:	James Holm and Benny Dean, US Army Corps of Engineers
From:	Brian Bauman, HDR – Environmental Lead Heather Catron, HDR – Project Manager Megan Neill, Multnomah County – Project Manager

1 Introduction

This memorandum has been prepared to provide an update regarding the anticipated construction of the Earthquake Ready Burnside Bridge (EQRB) Project (Project). A memorandum was provided in July 2020 to the Portland Sediment Evaluation Team (PSET) that described how construction of the Project would disturb sediments in the Willamette River, to facilitate a PSET determination if sediment analysis was necessary under the Sediment Evaluation Framework for the Pacific Northwest (see Attachment A). The Project Team subsequently followed up to PSET provided questions in October 2020 (see Attachment B). PSET subsequently requested a sediment Level 2A Sampling and Analysis Plan (SAP) be developed for the proposed floodway dredge area, specifically the post-dredge surface interval (-40 to -42 feet) that would be exposed after dredging. In the past year, the Project design and construction approach have been refined which has modified the proposed action to remove the floodway dredge area. The additional information contained within this memo is being provided to the PSET to allow an opportunity to reevaluate the requested Level 2A SAP.

1.1 Project Alternatives and Selection

There continue to be four alternatives considered that would meet the Purpose and Need for the Project, including an Enhanced Seismic Retrofit of the existing Burnside Bridge, a Replacement with Short-span Approach, a Replacement with Long-span Approach, and Replacement with Couch Extension. The Draft Environmental Impact Statement was published in February 2021. Design refinement since the submittal of the July 2020 memorandum and the Draft EIS have resulted in some changes to the project elements and the associated anticipated environmental impacts.

2 Alternative Refinement

Several changes have been proposed to reduce the impacts to the Willamette River and the cost of constructing the Long-Span Approach, including, but not limited to, the following elements:

- Reducing the number of vehicle lanes on the bridge (resulting in a narrower bridge)
- Options for bridge type, including girder vs. long-span, cable stayed vs. tied arch, lift vs. bascule
- Changing the span length by adding or relocating support columns
- Reducing the size of the in-water piers

Some of these project elements have no effect on sediments. The proposed refinements that could affect sediment migration differently than described in the July 2020 memorandum are described below.

2.1 Cofferdams

The Long-span Alternative that was included in the NEPA analysis was anticipated to be constructed with the use of cofferdams to replace the bridge piers. Cofferdam installation was to entail driving sheet pile to form a ring around the existing pier, pour a seal at the bottom of the cofferdam once set, then dewater the isolated area. While the refined design of the Long-span Alternative may use cofferdams for pier replacement, an option of using perched caissons is being proposed. Perched caissons will isolate the work area from the actively flowing channel without requiring embedment into the river bottom, thereby avoiding disturbance of the river bottom sediment.

2.2 Dredging

Dredging to mitigate for impacts to the floodway is no longer proposed. The amount of dredging that was originally proposed was for an area of approximately two acres and a volume of approximately 7,000 cubic yards. This floodplain dredging has since been eliminated as a project element. Because dredging will not take place as part of Project construction or mitigation, the risk of suspending currently confined sediments that may be contaminated is no longer anticipated.

3 Conclusion

Based on previous coordination and subsequent direction from the PSET, a Level 2 SAP was anticipated due to the risk of the leave surface that would result from the floodway mitigation dredging. As a result of design refinement, dredging for floodway mitigation is no longer proposed. The project is seeking concurrence from the PSET that no further testing is required for the proposed action.

Attachment A. July 2020 Memorandum

Memo

Project:	Earthquake Ready Burnside Bridge NEPA
Date:	Thursday, July 30, 2020
Subject:	Information Relevant to Determining Whether a Sediment Analysis is Necessary
To:	James Holm and Benny Dean, US Army Corps of Engineers
From:	Greg Mazer, HDR – Senior Environmental Scientist Brian Bauman, HDR – Permits Heather Catron, HDR – Project Manager Megan Neill, Multnomah County – Project Manager

1 Introduction

This memorandum has been prepared to summarize information about how anticipated construction of the Earthquake Ready Burnside Bridge (EQRB) Project would disturb sediments within the Willamette River. The US Army Corps of Engineers (Corps) and US Environmental Protection Agency (EPA) share federal responsibility for regulating dredged material within waters of the United States under section 404 of the Clean Water Act (CWA). The Corps may require sediment sampling prior to construction if the Project met criteria described in the Sediment Evaluation Framework for the Pacific Northwest, which provides a framework for assessing and characterizing sediment to determine the suitability of dredged material for unconfined, aquatic disposal and predicting effects on water quality during dredging.

1.1 Project Purpose

The primary purpose of the EQRB Project is to build a seismically resilient Burnside Street lifeline crossing over the Willamette River that would remain operational and accessible for vehicles and other modes of transportation following a major Cascadia Subduction Zone earthquake. The Burnside Bridge would provide a reliable crossing for emergency response, evacuation, and economic recovery after an earthquake. Additionally, the Project would provide a long-term safe crossing with low-maintenance needs for 100 years.

1.2 Project Location

The Project Area includes the Willamette River where it is crossed by the Burnside Bridge, at approximately river mile (RM) 12.2. The Project Area encompasses 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 (Figure 1).

1.3 Project Alternatives

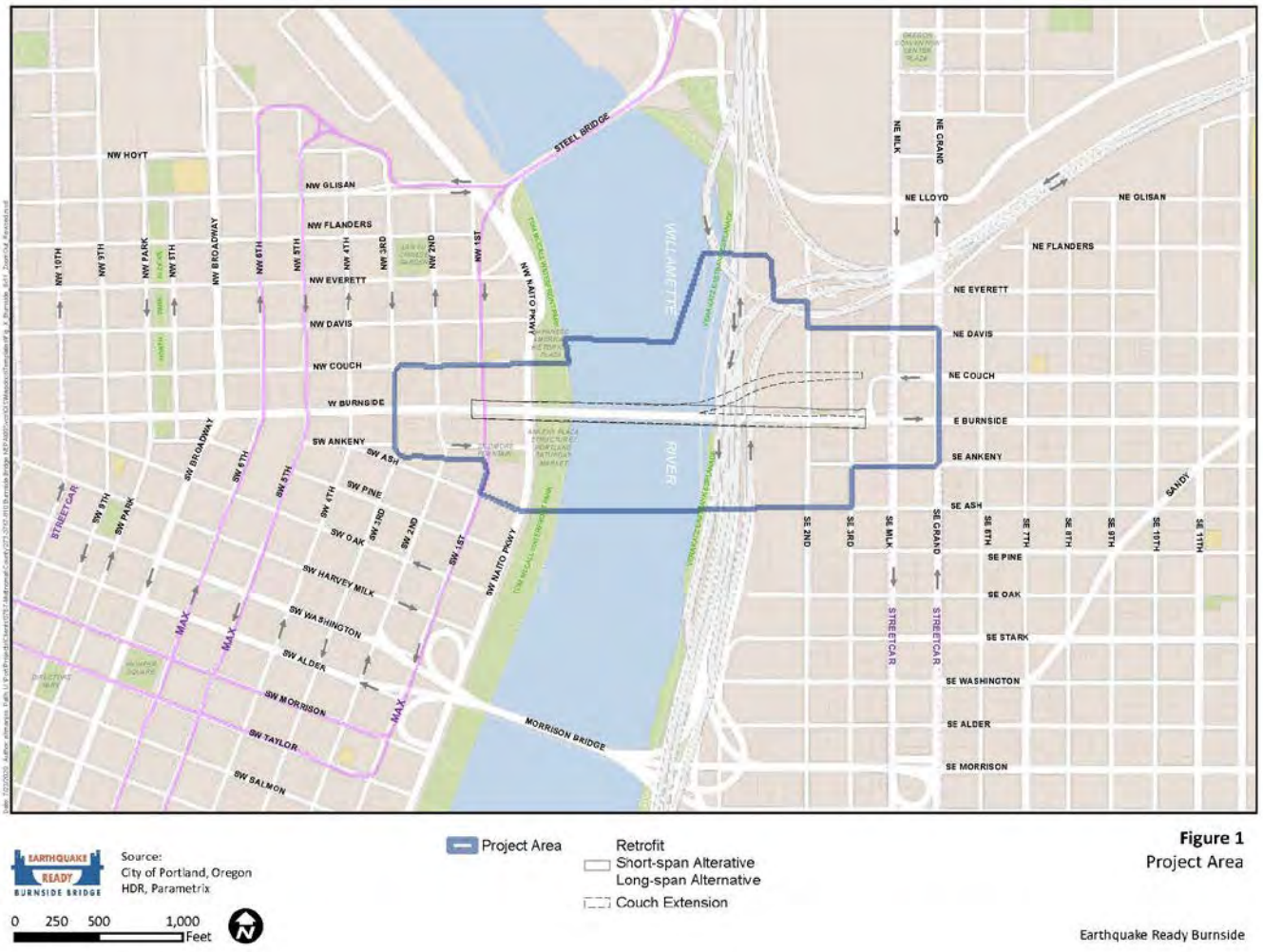
The Project alternatives currently under consideration include:

1. Enhanced Seismic Retrofit of the Existing Bridge (Retrofit)
2. Replacement Alternative with Short-span Approach (Short-span Alternative)
3. Replacement Alternative with Long-span Approach (Long-span Alternative)
4. Replacement Alternative with Couch Extension (Couch Extension)

Each of the above alternatives was studied with and without a Temporary Detour Bridge Option (Temporary Bridge) for the following modes:

1. All modes
2. Transit, bicycles and pedestrians only
3. Bicycles and pedestrians only

Figure 1. Project Area



2 Willamette River Sediments

The lower Willamette River has been heavily developed and modified during the past 150 years. Various industrial activities have occurred on the banks of the river, including ship building and breaking, heavy manufacturing, pesticide formulating, manufactured gas production, power generation and distribution, and lumber processing. As a result of these activities, various contaminants have reached the river and settled into the riverbed sediment (DEQ 2019).

Although the Project Area is located approximately 0.4 river miles upgradient of the Portland Harbor Superfund Site, which is listed primarily for sediments contaminated with petroleum products (polycyclic aromatic hydrocarbons [PAHs]), PCBs, and pesticides, along with a number of other chemicals and compounds, information obtained from DEQ indicates that sediment contamination also occurs, albeit to a lesser degree, within the reach upstream of the Portland Harbor Superfund Site. DEQ has overseen multiple sediment investigations and five major sediment cleanup actions in the 4-mile long reach upgradient of the Portland Harbor Superfund Site. Although specific sediment data within the Project Area are limited, DEQ and EPA have concluded that concentrations of contaminants in the 4-mile long reach are substantially lower than those found in sediments within the Portland Harbor Superfund Site. DEQ expects that concentrations of contaminants in surface sediments in the reach wherein the Project Area is situated will decline over time as the in-water sources are addressed, upland sources are controlled, and natural recovery mechanisms take effect (DEQ 2019).

3 Construction Approach

The approach to implementing the alternatives would be very similar to each other, though there will be much less demolition for the Retrofit Alternative than for the other alternatives. See Appendix A of the draft *EQRB Construction Approach Technical Report* for plan view summaries of access and construction for each of the Build Alternatives.

3.1 Cofferdam Installation

Cofferdams would be installed for retrofit or replacement of each of the four bridge piers. All demolition and construction activities in the river would occur in cofferdams sufficiently large and deeply set in the river bed to encapsulate both the proposed pier locations and the existing piers.

Regardless of bridge alternative, it is assumed that standard installation techniques would be used to install (and remove) cofferdams. See Appendix D of the draft *EQRB Construction Approach Technical Report* for cofferdam and drilled shaft installation sequence. Both installation and removal would need to take place during the in-water work window (IWWW).

The installation would be accomplished by first installing a sheet pile driving template. This is done by installing the top bracing ring (large W-beam on its side that will act as a brace for the sheet piles). Once the ring/template is installed, the contractor would install sheet piles using a vibratory hammer to advance the sheets past the bottom of the pier seal, which is estimated at El -72.5 feet (NAVD 88). If a vibratory hammer cannot advance the sheet pile the entire way, a diesel impact hammer can be used to drive the sheet pile further. If cobbles are encountered, it is likely that the sheet pile would need to be driven through the cobbles, but could meet refusal. Should refusal occur or a large boulder be encountered, the contractor would need to excavate inside the cofferdam to expose the boulder/cobble and then remove it underwater to allow cofferdam installation to continue.

Construction of the cofferdam seal would generally take place in a similar fashion for each of the various bridge alternatives, but there would be differences in construction approach for each alternative. The basic construction of the seal begins with excavating the existing material from the river. Any contaminated soil excavated would need to be disposed of properly at a certified landfill. For cofferdams as large as these, the contractor would likely use crane with a large clam bucket to remove material from within the cofferdam and place the material in a barge or watertight truck to be shipped off site and disposed of at an upland location. The removal of sediment from within the cofferdams would need to occur underwater to avoid inducing pressure on the unbraced cofferdam.

Once the cofferdam is excavated to the bottom of seal elevation, the contractor could either proceed with drilled shaft installation or pour the concrete seal next. The seal would need to be tremie-poured underwater.

Once the seal has cured for a few days, the contractor would begin to dewater the cofferdam. As the dewatering commences, the contractor would install bracing as the water level is dropped. Water would be drained until the contractor reaches the “next” bracing point, at which time, the dewatering would stop, the bracing would be installed, and the dewatering would continue. This process would be repeated until the contractor reaches the top of seal.

When the seal is exposed, the contractor would need to clean the top of the seal of latent material, uneven surfaces, and any ridges that may protrude into the new footing.

The likely sequence of cofferdam construction would be to:

- Vibrate/drive a frame/ring that would be used as the cofferdam template as well as a pressure brace
- Vibrate/drive sheet piles around the frame
- Install interior cofferdam wall between ground improvements and shaft/shaft cap location

- Install ground improvements where required
- Excavate (dredge) inside cofferdam until the elevation of soils is roughly at finished grade
- Install drilled shafts
- Install cofferdam seal on side of drilled shafts
- Dewater cofferdam on side of drilled shafts and install remainder of substructure

3.2 Drilled Shafts

The drilled shaft construction for the river piers would require careful planning and execution. Multiple rows of 12-foot diameter shafts are expected at the main piers for all bridge alternatives. This would require the contractor having to build access on top of the cofferdams in order to reach the shaft locations. See Appendix D of the draft *EQRB Construction Approach Technical Report* for cofferdam and drilled shaft installation sequence And Appendix E for details on the Long-span Approach Erection.

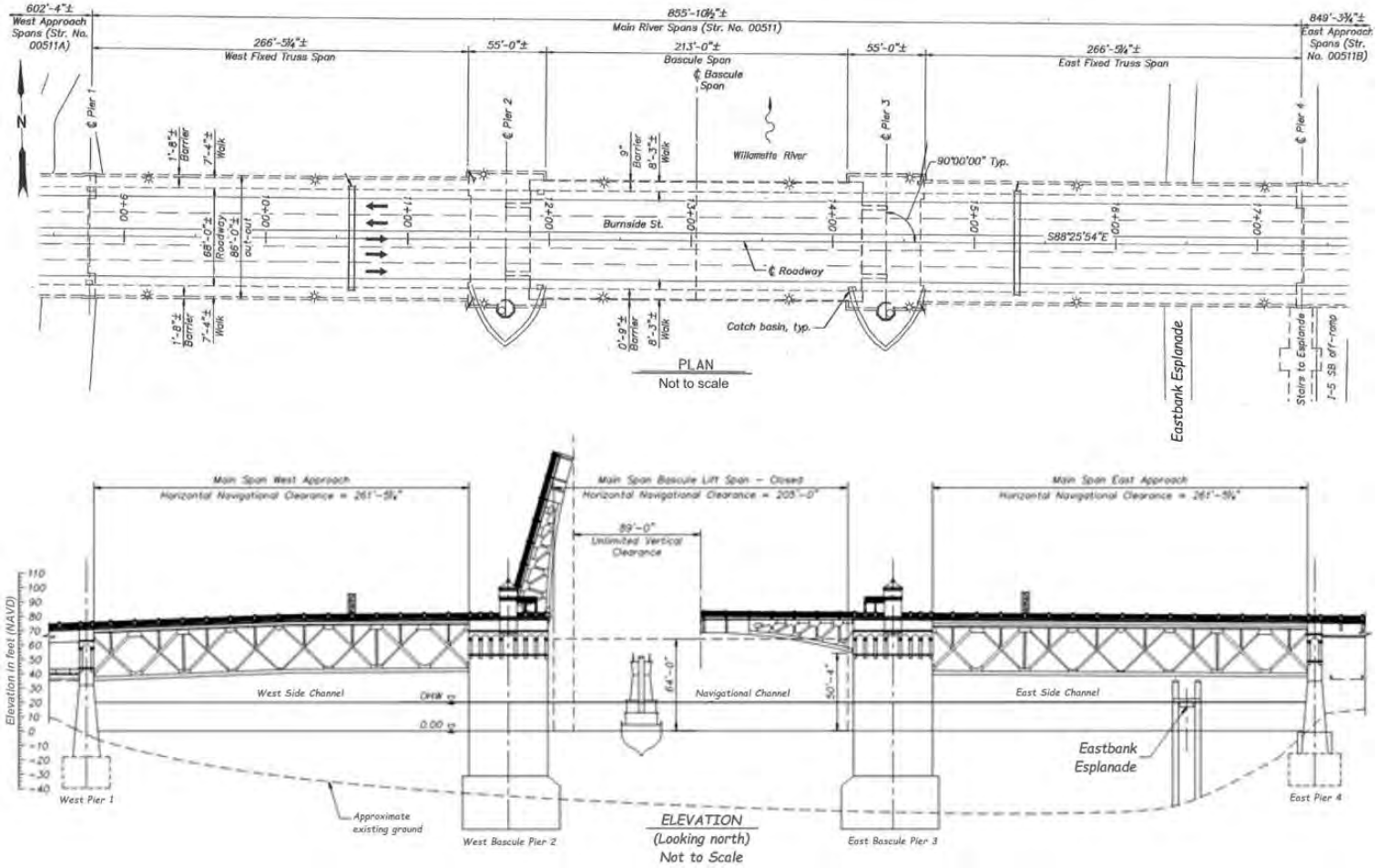
The general shaft installation procedure would be fairly similar for all alternatives. The Project team envisions one of two ways to install the shafts: i) conventionally augered shafts or ii) oscillated casing method. With both methods, a casing will be used to isolate the area wherein excavation would occur. Both methods may use a slurry to stabilize the hole below where the casing would be driven, though it is less likely to be necessary for the oscillated casing method. For either method, once the hole is drilled, the contractor would insert a rebar cage using the support crane, and then concrete would be placed using the tremie method (typically using a concrete pump).

3.2.1 Main River Piers (Retrofit)

The river piers include the main river piers (Piers 2 and 3), the west pier (Pier 1) and the east pier (Pier 4). See Figure 2 for plan and profile drawings of the existing bridge.

For the Retrofit Alternative, there would be 9 drilled shafts on either side of the existing main river piers, totaling 18 shafts at each pier. To avoid impacts to the navigation channel during construction, it is assumed that the shafts would only be accessed from the “non channel” side. This means that the shafts closest to the navigational channel would need to be accessed from a temporary platform built over the cofferdam. This platform would act as an extension of the work bridge. As the shafts are constructed, the temporary platform could be removed or “peeled” back until all shafts are constructed.

Figure 2. Existing Plan and Elevation Views – Main River Bridge



If the Retrofit shafts were constructed with a conventional drilling method, it is feasible that the shafts could be installed using a barge mounted drill before the cofferdam is in place, which would preclude needing a temporary platform. This would require that all shafts be installed during the in-water work window, or at least isolated from the river to allow construction outside the in-water work window.

It is currently assumed that the contractor would install shafts after the seal is poured and the cofferdam is dewatered. In this scenario, the contractor would have to drill shafts through the existing seal. This would take additional time, however would allow for shaft installation outside of the in-water work window once the cofferdam is dewatered.

3.2.2 Main River Piers (Short-span, Long-span, and Couch Extension Alternatives)

For each replacement alternative, the main river piers would each contain 18 drilled shafts, 12 feet in diameter. Similar to the Retrofit Alternative, the contractor would need to build a temporary access platform from the work bridge to access the shafts nearest to the navigation channel. The platform would be partially removed as the contractor completes shafts from the channel moving towards the riverbank.

The drilled shafts for the main river piers of the Short-span, Long-span and Couch Extension Alternatives could not be drilled until the existing piers are demolished. In order to demolish the piers completely, the cofferdams would need to be dewatered. This means that the cofferdams would need seal pours, which in turn means that the drilled shafts would need to be cored through the seal.

It is possible that a contractor will want to demolish a portion of the existing piers above water and drill shafts prior to installing a cofferdam. If this were done, the contractor could devise a plan to use a barge-mounted drill and drill through the existing pier floor to install shafts within the existing foundation footprint. Then, once complete with those shafts, continue to install the remaining shafts outside the existing pier footprint. After all shafts were installed, the contractor would continue with cofferdam installation and later, demolition of the remainder of the pier after the cofferdam was dewatered.

4 Potential Scour

The proposed Build Alternatives would each place a larger bridge structure in the floodway than is currently occupied by the existing bridge. As a result, the Project could increase river bed scour at and downstream of the bridge piers. A comparison of the range of potential scour length increase for the proposed alternatives is presented in Table 1.

Table 1. Estimated Percent Increase in Scour Length[a]

Alternative	Pier 1	Pier 2	Pier 3	Pier 4
No Change				
No-Build Alternative (Existing)	-	-	-	-
Lowest Increase				
Long-span Alternative[(b)] – bascule lift	-	15	15	-100
Long-span Alternative [(b)] – vertical lift	-	15	15	-100
Short-span Alternative – vertical lift	-	15	15	56
Medium Increase				
Couch Extension Alternative – bascule lift	-	43	43	109
Couch Extension Alternative – vertical lift	-	15	15	109
Short-span Alternative – bascule lift	-	43	43	56
Highest Increase				
Retrofit Alternative (highest impact)	42	116	116	66

Source: Lengths sourced from Respective Design Plan Sets (Multnomah County) and measured in Bluebeam.
[a] Percent increase calculated based on percent increase in footing length compared to existing condition.
[b] Long Span Alternatives were analyzed using the Tied Arch Configuration. The Cable Stay Support Option Configurations would be anticipated to have similar in channel impacts.

It is assumed that there is a correlation between increased scour length and increased potential to re-suspend riverine sediments that are contaminated with toxins and/or expose residual sediment contamination. Thus, the Long-span Alternative has the lowest potential to re-suspend contaminated sediments and the Retrofit Alternative has the highest potential. Note that the Long-span Alternative would eliminate scour at Pier 4, as this pier would be removed and not replaced under this alternative. Excavation of riverine sediment needed to install cofferdams for each alternative would occur within isolation via sheet pile and thereby have negligible effect on contaminant re-suspension.

5 Mitigation Measures

There are limited opportunities to mitigate hydraulic encroachment and increased scour impacts associated with the Project because encroachment offsets need to occur at the same location as the encroachment. The minimization measures would focus on limiting an increase in base flood elevation, reducing scour potential, and controlling sediment mobilization. Appropriate countermeasures would be developed after a preferred alternative is selected and the hydraulic design, detailed modeling, and scour analyses for the bridge has been completed. The following are potential measures to consider in order to minimize hydraulic impacts:

- Size the bridge pier structures to minimize increase in-water surface elevation for the 100-year peak flood discharge
- Lengthen the bridge spans to reduce the number of piers in the river and/or floodplain, as would occur with the long-span approach
- Design pier shaping to minimize energy losses

The Willamette River typically experiences low flow velocities with tidal influence in the project area, posing low risk for pier instability and generally resulting in channel deposition. The Build Alternatives all include larger (both wider and longer) in-water structures than the existing structure, which could result in an increase in scour at the piers or related in-water structures and the potential to mobilize contaminated sediments. Scour countermeasures would reduce localized scour to decrease flow separation and the formation of vortices around piers. Countermeasures could include streamlining the pier nose shape; orienting the pier within five degrees of the flow direction to decrease scour depth; or using partially grouted rock protection around piers to smooth flowpaths and minimize scour. Design modifications can also be used to mitigate for the contraction scour from piers, where pier design, span length, and pier location can have the greatest effect. Longer spans and placement of solid piers outside the channel thalweg can reduce the obstruction of flows as well, reducing the potential for debris to become lodged and exacerbate obstructions that cause scour (FHWA 2011).

One approach to mitigating the potential transport of contaminated sediments could include expanding in-water construction cofferdams to match the scour limits and remove and replace contaminated soils. Another possible approach could include underwater soil removal and replacement outside of the pier cofferdams within the extent of the anticipated scour. The use of techniques to curtain off and isolate the work area could be less costly than the use of extended cofferdams. Selection of any combination of these mitigation measures would be contingent upon detailed modeling and scour analysis to determine the footprint of the scour, which would be performed after selection of the preferred alternative.

6 References

DEQ (Oregon Department of Environmental Quality)

2019. Environmental Cleanup Site Information (ECSI) Database Site Summary Full Report - Details for Site ID 1138, Portland Gas Manufacturing Site.

FHWA (Federal Highway Administration).

2011 Bridge Scour and Stream Instability Countermeasures: Experience, Selection, and Design Guidance-Third Edition Volume 1. Accessed April 8, 2020. https://www.fhwa.dot.gov/engineering/hydraulics/pubs/09111/09111.pdf

7 Other Information

In the draft *EQRB Construction Approach Technical Report*, see the following:

- Appendix A. Access Plan and Temporary Bridge Layout
- Appendix D. Cofferdam and Drilled Shaft Installation Sequence
- Appendix E. Long-span Approach Erection

Attachment B. Responses to PSET Questions

From: Mazer, Gregory
To: Holm, James A CIV USARMY CENWP (USA); Bauman, Brian S.
Subject: RE: Earthquake Ready Burnside Bridge-river sediment memo (Corps No. NWP-2018-486) (UNCLASSIFIED)
Date: Tuesday, October 20, 2020 12:49:46 PM
Attachments: Fig 8 hydraulics tech report - riverbed scour.png

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James,
Below are my responses to the questions you posed in the August 12, 2020 email. My apology for the two month delay. The construction plan has been evolving during this time and I wanted this email to reflect the most up-to-date information.

The preferred alternative will be identified upon publication of the draft EIS in the Federal Register, which is scheduled to occur on January 15, 2021. The proposal within the Joint Permit Application, which will be submitted to USACE, DSL and DEQ on December 20, 2020, will be based upon the Long-span Replacement alternative including the temporary work bridge, but excluding the temporary detour bridge. The proposal will also include replacing the pedestrian connection to the Eastbank Esplanade, which will include some additional in-water pier installation.

The Long-span Replacement alternative has the lowest level of anticipated impact upon aquatic resources. Not including the Eastbank Esplanade pedestrian connection, this alternative will install two in-water piers, which is one less in-water pier than the other build alternatives. Unlike the Retrofit alternative, the Long-span Replacement does not entail removing and replacing a section of the harbor wall. Moreover, this alternative poses the lowest risk for sediment mobilization of all the build alternatives.

In contrast to what was conveyed in the memorandum sent to you and Benny Dean on July 30, the permit application will describe two possible options for the in-water work. The first option is to conduct all the in-water work within the confines of cofferdams. The second option is to conduct the in-water work in open water with a silt/turbidity curtain installed downriver of the work areas to capture sediment released into the water column. With either option, the existing piers will be cut with a wire saw at least three feet below the river bed and the bridge structure above this point will be removed for safe disposal in an upland location. The first option would involve dredging approximately 12 to 38 feet below the mudline (depending upon existing mudline elevation) prior to installing the cofferdams. The second option would require some minor dredging around the existing piers to at least four feet below river bottom to expose the "cut line" of the wire sawing and remove the small amount of rip rap, anticipated to be distributed around the base of the existing piers.

If construction proceeds using- cofferdams, then the replacement main river piers (Piers 2 and 3) and their associated footings will be installed in approximately the same location as the existing main river piers. If construction proceeds using the wire saw extraction without the use of cofferdams, then the replacement main river piers and footings will be placed just shoreward of the existing main river piers. For this second option, the 12-foot diameter, steel shafts will be drilled inside casings within the river. Installing the shafts and footings without using traditional cofferdams will obviate the need for large excavations, seal pours, and temporary structure placed on the river bottom.

As discussed in the July 30th memo, information obtained from DEQ indicates that sediment contamination is likely present within the 4-mile long 'Downtown Reach', which encompasses the EQRB Project Area. DEQ has overseen multiple sediment investigations and five major sediment cleanup actions in the Downtown Reach. Although specific sediment data within the Project Area are limited, DEQ and EPA have concluded that concentrations of contaminants in the Downtown Reach are substantially lower than those found in sediments within the Portland Harbor Superfund Site. Sediment contamination is not fully defined in the Project Area, but could include petroleum compounds, metals, pesticides, and other chemicals.

Although the portion of the river within the project vicinity is known to be mostly depositional, the scour and deposition dynamics within the Project Area are not well defined. There is correspondingly little information about the sediment size distribution under and near the Burnside Bridge. However, recent bathymetry indicates that some scour occurs at and immediately downriver of the bridge's main river piers and at the pier supporting the East Bank Esplanade. Thus, most of sediment in the project area may be sand or finer (<2 mm diameter). Further, it is believed that some amount of rip rap is positioned at the base of the existing piers and scattered about the vicinity.

Channel bed elevations are depicted in the attached figure, which is Figure 8 from the Hydraulics Technical Report for the EQRB EIS. The right half of the figure is a depiction of bathymetry survey data collected on April 25, 2019. As evidenced by the bathymetry, scour at the Burnside Bridge is most pronounced around Pier 3 and the Eastbank Esplanade columns, which, according to the Hydraulics Technical Report, may create a flow constriction and associated eddy scour at the riverbend. However, as indicated in the Hydraulics Technical Report, the channel bed elevation appears to self-correct before reaching the Steel Bridge.

The replacement footings will likely modify the local pier scour patterns, which could expose and/or mobilize contaminated sediments as discussed in the Hazardous Materials technical report; this process would make the contaminants more biologically available. However, the Long-span Replacement alternative minimizes the risk for sediment mobilization because only two in-water piers will be constructed. As mentioned in the July 30th memo, the current hydraulic analysis indicates that of the build alternatives, the Long-span Replacement alternative would have the lowest potential to re-suspend contaminated sediments. Also discussed in the July 30th memo are mitigation measures that will minimize scour potential to the extent practicable, and thereby minimize environmental harm. These measures may be refined upon completion of the hydraulic analysis that will occur as part of the EIS.

Please let me know if you have questions or concerns.
Regards,
Greg

Greg Mazer, PWS
Senior Environmental Scientist
HDR
1050 SW 6th Avenue, Suite 1800
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hdrinc.com/follow-us

-----Original Message-----
From: Holm, James A CIV USARMY CENWP (USA) [mailto:James.A.Holm@usace.army.mil]
Sent: Tuesday, September 8, 2020 10:12 PM
To: Mazer, Gregory <Gregory.Mazer@hdrinc.com>; Bauman, Brian S. <Brian.Bauman@hdrinc.com>
Subject: RE: Earthquake Ready Burnside Bridge-river sediment memo (Corps No. NWP-2018-486) (UNCLASSIFIED)

CAUTION: [EXTERNAL] This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hi Greg and Brian,

Hope all is well and that Greg had a good field event in AK. Have you heard back from Parametric yet to tighter up those scour numbers and known sediment quality?

Thanks!
James

James A. Holm
Sediment Quality Team: Biologist & PSET Lead Waterways Maintenance, Channels and Harbors USACE - Portland District
503-808-4963 (desk), 503-758-5571 (cell) james.a.holm@usace.army.mil

-----Original Message-----
From: Holm, James A CIV USARMY CENWP (USA)
Sent: Monday, August 24, 2020 8:57 AM
To: Mazer, Gregory <Gregory.Mazer@hdrinc.com>
Cc: Bauman, Brian S. <Brian.Bauman@hdrinc.com>
Subject: RE: Earthquake Ready Burnside Bridge-river sediment memo (Corps No. NWP-2018-486) (UNCLASSIFIED)

Have a great trip and we can catch up when you get back to the office.
Thanks for the heads up,
James

James A. Holm
Sediment Quality Team: Biologist & PSET Lead Waterways Maintenance, Channels and Harbors USACE - Portland District
503-808-4963 (desk), 503-758-5571 (cell) james.a.holm@usace.army.mil

-----Original Message-----
From: Mazer, Gregory <Gregory.Mazer@hdrinc.com>
Sent: Saturday, August 22, 2020 12:45 PM
To: Holm, James A CIV USARMY CENWP (USA) <James.A.Holm@usace.army.mil>
Cc: Bauman, Brian S. <Brian.Bauman@hdrinc.com>
Subject: [Non-DoD Source] RE: Earthquake Ready Burnside Bridge-river sediment memo (Corps No. NWP-2018-486) (UNCLASSIFIED)

James,
I apologize for not getting back to you any sooner. I'm still awaiting a response from Parametrix, with whom we're collaborating for the EIS, for information about the character or dynamics of the sediment under the bridge. Tomorrow I'm heading to a remote part of Alaska for field work that will extend until September 2. I will have limited email access during this time, but will be checking. Please coordinate with Brian, and cc me on any emails. Again, sorry for the delay.
Greg

-----Original Message-----
From: Holm, James A CIV USARMY CENWP (USA) [mailto:James.A.Holm@usace.army.mil]
Sent: Thursday, August 13, 2020 8:57 PM
To: Mazer, Gregory <Gregory.Mazer@hdrinc.com>
Subject: RE: Earthquake Ready Burnside Bridge-river sediment memo (Corps No. NWP-2018-486) (UNCLASSIFIED)

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Hi Greg,

Monday after 2:00 PM
Wednesday from 9:30 AM to 12:30 PM
Thurs/Fri 9:30 AM to 5:00 PM

Thanks for humoring PSET's questions as we get up to speed on the project.
James

James A. Holm
Sediment Quality Team: Biologist & PSET Lead Waterways Maintenance, Channels and Harbors USACE - Portland District
503-808-4963 (desk), 503-758-5571 (cell) james.a.holm@usace.army.mil

-----Original Message-----
From: Mazer, Gregory <Gregory.Mazer@hdrinc.com>
Sent: Thursday, August 13, 2020 4:42 PM
To: Holm, James A CIV USARMY CENWP (USA) <James.A.Holm@usace.army.mil>; Dean, Benny A Jr CIV USARMY CENWP (USA) <Benny.A.Dean@usace.army.mil>
Cc: megan.neill@multco.us; Bauman, Brian S. <Brian.Bauman@hdrinc.com>; Jeff Heilman <JHeilman@parametrix.com>; Tomaselli, Christina <Christina.Tomaselli@hdrinc.com>; Catron, Heather <Heather.Catron@hdrinc.com>
Subject: [Non-DoD Source] RE: Earthquake Ready Burnside Bridge-river sediment memo (Corps No. NWP-2018-486) (UNCLASSIFIED)

James,
I don't have answers to all your questions just yet, but I am digging. Thus, it may be best to target next week for a conversation. Are there days and times next week that would preferable?
Greg

-----Original Message-----
From: Holm, James A CIV USARMY CENWP (USA) [mailto:James.A.Holm@usace.army.mil]
Sent: Wednesday, August 12, 2020 4:08 PM
To: Mazer, Gregory <Gregory.Mazer@hdrinc.com>; Dean, Benny A Jr CIV USARMY CENWP (USA) <Benny.A.Dean@usace.army.mil>
Cc: megan.neill@multco.us; Bauman, Brian S. <Brian.Bauman@hdrinc.com>; Jeff Heilman <JHeilman@parametrix.com>; Tomaselli, Christina <Christina.Tomaselli@hdrinc.com>; Catron, Heather <Heather.Catron@hdrinc.com>
Subject: RE: Earthquake Ready Burnside Bridge-river sediment memo (Corps No. NWP-2018-486) (UNCLASSIFIED)

CAUTION: [EXTERNAL] This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

CLASSIFICATION: UNCLASSIFIED

Hi Greg,

PSET, ODEQ, and EPA reviewed your memo today. We have a few questions to help focus our review.

Which of the design alternatives is the preferred alternative that PSET should evaluate? Work within the cofferdams are unlikely to trigger sediment testing under the SEF/CWA. But the areas of potential scour and mitigation approaches warrant further discussion to support a No Test determination from PSET.

If it is too early to identify a preferred alternative and associated scour extent, what is the timeline for determining the preferred alternative? PSET could evaluate the worst case scour at each pier but we need scour numbers (volume, area, depth). We could assume the project would just let those scour sediments mobilize during construction instead of taking an active mitigation measure to remove or isolate those sediments.

Do you have data on what existing sediments/rock are currently present in the potential scour zones? How dynamic are the zones? Do they scour and fill every year based on seasonal flows or are they static year-round. Are the last round of as built drawings on the pier informative on what sediment/rock is in the potential scour zones?

Let me know if you would like to have a brief call this week or next to discuss PSET thoughts.

Thanks,
James

James A. Holm
Sediment Quality Team: Biologist & PSET Lead Waterways Maintenance, Channels and Harbors USACE - Portland District
503-808-4963 (desk), 503-758-5571 (cell) james.a.holm@usace.army.mil

-----Original Message-----
From: Holm, James A CIV USARMY CENWP (USA)
Sent: Monday, August 03, 2020 11:21 AM
To: Mazer, Gregory <Gregory.Mazer@hdrinc.com>; Dean, Benny A Jr CIV USARMY CENWP (USA) <Benny.A.Dean@usace.army.mil>
Cc: megan.neill@multco.us; Bauman, Brian S. <Brian.Bauman@hdrinc.com>; Jeff Heilman <JHeilman@parametrix.com>; Tomaselli, Christina <Christina.Tomaselli@hdrinc.com>; Catron, Heather <Heather.Catron@hdrinc.com>

Re-Evaluation for the Earthquake Ready Burnside Bridge Draft EIS

Project:	Earthquake Ready Burnside Bridge, Multnomah County Key Number: FHWA-OR-EIS-21-01-D
Date:	October 20, 2021

Purpose and Introduction

The NEPA document being re-evaluated is FHWA-OR-EIS-21-01-D, Burnside Bridge West 2nd Avenue to East Martin Luther King, Jr., Boulevard, Portland, Oregon, Draft Environmental Impact Statement (EIS), submitted pursuant to 42 U.S.C. 4332 (2) (c) and 49 U.S.C. 303 by the U.S. Department of Transportation, Federal Highway Administration, Oregon Department of Transportation, and Multnomah County. Cooperating Agencies are the National Marine Fisheries Service, U.S. Coast Guard, and U.S. Army Corps of Engineers.

Following the publication of the Draft EIS on February 5, 2021, and further analysis of potential sources for construction funds, Multnomah County identified the need to revise the Earthquake Ready Burnside Bridge (EQRB) Project (Project) in order to reduce the construction costs and increase the likelihood that the Project could be fully funded and built. Some of the impacts from the proposed cost-reduction measures would be different than identified for the Preferred Alternative (PA) in the Draft EIS. Potential impacts to several resources would be fewer while impacts to other resources will be greater than described in the Draft EIS, as summarized below under Changes to Environmental Effects.

Original Project Description

The Draft EIS evaluated a No-Build Alternative and four build alternatives:

- Enhanced Seismic Retrofit Alternative
- Replacement Short-span Alternative
- Replacement Couch Extension Alternative
- Replacement Long-span Alternative

The Replacement Long-span Alternative was identified in the Draft EIS as the PA. All of the replacement alternatives would remove the existing bridge and replace it with a new bridge. The Replacement Long-span was the only alternative that would use long spans in the west approach and the east approach in order to avoid or minimize placing piers within the geological hazard zones along both banks of the river. These approach spans would be supported by above-deck structure (such as a tied-arch, cable-stayed or through-truss structures), whereas the existing bridge, and the other build alternatives, would have shorter spans all of which would be supported with structure below the deck (for example, girder or deck-truss structures).

The new bridge would connect at the same locations and elevations as the existing bridge, and the alignment would be very similar to the existing alignment. Like the existing bridge, it would have five lanes for motor vehicles. It would differ from the existing bridge in that the new bridge would be wider over the water. This added width would accommodate wider traffic lanes, physical barriers between traffic and bicyclists/pedestrians, and wider bicyclist and pedestrian facilities.

Possible bridge types for the east approach of the Long-span Alternative include tied-arch, cable-stayed and through-truss. Possible bridge types for the west approach of the Long-span Alternative include these same bridge types as well as a girder option that would require additional columns.

Current or Changed Project Description

The refinements to the PA are described below.

- Bridge Width: The total width of the bridge over the river would be about 80 to 90 feet (rather than the 110 to 120 feet for the replacement alternatives evaluated in the Draft EIS). This would accommodate approximately 78 feet for vehicle lanes, bike lanes, and pedestrians in both directions, which is comparable to the existing bridge but narrower than the Draft EIS replacement alternatives.
    - The narrower bridge would accommodate four vehicle lanes (rather than five as evaluated in the Draft EIS). Several different lane configuration options are being evaluated:
        - Option 1 (Balanced) – Two westbound lanes (general purpose) plus two eastbound lanes (one general purpose and one bus-only lane)
        - Option 2 (Eastbound Focus) – One westbound lane (general purpose) plus three eastbound lanes (two general purpose and one bus-only)
        - Option 3 (Reversible Lane) – One westbound lane (general purpose) plus two eastbound lanes (one general purpose and one bus-only) plus a reversible lane (westbound AM peak and eastbound PM peak)
        - Option 4 (General Purpose with Bus Priority) – Two westbound general purpose lanes plus two eastbound general purpose lanes, plus bus priority access (e.g., queue bypass) at each end of the bridge.
    - The width of vehicle lanes could vary from 10 to 11 feet, depending on the designated user type for each lane and where the lane is located within the roadway cross section. In the Draft EIS, all lanes were proposed to be 11 feet wide.
    - The total clear width of the bicycle lanes and pedestrian sidewalk ranges from 14 to 15.5 feet in each direction (28 to 31 feet total), not including a physical barrier to separate them from motor vehicle traffic. Given the 25 mph design and posted speed for the proposed bridge, the City of Portland, which serves as the Roadway Authority, is exploring further options to reduce assumed 2-foot shoulder and median widths and re-allocate some of that space to the bicycle and pedestrian space. Regardless of that

outcome, the resulting bicycle and pedestrian space is more than currently exists but less than was proposed in the Draft EIS replacement alternatives (40 feet total).

  - A narrower bridge would allow narrower in-water piers than evaluated in the Draft EIS. Also, a proposed change in pier design and construction approach would reduce the overall size of the in-water piers compared to what was included in the Draft EIS.

- Other Design Refinements being evaluated:
  - West approach: a refined girder bridge type is proposed for the approach over the west channel of the river, Waterfront Park, and Naito Parkway. Compared to the cable-stayed and tied-arch options evaluated in the Draft EIS, this option would have two sets of columns in Waterfront Park compared to one set with the tied-arch or cable-stayed option and five with the existing bridge.
  - East approach: a slightly longer span length than evaluated in the Draft EIS for the east approach tied-arch option would minimize the risks and costs of placing a pier and foundation in the geologic hazard zone that extends from the river to about E 2nd Avenue. One tied-arch option would place the eastern pier of the span at the east side of 2nd Avenue, and the other option would place it on the west side of 2nd Avenue. Increasing the length of the tied-arch span would also reduce the length and depth of the subsequent girder span to the east.
- Construction Assumptions
  - The expected duration for project construction with design refinements is 4.5 to 5.5 years, same as in the Draft EIS.
  - Project construction footprint and staging locations would be the same, although the staging area in Waterfront Park would be slightly smaller on the south side of the bridge.

Changes to Regulations, Laws, or Policies – Resources Impacted by the Changes

There have been no identified changes to regulations, laws, or policies since the Draft EIS was published.

Changes to Environmental Effects – Resources Impacted by the Changes

Based on preliminary analysis of the proposed refinements, compared to the PA evaluated in the Draft EIS, there would be little or no change in impacts to the following resources:

- Land use
- Geology and soils
- Vegetation and wildlife
- Hazardous materials
- Social/neighborhoods
- Environmental justice

- Visual resources
- Navigation

Impacts to the following resources are expected to be different with the PA refinements compared to the PA as evaluated in the Draft EIS:

- Traffic, freight, and transit – Eliminating one lane for motor vehicles is expected to result in slower travel times, more congestion during peak periods, and traffic diversion to other bridges, although the extent of these impacts would depend on how the four lanes are utilized.
- Bicyclists and pedestrians – Compared to existing conditions, the proposed revisions to the PA would still result in wider facilities for bicyclists and pedestrians and an added physical barrier separating them from motor vehicles. However, these revisions would not widen the bicyclist and pedestrian facilities as much as the PA described in the Draft EIS, and thus would not provide as much capacity and comfort for users.
- Economics – The lower cost of the proposed PA revisions would result in lower direct and indirect economic benefits from construction spending. Greater congestion could have more adverse economic impacts during operation.
- Displacements and Acquisitions – The proposed PA refinements would have one less small property acquisition compared to the Draft EIS PA design.
- Water Quality – A narrower bridge would have less new impervious surface area than the PA design evaluated in the Draft EIS.
- Hydraulics – A narrower bridge would have slightly smaller in-water piers which could result in slightly less scour and slightly less impact on flood levels. Both scour and flood rise will depend on the pier profile and design, both of which are being refined as part of the proposed revisions.
- Wildlife – Potential changes to the design of the in-water piers and to construction methods could reduce overall impacts to aquatic habitat both during construction and long-term operations.
- Noise and Air – Eliminating one traffic lane is expected to increase travel times, congestion, and diversion to differing extents, depending on how the four traffic lanes are utilized. It is unlikely that there would be enough change to traffic volumes or speeds at any location to result in a meaningful difference in traffic noise at adjacent receptors. Added congestion and slower traffic speeds could increase traffic air emissions, although any change is not expected to be significant. Modeling would be required to quantify the effect on emissions.
- Historic Resources – The elimination of tied-arch, cable-stayed, and through-truss bridge types for the west approach would allow the PA to avoid adverse effects to the Skidmore/Old Town Historic District (a National Historic Landmark). Extending the length of the tied-arch option for the east approach could potentially affect the Burnside Skatepark, which is eligible for listing on the National Register of Historic Places.

- Parks and Recreation – The proposed girder bridge in this section would require one more set of columns within Waterfront Park, compared to the Draft EIS PA; this would still be less impact than the existing bridge which has five bents located in the park.
- Visual – A narrower bridge (four lanes) would have little effect on the long-range views of the bridge, compared to the five-lane alternative evaluated in the Draft EIS, but the proposed changes would have an effect on some close views. Some of these differences would be beneficial, such as providing more daylight under the bridge; others, such as added columns in the park or columns located in the East 2nd Avenue right of way, could be adverse.

Public Involvement/Agency Coordination

From spring through summer 2021, the EQRB project team informed the community and project stakeholders about the cost-saving measures under analysis and potential changes to the PA. Key activities included:

- Virtual briefings with key stakeholders, including agencies, individuals, community organizations and committees
- Community Task Force meeting (livestreamed to the public and meeting recording available on project website)
- Board of County Commissioners briefing (livestreamed to the public and meeting recording available on project website)
- Project webpage explaining the potential changes under analysis
- E-newsletter to stakeholder database

From late summer to early winter 2021, the EQRB project team will share early findings of the cost savings analysis and recommended changes to the PA and seek community feedback. This information will be shared using the following engagement tools:

- Virtual briefings with key stakeholders, including agencies, individuals, community organizations and committees
- Community Task Force meetings (livestreamed to the public and meeting recording available on project website)
- Online open house and survey (translated into six languages)
- Video
- Webinar
- Project website
- E-newsletters and news releases
- Social media
- Outreach to non-English speaking and BIPOC community groups through the Project's Community Engagement Liaisons program

In February or March 2022, the EQRB Project will publish the Supplemental Draft EIS documenting the changes and associated impacts to the PA. The document will be made available to the public for review and comment during a 45-day comment period. Public outreach and opportunities for comment will include:

- Virtual briefings with key stakeholders, including agencies, individuals, community organizations and committees
- Online open house and survey
- In-person hearing
- Project website
- E-newsletters and news releases
- Social media

Conclusion

Multnomah County has concluded that while the EQRB Draft EIS (issued February 2021) is still valid for the range of alternatives described in the Draft EIS, the potential impacts associated with the proposed refinements to the Preferred Alternative, and the potential for controversy associated with those design changes and impacts, warrant additional NEPA documentation in the form of a focused Supplemental Draft EIS. With the submission of this document, Multnomah County requests FHWA approval of this re-evaluation.

PHILLIP A DITZLER Digitally signed by PHILLIP A DITZLER
Date: 2021.10.28 12:47:32 -07'00' October 28, 2021

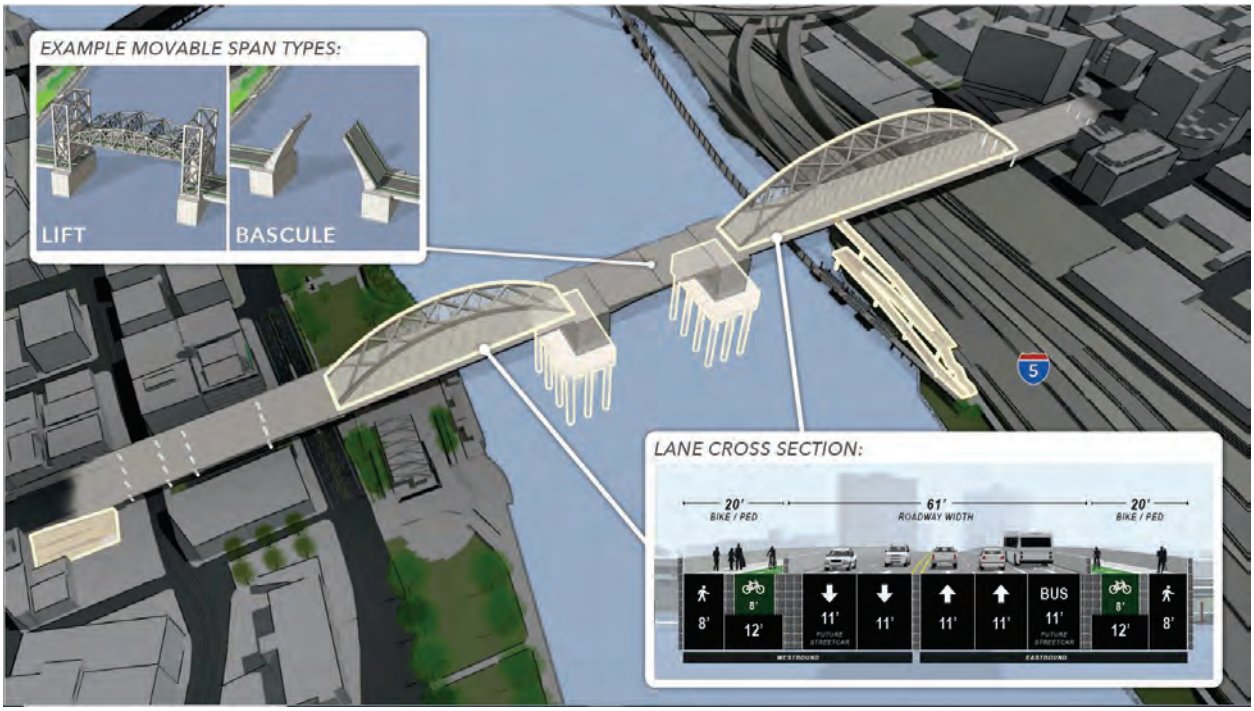
Phillip A. Ditzler
FHWA Oregon Division Administrator

Date

Figures

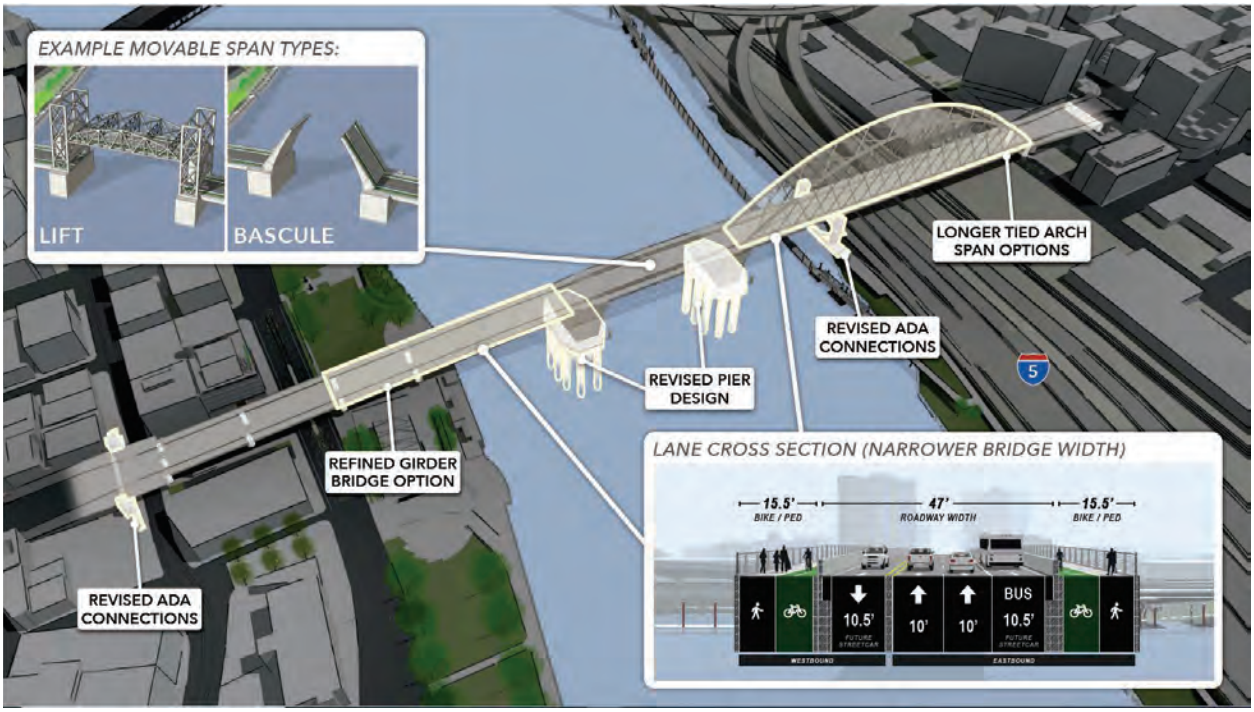
Figure 1 shows the Draft EIS Long-span Alternative highlighting those elements that would be revised with the Refined Long-span Alternative including a narrower bridge and cross section, the bridge piers, the west span bridge type, and the east span length. Figure 2 highlights the elements of the Refined Long-span Alternative that are different from the Draft EIS Long-span Alternative. Figure 3 shows the DEIS Long-span cross-section (with 5 vehicle lanes and 40 feet of the bridge width dedicated to bicycles and pedestrians). Figure 4 shows the Refined Long-span cross-section options (all of this have 4 vehicle lanes and 32 feet for the bridge width dedicated to bicycles and pedestrians).

Figure 1. Draft EIS Long-Span Alternative



Note: Highlighted project elements of the Draft EIS Long-span Alternative have been changed since the Draft EIS, as shown in Figure 2. This figure shows only the tied-arch option for the west and east approaches. The Draft EIS also considered cable-stayed, and through-truss for both approaches, and a girder bridge type for the west approach.

Figure 2. Revised Long-Span Alternative



Note: The highlighted project elements in this drawing of the Refined Long-span Alternative are different from the Draft EIS Long-span Alternative. This figure shows only the tied-arch option for the east approach; a cable-stayed option is also being considered for the east approach span.

Figure 3. Draft EIS Long-Span Alternative: Cross Section over Mid-River

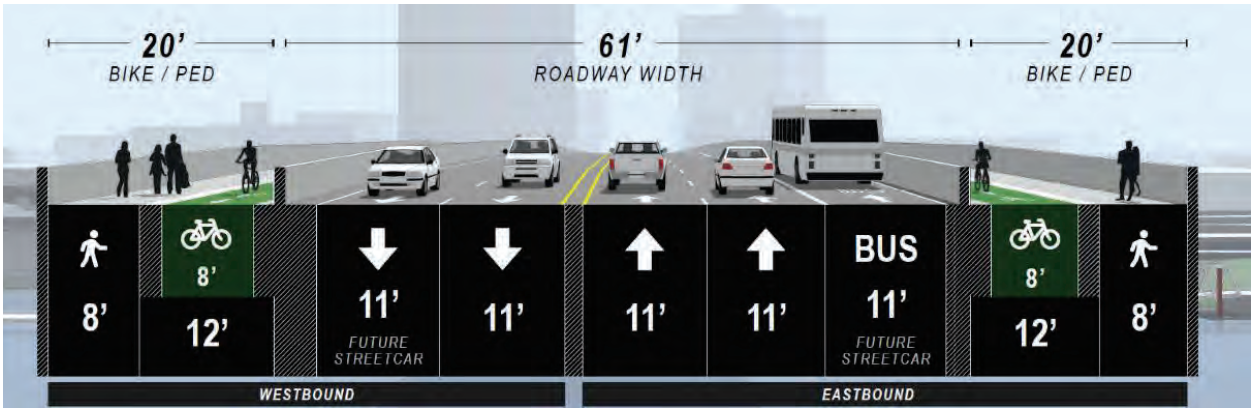
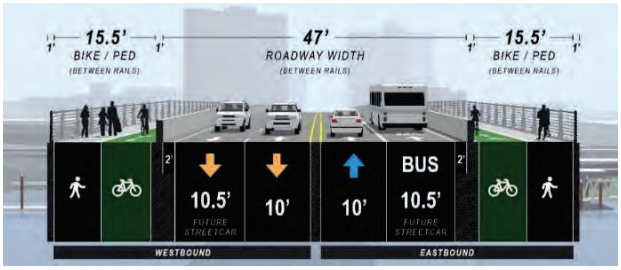
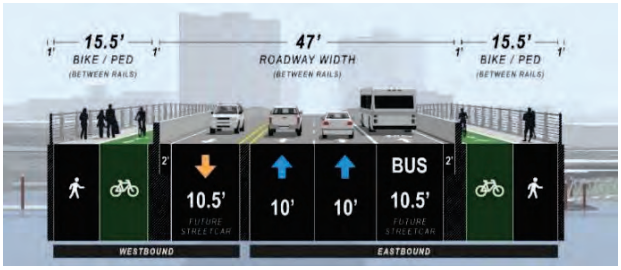


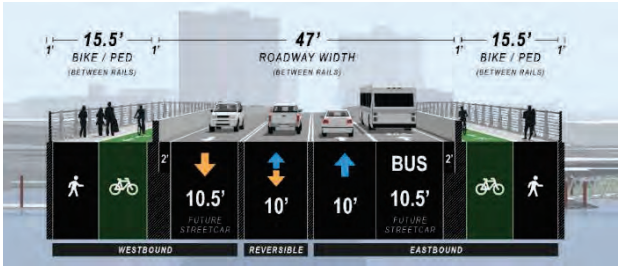
Figure 4. Refined Long-Span Alternative: Lane Configuration Options over Mid-River



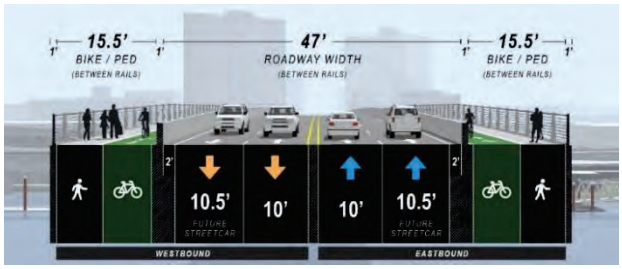
Option 1. 2 WB Lanes | 1 EB + 1 Bus Lane



Option 2. 1 WB Lane | 2 EB + 1 Bus Lane



Option 3. Reversible Lane



Option 4. 2 WB Lanes | 2 EB Lanes
(Bus queue jump)

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Oregon
Kate Brown, Governor

Department of Environmental Quality
Northwest Region Portland Office/Water Quality
700 NE Multnomah Street, Suite 600
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(503) 229-5263
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December 15, 2021

Megan Neill
Multnomah County
1403 SE Water Avenue
Portland, Oregon 97214

Dennis Reich
ODOT Region 1
123 NW Flanders Street
Portland, OR 97209

RE: 2018-486; Earthquake Ready Burnside Bridge 401 Water Quality Certification

The Department of Environmental Quality (DEQ) has reviewed the U.S. Army Corps of Engineers (USACE) Permit application #2018-486, pursuant to a request for a Clean Water Act Section 401 Water Quality Certification (WQC) received on December 18, 2020. DEQ's 401 WQC public comment opportunity was circulated with the USACE public notice from January 14, 2021 through February 13, 2021, and DEQ received no comments.

According to the application, Multnomah County and the Oregon Department of Transportation ("the Applicants") propose to impact waters in order to replace the existing Burnside Bridge. The project is located in the Willamette River, in Portland, Multnomah County, Oregon (Section 34 / Township 1N / Range 1E).

Project Description: The Applicants propose to impact approximately 4.47 acres (ac) of waters by excavating approximately 76,500 cubic yards (cy) and discharging approximately 160,200 (cy) of fill material to the Willamette River in order to remove the existing Burnside Bridge and construct a new seismically resilient long-span replacement bridge, creating an additional 1.2 ac of new impervious surface area in the Willamette Basin. Compensatory mitigation for impacts to waters is to be provided through the purchase of 4.91 credits at the Linnton Mill Mitigation Bank.

Status of Affected Waters of the State: The Willamette River from Johnson Creek to the confluence with the Columbia River is classified as water quality limited under the Federal Clean Water Act with an Environmental Protection Agency Total Maximum Daily Load (TMDL) developed for the parameters of *E. coli*, methylmercury, dioxin (2,3,7,8-TCDD); and is listed on the Section 303(d) list of impaired water bodies for the parameters of temperature, chlorophyll-*a*, iron, aldrin, dieldrin, ethylbenzene, hexachlorobenzene, DDE (4,4), DDT (4,4), polychlorinated biphenyls, chlordane, dissolved oxygen, biocriteria, cyanide, and polycyclic aromatic hydrocarbons.

The above listed parameters impair the following beneficial uses in the Willamette River: fish and aquatic life, water contact recreation, aesthetic quality, fishing, private domestic water supply, public domestic water supply, and livestock watering. Additional beneficial uses include: industrial water supply, irrigation, wildlife and hunting, boating, hydropower and commercial navigation and transportation.

Certification Decision: Based on the information provided by the Applicants, DEQ is reasonably assured that implementation of the project will be consistent with applicable provisions of Sections 301, 302, 303, 306 and 307 of the federal Clean Water Act, state water quality standards set forth in Oregon Administrative Rules Chapter 340 Division 41 and other appropriate requirements of state law, provided the following conditions are incorporated into the USACE permit and strictly adhered to by the Applicants.

401 WQC GENERAL CONDITIONS

1) **Responsible parties:** This 401 WQC applies to the Applicants. The Applicants are responsible for the work of its contractors and subcontractors, as well as any other entity that performs work related to this Water Quality Certification.
Rule: *40 CFR 121, OAR 340-048-0015*
Justification: *DEQ must be aware of responsible parties to ensure compliance.*

2) **Work Authorized:** Work authorized by this Order is limited to the work described in the Joint Permit Application signed on December 16, 2020 and additional application materials (hereafter "the permit application materials"), unless otherwise authorized by DEQ. If the project is operated in a manner that's not consistent with the project description contained in the permit application materials, the Applicants are not in compliance with this Order and may be subject to enforcement.
Rule: *OAR 340-048-0015*
Justification: *To ensure the project will comply with water quality standards, DEQ must understand all work involved in the construction and operation of the project.*

3) **Duration of Certificate:** This 401 Water Quality Certification for impacts to waters, including dredge and fill activities, is valid for five years from the date of issuance of the USACE 404 permit. A new or modified 401 WQC must be requested before any modification of the USACE 404 permit. Post construction stormwater facilities must be maintained for the life of the facility.
Rule: *40 CFR 121*
Justification: *Certification is required for any license or permit that authorizes an activity that may result in a discharge.*

4) **Modification:** Any approved modifications to this certification, including a change of ownership, will incur a Tier 1 fee of $985 at a minimum. A higher fee may be assessed for complex modifications.
Rule: *OAR 340-048-0050*
Justification: *To ensure the project will comply with water quality standards, DEQ must understand all work involved in the construction and operation of the project.*

5) **Notification:** The Applicants must notify DEQ of any change in ownership or control of this project within 30 days, and obtain DEQ review and approval before undertaking any change to the project that might affect water quality.
Rule: *OAR 340-048-0050*

Justification: *To ensure the project will comply with water quality standards, DEQ must understand all work involved in the construction and operation of the project.*

6) **401 WQC on Site:** A copy of this 401 Water Quality Certification letter must be kept on the job site and readily available for reference by the Applicants and its contractors and subcontractors, as well as by DEQ, US Army Corps of Engineers, National Marine Fisheries Service, Oregon Department of Fish and Wildlife and other state and local government inspectors.
Rule: *OAR 340-012*
Justification: *All parties must be aware of and comply with the 401 WQC, including on-site contractors.*

7) **Project Changes:** DEQ may modify or revoke this certification, in accordance with Oregon Administrative Rules 340-048-0050, if the project changes or project activities are having an adverse impact on state water quality or beneficial uses, or if the Applicants violates any of the conditions of this certification.
Rule: *OAR 340-048-0050*
Justification: *To ensure the project will comply with water quality standards, DEQ must understand all work involved in the construction and operation of the project.*

8) **Access:** The Applicants and its contractors must allow DEQ access to the project site with or without prior notice, including staging areas, and mitigation sites to monitor compliance with these certification conditions, including:

a. Access to any records, logs, and reports that must be kept under the conditions of this certification;

b. To inspect best management practices, monitoring or equipment or methods; and

c. To collect samples or monitor any discharge of pollutants.

Rule: *OAR 340-012*
Justification: *DEQ must inspect facilities for compliance with all state rules and laws.*

9) Failure of any person or entity to comply with this order may result in the issuance of civil penalties or other actions, whether administrative or judicial, to enforce its terms.
Rule: *OAR 340-012*
Justification: *If the project is not being constructed or operated as proposed, it may not be consistent with water quality requirements.*

CONSTRUCTION SPECIFIC CONDITIONS

10) **Erosion Control**: During construction, erosion control measures must be implemented to prevent soil from reaching waters of the state. The Applicants are required to develop and implement an effective erosion and sediment control plan. Refer to DEQ's Oregon Sediment and Erosion Control Manual, January, 2013 at:
https://www.oregon.gov/deq/FilterPermitsDocs/ErosionSedimentControl.pdf

A project that disturbs one acre or more may be required to obtain a National Pollutant Discharge Elimination System 1200-C construction stormwater general permit. Contact the DEQ Stormwater Program for more information at:
https://www.oregon.gov/deq/wq/wqpermits/Pages/Stormwater-Construction.aspx

In addition, the Applicants, unless otherwise authorized by DEQ in writing must:

a. Maintain an adequate supply of materials necessary to control erosion at the construction site

b. Prohibit erosion of stockpiles. Deploy compost berms, impervious materials, or other effective methods during rain or when stockpiles are not moved or reshaped for more than 48 hours.

c. Inspect erosion control measures daily and maintain erosion control measures as often as necessary to ensure the continued effectiveness of measures. Erosion control measures must remain in place until all exposed soil is stabilized;

   i. If monitoring or inspection shows that the erosion and sediment controls are ineffective, the Applicants must act immediately to make repairs, install replacements, or install additional controls as necessary.

   ii. If sediment has reached a third of the exposed height of a sediment or erosion control, the Applicants must remove the sediment to its original contour.

d. Use removable pads or mats to prevent soil compaction at all construction access points through, and staging areas in, riparian or wetland areas to prevent soil compaction, unless otherwise authorized by DEQ.

e. Flag or fence off wetlands not specifically authorized to be impacted to protect from disturbance and/or erosion.

f. Place dredged or other excavated material on upland areas with stable slopes to prevent materials from eroding back into waterways or wetlands.

g. Place clean aggregate at all construction entrances, and utilize other best management practices, including, but not limited to truck or wheel washes, when earth-moving equipment is leaving the site and traveling on paved surfaces. Vehicles are prohibited from tracking sediment off site.

h. This certification does not authorize the placement of best management practices into waters of the state unless specifically outlined in the application and authorized by DEQ.

i. Upon completion of construction activities, stormwater facilities must be inspected and adequately prepared for post-construction stormwater treatment.

j. Upon completion of construction activities, stormwater facilities must be tested to ensure they are working and adequately prepared for post-construction stormwater treatment.

Rule: *OAR 340-041-0007(8), ORS 468B.050, CWA Section 402, OAR 340-045*
Justification: *DEQ must ensure that pollution does not enter waterways.*

11) **Deleterious waste materials**: The Applicants are prohibited from placing biologically harmful materials and construction debris where they could enter waters of the state, including wetlands (wetlands are waters of the state). This includes, but is not limited to: petroleum products; chemicals; cement cured less than 24 hours; welding slag and grindings; concrete saw cutting by-products; sandblasted materials; chipped paint; tires; wire; steel posts; asphalt; and waste concrete.

The Applicants must:

a. Cure concrete, cement, or grout for at least 24 hours before any contact with flowing waters;

b. Use only clean fill, free of waste and polluted substances;

c. Employ all practicable controls to prevent discharges of spills of harmful materials to surface or groundwater;

d. Maintain at the project construction site, and deploy as necessary, an adequate supply of materials needed to contain deleterious materials during a weather event;

e. Remove all foreign materials, refuse, and waste from the project area; and

f. Employ general good housekeeping practices at all times.

Rule: *OAR 340-041-0007(8), ORS 468B.050, CWA Section 402*
Justification: *DEQ must ensure that pollution does not enter waterways.*

12) **Spill Prevention:** The Applicants must have a spill prevention and control plan. The Applicants must fuel, operate, maintain and store vehicles and equipment, and must store construction materials, in areas that will not disturb native habitat directly or result in potential discharges. In general, reasonable precautions and controls must be used to prevent any discharges of petroleum products or other harmful or toxic materials from entering the water as a result of any in-water activities. In addition, the following specific requirements apply:

a. Vehicle and motorized equipment staging, cleaning, maintenance, refueling, and fuel storage must take place in a vehicle staging area 150 feet or more from any waters of the state. DEQ may approve in writing exceptions to this distance if all practical prevention measures are employed and this distance is not possible because of any of the following site conditions:

   i. Physical constraints that make this distance not feasible (e.g., steep slopes, rock outcroppings)

   ii. Natural resource features would be degraded as a result of this setback

   iii. Equal or greater spill containment and effect avoidance is provided even if staging area is less than 150 feet away from waters of the state.

b. If staging areas are within 150 feet of any waters of the state, as allowed under subsection (a)(iii) of this condition, full containment of potential contaminants must be provided to prevent soil and water contamination, as appropriate.

c. All vehicles operated within 150 feet of any waters of the state must be inspected daily for fluid leaks before leaving the vehicle staging area. Any leaks detected in the vehicle-staging area must be repaired before the vehicle resumes operation.

d. Before operations begin and as often as necessary during operation, equipment must be steam cleaned (or undergo an approved equivalent cleaning) until all visible oil, grease, mud, and other visible contaminants are removed if the equipment will be used below the bank of a waterbody.

e. All stationary power equipment (e.g., generators, cranes, stationary drilling equipment) operated within 150 feet of any waters of the state must be covered

by an absorbent mat to prevent leaks, unless other suitable containment is provided to prevent potential spills from entering any waters of the state.

f. An adequate supply of materials (such as straw matting/bales, geotextiles, booms, diapers, and other absorbent materials) needed to contain spills must be maintained at the project construction site and deployed as necessary.

g. All equipment operated in state waters must use bio-degradable hydraulic fluid.

h. A maintenance log documenting equipment maintenance inspections and actions must be kept on-site and available upon request.

Rule: *ORS 466.645(1); OAR 340-142-0030(1)(b)(B), OAR 340-041*
Justification: *DEQ must ensure that pollution does not enter waterways and must be protective of beneficial uses, including fish.*

13) **Spill & Incident Reporting**:

a. In the event that petroleum products, chemicals, or any other deleterious materials are discharged into state waters, or onto land with a potential to enter state waters, the Applicant must report the discharge to the Oregon Emergency Response Service (OERS, 1-800-452-0311) within 24 hours. Containment and cleanup must begin immediately and be completed as soon as possible.

b. If the project operations cause a water quality problem which results in distressed or dying fish, the operator must immediately: cease operations; take appropriate corrective measures to prevent further environmental damage; collect fish specimens and water samples; and notify DEQ, Oregon Department of Fish and Wildlife and other appropriate regulatory agencies.

Rule: *ORS 466.645(1); OAR 340-142-0030(1)(b)(B), OAR 340-041*
Justification: *DEQ must ensure that pollution does not enter waterways and must be protective of beneficial uses, including fish.*

14) **Vegetation Protection and Restoration:**

a. The Applicants must protect riparian, wetland, and shoreline vegetation in the authorized project area (as defined in the permit application materials) from disturbance through one or more of the following:

i. Minimization of project and impact footprint

ii. Designation of staging areas and access points in open, upland areas

iii. Fencing and other barriers demarcating construction areas

iv. Use of alternative equipment (e.g., spider hoe or crane)

b. If authorized work results in vegetative disturbance and the disturbance has not been accounted for in planned mitigation actions, the Applicants must successfully reestablish vegetation to a degree of function equivalent or better than before the disturbance. The standard for success is 80 percent cover for native plant species. The vegetation must be reestablished by the completion of authorized work and include:

i. Restoring damaged streambanks to a natural slope, pattern, and profile suitable for establishment of permanent woody vegetation, unless precluded by pre-project conditions (e.g., a natural rock wall)

ii. Replanting or reseeding each area requiring revegetation before the end of the first planting season following construction

iii. Planting disturbed areas with native plants and trees in all cases except where the use of non-native plant materials may be essential for erosion control

iv. The use of invasive species to re-establish vegetation is prohibited

v. Herbicides, pesticides and fertilizers must be applied per manufacturer's instructions, and only if necessary for vegetation establishment. If chemical treatment is necessary, the Applicants are responsible for ensuring that pesticide application laws, including with the National Pollutant Discharge Eliminations System 2300-A general permit are met. Please review the information on the following website for more information:
https://www.oregon.gov/deq/wq/wqpermits/Pages/Pesticide.aspx

Additionally:

1. Unless otherwise approved in writing by DEQ, applying surface fertilizer within stormwater treatment facilities or within 50 feet of any stream channel is prohibited.

2. Other than spot application to cut stems, no herbicides are allowed within stormwater treatment facilites or within 150 feet of waters of the state. Mechanical, hand, or other methods may be used to control weeds and unwanted vegetation within stormwater treatment facilites or within 150 feet of waters of the state; and

3. No pesticides may be used within stormwater treatment facilities or within 150 feet of waters of the state.

vi. Install wildlife-friendly fencing as necessary to prevent access to revegetated sites by livestock or unauthorized persons

vii. Minimize soil compaction, especially in areas that are designated for replanting. If soils are compacted, decompact staging areas and work construction areas prior to replanting. Leave topsoil when possible. Chip materials from clear and grub operation and spread on soil surface, unless cleared areas contained invasive species.

Rule: *OAR 340-041, OAR 340-012, OAR 340-041-0033*
Justification: *Riparian, wetland, and shoreline vegetation help ensure excess sediment does not enter a waterway, and helps offset potential temperature impacts. DEQ must ensure that pollution does not enter waterways.*

15) **Previously Contaminated Soil and Groundwater:** If any contaminated soil or groundwater is encountered, it must be handled and disposed of in accordance with the soil and groundwater management plan for the site, as well as local, state and federal regulations. The Applicants must notify the Environmental Cleanup Section of DEQ at 800-452-4011 Ex.6258.
Rule: *OAR 340-041, OAR 340-012, OAR 340-122, OAR 340-040*
Justification: *DEQ must ensure that pollution does not enter waterways. As sediments are disturbed, pollutants could become redistributed.*

16) **Notification to DEQ:** The Applicants must provide pre-construction notification to DEQ one week before construction starts. Contact information can be found at the end of the certification.
Rule: *OAR 340-012*
Justification: *DEQ must inspect facilities for compliance with all state rules and laws.*

SPECIFIC CONDITIONS FOR IN-WATER WORK

17) **Fish Protection/ Oregon Department of Fish and Wildlife Timing:** The Applicants must perform in-water work only within the Oregon Department of Fish and Wildlife preferred time window as specified in the *Oregon Guidelines for Timing of In-Water Work to Protect Fish and Wildlife Resources* (https://www.dfw.state.or.us/lands/inwater/Oregon_Guidelines_for_Timing_of_%20InWater_Work2008.pdf) or as authorized otherwise under a Department of State Lands removal/fill permit. Exceptions to the timing window must be recommended by Oregon Department of Fish and Wildlife and/or the National Marine Fisheries Services as appropriate.
Rule: *OAR 340-041-0011*
Justification: *DEQ must be protective of all water quality standards, including beneficial uses such as fish and aquatic life.*

18) **Aquatic Life Movements:** Any activity that may disrupt the movement of aquatic life living in the water body, including those species that normally migrate through the area, is prohibited. The Applicants must provide unobstructed fish passage at all times during any authorized activity. Exceptions must be reviewed and recommended by Oregon Department of Fish Wildlife and/or the National Marine Fisheries Service as appropriate.
Rule: *OAR 340-041-0016; OAR 340-041-0028*
Justification: *DEQ must be protective of all water quality standards, including beneficial uses such as fish.*

19) **Isolation of Work Areas:** The Applicants must isolate in-water work areas from the active flowing stream during shaft installation and concrete placement.
Rule: *OAR 340-041, OAR 340-012, OAR 340-045*
Justification: *DEQ must ensure that pollution does not enter waterways.*

20) **Cessation of Work:** The Applicants must cease project operations under high-flow conditions that will result in inundation of the project area. Only efforts to avoid or minimize turbidity or other resource damage as a result of inundation of the exposed project area are allowed during high-flow conditions.
Rule: *OAR 340-041, OAR 340-012*
Justification: *DEQ must ensure that pollution does not enter waterways.*

21) **Turbidity:** The Applicants must implement best management practices to minimize turbidity during in-water work. Any activity that causes turbidity to exceed 10 percent above natural stream turbidity is prohibited except as specifically noted below:

a. **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, including while dewatering or work area isolation measures are in place. A properly calibrated turbidimeter is required.

i. **Representative Background Point:** The Applicants must take and record a turbidity measurement every two hours during in-water work at an undisturbed area 100 feet up-current from the in-water disturbance, in order to establish background turbidity levels. The background turbidity, location, date, tidal stage (if applicable) and time must be recorded immediately prior to monitoring down-current at the compliance point described below.

ii. **Compliance Point:** The Applicants must monitor every two hours, 100 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.

b. **Compliance**: The Applicants must compare turbidity monitoring results from the compliance points to the representative background levels taken during each two hour monitoring interval. Pursuant to Oregon Administrative Rules 340-041-0036, short-term exceedances are allowed as followed:

MONITORING WITH A TURBIDIMETER *EVERY 2 HOURS*	
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 0-4 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 0-4 above background.
50 NTU or more above background	Stop work immediately and inform DEQ

If an exceedance over the background level occurs, the Applicants must modify the activity and continue to monitor every two hours. **If an exceedance over the background level continues after the second monitoring interval, the activity must stop.** If, however, turbidity levels return to background at or after second monitoring level due to implementation of best management practices or natural attenuation, work may continue with appropriate monitoring as above.

If an exceedance occurs at: 50 NTU or more over background; 30 NTU over background for two hours; or 5-29 NTU over background for eight hours, the activity must stop immediately for the remainder of that 24-hour period.

c. Reporting:

i. Record all turbidity monitoring required by subsections (a) and (b) above in daily logs which must include: calibration documentation; background NTUs; compliance point NTUs; comparison of the points in NTUs; and location; date; time; and tidal stage (if applicable) for each reading.

ii. Keep records on file for the duration of the permit cycle.

iii. Prepare a narrative must be prepared discussing all exceedances with subsequent monitoring, actions taken, and the effectiveness of the actions. The Applicants must make available copies of daily logs for turbidity monitoring to regulatory agencies including DEQ, USACE, NMFS, USFWS, and ODFW upon request. An example turbidity log is attached to this certification.

If turbidity monitoring cannot be conducted due to dry conditions, the Applicants must provide photo documentation with a date and time stamp.

d. Best Management Practices to Minimize In-stream Turbidity: The Applicants must implement the following best management practices, unless accepted in writing by DEQ:

i. Sequence/Phasing of work – The Applicants must schedule work activities to minimize in-water disturbance and duration of in-water disturbances.

ii. Bucket control - All in-stream digging passes by excavation machinery and placement of fill in-stream using a bucket must be completed to minimize turbidity. All practical techniques such as employing an experienced equipment operator, not dumping partial or full buckets of material back into the wetted stream, adjusting the volume, speed, or both of the load, or using a closed-lipped environmental bucket must be implemented.

iii. The Applicants must limit the number and location of stream-crossing events. Establish temporary crossing sites as necessary at the least sensitive areas and amend these crossing sites with clean gravel or other temporary methods as appropriate, to discharge sediments to the waterbody.

iv. Machinery may not be driven into the flowing channel, unless authorized in writing by DEQ.

v. Excavated material must be placed so that it is isolated from the water's edge or wetlands, and not placed where it could re-enter waters of the state uncontrolled.

vi. Containment measures such as silt curtains, geotextile fabric, and silt fences must be in place and properly maintained in order to minimize in-stream sediment suspension and resulting turbidity.

Rule: *OAR 340-041-0036, OAR 340-041*
Justification: *DEQ must ensure that pollution does not enter waterways.*

SPECIFIC CONDITIONS FOR PILING REMOVAL

22) **Piling Removal:** Applicants must use vibratory extraction for pile removal, unless another method is authorized in writing by DEQ. Applicants must implement the following measures to reduce the incidence of sediment disturbance and contaminant mobilization:

a. Use an adequately trained equipment and crane operator:
b. Install a floating surface boom for capture and containment of debris and floatable pollutants;
c. Vibrate each pile to break the skin friction bond between pile and sediment, to avoid pulling out a large block of soil and possibly breaking off the pile in the process;
    i. Remove each pile slowly;
    ii. Do not allow extraction equipment (e.g., bucket, steel cable, vibratory hammer) to enter the water; and,
    iii. Once loose, immediately transfer the piling along the most direct route to a contained, dry storage site.
d. If vibratory extraction or pulling is not feasible due to slope stability or pile breakage, pile cutoff may be used. When pile cutting is performed. Applicants or its contractors must:
    i. Time work to occur at lowest water possible;
    ii. Use a pneumatic underwater chainsaw; and,
    iii. In areas that are tidally influenced or prone to scour, cut the pile at least three feet below the sediment surface.
e. Pile Handling and Disposal
    i. No treated wood debris may fall into waters of the state. If any treated wood debris enters waters of the state, it must be removed immediately and disposed of properly;
    ii. Applicants or its contractors must immediately place removed pilings into a contained, dry storage site;
    iii. Treated wood pile(s) may not be left in the water or stacked on the streambank; and,
    iv. Applicants or its contractors must dispose of all treated wood debris removed during a project at an upland facility in accordance with all applicable state and federal requirements.

Rule: *OAR 340-041-0036, OAR 340-041*
Justification: *DEQ must ensure that pollution does not enter waterways.*

SPECIFIC CONDITIONS FOR POST-CONSTRUCTION STORMWATER MANAGEMENT

23) **Post Construction Stormwater Management:** The Applicants must implement and comply with the terms of the approved post-construction stormwater management plan, which describes best management practices to prevent or treat pollution in stormwater

anticipated to be generated by the project, in order to comply with state water quality standards.

The City of Portland holds a DEQ MS4 Phase I permit covering municipal stormwater dischages. Review of the Stormwater Management Plan is delegated to the City of Portland. DEQ reserves the right to ensure compliance with the proposed plan.

Within 30 days of project completion, the Applicants must submit a copy of the "as-builts" or red-lined construction drawings showing all stormwater management facilities.
Rule: *ORS 468B.050, OAR 340-045, OAR 340-041*
Justification: *DEQ must ensure that pollution does not enter waterways.*

24) **Stormwater Management & System Maintenance:** The Applicants are required to implement effective operation and maintenance practices for the lifetime of the proposed facility. These include but are not limited to:

a. Monitoring facilities for signs of groundwater interception, and reconstructing the facilities as needed to prevent interception of sub-surface flow.

b. Maintenance techniques and frequency for each system component must follow appropriate recommendations in accepted manuals.

c. Long-term operation and maintenance of stormwater treatment facilities will be the responsibility of the Applicants unless and until an agreement transferring that responsibility to another entity is submitted to DEQ.

Rule: *OAR 340-041, OAR 340-012, OAR 340-045*
Justification: *DEQ must ensure that pollution does not enter waterways.*

25) **Corrective Action May Be Required:** DEQ retains the authority to require corrective action in the event the stormwater management facilities are not built or performing as described in the plan.

Rule: *OAR 340-041, OAR 340-012*
Justification: *DEQ must ensure that pollution does not enter waterways.*

If the Applicants are not satisfied with the conditions contained in this certification, a contested case hearing may be requested in accordance with Oregon Administrative Rule 340-048-0045. Such requests must be made in writing to the DEQ Office of Compliance and Enforcement at 700 NE Multnomah St, Suite 600, Portland Oregon 97232 within 20 days of the mailing of this certification.

The DEQ hereby certifies this project in accordance with the Clean Water Act and state rules, with the above conditions. If you have any questions, please contact Jeff Brittain at Jeffrey.brittain@deq.state.or.us, by phone at 503-229-5395, or at the address on this letterhead.

Sincerely,

Dec 15, 2021

Steve Mrazik
Water Quality Manager
Northwest Region

ec: Benny Dean, USACE
James Holm, USACE
Russ Klassen, DSL
Tom Loynes, NOAA
Brian Bauman, HDR

State of Oregon
DEQ Department of Environmental Quality

401 Water Quality Certification Turbidity Monitoring Report

Project Name:	USACE Project #	DSL Project #

Name of Inspector(s):	Turbidimeter Model:	Calibration Standard Type (Circle One) Formazin Solution or Gelex	Calibration Standard Expiration Date:

Samping Date:	Calibration Values	*Upstream (Background) Point Location	*Downstream (Compliance) Point Location:
	_____NTU (Standard) = _____NTU (Reading) _____NTU (Standard) = _____NTU (Reading) NTU (Standard) = NTU (Reading)	Latitude: Longitude:	Latitude: Longitude:

In-Water Work Start Time:	In-Water Work End Time:	Description of In-Water Work:

Upstream Sample		Downstream Sample		Change in Turbidity (NTU)	Observation of waterbody		NOTES (Describe any modifications mace to BMPs)
Time	Turbidity (NTU)	Time	Turbidity (NTU)		Tidal Stage	Note any plume, sheen, floatables, color	

** Include a figure with the turbidity sampling forms showing the sampling locations.*

Turbidity: The Applicanst 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:

MONITORING WITH A TURBIDIMETER *EVERY 2 HOURS*	
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 0-4 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 0-4 above background.
50 NTU or more above background	Stop work immediately and inform DEQ

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, including while dewatering or work area isolation measures are in place. A properly calibrated turbidimeter is required unless another monitoring method is proposed and authorized by DEQ.

Representative Background Point: The Applicants 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.

Compliance Point: The must monitor every two hours. A compliance location shall be established at a representative location approximately 100 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.

Compliance: The Applicants 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 shown in the monitoring table shown here.

Reporting: The Applicants must record all turbidity monitoring required by subsections (a) and (b) above in daily logs, kept on file for the duration of the permit cycle. 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. Applicants must make available copies of daily logs for turbidity monitoring to DEQ, USACE, NMFS, USFWS, and ODFW upon request.

BMPs to Minimize In-stream Turbidity: The Applicants must implement the following BMPs, unless otherwise accepted by DEQ:

i. Sequence/Phasing of Work – The Applicants must schedule work activities so as to minimize in-water disturbance and duration of in-water disturbances;
ii. Bucket control - All in-stream digging passes by excavation machinery and placement of fill in-stream using a bucket must be completed so as to minimize turbidity. All practicable techniques such as employing an experienced equipment operator, not dumping partial or full buckets of material back into the wetted stream, adjusting the volume, speed, or both of the load, or using a closed-lipped environmental bucket must be implemented;
iii. The Applicants must limit the number and location of stream-crossing events. Establish temporary crossing sites as necessary in the least sensitive areas and amend these crossing sites with clean gravel or other temporary methods as appropriate;
iv. Machinery may not be driven into the flowing channel, unless authorized by DEQ; and
v. Excavated material must be placed so that it is isolated from the water edge or wetlands, and not placed where it could re-enter waters of the state uncontrolled.

DEQ_401_WQC_EarthquakeReady_BurnsideBridge_2018_486_forSignature

Final Audit Report 2021-12-15

Created:	2021-12-15
By:	Chamille Hartman (chamille.hartman@deq.state.or.us)
Status:	Signed
Transaction ID:	CBJCHBCAABAA2wLvPowjltAc9guRbtVXZD72b8NsJfYP

"DEQ_401_WQC_EarthquakeReady_BurnsideBridge_2018_486_forSignature" History

Document created by Chamille Hartman (chamille.hartman@deq.state.or.us)
2021-12-15 - 8:23:31 PM GMT

Document emailed to Steve Mrazik (steve.mrazik@deq.state.or.us) for signature
2021-12-15 - 8:24:08 PM GMT

Email viewed by Steve Mrazik (steve.mrazik@deq.state.or.us)
2021-12-15 - 9:22:07 PM GMT

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Signature Date: 2021-12-15 - 10:50:45 PM GMT - Time Source: server

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BEFORE THE BOARD OF COUNTY COMMISSIONERS
FOR MULTNOMAH COUNTY, OREGON

RESOLUTION NO. 2022-020

Adopting the Recommended Preferred Alternative for Inclusion in the Supplemental Draft Environmental Impact Statement of the Earthquake Ready Burnside Bridge Project.

The Multnomah County Board of Commissioners Finds:

a. Multnomah County owns and maintains the Burnside Bridge, a 96-year-old structure that is nearing the end of its service life and was not designed to withstand a major earthquake.

b. In March 1996, Metro designated Burnside Street a primary "East-West emergency transportation route" thereby establishing the Burnside corridor as a regional "lifeline" route.

c. In April 2015, Multnomah County adopted the Willamette River Bridges Capital Improvement Plan, whereby making the existing Burnside Bridge seismically resilient, either through a retrofit or full replacement, was listed as the highest priority project in the 2015-2034 timeframe.

d. A seismically resilient Burnside Bridge will support the region's ability to provide rapid and reliable emergency response, rescue, and evacuation after a major earthquake, as well as enable post-earthquake economic recovery.

e. In September 2016, Multnomah County initiated a Burnside Bridge Seismic Feasibility Study whose purpose was to create a range of options for a seismically resilient Burnside Bridge that will remain fully operational and accessible for vehicles and other modes of transportation immediately following a major Cascadia Subduction Zone earthquake. The outcomes of this study were adopted by the Board on November 1, 2018.

f. In October 2018, Multnomah County convened a Policy Group made up of elected and appointed representatives of jurisdictions and agencies with an interest in the Burnside Bridge to make recommendations at project milestones during the Environmental Review Phase.

g. The Policy Group has met five times during the Environmental Review Phase to review the project progress and to formalize their recommendation for a Preferred Alternative for inclusion into the publication of the draft Environmental Impact Statement.

h. The Policy Group currently consists of:

- Co-chair, Multnomah County Chair Deborah Kafoury
- Co-chair, Multnomah County Commissioner Jessica Vega Pederson
- Steve Witter, TriMet

- Chris Warner, Portland Bureau of Transportation Director
- Rian Windsheimer, Oregon Department of Transportation (Region 1)
- Phil Ditzler, Federal Highway Administration (Oregon)
- Justin Douglas, Prosper Portland
- Councilor Mary Nolan, Metro
- Councilor Sue Piazza, City of Gresham
- Oregon State Senator Kathleen Taylor (District 21)
- Oregon State Representative Barbara Smith Warner (District 45)
- U.S. Senator Jeff Merkely's Office
- U.S. Senator Ron Wyden's Office
- U.S. Representative Earl Blumenauer's Office
- U.S. Representative Suzanne Bonamici's Office

i. In October 2018, a Community Task Force of 21 citizens was formed as part of the Environmental Review Phase. The Community Task Force has since met twenty-nine times.

j. In fall of 2020, the Community Task Force, Policy Group and Board of County Commissioners recommended a Preferred Alternative to be included in the publication of the draft Environmental Impact Statement. The recommended Preferred Alternative consists of the Long Span Alternative and the closure of the bridge to traffic during the construction phase. The alternatives not selected include the Enhanced Seismic Retrofit, the Short Span Replacement Alternative, and the Couch Extension Replacement Alternative. The installation of a temporary movable bridge during the construction phase was not selected. A Draft Environmental Impact Statement was published Feb 5, 2021 for public review and comment, documenting the benefits and impacts of the range of alternatives considered.

k. In spring of 2021, the two Board of County Commissioners who Co-Chair the project Policy Group, Chair Deborah Kafoury and Commissioner Jessica Vega Pederson, requested that the project team explore ways to bring the overall cost of the project down to better ensure a new bridge gets funded and built. Any proposed changes were to be included in the publication of a Supplemental Draft Environmental Impact Statement for public review and comment.

l. On January 24th, 2022, the Community Task Force recommended a range of cost saving measures to be applied to the Long Span Alternative, resulting in an update to the recommended Preferred Alternative. The range of cost saving measures included the selection of a conventional girder style structure type for the west approach span over Tom McCall Waterfront Park, a bascule style structure type for the movable span in the river, and the narrowing of the overall bridge width resulting in the reduction of one vehicular lane of traffic.

m. On March 3rd, 2022, the Policy Group approved the Community Task Force's recommendation for the refinements to the recommended Preferred Alternative. The Policy Group forwarded these recommendations to the Multnomah County Board of Commissioners for approval.

The Multnomah County Board of Commissioners Resolves:

1. The work of the Community Task Force is appreciated. The Board thanks them for their service to the public.

2. The work of the Policy Group is appreciated. The Board thanks them for their service to the public.

3. To include the recommended Preferred Alternative in the publication of the Supplemental Draft Environmental Impact Statement.

4. To direct staff in the Department of Community Services to work with the Federal Highway Administration to publish the Supplemental Draft Environmental Impact Statement as soon as is practicable.

ADOPTED this 17th day of March, 2022.

BOARD OF COUNTY COMMISSIONERS
FOR MULTNOMAH COUNTY, OREGON

Deborah Kafoury, Chair

REVIEWED:
JENNY M. MADKOUR, COUNTY ATTORNEY
FOR MULTNOMAH COUNTY, OREGON

By _____
Courtney Lords, Senior Assistant County Attorney

SUBMITTED BY: Jamie Waltz, Director, Department of Community Services

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