NATIONAL MARINE FISHERIES SERVICE
ENDANGERED SPECIES ACT SECTION 7
BIOLOGICAL OPINION

Title: Biological and Conference Opinion for the Environmental Protection Agency's 2022 Issuance of the 5-Year Construction General Permit for Stormwater Discharges, Pursuant to the National Pollution Discharge Elimination System

Consultation Conducted By: Endangered Species Act Interagency Cooperation Division of the Office of Protected Resources, National Marine Fisheries Service

Action Agency: United States Environmental Protection Agency, Office of Water

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1 INTRODUCTION

The Endangered Species Act of 1973, as amended (ESA; 16 U.S.C. 1531 et seq.), jointly administered by the U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS, taken together, the Services), establishes a national program for conserving threatened and endangered species of fish, wildlife, plants, and the habitat they depend on. Section 7(a)(2) of the ESA requires Federal agencies to insure that their actions are not likely to jeopardize the continued existence of endangered or threatened species or adversely modify or destroy their designated and proposed critical habitat. Federal agencies must do so in consultation with NMFS for threatened or endangered species (ESA-listed), or designated and proposed critical habitat that may be affected by the action that are under NMFS' jurisdiction for threatened or endangered species (ESA-listed), or designated and proposed critical habitat that may be affected by the action that are under NMFS' jurisdiction (50 CFR §402.14(a)). If a Federal action agency determines that an action "may affect, but is not likely to adversely affect" endangered species, threatened species, or designated and proposed critical habitat (a not likely to adversely affect determination, NLAA) and NMFS concurs with that determination for species under NMFS' jurisdiction, consultation concludes informally (50 CFR §402.14(b)).

Section 7(b)(3) of the ESA requires that at the conclusion of consultation NMFS provides an opinion stating whether the Federal agency's action is likely to jeopardize ESA-listed species or destroy or adversely modify designated and proposed critical habitat. If NMFS determines that the action is likely to jeopardize listed species or destroy or adversely modify critical habitat, NMFS provides a reasonable and prudent alternative that allows the action to proceed in compliance with section 7(a)(2) of the ESA. If the action (or a reasonable and prudent alternative) is expected to cause incidental take without violating section 7(a)(2), section 7(b)(4), as implemented by 50 CFR §402.14(i), requires NMFS to provide an incidental take statement (ITS), which specifies: the impact (i.e., amount or extent of take) of incidental take; reasonable and prudent measures (RPMs) determined necessary or appropriate to minimize such impacts and terms and conditions to implement the RPMs; and, procedures to be used to handle or dispose of any individual species actually taken. Incidental take must also be monitored and reported as the action proceeds and consultation must be immediately reinitiated should the amount or extent of incidental take specified in the ITS be exceeded. Any incidental take which occurs in compliance with the ITS is exempted from the ESA's prohibition on take. The protection from the prohibition on take may lapse if the action agency fails to comply with the RPMs or terms and conditions included in the ITS.

The Federal action agency for this consultation is the United States Environmental Protection Agency (EPA). The EPA proposes to authorize stormwater discharges and certain non-stormwater discharges from construction sites equal to or greater than one acre into Waters of the United States under the 2022 Construction General Permit (CGP).

This consultation, biological opinion, and incidental take statement, was prepared by NMFS Office of Protected Resources Endangered Species Act Interagency Cooperation Division (hereafter referred to as "we" or "our") in accordance with section 7(a)(2) of the statute (16 U.S.C. 1536(a)(2)), associated implementing regulations (50 CFR §402), and agency policy and guidance.

This document represents NMFS' opinion on the effects of EPA issuance of the 2022 CGP on the following ESA-listed species and designated and proposed critical habitat: cetaceans, including Rice's whale (*Balaenoptera brydei*), North Atlantic right whale (*Eubalaena glacialis*), and Southern Resident Distinct Population Segment (DPS) of killer whale (*Orcinus orca*); salmonids, including Atlantic salmon

(*Salmo salar*), nine Evolutionarily Significant Units (ESUs) of steelhead trout (*Oncorhynchus mykiss*), nine ESUs of Chinook salmon (*Oncorhynchus tshawytscha*), three ESUs of coho salmon (*Oncorhynchus kisutch*), two ESUs of chum salmon (*Oncorhynchus keta*), and two ESUs of sockeye salmon (*Oncorhynchus nerka*); anadromous non-salmonids, including the shortnose sturgeon (*Acipenser brevirostrum*), three DPSs of Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*), green sturgeon (*Acipenser medirostris*) southern DPS, and eulachon (*Thaleichthys pacificus*) southern Pacific DPS; other fish, including Nassau Grouper (*Epinephelus striatus*), Puget Sound/Georgia Basin DPSs of bocaccio (*Sebastes paucispinis*), yelloweye rockfish (*Sebastes ruberrimus*), giant manta ray (*Mobula birostris*), oceanic whitetip shark (*Carcharhinus longimanus*), and two DPSs of scalloped hammerhead (*Sphyrna lewini*); marine turtle species, including hawksbill (*Eretmochelys imbricata*), Kemp's ridley (*Lepidochelys kempii*), leatherback (*Dermochelys coriacea*), olive ridley (*Lepidochelys olivacea*), two DPSs of green turtle (*Chelonia mydas*), and two DPSs of loggerhead turtle (*Caretta caretta*); Indo-Pacific coral species, including *Acropora globiceps, Acropora jacquelineae, Acropora retusa, Acropora speciosa, Euphyllia paradivisa, Isopora crateriformis, Orbicella annularis,* and *Seriatopora aculeata*; Atlantic/Caribbean coral species, including boulder star coral (*Orbicella franksi*), elkhorn coral (*Acropora palmata*), lobed star coral (*Orbicella annularis*), mountainous star coral (*Orbicella faveolata*), pillar coral (*Dendrogyra cylindrus*), rough cactus coral (*Mycetophyllia ferox*), and staghorn coral (*Acropora cervicornis*); other invertebrates, including black abalone (*Haliotis cracherodii*) and white abalone (*Haliotis sorenseni*); and designated and proposed critical habitat for Southern Resident killer whale, eight[1] ESUs of steelhead trout, nine ESUs of Chinook salmon, three ESUs of coho salmon, two ESUs of chum salmon, and two ESUs of sockeye salmon;, Southern Pacific DPS of eulachon, Southern DPS of green sturgeon, three DPSs of Atlantic sturgeon, and Puget Sound/Georgia Basin DPSs of bocaccio and yelloweye rockfish, green sea turtle North Atlantic DPS, leatherback sea turtle, and loggerhead sea turtle - Northwest Atlantic DPS, black abalone, and critical habitat proposed for ESA-listed Atlantic/Caribbean corals and Indo-Pacific corals.

A complete record of this consultation is on file at the NMFS Office of Protected Resources in Silver Spring, Maryland.

[1] Designated critical habitat for Southern California steelhead is not within EPA's action area

1.1 Background

The EPA's statutory authority for the CGP is the National Pollutant Discharge Elimination System (NPDES) of the Clean Water Act (33 USC §§ 1342 et seq.). The purpose of the proposed general permit renewal is to satisfy the goals and policies of the Clean Water Act (33 USC §§1251). The Clean Water Act establishes the basic structure for regulating discharges of pollutants into and regulating quality standards for the Waters of the United States.

The Clean Water Act made it unlawful to discharge any pollutant from a point source into navigable waters, unless a permit was obtained. EPA's NPDES permit program controls point source discharges. Point sources are discrete conveyances such as pipes or man-made ditches. Operators must obtain permits if their discharges go directly to surface waters.

Section 402 of the Clean Water Act directed EPA to develop a phased approach to regulate stormwater discharges under the NPDES program, and EPA published a final regulation on the first phase of this program in November 1990. It was at this time that EPA established permit application requirements for stormwater discharges associated with construction activities.

1.1.1 NPDES Compliance

According to EPA Office of Enforcement and Compliance Assurance (USEPA 2020), "over 29 percent of NPDES permitted facilities were in significant noncompliance with their permits in FY 2018. Violations range from significant exceedances of effluent limits, which can cause harm to human health and the environment, to failure to submit reports, which can mask serious deficiencies." As a result, EPA's National Compliance Initiative was established in 2019 to cut significant noncompliance in half and to ensure that the most serious violations are addressed in a timely and appropriate manner. At this time, compliance under the EPA-issued CGP is expected to mirror that of the NPDES permitting program as a whole, including the accuracy and completeness ESA-eligibility certifications.

1.1.2 The ESA Eligibility Requirement for Coverage Under an EPA General Permit

It is EPA's policy that discharges that may result in adverse effects to ESA-listed species and/or designated and proposed critical habitat are not eligible for coverage under its General Permits, including the CGP. The EPA's General Permits use an ESA Eligibility Certification procedure that identifies discharges in need of Services' expertise in reviewing notices of intent (NOIs) to discharge to ensure that discharges are not likely to result in adverse effects to ESA-listed species and/or designated and proposed critical habitat. This is termed a "consistency review." If NMFS or the USFWS find that discharges under an NOI are likely to adversely affect ESA resources, the Service may either provide technical assistance, identifying the necessary changes to control measures and stormwater pollution prevention plans (SWPPPs) to achieve NLAA, or inform EPA that the discharge is ineligible for coverage under the General Permit and will require an individual permit and associated individual consultation.

1.1.3 ESA Section 7 Consultation on the 2017 CGP

NMFS conducted a formal ESA section 7 consultation on the 2017 CGP and produced a programmatic biological opinion: *Reissuance of the Construction General Permit by the Environmental Protection Agency* (January 13, 2017 FPR-2016-9182). NMFS' 2017 opinion on the CGP concluded that the permit is likely to adversely affect species and designated or proposed critical habitat under NMFS' jurisdiction, but not likely to result in jeopardy to these species or adversely modify or destroy critical habitat. . The analyses in NMFS' opinion on the 2017 CGP determined that discharges authorized by the 2017 CGP

were likely to adversely affect ESA-listed species and designated and proposed critical habitat. This opinion on the 2022 CGP updates NMFS'2017 opinion and incorporates by reference the analyses and determinations made in 2017 because the stressors of the action and species affected have changed little and analyses of approvals under the 2017 CGP indicate that the RPMs in NMFS' 2017 opinion on the CGP did not minimize take to the extent intended.

The CGP consultation assessed the framework of the CGP permitting program, in particular its implementation of the ESA Eligibility Certification process (Figure 1) because, in the absence of consistency review by the Services, the discharges authorized by the CGP were likely to result in exposures to erosive flows and pollutants from construction sites that would adversely affect ESA resources. Successful implementation of the ESA Eligibility Certification process is required for the CGP to achieve NLAA for authorized discharges. There is an ITS in the NMFS' opinion on the 2017 CGP for effects associated with the implementation of the permit because NMFS identified issues with ESA Eligibility Certification and permit compliance during the consultation process. The Reasonable and Prudent Measures to minimize take require EPA to identify and address harmful discharges to waters where ESA resources occur through gathering information on the activities authorized by the CGP, including any corrective actions reported in permittees' corrective action logs EPA has accessed, monitoring the effectiveness of the CGP provisions for the protection of endangered and threatened species and designated and proposed critical habitat, and reporting this information to NMFS.

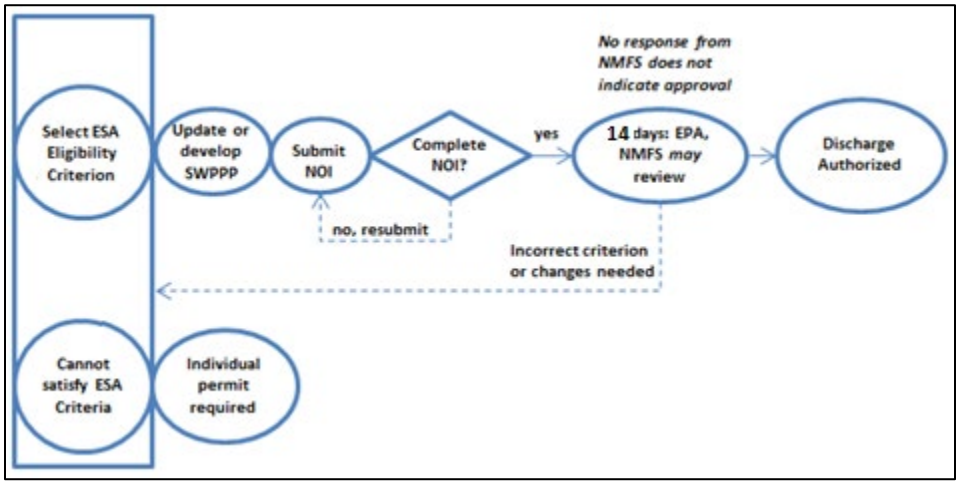


Figure 1. Preparation, submittal, and approval sequence for documents required under the ESA Eligibility Certification process of the 2017 CGP

1.2 Consultation History

During pre-consultation technical assistance and throughout the consultation period, EPA and the Services held periodic meetings to verify the status of the Services' analyses for their respective CGP biological opinions, answer questions, explore RPM options for this consultation, discuss implementation of existing RPMs for other General Permits, and discuss EPA's General Permitting program as a whole. Chief interactions specific to this consultation are discussed in this section.

Between March 1, 2021 and October 27, 2021, EPA and the Services engaged in pre-consultation technical assistance discussions on the upcoming CGP.

- EPA provided a spreadsheet listing CGP authorizations over the prior term on March 2, 2021, and a summary analysis of the number and extent of activities authorized on March 11, 2021.
- On April 14, 2021, EPA requested that the Services review and make edits to the ESA procedures in Appendix D of the CGP and to the instructions for submitting an NOI. The Services provided extensive edits over several iterations, which EPA incorporated into the permit (see https://www.epa.gov/sites/default/files/2021-05/documents/proposed_2022_cgp_-_appendices.pdf).
- On July 14, 2021, EPA requested and received from NMFS a list of the endangered and threatened species and designated and proposed critical habitat under NMFS' jurisdiction that may be affected by discharges authorized under the CGP.
- On October 19, 2021, EPA requested that NMFS confirm that no additional species or critical habitats have been listed or proposed for protection under the ESA.
- On October 29, 2021, EPA transmitted a biological evaluation (BE) and requested initiation of formal consultation on the 2022 Construction General Permit. The Services met virtually with EPA on November 4, 2021 to review the BE and changes made to the 2022 CGP. After the meeting, EPA transmitted a document clarifying the technical basis for EPA's standard 50-foot natural vegetation buffer between a pollution source and Waters of the United States.
- On December 9, 2021, NMFS transmitted a letter to EPA verifying that the information required for the consultation analyses is complete and that we were initiating consultation. NMFS also explained that we would not be able to complete consultation before the anticipated mid-January date EPA planned to sign the CGP because we have 90 days to complete a formal consultation once initiated and 45 days to provide our biological opinion per ESA section 7 regulation (50 CFR §402.14(e)). NMFS informed EPA that incidental take statements (ITS) do not expire. Therefore, the ITS for the 2017 CGP will be in effect until another is issued for the 2022 CGP, so it is reasonable for EPA to develop 7(d) documentation while the consultation for the 2022 CGP in ongoing. This is appropriate because EPA had already agreed to the RPMs and terms and conditions during consultation and retains the discretion to implement them once they receive the final opinion documenting NMFS consultation with EPA on the 2022 CGP.
- On January 18, 2022, EPA finalized the 2022 GCP.
- On February 7, 2022, NMFS transmitted draft RPMs to EPA for review.
- EPA responded with comments on the RPMs on February 18, 2022. NMFS edited the RPMs in response to EPA's comments and finalized the RPMs on February 22, 2022.

2 THE ASSESSMENT FRAMEWORK

Section 7(a)(2) of the ESA requires Federal agencies, in consultation with NMFS, to ensure that their actions are not likely to jeopardize the continued existence of endangered or threatened species; or adversely modify or destroy their designated and proposed critical habitat.

As a stormwater permit, CGP applies to future discharges area occurring over a five-year permit term with unknown timing, frequencies, and intensities from an unknown number of locations over a large geographic area. A traditional approach to section 7 consultation focusing on the effects of a specific

proposed action is not designed to address the number, spatial, and temporal scales of stormwater discharges under the CGP. The opinion for the 2017 CGP applied a programmatic analysis that evaluates the structure and decision-making processes of the CGP to determine whether they are likely to insure that the authorized discharges collectively comply with the requirements of section 7(a)(2). While consultation addressed the 2022 CGP as a whole and this opinion applies to the 2022 CGP as a whole, this opinion relies on the analyses in NMFS' opinion on the 2017 CGP for those aspects of the permit that have not been changed for the 2022-2027 permit term. The content of this opinion on the 2022 CGP updates NMFS'2017 opinion and incorporates by reference the analyses and determinations made in 2017 because the stressors of the action and species affected have changed little and analyses of approvals under the 2017 CGP indicate that the RPMs in NMFS' 2017 opinion on the CGP did not minimize take to the extent intended.

The EPA and the Services perform consistency reviews of the NOI to discharge under the CGP where ESA-listed species and designated or proposed critical habitat may be affected. Stormwater discharges within the action area that are not eligible for the CGP require an individual permit from EPA and will be subject to a separate ESA section 7 consultation.

An ESA section 7 assessment involves the following steps:

Description of the Proposed Action (Section 3): In this framework programmatic consultation, the description of the action describes the CGP elements that have been added to or changed for the 2022-2027 permit term and references the 2017 opinion for the CGP elements that have not changed.

Action Area (Section 4): We update the 2017 opinion on the CGP BE's description of the degree of overlap between the discharges that would be authorized by the CGP, as proposed for the 2022-2027 permit term, with the ranges of endangered and threatened species and designated and proposed critical habitat under NMFS' jurisdiction to describe the action area within the spatial extent of stressors caused by the discharges.

Species and Critical Habitat Considered in this Opinion (Section 5): We identify ESA-listed species and designated and proposed critical habitat that are likely to co-occur with the stressors from the action in space and time and update the status of those species and habitat relative to the 2017 opinion on the CGP. We first identify the new species or listing changes that have occurred since NMFS' consultation on the 2017 CGP in Section 5.1 *Recently Listed Species and Designated and Proposed* Critical Habitat. This is followed by Section 0.

Updates to the Status of Species and Designated and Proposed Critical Habitat Addressed in NMFS' Consultation on the 2017 CGP.

Environmental Baseline (Section 6): We describe changes since NMFS' consultation on the 2017 CGP in the environmental baseline as the condition of the listed species or designated and proposed critical habitat in the action area, without the consequences to the listed species or designated and proposed 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 consultation, and the impact of State or private actions which are contemporaneous with the consultation in process. The consequences to listed species or designated and proposed critical habitat

from ongoing activities that are not within the agency's discretion to modify are part of the environmental baseline.

Effects of the Action (Section 7): The 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. This section of the opinion evaluates the changes made to the CGP for the 2022-2027 permit term. 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.

General permits authorized by Federal agencies apply to activities over large geographic areas occurring over long periods of time, with substantial uncertainty about the number, location, timing, frequency, and intensity of specific activities those programs authorize, fund, or carry out. The traditional approach to section 7 consultations, which focuses on the effects of a specific proposed action, is not designed to address the spatial and temporal scales and level of uncertainty that is typical of on the implementation of general permit programs. Instead of trying to adapt the traditional approach to consultations to the 2022 CGP, we developed a programmatic assessment framework that allows us assist EPA in ensuring their program complies with the requirements of section 7(a)(2) of the ESA. Our assessment framework for general permits first assesses whether the actions a general permit authorizes are likely to adversely affect ESA-listed species or designated or proposed critical habitats. We do this by estimating exposure and response to the stressors these actions contribute, just as for traditional consultations (Section 0). Section 7.2 updates the Risk Analysis from the 2017 CGP opinion and Section 7.3 examines the implications of the CGP under climate change. If ESA-listed species and designated and proposed critical habitats are likely to be adversely affected, we then examine the general permit's structure and decision-making processes to determine whether they are likely to insure that the actions the agency authorizes collectively comply with the requirements of section 7(a)(2) in Section 7.4. If exposure to stressors and adverse effects are not likely to occur, we do not assess the agency's decision-making process as the process would not result in jeopardy to listed species or adverse modification or destruction of designated critical habitat.

NMFS' opinion on the 2017 CGP concluded that individuals of ESA-listed species and essential physical and biological features (PBFs) of designated and proposed critical habitat may be exposed to harmful levels of stressors in construction stormwater discharges. EPA's 303(d) list identifies construction as the source of sediment impairment of aquatic habitats within the range of these species, and in a number of cases, within designated and proposed critical habitat. The 2017 opinion then evaluated implementation of the permit program to determine if the decision processes and monitoring and feedback features of the permit would prevent harmful exposures to stressors by ESA-listed species and designated and proposed critical habitat. Revisions for the 2022 CGP were made to improve compliance, training, and validity of ESA Eligibility certifications. This opinion evaluates those changes for the 2022 CGP using the following seven elements:

1) Scope: Has the general permit been structured to reliably estimate the probable number, location and timing of the discharges that would be authorized by the program?
2) Stressors: Has the general permit been structured to reliably estimate the physical, chemical, or biotic stressors that are likely to be produced as a direct or indirect result of the discharges that would be authorized (that is, the stressors produced by the actual discharges to Waters of the United States)?

3) Overlap: Has the general permit been structured to reliably estimate whether or to what degree specific endangered or threatened species or designated and proposed critical habitat are likely to be exposed to potentially harmful impacts that the proposed permit would authorize?
4) Monitoring/Feedback: Has the general permit been structured to identify, collect, and analyze information about authorized actions that may have exposed endangered or threatened species or designated and proposed critical habitat to stressors at concentrations, intensities, durations, or frequencies that are known or suspected to produce physical, physiological, behavioral, or ecological responses that have potential individual or cumulative adverse consequences for individual organisms or PBFs of designated and proposed critical habitat?
5) Responses of Listed Resources: Does the general permit incorporate an analytical methodology that considers:

    - Status and trends of endangered or threatened species or designated and proposed critical habitat;
    - Demographic and ecological status of populations and individuals of those species given their exposure to pre-existing stressors in different drainages and watersheds;
    - Direct and indirect pathways by which endangered or threatened species or designated and proposed critical habitat might be exposed to the discharges to Waters of the United States; and
    - Physical, physiological, behavior, sociobiological, and ecological consequences of exposing endangered or threatened species or designated and proposed critical habitat to stressors from discharges at concentrations, intensities, durations, or frequencies that could produce physical, physiological, behavioral, or ecological responses, given their pre-existing demographic and ecological condition?

6) Compliance: Does the general permit have a mechanism to reliably determine whether or to what degree operators have complied with the conditions, restrictions or mitigation measures the proposed permit requires when they discharge to Waters of the United States?
7) Adequacy of Controls: Does the general permit have a mechanism to change the action to prevent or minimize endangered or threatened species or designated and proposed critical habitat from being exposed to stressors from discharges at concentration, durations or frequencies that have adverse effects to individual listed organisms, populations or species or PBFs of designated and proposed critical habitat?

Cumulative Effects (Section 8): Cumulative effects are the effects to ESA-listed species and designated and proposed critical habitat of future state or private activities that are reasonably certain to occur within the action area (50 CFR §402.02). Effects from future Federal actions that are unrelated to the action are not considered because they require separate ESA section 7 compliance.

Integration and Synthesis (Section 9): We begin with problem formulation that identifies and integrates the stressors of the action with the species' status (Section 5.2) and the Environmental Baseline (Section 6) and formulate risk hypotheses based on the anticipated exposure of listed species and critical habitat to stressors and the likely response of species and habitats to this exposure. We consider the effects of the action within the action area on populations or subpopulations and on PBFs when added to the environmental baseline and the cumulative effects to determine whether the action could reasonably be expected to:

- Reduce appreciably the likelihood of survival and recovery of an ESA-listed species in the wild by reducing its numbers, reproduction, or distribution, and state our conclusion as to whether the action is likely to jeopardize the continued existence of such species; or
- Appreciably diminish the value of designated and proposed critical habitat for the conservation of an ESA-listed species, and state our conclusion as to whether the action is likely to destroy or adversely modify designated and proposed critical habitat.

The results of our jeopardy and destruction or adverse modification analyses are summarized in the *Conclusion* (Section 10). If, in completing the last step in the analysis, we determine that the action under consultation is likely to jeopardize the continued existence of ESA-listed species or destroy or adversely modify designated and proposed critical habitat, then we must identify Reasonable and Prudent Alternative(s) to the action, if any, or indicate that to the best of our knowledge there are no reasonable and prudent alternatives (see 50 CFR §402.14(h)(2)).

An *Incidental Take Statement* (Section 11) sets limits or boundaries on the total amount of incidental take expected as a result of the programmatic action as a whole (i.e. program actions that are reasonably certain to cause take and are not subject to further section 7 consultation). The ITS specifies the impact of the take, reasonable and prudent measures to minimize the impact of the take, and terms and conditions to implement the reasonable and prudent measures (ESA section 7 (b)(4); 50 CFR §402.14(i)). While it is EPA's policy that its general permits do not authorize discharges that result in take that is not already exempted through another ITS or ESA section 10 permit, reviews of ESA-eligibility certifications indicate that discharges were authorized for NOI making inaccurate and invalid certifications. The ITS for this action applies to all authorizations under the CGP. The consistency review of NOI for eligibility by the EPA and the Services is intended to ensure that individual proposed discharges will minimize or eliminate take that is not otherwise exempted.

We provide discretionary *Conservation Recommendations* (Section 12) that may be implemented by the action agency (50 CFR §402.14(j)). Finally, we identify the circumstances in which *Reinitiation of Consultation* (section 13) is required (50 CFR §402.16).

2.1 Information Used in this Assessment

To comply with our obligation to use the best scientific and commercial data available, we collected information identified through searches of Web of Science, scientific publisher databases (e.g., Elsevier), government databases (e.g., EPA's National Service Center for Environmental Publications), and literature cited sections of peer reviewed articles, species listing documentation, and reports published by government and private entities. This opinion is based on our review and analysis of various information sources, including:

- EPA's initiation package containing:
  - NMFS' opinion from the 2017 consultation
  - EPA's addendum to the 2017 BE addressing which portions of the 2017 BE are still valid and examining changes made for the 2022 CGP;
  - the proposed 2022 CGP permit;
  - the proposed 2022 CGP fact sheet; and
  - the Proposed 2022 CGP Appendices, including Appendix D: Eligibility Procedures Relating to Threatened and Endangered Species Protection;

  - EPA's BE for the 2017 CGP;
- data regarding authorizations under the 2017 CGP transmitted to NMFS on March 2, 2021;
- EPA's summary analysis of authorizations under the 2017 CGP;
- government scientific publications, including status reviews, recovery plans, and listing notices for ESA-listed species and designated and proposed critical habitat in the action area of this consultation;
- reports on the status and trends of water quality within the action area
- NMFS' opinion for the 2017 CGP;
- the National Land Cover Dataset and 2022 State Climate Summaries; and
- the best available commercial and scientific information, including peer reviewed research.

These information resources identify information relevant to the potential exposures and responses of ESA-listed species and designated and proposed critical habitat under NMFS' jurisdiction that may be affected by the proposed action. This information was used to evaluate the action's framework in order to draw conclusions on risks the action may pose to the continued existence of these species and the value of designated and proposed critical habitat for the conservation of ESA-listed species.

In 2019, NMFS and the USFWS revised regulations for implementing section 7 of the ESA to clarify, interpret, and implement portions of the Act concerning the interagency cooperation procedures. Among these revisions was § 402.14(h)(3) that allows the Services to adopt all or part of a Federal agency's initiation package. Rather than repeat the content of these resources in this opinion, they are adopted and referenced where needed. Similarly, rather than repeat information and analyses used in the NMFS' opinion for the 2017 CGP, the opinion adopted for purposes of this consultation and is referenced where appropriate and the text in this opinion explains why the information or analyses are still valid.

3 DESCRIPTION OF THE PROPOSED ACTION

"Action" means all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by federal agencies (50 C.F.R. §402.02). The EPA proposed to re-issue the NPDES CGP to authorize the discharge or pollutants from construction activities. EPA's 2017 CGP became effective on February 17, 2017, and expired on February 16, 2022 (see 82 FR 6534). EPA's 2022 CGP replaced the 2017 CGP, and became effective on February 17, 2022 (see 87 FR 3522). This opinion adopts the documents submitted with EPA's request for consultation as detailed descriptions of the action and this opinion relies on the analyses in NMFS' opinion on the 2017 CGP for those aspects of the permit that have not been changed for the 2022-2027 permit term.

This opinion adopts the documents submitted with EPA's request for consultation as detailed descriptions of the action and relies on the analyses in NMFS' opinion on the 2017 CGP for those aspects of the permit that have not been changed for the 2022-2027 permit term. During pre-consultation technical assistance, the Services made a number of edits to the language in the NOI and in *Appendix D: Eligibility Procedures Relating to Threatened and Endangered Species Protection* during pre-consultation technical assistance. EPA incorporated these edits into the proposed permit issued for notice and comment (https://www.epa.gov/sites/default/files/2021-05/documents/proposed_2022_cgp_-_appendices.pdf). Not all 2022 CGP changes are substantive. Changes that are non-substantive are not part of this consultation. For example, language in the permit was simplified to make it more readable, including changes that improve the clarity and specificity of the permit requirements. Changes in the 2022 CGP, as described in EPA's BE addendum, that are part of this consultation are summarized in the following subsections.

3.1 Clarifying Permit Requirements to Improve Compliance

The language in the following sections of the permit was simplified to improve permit readability and enhance operators' understanding of and ability to comply with the permit's requirements:

Part 1.3.6. Dewatering water discharged from contaminated sites (as defined) are prohibited;

Part 2.2.3. Perimeter control installation & maintenance;

Part 2.3.3. Storage, handling, and disposal of building products, materials, and wastes;

Part 2.4. Dewatering discharge requirements;

Part 4.2.2. Storm events triggering site inspection;

Part 4.4. Definitions of arid, semi-arid, drought-stricken areas, and seasonally dry period;

Part 4.6.4. Updating the SWPPP based on inspection information;

Part 4.7.3. Option for electronic inspection reports and SWPPPs;

Part 5.1.1. Timeframe to repair or replace stormwater controls;

Part 5.4. Corrective action documentation; and

Part 6. Staff training requirements.

EPA expects the changes in the sections listed above to improve permit compliance and provide greater environmental protection through:

- Clarifying the difference between routine maintenance and corrective actions, particularly for controls with repetitive failures;
- Clarifying the requirements for perimeter controls and natural buffers, and adding specific information on where perimeter controls are needed, how to maintain them and when to perform repairs;
- Clarifying soil and rock stockpile requirements;
- Clarifying the definition of arid and semi-arid areas, adding a definition for seasonally dry period and providing alternative schedules for stabilization and inspection (including tools to help a permittee determine applicability to their site);
- Specifying pollution prevention requirements for petroleum and chemical containers;
- Clarifying the requirements for inspection frequency, including when to inspect during multi-day storms or after snowmelt, and when to inspect at sites discharging to sensitive waters;
- Specifying that inspection procedures include checking downstream areas for signs of sedimentation;
- Clarifying the requirements to update the SWPPP site map and stormwater team training documentation;
- Clarifying that inspection reports and SWPPPs can be stored electronically;
- Streamlining corrective action documentation requirements (i.e., list actions as entries in a log rather than generate multiple reports);
- Clarifying the requirement to identify in the SWPPP members of the stormwater team responsible for (1) installing and maintaining controls, (2) conducting inspections, and (3) taking corrective action;

- Requiring photo documentation of stabilized areas as part of permit termination;
- Updating the ESA Eligibility procedures; and
- Adding a question to the NOI for operators to identify other operators involved in the same project that are also covered under the CGP.

3.2 Permit Eligibility Related to Endangered and Threatened Species and Critical Habitat Protection

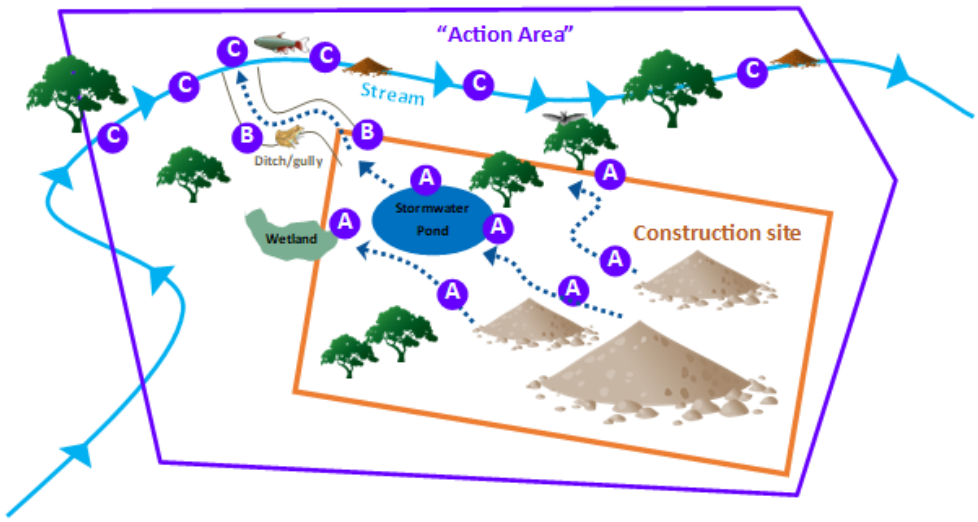
Central to this consultation are the changes made to Appendix D of the 2022 CGP during pre-consultation technical assistance: *Eligibility Procedures Relating to Threatened & Endangered Species Protection*. The CGP requires operators to determine, in conjunction with submitting their NOI for permit coverage, that their site's stormwater discharges, authorized non-stormwater discharges, and stormwater discharge-related activities were the subject of a separate ESA consultation, an ESA Section 10 permit, or are not likely to result in short- or long-term adverse effects on any listed species or critical habitat protected under the ESA. In the 2022 CGP, operators must follow the steps in the ESA section of the NOI in the NPDES eReporting Tool (NeT), or in the paper "ESA worksheet" in (Appendix J of the permit) if the EPA Regional Office has granted a waiver from electronic reporting, to complete this assessment. Coverage under the CGP does not begin immediately upon submitting an NOI: the 2022 CGP still allows only a 14-day waiting period to provide the Services an opportunity to review the NOI and the operator's ESA Eligibility criterion selection. EPA requested public comment on extending this waiting period to 30 days, but ultimately the permit was not changed to extend the review period.

The Services made extensive edits to Appendix D and the NOI materials during preconsultation. EPA incorporated these edits into the permit and is incorporating the entire ESA worksheet from Appendix D into the NOI form/NeT to guide potential permittees in making accurate eligibility selections. A red-line/strike out version of these changes to Appendices D and J of the 2022 CGP are provided in Appendix A of this opinion.

Those certifying under Criterion E: ESA Section 7 consultation has successfully concluded for that specific construction project, are now required to add a reference to the letter of concurrence, conference or opinion and attach supporting documentation to the NOI and SWPPP. Other revisions clarified existing procedures, restated recommendations as requirements (i.e., changing should to must), and updated the information resources available to operators for determining whether species are located in their "action area." The updated links and instructions for USFWS and NMFS Web sites provide operators with mapping resources to help determine the presence of ESA-listed species and critical habitat. EPA will update link on its ESA web page for NMFS' most recent mapping resources.

Because permit applicants often failed to understand that their action area includes the impact area around their constructions site under the 2017 CGP, EPA developed an example graphic (Figure 2) that depicts a construction site "action area" as defined in the CGP. EPA will include this graphic on the construction stormwater website, in Appendix D, and if technology allows, may incorporate it into NeT-CGP.

Example of an "Action Area" with respect to requirements under EPA's Construction General Permit (CGP) for protection of Endangered Species Act (ESA)-protected species and critical habitat



"Action Area" – all areas to be affected directly or indirectly by the federal action and not merely the immediate area involved in the action. See 50 CFR 402. For the purposes of this permit and for application of the threatened and endangered species protection eligibility requirements, the following areas are included in

A The areas on the construction site where stormwater discharges originate and flow toward the point of discharge into the receiving waters. This includes: areas on the construction site where excavation, site development, or other ground disturbance activities occur; and areas where stormwater controls will be constructed and operated, including any areas where stormwater flows to and from the stormwater controls. and the immediate vicinity.

B The areas in the vicinity of the construction site where stormwater discharges flow from the construction site to one or more points of discharge into receiving waters. (Example: Where stormwater flows into a ditch, swale, or gully that leads to receiving waters.)

C The extent of the receiving water potentially affected by stormwater discharges from your construction site through alteration of water chemistry, turbidity, temperature, or bank structure (i.e., erosive flow), regardless of whether the construction site is adjacent to the receiving water.

Figure 2. EPA's graphic for instructing applicants on determining their action area when certifying ESA eligibility

3.3 Additional Requirements under the 2022 CGP

EPA proposed significant changes to the 2022 CGP for the management of dewatering (i.e., removal of ponded water from the site) and site inspector training. These changes were made because EPA site inspections consistently noted compliance issues in these areas.

3.3.1 Dewatering

Proposed changes to the 2022 CGP include the prohibition of dewatering water discharges from contaminated sites. EPA also proposes that the CGP only cover dewatering discharges with no visible turbidity or visible sheen or hydrocarbon deposits and that do not cause erosion or resuspended sediment. Further, site operators will be required to perform daily dewatering inspections, document the discharge duration and volume, take photographs of the dewatering discharge, the stormwater control, and the point

of discharge, and take immediate corrective action when the dewatering discharge produces a sediment plume, a visible sheen or visible hydrocarbon deposits in the receiving water.

The final CGP includes additional limitations on dewatering discharges: EPA's request for public comment asked for comment on whether the CGP should include prohibitions to dewatering discharges beyond those from contaminated sites, and whether turbidity monitoring from dewatering operations that discharge to sediment-impaired waters or waters designated as Tier 2, Tier 2.5 or Tier 3[2] waters should be required.

3.3.2 Site Inspector Training

Site visits by EPA staff consistently noted that many permittees were not properly conducting inspections or documenting their findings in accordance with the 2017 CGP. The 2022 CGP requires that any personnel conducting permit-required site inspections must complete either an EPA-developed construction inspection training course or hold a current, valid certification or license. The certification or license must be from a program that, at a minimum, covers the principles and practices of erosion and sediment control and pollution prevention practices for construction sites; the proper design, installation and maintenance of erosion and sediment controls and pollution prevention practices used at construction sites; and the performance of inspections, including the proper completion of required reports and documentation consistent with the requirements of the CGP.

3.4 Conservation Measures to Avoid Exposure

Conservation measures other than those already required by the 2022 CGP have not been developed.

4 ACTION AREA

The action area is defined by regulation as "all areas to be affected directly or indirectly by the federal action and not merely the immediate area involved in the action" (50 CFR §402.02). Section 4.1 of NMFS' opinion for the 2017 CGP includes an inventory and maps of the distribution of subwatersheds that are subject to the CGP. The action area includes waters that may be directly affected where EPA has NPDES permitting authority and other waters affected by discharges to those waters. For example, the Connecticut River flows through Massachusetts into Connecticut. While EPA does not have permitting authority in Connecticut, authorized discharges to the Connecticut River at the state border potentially expose endangered shortnose and New York Bight DPS of Atlantic sturgeon in Connecticut.

Those areas where EPA is the NPDES permitting authority include:

- Washington D.C., Massachusetts, New Hampshire, New Mexico, and Puerto Rico;
- The Pacific Territories of American Samoa, Guam, Northern Marianas Islands, Johnson's Atoll, Midway Island, and Wake Island;
- Indian Country in Alabama, Arizona, California, Colorado, Connecticut, Florida, Idaho, Iowa, Kansas, Louisiana, Michigan, Minnesota, Mississippi, Montana, Nebraska, New York, North Carolina, North Dakota, Oregon, Rhode Island, South Carolina, South Dakota, Texas, Utah, Virginia, Washington, Wisconsin, and Wyoming;

[2] Tier 2 are high quality waters, Tier 2.5 are Significant Natural Resource Waters, Tier 3 are Outstanding Natural Resource Waters

- Federal Operators in Colorado, Delaware, Vermont, and Washington state; and
- Designated Areas in Oklahoma and Texas. The EPA has retained authorization to issue permits for activities associated with the exploration, development, or production of oil or gas or geothermal resources, including transportation of crude oil or natural gas by pipeline.

Specific areas where EPA is the permitting authority are listed in detail in Table 1.1 of EPA's BE addendum for the 2022 CGP. The action area specified in EPA's BE addendum includes "Waters of the United States," as defined in 40 CFR §122.2. That provision defines "Waters of the United States" as certain inland waters (i.e. streams, rivers, lakes, ponds) and the territorial sea, which generally extends 4.8 kilometers from shore[3]. NMFS expects that CGP-authorized discharges would be indistinguishable from other sources at the outer boundary of the territorial seas.

5 Species and Designated and Proposed Critical Habitat Considered in this Opinion

This section first identifies the species and critical habitat considered in this opinion. Section 5.1 addresses those species that have been listed and critical habitat that has been designated or proposed for designation since consultation on the 2017 CGP. The section explains whether these ESA resources are likely to be exposed to CGP discharges such that they be included in the effects analysis of this opinion. Section 0 updates the status of the species and designated and proposed critical habitat for those species and critical habitat that were addressed in NMFS' opinion on the 2017 CGP.

Table 1 below identifies the ESA-listed species and designated and proposed critical habitat, including DPSs and ESUs, under NMFS' jurisdiction that have ranges and locations, overlapping with waters potentially affected by the 2022 CGP. This table includes both recently listed species and designated or proposed critical habitat (Section 5.1) and those species and designated critical habitat addressed in the 2017 opinion (Section 0).

During consultation on the 2022 CGP NMFS reviewed the determinations made in the 2017 CGP opinion and the basis for those determinations. With the exception of the unusual mortality event for North Atlantic right whale and closer consideration of nearshore critical habitat and life stages of Puget Sound/Georgia Basin bocaccio and yelloweye rockfish, NMFS determined that this opinion on the 2022 CGP need not consider those ESA-listed species and designated and proposed critical habitat under NMFS' jurisdiction that were not likely to be adversely affected by discharges authorized under the 2017 CGP. These include blue whale, (*Balaenoptera musculus*, endangered), fin whale (*Balaenoptera physalus*, endangered), sei whale (*Balaenoptera borealis*, endangered), sperm whale (*Physeter macrocephalus*, endangered), Humpback Whale (*Megaptera novaeangliae*)[4], Eastern Pacific and Central

[3] Permitting under NPDES applies to waters beyond the territorial sea. Section 402 authorizes permits which *"apply, and insure compliance with, any applicable requirements of sections 301, 302, 306, 307, and 403."* Section 403 of the Clean Water Act addresses ocean discharges, including the territorial sea, the contiguous zone, and the ocean. The term ''contiguous zone'' means the entire zone established or to be established by the United States under article 24 of the Convention of the Territorial Sea and the Contiguous Zone. The term ''ocean'' means any portion of the high seas beyond the contiguous zone.

[4] NMFS' opinion on the 2017 did not reflect the May 2016 listing revision for humpback whales. The DPS within the action area include the Mexico DPS (threatened)and the Central American DPS (endangered).

and Southwest Atlantic DPSs of scalloped hammerhead (*Sphyrna lewini,* threatened), white and black abalone (*Haliotis sorenseni* and *H. cracherodii*, respectively both endangered), and Carolina and South Atlantic DPS of Atlantic sturgeon (*Acipenser oxyrhynchus oxyrhynchus*, both endangered) (NMFS 2017b). The action area for the CGP has not expanded to include additional ranges or designated and proposed critical habitats and the anticipated effects of the CGP-proposed discharges on these species has not changed, so these species and designated and proposed critical habitats are not included in this opinion for the 2022 CGP.

The delegation of Clean Water Act authority to the state of Idaho has not affected which species and designated and proposed critical habitat features will be considered in this opinion because Indian Country Lands within Idaho are still eligible for EPA's 2022 CGP and these lands overlap with waters where ESA-listed species and designated and proposed critical habitat within the Snake River System occur.

Table 1. Species protected under the ESA with ranges that overlap with waters affected by the 2022 CGP

Species	*ESA Status*	*Critical Habitat*	*Recovery Plan*
Marine Mammals – Cetaceans			
Killer Whale (Orcinus orca) – Southern Resident DPS	E – 70 FR 69903 Amendment 80 FR 7380	71 FR 69054	73 FR 4176 *01/2008*
North Atlantic Right Whale (Eubalaena glacialis)	E – 73 FR 12024	81 FR 4837	70 FR 32293 08/2004
Rice's (formerly Bryde's) Whale (Balaenoptera edeni) – Gulf of Mexico subspecies	E – 84 FR 15446	-- --	-- --
Marine Reptiles			
Green Turtle (Chelonia mydas) *– East Pacific DPS* *– Central North Pacific DPS* *– Central West Pacific DPS* *– North Atlantic DPS*	81 FR 20057 T T E *T*	-- --	63 FR 28359 01/1998 10/1991 – U.S. Atlantic
Hawksbill Turtle (Eretmochelys imbricata)	E – 35 FR 8491	63 FR 46693	57 FR 38818 08/1992 – *U.S. Caribbean, Atlantic, and Gulf of Mexico* 63 FR 28359 05/1998 – *U.S. Pacific*
Kemp's Ridley Turtle (Lepidochelys kempii)	E – 35 FR 18319	-- --	03/2010 – *U.S. Caribbean, Atlantic, and Gulf of Mexico* 09/2011
Leatherback Turtle (Dermochelys coriacea)	E – 35 FR 8491	44 FR 17710 and 77 FR 4170	10/1991 – *U.S. Caribbean, Atlantic, and Gulf of Mexico* 63 FR 28359 05/1998 – *U.S. Pacific*
Loggerhead Turtle (Caretta caretta) – North Pacific Ocean DPS	76 FR 58868 E	-- --	63 FR 28359

Species	*ESA Status*	*Critical Habitat*	*Recovery Plan*
Northwest Atlantic Ocean DPS	*T*	79 FR 39855	74 FR 2995 *10/1991 – U.S. Caribbean, Atlantic, and Gulf of Mexico* *05/1998 – U.S. Pacific* *01/2009 – Northwest Atlantic*
South Atlantic Ocean DPS	*T*	-- --	-- --
Olive Ridley Turtle (Lepidochelys olivacea) All Other Areas/Not Mexico's Pacific Coast Breeding Colonies	T – 43 FR 32800	-- --	-- --
Salmonids			
Atlantic Salmon (Salmo salar) – Gulf of Maine DPS	E – 74 FR 29344 and *65 FR 69459*	74 FR 39903	70 FR 75473 and 81 FR 18639 (Draft) 11/2005 *03/2016 – Draft* 2/2019- Final
Chinook Salmon (Oncorhynchus tshawytscha)	70 FR 37160		
– California Coastal ESU	*T*	70 FR 52488	81 FR 70666
– Central Valley Spring-Run ESU	*T*	"	79 FR 42504
– Lower Columbia River ESU	*T*	70 FR 52629	78 FR 41911
– Upper Columbia River Spring-Run ESU	*E*	"	72 FR 57303
– Upper Willamette River ESU	T	"	76 FR 52317
– Puget Sound ESU	*T*	"	72 FR 2493
– Sacramento River Winter-Run ESU	*E*	58 FR 33212	79 FR 42504
– Snake River Fall-Run ESU	*T*	58 FR 68543	*11*-2017
– Snake River Spring/Summer Run ESU	*T*	64 FR 57399	11-2017
Chum Salmon (Oncorhynchus keta)	70 FR 37160		
– Columbia River ESU	T	70 FR 52629	78 FR 41911
– Hood Canal Summer-Run ESU	*T*	"	72 FR 29121
Coho Salmon (Oncorhynchus kisutch)	70 FR 37160		
– Central California Coast ESU	E	64 FR 24049	77 FR 54565
– Southern Oregon and Northern California Coasts ESU	*T*	"	79 FR 58750
– Lower Columbia River ESU	T	81 FR 9251	78 FR 41911
– Oregon Coast ESU	T – 73 FR 7816	73 FR 7816	81 FR 90780
Sockeye Salmon (Oncorhynchus nerka)	70 FR 37160		
– Ozette Lake ESU	T	70 FR 52630	74 FR 25706
– Snake River ESU	*E*	58 FR 68543	80 FR 32365
Steelhead Trout (Oncorhynchus mykiss)	71 FR 834		
– California Central Valley DPS	*T*	70 FR 52487	79 FR 42504
– Central California Coast DPS	*T*	"	81 FR 70666

Species	*ESA Status*	*Critical Habitat*	*Recovery Plan*
– Northern California DPS	*T*	*“*	*“*
– South-Central California Coast DPS	*T*	*“*	78 FR 77430
– Southern California DPS	*E*	*“*	77 FR 1669
– Upper Columbia River DPS	*T*	70 FR 52629	72 FR 57303
– Upper Willamette River DPS	*T*	*“*	76 FR 52317
– Lower Columbia River DPS	*T*	*“*	78 FR 41911
– Middle Columbia River DPS	*T*	*“*	74 FR 50165
– Snake River Basin DPS	*T*	*“*	11-2017
– Puget Sound DPS	T – 72 FR 26722	81 FR 9251	12-2019
Anadromous non-Salmonid Fish			
Atlantic Sturgeon (Acipenser oxyrinchus oxyrinchus)	77 FR 5879	82 FR 39160	-- --
– Gulf of Maine DPS	*T*		
– New York Bight DPS	*E*		-- --
– Chesapeake DPS	*E*		
Eulachon (Thaleichthys pacificus) –Southern DPS	T – 75 FR 13012	76 FR 65323	9/2017
Green Sturgeon (Acipenser medirostris) – Southern DPS	T – 71 FR 17757	74 FR 52300	8/2018
Shortnose Sturgeon (Acipenser brevirostrum)	E – 32 FR 4001	-- --	63 FR 69613 12/1998
Other Fish			
Bocaccio (Sebastes paucispinis) – Puget Sound/Georgia Basin DPS	E – 75 FR 22276 and 82 FR 7711	79 FR 68041	10/2017
Giant Manta Ray (Mobula birostris)	T – 83 FR 2916	*Not prudent*	-- --
Nassau Grouper (Epinephelus striatus)	T – 81 FR 42268	-- --	8/2018- Outline
Oceanic Whitetip Shark (Carcharhinus longimanus)	T – 83 FR 4153	*Not prudent*	9/2018- Outline
Yelloweye Rockfish (Sebastes rubberimus) – Puget Sound/Georgia Basin DPS	T – 75 FR 22276 and 82 FR 7711	79 FR 68041	10/2017
Marine Invertebrates			
Indo-Pacific Corals			
Acropora globiceps Coral	T – 79 FR 53851	*85 FR 76262 (proposed)*	-- --
Acropora jacquelineae Coral	*“*	*“*	-- --
Acropora retusa Coral	*“*	*“*	-- --
Acropora speciosa Coral	*“*	*“*	-- --
Acropora tenella Coral	*“*	*“*	-- --
Euphyllia paradivisa Coral	*“*	*“*	-- --
Isopora crateriformis Coral	*“*	*“*	-- --
Seriatopora aculeata Coral	*“*	*“*	-- --
Atlantic/Caribbean Corals			
Boulder Star Coral (Orbicella franksi)	T – 79 FR 53851	*85 FR 76302 (proposed)*	

Species	*ESA Status*	*Critical Habitat*	*Recovery Plan*
Lobed Star Coral (Orbicella annularis)	"	"	-- --
Mountainous Star Coral (Orbicella faveolata)	"	"	-- --
Rough Cactus Coral (Mycetophyllia ferox)	"	"	-- --
Pillar Coral (Dendrogyra cylindrus)	"	"	-- --
Elkhorn Coral (Acropora palmata)	"	73 FR 72210	80 FR 12146
Staghorn Coral (Acropora cervicornis)	"	"	""
Other Marine Invertebrates			
Chambered Nautilus (Nautilus pompilius)	T – 83 FR 48976	*Not prudent*	-- --
White Abalone (Haliotis sorenseni)	*E – 66 FR 29046*	*Not prudent*	
Black Abalone (Haliotis cracherodii)	E – 74 FR 1937	76 FR 66806	

5.1 Recently Listed Species and Designated and Proposed Critical Habitat

NMFS has listed additional species and designated and proposed critical habitat for protection under the ESA since issuance of the 2017 CGP. Those that have ranges overlapping with the action area include Rice's (formerly Gulf of Mexico Bryde's) whale, the chambered nautilus, the oceanic whitetip shark, and the giant manta ray. NMFS finalized critical habitat for the Mexico and Central American humpback whale DPSs in May of 2021. Finally, we reconsider the NLAA determination in the 2017 CGP biological opinion for North Atlantic right whale due to a change in the status of the species associated with increased mortality rates and decreased reproduction since issuance of the 2017 permit. Finally, since issuance of the 2016 CGP, NMFS has proposed critical habitat for the threatened Caribbean coral species *Mycetophyllia ferox, Dendrogyra cylindrus, Orbicella annularis, O. faveolata, O. franksi,* and the threatened Indo-Pacific corals *Acropora globiceps, Acropora jacquelineae, Acropora retusa, Acropora rudis, Acropora speciosa, Euphyllia paradivisa, Isopora crateriformis, Pavona diffluens,*and *Seriatopora aculeata.*

5.1.1 Rice's Whale

The range for the endangered Rices's whale is throughout the Gulf. The species is consistently located in the northeastern Gulf of Mexico along the continental shelf break between 200 and 300 meters deep (Rosel et al. 2016). The EPA has permitting authority over Indian Country land in Texas. These lands are at least 120 kilometers from the Texas coast, so Rice's whale are extremely unlikely to be exposed to discharges from any construction activities authorized by EPA in the state of Texas. NMFS concludes that discharges authorized under the 2022 CGP are not likely to adversely affect Rice's whale because exposures are expected to be extremely unlikely to occur and are thus discountable. Rice's whale is not discussed further in this opinion.

5.1.2 Chambered Nautilus

The threatened chambered nautilus is an extreme habitat specialist that lives in close association with steep-sloped forereefs in the western Pacific Ocean (Jereb 2005, Saunders 2010). The species is only

reported off of one U.S. island in deep waters. Given their habitat is separated from land-sourced sediments by some distance, NMFS concludes that discharges authorized under the 2022 CGP are not likely to adversely affect the chambered nautilus because exposures are expected to be extremely unlikely to occur and are thus discountable. The chambered nautilus is not discussed further in this opinion.

5.1.3 Oceanic Whitetip Shark

The oceanic whitetip shark is a truly pelagic species, generally remaining offshore in the open ocean. It is usually found on the outer continental shelf or around oceanic islands in deep water greater than 184 meters (Backus et al. 1956, Strasburg 1958, Compagno 1984, Bonfil et al. 2008). Given their habitat is separated from land-source terrestrial sediment sources by some distance, NMFS concludes that discharges authorized under the 2022 CGP are not likely to adversely affect the oceanic whitetip shark because exposures are expected to be extremely unlikely to occur and are thus discountable. The oceanic whitetip shark is not discussed further in this opinion.

5.1.4 Giant Manta Ray

Giant manta rays are typically found offshore in the open ocean, though these animals are sometimes found around cleaning stations of nearshore reefs and estuarine waters. Biologists from NMFS have observed giant manta ray infrequently near the entrance to San Juan Bay in Puerto Rico, particularly near channel marker buoys in San Juan Harbor. Overall, the species is not frequently reported in waters of Puerto Rico. The rarity of giant manta rays in Puerto Rico waters and their preference for deeper, offshore areas means any exposure to CGP-authorized discharges would rarely occur (Farmer et al. 2021). While the Flower Garden Banks in the Gulf of Mexico are a juvenile nursery area, giant manta are extremely unlikely to be exposed to discharges from construction activities on the Texas coast because it is located about 161 kilometers south of the Texas-Louisiana border. Giant manta rays are extremely unlikely to be exposed to CGP-authorized discharges in the Pacific territories. Manta species were observed in Tumon Bay Marine Preserve of Guam. The coastline of Tumon Bay is populated by hotels and other resort facilities. Observation of manta rays during aerial surveys of Guam were infrequent, but increased slightly from 1963 to 2012 (Martin 2016). These reports are not specifically of the giant manta ray and could actually represent observations of the reef manta, which are more likely to occur close to land. Manta species were not observed in surveys of Apra Harbor and Agana Bay conducted between 2008 and 2012 (Martin 2016). Over the 2017 CGP permit term, only two NOI were submitted from Guam for first time coverage under the CGP. Considering that the giant manta ray is a pelagic species of manta ray and manta species have not been observed in or near waters receiving CGP-authorized discharges in recent years, NMFS concludes that discharges authorized under the 2022 CGP are not likely to adversely affect the giant manta because exposures are expected to be extremely unlikely to occur and are thus discountable. The giant manta ray is not discussed further in this opinion.

5.1.5 Critical Habitat Proposed for Indo-Pacific and Caribbean ESA-Listed Corals

Critical habitat recently proposed for the Indo-Pacific ESA-listed coral species (85 FR 76262) and Caribbean coral species (85 FR 76302) includes the PBFs of *"Reefscape with no more than a thin veneer of sediment..."* and *"Marine water with levels of temperature, aragonite saturation, nutrients, and water clarity that have been observed to support any demographic function."* Because low sedimentation and water clarity are important features of proposed critical habitats for ESA-listed coral, the implications of CGP-authorized discharges on proposed critical habitat are addressed in later sections of this opinion.

5.1.6 Critical Habitat Proposed for the Mexico and Central American DPSs of Humpback Whale.

Critical habitat for the Mexico and Central American DPSs of Humpback Whale was designated on April 21, 2021. The designation identifies specific areas along the Pacific coast of the United States based on documented feeding in these areas, humpback whale sightings data, and/or presence of humpback whale prey. The greater than 150,000 kilometer long nearshore boundary of the critical habitat generally follows the 50 meter isobath along the Pacific coast. The boundary is set in shallower waters for the San Francisco and Monterrey Bay critical habitat unit, at the 15 meter isobath and the Central California Coastal unit, at the 30 meter isobath. EPA is the permitting authority for only one area that is less than 50 kilometers from this designated critical habitat: the northern border of Cape Flattery on the Makah Reservation in Washington state is about one kilometer from the critical habitat and Tatoosh Island, which is also part of the reservation, lies partially within the critical habitat. This represents about 20 kilometers (0.013%) of the designated critical habitat's nearshore boundary. NMFS concludes that discharges authorized under the 2022 CGP are not likely to destroy or adversely modify critical habitat designated for the Mexico and Central American DPS of humpback whale because discharges from any construction activity near this critical habitat are expected to be insignificant, if not extremely unlikely to occur. Designated critical habitat for the Mexico and Central American DPSs of humpback whale is not discussed further in this opinion.

5.2 Updates to the Status of Species and Designated and Proposed Critical Habitat Addressed in NMFS' Consultation on the 2017 CGP

The 2017 consultation for the CGP applied the recovery plans and status reports that were the most recent information available at the time the opinion was written. Sections 5.2.1 through 5.2.7 which follow adopts and updates Section 6.2 *Status of the Species and Designated Critical Habitat Considered in this Consultation* of the 2017 CGP biological opinion using recently published status reviews and recovery plans. This consultation addresses all species and designated critical habitat identified in Section 6.2 of the 2017 CGP biological opinion as well as Critical Habitat Proposed for Indo-Pacific and Caribbean ESA-Listed Corals. See section 6.2 of the 2017 CGP biological opinion for species descriptions and life histories, and status at the time of the 2017 CGP consultation. Recovery goals are included in this opinion for each species, where available, as the 2017 CGP biological opinion did not include this information.

5.2.1 Cetaceans

5.2.1.1 *The 2017–2022 North Atlantic Right Whale Unusual Mortality Event*

An unusually high number of vessel-strike and entanglement mortalities, starting in 2017 and continuing into 2022, has claimed approximately ten percent of the North Atlantic right whale population. These elevated mortalities have been declared an Unusual Mortality Event under the Marine Mammal Protection Act. There are fewer than 100 breeding females left. Only 22 births have been observed in the four calving seasons since 2017, less than one-third the previous average annual birth rate for the species. The best current abundance estimate available for the North Atlantic right whale stock is 368+/- 11 individuals (NMFS 2021).

Section 6.1 in NMFS' opinion on the 2017 CGP identified the North Atlantic right whale as a species that is expected to have insignificant exposures to CGP-authorized discharges. Because of the recent unusual mortality event, we reassess, in a spatially-informed manner, whether exposures to CGP discharges may

still be considered insignificant under the 2022 CGP, given the current status of the species. CGP permits[5] for discharges to estuarine and coastal waters of New England, where the North Atlantic right whale forages in summertime, are concentrated in the urban areas of Boston, Salem, Quincy, and Lynn, Massachusetts. Right whales migrate to shallower waters from the south of Cape Fear, North Carolina, to the Atlantic coast of Florida. Calving occurs in these waters from mid-November to mid-April. While Indian Country Lands in the Carolinas, Georgia, and Florida are eligible for CGP coverage, these lands are far removed from coastal watersheds, so construction activities on these lands are not expected to impact waters where North Atlantic Right whales occur. Comparing the locations of coastal dischargers with the thousands of sightings reported in New England waters over the past 20 years to the NOAA Right Whale Sighting Advisory System (Consortium 2020)[6] revealed sightings within Nahant Bay near Lynn and south of Marblehead near Salem, but none close to Boston or Quincy. Most North Atlantic right whale sightings occur within Cape Cod Bay.

Over the 2017 CGP permit term, there were 21 NOI filed for construction that could discharge to Cape Cod Bay. However, there is no information available on the effects of turbidity on whales. While an increase in suspended sediments may cause whales to alter their normal movements, these minor movements are expected to be too small to be meaningfully measured or detected. Since whales breathe air, turbidity is not expected to affect their ability to oxygenate whir blood. They would be able to swim away from the turbidity plume and would not be adversely affected by passing through the temporary increase in turbidity. Turbidity is most likely to affect whales if a plume causes a barrier to normal behaviors. However, we expect whales to swim through the plume or avoid the area with no adverse effects. Considering that the responses of whales to turbidity plumes are expected to be insignificant, NMFS concludes that EPA's authorization of discharges under the CGP is not likely to adversely affect the North Atlantic right whale. The North Atlantic right whale is not discussed further in this opinion.

5.2.1.2 *Southern Resident Killer Whale*

Section 6.3 of NMFS' opinion on the 2017 CGP reviewed the physical description, life history, status, and designated critical habitat for the endangered southern resident killer whale. Despite conservation efforts prior to the 2016 status review for southern resident killer whales, the population has not grown (NMFS 2016j). The overall status of the population is not consistent with a healthy, recovered population and the DPS remains in danger of extinction. The recovery plan for this species calls for clean-up of contaminated sites and monitoring and minimizing inputs of toxic chemicals into the whales' habitat and food chain. The criteria for recovery and delisting require a sustained average population growth of 2.3 percent per year for 28 years, population parameters that are consistent with a healthy growing population, and actions to address threats completed. Interim downlisting criteria require an average population growth rate of 2.3 percent per year for 14 years and progress toward addressing threats. These

[5] Download from the EPA NOI database provided by EPA: Form_Data_CSV_Export_02182021.xlsx.

[6] Accessed October 13, 2020. The Right Whale Sighting Advisory System is a NOAA Fisheries program designed to reduce vessel strikes by alerting mariners to the presence of presence of North Atlantic right whales in near real-time. These sightings are provided by the United States Coast Guard, aerial surveys, shipboard surveys, whale watch vessels, and other sources (commercial ships, fishing vessels, and the general public). This database does not include effort data and does not represent a systematic survey of the species abundance and distribution.

metrics represent sustained growth such that the species could be downlisted from endangered to threatened.

5.2.2 Pacific Salmonids

Section 6.4 of NMFS' opinion on the 2017 CGP reviewed the species descriptions, life history, and designated critical habitat for ESA-listed salmonids in the action area. This information has not changed and will not be repeated here. The 2017 opinion relied on the 2016 five-year status reviews for all 28 west coast salmon and steelhead species listed under the ESA (NMFS 2016b, d, c, g, f, e, a, 2017a). With but a few exceptions, a 2022 viability analysis indicates that ESA-listed salmon and steelhead continue to do poorly throughout their Washington, Idaho, and Oregon (Table 2).

Table 2. Summary of current ESA listing status, recent viability trends, and risk of extinction of Pacific salmon ESUs/DPSs, by species (Ford 2022)

Species	ESU/DPS	ESA listing status	Recent viability trend[a]	2020 extinction risk category[b]
Chinook	Upper Columbia River spring-run	Endangered	unchanged	high
	Snake River spring/summer-run	Threatened	unchanged	moderate-to-high
	Snake River fall-run	Threatened	unchanged	moderate-to-low
	Upper Willamette River	Threatened	declining	moderate
	Lower Columbia River	Threatened	increasing	moderate
	Puget Sound	Threatened	unchanged	moderate
Coho	Lower Columbia River	Threatened	unchanged	moderate
	Oregon Coast	Threatened	unchanged	moderate-to-low
Sockeye	Snake River	Endangered	declining	high
	Ozette Lake	Threatened	mixed	moderate-to-high
Chum	Hood Canal summer-run	Threatened	unchanged	moderate-to-low
	Columbia River	Threatened	unchanged	moderate
Steelhead	Upper Columbia River	Threatened	unchanged	high
	Snake River Basin	Threatened	unchanged	moderate
	Middle Columbia River	Threatened	unchanged	moderate
	Upper Willamette River	Threatened	declining	moderate-to-high
	Lower Columbia River	Threatened	unchanged	moderate
	Puget Sound	Threatened	increasing	moderate

California returns of all listed salmon are variable year to year, but their overall decline appears to be continuing (Table 3).

Table 3. Estimated Returns for California's salmon and steelhead (The Nature Conservancy 2019)

Species and ESUs/DPSs	ESA Status	2015	2016	2017	2018	2019
Chinook Salmon						
California Coastal	Threatened	5314	5271	8569	1261	
Central Valley Spring-run	Threatened	5783	8608	1946	4884	
Sacramento River Winter-run	Endangered	3440	1538	977	2639	
Coho Salmon						
Central California Coast	Endangered	7980	4890	7382	1158	
Southern OR\Northern CA Coasts	Threatened	6149	2530	5390	4244	
Steelhead						
California Central Valley	Threatened	4060	1970	2368	11468	
Central California Coast	Threatened	4296	6102	8437	6485	9709
Northern California	Threatened	2733	1352	6478	4129	
South-Central California Coast	Threatened	7	0	7	29	126
Southern California	Endangered	2	2	4	1	

Every five years, NMFS reviews the status of ESA-listed species. The most recent status reviews or west coast salmonids was conducted by NMFS were in 2016. An update of these reviews for all 28 species of ESA-listed salmonids was announced in November of 2019 (84 FR 53117) but has not been completed at the time of this writing. The results of the 2016 reviews are summarized in Table 4.

Table 4. Summary of the 2016 five-year status reviews for ESA-listed salmonids in the Pacific Northwest

ESU/DPS	Abundance and productivity	Condition of designated critical habitat PBFs
Chum salmon		
Columbia River	Most populations have very low abundances and productivity, low genetic diversity, high risk of extinction	Rearing PBFs (water quality and cover) are degraded Migration PBFs significantly impacted by dams Elevated temperatures and environmental mixtures anticipated in freshwater habitats All 19 watersheds of high or medium conservation value
Hood Canal summer-run	Some recovery criteria have been met. Stable to increasing abundance trend, increasing population productivity	Spawning and rearing PBFs are degraded Migration and rearing PBFs are impaired by loss of floodplain habitat necessary for juvenile growth and development Elevated temperatures and environmental mixtures anticipated in freshwater habitats All 12 watersheds of high or medium conservation value
Chinook salmon		
California coastal	Some Recovery criteria have been met, but at considerable risk from population fragmentation and reduced spatial diversity. Comparisons to historical abundance is depressed in many basins. Only one population has had consistent runs exceeding 1,000 spawning fish.	Spawning PBFs are degraded by timber harvest Rearing and migration PBFs impacted by dams and invasive species Estuarine PBFs degraded by water quality and saltwater mixing Elevated temperatures and environmental mixtures anticipated in freshwater habitats Of 45 watersheds, 27 are of high and 10 are of medium conservation value.
Central Valley spring-run	Stable to declining trends, low abundances, low genetic diversity, fragmented populations	Spawning and rearing PBFs are degraded by elevated temperatures, lost access to historic spawning sites, and loss of floodplain habitat Migration PBFs degraded by loss of cover and water diversions Elevated temperatures and environmental mixtures anticipated in freshwater habitats Of 38 watersheds, 28 are of high and 3 are of medium conservation value
Lower Columbia River	Trends for most populations are declining. Only one population is self-sustaining. The near loss of the spring-run life history remains an important concern for maintaining genetic diversity.	Spawning and rearing PBFs are degraded by timber harvest, agriculture, urbanization, loss of floodplain habitat, and reduced natural cover Migration PBFs impacted by dams Elevated temperatures and environmental mixtures anticipated in freshwater habitats Of occupied watersheds, 31 are of high and 13 are of medium conservation value.

ESU/DPS	Abundance and productivity	Condition of designated critical habitat PBFs
Puget Sound	Abundance is several orders of magnitude below historic levels. Approximately half the populations are declining and half are increasing in abundance. Most of the populations that are increasing have lambda of close to 1 (barely replacing themselves).	Spawning, rearing and migration PBFs are degraded by forestry, agriculture, urbanization, and loss of habitat Estuarine PBFs degraded by water quality, altered salinity, and lack of natural cover Elevated temperatures and environmental mixtures anticipated in freshwater habitats Of 61 watersheds, 40 are of high and 9 are of medium conservation value.
Sacramento winter-run	Only one small population, declining population trend hatchery-supported propagation, low genetic diversity	Spawning and rearing PBFs are degraded by elevated temperatures and loss of habitat Migration PBFs degraded by lack of natural cover and water diversions Elevated temperatures and environmental mixtures anticipated in freshwater habitats The entire Sacramento river and delta are considered of high conservation value
Snake River fall-run	Stable to increasing abundance trend, moderate extinction risk. Productivity of naturally spawned populations uncertain. Large proportion of hatchery-reared fish.	Spawning, rearing and migration PBFs are degraded by loss of habitat, impaired stream flows, barriers to fish passage, and poor water quality Elevated temperatures and environmental mixtures anticipated in freshwater habitats The entire river corridor is considered of high conservation value
Snake River spring/summer-run	Low abundances, high risk of extinction. Poor natural productivity with unknown rates. Several Salmon River populations have higher abundances, but still well below recovery criteria. Moderate genetic diversity.	Spawning, rearing and migration PBFs are degraded by loss of habitat, altered stream flows, barriers to fish passage, dams, loss of cover, and poor water quality Elevated temperatures and environmental mixtures anticipated in freshwater habitats The river corridor is considered of high conservation value
Upper Columbia River spring-run	All populations have low abundance and the long-term trend in growth rate is declining (the population is not replacing itself).	Spawning and rearing PBFs are degraded by urbanization and irrigation water diversions Migration PBFs degraded by numerous dams Elevated temperatures and environmental mixtures anticipated in freshwater habitats Of occupied watersheds, 26 are of high and 5 are of medium conservation value
Upper Willamette River	Only one of seven remaining naturally reproducing independent populations. Unknown historical abundance. Declining trends with a high hatchery-produced fraction.	Migration, rearing, and estuary PBFs are degraded by dams, water management, loss of riparian vegetation, and quality of floodplain habitat Elevated temperatures and environmental mixtures anticipated in freshwater habitats Of 59 assessed watersheds, 22 are of high and 18 are of medium conservation value
Coho salmon		

ESU/DPS	Abundance and productivity	Condition of designated critical habitat PBFs
central California coast	Stable population trend, low abundances, fragmented populations, supported by hatchery propagation.	Degradation in quality and quantity of PBFs, especially in southern end of range Rearing PBFs degraded by loss of suitable incubation substrate and loss of habitat Elevated temperatures anticipated in freshwater habitats Environmental mixtures anticipated in freshwater habitats may impact PBFs
lower Columbia River	90 percent reduction in abundance of all independent populations. Two of 25 populations have significant natural production. Long and short term lambda projections remain negative. Diversity of populations remains in the high risk category.	Spawning and rearing PBFs are degraded by timber harvest, agriculture, urbanization, loss of floodplain habitat, and reduced natural cover Migration PBFs impacted by dams Elevated temperatures and environmental mixtures anticipated in freshwater habitats
Oregon coast	Drastic reductions in abundance compared to historical estimates. Highly variable abundances with periods of severe declines followed by a year of increases. Long term trends remain negative due to low abundances in the 1990s.	Rearing PBFs are degraded by elevated water temperature All PBFs degraded by reduced water quality from contaminants and excess nutrients Elevated temperatures and environmental mixtures anticipated in freshwater habitats Of 80 assessed watersheds, 45 are of high and 27 are of medium conservation value
Southern Oregon/Northern California	Data on population abundance and trends are limited for this. Trend data are variable throughout the.	Spawning PBFs are degraded by logging Rearing and migration PBFs degraded by loss of riparian vegetation and loss of floodplain habitat Elevated temperatures and environmental mixtures anticipated in freshwater habitats
Sockeye salmon		
Ozette Lake	Stable productivity rates, but abundance only 1 percent of historical levels. Low genetic diversity and low resilience to future perturbations.	Rearing PBFs are degraded by excessive predation, invasive species, and loss of habitat Spawning and migration PBFs are degraded by low water levels, loss of suitable spawning habitat, and low summer water flows Elevated temperatures and environmental mixtures anticipated in freshwater habitats The entire watershed is of high conservation value
Snake River	Only one population remaining in Redfish Lake and it is supported by hatchery propagation. Increasing abundance, but well below those needed for sustainable natural production. Low resilience to future perturbations.	Rearing and migration PBFs are degraded by impaired water quality from adjacent land uses Migration PBFs are degraded by multiple dams Elevated temperatures and environmental mixtures anticipated in freshwater habitats All occupied and used areas of the watershed are of high conservation value
Steelhead		

ESU/DPS	Abundance and productivity	Condition of designated critical habitat PBFs
California Central Valley	Long-term trend of declining abundances and reduced genetic diversity. Populations supplemented by hatchery propagation.	Spawning PBFs are degraded by altered water flows and temperature Rearing and migration PBFs are degraded by altered riverine habitat, dense urbanization and agriculture, poor water quality, and water diversions Elevated temperatures and environmental mixtures anticipated in freshwater habitats Of 67 occupied watersheds, 37 are of high and 18 are of medium conservation value
Central California Coast	5-year population trend uncertain. Population abundance supplemented by hatchery propagation. Populations are likely not viable, and have lost spatial structure.	Spawning and rearing PBFs are degraded by sedimentation and elevated temperature All PBFs are degraded by loss of habitat, low summer flows, erosion, and contaminants Elevated temperatures and environmental mixtures anticipated in freshwater habitats Of 47 occupied watersheds, 19 are of high and 15 are of medium conservation value
Lower Columbia River	5-year population trend stable. Populations have low genetic diversity and are impacted by a loss of available habitat.	Rearing PBFs are degraded by agricultural runoff and lack of available prey Spawning, rearing and migration PBFs are degraded by timber harvests, dams, and loss of floodplain habitat Elevated temperatures and environmental mixtures anticipated in freshwater habitats Of 41 occupied watersheds, 28 are of high and 11 are of medium conservation value
Middle Columbia River	5-year population trend stable to improving, but abundances still low compared to historical numbers.	Rearing PBFs are degraded by water quality, reduced invertebrate prey, and loss of riparian vegetation Migration PBFs are degraded by several dams Elevated temperatures and environmental mixtures anticipated in freshwater habitats Of 106 assessed watersheds, 73 are of high and 24 are of medium conservation value
Northern California	5-year population trend stable to improving, but abundances still low compared to historical numbers.	Rearing PBFs are degraded by loss of riparian vegetation and elevated temperature Spawning PBFs are degraded by lack of quality substrate and sedimentation Migration PBFs are degraded by bridges, culverts, and forest road construction Elevated temperatures and environmental mixtures anticipated in freshwater habitats Of 50 assessed watersheds, 27 are of high and 14 are of medium conservation value
Puget Sound	5-year population trend stable, but populations have reduced genetic diversity.	Rearing, migration and spawning PBFs are degraded by forestry, agriculture, urbanization, loss of floodplain habitat, and poor water quality Elevated temperatures and environmental mixtures anticipated in freshwater habitats Most watersheds are of high or medium conservation value

ESU/DPS	Abundance and productivity	Condition of designated critical habitat PBFs
Snake River Basin	5-year population trend stable to improving, but still in moderate danger of extinction. Overall abundances are still below thresholds necessary for recovery.	Rearing PBFs are degraded by agricultural runoff, reduced invertebrate prey, loss of riparian vegetation, and elevated temperature Migration PBFs are degraded by several dams Elevated temperatures and environmental mixtures anticipated in freshwater habitats Of assessed watersheds, 229 are of high and 41 are of medium conservation value
South-Central California Coast	5-year population trend declining, depressed abundances.	Rearing and migration PBFs are degraded by elevated temperatures and contaminants from urban and agricultural runoff Estuarine PBFs are degraded by altered habitat and contaminated runoff Elevated temperatures and environmental mixtures anticipated in freshwater habitats Of 29 occupied watersheds, 12 are of high and 11 are of medium conservation value
Southern California	5-year population trend uncertain. Population abundance supplemented by hatchery propagation. Populations are at the extreme southern end of the species' range. Large annual variations in abundances, and fragmented distributions.	All PBFs are degraded by pollutants in urban and agricultural runoff, elevated temperatures, erosion, and low water flows Elevated temperatures and environmental mixtures anticipated in freshwater habitats Of 29 freshwater and estuarine watersheds, 21 are of high and 5 are of medium conservation value
Upper Columbia River	5-year population trend improving, but low genetic diversity. Abundances still below those necessary for recovery.	Rearing PBFs are degraded by agricultural runoff and lack of available prey Migration PBFs are degraded by several dams Elevated temperatures and environmental mixtures anticipated in freshwater habitats Of 41 occupied watersheds, 31 are of high and 7 are of medium conservation value
Upper Willamette River	5-year population trend declining, large fluctuations in abundances.	Rearing PBFs are degraded by agricultural runoff and lack of available prey Migration PBFs are degraded by dams and elevated temperatures Elevated temperatures and environmental mixtures anticipated in freshwater habitats Of assessed watersheds, 14 are of high and six are of medium conservation value

Recovery goals for each ESA-listed North Pacific salmonid species center on elimination of identified threats and achieving specific population and habitat use metrics at a granular detail for individual populations. For example, the recovery criteria for the Upper Columbia River Steelhead DPS requires at least 3,000 spawners distributed at specific abundances among each of the Wenatchee, Entiat, Methow, and Okanogan populations. Recovery criteria for each Pacific Northwest salmonid species is detailed in in Table 1 of their respective recovery plans identified.

5.2.2.1 *Urban Stream Syndrome and Coho Salmon Pre-spawn Mortality*

The toxicity of urban stormwater is well documented (Deering et al. 2004, McCarthy 2008, Boehler et al. 2017, Young et al. 2018). Coho salmon are uniquely sensitive to urban runoff. Urban runoff has resulted in acute mortality syndrome in coho salmon of the Pacific Northwest for decades (Scholz 2011, McIntyre et al. 2018, Chow et al. 2019). The syndrome is a pattern of rapid mortality occurring concurrent with stormwater events in adult fish returning to freshwaters to spawn. In the most highly urbanized areas, the syndrome results in the loss of 40 to 90 percent of returning fish. Leachates from tire tread wear particulates were identified as an important source of the toxicants causing mortality in fish. Since the 2017 CGP was issued, stormwater monitoring identified occurrence of toxic concentrations of a transformation product of an antioxidant chemical used in the production of tires, N-(1,3-dimethylbutyl)-N'-phenyl-1,4-benzenediamine, or 6PPD-quinone throughout the U.S. Pacific Northwest (Tian et al. 2020). Construction site equipment and construction projects creating, expanding, or repairing streets and highways, and any post-construction stormwater control measures that are part of a particular project with stormwater discharges authorized under the 2022 CGP potentially contribute to traffic-associated pollutants, including 6PPD-quinone.

5.2.3 Atlantic Salmon, Gulf of Maine DPS

Section 6.5 of NMFS' opinion on the 2017 CGP reviewed the physical description, life history, status, and designated critical habitat for the endangered Gulf of Maine DPS of Atlantic Salmon and that summary will not be repeated here. In 2019, the USFWS and NMFS jointly released a recovery plan with the goal of enabling the species to maintain self-sustaining, wild populations with access to sufficient suitable habitat in three freshwater recovery units and ensure that necessary management options for marine survival of the species are in place (NMFS and USFWS 2019). In addition, the plan seeks to reduce or eliminate all threats that, either individually or in combination, pose a risk of endangerment to the DPS. Recovery criteria for downlisting the Gulf of Maine DPS of Atlantic salmon from endangered to threatened requires total annual returns of at least 1,500 adults originating from wild origin, or hatchery stocked eggs, fry or parr spawning in the wild, with at least two of the three freshwater recovery units having a minimum annual escapement of 500 naturally reared adults. Among the recovery units that have met or exceeded the abundance criterion, the plan requires the population have a positive mean growth rate greater than 1.0 in the preceding 10-year period and the habitat includes a minimum of 7,500 units of accessible and suitable spawning and rearing habitats capable of supporting the offspring of 1,500 naturally reared adults. Delisting of the Gulf of Maine DPS will require both habitat protection and restoration. Delisting criteria require a self-sustaining annual escapement of at least 2,000 wild origin adults in each recovery unit, for a DPS-wide total of at least 6,000 wild adults. Delisting would require that each recovery unit have a positive mean population growth rate of greater than 1.0 in the preceding 10-year period and self-sustaining population, whereby the total wild population in each Salmon Habitat Recovery Unit has less than a 50percent probability of falling below 500 adult wild spawners in the next 15 years based on population viability analysis projections. Delisting of the DPS also requires that

sufficient suitable spawning and rearing habitat for the offspring of the 6,000 wild adults is accessible and distributed throughout the designated Atlantic salmon critical habitat, with at least 30,000 accessible and suitable Habitat Units in each recovery unit, located according to the known migratory patterns of returning wild adult salmon.

5.2.4 Non-salmonid Anadromous Species

5.2.4.1 *Atlantic Sturgeon and Designated Critical Habitat*

Section 6.8 of NMFS' opinion on the 2017 CGP reviewed the physical description, life history, and status for the Atlantic sturgeon and that summary will not be repeated here. NMFS' opinion on the 2017 CGP considered the critical habitat proposed for Atlantic sturgeon, which was finalized in August of 2017 (82 FR 39160). The PBFs of Atlantic sturgeon designated critical habitat include water without physical barriers, including thermal plumes and turbidity, between the river mouth and spawning sites necessary to support unimpeded movement of adults to and from spawning sites, seasonal and physiologically dependent movement of juvenile Atlantic sturgeon to appropriate salinity zones within the river estuary, and staging, resting, or holding of subadults or spawning condition adults. The critical habitat designation also includes a requirement of 6 mg/L or greater dissolved oxygen for juvenile rearing habitat.

A five-year status review for this species was initiated in 2018. A recovery outline is in place to serve as interim guidance. Recovery would result in subpopulations of all five Atlantic sturgeon DPSs across the historical range at sufficient numbers and genetic diversity to support successful reproduction and recovery from mortality events. To achieve this, recruitment of juveniles to the sub-adult and adult life stages must increase consistently over many years. Recovery of these DPSs will require conservation of the riverine and marine habitats used for spawning, development, foraging, and growth by abating threats to ensure a high probability of survival into the future. Key recovery tasks include improvement of water quality and fish passage for these DPSs, including access to historical habitats (NMFS 2018a).

5.2.4.2 *Shortnose Sturgeon*

Section 6.7 of NMFS' opinion on the 2017 CGP reviewed the physical description, life history, and status for the shortnose sturgeon and that information will not be repeated here. Critical habitat has not been designated for shortnose sturgeon and there are no recent status reviews for this species. The Shortnose Sturgeon Recovery Plan was developed in 1998. The long-term recovery objective, as stated in the Plan, is to recover all 19 discrete populations to levels of abundance at which they no longer require protection under the ESA (NMFS 1998). To achieve and preserve minimum population sizes for each population segment, essential habitats must be identified and maintained, and mortality must be monitored and minimized. Accordingly, other key recovery tasks discussed in the plan are to define essential habitat characteristics, assess mortality factors, and protect shortnose sturgeon through applicable federal and state regulations.

5.2.4.3 *North American Green Sturgeon, Southern DPS*

Section 6.9 of NMFS' opinion on the 2017 CGP reviewed the physical description, life history, and status and designated critical habitat for the Southern DPS of the North American green sturgeon and that summary will not be repeated here. A status review for this species was initiated in 2020 and has not yet been completed. For delisting, the 2018 recovery plan requires that the adults of the DPS census population remain at or above 3,000 for three generations with an effective population size of at least 500 individuals in any given year (NMFS 2018b). Each annual spawning run must be comprised of a

combined total from all spawning locations of at least 500 adult fish in any given year in at least two rivers within their historical range. Successful spawning will be determined by the annual presence of larvae for at least 20 years with a net positive trend in juvenile and subadult abundance and broad distribution of size classes representing multiple cohorts that are stable over 20 years or more. Further, delisting requires that there be no net loss of demographic and genetic diversity from current levels.

The plan also requires barrier removal or modification in the Sacramento, Feather, and/or Yuba Rivers such that successful spawning occurs annually in at least two rivers as evidenced by annual presence of larvae for at least 20 years, and passage provided for adult green sturgeon through the Yolo and Sutter Bypasses. Water temperature and flows need to be provided in spawning habitat such that juvenile recruitment is documented annually, as evidenced by the annual presence of age-0 juveniles in the lower Sacramento River or San Francisco Bay Delta Estuary. Concentrations of contaminants in adults are required to be below levels that are identified as limiting population maintenance and growth. Operation guidelines and/or fish screens must be applied to water diversions in the mainstem Sacramento, Feather, and Yuba Rivers and San Francisco Bay Delta Estuary such that early life stage entrainment is below a level that limits juvenile recruitment. Finally, the recovery plan requires that take of adults and subadults through poaching and state, federal and tribal fisheries be minimal and not limit population persistence and growth.

5.2.4.4 *Southern Pacific Eulachon*

Section 6.6 of NMFS' opinion on the 2017 CGP reviewed the physical description, life history, status and designated and proposed critical habitat of the Southern Pacific eulachon and that summary will not be repeated here. A status review for this species was initiated in 2020 and has not yet been completed. Recovery objectives for this species include eliminating or sufficiently reducing the severity of threats. Threats include poor water quality (temperature) and climate change. Delisting criteria require that each subpopulation is self-sustaining with a stable or increasing growth rate greater than one across multiple generations. Eulachon subpopulations would need to be distributed in a manner that insulates against loss from local catastrophic events and provides for re-colonization of a subpopulation that is affected by such an event. Finally, recovered eulachon subpopulations would exhibit high certainty that genetic and life history diversity is sufficient to sustain natural production across a range of conditions, and exhibit high certainty that changes in phenotypical traits represent positive natural adaptations to prevailing environmental conditions (NMFS 2017c).

5.2.4.5 *Bocaccio and Yelloweye Rockfish*

NMFS' opinion on the 2017 CGP did not review the physical description, life history, and status of the endangered bocaccio and threatened yelloweye rockfish or describe the designated critical habitat PBFs designated for ESA-listed rockfish (79 FR 68041). NMFS' 2017 opinion determined that exposures to CGP-authorized discharges were expected to be extremely unlikely for these species because of EPA's limited permitting authority in the state of Washington relative to the location of nearshore juvenile settlement habitats. The CGP NOI data provided by EPA on March 2, 2021 showed about 20 CGP authorizations were issued by EPA near these waters, so this opinion will address these species.

Both ESA-listed species occur within Puget Sound, which encompasses all waters south of a line connecting Point Wilson on the Olympic Peninsula and Partridge on Whidbey Island; West Point on Whidbey Island, Deception Island, and Rosario Head on Fidalgo Island; and the southern end of Swinomish Channel between Fidalgo Island and McGlinn Island (U.S. Geological Survey 1979), and the

Strait of Georgia, which encompasses the waters inland of Vancouver Island, the Gulf Islands, and the mainland coast of British Columbia.

Puget Sound/Georgia Basin Bocaccio

The Puget Sound/Georgia Basin bocaccio DPS was listed as endangered on April 28, 2010 (75 FR 22276). Preferred bocaccio habitat is largely dependent upon the life stage of an individual. Larvae and young juveniles tend to be found in deeper offshore regions (1-148 kilometers offshore), but associated with the surface and occasionally with floating kelp mats (Hartmann 1987, Love 2002, Emery 2006). As individuals mature into older juveniles and adults, they transition into shallow waters and settle to the bottom, preferring algae-covered rocky, eelgrass, or sand habitats and aggregating into schools (Eschmeyer 1983, Love 1991). After a few weeks, fish move into slightly deeper waters of 18-30 meters and occupy rocky reefs (Feder 1974, Carr 1983, Eschmeyer 1983, Johnson 2006, Love 2008).

As adults, bocaccio may be found in depths of 12-478 m, but tend to remain in shallow waters on the continental shelf (20-250 meters), still associating mostly with reefs or other hard substrate, but may move over mud flats (Feder 1974, Kramer 1995, Love 2002, Love 2005, Love and York 2006, Love 2006). Artificial habitats, such as platform structures, also appear to be suitable habitat for bocaccio (Love and York 2006). Adults may occupy territories of 200-400 hectares, but can venture outside of this territory (Hartmann 1987). Adults are not as benthic-oriented as juveniles and may occur as much as 30 m above the bottom and move 100 m vertically during the course of a day (Starr 1998, Love 2002). Prior to severe population reductions, bocaccio appeared to frequent the Tacoma Narrows in Washington State (Delacy 1964, Haw and Buckley 1971, Miller and Borton 1980).

Bocaccio are live-bearers with internal fertilization. Once females become mature (at 54-61 centimeters total length), they produce 20,000-2.3 million eggs annually, with the number increasing as females age and grow larger (Hart 1973, Echeverria 1987, Love 2002). However, either sex has been known to attain sexual maturity as small as 35 centimeters or 3 years of age and, in recent years as populations have declined, average age at sexual maturity may have declined as well (Hart 1973, Echeverria 1987, Love 2002, MacCall 2002a). Mating occurs between August and November, with larvae born between January and April (Lyubimova 1965, Moser 1967, Westrheim 1975, Echeverria 1987, Love 2002, MacCall 2002b).

Upon birth, bocaccio larvae measure four to five millimeters in length. These larvae move into pelagic waters as juveniles when they are 1.5-3 centimeters and remain in oceanic waters from 3.5-5.5 months after birth (usually until early June), where they grow at approximately 0.5-1 millimeters per day (Moser 1967, Matarese 1989, Woodbury 1991, Love 2002, MacCall 2002b, MacCall 2003). However, growth can vary from year-to-year (Woodbury 1991). Once individuals are 3-4 centimeters in length, they return to nearshore waters, where they settle into bottom habitats. Females tend to grow faster than males, but fish may take five years to reach sexual maturity (MacCall 2003). Individuals continue to grow until they reach maximum sizes of 91 centimeters, or 9.6 kilograms, at an estimated maximum age of 50 years (Eschmeyer et al. 1983, Ralston 1998, Love 2002, Andrews 2005, Piner 2006). However, individuals tend to grow larger in more northerly regions (Dark 1983).

Prey of bocaccio vary with fish age, with bocaccio larvae feeding on larval krill, diatoms, and dinoflagellates (Love 2002). Pelagic juveniles consume fish larvae, copepods, and krill while older, nearshore juveniles and adults prey upon rockfishes, hake, sablefish, anchovies, lanternfish, and squid (Reilly 1992, Love 2002).

From 1975 through 1979, bocaccio were reported as representing an average of 4.63 percent of the total rockfish catch. From 1980–1989, they represented about 0.24 percent of the rockfish identified and, from 1996 to 2007, bocaccio were not reported in a sample of 2,238 rockfish captured in recreational fisheries (in a sample of that size, there was a 99.5 percent probability of observing at least one bocaccio, assuming their relative frequency was the same as it had been in the 1980s). Bocaccio have always been rare in recreational fisheries that occur in North Puget Sound and the Strait of Georgia; however, there have been no confirmed reports of bocaccio in Georgia Basin for several years.

Although their abundance cannot be estimated directly, NMFS' Bocaccio Recovery Team estimated that the populations of bocaccio are small in size, probably numbering fewer than 10,000 individuals in Georgia Basin and fewer than 1,000 total individuals in Puget Sound (74 FR 18532) (Drake 2010). Georgia Basin bocaccio are most common at depths between 50 and 250 meters.

Georgia Basin Yelloweye Rockfish

Georgia Basin yelloweye rockfish were listed as threatened under the ESA on April 28, 2010 (75 FR 22276). As with other rockfishes, yelloweye habitat varies based upon life stage. Larvae maintain a pelagic existence but, as juveniles, fish move into shallow high relief rocky or sponge garden habitats (Eschmeyer et al. 1983, Richards 1985, Love 1991). Juveniles may also associate with floating debris or pilings (Lamb and Edgell 1986). As adults, yelloweye rockfish move to deeper habitats. Individuals have been found in waters as deep as 549 m, but are generally found in waters of less than 180 m (Eschmeyer et al. 1983, Love 2002). Adults continue to associate with rocky, high relief habitats, particularly with caves and crevices, pinnacles, and boulder fields (Carlson 1981, Richards 1986, Love 1991, O'connell and Carlisle 1993, Yoklavich 2000). Yelloweyes generally occur as individuals, with loose, residential aggregations infrequently found (Coombs 1979, Demott 1983, Love 2002). In the Puget Sound region, sport catch records from the 1970's indicate that Sucia Island and other islands of the San Juans, as well as Bellingham Bay, had the highest concentrations of catches (Delacy 1964, Miller and Borton 1980).

Georgia Basin yelloweye rockfish are most common in depths between 91 and 180 meters, although they may occur in waters 50 to 475 meters deep. Larval rockfish occur over areas that extend several hundred nearly 500 kilometers offshore where they are passively dispersed by ocean currents and remain in larval form and as small juveniles for several months (Moser and Boehlert 1991, Auth 2006). They appear to concentrate over the continental shelf and slope, but have been captured more than 250 nautical miles offshore of the Oregon coast (Richardson 1979, Moser and Boehlert 1991). Larval rockfish have been reported to be uniformly distributed at depths of 13, 37 and 117 meters below surface. Like the other rockfish we have discussed, larval yelloweye rockfish were captured at all three depths, but their densities were highest at the 37- and 177-meter depths (Lenarz 1991).

Yelloweye rockfish are live-bearers with internal fertilization. Copulation occurs between September and April, with fertilization taking place later as latitude increases (Hitz 1962, Delacy 1964, Westrheim 1975, Echeverria 1987, O'connell 1987, Lea 1999). Puget Sound yelloweyes mate between winter and summer, giving birth from spring to late summer (Washington 1978). Gestation lasts roughly 30 days (Eldridge 2002). Although yelloweye rockfish were once believed to reproduce annually, evidence indicates there is the potential for multiple births per year (MacGregor 1970, Washington 1978). Females produce more eggs as they grow older and larger with each individual producing roughly 300 eggs per year per gram of body weight (1.2-2.7 million eggs per year MacGregor 1970, Hart 1973). In addition, older females of several rockfish species may be capable of provisioning their offspring better than their younger

counterparts, meaning that they may be more a more influential component in a given year's recruitment success (Sogard et al. 2008).

Larvae are born at 4-5 millimeters in length and maintain a pelagic existence for the first two months of life before moving to nearshore habitats and settling into rocky reef habitat at about 25 millimeters in length (Delacy 1964, Matarese 1989, Moser 1996, Love 2002). Yelloweye growth is thought to vary by latitudinal gradient, with individuals in more northerly regions growing faster and larger. Year class strength appears to be most strongly linked to survival of the larval stage (Laidig 2007). In general, sexual maturity appears to be reached by 50 percent of individuals by 15-20 years of age and 40-50 centimeters in length (Yamanaka 1997). As with other rockfish, yelloweye can be long-lived (reported oldest age is 118 years Munk 2001). Maximum size has been reported as 910 centimeters, but asymptotic size in Alaskan waters for both males and females was estimated to be 690 centimeters, and 659-676 millimeters along British Columbia (Clemens 1961, Westrheim 1973, Rosenthal 1998, Love 2005, Yamanaka 2006). Individuals shift to deeper habitats as they age. Juveniles tend to begin life in shallow rocky reefs and graduate to deeper rocky habitats as adults. Once adult habitat is established, individuals tend to remain at a particular site (Love 1978, Coombs 1979, Demott 1983).

Yelloweye rockfish prey upon different species and size classes throughout their development. Larval and juvenile rockfish prey upon phyto- and zooplankton (Lee 2009). Adult yelloweye eat other rockfish (including members of their own species), sand lance, gadids, flatfishes, shrimp, crabs, and gastropods (Love 2005, Yamanaka 2006).

The frequency of yelloweye rockfish in collections from Puget Sound appears to have been highly variable; frequencies were less than 1 percent in the 1960s and 1980s and about 3 percent in the 1970s and 1990s. In North Puget Sound, the frequency of yelloweye rockfish has been estimated to have declined from a high of greater than 3 percent in the 1970s to about 0.65 percent in more recent samples. This decline, combined with their low intrinsic growth potential, threats from bycatch in commercial and recreational fisheries, loss of nearshore rearing habitat, chemical contamination, and the proportion of coastal areas with low dissolved oxygen levels, led to this species' listing as threatened under the ESA.

Although their abundance cannot be estimated directly, NMFS' Bocaccio Recovery Team estimated that the populations of yelloweye rockfish are small in size, probably numbering fewer than 10,000 individuals in Georgia Basin and fewer than 1,000 total individuals in Puget Sound (74 FR 18532) (Drake 2010).

Designated Critical Habitat and Recovery Plan for Bocaccio and Yelloweye Rockfish

Critical habitat was designated for bocaccio and yelloweye rockfish on November 13, 2014 (79 FR 68041). The PBFs essential to adults include the benthic habitats or sites deeper than 30m (98ft) that possess or are adjacent to areas of complex bathymetry consisting of rock and/or highly rugose habitat that are essential to species' conservation because these features support growth, survival, reproduction, and feeding opportunities by providing the structure for rockfish to avoid predation, seek food, and persist for decades. Several attributes of these sites determine the quality of the habitat and are useful in considering the conservation value of the associated feature, and whether the feature may require special management considerations or protection. These attributes are also relevant in the evaluation of the effects of a proposed action in a section 7 consultation if the specific area containing the site is designated as critical habitat. These attributes include: (1) quantity, quality and availability of prey species to support individual growth, survival, reproduction, and feeding opportunities; (2) water quality and sufficient

levels of dissolved oxygen to support growth, survival, reproduction, and feeding opportunities; and (3) the type and amount of structure and rugosity that support feeding opportunities and predator avoidance.

The PBFs essential to juveniles include settlement habitats located in the nearshore with substrates such as sand, rock or cobble compositions that also support kelp because these features provide forage opportunities and refuge from predators and enable behavioral and physiological changes needed for juveniles to occupy deeper adult habitats. Several attributes of these sites determine the quality of the area and are useful in considering the conservation value of the associated feature and in determining whether the feature may require special management considerations or protection. These attributes include: (1) quantity, quality, and availability of prey species to support individual growth, survival, reproduction, and feeding opportunities; and (2) water quality and sufficient levels of dissolved oxygen to support growth, survival, reproduction, and feeding opportunities.

A joint recovery plan for bocaccio and yelloweye rockfish species was published in 2019 (NMFS 2017d). The recovery objectives include: 1) continue to improve our knowledge of the current and historical population status and habitats so that populations can be characterized on a management unit basis and a detailed program can be developed for implementing recovery actions to most efficiently achieve delisting criteria; 2) reduce or eliminate existing threats from fisheries/anthropogenic mortality; and 3) reduce or eliminate existing threats to habitats and restore degraded or removed habitat. The downlisting criteria for bocaccio from endangered to threatened require completed research and/or programs to understand, limit, and mitigate threats. Delisting criteria for both species require that the threats be found to not limit recovery of the listed species. Metrics for success in meeting criteria are based on a selection of spawning potential ratio scenarios.

5.2.4.6 *Nassau Grouper*

Section 6.10 of NMFS' opinion on the 2017 CGP reviewed the physical description and life history of the threatened Nassau grouper and that summary will not be repeated here. Critical habitat has not been designated for this species. NMFS developed a recovery outline as interim guidance to direct recovery efforts until a full plan may be developed (NMFS 2016h). The Recovery Vision Statement within the outline seeks to achieve Nassau grouper spawning aggregations that occur across their historical range in numbers sufficient to produce larvae to increase adult abundance. These aggregations must be of sufficient size and distribution to support successful larval recruitment across the range. In turn, the growth of juveniles to the sub-adult and adult life stages must increase and be maintained over many years in order to realize an increase of reproductive adults in the spawning aggregations. Recovery will require conservation of habitats for all life stages.

5.2.5 Sea Turtles

Section 6.11 of NMFS' opinion on the 2017 CGP, adopted and relied on in this opinion identified habitat disturbance and climate change as threats common to all ESA-listed sea turtles.

5.2.5.1 *Leatherback Sea Turtle*

NMFS' opinion on the 2017 CGP reviewed the physical description, life history, and status of the endangered leatherback turtle and described the designated critical habitat PBFs for the Pacific leatherback, and that summary will not be repeated here. For delisting of the leatherbacks in the U.S. Caribbean, Atlantic, and Gulf of Mexico, the 1992 recovery plan requires that 75 percent of the nesting habitat be publically owned, the adult female population increase over the next 25 years (i.e., by 2017) as

evidenced by a statistically significant trend in the number of nests at Culebra, Puerto Rico, St. Croix, U.S. Virgin Islands and along the east coast of Florida, and that all Priority #1 tasks (i.e., information collection, monitoring and protection) be successfully implemented (NMFS and USFWS 1992). For delisting in the Pacific, the 1998 recovery plan (NMFS and USFWS 1998b) requires the following:

1) All regional stocks that use U.S. waters have been identified to source beaches based on reasonable geographic parameters.
2) Each stock must average 5,000 (or a biologically reasonable estimate based on the goal of maintaining a stable population in perpetuity) females estimated to nest annually (FENA) over six years.
3) Nesting populations at "source beaches" are either stable or increasing over a 25-year monitoring period.
4) Existing foraging areas are maintained as healthy environments.
5) Foraging populations are exhibiting statistically significant increases at several key foraging grounds within each stock region.
6) All Priority #1 tasks have been implemented.
7) A management plan designed to maintain sustained populations of turtles is in place.

5.2.5.2 *Hawksbill Sea Turtle*

Section 6.11.1 of NMFS' opinion on the 2017 CGP reviewed the physical description and life history of the endangered hawksbill turtle and described the designated critical habitat PBFs, and that summary will not be repeated here. For delisting of the hawksbill turtles in the U.S. Caribbean, Atlantic, and Gulf of Mexico, the 1992 recovery plan mirrors that for leatherback turtles, requiring that, over the next 25 years (i.e., by 2017), 50 percent of the nesting habitat be publically owned; the metric for adult female populationshows a statistically significant increase in the annual number of nests on at least five index beaches; the metric for numbers of adults, subadults, and juveniles shows a statistically significant increase in at least five key foraging areas within Puerto Rico, U.S. Virgin Islands, and Florida; and all Priority #1 tasks have been successfully implemented (NMFS and USFWS 1992). For delisting hawksbill turtles in the Pacific, the 1998 recovery plan (NMFS and USFWS 1998a) requires the following:

1) All regional stocks that use U.S. waters have been identified to source beaches based on reasonable geographic parameters.
2) Each stock must average 1,000 FENA (or a biologically reasonable estimate based on the goal of maintaining a stable population in perpetuity) over six years.
3) All FENA at "source beaches" are either stable or increasing for 25 years (i.e. 2023).
4) Existing foraging areas are maintained as healthy environments.
5) Foraging populations are exhibiting statistically significant increases at several key foraging grounds within each stock region.
6) All Priority #1 tasks have been implemented.
7) A management plan designed to maintain sustained populations of turtles is in place.

8) A formal cooperative relationship with regional sea turtle management programs (South Pacific Regional Environment Program) is ensured.

9) International agreements are in place to protect shared stocks.

5.2.5.3 *Kemp's Ridley Sea Turtle*

Section 6.11.2 of NMFS' opinion on the 2017 CGP reviewed the physical description, life history, and status of the endangered Kemp's ridley turtle, and that summary will not be repeated here. The recovery plan for this species was developed by the Services and Mexico's Secretariat of Environment and Natural Resources (NMFS et al. 2011). To downlist this species from endangered to threatened, the recovery plan requires a population of at least 10,000 nesting females in a season (as measured by clutch frequency per female per season) distributed at the primary nesting beaches (Rancho Nuevo, Tepehuajes, and Playa Dos) in Mexico, recruitment of at least 300,000 hatchlings to the marine environment per season at the three primary nesting beaches (Rancho Nuevo, Tepehuajes, and Playa Dos) in Mexico to ensure a minimum level of known production through *in situ* incubation, incubation in corrals, or a combination of both. Delisting Kemp's ridley turtle requires an average population of at least 40,000 nesting females per season over a 6-year period distributed among nesting beaches in Mexico and the U.S., and reliable average annual recruitment of hatchlings over a 6-year period from *in situ* nests and beach corrals sufficient to maintain a population of at least 40,000 nesting females per nesting season distributed among nesting beaches in Mexico and the U.S into the future.

5.2.5.4 *Olive Ridley Sea Turtle*

Section 6.11.3 of NMFS' opinion on the 2017 CGP reviewed the physical description and life history of the threatened olive ridley turtle, and that summary will not be repeated here. The most recent 5-year status review for this species was completed in 2014, and is incorporated into the 2017 opinion. The 1998 recovery plan for the U.S. Pacific populations of olive ridley turtles indicates that contaminants in the marine environment are not a current problem among the threats faced by this species (NMFS/USFWS 1998).

5.2.5.5 *Loggerhead Sea Turtle North Pacific DPS and Northwest Atlantic DPS*

Section 6.11.4 of NMFS' opinion on the 2017 CGP reviewed the physical description, life history, and status of the endangered North Pacific DPS and threatened Northwest Atlantic DPS of loggerhead turtle, and that summary will not be repeated here. A five-year status review for the Northwest Atlantic DPS species was initiated in 2019 and is not yet complete. Two of the Northwest Atlantic loggerhead turtle DPS recovery units overlap with waters where EPA has NPDES permitting authority: the Northern Gulf of Mexico Unit and the Greater Caribbean Unit (NMFS and USFWS 2008). The recovery plan requires that the Northern Gulf of Mexico Unit attain an annual rate of increase over a generation time of 50 years that is three percent or greater than the previous year, resulting in a total annual number of nests of 4,000 or greater for this recovery unit, with a statistical confidence of 95 percent, and that the increase in number of nests must be a result of corresponding increases in numbers of nesting females (estimated from nests, clutch frequency, and remigration interval). For the Greater Caribbean Recovery Unit, recovery requires that the total annual number of nests at a minimum of three nesting assemblages increase over a generation time of 50 years and that this increase in number of nests must be a result of corresponding increases in numbers of nesting females (estimated from nests, clutch frequency, and remigration interval).

According to the 2020 status review, the North Pacific Ocean loggerhead turtle DPS continues to meet the definition of an endangered species because it is in danger of extinction throughout its range as a result of numerous factors. The greatest threats are caused by fisheries bycatch, which reduces abundance, and climate change, which reduces productivity. Other threats include loss and modification of habitat, overutilization, and predation. These threats are reflected in the low abundance of nesting females. Nesting appears to be increasing; however, relatively few females return to nest on a regular basis, raising concern regarding the impact of threats on the survival of mature females and thus the resilience and recovery of the DPS (NMFS and USFWS 2020). Delisting of the North Pacific DPS of loggerhead sea turtle requires all of the following criteria to be met (USFWS/NMFS 1998b):

1) to the best extent possible, take in international waters must be reduced via enforced agreements;
2) all regional stocks that use U.S. waters must have been identified to source beaches based on reasonable geographic parameters;
3) all FENA at "source beaches" must be either stable or increasing for over 25 years;
4) each stock must average 5,000 FENA (or a biologically reasonable estimate based on the goal of maintaining a stable population in perpetuity) over six years;
5) existing foraging areas must be maintained as healthy environments;
6) foraging populations must be exhibiting statistically significant increases at several key foraging grounds within each stock region;
7) all Priority #1 tasks have been implemented;
8) a management plan designed to maintain stable or increasing populations of turtles must be in place;
9) ensure formal cooperative relationship with a regional sea turtle management program; and
10) international agreements must be in place to protect shared stocks (e.g., Mexico and Japan).

5.2.5.6 *Green Sea Turtle*

NMFS listed 11 DPSs of green turtle in 2016, which changed the 2015 status review. CGP discharges occur to habitats used by the North Atlantic, South Atlantic, East Pacific, and Central North Pacific DPS of green turtle, which are threatened, and the Central West Pacific DPS of green turtle, which is endangered. This listing update does not affect existing designated critical habitat in Puerto Rico (although this critical habitat pertains only to the North Atlantic DPS) and does not influence the determinations made for the green turtle in NMFS' opinion for the 2017 CGP, which are discussed in section 6.11.5 of that opinion. The 1998 recovery plan addressed the green turtle as Atlantic (NMFS and USFWS 1991) and Pacific (USFWS/NMFS 1998a) populations. The U.S. population of green turtles in the Atlantic can be considered for delisting if, over a period of 25 years (i.e. by 2023), the following conditions are met:

1) the level of nesting in Florida has increased to an average of 5,000 nests per year for at least six years;
2) at least 25 percent of all available nesting beaches (420 kilometers) is in public ownership and encompasses greater than 50 percent of the nesting activity;

3) a reduction in stage class mortality is reflected in higher counts of individuals on foraging grounds; and

4) All Priority #1 tasks have been successfully implemented.

For the Pacific population, delisting requires that:

1) all regional stocks that use U.S. waters be identified to source beaches based on reasonable geographic parameters;

2) each stock must average 5,000 FENA over six years;

3) nesting populations at "source beaches" must be either stable or increasing over a 25-year monitoring period;

4) existing foraging areas must be maintained as healthy environments;

5) foraging populations must be exhibiting statistically significant increases at several key foraging grounds within each stock region;

6) all Priority #1 tasks must have been implemented;

7) a management plan to maintain sustained populations of turtles must be in place; and

8) international agreements must be in place to protect shared stocks.

5.2.5.7 *Updated Green Sea Turtle Listing*

The green turtle was initially listed under the ESA on July 28, 1978 (43 FR 32800) as endangered for breeding populations in Florida and the Pacific coast of Mexico, and threatened in all other areas throughout its range. On April 6, 2016, NMFS listed 11 DPSs of green sea turtles under the ESA (81 FR 20057). Eight DPSs are listed as threatened: Central North Pacific, East Indian-West Pacific, East Pacific, North Atlantic, North Indian, South Atlantic, Southwest Indian, and Southwest Pacific. Three DPSs are listed as endangered: Central South Pacific, Central West Pacific, and Mediterranean.

CGP discharges occur to habitats used by the North Atlantic, South Atlantic, East Pacific, and Central North Pacific DPS of green turtle, which are threatened, and the Central West Pacific DPS of green turtle, which is endangered. The listing change did not affect existing designated critical habitat in Puerto Rico, which is now within the North Atlantic DPS, and does not influence the determinations made for the green turtle in NMFS' opinion for the 2017 CGP, which are discussed in section 6.11.5 of that opinion.

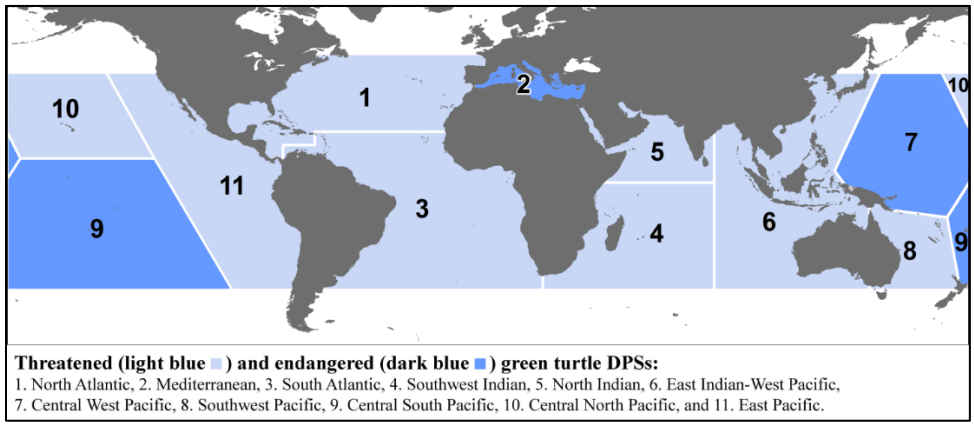


Figure 3. Map depicting DPS boundaries for green turtles

5.2.6 Corals

Section 6.12 of NMFS' opinion on the 2017 CGP summarized the ESA-listed corals and that summary will not be repeated here. Since 2014, coral reef habitats have been subject to elevated ocean surface temperatures (Figure 4) precipitating a prolonged global bleaching event extending into early 2017 (Hughes 2017, NESDIS 2017). In subsequent years, bleaching conditions in the vicinity of Puerto Rico reached alert level 1 in October of 2019 and again in 2021. In addition, the 2017 western Atlantic hurricane season was unusually intense, with four hurricanes over a period of less than two months. Hurricanes Harvey (August 25, category three) and Nate (October 4, category one) struck in the Gulf of Mexico and Hurricanes Irma (August 30, category 5) and Maria (September 16, category 4) struck Florida and the Caribbean. The hurricanes churned coastal sediments into the water column and torrential rain carried sediments in runoff from land (Hernández et al. 2020).

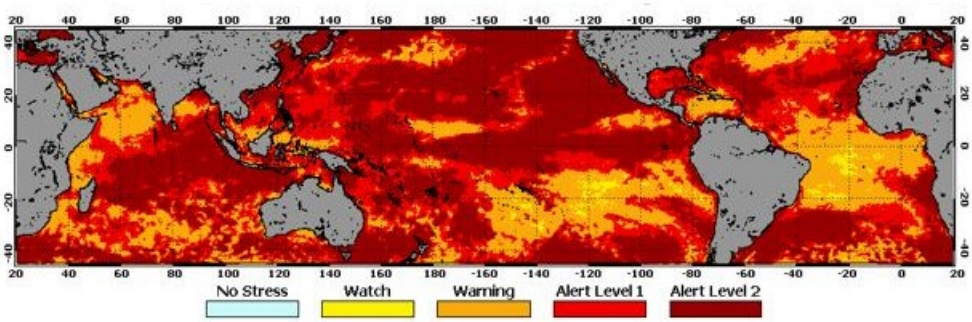


Figure 4. Reef Watch satellite coral bleaching alert area January 2014-December 2016

Post-hurricane assessments found that staghorn coral and boulder star coral were the most severely impacted ESA-listed coral species. These species are major contributors to nearshore reefs in the Caribbean that provide coastal protection (Viehman 2020). An assessment of data collected between 2014 and 2017 rated the overall condition of Puerto Rico coral reefs after monitoring and restoration efforts as "fair" (Alvarez et al. 2020). Recovery outlines have been developed for ESA-listed Indo-Pacific coral species and the ESA-listed Caribbean coral species as interim guidance to direct recovery efforts until full plans may be developed (NMFS 2015, 2016i).

NMFS' vision for restoration and delisting the 15 ESA-listed Indo-Pacific corals is that they should be present throughout as much of their historical ranges as future environmental changes allow, and expand

their ranges into new locations with more favorable habitat conditions. Changing environmental conditions on a global scale are the primary drivers of the status of these listed corals and it is not realistic to expect future distributions to reflect the past. Coral reefs where these species occur are expected to continue to experience low levels of local anthropogenic impacts, retain their ecosystem function, and show increased resilience to global environmental changes. Recovery of the 15 ESA-listed Indo-Pacific corals will require conservation of the coral reef ecosystem through threat abatement, and facilitation of adaptation to changing conditions to ensure a high probability of survival into the future.

NMFS' vision for restoration and delisting the ESA-listed coral species in the Atlantic-Caribbean is that these species should be present across their historical range, with populations large enough and genetically diverse enough to support successful reproduction and recovery from mortality events and dense enough to maintain ecosystem function. Recovery of ESA-listed Atlantic-Caribbean coral will require conservation of the coral reef ecosystem through threat abatement to ensure a high probability of survival into the future.

Critical habitat recently proposed for the Indo-Pacific ESA-listed coral species (85 FR 76262) and Atlantic-Caribbean coral species (85 FR 76302) includes the PBF of "marine water with levels of anthropogenically-introduced (from humans) chemical contaminants that do not preclude or inhibit any demographic function."

6 UPDATES TO THE ENVIRONMENTAL BASELINE

The environmental baseline is defined as: "the past and present impacts of all Federal, State, or private actions and other human activities in an action area, the anticipated impacts of all proposed Federal projects in an action area that have already undergone formal or early section 7 consultation, and the impact of State or private actions which are contemporaneous with the consultation in process." The consequences to listed species or designated and proposed critical habitat from ongoing agency activities that are not within the agency's discretion to modify are part of the environmental baseline (50 CFR §402.02). This includes discharges and activities authorized by the administratively continued 2017 CGP, and other activities authorized by the EPA (e.g., NPDES permits, cooling water intakes, air emissions, and the cleanup and management of hazardous waste) that have undergone or are in the process of completing ESA section 7 consultations. The purpose of the environmental baseline is to describe the condition of the ESA-listed species and designated and proposed critical habitat in the action area without the consequences caused by the proposed action.

NMFS does not expect that the overarching drivers contributing to the environmental baseline within EPA's action area (e.g., example, land and water use, bycatch, and pollutant sources) have changed substantially since issuing the 2017 CGP. In addition to the species' status updates described in Section 5, this section updates the environmental baseline within the action area of the 2017 CGP biological opinion (Section 7) , which is adopted and relied on in this opinion, with information from the Clean Water Act 305(b) assessments overlapping with the action area for this opinion. The Clean Water Act requires states and territories to assess water quality every two years under 305(b) and identify waters that are impaired under 303(d) and in need of restoration. Restoration is achieved by establishing the maximum amount of an impairing pollutant allowed in a waterbody, or total maximum daily load (TMDL). These assessments are sent as an integrated report every even numbered year to EPA, who must approve of each impaired waters' listing. The current EPA-approved integrated reports are not approved the year they are assessed. For example, at the time of this writing, Current EPA-approved integrated reports for Massachusetts and Puerto Rico are dated 2020 while the currently approved integrated reports for New Hampshire and Washington DC are from 2018, . The summary in this environmental baseline section includes integrated water quality report assessments finalized by EPA since the 2017 CGP was issued. This section also examines the implications of consequential climatic events over the 2017 CGP permit term: the 2017 hurricane seasons and 2020 wildfire season. These action area-specific baseline descriptions are summarized by regions for East Coast, Puerto Rico, Texas, the West Coast, and the Pacific Territories.

6.1 East Coast

Specific major rivers of the conterminous Eastern United States are the only freshwaters of concern for this opinion because, unlike the salmonids of the Pacific Northwest, the ESA-listed Atlantic sturgeon and shortnose sturgeon do not use streams and other backwaters. The rivers of concern within the action area are based on the NMFS Greater Atlantic Region section 7 mapper data for Atlantic sturgeon designated critical habitat. While the Atlantic sturgeon was listed for protection under the ESA in 2011, critical habitat for the species was proposed and not yet finalized at the time NMFS completed consultation on the 2017 CGP. The final designated critical habitat rivers within the action area include the:

- Piscataqua River in New Hampshire, including critical habitat from its confluence with the Salmon Falls and Cocheco Rivers downstream to where the main stem river discharges at its mouth into the Atlantic Ocean;

- Cocheco River in New Hampshire, including critical habitat from its confluence with the Piscataqua River and upstream to the Cocheco Falls Dam;
- Salmon Falls River in New Hampshire, including critical habitat from its confluence with the Piscataqua River and upstream to the Route 4 Dam;
- Merrimack River in Massachusetts, including critical habitat from the Essex Dam (also known as the Lawrence Dam) downstream to where the main stem river discharges at its mouth into the Atlantic Ocean;
- North River in Massachusetts;
- Taunton River of Massachusetts;
- Thames River in Connecticut because the Mohegan Reservation is located on its shores;
- Connecticut River in Massachusetts, including critical habitat from the Holyoke Dam downstream to where the main stem river discharges at its mouth into Long Island Sound for Atlantic sturgeon, and, for the landlocked shortnose sturgeon, from Turners Falls to the Holyoke Dam;
- Delaware River; and
- Potomac River in Washington D.C., including critical habitat from the Little Falls Dam downstream to where the main stem river discharges at its mouth into the Chesapeake Bay.

The EPA approved New Hampshire's 2018 303(d) list for freshwaters in February of 2020. Prior to the 2018 assessment, the Cocheco River was listed as impaired due to polychlorinated biphenyls (PCBs). This listing was found to be in error and the water is no longer considered impaired. Even so, the Cocheco and associated tributaries remain impaired by polycyclic aromatic hydrocarbons (PAHs), legacy organochlorine pesticides, lead, aluminum, iron, pH, low dissolved oxygen, and other stressors contributing to the impairment of the biological community (e.g., erosive flow). The Piscataqua River continues to be impaired by excess nitrogen, dioxin, mercury, PCBs, and light penetration, resulting in an impaired estuarine biological community. Approved TMDLs for fecal coliform and enterococcus are now in place for these Piscataqua River impairments. For the Salmon Falls River, impairments include impaired biological communities, indicators of eutrophication (chlorophyll-a, dissolved oxygen and oxygen saturation, and total nitrogen), dioxin, mercury, PCBs, and pH. Approved TMDLs for mercury and dissolved oxygen are now in place for certain segments of the Salmon Falls River. Approved TMDLs are also in place for enterococcus, *Escherichia coli*, fecal coliform, and non-native aquatic plant impairments. The 2018 assessment did not include marine waters, but the draft 2020 303(d) list adds assessment zones located in Great Bay impaired by eutrophication indicators chlorophyll-a and total nitrogen.

The EPA approved Massachusetts's 2018/2020 303(d) list in February of 2022. The 2018/2020 reports data differently than for previous cycles. While the assessment identified pathogens a major cause for impairment, these are classified secondary contact impairments even though pathogens are detrimental to aquatic life as well. . Top bay and estuary impairments in the 2018/2020 cycle were identified due to biological assessment results (n=16) and indicators of sewage and eutrophication impairments were identified (n=21). Invasive aquatic pl;ant species dominated new impairments for rivers and streams

(n=11), followed by waterways identified as impaired due to biological assessment results (n=4), temperature (n=4), and fish passage obstruction (n=3).

The most recent EPA-approved integrated report for Washington, D.C.'s is for the 2018 reporting year. All waters were assessed and continue to be as impaired (Washington D.C. Department of Energy and Environment 2019). Typical causes of impairment to the District's waterbodies are elevated concentrations of bacteria and pH, low concentrations of dissolved oxygen (DO), and high turbidity. The top five sources leading to impairments are unspecified urban stormwater, discharges from municipal separate storm sewer systems , residential districts, impacts from hydrostructure flow regulation/modification, and unspecified "upstream sources." The EPA has not approved any new TMDLs since issuing the 2017 CGP. Approval of the Anacostia River watershed toxics TMDL is awaiting more data.

6.1.1 Municipal Separate Storm Sewer Systems

Municipal Separate Storm Sewer Systems (MS4s) are conveyances or a system of conveyances that are:

- owned by a state, city, town, village, or other public entity that discharges to Waters of the United States;
- designed or used to collect or convey stormwater (e.g., storm drains, pipes, ditches);
- not a combined sewer; and
- not part of a sewage treatment plant, or publicly owned treatment works.

The Clean Water Act Section 402(p)(3)(B) states that permits for MS4 discharges may be issued on a system or jurisdiction-wide basis, and must effectively prohibit non-stormwater discharges into the sewer system. Stormwater discharges regulated under an MS4 permit represent a baseline stormwater impact to which CGP-regulated discharges are added. In 2016, EPA Region 1 issued an MS4 General Permit for stormwater discharges within urbanized areas of Massachusetts and New Hampshire (Figure 5). Recent modifications clarifying requirements of permit holders become effective in January 6, 2021. In August of 2016, NMFS Greater Atlantic Region Field Office completed informal consultation, concurring with the conclusion made by EPA Region 1 that the proposed MS4 General Permit for Massachusetts and New Hampshire is not likely to adversely affect NMFS ESA-listed species and/or designated/proposed critical habitat within the action area of the permit.

In February of 2018, EPA Region 3 reinitiated consultation with NMFS Greater Atlantic Region Field Office on its MS4 General Permit for stormwater discharges within Washington D.C. Reinitiation was required to address the designation of critical habitat for the Atlantic sturgeon. NMFS Greater Atlantic Region Field Office issued its concurrence that the MS4 was not likely to adversely affect critical habitat designated for Atlantic sturgeon.

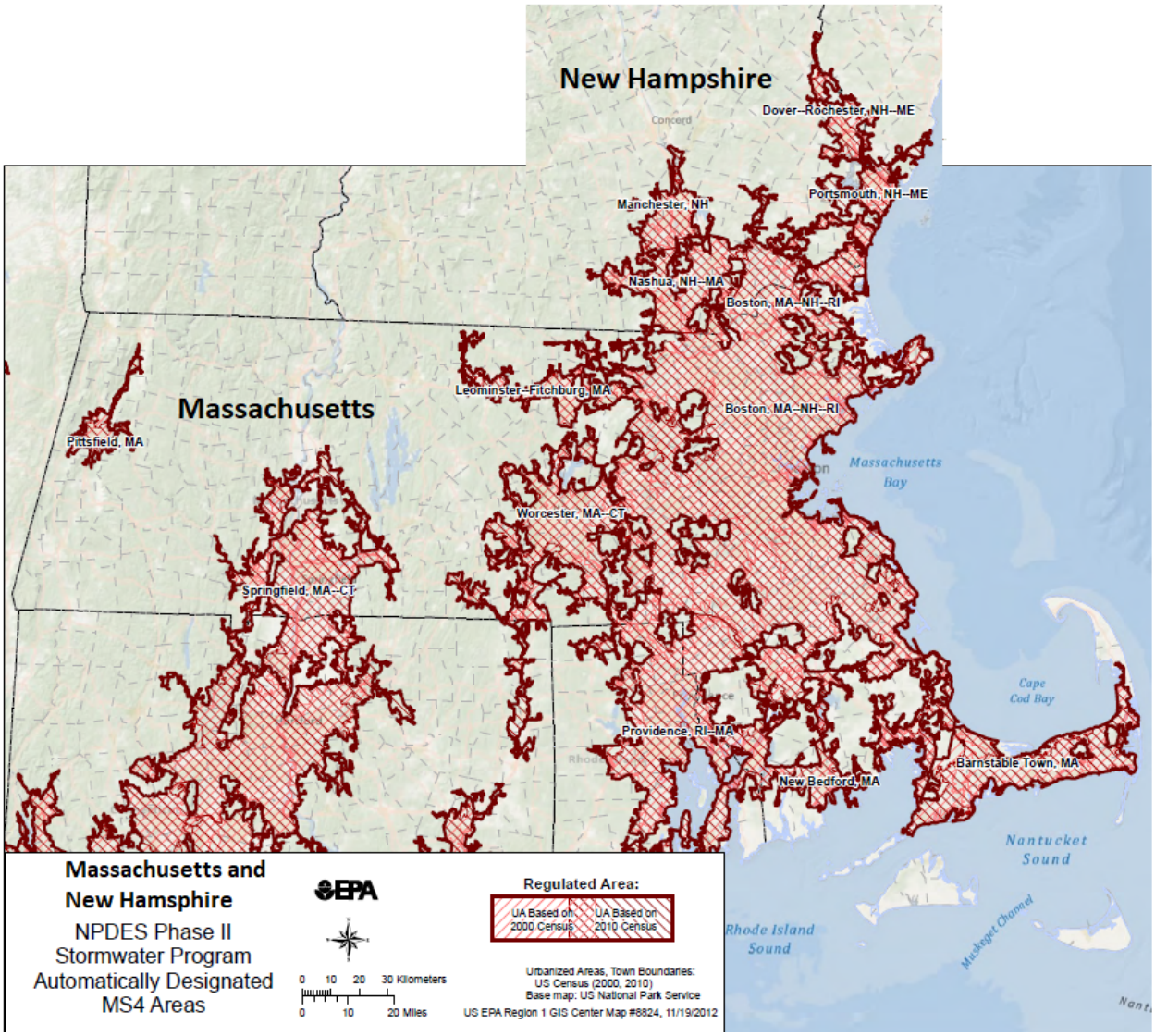


Figure 5. Map of urbanized areas of Massachusetts and New Hampshire automatically designated MS4 areas

6.2 Puerto Rico

Puerto Rico added 280 new waterbody/pollutant combinations to the 2020 303(d) list, with the top five causes of impairments identified as turbidity (118) dissolved oxygen (96), enterococcus (91), copper (87), and temperature (65). Contributing sources were identified as confined animal feeding operations (point source), sanitary sewer overflows (collection system failures), on-site treatment systems (septic systems and similar decentralized systems), urban runoff/storm sewers, and agriculture..

6.2.1 Hurricanes in 2017

Major hurricanes have caused significant losses in coral cover and changes in the physical structure of many reefs in Puerto Rico, as well as loss or damage to seagrass beds from blowouts and sediment movement. Tropical storms and hurricanes can result in severe flooding, leading to significant sediment transport to nearshore waters from terrestrial areas, as well as shifting of marine sediments. In addition to affecting sessile benthic organisms such as ESA-listed corals, changes in the structure of the reef affect

species like sea turtles, in particular greens and hawksbills that use reef habitats for refuge and foraging. In-water habitat for green and hawksbill sea turtles is temporarily or permanently lost or degraded depending on the magnitude of the storm.

Based on NOAA hurricane data and data from the Federal Emergency Management Agency, there have been a total of 11 hurricanes and tropical storms that have affected Puerto Rico between 1975 and 2017. Hurricanes Irma and Maria passed through the Caribbean in September 2017. Many portions of Puerto Rico were relatively unaffected by Hurricane Irma, although the storm did cause damage to Vieques, but Hurricane Maria affected all of Puerto Rico. Extensive damage to corals and coral reefs was reported in Puerto Rico and the U.S. Virgin Islands. In particular, dense thickets of elkhorn coral and patch reefs of lobed star coral showed significant breakage from the hurricanes. Corals can remain alive after such damage but are at high risk of further damage or death from subsequent storm waves or sediment burial. Restoration efforts ultimately reattached over 16,000 fragments in 63 restoration sites (Viehman et al. 2020).

While the Atlantic 2020 and 2021 hurricane seasons were intense, with 30 and 21 named storms, respectively, no hurricanes made landfall in Puerto Rico where EPA is the permitting authority. NMFS looked for, but did not find any information suggesting reefs surrounding Puerto Rico were physically harmed. However, considering the torrential rains impact Puerto Rico during these most recent hurricane seasons, it is likely that stormwater retention ponds and other stormwater control measures failed and discharged pollutants into the Atlantic Ocean and Caribbean Sea.

6.3 West Coast

The state of Washington's 2012 integrated water quality assessment was approved by EPA in 2016 (Opalski 2016). The 2012 integrated list identifies 303 freshwater segments that have been removed from the state 303(d) list due to attaining water quality standards (n=116), being subject to a plan to achieve water quality standards through a TMDL or other pollutant control strategy (n=156), or for which the state determined that the data no longer met revised threshold requirements for non-attainment (n=31). Impairments in Washington's 2012 303(d) list total 3,571 freshwater segments. This includes 1,622 waters listed for the first time. The state also identified 77 marine and estuarine waters as impaired, with primary impairments being fecal coliform, dissolved oxygen, invasive exotic species, sediment toxicity, PCBs, and PAHs in fish tissue. The top five impairments in Washington freshwaters are temperature, dissolved oxygen, bacteria, pH, and PCBs in fish tissue (DEQ 2020).

The EPA approved Oregon's 2018/2020 integrated water quality report in November of 2020. The Integrated Report is no longer submitted as a written report. It is a series of spreadsheets used to create a database and mapper reporting of the status of water quality in Oregon and a list of waters considered to be impaired. The most recent report indicates that the top five impairment types in Oregon waters are currently temperature (year round and spawning waters), impaired ecological communities, dissolved oxygen in spawning waters, and sedimentation.

The EPA approved Idaho's 2018/2020 integrated report in October of 2020. The state listed 71 additional waters as impaired and delisted 147 waters: 21 because data indicate the standard has been attained and 43 due to approval of a TMDL. The remaining delistings were based on insufficient data, clarifications, or duplicates of existing listings. The top impairment causes for Idaho streams are impaired biological

communities and habitats, water temperature, *Eschericia coli*, sedimentation/siltation, and mercury. The 2018/2020 integrated report indicates that some of these impairments have improved since the 2016 reporting year. The extent of sedimentation/siltation impairments decreased by about 30 percent, temperature impairments decreased by 24 percent, and stream miles with impaired biological communities and habitats declined by about 11 percent.

EPA approved California's 2018 integrated report on June 9, 2021. The report identified 23 additional impaired waters in Indian Country Lands where EPA is still the permitting authority. Three waters were delisted. One was delisted due to a change in the California water quality standard, one because the assessment method changed, and one was delisted with an unspecified reason for recovery. The top five impairment categories identified for these areas were ecological assessment indicators (i.e., water chemistry excursions, habitat and community assessments) nutrients, salinity/dissolved solids/chlorides and sulfates, metals and sediment.

6.3.1 *Wildland Fire (West Coast)*

Fires that are allowed to burn naturally in riparian or upland areas may benefit or harm aquatic species, depending on the degree of departure from natural fire regimes. The intensity and extent of wildfires appear to be increasing over time, suggesting a departure from natural fire regimes. In the 1990s, the average annual acreage burned by wildfire was 3.3 million acres in an average of 78,600 individual fires. Since 2000, the average annual acreage burned by wildfire was 6.9 million acres, three times the area burned in the 1990s. The 2015 fire season was the largest on record, with 10.1 million acres burned. As of November 2, 2020, over 47,500 wildfires have burned nearly 8.7 million acres (CRS 2020). Nationally, there were 58,985 wildfires reported in 2021, compared to 58,950 wildfires reported in 2020. Wildfires consumed 10,122,336 acres nationally in 2020 and 7,125,643 acres nationally in 2021. While the nationwide frequency acreage of wildfires were similar to their respective 10-year averages, the 2021 season was a particularly active for four Geographic Areas. While the frequency of wildfire in Northern California's was near normal number, some of those fires grew to enormous size such that the overall acreage burned significantly exceeded the area's ten-year average. In Northwest and Eastern Areas, the combination of more fires and large sizes resulted in above average activity. The Northern Rockies had a significant increase in the number of fires which consumed roughly twice the normal number of acres, based on the ten-year average (National Interagency Fire Center 2022). Fire retardants used to fight wildfires risk polluting water and adversely ESA-listed species (NMFS 2019). However, the use of fire retardants in some cases is less harmful than the effects of wildfire on those systems. Heat stress form wildfire, coupled with exposure to fire retardants makes fish more likely to die, but also makes it more likely for there to be much lower densities of fish in the area, as many fish would be expected to move out of the area affected by wildfires before fire retardants are ever applied (NMFS 2022).

6.4 Pacific Territories

In 2016, Guam assessed 2.4 percent of its bays and estuaries (22.3 square miles assessed) and 14 percent of the coastal shoreline (16.6 miles assessed). While enterococcus bacteria TMDLs were developed for 25 beaches, no previously impaired waters were identified as attaining their designated use in the 2016 reporting period. Enterococcus bacteria TMDLs are still needed for about 16 miles of beach, and 0.7 miles of beach need a TMDL for PCBs in fish tissue. About 12 square miles of Guam's bays and estuaries are impaired by PCBs in fish tissue, and Tumon Bay was identified as impaired by antimony,

tetrachloroethylene, trichloroethylene, arsenic, dieldrin, and chlordane. While sources for these impairments were not identified in Guam's 2016 integrated assessment report, the presence of the legacy contaminants PCBs, dieldrin, and chlordane does not suggest contributions were from construction activity that would be subject to the CGP.

American Samoa assessed 78 percent of its coastal shoreline (124 linear miles) during its 2016 reporting year. Enterococcus bacteria TMDLs were developed for 41 beaches and the original listing of one beach as impaired by arsenic was determined to be incorrect. Overall, enteroccoccus bacteria impairs 58.6 miles of coastline and impaired biological communities (specific cause unknown) occur along 41 miles of coastline. Sources of pollutants in these waters were identified as multiple unspecified nonpoint sources and sediments contaminated with legacy pollutants. Since that assessment EPA approved additional waters identified in the 2020 assessment cycles as impaired, largely by sewage indicators, but disapproved of American Samoa omission of Aunu'u Harbor as impaired by fecal indicator bacteria.

The Northern Marianas Islands assessed water quality along 235.3 miles of coastal shoreline in 2016 and determined that 89.5 miles were impaired and required a TMDL for phosphate. Specific impairments, in addition to phosphate, include 83.3 miles impaired by enterococcus bacteria, 53 miles exhibiting impaired biological communities, 25.6 miles impaired by low dissolved oxygen, 9.9 miles with pH impairments, and less than five miles impaired by mercury, copper, and lead. Pollutant sources were identified as septic systems, livestock operations, and military bases.

6.5 Climate Change

Continued global warming is projected to further disrupt the global water cycle, increasing the frequency and intensity of hot extremes, regional precipitation and drought extremes, violent storms, and reductions in Arctic sea ice, snow cover and permafrost. Average global warming up to 1.5°C as compared to pre-industrial levels is expected to lead to regional changes in extreme temperatures, and increases in the frequency and intensity of precipitation and drought (Hoegh-Guldberg et al. 2018). Recent changes in precipitation over the past 30 years indicates stormwater increases in EPA permitting areas of the Northeast and Washington State (Figure 6).

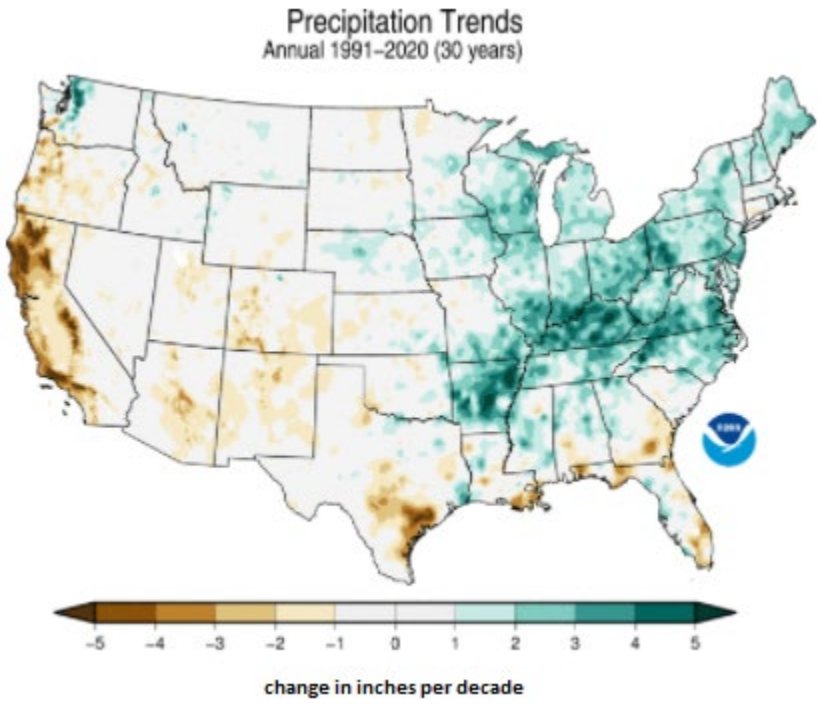


Figure 6. Changes in precipitation over the past 30 years (https://www.ncdc.noaa.gov/temp-and-precip/us-trends/prcp/ann)

Global warming has led to more frequent heatwaves in most land regions and an increase in the frequency and duration of marine heatwaves (Hoegh-Guldberg et al. 2018) increasing stress on ESA-listed species in marine environments. The implications of marine heatwaves on coral has already been discussed in Section 5.2.6.The Atlantic Ocean appears to be warming faster than all other ocean basins except perhaps the southern oceans (Cheng et al. 2017). In the western North Atlantic Ocean, surface temperatures have been unusually warm in recent years (Blunden and Arndt 2016). Since the early 1980s, the annual minimum sea ice extent (observed in September each year) in the Arctic Ocean has decreased at a rate of 11 to 16 percent per decade (Jay et al. 2018). Further, ocean acidity has increased by 26 percent since the beginning of the industrial era (IPCC 2014)and this rise has been linked to climate change.

7 EFFECTS OF THE ACTION

Effects of the action are defined as 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 (50 CFR §402.02).

As explained in Section 3 of this opinion, NMFS has evaluated the existing analyses The analyses in NMFS' in the opinion on the 2017 CGP and are considered them currently valid for those elements of the permit that have not changed for the 2022-2027 CGP permit term. Section 8 of that opinion applied a qualitative strength of evidence assessment of risks. This includes analyses of the contribution of the CGP to climate change (Section 8.1), the risk analyses (Section 8.2) and an analysis of the construction general permit as a permitting program (Section 8.3). NMFS adopts those analyses and relies on them in this

opinion. Stressors of the action in NMFS' opinion on the 2017 CGP were treatment polymers and sediment with any nutrients, metals, or other pollutants adsorbed to sediment particles.

7.1 Changes to the CGP for the 2022-2027 Permit Term

The effects analysis of this opinion describes how the CGP for the 2022-2027 particularly the changes from the 2017 CGP in the current permit term are expected to affect ESA-listed species and designated and proposed critical habitat under NMFS' jurisdiction. The assessment considered effects to those species and designated and proposed critical habitat that NMFS determined were likely to be adversely affected by the discharges authorized by the 2017 CGP and to proposed critical habitat for ESA-listed coral and final critical habitat Atlantic sturgeon which was designated since EPA issued the 2017 CGP. These changes include aspects related to stormwater exposure and permit implementation (e.g., ESA Eligibility Certification, Electronic Reporting). These are handled separately, with changes related to stormwater exposure addressed in an effects analysis and changes made to permit implementation addressed in a programmatic analysis. The Integration and Synthesis (Section 9) of this opinion integrates the updates to the status of the species and environmental baseline in this opinion with the assessment of the effects of changes to the 2022 CGP on listed species and critical habitat.

7.1.1 Graphical Example for Defining the Action Area

Under the 2017 CGP, many site operators did not correctly identify their action area. Often, they delineated their action area as the property boundaries or extending to the first stormwater control measure without confirmation that the measure eliminated discharge of constituents to Waters of the United States. For example, many basis statements indicated that the site was already developed or paved so no ESA-listed species would be affected by the construction. As described in section 3.2 of this opinion, the 2022 CGP will provide a graphical example showing that the action area is not limited to the construction site, but includes all areas affected by stormwater flowing from the site (Figure 2).

NMFS concludes that the addition of a graphical example of how to define an action area for the 2022-2027 CGP permit term will minimize exposures of ESA-listed species and designated and proposed critical habitat to harmful discharges by increasing the likelihood that an operator will acknowledge discharges made to waters where ESA-listed species and designated and proposed critical habitat occur. As a result, operators are more likely to certify their ESA Eligibility correctly and ensure control measures are adequate. Rather than correct certification mistakes, the Services will then be better able to target their efforts to advise EPA of discharges that are likely to result in short or long-term adverse effects to ESA-listed species and/or critical habitat, and offer technical assistance to avoid or minimize adverse effects.

7.1.2 Site Dewatering Requirements

Site dewatering is the removal of groundwater or surface water from the construction area to make it possible to perform construction activities. Incorrectly done, site dewatering can discharge more sediment in a few hours than discharged through stormwater over the entire duration of construction. By prohibiting discharges from contaminated sites and requiring dewatering discharges to be visually free of turbidity and hydrocarbons and not cause erosion or resuspend sediment, the 2022 CGP eliminates a threat to aquatic habitats posed by construction activity. This prohibition is strengthened by requirements to conduct and document daily inspections of dewatering discharges and take immediate action if the discharge is observed to be turbid or contain hydrocarbon sheen

NMFS concludes that increased discharge restrictions and inspection requirements on dewatering discharges will reduce the likelihood of exposures of ESA-listed species and designated and proposed critical habitat to sediment and construction site pollutants during dewatering activities. Such exposures may occur, but given the requirement for daily inspections, harmful discharges would be identified and addressed in a timely manner.

7.1.3 Site Inspector Training

The EPA adjusted site inspector training requirements and clarified language in the 2022 CGP to address problems observed by EPA staff during site visits. Training required for the 2022 CGP will cover the conduct and documentation of inspections along with the selection, design, installation, and maintenance of sediment controls and pollution prevention measures. In addition, clarifications in the 2022 CGP address required inspection frequency and scope, documentation, and control measures.

NMFS concludes that the training requirements, taken with clarifications in the 2022 CGP term, will reduce the likelihood of harmful exposures of ESA-listed species and designated and proposed critical habitat to sediment and construction site pollutants through reducing the likelihood of failures in stormwater sediment controls and pollution prevention measures. Such exposures may occur, but training should improve the effectiveness of inspections in identifying and addressing controls in need of maintenance and controls that have failed or are at risk of failure.

7.1.4 ESA Eligibility Certification

Inaccurate ESA Eligibility Certifications first noted for the 2012 CGP term persisted during the 2017 term. Consultation on the 2017 CGP attempted to correct the ESA Eligibility Certification issues by making the instructions more explicit and adding a flowchart for the instructions. Given the frequency of incorrect certifications and failure to consider NMFS' species over the 2017 CGP permit term, it is clear that these efforts did not have the desired effect. The most common mistakes observed over both permit terms include incorrect identification of the action area, failure to consider ESA-listed species and designated and proposed critical habitat under NMFS' jurisdiction, inadequate statements supporting certifications, and relying on state agencies and information resources (which do not necessarily reflect federally-protected species and habitats).

Understanding that changes in how requirements are written only have a limited effect, the ESA Eligibility certification procedure for the 2022 CGP term was extensively revised. The steps in the ESA section of the NeT or in the paper "ESA worksheet" firmly guide the applicant through the certification process by requiring the certifier to select statements applicable to their construction activity and provide specific information, including documentation that supports their certification. The form no longer has a free text field requesting an open-ended basis statement supporting the certification. The only free text fields that are included in the 2022 CGP NOI form request specific information such as *"Identify the federal action agency or agencies involved."*

These changes were made because, for example, during the 2017 CGP term many applicants incorrectly certified under Criterion A – "*No ESA-listed species or designated and proposed critical habitat occur in the action area*." This mistake was often caused by both incorrectly identifying the action area and failing to consider ESA-listed species and habitats under NMFS' jurisdiction. The 2022 ESA Eligibility Certification process now provides an example of what should be included in the action area, a link to Services' information resources, and requires the applicant to select statements affirming (1) that their

action area includes all areas, offsite and onsite, affected by stormwater discharges and discharge-related activities, (2) that they have used information resources of both Services, (3) that aerial images of the site and species' lists are attached to the NOI, and (4) that supporting documentation for their ESA Eligibility Certification is included with the site's SWPPP. Finally, to certify under criterion A, the applicant must list information sources used for the certification for USFWS and NMFS' species in separate free text fields so that a failure to consider NMFS' species is immediately evident to the certifier, to EPA, and to the Services.

NMFS concludes that changes to the ESA Eligibility certification procedure for the 2022-2027 CGP term will increase the likelihood that construction site operators will certify ESA Eligibility correctly and provide the supporting documentation necessary for the Services to verify eligibility. The changes will also make it easier to identify certifications that did not consider ESA-listed species and designated and proposed critical habitat under NMFS' jurisdiction and certifications relying on out-of-date assessments and permits. This has the effect of minimizing harmful exposures of ESA-listed species and designated and proposed critical habitat because certifiers will be aware of the risk their activities pose to ESA resources and the Services will be better able to identify NOI that may require technical assistance or an individual permit and ESA section 7 consultation.

7.2 Updated Risk Analysis

The risk analysis in section 8.2 NMFS' opinion on the 2017 CGP, adopted and relied on here, determined that the authorized discharges were likely to adversely affect ESA-listed species and designated and proposed critical habitat through sediment smothering or burial of immobile organisms (coral), life stages (bedded eggs), or habitat (gravel interstitial spaces), clogging or irritation of gills and filter feeding structures (fish, coral), and light attenuation (zooxanthellae photosynthesis, sight feeders). The analysis also concluded that flocculants used as authorized under the CGP would potentially result in direct mortality to fish and harm to gills and filter feeding structures.

Less than one percent of the 2017 CGP NOI indicated the use of treatment chemicals to settle out suspended materials, and this is expected to be the case for NOI under the 2022 CGP. NMFS concludes that the risk analysis for flocculants in NMFS' opinion on the 2017 CGP no longer applies to the 2022 CGP. The risk analysis for exposures of species and designated and proposed critical habitat to sediment, as assessed in the 2017 opinion, is still valid because the vulnerability of ESA-listed species and designated critical habitat to the effects of CGP discharges has not likely changed, sediment effects on critical habitat proposed for Indo-Pacific and Caribbean corals is expected to be consistent with effects assessed in 2017 for staghorn and elkhorn coral,[7] issues with ESA Eligibility Certifications persist, compliance among NPDES permits is poor (see Section 1.1.1), and the effectiveness of changes intended to minimize sediment exposures for the 2022 CGP are untested.

Because CGP authorizations include discharges from an unknown number and locations of construction activities, the risk analyses in the 2017 opinion were applied over the entire action area of EPA's

[7] The 2017 assessment of sediment effects on critical habitat designated for elkhorn and staghorn coral (i.e., Substrate of suitable quality and availability to support successful larval settlement and recruitment, and reattachment and recruitment of fragments) would apply to sediment effects on critical habitat proposed for the ESA-listed Indo-Pacific and Caribbean coral (i.e., Reefscape ... with no more than a thin veneer of sediment and low occupancy by fleshy and turf macroalgae)

permitting authority. Thus, NMFS concludes that the 2017 risk analyses apply to the critical habitat recently designated for Atlantic sturgeon and proposed for the ESA-listed Caribbean and Indo-Pacific corals.

7.3 Aggregate Effects of the CGP Under Climate Change

Climate change disruptions in the water cycle alters the frequency and nature of stormwater discharges from construction activity and construction activity results in a built environment affecting the impact of water cycle disruptions. Thus NMFS' opinion on the 2017 CGP addressed climate change as part of the environmental baseline (section 7.1.3), the contribution of CGP authorizations to climate change (Section 8.1), and climate change itself as a Cumulative Effect not subject to consultation (Section 10.1). NMFS's policy guidance with respect to climate change when evaluating an agency's action is to project climate effects over the timeframe of the action's consequences. Consideration is not limited to only the duration of the specified activity, but also to its continuing effects for the foreseeable future. Given this policy, the cumulative effects section of NMFS' opinion on the 2017 CGP concluded that:

> *"While the CGP covers a short 5-year term over which the interaction of climate change on the direct and indirect effects of the action itself cannot be effectively monitored, chronic stormwater discharges authorized over each CGP permit term will continue to result in aggregate impacts. As climate change proceeds, precipitation rates will change and the frequency of heavy rainfall events, where stormwater control upsets are more likely, is expected to increase nationwide. Interaction of climate change effects on precipitation with the aggregate of the built environment resulting from construction activities with CGP-authorized discharges require NMFS to apply sustained attention to aggregate effects beyond the permit term of a given iteration of the CGP."*

An analysis of aggregate effects of CGP-authorized discharges under climate change would determine whether, taken together, these present "hot spots" affecting watersheds where species and designated and proposed critical habitat under NMFS' jurisdiction occur. Aggregate impacts include: (1) time-crowded perturbations (i.e., repeated occurrence of one type of impact in the same area) or perturbations that are so close in time that the effects of one perturbation do not dissipate before a subsequent perturbation occurs; (2) space-crowded perturbations (i.e., a concentration of a number of different impacts in the same area) or perturbations that are so close in space that their effects overlap; (3) interactions or perturbations that have qualitatively and quantitatively different consequences for the ecosystems, ecological communities, populations, or individuals exposed to them because of synergism (when stressors produce fundamentally different effects in combination than they do individually), additivity, magnification (when a combination of stressors have effects that are more than additive), or antagonism (i.e., when two or more stressors have less effect in combination than they do individually); and (4) nibbling (i.e., the gradual disturbance and loss of land and habitat) or incremental and decremental effects are often, but not always, involved in each of the preceding three categories (NRC 1986).

A granular analysis of aggregate impact of construction activities is of limited use because the discharges are not fixed in nature or location. This would require time series data associating active construction with concurrent stormwater and/or snowmelt episodes. Understanding the "*Interaction of climate change effects on precipitation with the aggregate of the built environment resulting from construction activities with CGP-authorized discharges*" requires information on additional impervious area resulting from the construction activity. At this time, the CGP NOI do not collect information on whether the construction

activity would result in new impervious area. However, an altered landscape resulting from construction activities is reasonably certain to occur for many CGP-authorized discharges.

While the first CGP was issued in 1992, the 2008 CGP was the first for which NOI were reliably filed electronically. The CGP authorizations for 15 of the past 30 years of CGP implementation that are not electronically available and cannot be used in an analyis . Information recorded for older authorizations are not as detailed. Baseline information for impervious cover within the action area prior to EPA's first CGP is not available. The oldest available impervious cover data from the National Land Cover Dataset is from 2001 and the most recent is from 2019. However, data for 2019 are not available for the Pacific territories or Puerto Rico. These are the best data available for framing the baseline and aggregate impact of CGP authorizations. NMFS generated following summary of available data to provide context for aggregate impacts for the 2022 and future CGP permits.

Table 5 summarizes the change in impervious cover between 2001 and 2019 for catchments immediately adjacent to waters where ESA-listed species and critical habitats under NMFS' jurisdiction occur and catchments abutting water-adjacent catchments. Data for Massachusetts are divided into regions within the state because a large number of CGP NOI are from Massachusetts and this allows comparison of highly urbanized areas of the state (e.g., Plymouth to Essex) with relatively less developed areas (e.g., Connecticut River; Figure 7).

Table 5. Summary of impervious cover changes within catchments adjacent to waters where ESA-listed species under NMFS' jurisdicion occur

Region	Catchment area (km^2)	2001 catchment area already >10 percent impervious cover	Catchment area increased to >10 percent impervious cover by 2019	2019 catchment area still <10 percent impervious cover
Connecticut River (MA)	825.25	340.89 (41.3%)	16.07 (1.9%)	468.28 (56.7%)
Buzzards Bay/Taunton River (MA)	1097.19	494.87 (45.1%)	57.78 (5.3%)	544.54 (49.6%)
Cape Cod and Islands (MA)	1389.27	761.97 (54.8%)	40.95 (2.9%)	586.36 (42.2%)
Cape Cod to Plymouth (MA)	529.25	243.42 (46.0%)	54.89 (10.4%)	230.94 (43.6%)
Plymouth to Essex (MA)	687.37	621.16 (90.4%)	9.87 (1.4%)	56.34 (8.2%)
Essex to Lowell (Merrimack River, MA)	450.18	264.87 (58.8%)	11.50 (2.6%)	173.81 (38.6%)
New Hampshire	349.90	169.26 (48.4%)	15.74 (4.5%)	164.91 (47.1%)
Washington DC	145.91	145.71 (99.9%)	0.00 (0.0%)	0.20 (0.1%)
Washington Federal Lands[8]	2377.85	470.80 (19.8%)	47.67 (2.0%)	1859.39 (78.2%)
Idaho	14966.58	52.33 (0.3%)	3.82 (0.0%)	14910.43 (99.6%)
Indian Country (ID)	1756.89	0.56 (0.0%)	6.58 (0.4%)	1749.76 (99.6%)
Indian Country (CA, OR, WA)	7146.80	664.17 (9.3%)	73.02 (1.0%)	6409.61 (89.7%)

[8] Excluding wilderness areas, National Forests, and National Parks

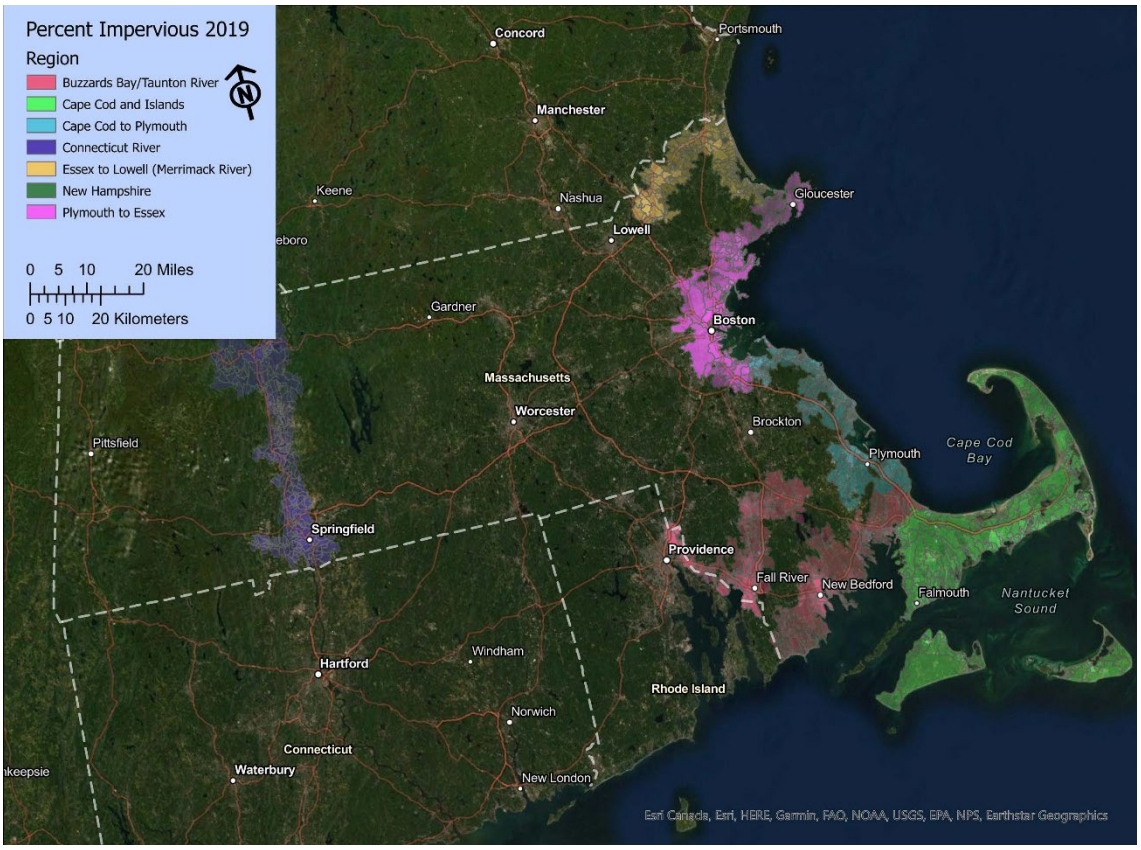


Figure 7. Relative impervious cover, expressed transparency, for Massachusetts catchments adjacent to waters where ESA-listed species under NMFS' jurisdiction occur (opaque = highly impervious)

For example, Figure 8 illustrates the incremental spread of impervious cover along the Connecticut River in Massachusetts. According to Arnold and Gibbons (1996) runoff doubles in forested catchments that are 10 to 20 percent impervious, triples between 35 and 50 percent and increases more than five-fold at above 75 percent impervious. Catchments that shifted from below 10 percent impervious cover in 2001 to greater than 10 percent impervious in 2019 are typically adjacent to existing areas of increased impervious cover. These are shown in Figure 8 using a color scale to illustrate the degree of impervious cover change. For example, impervious cover at five percent in 2001 and 6.5 percent in 2019 is a 30 percent increase in impervious cover.

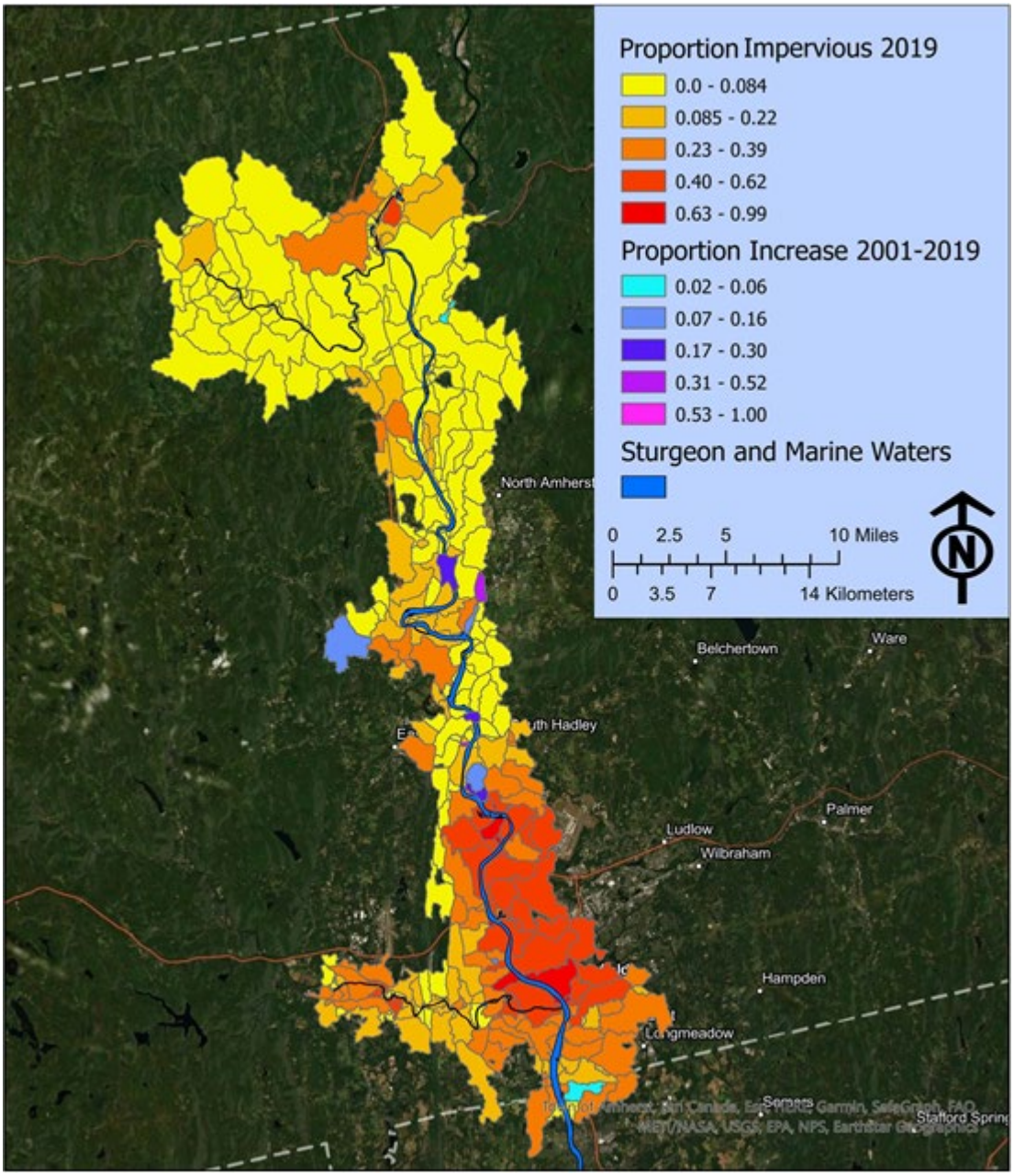


Figure 8. Percent impervious cover (increasing yellow-to-red) within catchments along the Connecticut River with catchments that increased to greater than 10 percent impervious cover between 2001 and 2019 (increasing aqua-to-fuscia)

Climate change influences on precipitation frequency and intensity interacting with increasing impervious cover intensifies risk to surface water quality through increased pollutant transport and erosive flow. Further, changes in plant cover and soil structure under climate change will influence infiltration potential (Lal 2015). Annual precipitation in the state of New Hampshire has increased by an average of about 17 centimeters over the 1895-2004 average (Runkle et al. 2022a). Records for Massachusetts indicate average annual precipitation increased by nearly 12 centimeters over the 1895-1969 average (Runkle 2022). Both states are projected to have significant increases in spring precipitation of between 5 and 15

percent. Such records are not available for the Washington DC region, but recent years have brought extreme weather, unusually heavy snow storms in 2010, Hurricane Irene in 2011, the June 2012 derecho, and Superstorm Sandy in October of 2012. The region has also experienced extreme precipitation events ranging from about 15 to 30 centimeters of rain in August of 2014, July 2016, and May 2018 (Runkle et al. 2022b). Climate change models indicate a five to ten percent increase in annual precipitation in the Northeastern U.S.

The areas where EPA has permitting authority in Washington, Oregon, and California are small and widely dispersed. The region is expected to experience a five to ten percent increase in winter precipitation, but, under increasing temperatures, a greater proportion of this will be rain, not snow. Snowmelt will also occur earlier in the spring (Frankson et al. 2022a, Frankson et al. 2022b, Frankson et al. 2022c). Up until 2021, EPA had permitting authority for Idaho. Both winter and spring precipitation is expected to increase by five to ten percent in areas where ESA-listed salmonids under NMFS' jurisdiction occur. The number of 2.54-centimeter extreme precipitation events has been above average for the past 16 years with record-high numbers of events from 1995–1999 (Runkle et al. 2022c).

The extent to which existing stormwater control technologies and best management practices will be effective under increasingly challenging stormwater conditions has yet to be proven. The increased impervious area resulting from construction activities with CGP-authorized discharges taken with anticipated increases in annual and seasonal precipitation is expected to result in more frequent and extreme uncontrolled stormwater discharges which, in turn, will likely adversely affect water quality and aquatic life through erosive waters and contribution of land-sourced pollutants.

7.4 Evaluation of the CGP as a Permitting Program

NMFS' opinion on the 2017 CGP concluded that successful implementation of the ESA Eligibility Criterion Procedure, taken with the inspections, stormwater controls, monitoring, and corrective actions required by the 2017 CGP, were key to minimizing risk to ESA-listed species and designated and proposed critical habitat. Changes were made to three elements related to the implementation of the CGP for the 2022-2027 permit term. NMFS' opinion on the 2017 CGP evaluated the permit using seven elements. We review these here to place the changes to the CGP proposed for the 2022-2027 permit term in context.

7.4.1 Scope

The first element evaluates whether the general permit has been structured to reliably estimate the probable number, location and timing of the discharges that would be authorized by the program. The EPA estimated that the 2022 CGP would authorize discharges from approximately 3,000 projects per year totaling approximately 15,000 projects over the 5-year permit term. Most of these projects are expected to be in Arizona, Massachusetts, New Hampshire, New Mexico, and Puerto Rico. Texas and Idaho were delegated NPDES permitting authority in 2021, so only construction activities on Indian Country Lands in these states remain eligible for coverage under the 2022 CGP. Excluding data for Idaho and Texas, EPA anticipates that the average area disturbed by a project authorized under the CGP will be just under 13 acres with about 60 percent of projects disturbing under five acres.

7.4.2 Stressors

The second element evaluates whether the general permit has been structured to reliably estimate the physical, chemical, or biotic stressors that are likely to be produced as a direct or indirect result of the

discharges that would be authorized (that is, the stressors produced by the actual discharges to Waters of the United States). The BE for the 2017 CGP identified typical construction site pollutants to be the following:

- sediment;
- nutrients;
- heavy metals;
- pesticides and herbicides;
- oil and grease;
- bacteria and viruses;
- trash, debris, and solids;
- treatment polymers; and
- other toxic chemicals.

However, most of these pollutants should not occur in CGP-authorized discharges because the permit prohibits discharges of wastewater from washout of concrete; wastewater from washout and cleanout of stucco, paint, form release oils, curing compounds, and other construction materials; fuels, oils, or other pollutants used in vehicle and equipment operation and maintenance; soaps, solvents, or detergents used in vehicle and equipment washing or external building washdown; and the discharge of toxic or hazardous substances from a spill or other release. The 2022 CGP added a prohibition for the release of dewatering water from contaminated sites. This leaves trash, debris and solids; treatment polymers; and sediment with any nutrients, metals, or other pollutants adsorbed to sediment particles. Less than one percent of the 2017 CGP NOI indicated the use of treatment chemicals to settle out suspended materials, and this is expected to be the case for NOI under the 2022 CGP as well. Elimination or minimization of sediment in discharged stormwater, as required under the permit, would thus eliminate or minimize discharges of sediment-associated pollutants.

7.4.3 Overlap and Responses of Listed Resources

Two of the elements are related to evaluations addressed through the ESA Eligibility Certification process, which, on an NOI by NOI basis, integrates the Service's expertise to identify whether or to what degree specific endangered or threatened species or designated and proposed critical habitat are likely to be exposed to potentially harmful effects the proposed permit would authorize while taking into consideration:

1) Status and trends of endangered or threatened species or designated and proposed critical habitat;
2) Demographic and ecological status of populations and individuals of those species given their exposure to pre-existing stressors in different drainages and watersheds;
3) Direct and indirect pathways by which endangered or threatened species or designated and proposed critical habitat might be exposed to the discharges to Waters of the United States; and
4) Physical, physiological, behavioral, sociobiological, and ecological consequences of exposing endangered or threatened species or designated and proposed critical habitat to stressors from discharges at concentrations, intensities, durations, or frequencies that could produce physical,

physiological, behavioral, or ecological responses, given their pre-existing demographic and ecological condition.

Changes to the ESA Eligibility Certification process for the 2022-2027 permit term are intended to increase the probability that an operator makes a valid certification on the NOI, thus allowing the Services to evaluate potential responses of ESA resources to discharges where needed. Incorrect certifications were common among the NOI submitted under the 2017 CGP. At least half of the NOI for discharges to catchments adjacent to waters where ESA-listed species and designated or proposed critical habitat under NMFS' jurisdiction occur were certified as "Criterion A, no species present" and many other certifications within these catchments addressed only species under jurisdiction of the USFWS.

EPA has incorporated a smartform approach to its NOI submission system that guides site operators through the NOI submission and ESA Eligibility Certification process, making sure that species and designated and proposed critical habitat under NMFS' jurisdiction are considered. The NOI form also provides an open-text field for the site operator to provide a brief summary of the basis for their criterion selection (e.g., identify source of certification guidance, reference documentation). Editorial clarifications and nonsubstantive changes (see Section 3) were also made to the certification criteria.

7.4.4 Monitoring/Feedback

The monitoring and feedback element evaluates whether the general permit has been structured to identify, collect, and analyze information about authorized actions that may have exposed endangered or threatened species or designated and proposed critical habitat to stressors at concentrations, intensities, durations, or frequencies that are known or suspected to produce physical, physiological, behavioral, or ecological responses that have potential individual or cumulative adverse consequences for individual organisms or PBFs of critical habitat.

Changes to the monitoring and reporting requirements for the 2022-2027 CGP term include requiring turbidity monitoring for sites discharging dewatering water to a sediment-impaired water or a water designated as a Tier 2, Tier 2.5, or Tier 3 water, and the replacement of corrective action reports with a single corrective action log tracking all actions over the duration of the project. The EPA requested comments on whether turbidity monitoring should be a "report only" requirement to provide EPA with baseline data on dewatering or whether EPA should require benchmark monitoring with a turbidity threshold of 50 nephelometric units. Exceeding a weekly average turbidity benchmark of 50 nephelometric units would trigger a requirement to determine the source of the problem and to make any necessary repairs or upgrades to the dewatering controls to lower the turbidity levels.

The RPMs from the consultation on the 2017 CGP required EPA to provide annual reports regarding permit performance to NMFS that allowed analysis of authorized actions that may have exposed endangered or threatened species or designated and proposed critical habitat to stressors at concentrations, intensities, durations, or frequencies that are known or suspected to produce physical, physiological, behavioral, or ecological responses that have potential individual or cumulative adverse consequences for individual organisms or PBFs of designated and proposed critical habitat. The RPMs in this consultation will continue this reporting requirement.

7.4.5 Compliance

The compliance element evaluates whether the general permit has mechanisms to reliably determine whether or to what degree operators have complied with the conditions, restrictions or mitigation

measures the permit requires when they discharge to Waters of the United States. The first step to achieve compliance under the 2022 CGP is submission of complete and valid NOI. The electronic reporting system for the 2022 CGP integrates the ESA Eligibility Certification instructions through a series of "smart" questions. Each question prompt is based on the response to the previous question guiding the operator toward a valid certification. The operator is also required to affirm completion of certain required steps (e.g., consulting both NMFS and USFWS species' information) before being able to proceed further in the form. Finally, operators would be required to attach certain documents, or provide information, depending on their selection.

The EPA Enforcement and Compliance History Online database (ECHO) is a centralized database that integrates compliance and enforcement data for permits issued under the Clean Air Act, the Clean Water Act, and the Resource Conservation and Recovery Act. At the time of this writing, a total of 106 of 12,087 of CGP projects had onsite visits in the past five years. This is less than one percent of projects. These inspected projects account for roughly 15 percent of the violations identified. For comparison, just over thirty percent of facilities with EPA-issued individual NPDES permits were inspected in the past five years and these account for about three quarters of the violations and enforcement actions among individual permits.

We could anticipate that 15 percent of the unvisited CGP project sites would also have compliance issues and be subject to enforcement actions. However, this would require a random probability of being inspected. This is not likely. Inspections may be targeted for a certain location or activity; triggered by an accident, the failure to submit required reports or submission of reports indicating noncompliance; or in response to a whistleblower compliant or request for compliance assistance. At present, ECHO does not distinguish among inspection triggers and, given personnel and resource constraints, NMFS expects that truly random inspections are unlikely to occur. Even so, at an inspection rate of below one percent, it is likely that many CGP-authorized projects with compliance issues proceed unchecked.

The reliability of some of the CGP NOI information further complicates the assessment of aggregate impacts. The data indicate that nearly 30 percent of the 2017 CGP-authorized discharges potentially affecting ESA-listed species and designated and proposed critical habitat under NMFS' jurisdiction were to waters that were already assessed as impaired by sediment, turbidity, and/or nutrients. This estimate is likely inaccurate because plots of those data indicate that sites discharging to the same waterbody over the same construction season did not consistently identify whether the receiving water was impaired Figure 9 or what the impairments were. While construction pollutants are not necessarily the cause of impairment designations for their receiving waters, CGP-authorized discharges potentially contribute to the impairments because construction site discharges remain eligible for CGP coverage so long as any control failures are addressed in a timely manner.

Geocoding project site addresses to obtain site coordinates was necessary to generate Figure 9 because a number of the 2017 NOI had wildly inaccurate coordinates. Coordinates provided for construction activities need to be reliably accurate in order to identify catchments with multiple or proportionately large areas of construction activities in order to identify potential aggregate impacts to stormwater conveyances and receiving waters.

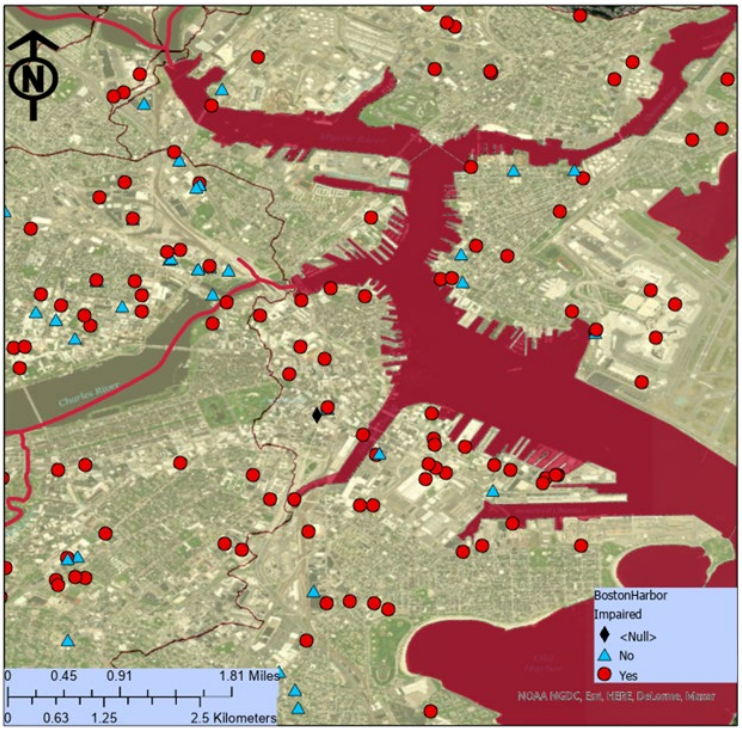


Figure 9. Map of impaired waters in the Boston Harbor area showing inconsistent identification of discharges to an impaired water (NMFS' analysis ArcMapPro)

About two thirds of the 2017 CGP NOI indicated that the construction did not involve "earth disturbance." This would be expected for parking lot improvements, demolition, and road and sidewalk repairs. However, the descriptions of many of these actions suggest earth disturbance occurred. Some examples: mineral exploration, flood control project-channel construction, and floodplain grading and stream restoration would clearly disturb soil and sediment. In at least one instance, a development claimed no "earth disturbance' yet review of publically available aerial images of the location clearly shows that ground was broken (Figure 10). At this time, the CGP does not include a definition for "earth disturbance." A conservative assessment of aggregate impacts would therefore rely on the number of acres to be disturbed by a given project, irrespective of whether that disturbance includes the removal of native vegetation and soil or rebuild over an existing footprint.

Figure 10. Arial images of a project area with a CGP NOI stating that there would be "no earth-disturbing activities" (Google Earth)

7.4.6 Adequacy of Controls

The final element evaluates whether the general permit has a mechanism to change the action to prevent or minimize endangered or threatened species or designated and proposed critical habitat from being exposed to stressors from discharges at concentrations, durations or frequencies that have adverse effects to individual listed organisms, populations, or species, or PBFs of designated and proposed critical habitat.

The most immediate intervention for exposures that may have short or long-term adverse effects on ESA-listed species and critical habitats does not require a change to the CGP as a whole, but could change permit conditions for a specific project. Specifically, the Services will, within 14 days of submission of an NOI, advise EPA whether the planned discharges meet the selected eligibility criterion, whether the eligibility criterion could be met with additional conditions, or whether the eligibility criterion is not met. With respect to ESA issues, EPA states that it recognizes the Services' expertise and will carefully consider their conclusion(s) in identifying eligibility for authorization, either with or without additional conditions.

The five-year permit term allows EPA to change the CGP to address issues in future permit iterations. Modification of the CGP for the 2022 permit term began in the middle of the 2017 CGP permit term. For example, requirements for dewatering water and site inspector training were added to the 2022 CGP in response to EPA site inspection findings. Pre-consultation technical assistance with the Services on ESA measures began about a year before EPA planned to issue the 2022 CGP. This resulted in modifications to the ESA Eligibility Certification process to improve compliance.

Changes to the permit need not wait for the next permit term. Under 40 CFR §122.62(a)(2), the EPA may modify a permit if the Agency is presented with new information during the permit term that was not available at the time of issuance and would have justified the application of different permit conditions at the time of issuance. The EPA modified the 2017 CGP during its permit term in response to a petition for judicial review filed with the United States Court of Appeals in the D.C. Circuit by the National Association of Home Builders and the Chesapeake Bay Foundation. These modifications were

clarifications of requirements in 40 C.F.R. Part 450 that implement the Effluent Limitations Guidelines and New Source Performance Standards for Construction and Development.

7.4.7 Summary and Conclusion

While the stressors associated with CGP discharges are well characterized (Programmatic Element 2), EPA's ability to estimate the scope and overlap with ESA resources (Programmatic Elements 1 and 3) for discharges authorized under the 2022 CGP is limited by the temporary nature of construction activities and the variability in timing and intensity of precipitation and snowmelt. While EPA's estimates for the 2022 CGP program are at the state level and not specific to catchments adjacent to waters where species and habitats protected under the ESA occur, they relied on the best available information gathered from previous permit terms.

Information from prior permit terms informed changes made to the 2022 CGP that EPA expects will reduce the potential for harmful discharges and obtain more accurate information on effects to species and habitats protected under the ESA. These changes include improvements to the ESA Eligibility Certification process that should increase certification accuracy and ensure that the Services have the information they need to better target efforts toward discharges with the potential to cause short or long-term adverse responses in ESA resources (Programmatic Element 5). Increases in certification accuracy also mean EPA and the Services will expend less effort in correcting certification mistakes.

Changes made to monitoring and reporting requirements (Programmatic Element 4) under the 2022 CGP term account for discharges of turbid water to a sediment-impaired water or a water designated as Tier 2, Tier 2.5, or Tier 3. While the replacement of corrective action reports with a single corrective action log tracking all actions over the duration of the project may appear non-substantive, assembling information in this way can reveal trends that require intervention.

Overall, EPA's NPDES program is compliance-challenged (Programmatic Element 6). Identification of compliance issues is dependent on inspections, which are particularly infrequent on CGP project sites.

Mechanisms for modifying the permit to prevent or minimize endangered or threatened species or designated and proposed critical habitat from being exposed to stressors from discharges at concentrations, durations or frequencies that have adverse effects to individual listed organisms, populations, or species, or PBFs of designated and proposed critical habitat (Programmatic Element 7) include modification of permit conditions for specific discharges based on the Services' review of individual NOI, modifications made to the CGP for subsequent permit terms, and modifications made during a permit term under 40 CFR §122.62(a)(2) of the Clean Water Act to accommodate new information that would have justified the application of different permit conditions at the time of issuance.

NMFS concludes that EPA's reissuance of the CGP is likely to adversely affect ESA-listed species and designated and proposed critical habitat for the following reasons:

1) EPA has not demonstrated an ability to estimate the scope and overlap of CGP discharges, specifically with ESA resources. Because projects with CGP-authorized discharges are by nature temporary, retrospective analyses relying on prior authorizations only suggest likely locations of future construction activity (e.g., greater intensity within and at the margins of urbanizing areas).
2) Revisions to the ESA Eligibility Certification process to improve accuracy and documentation of eligibility are untested. Given issues with prior certifications, NMFS expects certifications will

still fail to identify potential effects to ESA-listed species and designated and proposed critical habitat under NMFS' jurisdiction.

3) Projects with CGP authorizations are rarely inspected, so it is likely that compliance issues/the need for compliance assistance will not be addressed.

8 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). 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. These were discussed in section 10 of NMFS' opinion on the 2017 CGP and very little has changed in the five years since that opinion was issued. Many of the activities described in the baseline sections of opinion on the 2017 CGP and the updated baseline in this opinion for the 2022 CGP are expected to continue into the future and thus are also considered cumulative effects.

8.1 Climate Change

Climate change is discussed in both the environmental baseline section of this opinion and in the cumulative effects because it is a current and ongoing circumstance that, for the most part, is not subject to consultation, yet influences environmental quality and the effects of the action, currently and in the future. Infrastructure resilience projects and implementation of new technologies are subject to consultation if they are federally constructed, permitted, or funded. NMFS' policy guidance with respect to climate change, when evaluating an agency's action, is to project climate effects over the timeframe of the action's consequences (see sections 6.5 and 8.1 of this opinion). It will usually be the case that consideration is not limited to only the duration of the specified activity, but also to its continuing effects for the foreseeable future. For example, where a construction activity is the subject of consultation, we must consider not only the effects caused from the construction itself, but also the effects of the resulting structure once completed. Similarly, in the case of consultations on permits or other authorizations that are likely to be renewed, it can be appropriate to analyze the project over some period of time beyond the initial authorization period to the fullest extent possible (based on the ability of available information to predict impacts with acceptable accuracy).

Given the challenges of monitoring and controlling non-point source pollution and accounting for all the potential stressors and effects on ESA-listed species and designated and proposed critical habitat, chronic stormwater discharges from all sources will continue to result in aggregate impacts. As climate change proceeds, precipitation rates will change (Figure 11), and the frequency of heavy rainfall events, where stormwater control upsets are more likely, is expected to increase nationwide (Figure 12). Interaction of climate change effects on precipitation with the aggregate of the built environment resulting from construction activities will require NMFS to apply sustained attention to aggregate effects.

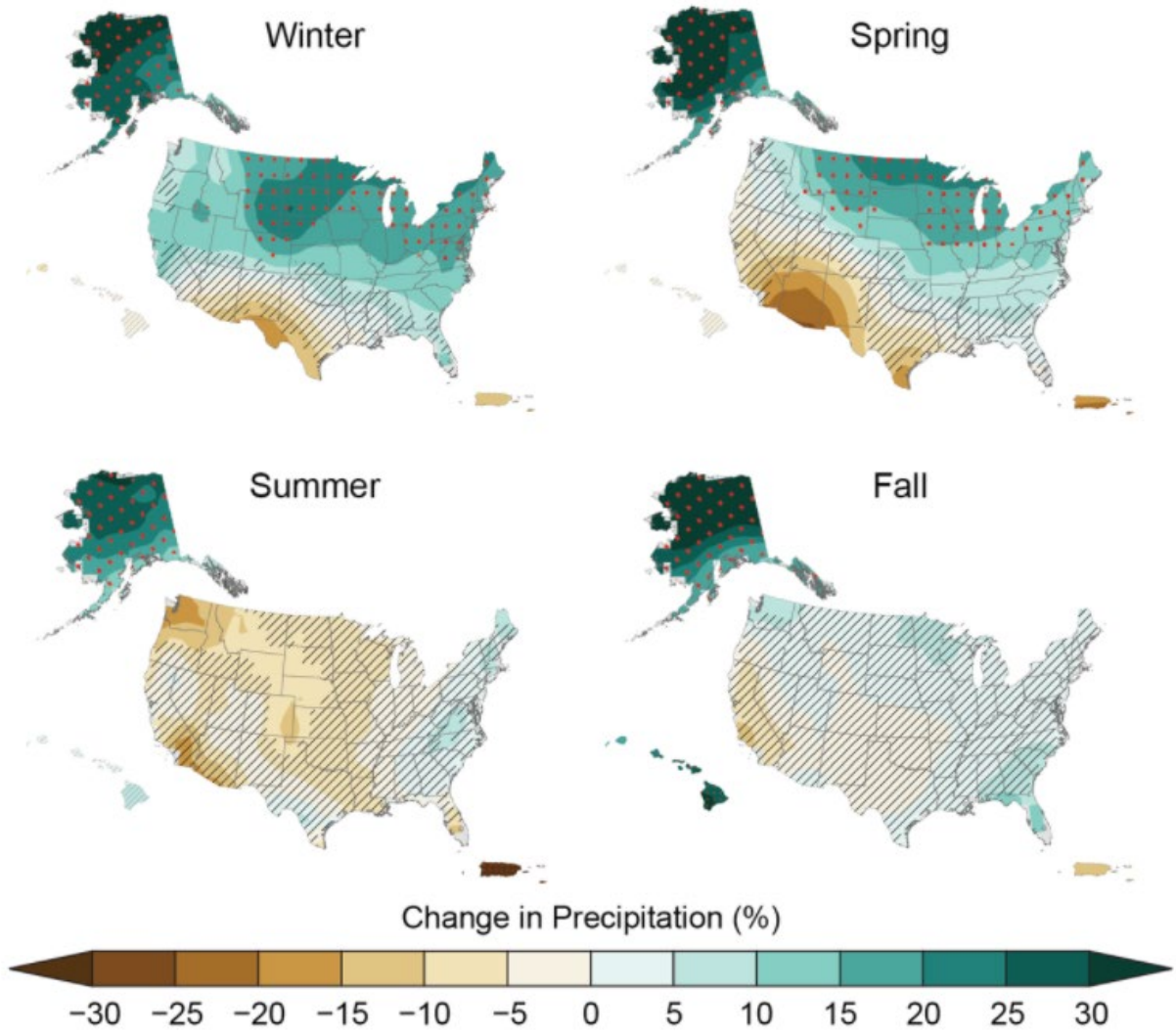


Figure 11. Seasonal precipitation change for 2070-2099 (compared to 1986-2015)[9]

[9] Assumes existing emissions rate increases. Hatched areas are projected changes that are significant and consistent among models, unhatched areas indicate projected changes do not differ from natural variability. Red dots indicate large projected changes relative to natural variation. (Figure source: https://nca2018.globalchange.gov/chapter/2/)

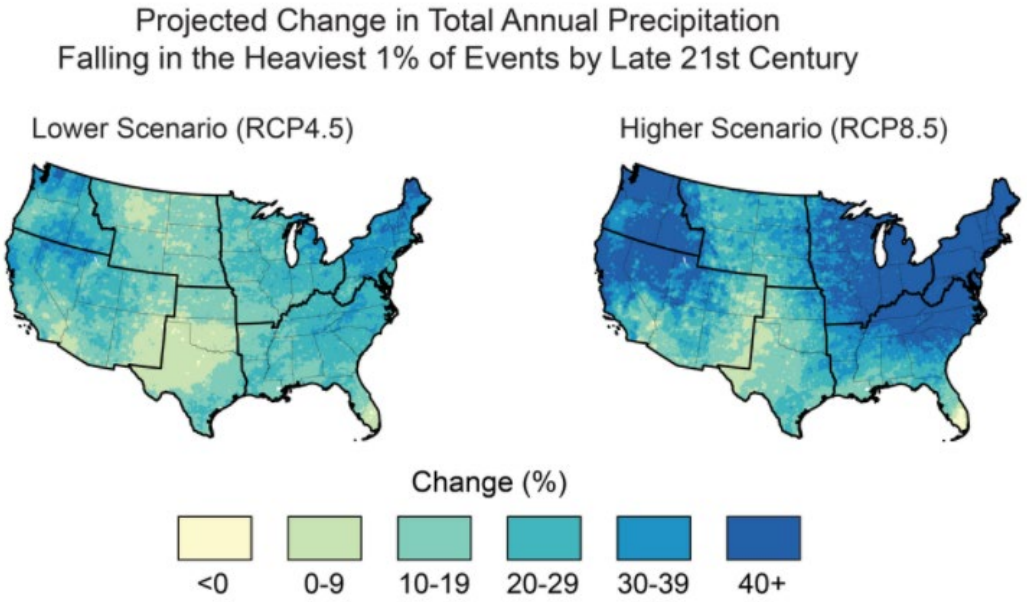


Figure 12. Increase in frequency of extreme daily precipitation events for 2070-2099 (compared to 1986-2015)[10]

[10] https://nca2018.globalchange.gov/chapter/2/

9 INTEGRATION AND SYNTHESIS OF EFFECTS

The *Integration and Synthesis* section is the final step in our assessment of the risk posed to species and critical habitat because of implementing the action. In this section, we consider the prior analyses and baseline conditions in NMFS' opinion on the 2017 CGP, as adopted and relied upon here, and the environmental baseline discussed in this opinion (Section 6 of this opinion) with the *Effects of the Action* (Section 7) analysis in this opinion evaluating c the consequences of changes made for issuing the 2022-2027 CGP permit term and discharges authorized thereunder, including the anticipated effects of the changes made from the 2017 CGP to the 2022 CGP, and anticipated cumulative effects (Section 8 of this opinion) 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 ESA-listed species in the wild by reducing its numbers, reproduction, or distribution; or (2) reduce the value of designated or proposed critical habitat for the conservation of the species. These assessments are made in full consideration of the *Status of the Species and Critical Habitat* (Section 5.1 of NMFS' opinion on the 2017 CGP updated in Section 0 of this opinion).

EPA proposes to issue the CGP for stormwater discharges associated with construction activity over the permit period from 2022 to 2027. Based on its analysis in this opinion, including its reliance on the adopted 2017 opinion, of this opinion, NMFS concludes that discharges to be authorized under the CGP for the 2022-2027 permit term are likely to adversely affect the same ESA-listed species and designated and proposed critical habitats the CGP for the 2017-2021 permit term, as well as designated and proposed critical habitat for Atlantic sturgeon and proposed critical habitat for ESA-listed Atlantic-Caribbean corals and Indo-Pacific corals. Under an EPA general permit, the adverse effects and measures to minimize adverse effects of specific NOIs are addressed where necessary through technical assistance from the Services.

The Permit Implementation Analysis assessed whether, and to what degree, EPA structured its permit to establish processes that address adverse effects to ESA-listed species, and ensure that authorized discharges are not likely to jeopardize the continued existence of endangered or threatened species or destroy or adversely modify designated and proposed critical habitat. We addressed this in NMFS' opinion on the 2017 permit, adopted and relied on herein where analyses remained valid, and updated the assessment in Section 7.4 of this opinion.

The revised NeT procedures are expected to improve errors noted in the ESA Certification Procedure, but the degree of improvement is yet to be demonstrated. Problems with the ability of site operators to make valid certifications were evident over the 2017-2021 permit term. Site operators made errors in delineating their action area and apparently did not follow instructions for identifying the presence of ESA resources. For the 2022-2027 permit term, the NeT certification process requires documentation supporting certification. The EPA has also updated its instructions for identifying the action area with illustrations showing how and why a construction site's action area extends beyond the site footprint. EPA has also made it easier for site operators to make valid ESA Eligibility Certifications by refining the language and integrating the required information into a guided NOI process that requires the site operator verify that they are using the correct information sources. The EPA's electronic reporting systems have functioned and continue to function to allow EPA to identify, collect, and analyze information about its authorized discharges that may expose ESA-listed species and designated and proposed critical habitat to harmful stressors. Overlap and Response of Listed Resources, Monitoring and

Feedback, and Compliance are the programmatic elements that have been the most challenging for the CGP. These are further addressed in the RPMs and their implementing Terms and Conditions (Section 11).

9.1 Summary

The analyses in NMFS' opinion on the 2017 CGP, as adopted and relied upon here, and in this opinion evaluating the consequences of EPA's issuance of the changes made for the 2022-2027 CGP permit term and discharges authorized thereunder, including the analyses in NMFS opinion on the 2017 CGP, as adopted and relied upon here for analyses determined to remain valid, establish that, in the absence of successful implementation of the ESA Eligibility Certification procedure, exposures of ESA-listed species and designated critical habitat to stressors at concentrations resulting in adverse effects are expected to be authorized and occur under the CGP. Changes made to the CGP for the 2022-2027 permit term address implementation issues that were identified over the 2017-2022 permit term. The determination in the 2017 opinion relied particularly on the monitoring and reporting that would occur pursuant to the CGP. The 2022 CGP includes additional monitoring parameters and reporting requirements, thereby strengthening the information available to identify and minimize problematic exposures.

10 CONCLUSION

Because the action includes discharges from an unknown number and location of new facilities, the determinations made in this opinion apply over the entire action area of EPA's permitting authority and thus apply to newly designated critical habitats for Atlantic sturgeon, ESA-listed Caribbean corals, and ESA-listed Indo-Pacific corals as well as the species and designated critical habitats evaluated for adverse effects in the 2017 CGP opinion, as adopted and updated Section 5.2 of this opinion.

After considering the current status of ESA-listed species, the environmental baseline, the effects of the action, and the cumulative effects of concurrent and future nonfederal actions reasonably certain to occur in the action area, it is NMFS' opinion that EPA's reissuance of the CGP for a 2022-2027 permit term is likely to adversely affect, but is not likely to jeopardize the continued existence of the Southern Resident DPS of killer whale; salmonids, including Atlantic salmon, nine ESUs of steelhead trout, nine ESUs of Chinook salmon, three ESUs of coho salmon, two ESUs of chum salmon, and two ESUs of sockeye salmon; anadromous non-salmonids, including the shortnose sturgeon, three DPSs of Atlantic sturgeon, southern DPS of the green sturgeon, and southern Pacific DPS of eulachon; other fish, including Nassau Grouper, the Puget Sound/Georgia Basin DPSs of bocaccio and yelloweye rockfish; marine turtle species, including hawksbill, Kemp's ridley, leatherback, olive ridley, two DPSs of green turtle, and two DPSs of loggerhead turtle; Indo-Pacific coral species, including *Acropora globiceps*, *Acropora jacquelineae*, *Acropora retusa*, *Acropora speciosa*, *Euphyllia paradivisa*, *Isopora crateriformis*, *Orbicella annularis*, and *Seriatopora aculeata*; Atlantic/Caribbean coral species, including boulder star coral, elkhorn coral, lobed star coral, mountainous star coral, pillar coral, rough cactus coral, and staghorn coral.

It is also our opinion that EPA's reissuance of the CGP is not likely to destroy or adversely modify designated and proposed critical habitat for designated and proposed critical habitat for Southern Resident killer whale, eight ESUs of steelhead trout, nine ESUs of Chinook salmon, three ESUs of coho salmon, two ESUs of chum salmon, and two ESUs of sockeye salmon;, Southern Pacific DPS of eulachon, Southern DPS of green sturgeon, three DPSs of Atlantic sturgeon, and Puget Sound/Georgia Basin DPSs of bocaccio and yelloweye rockfish, green sea turtle North Atlantic DPS, leatherback sea turtle, and loggerhead sea turtle -Northwest Atlantic DPS, and critical habitat proposed for ESA-listed Atlantic/Caribbean corals and Indo-Pacific corals.

11 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 results in death or injury to ESA-listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering (see 50 CFR §222.102).

Incidental take is defined as take that results from, but is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity (see 50 CFR §402.02). Section 7(b)(4) and 7(o)(2) of the ESA provide that taking that is incidental to an otherwise lawful agency action is not considered to be prohibited taking under the ESA if that action is performed in compliance with the terms and conditions of this incidental take statement.

The basis for take of ESA-listed species anticipated under CGP-authorized actions, particularly changes to the permit for the 2022 issuance, has been set forth in the effects section (Section 7) of this Opinion and in NMFS' opinion on the 2017 CGP, as adopted and relied upon here. NMFS has provided a detailed explanation of the conditions under which stormwater discharges, even when in compliance with CGP benchmarks, are reasonable certain to result in take. Thus, NMFS believes that incidental take is reasonable certain to occur as a result of the authorization of stormwater discharges under the renewed CGP and the implementation of the permit program. The benchmarks applied in the CGP are based on EPA's Guidelines for the Protection of Aquatic Life, which have not been evaluated by NMFS for protectiveness of ESA-listed species under NMFS' jurisdiction.

Engagement of NMFS' expertise through the CGP ESA Eligibility Certification procedure and the terms and conditions listed below are necessary or appropriate to minimize or avoid take. Given the scope, complexity, wide geographic reach and uncertainty of the type, frequency, location, and intensity of stormwater events, NMFS is unable to specify an amount or extent of take in terms of numbers of individuals or units of habitat for the entire extent of individual permit authorizations made under the CGP permitting program. Any take is identified through the CGP ESA Eligibility Certification procedure with which proposed dischargers are required to comply. Take of a threatened or endangered species resulting from discharges or discharge-related activities under the CGP is only authorized or exempted when:

1) Take has been authorized under the ESA of 1973, as amended, through a separate permit pursuant to ESA section 10(a)(1)(A) for research or to enhance the survival or propagation of an endangered or threatened species, or ESA section 10(a)(1)(B) exempting incidental "take" of endangered species or threatened species. In both cases, operators certify under CGP eligibility criterion F.
2) Take is exempted through an ITS included in an opinion issued to for discharges authorized under the 2022 CGP for the construction operation under consideration. Specifically, certification of ESA Eligibility under Criterion B can be met through a successfully completed section 7 consultation by another Federal Agency operator, while certifying eligibility under Criterion E requires successful completion of a section 7 consultation with the Federal Agency operator filing the NOI.

Accordingly, the amount or extent of any incidental take has been or will be more fully assessed and addressed at a site-specific level for those construction activities that are certified under the 2022 CGP's ESA Eligibility Criterion B, E, or F, as described in points (1) and (2) above. The authorization of stormwater discharges under the 2022 CGP is anticipated to cause incidental take of ESA-listed species under NMFS' jurisdiction that has not been previously authorized or exempted under Criteria B, E, or F.

Due to uncertainty about the type, frequency, location and intensity of stormwater discharges to be authorized by the 2022 CGP, this consultation does not address individual actions. We focus instead on whether EPA's 2022 CGP is written to prevent or minimize take resulting from individual discharges. Incidental take under the 2022 CGP cannot be accurately quantified or monitored as a number of individuals of a species because the action area includes large areas over which EPA has permitting authority and the exact location, composition, time, and frequency of the individual discharges that will be authorized under the 2022 CGP are unknown. Therefore, we are not able to quantify how many individuals of each species and life stage exist in affected waters, especially considering that the numbers of individuals vary with the season, environmental conditions, and changes in population size due to recruitment and mortality over the course of a year. In addition, we currently have no means to determine which deaths or injuries in populations across the entire range of the ESA-listed species and designated and proposed critical habitats covered in this opinion would be due to the discharges authorized under the 2022 CGP versus other environmental stressors, competition, and predation.

Because we cannot directly quantify the amount of anticipated take, NMFS identifies, as a surrogate for the allowable extent of take, the ability of this action to proceed without any adverse incident, defined in the following paragraph, that is attributed to discharges in accordance with the 2022 CGP in waters where ESA-listed species under NMFS' jurisdiction occur. The association of take with the surrogate of adverse incident occurrences relates to the expectation that effects on individuals of ESA-listed species and essential features of designated and proposed critical habitat may be difficult to detect. For example, it is difficult to detect avoidance or altered behavior, delayed mortality, tissue damage, energetically costly stress responses (e.g., mucus secretion), burial of eggs, juveniles, or colonizing substrate. In addition, detection of direct mortality can be obscured by co-occurring events such as scavenging, decay, or submergence.

An adverse incident is an incident that is considered attributable to a 2022 CGP authorized discharge, and has resulted in unusual or unexpected levels of discharges of sediment or pollutants that is within the range of an ESA-listed species or may affect ESA-listed species. An incident is considered attributable to a 2022 CGP authorized discharge if that discharge is known to have occurred prior to, and near or upstream of the incident, and there is evidence that stormwater from the construction site caused the incident. Evidence includes, but is not limited to: death, harm or harassment of listed aquatic plants or animals (for example by smothering), or damage to critical habitat features (e.g., spawning substrate) that causes harm to ESA-listed species.

As discussed in NMFS' 2017 opinion, adopted and relied on herein, section 8.3 Analysis of the Construction General Permit as a Permitting Program, the CGP integrates standard permit conditions consistent with permit provisions required under 40 CFR §122.41 (see Appendix I of the permit). These include a requirement to report any noncompliance that may endanger health or the environment within 24 hours from the time an operator becomes aware of the circumstances, followed, within 5 days, by a written description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and, if the noncompliance has not been corrected, the anticipated time it is expected to

continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. This requirement to report any noncompliance that may endanger health or the environment provides a mechanism through which an adverse incident, or the opportunity to prevent an adverse incident, can be identified. Thus, adverse incidents provide a suitable surrogate for take of ESA-listed species under the CGP because (1) such incidents could involve discharges of sediments or other pollutants from construction stormwater that adversely affect individuals of ESA-listed species, as described in the opinion's effects section, and (2) EPA would be notified of the occurrence or potential for the occurrence of such incidents pursuant to the standard permit conditions consistent with 40 CFR §122.41.

The goal of each RPM below is to ensure that the potential for exposure of ESA-listed species and designated and proposed critical habitat to adverse consequences of stormwater erosion resulting from CGP-authorized discharges is accurately identified, that NMFS will receive all NOIs associated with discharges that may affect ESA-listed species and designated and proposed critical habitat under our jurisdiction, and that these NOIs will contain the necessary information that will allow NMFS to advise EPA on its authorization of such discharges with respect to EPA's obligations under the ESA. The RPMs will allow EPA to demonstrate that it is able to satisfy the requirements of section 7(a)(2) of the ESA and minimize take by: (1) tracking the number, location and timing of those discharges authorized under the 2022 CGP that may affect ESA-listed species and designated and proposed critical habitat under NMFS' jurisdiction; (2) identifying whether or to what degree specific ESA-listed species or designated and proposed critical habitat are likely to be exposed to adverse conditions resulting from authorized discharges; and (3) determining whether or to what degree operators have complied with the conditions of the permit, specifically those intended to eliminate or minimize exposures of ESA-listed species and designated and proposed critical habitat to adverse conditions resulting from authorized discharges. By extension, effective identification of the potential for ESA concerns and subsequent engagement of NMFS' expertise, where necessary, contributes to EPA's ability to prevent or minimize exposure of endangered or threatened species or PBFs of designated and proposed critical habitat to adverse conditions (i.e., potentially harmful stressor intensities, durations, or frequencies) or potentially harmful indirect ecological consequences that could result in take (e.g., habitat structure or alterations in trophic, temperature, dissolved oxygen, or flow regime).

The RPMs described below are revised slightly from the RPMs provided with the 2017 opinion. These were and continue to be designed to ensure the successful implementation of the ESA Eligibility Criteria procedure which NMFS believes will minimize or, in most cases, avoid the exposure of endangered or threatened species under NMFS' jurisdiction to adverse conditions and incidental take resulting from 2022 CGP-authorized discharges.

11.1 RPMs for the 2022 CGP

The measures to avoid or minimize take described below are non-discretionary and must be undertaken by the EPA so that they become a binding condition of the EPA's 2022 CGP implementation and oversight responsibilities, as appropriate, for the incidental take exemption from the take prohibition in section 9 to apply through in section 7(b)(4) and 7(o)(2)7(oa)(2) to apply. The EPA has a continuing duty to regulate the activities it authorizes which are covered by this ITS. The protective coverage of section of this ITS 7(a)(2) may lapse if the EPA fails to assume and implement the Terms and Conditions. In order to monitor the impact of incidental take, the EPA must report the progress of the action to NMFS Office of Protected Resources consistent with Term & Condition 2 as specified in the ITS (50 CFR§402.14(i)(3)). The reporting requirements are established in accordance with 50 CFR 216.105 and

222.301(b). In order to monitor the impact of incidental take, the EPA must report the progress of the action to NMFS Office of Protected Resources consistent with Term & Condition 2 as specified in the ITS (50 CFR§402.14(i)(3)). The reporting requirements are established in accordance with 50 CFR §216.105 and 222.301(b).

Reasonable and prudent measures are measures that are necessary or appropriate to minimize the amount or extent of incidental take (50 CFR §402.02). If, during the course of the action and subsequent monitoring, the allowable level of incidental take specified above is exceeded, such incidental take requires reinitiation of consultation and review of the RPMs provided. The EPA must immediately provide an explanation of the causes of the taking and review with NMFS the need for possible modification of the RPMs.

NMFS believes the RPMs described below, are necessary and appropriate to minimize the likelihood of incidental take of ESA-listed species due to implementation of the proposed action.

RPM 1. The EPA must make changes and add clarifications to the NOI form, the permit, and to the species' information made available to construction operators in order to increase the effectiveness of the 2022 CGP provisions for the protection of endangered and threatened species and designated critical habitat and report this information to NMFS as specified in the terms and conditions.

RPM 2. The EPA must gather and evaluate information on the 2022 CGP-authorized activities discharging to waters where ESA-listed species or designated critical habitat under NMFS' jurisdiction occur, including any corrective actions that have been required of permit applicants. EPA will report this information to NMFS as specified in the terms and conditions.

RPM 3. The EPA will provide outreach to the construction industry to improve understanding and awareness of the ESA requirements under the 2022 CGP through updated technical materials.

11.1.1 Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the ESA, the EPA must comply (or must ensure that any entity authorized by the agency) with the following Terms and Conditions implementing the RPMs described above. These include the take minimization, monitoring and reporting measures required by the section 7 regulations (50 CFR §402.14(i)). The terms and conditions detailed below for each of the RPMs include monitoring and minimization measures where needed.

11.1.1.1 *Terms and Conditions for RPM 1*

1) The EPA will continue to instruct operators of the steps that are necessary to modify their NOIs if their existing ESA eligibility changes as explained in Section 14.1, item 1 of NMFS' opinion on the 2017 CGP.
2) In coordination with NMFS, EPA revised the 2022 CGP NOI form to further clarify the ESA Eligibility Certification Criteria, specifically:
3) To increase the accuracy of operator-determined action areas, the permit and NOI forms will clarify the definition of action area and provide an illustration.
4) To increase the accuracy and completeness of NOI, the online NeT NOI form and paper form used by those with an electronic reporting waiver will use a smartform strategy to guide operators through the NOI submission and ESA Eligibility Certification process to ensure the NOI is complete and that species and designated critical habitat under NMFS' jurisdiction are considered.

5) The EPA will continue to require submission of a mappable point location for the construction site.
6) EPA will continue to provide a link on the 2022 CGP website to the mapping resources hosted by NMFS to assist operators in correctly identifying NMFS' resources of concern that overlap with the operators' action area. EPA will update NMFS' species information when requested to do so by NMFS.
7) EPA will retain the following information on its CGP website regarding the notification requirements for permittees should an adverse incident to ESA-listed species or designated critical habitat result from a construction stormwater discharge.

> *"Notwithstanding any of the other corrective action trigger and notification requirements, if an Operator becomes aware of an adverse incident affecting a Federally-listed threatened or endangered species or its federally designated critical habitat, which may have resulted from a discharge from the Operator's construction site, in addition to the obligation to notify EPA (see Appendix G of the CGP), it is in the best interest of the Operator to immediately notify NMFS if the case involves an anadromous or marine species under NMFS' jurisdiction. This notification should be made by telephone and e-mail addresses, to the contacts listed on EPA's website at [web address to be provided], immediately upon the Operator becoming aware of the adverse incident, and should include at least the following information:*
>
> *The caller's name and telephone number*
>
> *Operator name and mailing address*
>
> *The name of the affected species*
>
> *How and when the Operator became aware of the adverse incident*
>
> *Description of the location of the adverse incident*
>
> *Description of the adverse incident and*
>
> *Description of any steps the Operator has taken or will take to alleviate the adverse impact to the species*
>
> *Additional information on federally-listed threatened or endangered species and federally-designated critical habitat is available from NMFS (www.fisheries.noaa.gov) for anadromous or marine species. Note: In an adverse incident affecting Federally-listed threatened or endangered species or designated critical habitat, the Operator should leave the affected organisms alone, make note of any circumstances likely causing the death or injury, note the location and number or extent of aquatic organisms involved and, if possible, take photographs. In some circumstances, the Operator may be asked to carry out instructions provided by the NMFS to collect specimens or take other measures to ensure that evidence intrinsic to the specimen is preserved."*

11.1.1.2 *Terms and Conditions for RPM 2*

1) The EPA will provide NMFS all available 2022 CGP NOI data on an annual basis along with a brief summary and EPA perspective. The NOI data will be provided in the form of an electronic spreadsheet listing, at a minimum:

a) the latitude and longitudes of the construction site discharge points,
b) estimated area to be disturbed,
c) estimated start and completion dates of the construction project,
d) ESA criterion selection,
e) the basis statement supporting each ESA criterion selection, and
f) any noncompliance reporting received by EPA, whether or not the discharge involved waters occupied by ESA-listed species under NMFS' jurisdiction.

2) The appropriate EPA staff will obtain access to GIS services to enable EPA to conduct analyses related to submitted 2022 CGP NOIs in order to assess their aggregate effects. EPA will coordinate with NMFS on developing the scope and protocol for these analyses.
3) EPA will conduct a compliance evaluation between years 1 and 2 of the 2022 CGP and report its findings to NMFS. The following are required actions as part of the evaluation and report:
   a) Evaluate information in the NeT CGP system from a representative sample of 100 construction sites covered under the 2022 CGP, which will include NOIs and relevant endangered species protection information provided by operators. The representative sample will be taken from areas NMFS identified to be of particular concern in Section 14.2, items 2(a) i-iv of our opinion on the 2017 CGP and changes to this list of areas identified by NMFS after the date this opinion was signed and prior to EPA's initiation of the evaluation. EPA will contact NMFS one month prior to initiating the evaluation to verify whether permits from additional areas of concern need to be included in the request.
      i) These materials will be evaluated for compliance with the eligibility certification requirements of the CGP, including:
         (1) The type and frequency of incorrect ESA eligibility certifications, based on the availability of NMFS mapping resources;
         (2) The quality of the basis statements and attachments supporting ESA eligibility certifications; and
         (3) Identification of the waterbodies with multiple operators who have selected criteriaon B through F.
   b) EPA will also request copies of corrective action reports from between 25 and 50 construction sites in the locations identified in (a), above, and assess them for compliance with the applicable permit requirements. Copies of these corrective action reports will be made available as part of the report presented to NMFS.
   c) EPA will also report on any "hold" requests placed during the reporting period, and will provide, for construction activities certifying under Criterion C, a brief description of any instances where a reviewing field or regional office of NMFS initially noted, in writing to an EPA Regional Office, that the proposal did not appear to support coverage under the 2022 CGP. The description shall include how the concerns were addressed, and will specify whether the reviewing field or regional office provided confirmation that any additional information and/or changes (including but not limited to additional BMPs) to the NOI or SWPPP, if provided, were sufficient to address the concerns.
   d) EPA will meet with NMFS one month after transmittal of the report to discuss the results and determine if modifications to the CGP's implementation may need to be considered.
      i) EPA will provide future information and/or coordination regarding unexpected developments if the reviewing NMFS Regional Office requests it. For example, NMFS

may want to review any additional permit documentation for a site that has experienced significant events, such as fire or extreme weather events, potentially affecting stormwater control measures and stormwater constituents.

ii) EPA and NMFS will identify actions that can be taken by EPA, or in coordination with NMFS, to address any issues identified with the implementation of the permit over the past permitting year.

11.1.1.3 *Terms and Conditions for RPM 3*

1) Three months after transmittal of the compliance evaluation report for RPM 2, Term and Condition 3, EPA will hold an ESA-targeted coordination call between EPA Headquarters and regional staff and NMFS staff to discuss expectations and any concerns related to implementing the ESA-related provisions of the 2022 CGP.
2) The EPA will update, as necessary, the Spanish language information resources developed under the 2017 CGP.

12 CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the ESA directs Federal agencies to utilize their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on ESA-listed species or designated and proposed critical habitat, to help implement recovery plans, or to develop information.

The following conservation recommendations would provide information for future consultation involving EPA's issuance and implementation of the 2022 CGP:

1) Integrate geospatial data entry into the NeT for applicants to use in identifying their project areas, outfalls, and the impact zone (Action Area) around their project. This can then be used to autopopulate aquatic impairments, receiving waters, ESA-listed species presence, etc.
2) For the next permit round, require applicants to identify the amount of new impervious cover resulting from their project.
3) Initiate and maintain a "pick list" for improvements under the next CGP based on findings under RPM 2 and concerns noted under RPM 3.
4) Coordinate with NMFS on the development of the next draft CGP permit prior to publication in the Federal Register for public comment. This will allow EPA time to incorporate recommended changes designed to protect ESA-listed species and designated critical habitat at an early stage and receive public comment on these actions.
5) Maintain informal dialogue with NMFS on ongoing EPA general permits.
6) Coordinate with NMFS on the development of mechanisms and strategies to address ESA concerns for emergency-related projects (e.g., Emergency-specific ESA Eligibility Criterion, standard operating procedures, notification mechanisms, etc).
7) We recommend that EPA leverage its National Compliance Initiative to target compliance among stormwater discharges to waters where ESA-listed resources under NMFS' jurisdiction occur. This includes discharges authorized under the CGP and other stormwater permits (e.g., Construction General Permit, MS4s).
8) We recommend EPA maintain a list of receiving waters where Criterion A has been selected in error in previous permit cycles and crosscheck requests for coverage under Criterion A against

this list to avoid inadvertent errors in criterion selection as NOIs are submitted. As additional receiving waters are identified where ESA-listed species and/or designated critical habitat are likely to occur, either through notification by NMFS or through other means (e.g., the EPA's proposed review of a subsample of Criterion A facilities), the list and crosscheck should be expanded accordingly. For example, facilities discharging to the following receiving waters should generally not be allowed to proceed with coverage under Criterion A:

   a. Puerto Rico: waterbodies in the coastal zone;
   b. Washington: Puget Sound tributaries to eastern Puget Sound, from the Puyallup River north mainstem Columbia River and certain tributaries to the Upper and Lower Yakima River; and
   c. New England: Watersheds accessible to anadromous species.

9) We recommend that EPA's Healthy Watersheds Program be leveraged to increase awareness among CGP permittees of the value of protecting watersheds and improve understanding of the range of management actions needed to avoid adverse impacts. In addition, outreach materials in Spanish should be made available to CGP dischargers.

In order to keep NMFS' Endangered Species Division informed of actions minimizing or avoiding adverse effects, or benefiting ESA-listed species or their habitats, the EPA should notify the NMFS Office of Protected Resources of any of these conservation recommendations they implement by contacting their Headquarters Office at the address listed on the cover letter to this document.

13 REINITIATION NOTICE

This concludes formal consultation on the EPA's issuance of the CGP. As provided in 50 CFR §402.16, reinitiation of formal consultation is required and shall be requested by the Federal agency or by the Service, where discretionary Federal involvement or control over the action has been retained or is authorized by law and:

1) If the amount or extent of taking specified in the ITS is exceeded;
2) If new information reveals effects of the action that may affect ESA-listed species or designated critical habitat in a manner or to an extent not previously considered;
3) If the identified action is subsequently modified in a manner that causes an effect to the listed species or designated critical habitat that was not considered in the biological opinion; or
4) If a new species is listed or critical habitat designated that may be affected by the identified action.

Specific to the reissuance of the CGP, NMFS includes the following additional reinitiation triggers:

1) The findings of RPM 2, item 3 identify chronic issues, defined as a 20 percent or greater frequency, resulting from the ESA Eligibility Certification procedure, including Criterion A certifications and Criteria B and E certifications found to be invalid due to consultations or certifications that did not actually occur, are out of date, did not consider all ESA-species and designated critical habitat in the action area, or for which ITS requirements of biological opinions have not been fully implemented or for which authorized incidental take has been exceeded. This CGP-specific reinitiation trigger is considered "new information" indicated in reinitiation trigger 2 above.

2) For those actions with ESA Eligibility Certifications based on an existing formal consultation, any instance where the amount or extent of take specified in the ITS is exceeded because of a CGP-authorized discharge requires reinitiation of the section 7 consultation. This CGP-specific reinitiation trigger is considered “an exceedance of amount or extent of take” indicated in reinitiation trigger 1 above.

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