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 Consultation No.:
WCRO-2019-03422

July 29, 2020

Sean Callahan
Federal Aviation Administration
2200 S 216th Street
Des Moines, Washington 98198

William D. Abadie
Chief, Regulatory Branch
U.S. Army Corps of Engineers
P.O. Box 2946
Portland, Oregon 97208-2946

Re: Endangered Species Act Section 7(a)(2) Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Response for the Southwest Oregon Regional Airport Runway Safety Area Improvements, North Bend, Oregon

Dear Mr. Callahan and Mr. Abadie:

Thank you for your letter of October 15, 2019, requesting initiation of consultation with NOAA's National Marine Fisheries Service (NMFS) pursuant to section 7 of the Endangered Species Act of 1973 (ESA) (16 U.S.C. 1531 et seq.) for the Southwest Oregon Regional Airport runway safety area improvements. This consultation was conducted in accordance with the 2019 revised regulations that implement section 7 of the ESA (50 CFR 402, 84 FR 45016). Thank you, also, for your request for consultation pursuant to the essential fish habitat (EFH) provisions in Section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA)(16 U.S.C. 1855(b)) for this action.

In this biological opinion (opinion), we conclude that the proposed action is not likely to jeopardize the continued existence of Oregon Coast (OC) coho salmon (*Oncorhynchus kisutch*), southern distinct population segment Pacific eulachon (eulachon) (*Thaleichthys pacificus*), or southern distinct population segment North American green sturgeon (green sturgeon) (*Acipenser medirostris*). We also conclude the project will not result in the destruction or adverse modification of designated critical habitat for OC coho salmon or green sturgeon. The effects of this action would occur outside the geographic range of designated critical habitat for eulachon.

As required by section 7 of the ESA, we are providing an incidental take statement (ITS) with the opinion. The ITS describes reasonable and prudent measures we consider necessary or appropriate to minimize the impact of incidental take associated with this action.

The ITS sets forth nondiscretionary terms and conditions, including reporting requirements, and the Federal Aviation Administration (FAA) must comply with them to implement the reasonable and prudent measures. Incidental take from actions that meet these terms and conditions will be exempt from the ESA's prohibition against the take of listed species. Exceeding the specified level of take in the ITS would trigger reinitiation of this consultation.

This document also includes the results of our analysis of the action's likely effects on EFH and includes four conservation recommendations to avoid, minimize, or otherwise offset potential adverse effects on EFH. Three of these conservation recommendations are a subset of the ESA take statement's terms and conditions. Section 305(b) (4) (B) of the MSA requires Federal agencies to provide a detailed written response to us within 30 days after receiving these recommendations.

If the response is inconsistent with the EFH conservation recommendations, the FAA must explain why the recommendations will not be followed, including the scientific justification for any disagreements over the effects of the action and the recommendations. In response to increased oversight of overall EFH program effectiveness by the Office of Management and Budget, we established a quarterly reporting requirement to determine how many conservation recommendations are provided as part of each EFH consultation and how many are adopted by the action agency. Therefore, we request that in your statutory reply to the EFH portion of this consultation, you clearly identify the number of conservation recommendations accepted.

Please contact Chuck Wheeler, fisheries biologist in the Oregon Coast Branch, at 541.957.3379 if you have any questions concerning this section 7 consultation, or if you require additional information.

Sincerely,

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

cc: Tyler Krug, Corps of Engineers

Endangered Species Act (ESA) Section 7(a)(2) Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Response for the

Southwest Oregon Regional Airport Runway Safety Area Improvements

NMFS Consultation Number: WCRO-2019-03422

Action Agencies: Federal Aviation Administration
U.S. Army Corps of Engineers

Affected Species and NMFS' Determinations:

ESA-Listed Species	Status	Is Action Likely to Adversely Affect Species?	Is Action Likely To Jeopardize the Species?	Is Action Likely to Adversely Affect Critical Habitat?	Is Action Likely To Destroy or Adversely Modify Critical Habitat?
Oregon Coast coho salmon	Threatened	Yes	No	Yes	No
Southern distinct population segment North American green sturgeon	Threatened	Yes	No	Yes	No
Southern distinct population segment Pacific eulachon	Threatened	Yes	No	No	No

Fishery Management Plan That Identifies EFH in the Project Area	Does Action Have an Adverse Effect on EFH?	Are EFH Conservation Recommendations Provided?
Pacific Coast Salmon	Yes	Yes
Pacific Coast Groundfish	Yes	Yes
Coastal Pelagic Species	Yes	Yes

Consultation Conducted By: National Marine Fisheries Service
West Coast Region

Issued By:

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

Date: July 29, 2020

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1. INTRODUCTION

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

1.1 Background

The National Marine Fisheries Service (NMFS) prepared the biological opinion (opinion) and incidental take statement (ITS) portions of this document in accordance with section 7(b) of the Endangered Species Act (ESA) of 1973 (16 USC 1531 et seq.), and implementing regulations at 50 CFR 402, as amended. We also completed an essential fish habitat (EFH) consultation on the proposed action, in accordance with section 305(b)(2) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) (16 U.S.C. 1801 et seq.) and implementing regulations at 50 CFR 600.

We completed pre-dissemination review of this document using standards for utility, integrity, and objectivity in compliance with applicable guidelines issued under the Data Quality Act (DQA) (section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001, Public Law 106-554). The document will be available within two weeks at the NOAA Library Institutional Repository [https://repository.library.noaa.gov/welcome].

1.2 Consultation History

On October 16, 2019, we received a biological assessment (BA) from the Federal Aviation Administration (FAA) along with a letter requesting formal consultation on the potential effects of the runway safety area improvement projects at the Southwest Oregon Regional Airport.

In a December 11, 2019, email from Chuck Wheeler (NMFS) to you, we asked for additional information pertaining to mitigation and stormwater management plans. We received adequate information about mitigation in an email on January 30, 2020. We received adequate information about stormwater management in an email on April 13, 2020, and acknowledged sufficient information to initiate formal consultation on that day. The Corps of Engineers (Corps) will issue a permit (NWP-2017-337) for this work under their authorities and requested to be part of this consultation on April 8, 2020.

The FAA determined the action may affect and is likely to adversely affect Oregon Coast (OC) coho salmon (*Oncorhynchus kisutch*), southern distinct population segment (DPS) North American green sturgeon (*Acipenser medirostris*) (hereafter referred to as ‘green sturgeon’), and designated critical habitat for these species. The FAA determined the action may affect, but is not likely to adversely affect southern DPS Pacific eulachon (*Thaleichthys pacificus*) (hereafter referred to as ‘eulachon’).

1.3 Proposed Federal Action

Under the ESA, “action” means all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by Federal agencies (50 CFR 402.02). Under the MSA, the

Federal action means any action authorized, funded, or undertaken, or proposed to be authorized, funded, or undertaken by a Federal Agency (50 CFR 600.910). The FAA is proposing to fund the Southwest Oregon Regional Airport (Airport) to complete five improvement projects. The Corps of Engineers will issue a permit (NWP-2017-337) for this work under their authorities. The five projects are:

- Installation of a bulkhead at the northeast end of Runway 4/22 to address runway safety area compliance.
- Reconstruction of the main apron pavement and relocation of the taxiway connectors.
- Relocation and reconstruction of the Aircraft Rescue and Firefighting (ARFF) facility according to FAA standards.
- Improvements to the approach lighting system with runway alignment indicator lights on catwalk.
- Relocation of the glide slope tower to 150 feet south of the Runway 4/22 centerline.

The only in-water construction work is fill for installation of the bulkhead. The Airport will fill 0.07 acres of Coos Bay to construct the bulkhead in compliance with FAA runway safety requirements. All in-water work will occur between October 1 and February 15 in compliance with the Oregon Department of Fish and Wildlife (ODFW) preferred in-water work window for Coos Bay. In-water work will occur on outgoing tides, reducing the potential for sedimentation on eelgrass beds upstream in Pony Slough. Prior to excavation, the Airport will construct a cofferdam to isolate the work area. The Airport will use an excavator and/or hydraulic suction dredge operated from a floating barge to excavate substrate in preparation for bulkhead construction. The Airport will ensure daily testing of all equipment for fluid leaks, and repair of any leaks before operation resumes. The Airport will ensure diapering of all stationary power equipment operated within 150 feet of Coos Bay to prevent leaks.

The Airport will mitigate for filling 0.07 acres of Coos Bay with two actions. The first is removing an abandoned wooden boat ramp (approximately 800 square feet) and approximately 60 creosote-treated piles. These activities will enhance approximately 0.09 acres of bay. The second action will remove approximately 40 creosote-treated piles from an abandoned pier. This activity will enhance approximately 0.08 acres of bay.

The new ARFF site currently has 0.93 acres of impervious surfaces. After construction, the site will have 0.84 acres of impervious surfaces. As part of the construction activity, the Airport will provide stormwater treatment. The stormwater treatment plan consists of treating 50% of the 2-year, 24-hour storm for runoff from 0.69 acres of impervious surfaces. Treatment consists of biofiltration facilities designed in accordance with the Washington State Department of Transportation, Aviation Stormwater Design Manual: Managing Wildlife Hazards Near Airports (WSDOT 2008). Due to site constraints, 0.15 acres of new impervious surfaces are not treatable. As an offset for these untreated areas, the Airport will remove 0.1 acres of impervious surface at the old ARFF site and the 0.09 acres of impervious surface at the new site. This results in a net reduction of 0.19 acres of impervious surfaces. Furthermore, the Airport will treat 0.05 acres of impervious surfaces unrelated to the ARFF site.

We considered whether or not the proposed action would cause any other activities and determined that it will not.

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

The ESA establishes a national program for conserving threatened and endangered species of fish, wildlife, plants, and the habitat upon which they depend. As required by section 7(a)(2) of the ESA, each Federal agency must ensure that its actions are not likely to jeopardize the continued existence of endangered or threatened species, or adversely modify or destroy their designated critical habitat. Per the requirements of the ESA, Federal action agencies consult with NMFS and section 7(b)(3) requires that, at the conclusion of consultation, NMFS provide an opinion stating how the agency's actions would affect listed species and their critical habitats. If incidental take is reasonably certain to occur, section 7(b)(4) requires NMFS to provide an ITS that specifies the impact of any incidental taking and includes non-discretionary reasonable and prudent measures (RPMs) and terms and conditions to minimize such impacts.

The FAA determined the action may affect, but is not likely to adversely affect eulachon. We do not concur with this determination and included them in this biological opinion. The effects of this action would occur outside the geographic range of designated critical habitat for eulachon.

2.1 Analytical Approach

This biological opinion includes both a jeopardy analysis and an adverse modification analysis. The jeopardy analysis relies upon the regulatory definition of "jeopardize the continued existence of" a listed species, which is "to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species" (50 CFR402.02). Therefore, the jeopardy analysis considers both survival and recovery of the species.

This biological opinion relies on the definition of "destruction or adverse modification," which "means a direct or indirect alteration that appreciably diminishes the value of critical habitat as a whole for the conservation of a listed species" (50 CFR 402.02).

The designations of critical habitat for OC coho salmon and green sturgeon use the term primary constituent element (PCE) or essential features. The 2016 critical habitat regulations (50 CFR 424.12) replaced this term with physical or biological features (PBFs). The shift in terminology does not change the approach used in conducting a ''destruction or adverse modification'' analysis, which is the same regardless of whether the original designation identified PCEs, PBFs, or essential features. In this biological opinion, we use the term PBF to mean PCE or essential feature, as appropriate for the specific critical habitat.

The 2019 regulations define effects of the action using the term "consequences" (50 CFR 402.02). As explained in the preamble to the regulations (84 FR 44977), that definition does not change the scope of our analysis and in this opinion we use the terms "effects" and "consequences" interchangeably.

We use the following approach to determine whether a proposed action is likely to jeopardize listed species or destroy or adversely modify critical habitat:

- Evaluate the rangewide status of the species and critical habitat expected to be adversely affected by the proposed action.
- Evaluate the environmental baseline of the species and critical habitat.
- Evaluate the effects of the proposed action on species and their habitat using an exposure-response approach.
- Evaluate cumulative effects.
- In the integration and synthesis, add the effects of the action and cumulative effects to the environmental baseline, and, in light of the status of the species and critical habitat, analyze whether the proposed action is likely to: 1) directly or indirectly reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species, or 2) directly or indirectly result in an alteration that appreciably diminishes the value of critical habitat as a whole for the conservation of a listed species.
- If necessary, suggest a reasonable and prudent alternative to the proposed action.

2.2 Rangewide Status of the Species and Critical Habitat

This opinion examines the status of each species that would be adversely affected by the proposed action. The status is determined by the level of extinction risk that the listed species face, based on parameters considered in documents such as recovery plans, status reviews, and listing decisions. This informs the description of the species' likelihood of both survival and recovery. The species status section also helps to inform the description of the species' "reproduction, numbers, or distribution" as described in 50 CFR 402.02. The opinion also examines the condition of critical habitat throughout the designated area, evaluates the conservation value of the various watersheds and coastal and marine environments that make up the designated area, and discusses the function of the essential PBFs that help to form that conservation value.

One factor affecting the status of ESA-listed species considered in this opinion, and aquatic habitat at large, is climate change. Climate change is likely to play an increasingly important role in determining the abundance and distribution of ESA-listed species, and the conservation value of designated critical habitats, in the Pacific Northwest. These changes will not be spatially homogeneous across the Pacific Northwest. The largest hydrologic responses are expected to occur in basins with significant snow accumulation, where warming decreases snow pack, increases winter flows, and advances the timing of spring melt (Mote *et al*. 2014, Mote *et al.* 2016). Rain-dominated watersheds and those with significant contributions from groundwater may be less sensitive to predicted changes in climate (Tague *et al*. 2013, Mote *et al*. 2014).

During the last century, average regional air temperatures in the Pacific Northwest increased by 1-1.4°F as an annual average, and up to 2°F in some seasons (based on average linear increase per decade; Abatzoglou *et al*. 2014, Kunkel *et al*. 2013). Warming is likely to continue during the next century as average temperatures are projected to increase another 3-10°F, with the largest increases predicted to occur in the summer (Mote *et al*. 2014). Decreases in summer precipitation of as much as 30% by the end of the century are consistently predicted across climate models (Mote *et al.* 2014). Precipitation is more likely to occur during October through March, less during summer months, and more winter precipitation will be rain than snow (ISAB 2007, Mote *et al*. 2013, Mote *et al*. 2014). Earlier snowmelt will cause lower stream flows in late spring, summer, and fall, and water temperatures will be warmer (ISAB 2007, Mote *et al.* 2014). Models consistently predict increases in the frequency of severe winter precipitation events (i.e., 20-year and 50-year events), in the western United States (Dominguez *et al*. 2012). The largest increases in winter flood frequency and magnitude are predicted in mixed rain-snow watersheds (Mote *et al*. 2014).

Overall, about one-third of the current cold-water salmonid habitat in the Pacific Northwest is likely to exceed key water temperature thresholds by the end of this century (Mantua *et al.* 2009). Higher temperatures will reduce the quality of available salmonid habitat for most freshwater life stages (ISAB 2007). Reduced flows will make it more difficult for migrating fish to pass physical and thermal obstructions, limiting their access to available habitat (Mantua *et al*. 2010, Isaak *et al*. 2012). Temperature increases shift timing of key life cycle events for salmonids and species forming the base of their aquatic foodwebs (Crozier *et al*. 2011, Tillmann and Siemann 2011, Winder and Schindler 2004). Higher stream temperatures will also cause decreases in dissolved oxygen and may also cause earlier onset of stratification and reduced mixing between layers in lakes and reservoirs, which can also result in reduced oxygen (Meyer *et al*. 1999, Winder and Schindler 2004, Raymondi *et al*. 2013). Higher temperatures are likely to cause several species to become more susceptible to parasites, disease, and higher predation rates (Crozier *et al*. 2008, Wainwright and Weitkamp 2013, Raymondi *et al*. 2013).

As more basins become rain-dominated and prone to more severe winter storms, higher winter stream flows may increase the risk that winter or spring floods in sensitive watersheds will damage spawning redds and wash away incubating eggs (Goode *et al*. 2013). Earlier peak stream flows will also alter migration timing for salmon smolts, and may flush some young salmon and steelhead from rivers to estuaries before they are physically mature, increasing stress and reducing smolt survival (McMahon and Hartman 1989, Lawson *et al*. 2004).

In addition to changes in freshwater conditions, predicted changes for coastal waters in the Pacific Northwest as a result of climate change include increasing surface water temperature, increasing but highly variable acidity, and increasing storm frequency and magnitude (Mote *et al*. 2014). Elevated ocean temperatures already documented for the Pacific Northwest are highly likely to continue during the next century, with sea surface temperature projected to increase by 1.0-3.7°C by the end of the century (IPCC 2014). Habitat loss, shifts in species' ranges and abundances, and altered marine food webs could have substantial consequences to anadromous, coastal, and marine species in the Pacific Northwest (Tillmann and Siemann 2011, Reeder *et al*. 2013).

Moreover, as atmospheric carbon emissions increase, increasing levels of carbon are absorbed by the oceans, changing the pH of the water. Acidification also impacts sensitive estuary habitats, where organic matter and nutrient inputs further reduce pH and produce conditions more corrosive than those in offshore waters (Feely *et al*. 2012, Sunda and Cai 2012).

Global sea levels are expected to continue rising throughout this century, reaching likely predicted increases of 10-32 inches by 2081-2100 (IPCC 2014). These changes will likely result in increased erosion and more frequent and severe coastal flooding, and shifts in the composition of nearshore habitats (Tillmann and Siemann 2011, Reeder *et al*. 2013). Estuarine-dependent salmonids such as chum and Chinook salmon are predicted to be impacted by significant reductions in rearing habitat in some Pacific Northwest coastal areas (Glick *et al*. 2007).

Historically, warm periods in the coastal Pacific Ocean have coincided with relatively low abundances of salmon and steelhead, while cooler ocean periods have coincided with relatively high abundances, and therefore these species are predicted to fare poorly in warming ocean conditions (Scheuerell and Williams 2005, Zabel *et al*. 2006). This is supported by the recent observation that anomalously warm sea surface temperatures off the coast of Washington from 2013 to 2016 resulted in poor coho and Chinook salmon body condition for juveniles caught in those waters (NWFSC 2015). Changes to estuarine and coastal conditions, as well as the timing of seasonal shifts in these habitats, have the potential to impact a wide range of listed aquatic species (Tillmann and Siemann 2011, Reeder *et al*. 2013).

The adaptive ability of these threatened and endangered species is depressed due to reductions in population size, habitat quantity and diversity, and loss of behavioral and genetic variation. Without these natural sources of resilience, systematic changes in local and regional climatic conditions due to anthropogenic global climate change will likely reduce long-term viability and sustainability of populations in many of these salmon evolutionarily significant units (ESUs) and steelhead DPSs (NWFSC 2015). New stressors generated by climate change, or existing stressors with effects that have been amplified by climate change, may also have synergistic impacts on species and ecosystems (Doney *et al*. 2012). These conditions will possibly intensify the climate change stressors inhibiting recovery of ESA-listed species in the future.

2.2.1 Status of the Species

Table 1 provides a summary of listing and recovery plan information, status, and limiting factors for the species addressed in this opinion. More information can be found in recovery plans and status reviews for these species. These documents are available on the NMFS West Coast Region website (http://www.westcoast.fisheries.noaa.gov/) and cited in the References Section of this opinion.

Table 1. Listing classification and date, recovery plan reference, most recent status review, status summary, and limiting factors for each species considered in this opinion.

Species	Listing Classification and Date	Recovery Plan Reference	Most Recent Status Review	Status Summary	Limiting Factors
Oregon Coast (OC) coho salmon	Threatened 6/20/11; reaffirmed 4/14/14	NMFS 2016	NWFSC 2015	This ESU comprises 56 populations including 21 independent and 35 dependent populations. The last status review indicated a moderate risk of extinction. Significant improvements in hatchery and harvest practices have been made for this ESU. Most recently, spatial structure conditions have improved in terms of spawner and juvenile distribution in watersheds; none of the geographic area or strata within the ESU appear to have considerably lower abundance or productivity. The ability of the ESU to survive another prolonged period of poor marine survival remains in question.	• Reduced amount and complexity of habitat including connected floodplain habitat • Degraded water quality • Blocked/impaired fish passage • Inadequate long-term habitat protection • Changes in ocean conditions
Southern DPS green sturgeon (green sturgeon)	Threatened 4/7/06	NMFS 2018	NMFS 2015	The Sacramento River contains the only known green sturgeon spawning population in this DPS. The current estimate of spawning adult abundance is between 824-1,872 individuals. Telemetry data and genetic analyses suggest green sturgeon generally occur from Graves Harbor, Alaska to Monterey Bay, California and, within this range, most frequently occur in coastal waters of Washington, Oregon, and Vancouver Island and near San Francisco and Monterey bays. Within the nearshore marine environment, tagging and fisheries data indicate that green sturgeon prefer marine waters of less than a depth of 110 meters.	• Reduction of its spawning area to a single known population • Lack of water quantity • Poor water quality • Poaching

Species	Listing Classification and Date	Recovery Plan Reference	Most Recent Status Review	Status Summary	Limiting Factors
Southern DPS Pacific eulachon (eulachon)	Threatened 3/18/10	NMFS 2017	Gustafson *et al*. 2016	The Southern DPS of eulachon includes all naturally-spawned populations that occur in rivers south of the Nass River in British Columbia to the Mad River in California. Sub populations for this species include the Fraser River, Columbia River, British Columbia and the Klamath River. In the early 1990s, there was an abrupt decline in the abundance of eulachon returning to the Columbia River. Despite a brief period of improved returns in 2001-2003, the returns and associated commercial landings eventually declined to the low levels observed in the mid-1990s. Although eulachon abundance in monitored rivers has generally improved, especially in the 2013-2015 return years, recent poor ocean conditions and the likelihood that these conditions will persist into the near future suggest that population declines may be widespread in the upcoming return years.	• Changes in ocean conditions due to climate change, particularly in the southern portion of the species' range where ocean warming trends may be the most pronounced and may alter prey, spawning, and rearing success. • Climate-induced change to freshwater habitats • Bycatch of eulachon in commercial fisheries • Adverse effects related to dams and water diversions • Water quality, • Shoreline construction • Over harvest • Predation

2.2.2 Status of the Critical Habitat

This section describes the status of designated critical habitats affected by the proposed action by examining the condition and trends of the essential PBFs of that habitat throughout the designated areas. These features are essential to the conservation of the ESA-listed species because they support one or more of the species' life stages (e.g., sites with conditions that support spawning, rearing, migration and foraging). For several of the species covered in this opinion, we have not designated critical habitat or it is designated, but outside of the action area. The BA included detailed analysis of the status of critical habitat. We incorporate that discussion by reference here, also.

A summary of the status of critical habitats considered in this opinion is provided in Table 2, below.

Table 2. Critical habitat, designation date, federal register citation, and status summary for critical habitat considered in this opinion.

Species	Designation Date and Federal Register Citation	Critical Habitat Status Summary
Oregon Coast (OC) coho salmon	2/11/08 73 FR 7816	Critical habitat encompasses 13 subbasins in Oregon. The long-term decline in OC coho salmon productivity reflects deteriorating conditions in freshwater habitat as well as extensive loss of access to habitats in estuaries and tidal freshwater. Many of the habitat changes resulting from land use practices over the last 150 years that contributed to the ESA-listing of OC coho salmon continue to hinder recovery of the populations; changes in the watersheds due to land use practices have weakened natural watershed processes and functions, including loss of connectivity to historical floodplains, wetlands and side channels; reduced riparian area functions (stream temperature regulation, wood recruitment, sediment and nutrient retention); and altered flow and sediment regimes (NMFS 2016). Several historical and ongoing land uses have reduced stream capacity and complexity in Oregon coastal streams and lakes through disturbance, road building, splash damming, stream cleaning, and other activities. Beaver removal, combined with loss of large wood in streams, has also led to degraded stream habitat conditions for coho salmon (Stout et al. 2012).
Southern DPS of green sturgeon (hereafter green sturgeon)	10/09/09 74 FR 52300	Critical habitat has been designated in coastal U.S. marine waters within 60 fathoms depth from Monterey Bay, California (including Monterey Bay), north to Cape Flattery, Washington, including the Strait of Juan de Fuca, Washington, to its United States boundary; the Sacramento River, lower Feather River, and lower Yuba River in California; the Sacramento-San Joaquin Delta and Suisun, San Pablo, and San Francisco bays in California; tidally influenced areas of the Columbia River estuary from the mouth upstream to river mile 46; and certain coastal bays and estuaries in California (Humboldt Bay), Oregon (Coos Bay, Winchester Bay, Yaquina Bay, and Nehalem Bay), and Washington (Willapa Bay and Grays Harbor), including, but not limited to, areas upstream to the head of tide in various streams that drain into the bays, as listed in Table 1 in USDC (2009). The CHRT identified several activities that threaten the PBFs in coastal bays and estuaries and necessitate the need for special management considerations or protection. The application of pesticides is likely to adversely affect prey resources and water quality within the bays and estuaries, as well as the growth and reproductive health of green sturgeon through bioaccumulation. Other activities of concern include those that disturb bottom substrates, adversely affect prey resources, or degrade water quality through re-suspension of contaminated sediments. Of particular concern are activities that affect prey resources. Prey resources are affected by: commercial shipping and activities generating point source pollution and non-point source pollution that discharge contaminants and result in bioaccumulation of contaminants in green sturgeon; disposal of dredged materials that bury prey resources; and bottom trawl fisheries that disturb the bottom (but result in beneficial or adverse effects on prey resources for green sturgeon).

2.3 Action Area

"Action area" means all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 CFR 402.02). For this action, the action area is defined as the footprints of all areas involved in constructing the improvements. The action area also includes Coos Bay beginning at the confluence with the Pacific Ocean upstream to river mile 9. Because of tidal ebb and flow, this 9-mile reach of Coos Bay may be affected by some level of contaminants from project-related stormwater. River mile 9 is the transition point between the lower bay subsystem and upper bay subsystem (ODFW 1979). The lower bay subsystem is a confined channel with high velocities likely to carry contaminants far distances. The upper bay subsystem is an unconfined channel approximately 3 times wider than the lower. Velocities during flood tides within the upper bay subsystem are significantly lower and less likely to transport contaminants than those in the lower subsystem. Because of the lower flood velocities in the upper bay subsystem and distance from the outfall, contaminants from project-related stormwater are not reasonably certain to distribute above river mile 9. The action area occurs in sixth-field hydrologic unit code (HUC) watershed #171003040306.

2.4 Environmental Baseline

The "environmental baseline" refers to the condition of the listed species or its designated critical habitat in the action area, without the consequences to the listed species or designated critical habitat caused by the proposed action. The environmental baseline includes the past and present impacts of all Federal, State, or private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action area that have already undergone formal or early section 7 consultations, and the impact of State or private actions which are contemporaneous with the consultation in process. The consequences to listed species or designated critical habitat from ongoing agency activities or existing agency facilities that are not within the agency's discretion to modify are part of the environmental baseline (50 CFR 402.02).

The Coos Bay estuary, contains habitats for the Coos population of OC coho salmon, eulachon, and green sturgeon. Over the last 10 years (2009-2018), the average annual adult return of OC coho salmon is 13,845 to the Coos population (Sounhein *et al*. 2019). Eulachon returning to Coos Bay tributaries are likely part of the Columbia River subpopulation, which has a 10-year (2009-2018) average annual adult return of approximately 57 million (Langness *et al*. 2018). The total population of green sturgeon is estimated at 17,548 individuals (Mora *et al*. 2017).

The estuary is classified as a drowned river mouth type estuary, where winter flows discharge high volumes of sediment through the estuary. In summer, when discharge is lower, seawater inflow dominates the estuary. ODFW researchers have divided the estuary into subsystems: marine (mouth to river mile 2.5), lower bay (river mile 2.5 to river mile 9), upper bay (river mile 9 to river mile 17), riverine and slough. These categories were based on sediments, habitat types and geographic locations.

The airport is within the lower bay subsystem. Berg *et al.* (2013) described the lower bay subsystem as:

> "The lower bay subsystem experiences substantial oceanic influence, but is not strongly affected by wave action. Habitat has considerable bearing on the type of fish present, and generally this area is relatively protected from turbulence. Marsh and eelgrass habitat are more common in this subsystem and these vegetated areas appear to exhibit greater species diversity and are preferred by aquatic species. Many species are also found in great numbers over sandy substrates. Most fish species of Coos Bay use the flats of the lower bay at some time during the year. Sediments of the lower bay are predominately sand. Subtidal habitats include unconsolidated bottom substrates of the dredged ship channel and adjacent areas and aquatic beds in shallower areas."

Wetland functions within the estuary have been affected by dikes, tide gates, roads and railroads, ditches, and dams that restrict tidal flows and/or have changed tidal flow patterns. Agricultural land uses have contributed to erosion of channels and, along with channel armoring, have affected vegetation diversity in wetlands, channel shading, and salmonid habitat function; tidal wetlands have also been affected by excavations and disposal of dredged materials. Extensive filling and diking of Coos Bay and its sloughs, estuaries, and tributaries have changed the form and function of the estuary. Approximately 90% of the salt marshes of Coos Bay have been diked or filled to accommodate industry, residential areas, and agriculture and for dredged material disposal sites (Hoffnagle and Olson 1974).

Dredging of the navigation channel has deepened channels and thereby changed circulation, physical processes, and bathymetry in the systems. In 2017, NMFS consulted with the Corps and found their proposed maintenance dredging of the Federal Navigation Channel would not jeopardize any species or result in adverse modification of any critical habitats (NMFS No. WCR-2016-5055). The Corps removes up to 2,350,000 cubic yards of sediment from Coos Bay annually. The Corps may place some of this material within the bay, particularly when the entrance channel bar is impassable, but the vast majority of the material is taken offshore. Intense development in and around the estuary has impacted the shoreline and intertidal zone by removing vegetation and habitats.

2.5 Effects of the Action

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

2.5.1 Effects on Designated Critical Habitat

The proposed construction will occur within and adjacent to Coos Bay. The proposed action will affect the lower portion of the Coos Bay fifth-field watershed (HUC# 1710030403), which is designated OC coho salmon and green sturgeon critical habitat. The PBFs essential for OC coho salmon present in the action area are forage, free of artificial obstruction, natural cover, salinity, water quality, and water quantity. The PBFs for green sturgeon present in the action area are food resources, migratory corridor, sediment quality, water flow, water depth, and water quality.

Potential habitat effects from the proposed action are reasonably certain to include: (1) Temporary and localized reductions in water quality from construction-related suspended sediment; (2) permanent, localized reductions in natural cover and forage/food resources from bulkhead construction; (3) permanent, localized improvements in natural cover and forage/food resources from mitigation actions; and (4) episodic and permanent effects on water quality from pollutants in stormwater runoff. These effects are described in greater detail below.

Construction-related suspended sediment (water quality PBFs)

The Airport will construct a cofferdam to isolate the area needed for bulkhead installation. The substrate in the cofferdam footprint is mostly fines, which are susceptible to becoming suspended in the water column. Construction and removal of the cofferdam will cause short-term increases of suspended sediment in Coos Bay (two periods up to eight hours each). The suspended sediment plume is likely to extend up to 250 feet from shore and 1,000 feet from the cofferdam area. Because the Airport will time this work with outgoing tides, suspended sediment will only affect areas west of the cofferdam. Therefore, construction-related suspended sediment will have a localized, temporary negative effect on the water quality PBFs.

Habitat displacement from bulkhead installation (natural cover and forage/food resources PBFs)

The Airport will fill 0.07 acres of Coos Bay tidelands (lands submerged at high tide but exposed at low tide) to construct the bulkhead. This constitutes a permanent loss of habitat used for sheltering and feeding. Coos Bay has approximately 4,569 acres of tidelands (ODEQ 2004). Therefore, bulkhead construction will eliminate 0.0015% of available similar habitat. This constitutes a permanent, but small and localized negative effect on the natural cover and forage/food resources PBFs.

Habitat improvement from mitigation actions (natural cover and forage/food resources PBFs)

The Airport will improve 0.17 acres of Coos Bay tidelands by removing an abandoned boat ramp and creosote-treated wood pilings. Mitigation activities will improve almost 2.5 times the acreage affected by bulkhead installation. This constitutes a permanent, but small and localized positive effect on the natural cover and forage/food resources PBFs.

Contaminant discharge from stormwater systems (water quality PBFs)

The Airport will decrease the total amount of impervious surfaces on their property by 0.04 acres. They will also treat 0.89 acres of previously untreated impervious surfaces. Stormwater runoff from impervious surfaces delivers a wide variety of pollutants to aquatic ecosystems, such as metals (e.g. copper and zinc), petroleum-related compounds (polycyclic aromatic hydrocarbons - PAHs), and sediment washed off the roads, parking lots, driveways, etc. (Driscoll *et al.* 1990, Buckler and Granato 1999, Colman *et al.* 2001, Kayhanian *et al.* 2003, Van Metre *et al.* 2006, Peter *et al.* 2018).

The proposed stormwater treatment method is vegetated biofiltration swales. These swales primarily target sediments and dissolved and particulate metals, although secondary pollutant targets include nutrients, oil, grease, and PAHs (ODOT 2011). Vegetated swales (bioswales) have been shown to reduce total and dissolved copper and zinc concentrations in stormwater (ODEQ 2003, Clary *et al*. 2011). ODEQ (2003) describes bioswale pollutant reduction efficiencies for copper (46%), total and dissolved zinc (63% and 30%), oil/grease (75%), and total suspended solids, including sediment (83%-92%). The exact concentrations of contaminants remaining in the stormwater discharge are unknown and are likely to be highly variable depending on the timing and intensity of individual storm events.

Stormwater runoff only occurs when there is rainfall. The greatest discharge of pollutants is typically during the first-flush storm when rainfall mobilizes pollutants accumulated during dry periods between storms (Kayhanian *et al.* 2003, Lee *et al.* 2004, Soller *et al.* 2005, Kayhanian *et al.* 2008, Nason *et al.* 2011). In Oregon's climate, the most significant of these rain events is the first fall rain; lesser events may occur 2-5 times annually per autumn, winter, or spring, given the seasonality of precipitation patterns in Oregon.

There is a lot of uncertainty regarding the duration of elevated stormwater pollutant concentrations during first-flush events, largely due to the inherent unpredictability and natural variability in rainfall events. In general, the elevated concentrations of stormwater pollutants associated with first-flush events occurs within the first few minutes and up to the first hour after detection of observable runoff (Tiefenthaler and Schiff 2003, Stenstrom and Kayhanian 2005). Therefore, adverse effects on water quality from stormwater will occur at their greatest intensity in the fall after the first significant precipitation. However, they will also occur at lower intensity episodically throughout the remainder of the year.

The proposed action will result in less untreated impervious surface and less stormwater contaminants than are delivered to Coos Bay currently. However, the treatment is not 100% effective and stormwater contaminants will still be delivered to Coos Bay. The amount of contaminants generated from the surfaces will be small because the AARF facility has very low traffic and the stormwater is treated to current standards. While some action-related contaminants are likely to disperse throughout the lower bay, measurable amounts are unlikely further than a few feet (maximum of 10 feet) from the outfall. This is due to the low concentrations of contaminants from the proposed action and the overwhelming volume of water in Coos Bay relative to the discharge of the outfall. Therefore, stormwater discharge will have a permanent, but small and localized negative effect on the water quality PBFs.

Summary of effects on critical habitats

Cofferdam installation will result in temporary and localized negative effects on the water quality PBF from construction-related suspended sediment. Bulkhead installation will result in a permanent, but small and localized negative effect on the natural cover and forage/food resources PBFs. Mitigation activities will result in a permanent, but small and localized positive effect on the natural cover and forage/food resources PBFs. Stormwater discharge will have a permanent, but small and localized negative effect on the water quality PBFs.

2.5.2 Effects on Species

Exposure

In our analysis of the effects of the action on critical habitat, we found adverse effects on water quality, natural cover, and forage/food resources. To understand how listed species present in the action area respond to these effects, we must first understand how these species will be exposed to the effects. Individuals of these species do not reside in the Coos Bay portion of the action area year round.

OC coho salmon. Historically, researchers believed juvenile coho salmon rear in freshwater streams for a year, migrating out to sea in the spring at age 1. More recently, the flexibility of pre-smolt coho salmon life histories, including estuary rearing during all parts of the year, has been documented (Bennett *et al*. 2014). Miller and Sadro (2003) observed pre-smolt OC coho salmon entering the estuary in the South Slough of Coos Bay during spring and remaining up to 8 months, when they moved back upstream to overwinter. They also found pre-smolts moving into the estuary in the fall and winter with individuals having a mean residence time of 48 to 64 days per year.

However, these results were from the stream-estuary ecotone portion of the estuary where salinities are low (maximum 10 parts per thousand). Waters in the action area will have much higher salinities, approaching full strength sea water (around 35 parts per thousand) during the summer months. Salinity in the action area all year around is likely higher than the incipient lethal threshold (22 parts per thousand) for pre-smolt coho salmon (Otto 1971). Therefore, pre-smolt juvenile OC coho salmon may be in these portions of the action area throughout the year, but any one individual is unlikely to remain in it for more than a few days. When they are present, pre-smolts will be seeking habitats for refuge and feeding.

The juvenile pre-smolts begin their physiological change to smolts the spring after they are born. From February through June, the smolts migrate through the action area on the way to the ocean. Miller and Sadro (2003) found the mean residence time in the lower estuary of South Slough was 5.2 days. Those smolts could have moved through within 24 hours, but choose to remain, likely as the final physiological preparation for ocean salinities (Miller and Sadro 2003). This time period is applicable to residence times for OC coho salmon smolts in the action area, as the physical features are the same. As with pre-smolts, smolts will likely favor the shorelines where the habitat types occur that provide feeding and sheltering.

From September to December, adult OC coho salmon return from the ocean and pass through the action area. These returning adults are highly mobile, use the tide to their advantage, and are unlikely to require more than an hour to traverse through the action area.

Green sturgeon. Green sturgeon use the Coos River estuary for subadult and adult growth, development, and migration. Green sturgeon congregate in coastal waters and estuaries, including non-natal estuaries. Beamis and Kynard (1997) suggested that green sturgeon move into estuaries of non-natal rivers to feed. Data from Washington studies indicate that green sturgeon will only be present in estuaries from June until October (Moser and Lindley 2007). Recent fieldwork indicates that green sturgeon generally inhabit specific areas of coastal estuaries near or within deep channels or holes, moving into the upper reaches of the estuary, but rarely into freshwater (WDFW and ODFW 2012). Green sturgeon in these estuaries may move into tidal flats areas, particularly at night, to feed (Dumbauld *et al*. 2008).

When they are not feeding in the shallows, green sturgeon likely will be holding in the deepest habitat available (WDFW and ODFW 2012). In Coos Bay, the navigational channel is maintained at 37 feet below mean lower low water and runs adjacent to the entire length of the action area. It is likely that a few green sturgeon will feed in the action area or swim through it on their way to or from feeding.

Eulachon. Eulachon have been observed in the Coos River (Gustafson *et al.* 2010), but likely occur on an infrequent basis and in small numbers (Monaco *et al*. 1990, Emmett *et al*. 1991, Hutchinson 1979 as cited in Gustafson *et al.* 2010). On March 3, 2015, a pre-spawn female was collected in a screw trap being operated in Winchester Creek, a tributary of South Slough within Coos Bay.[1] Eulachon spawners have returned in the Columbia River as early as mid-December to as late as mid-February, with an average of mid-January (Gustafson *et al.* 2010). First appearance of eulachon spawners in the Coos River has not been studied, but based on the available information for eulachon run-timing, small numbers of spawners, and frequency of occurrence, adult eulachon will probably migrate through the action area from mid-January through May. Individual adults will likely only be in the action area for an hour or two as they swim upstream to spawning habitat.

Eggs hatch in 20 to 40 days and larval eulachon, which are feeble swimmers, are carried downstream within hours or days. Thus, larval eulachon could be present in the action area from February through June. Some studies found larval eulachon may be retained for weeks or months in inlets or fjords of estuaries on the British Columbia mainland coast (McCarter and Hay 2003), but no such habitat features exist in the action area. The action area is a constriction between the ocean and the large upper Coos Bay. Therefore, individual larval eulachon will likely only be present an hour or two in the action area as they are carried out to sea. These individuals are unlikely to be feeding while in the action area as larval nutrition is provided by the yolk sac prior to first feeding (WDFW and ODFW 2001).

Construction-related suspended sediment

Of key importance in considering the detrimental effects of suspended sediment on fishes are the concentration and duration of the exposure. High levels of suspended sediment can be lethal; lower levels can cause chronic sublethal effects including loss or reduction of foraging capability, reduced growth, reduced resistance to disease, reduced respiratory ability, increased stress, and interference with cues necessary for homing and migration (Bash *et al*. 2001). Sublethal effects (such as olfactory effects) are those that are not directly or immediately lethal,

[1] Email from Gary Vonderohe, ODFW, to Ken Phippen, NMFS, March 5, 2015, (notifying NMFS of the collection of a eulachon in Coos Bay)

but are detrimental and have some probability of leading to eventual death via behavioral or physiological disruption. These responses can include changes in territorial behavior, alarm reactions with downstream displacement and increased predation and competition, avoidance behavior, decreased feeding, and reduced growth (Noggle 1978, Berg 1983, Lloyd 1987, Newcombe and Jensen 1996, Bash *et al*. 2001, Robertson *et al.* 2006).

We anticipate the proposed action will result in two occurrences of a 250-foot wide, 1,000-foot long suspended sediment plume up to 8 hours in duration.

OC coho salmon. Robertson *et al.* (2006) completed a literature review on coho salmon juveniles and found the following effects for suspended sediment concentrations and durations:

- Mortality – 96 hour exposure to concentration greater than 100,000 milligrams per liter (mg/L) killed 50% of individuals
- Gill damage – 96 hour exposure to concentrations greater than 40,000 mg/L
- Coughing – 96 hour exposure to concentrations of 240 mg/L
- Stress – 7 day exposure to concentrations of 2,000 mg/L
- Reduced feeding – 7 day exposure to concentrations of 2,000 mg/L

All three life stages of OC coho salmon could be in the action area during the suspended sediment plumes. A portion of the suspended sediment plumes will likely have sufficient concentration and duration to illicit coughing, stress, reduced feeding, and gill damage. We expect this portion to be 100-feet wide and 300-feet long. Mortality is unlikely due to short duration (8 hours). Quantifying the number of individuals exposed to adverse concentrations of suspended sediment is very difficult for several reasons. Density of any of the life stages in Coos Bay is low and their locations hard to predict. The plumes will only effect a narrow strip, approximately 250 feet wide, and coho salmon are known to move and avoid suspended sediment plumes (Servizi and Martens 1992). Also, the portion of the action area affected by the plumes is extremely small (0.01% of Coos Bay tidelands) and has no features to congregate or hold any of the life stages. Therefore, while we cannot predict the exact number of OC coho salmon affected precisely, we are reasonably certain it will be a small number.

Green sturgeon. Due the in-water work timing, exposure of green sturgeon to suspended sediment plumes is not reasonably certain.

Eulachon. Due to the in-water work timing, exposure of larval eulachon to suspended sediment plumes is not reasonably certain. While adequate information exists to analyze the effect of suspended sediment on coho salmon, little exists for adult eulachon. In the absence of information we assume, because of their similar size, the thresholds for effects on adult eulachon are similar to those for juvenile coho salmon. However, adult eulachon will only be actively migrating through the action area and unlikely to spend more than an hour or two exposed to the plumes. Thus, individuals may experience coughing, stress, and gill damage, but mortality is unlikely due to the short duration of exposure.

Quantifying the number of individuals exposed to adverse concentrations of suspended sediment is very difficult for several reasons. Density of adult eulachon is extremely low due to their infrequent basis and small numbers in Coos Bay and the portion of the action area affected by the plumes is extremely small (0.01% of Coos Bay tidelands). Therefore, while we cannot predict the exact number of eulachon affected precisely, we are reasonably certain it will be a small number.

Habitat displacement from bulkhead installation

Bulkhead construction will permanently eliminate 0.07 acres of Coos Bay's tidelands.

OC coho salmon. All life stages of OC coho salmon use this area for migration. The new bulkhead is located on the edge of the channel where a bulkhead already exists. There will not be a change to any flow or habitat condition that will impede migration or movement.

Juvenile and smolt OC coho salmon use the bulkhead area for feeding and sheltering. Because the shoreline habitat constructed by the new bulkhead is similar to that of the old bulkhead, its value for sheltering is likely similar. There are also no significant habitat features or forage in the area eliminated by the bulkhead, so few individuals are likely to congregate or remain feeding for extended periods. Therefore, the adverse effects of losing 0.07 acres of tidelands (0.01% of similar habitat in Coos Bay) will result in loss of forage to OC coho salmon, but will only affect a small number. Because these 0.07 acres are a small portion of the action area, and OC coho salmon juveniles and smolts are unlikely to spend much time in the action area (juveniles for no more than a few days, smolts on average 5.2 days), we find the loss of forage from the proposed action is not reasonably certain to result in changes to their growth or survival rates.

Green sturgeon. Subadult and adult green sturgeon may use this area for movement. The new bulkhead is located on the edge of the channel where a bulkhead already exists. There will not be a change to any flow or habitat condition that will impede migration or movement.

Subadult and adult green sturgeon also use the bulkhead area for feeding. Because the area is small and has no particularly important forage resources, it is unlikely any individual green sturgeon will preferentially choose it over the rest of the 4,569 acres of tidelands in Coos Bay. The loss of 0.07 acres of tidelands (0.01% of similar habitat in Coos Bay) will result in loss of forage to green sturgeon, but this loss is so small it is not reasonably certain to result in changes to their growth or survival rates.

Eulachon. Adult and larval eulachon migrate past the bulkhead area. The new bulkhead is located on the edge of the channel where a bulkhead already exists. There will not be a change to any flow or habitat condition that will impede eulachon migration.

Habitat improvement from mitigation actions

The Airport will improve 0.17 acres of Coos Bay tidelands constituting a permanent, but small and localized positive effect.

OC coho salmon. All life stages of OC coho salmon use the mitigation area for migration. Removing the boat ramp and pilings will improve passage. However, this area is small and located just off the main channel of Coos Bay where most migrating individuals may not go.

Juvenile and smolt OC coho salmon use the mitigation area for feeding and sheltering. The area is small, but has habitat features (such as eelgrass) that provide significant sheltering and forage resources. Thus, the positive effects of improving these 0.17 acres will result in a disproportionately large positive effect on OC coho salmon, albeit still small because the area is such a small proportion of Coos Bay. Therefore, the effects from mitigation on migration, feeding, and sheltering of OC coho salmon are small, but likely to result in slight improvements of growth and survival rates.

Green sturgeon. Subadult and adult green sturgeon use the mitigation area for movement and feeding. The area is small, but has habitat features (such as eelgrass) that provide significant forage resources. Therefore, the positive effects of improving these 0.17 acres will result in a disproportionately large positive effect on green sturgeon, albeit still small because the area is such a small proportion of Coos Bay. Therefore, the effects from mitigation on movement and feeding of green sturgeon are small, but likely to result in slight improvements of growth and survival rates.

Eulachon. Adult and larval eulachon use the mitigation area for migration. Removing the boat ramp and pilings will improve passage. However, this area is small and located just off the main channel of Coos Bay where most migrating individuals will not go. Therefore, the positive effects to OC coho salmon migration will be small.

Contaminant discharge from stormwater systems

As discussed in Section 2.5.1, the proposed action will result in less untreated impervious surface and less stormwater contaminants than are delivered to Coos Bay currently. However, the treatment is not 100% effective and a small amount of stormwater contaminants will still be delivered to Coos Bay. Measurable amounts are not reasonably certain further than a few feet (maximum of 10 feet) from the outfall.

Stormwater pollutants are a source of potent adverse effects on fish, even at ambient levels (Loge *et al.* 2006, Spromberg and Meador 2006, Hecht *et al.* 2007, Johnson *et al*. 2007, Sandahl *et al.* 2007). These pollutants can accumulate in prey and in tissues of fish where, depending on the level of exposure, they cause a variety of lethal and sublethal effects. These adverse effects include disrupted behavior, reduced olfactory function, immune suppression, reduced growth, disrupted smoltification, hormone disruption, disrupted reproduction, cellular damage, and physical and developmental abnormalities (Fresh *et al.* 2005, Hecht *et al.* 2007, LCREP 2007). Aquatic contaminants often travel long distances in solution or attached to suspended sediments, or gather in sediments until they are mobilized and transported by the next high flow (Anderson *et al.* 1996, Alpers *et al.* 2000a, 2000b).

Most published literature addresses acute toxicity of single pollutants, although pollutants from stormwater exist in mixtures and interact with each other (e.g., Niyogi *et al.* 2004, Feist *et al.* 2011). Rand and Petrocelli (1985) state that in "assessing chemically induced effects (responses), it is important to consider that organisms may be exposed not to a single chemical but rather to a myriad or mixture of different substances at the same or nearly at the same time." Environmental conditions (i.e., non-chemical conditions) can also influence the toxicity of pollutants and fish vulnerability by altering susceptibility to pollutants (Brooks *et al.* 2012, Laetz *et al.* 2014). Exposure to two or more pollutants simultaneously may produce a response that is simply additive of the individual responses or one that is greater (synergistic) or less (antagonistic) than expected from the addition of their individual responses (Denton *et al.* 2002, Laetz *et al.* 2013). For example, mixtures of zinc and copper have greater than additive toxicity to a wide variety of aquatic organisms including freshwater fish (Eisler 1993). Although the large number of pollutants and much larger number of toxicological interactions in stormwater make specific mechanisms of toxicological effects on fish difficult to predict, there is ample evidence that the mixture of toxins in stormwater can degrade habitat enough to substantially reduce its ability to support salmon spawning, feeding, and growth to maturity.

For example, Baldwin *et al.* (2003) exposed juvenile coho salmon to various concentrations of copper to evaluate sublethal effects on sensory physiology, specifically olfaction. These researchers demonstrated that short pulses of dissolved copper at concentrations as low as 2 micrograms per liter (µg/L) over experimental background concentrations of 3 µg/L reduced olfactory sensory responsiveness within 20 minutes such that the response evoked by odorants was reduced by approximately 10%. At 10 µg/L over background, responsiveness was reduced by 67% within 30 minutes. They calculated neurotoxic thresholds sufficient to cause olfactory inhibition at 2.3-3.0 µg/L over background. They also referenced three studies that reported copper exposures over four hours caused cell death of olfactory receptor neurons within rainbow trout, Atlantic salmon, and Chinook salmon. The concentrations tested are lower than common concentrations in stormwater outfalls, and thus indicate toxicity even after stormwater has been moderately diluted. The measured exposure times are likewise shorter than typical stormwater outfall discharge times. Inhibiting olfaction is detrimental to fish because olfaction plays a significant role in the recognition and avoidance of predators and migration back to natal streams to spawn (Baldwin *et al.* 2003). Additional research indicates that the effect of 2 µg/L concentrations over experimental background concentrations of 3 µg/L reduces the survival of individuals (Hecht *et al.* 2007). Juvenile wild coho salmon exposed to low levels of dissolved copper did not display an alarm response (i.e., sharp reduction of swimming activity) in the presence of a predator or in response to other olfactory signals as compared to unexposed wild juveniles (McIntyre *et al.* 2012). Predators were also more successful in capturing copper-exposed juvenile coho salmon (McIntyre *et al.* 2012).

Also, fish embryos and larvae exposed to PAHs are likely to experience adverse changes in heart physiology and morphology, including pericardial edema and heart failure, leading to mortality, even with only temporary exposure to low concentrations (Hicken *et al.* 2011, Incardona *et al*. 2012, Brette *et al.* 2014, Incardona *et al.* 2014). Although exposed embryos and larvae may grow to look like normal fish on the outside, internally there are subtle changes in heart shape and also a significant reduction in swimming performance reducing individual survival due to long-term physiological impairment (Hicken *et al.* 2011). Reduced larval feeding associated with pericardial edema can lead to death during the transition period to juvenile stages (Hicken *et al.* 2011). Other individuals may experience a disturbance in heartbeat rhythm (Brette *et al.* 2014). Cardiotoxic PAHs are present in urban stormwater; their sources include vehicle exhaust, fuel spills, oil and grease, treated wood, and coal dust (N. Scholz, pers comm., Northwest Fisheries Science Center, Ecotoxicology Program Manager, February 2, 2014).

OC coho salmon. Some individuals of all life stages of OC coho salmon will be exposed to project-related stormwater contaminants at some time. It is not reasonably certain that adults will require more than a few seconds to migrate through the affected area, so they are unlikely to experience any effects. Adverse effects to juveniles and smolts are reasonably certain to include a variety of sublethal and behavioral effects that will reduce growth, fitness, and survival. Sublethal effects (such as olfactory effects) are those that are not directly or immediately lethal, but are detrimental and have some probability of leading to eventual death via behavioral or physiological disruption.

Quantifying the number of juvenile and smolt OC coho salmon experiencing adverse effects caused by project-related stormwater pollutants is impractical. This is because the area affected by measureable amounts of project contaminants is so small and the distribution and abundance of individuals in the action area is inexact and show wide, random variations due to biological and environmental processes operating at much larger demographic and regional scales. Additionally pollutant exposure is episodic and densities of coho salmon near the outfall are likely to vary significantly over short periods of time (minutes to hours).

Although calculating the exact number of OC coho salmon exposed to measurable levels of project-related stormwater pollutants is impracticable, we are confident the number is small. This is primarily because the affected area is only 157 square feet (calculated as a 10-foot semicircle), which is approximately 0.00001% of the 4,569 acres of tidelands in Coos Bay. Also, few juveniles or smolts are likely to remain in the area for extended periods since there are no significant habitat features or forage.

Green sturgeon. Some individual subadult and adult green sturgeon are reasonably certain to enter the 157 square-foot area at some time looking for forage. Because the area is small (approximately 0.00001% of the 4,569 acres of tidelands in Coos Bay) and has no particularly important forage resources, it is unlikely any individual green sturgeon will remain for an extended period. Therefore, any sublethal effects to individual green sturgeon are not guaranteed, and if they occur, will only affect a small number of individuals.

Eulachon. Adult and larval eulachon migrate past the outfall area. Because the measurable effects from stormwater contaminants extend only a few feet (up to 10 feet) from the shore and the channel is 2,500 feet across at its narrowest, only a very small portion of migrating eulachon will be exposed. It is not reasonably certain for any adult eulachon swimming that close to shore to need more than a few seconds to migrate through the area, and are unlikely to experience any sublethal effects. Larval eulachon, carried on the tide, may spend a few minutes in the measurably affected area. Because of their larval state, they are likely more susceptible than fish in the research cited above and at least some individuals are reasonably certain to experience sublethal effects from project-related stormwater contaminants. However, the number of larval eulachon affected will be small as they should be well dispersed across the channel and the affected area only encompasses approximately 0.4% (10 feet of the 2,500-foot width).

Summary of effects on species

A small number of OC coho salmon and adult eulachon will experience sublethal effects from exposure to construction-related suspended sediment. Bulkhead installation will result in a permanent loss of 0.07 acres of tideland in Coos Bay (0.01% of similar habitat), which will result in a small loss of forage for green sturgeon and juvenile and smolt OC coho salmon. However, the loss is so small it is not reasonably certain to change their growth or survival rates. The effects from mitigation on OC coho salmon and green sturgeon are small, but likely to result in slight improvements of growth and survival rates. Project-related stormwater contaminants are likely to result in sublethal effects to a small number of juvenile and smolt OC coho salmon, green sturgeon, and larval eulachon.

2.6 Cumulative Effects

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

The contribution of non-Federal activities to the current condition of ESA-listed species and designated critical habitats within the action area was described in the Status of the Species and Critical Habitats and Environmental Baseline sections, above. Some continuing non-Federal activities are reasonably certain to contribute to climate effects within the action area. However, it is difficult if not impossible to distinguish between the action area's future environmental conditions caused by global climate change that are properly part of the environmental baseline *vs.* cumulative effects. Therefore, all relevant future climate-related environmental conditions in the action area are described in the environmental baseline (Section 2.4).

Information from Willapa Bay and Grays Harbor in Washington and Tillamook, Yaquina, and Coos bays in Oregon show that coastal communities are growing more slowly than the respective states overall, populations are relatively old, and the extractive natural resource industries (fishing, aquaculture, agriculture, forest products) are declining in importance relative to tourism, recreation, and retirement industries (Hupert *et al.* 2003). Between 2010 and 2019, the population of Coos County increased by 2.3% from 63,043 in 2010 to 64,487 in 2019.[2]

These trends suggest human uses of the estuaries are changing in character (Hupert *et al.* 2003). Residents choose to live in these communities to enjoy the views and scenery, experience rural living, to be near the ocean, and to recreate outdoors (Hupert *et al.* 2003). However, increased tourism and residential development can also impact estuary shorelines, water quality, and wildlife (Hupert *et al.* 2003).

[2] U.S. Census Bureau, State and County Quickfacts, Jackson County. Any county available: https://www.census.gov/quickfacts/fact/table/US/PST045219. (Last Accessed May 2020).

The City of Coos Bay developed a land use plan in 2000 to guide future development. The plan postulates that: 1) The city will experience renewed growth from in-migration and commercial employment, 2) Additional housing will be needed, 3) Commercial and industrial areas will need to be redeveloped, and 4) Waterfront areas are an asset to commercial ventures.

The Coos Bay Estuary Management Plan (Plan) sets out the basis of land, water use, and community development regulations for lands lying within the estuary and its shorelands, as designated within the Plan. It designates appropriate areas for the location of various existing and future uses and activities. These plans postulate that there will be some growth in the future that may affect the quality of habitat within the Coos Bay estuary. However, these growth plans may or may not come to fruition.

Despite changes to less consumptive use of estuary resources, future uses are reasonably certain to continue to have a depressive effect on aquatic habitat quality in the action area. Given the increasing ability for the restoration community at funding and implementing activities, restoration and recovery actions are also reasonably certain to continue. These activities are likely to provide significant benefits to habitat quality, albeit on a project by project basis.

When we consider all these influences collectively, we expect trends in habitat quality to remain flat or improve gradually over time. In turn, this habitat trend will, at best, have a positive influence on population abundance and productivity for the species considered in this consultation. In a worst case scenario, we expect cumulative effects will have a relatively neutral effect on population abundance trends. Similarly, we expect the quality and function of critical habitat PBFs to express a slightly positive to neutral trend over time as a result of the cumulative effects.

2.7 Integration and Synthesis

The Integration and Synthesis section is the final step in our assessment of the risk posed to species and critical habitat as a result of implementing the proposed action. In this section, we add the effects of the action (Section 2.5) to the environmental baseline (Section 2.4) and the cumulative effects (Section 2.6), taking into account the status of the species and critical habitat (Section 2.2), to formulate the agency's biological opinion as to whether the proposed action is likely to: 1) Reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing its numbers, reproduction, or distribution; or 2) appreciably diminish the value of designated or proposed critical habitat as a whole for the conservation of the species.

2.7.1 Critical Habitat

OC coho salmon and green sturgeon have designated critical habitat within the action area. The value of PBFs for their critical habitat has declined due to numerous factors, mostly related to human development. For OC coho salmon, critical habitat major limiting factors include extensive loss of access to habitats and habitat changes resulting from land use practices. For green sturgeon, the major limiting factor in coastal bays and estuaries is prey reduction.

The environmental baseline has been degraded by the effects of past land use, urbanization, and water development. The long-term decline of species inhabiting these areas reflects deteriorated critical habitat conditions. Many of the changes to critical habitat resulting from land use practices over the last 150 years have stabilized, but continue to hinder recovery of the populations. Restoration activities have gained popularity in recent decades. Restoration actions may have short-term adverse effects, but generally result in long-term improvements to critical habitat conditions. Climate change is reasonably certain to exacerbate degraded conditions, including sea level rise.

As described in the analysis of the effects of the action, the proposed action will result in adverse impacts to OC coho salmon and green sturgeon critical habitat. Cofferdam installation will result in temporary and localized negative effects. Bulkhead installation and stormwater discharge will result in a permanent, but small and localized negative effect. Mitigation activities will result in a permanent, but small and localized positive effect on approximately the same acreage.

Cumulative effects from future state and private activities are reasonably certain to have a neutral to slightly positive effect over time on the critical habitat considered in this opinion. Resource-based activities will continue to adversely affect habitat, but industry-wide standards and shifts away from resource extraction will gradually decrease their effects over time. The human population in the action area is expected to continue to increase, counterbalancing the improved extraction standards and shift away from resource extraction to a mixed economy. We expect the public's growing environmental awareness will reduce the impacts of some activities affecting critical habitat. As interest in restoration activities continues, their positive effects are likely to continue.

Because the adverse effects caused by the proposed action are short-term or small in scale and the beneficial effects are long-term and similar in spatial scale, when we add them to the current population status, environmental baseline, and consider cumulative effects and climate change, we find the proposed action will not appreciably diminish the value of any critical habitat for the conservation of either species at the designation level. Thus, the critical habitats will retain their current ability to play their intended conservation role.

2.7.2 Species

The status of each species considered in this opinion varies considerably from high risk to moderate risk. The species addressed in this opinion have declined due to numerous factors. One factor for decline of all species inhabiting the action area is degradation of their habitat. Human development has caused significant negative changes throughout their ranges.

The environmental baseline has been degraded by the effects of past land use, urbanization, and water development. The long-term decline of species inhabiting these areas reflects deteriorated habitat conditions. Many of the habitat changes resulting from land use practices over the last 150 years have stabilized, but continue to hinder recovery of the populations. Restoration activities have gained popularity in recent decades. Restoration actions may have short-term adverse effects, but generally result in long-term improvements to habitat conditions. Climate change is reasonably certain to exacerbate degraded conditions, including sea level rise.

As described in the analysis of the effects of the action, the proposed action is reasonably certain to injure and/or harass a small number of OC coho salmon, eulachon, and green sturgeon. A small number of OC coho salmon and adult eulachon will experience sublethal effects from exposure to construction-related suspended sediment. Bulkhead installation will result in a permanent loss of 0.07 acres of tideland in Coos Bay (0.01% of similar habitat), which will result in a small loss of forage for green sturgeon and juvenile and smolt OC coho salmon. However, the loss is so small it is not reasonably certain to change their growth or survival rates. The effects from mitigation on OC coho salmon and green sturgeon are small, but likely to result in slight improvements of growth and survival rates. Project-related stormwater contaminants are likely to result in sublethal effects to a small number of juvenile and smolt OC coho salmon, green sturgeon, and larval eulachon.

Cumulative effects from future state and private activities are reasonably certain to have a neutral to slightly positive effect over time on the species considered in this opinion. Resource-based activities will continue to adversely affect species, but industry-wide standards and shifts away from resource extraction will gradually decrease their effects over time. The human population in the action area is expected to continue to increase, counterbalancing the improved extraction standards and shift away from resource extraction to a mixed economy. We expect the public's growing environmental awareness will reduce the impacts of some activities affecting listed species. As interest in restoration activities continues, their positive effects are likely to continue.

For OC coho salmon, at the ESU scale, the status of individual populations determines the ability of the species to sustain itself or persist well into the future, thus impacts to individual populations are important to the survival and recovery of the species. Because the adverse effects caused by the proposed action are short-term or small in scale and the beneficial effects are long term and similar in scale, when we add them to the current population status, environmental baseline, and consider cumulative effects and climate change, we find the proposed action will not appreciably reduce the likelihood of the survival or recovery of the Coos River population of OC coho salmon. Given our conclusion that the populations will not be impeded in recovery as a result of the proposed action, the proposed action will also not appreciably reduce the likelihood of the survival or recovery of OC coho salmon at the ESU level.

For eulachon, at the DPS scale, we found the adverse effects caused by the proposed action are short-term or small in scale and the beneficial effects are long term and similar in scale. When we add those effects to the current subpopulation status, environmental baseline, and consider cumulative effects and climate change, we find the proposed action will not appreciably reduce the likelihood of the survival or recovery of the Columbia River subpopulation. Given our conclusion that this subpopulation will not be impeded in recovery as a result of the proposed action, the proposed action will also not appreciably reduce the likelihood of the survival or recovery of eulachon at the DPS level.

The DPS of green sturgeon contains one population. Because the adverse effects caused by the proposed action are short-term or small in scale and the beneficial effects are long-term and similar in scale, when we add them to the current population status, environmental baseline, and consider cumulative effects and climate change, we find the proposed action will not appreciably reduce the likelihood of the survival or recovery of the Sacramento River spawning population.

Because the population is the DPS, the proposed action will also not appreciably reduce the likelihood of the survival or recovery of southern DPS green sturgeon.

2.8 Conclusion

After reviewing and analyzing the current status of the listed species and critical habitats, 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 OC coho salmon, green sturgeon, or eulachon, or destroy or adversely modify designated critical habitat for OC coho salmon or green sturgeon.

2.9 Incidental Take Statement

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

The NMFS has not yet promulgated an ESA section 4(d) rule prohibiting take of threatened eulachon. Anticipating that such a rule may be issued in the future, we have included a prospective incidental take exemption for eulachon. The elements of this ITS for eulachon would become effective on the date on which any future 4(d) rule prohibiting take of eulachon becomes effective. Nevertheless, the amount and extent of eulachon incidental take, as specified in this statement, will serve as one of the criteria for reinitiation of consultation pursuant to 50 C.F.R. § 402.16(a), if exceeded.

2.9.1 Amount or Extent of Take

In the biological opinion, NMFS determined that incidental take is reasonably certain to occur as harm from suspended sediment releases during cofferdam construction and removal and stormwater runoff from impervious surfaces. Incidental take from suspended sediment plumes will occur in an area extending 100 feet out from the cofferdam area and 300 feet downstream. Incidental take from stormwater discharge will occur within 10 feet of the outfall.

Take caused by the habitat-related effects of this action cannot be accurately quantified as a number of fish because the abundance of these species occurring within the areas affected at the time when the effects occur are not readily predictable. These unpredictable factors include precipitation events, tidal elevations and flow, time of day, time of year, competition, predation, and the previous year's spawning success. In such circumstances, we use take surrogates causally linked to the expected level and type of incidental take from the proposed action. For the proposed action, the best available surrogates are:

Suspended sediment plumes during cofferdam construction and removal. The best available incidental take surrogate for this pathway is the duration of suspended sediment plumes. In the effects analysis, we expected the plume associated with installing and removing the cofferdam will not exceed 8 hours each. This surrogate is connected causally to the amount of take that will occur because an increase in duration (over 8 hours) translates into a proportional increase in the impact to listed species (i.e., exposure time is one factor determining the severity of adverse effects from elevated suspended sediment). The duration of suspended sediment plumes is also easily monitored, allowing the surrogate to serve as a clear reinitiation trigger.

Stormwater runoff from impervious surfaces. The best available incidental take surrogate for this pathway is implementation of a stormwater facility inspection and maintenance plan according to the following specifications. Proper implementation will determine whether the system continues to reduce concentrations of pollutants as designed, and thus reflect the amount of incidental take analyzed in the opinion. This surrogate is appropriate for the proposed action because it has a rational connection to the release of stormwater pollutants that cause take of listed species. Implementation of a plan is also easily monitored, allowing the surrogate to serve as a clear reinitiation trigger.

1. Inspection. Each part of the proposed stormwater system must be inspected:
    a. For the first three years:
        i. At least quarterly; and,
        ii. At least three times per water year within 48-hours following a storm event with more than 0.5 inches of rain over a 24-hour period.
    b. After three years:
        i. At least twice a year thereafter; and,
        ii. At least once per water year within 48-hours following a storm event with more than 0.5 inches of rain over a 24-hour period.
2. Maintenance. Maintenance will bring the system back to original design specifications within 7 days of any of the following occurring:
    a. Stormwater does not drain out of the biofiltration swales within 24-hours after rainfall ends;
    b. Any structural component, including inlets and outlets, do not freely convey stormwater;
    c. Desirable vegetation in the biofiltration swales does not cover at least 90% of the facility any time after 3 years – excluding dead or stressed vegetation, dry grass or other plants, and weeds.

2.9.2 Effect of the Take

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

2.9.3 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).

1. Minimize incidental take from exposure to suspended sediment.
2. Minimize incidental take from exposure to stormwater pollutants.
3. Conduct monitoring sufficient to document the proposed action does not exceed the parameters analyzed in the effects section or the extent of take described above, and report results to NMFS.

2.9.4 Terms and Conditions

The terms and conditions described below are non-discretionary, and the FAA, Corps, and Airport must comply with them in order to implement the RPMs (50 CFR 402.14). The FAA, Corps, and Airport have 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 will likely lapse.

1. To implement reasonable and prudent measure #1 (suspended sediment), FAA, the Corps, and the Airport shall ensure:
    a. Suspended sediment monitoring occurs hourly during installation and removal of the cofferdam.
    b. Suspended sediment monitoring occurs daily for the duration of time the cofferdam is in place.
2. To implement reasonable and prudent measure #2 (stormwater), FAA, the Corps, and the Airport shall ensure the Airport drafts and implements a stormwater facility inspection and maintenance plan that includes:
    a. <u>Inspection</u>. Each part of the proposed stormwater system must be inspected:
        i. For the first three years:
            1. At least quarterly; and,
            2. At least three times per water year within 48-hours following a storm event with more than 0.5 inches of rain over a 24-hour period.
        ii. After three years:
            1. At least twice a year thereafter; and,
            2. At least once per water year within 48-hours following a storm event with more than 0.5 inches of rain over a 24-hour period.

b. Maintenance. Maintenance will bring the system back to original design specifications within 7 days of any of the following occurring:
    i. Stormwater does not drain out of the biofiltration swales within 24-hours after rainfall ends.
    ii. Any structural component, including inlets and outlets, do not freely convey stormwater.
    iii. Desirable vegetation in the biofiltration swales does not cover at least 90% of the facility any time after 3 years – excluding dead or stressed vegetation, dry grass or other plants, and weeds.

3. To implement reasonable and prudent measure #3 (monitoring and reporting), FAA, the Corps, and the Airport shall ensure the Airport completes the following monitoring and reporting:
    a. A project completion report within 60-days of completing construction, including:
        i. Project name
        ii. Airport contact person
        iii. FAA contact person
        iv. Construction completion date
        v. As-built drawings of all project components
        vi. Results of the suspended sediment monitoring from T&C #1
        vii. Square footage of fill installed for the bulkhead
        viii. Photos of the mitigation areas (including date of photograph, GPS site location of photo point, name of photographer, and other relevant information)
    b. Annual reports of the stormwater facility inspection and maintenance plan after the first three full years following construction, including the following information:
        i. Name of person completing each inspection
        ii. Date of each inspection
        iii. Findings of each inspection
        iv. Description of any structural repairs, maintenance, or facility cleanout, e.g., sediment and oil removal and disposal, vegetation management, erosion control, structural repairs or seals, ponding water, pests, trash or debris removal
        v. An estimate of the percent cover of healthy vegetation in the swales, including a description of any corrective action needed to ensure 90% coverage within three years
    c. Each of the above reports and/or plans must be submitted annually to NMFS at the following address, no later than September 30:

National Marine Fisheries Service
Attn: WCRO-2019-03422
2900 NW Stewart Parkway
Roseburg, Oregon 97471

2.10 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). The following conservation recommendation is a discretionary measure that we believe is consistent with this obligation and therefore should be carried out by the FAA:

1. The FAA should consider initiating and completing consultation with NMFS on a programmatic biological opinion that addresses FAA airport improvement projects where they coincide with listed-fish under NMFS' jurisdiction. The primary benefits of programmatic consultation are more consistent use of conservation measures, the ability to address the effects of multiple activities at larger scales, efficient workload management, improved internal communication, better public relations, and a sharper vision of interagency consultation overall.

Please notify NMFS if the FAA 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.

2.11 Reinitiation of Consultation

This concludes formal consultation for the Southwest Oregon Regional Airport Runway Safety Area Improvements project.

As 50 CFR 402.16 states, reinitiation of consultation is required and shall be requested by the Federal agency or by the Service where discretionary Federal agency involvement or control over the action has been retained or is authorized by law and if: (1) The amount or extent of incidental taking specified in the ITS is exceeded, (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion, (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 the biological opinion, or (4) a new species is listed or critical habitat designated that may be affected by the action.

3. MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT ESSENTIAL FISH HABITAT RESPONSE

Section 305(b) of the MSA directs Federal agencies to consult with NMFS on all actions or proposed actions that may adversely affect EFH. The MSA (section 3) defines EFH as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." Adverse effect means any impact that reduces quality or quantity of EFH, and may include direct or indirect physical, chemical, or biological alteration of the waters or substrate and loss of (or injury to) benthic organisms, prey species and their habitat, and other ecosystem components, if such modifications reduce the quality or quantity of EFH. Adverse effects on EFH may result from actions occurring within EFH or outside of it and may include site-specific or EFH-wide impacts, including individual, cumulative, or synergistic consequences of actions (50 CFR 600.810). Section 305(b) also requires NMFS to recommend measures that can be taken by the action agency to conserve EFH.

This analysis is based, in part, on the EFH assessment provided by FAA and descriptions of EFH for Pacific Coast groundfish (PFMC 2005), coastal pelagic species (PFMC 1998), and Pacific Coast salmon (PFMC 2014); contained in the fishery management plans developed by the Pacific Fishery Management Council (PFMC) and approved by the Secretary of Commerce.

3.1 Essential Fish Habitat Affected by the Project

The proposed action and the action area for this consultation are described above in Sections 1.3 and 2.3. The action area is also designated by the PFMC as EFH as EFH for coastal pelagic species, Pacific Coast groundfish, and Pacific salmon. The action area is an estuarine area; estuaries are designated by the PFMC as habitat areas of particular concern (HAPC) for groundfish species. While the HAPC designation does not add any specific regulatory process, it does highlight certain habitat types that are of high ecological importance.

3.2 Adverse Effects on Essential Fish Habitat

The ESA portion of this document describes the adverse effects of this proposed action on coho salmon, green sturgeon, and eulachon. This ESA analysis of effects is also relevant to EFH. Based on information provided by the action agency and the analysis of effects presented in the ESA portion of this document, we conclude the proposed action will adversely affect designated EFH for coastal pelagic species, Pacific Coast groundfish, and Pacific salmon. These adverse effects occur from suspended sediment plumes and delivery of contaminants in stormwater.

3.3 Essential Fish Habitat Conservation Recommendations

The following four conservation measures are necessary to avoid, mitigate, or offset the impact of the proposed action on the above described impacts to EFH. Three of these conservation recommendations are a subset of the ESA terms and conditions.

1. FAA, the Corps, and the Airport should minimize adverse effects from suspended sediment by implementing ESA Term and Condition #1 (Section 2.9.4).
2. FAA, the Corps, and the Airport should minimize adverse effects from stormwater contaminants by implementing ESA Term and Condition #2 (Section 2.9.4).
3. FAA, the Corps, and the Airport should ensure completion of a monitoring and reporting program to confirm the program is meeting the objective of limiting adverse effects by implementing ESA Term and Condition #3 (Section 2.9.4).
4. The FAA should consider initiating and completing a programmatic consultation with NMFS that addresses FAA airport improvement projects where they coincide with EFH.

3.4 Statutory Response Requirement

As required by section 305(b)(4)(B) of the MSA, FAA and the Corps must provide a detailed response in writing to NMFS within 30 days after receiving an EFH Conservation Recommendation. Such a response must be provided at least 10 days prior to final approval of the action if the response is inconsistent with any of NMFS' EFH Conservation Recommendations unless NMFS and the Federal agency have agreed to use alternative time frames for the Federal agency response. The response must include a description of measures proposed by the agency for avoiding, minimizing, mitigating, or otherwise offsetting the impact of the activity on EFH. In the case of a response that is inconsistent with the Conservation Recommendations, the Federal agency must explain its reasons for not following the recommendations, including the scientific justification for any disagreements with NMFS over the anticipated effects of the action and the measures needed to avoid, minimize, mitigate, or offset such effects (50 CFR 600.920(k)(1)).

In response to increased oversight of overall EFH program effectiveness by the Office of Management and Budget, NMFS established a quarterly reporting requirement to determine how many conservation recommendations are provided as part of each EFH consultation and how many are adopted by the action agency. Therefore, we ask that in your statutory reply to the EFH portion of this consultation, you clearly identify the number of conservation recommendations accepted.

3.5 Supplemental Consultation

The FAA and/or the Corps must reinitiate EFH consultation with NMFS if the proposed action is substantially revised in a way that may adversely affect EFH, or if new information becomes available that affects the basis for NMFS' EFH Conservation Recommendations (50 CFR 600.920(l)).

4. DATA QUALITY ACT DOCUMENTATION AND PRE-DISSEMINATION REVIEW

The DQA specifies three components contributing to the quality of a document. They are utility, integrity, and objectivity. This section of the opinion addresses these DQA components, documents compliance with the DQA, and certifies that this opinion has undergone pre-dissemination review.

Utility

Utility principally refers to ensuring that the information contained in this consultation is helpful, serviceable, and beneficial to the intended users. The intended users of this opinion are FAA, the Corps, and the Airport. Other interested users could include citizens of affected areas and others interested in the conservation of the affected ESUs/DPSs. Individual copies of this opinion were provided to FAA and the Corps. The document will be available within two weeks at the NOAA Library Institutional Repository [https://repository.library.noaa.gov/welcome]. The format and naming adheres to conventional standards for style.

Integrity

This consultation was completed on a computer system managed by NMFS in accordance with relevant information technology security policies and standards set out in Appendix III, 'Security of Automated Information Resources,' Office of Management and Budget Circular A-130; the Computer Security Act; and the Government Information Security Reform Act.

Objectivity

Information Product Category: Natural Resource Plan

Standards: This consultation and supporting documents are clear, concise, complete, and unbiased; and were developed using commonly accepted scientific research methods. They adhere to published standards including the NMFS ESA Consultation Handbook, ESA regulations, 50 CFR 402.01 et seq., and the MSA implementing regulations regarding EFH, 50 CFR 600.

Best Available Information: This consultation and supporting documents use the best available information, as referenced in the References section. The analyses in this opinion and EFH consultation contain more background on information sources and quality.

Referencing: All supporting materials, information, data and analyses are properly referenced, consistent with standard scientific referencing style.

Review Process: This consultation was drafted by NMFS staff with training in ESA and MSA implementation and reviewed in accordance with West Coast Region ESA quality control and assurance processes.

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