



**PACIFIC COASTAL SALMON RECOVERY FUND (PCSRF)  
PROGRAMMATIC ENVIRONMENTAL ASSESSMENT (PEA)**

**Prepared by:  
National Marine Fisheries Service (NMFS)  
National Oceanic and Atmospheric Administration (NOAA)  
Department of Commerce (DOC)**

**June 2021**

NMFS is preparing this PEA using the 2020 Council for Environmental Quality (CEQ) National Environmental Policy Act (NEPA) Regulations. The effective date of the 2020 CEQ NEPA Regulations was September 14, 2020, and reviews begun after this date are required to apply the 2020 regulations unless there is a clear and fundamental conflict with an applicable statute. 85 Fed. Reg. at 43372-73 (§§ 1506.13, 1507.3(a)). NMFS began developing this PEA on March 31, 2021 and accordingly proceeds under the 2020 regulations.

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## 1 Introduction

### 1.1 Background

Since 2000, Congress has provided funding for the protection, conservation, and restoration of Pacific salmon and steelhead. Through the Pacific Coastal Salmon Recovery Fund (PCSRF, or the Fund), the National Oceanic and Atmospheric Administration's (NOAA) National Marine Fisheries Service (NMFS) distributes those funds to states and tribes through competitive grants. Eligible projects include all phases of habitat restoration and protection activities that contribute to recovering Pacific salmon and steelhead listed under the Endangered Species Act (ESA) or supporting Pacific salmon and steelhead species important to tribal treaty fishing rights and native subsistence fishing. Since 2000, PCSRF has awarded an annual average of \$74 million, states and tribes have leveraged additional resources to collectively implement more than 14,500 projects, and PCSRF has protected, restored, and created more than 1.1 million acres of salmon habitat across the West Coast.<sup>1</sup>

### 1.2 Proposed Action and Project Area

The annual decision to award grants is a Major Federal Action (40 CFR § 1508.1(q)) as defined by the National Environmental Policy Act (NEPA) and its implementing regulations (40 CFR § 1500-1508). The awarding of these funds is the **Proposed Action** that the National Marine Fisheries Service (NMFS) analyzes in this document.

The **project area** comprises the six states specified by Congress—Alaska, Washington, Oregon, California, Idaho, and Nevada—and the federally recognized Tribes of the Columbia River and Pacific Coast (including Alaska).

### 1.3 Grant Process Overview

#### 1.3.1 Project Categories

NMFS has established six project category types that qualify for PCSRF funding. Each category has one or more sub-categories as presented in Appendix A and found in the [PCSRF Project and Performance Metrics Database](#) (PCSRF Database):

1. Salmonid Restoration Planning and Assessments
2. Salmonid Habitat Restoration and Acquisition
3. Salmonid Hatcheries and Harvest Management
4. Salmonid Research, Monitoring, and Evaluation
5. Public Outreach, Education, and Landowner Recruitment
6. Program Administration

NMFS identifies program priorities in the annual notice of funding opportunity (the notice), available on [www.grants.gov](http://www.grants.gov). In 2021, NMFS identified the following priorities:

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<sup>1</sup> Pacific Coastal Salmon Recovery Fund, Draft FY 2020 Report to Congress

- *Priority One* projects address factors limiting the productivity of Pacific anadromous salmonid populations that are listed under the ESA and/or necessary for the exercise of tribal treaty fishing rights or native subsistence fishing.
- *Priority Two* projects consist of watershed-scale or larger effectiveness monitoring, population-scale status and trend monitoring, monitoring necessary for the exercise of tribal treaty fishing rights or native subsistence fishing on anadromous salmonids, or conducting watershed-scale or larger restoration planning.
- *Priority Three* projects are all other projects consistent with the Congressional authorization with demonstrated need for PCSRF funding.

Details of each priority are listed in the most recent notice. The priorities and the notice refer applicants to the most recent ESA-listed salmonid population Recovery Plans. Appendix B lists the Recovery Plans available as of April 2021. While the list of priorities has not changed since 2014, and Recovery Plans are now available for all ESA-listed salmon and steelhead, the lists in Appendices A and B may further evolve over the life of the Fund.

### 1.3.2 Applicants

Each year, as authorized by Congress, NMFS solicits proposals from the States of Alaska, Washington, Oregon, Idaho, Nevada, and California, and federally recognized Pacific Coast Tribes. States and tribal commissions/ consortia applicants have different requirements than individual tribal applicants when describing their program or project narrative within their proposals.<sup>2</sup>

After NMFS makes its funding decision, and the awards are issued, the states and tribal commissions/consortia identify their sub-recipients and activities. States and tribal commissions/consortia propose an overarching program framework, in which each follows their own policies and procedures to select projects and award funding to sub-recipients. Recipients may issue competitive solicitations, issue non-competitive sub-awards, or use a combination of both. Recipients may supplement the project criteria provided by NMFS, for example, focusing on particular species or watersheds.

Typically, each state implements 15-250 projects under each annual award, while tribal commissions and consortia typically implement up to 40 projects annually. Both types of recipients can select projects and grant sub-awards throughout a five-year period. Each recipient's respective grant policies and procedures govern these sub-awards. Each project may receive other state or tribal funds, federal funds, local contributions, or in-kind support. Individual tribes typically propose 1-3 specific project(s) for which they are seeking funds. These projects may also receive any combination of other funds and in-kind support.

Given this grant process, NMFS has limited involvement in the scope or details of individual projects or sub-award funding for the states and tribal commissions/consortia.<sup>3</sup> Per the award requirements, all

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<sup>2</sup> [www.grants.gov](http://www.grants.gov). The 2021 funding opportunity number was NOAA-NMFS-WCRO-2021-2006764

<sup>3</sup> At the recipient's request, NMFS staff may participate in reviewing sub-recipient applications, provide technical feedback, and rank proposals based on technical merit. However, they do not select or vote on funding projects.

applicable environmental reviews must be completed and permits secured before work commences. The specific consultations and permits depend on the type of activities.

## 1.4 Purpose and Need

Congress authorized<sup>4</sup> the Secretary of Commerce to issue grants from the Pacific Coastal Salmon Recovery Fund (PCSRF). Congress established the following **purpose** for the Fund:

- For projects necessary for the conservation of salmon and steelhead populations that are listed as threatened or endangered<sup>5</sup>, or that are identified by a state as at-risk to be so listed.
- For maintaining populations necessary for exercise of tribal treaty fishing rights or native subsistence fishing.
- For conservation of Pacific coastal salmon and steelhead habitat.

On behalf of the Secretary, NMFS **needs** to issue the grants in accordance with the following legislative requirements:

- 1) The grants be issued to the States of Washington, Oregon, Idaho, Nevada, California, or Alaska, and to the federally recognized tribes of the Columbia River and Pacific Coast (including Alaska).
- 2) That all funds shall be allocated based on scientific and other merit principles.
- 3) Funds disbursed to states shall be subject to a matching requirement of funds or documented in-kind contributions of at least 33 percent of the federal funds.

## 2 Alternatives

### 2.1 No Action Alternative

Under the No Action Alternative, NMFS would not award grants to eligible states and tribes from the Fund that Congress established. NMFS is including this alternative to contrast the impacts of the proposed action with the current and expected future conditions of the affected environment, in the absence of the action (§1501.5(c)(2)).

### 2.2 Preferred Alternative

Under this alternative, NMFS would issue PCSRF grants to states, representative tribal commissions and consortia, and federally recognized tribes using the process described in Section 1.3. Project categories include (see Section 1.3.1):

- Salmonid Restoration Planning and Assessments
- Salmonid Habitat Restoration and Acquisition
- Salmonid Hatcheries and Harvest Management
- Salmonid Research, Monitoring, and Evaluation
- Public Outreach, Education, and Landowner Recruitment

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<sup>4</sup> Last updated in the Consolidated Appropriations Act, 2021 (December 27, 2020); 16 U.S.C. 3645(d)(2).

<sup>5</sup> Under the Endangered Species Act (ESA).

- Program Administration

NMFS maintains a list of categories, sub-categories, and types of actions (Appendix A), which NMFS uses to assess and describe the environmental effects in this NEPA document. This list may evolve over the life of the Fund, based on the most recent available information. NMFS would supplement this NEPA analysis under either of the following conditions (§ 1502.9(d)).

(i) There are substantial changes to the proposed action that are relevant to environmental concerns. For example, Congress may substantially change the intent or scope of the funding.

(ii) There are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts. For example, substantial changes to ESA-listed salmonids, limiting factors, or critical habitat as defined in the most recent Recovery Plans (Appendix B).

NMFS may also find that changes to the proposed action or new circumstances or information relevant to environmental concerns are not significant and therefore do not require a supplement (§ 1502.9(d)(4)).

As noted in the 2020 NEPA Regulations Final Rule (85 Fed. Reg. at 43330, §1502.14), “The number of alternatives that is appropriate for an agency to consider will vary. For some actions, such as where the Federal agency’s authority to consider alternatives is limited by statute, the range of alternatives may be limited to the proposed action and the no action alternative.” NMFS has determined that this is one of those cases—only the Preferred Alternative will meet all of these criteria.

### 3 Environmental Effects Methodology

#### 3.1 Future Project Types

NMFS bases the scope and analysis of the anticipated effects of the Preferred Alternative on the 21-year history of the program, as captured in the PCSRF Database. At the time of its Federal Action, NMFS does not know the specific projects that the states and tribal commissions/consortia will sub-award. However, the project categories have been identified (Appendix A) and represent the broad scope of future funded projects.

NMFS grouped past and current projects<sup>6</sup> into analysis groups. These groups may differ from the categories in Appendix A and the PCSRF Database because they group together activities that result in similar environmental impacts. The PCSRF Database structure requires each project to be assigned to only one primary category. Habitat restoration projects are inherently complex; they may involve extensive design, planning, land acquisition, site work, road removal, nursery production, planting, fish barriers, fish screening, and water quality enhancements. Therefore, the grant recipient has to make a subjective choice when entering data.

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<sup>6</sup> As of April 1, 2021.

Table 1 summarizes the NEPA analysis groups based on all data from 2000 to April 1, 2021 including all new, on-going, completed, terminated, and cancelled projects. The values shown may change as projects are completed and awards are closed.

To help understand the anticipated future environmental effects of the proposed action, NMFS first eliminated historic database categories that are no longer available for program funds. For example, the Salmonid Hatcheries and Harvest Management category has a subcategory for Alaska Salmon Fisheries Assistance that was only used from 2000-2006. The remaining NEPA analysis groups were then placed into the following NEPA clusters:

- **Cluster 1: Non-physical projects.** These projects focus on staffing, technical assistance, studies, planning, outreach, education, travel, and acquisition. They do not directly disturb soil, water, or fish. The analysis groups in this cluster are:
  - Research, Monitoring and Evaluation
  - Habitat Restoration Planning and Assessments
  - Land Acquisition and Nursery Operations
  - Public Outreach, Education, and Landowner Recruitment
  - Program Administration
- **Cluster 2: Incidental physical projects.** While human resources (staffing, technical assistance, studies, planning, etc.) dominate these projects, the projects may include equipment and supplies, incidental in-water work, fish handling, and ancillary construction. The analysis groups in this cluster are:
  - Hatchery Reform and Fish Marking. Incidental in-water work includes temporary or permanent weirs, fish ladders improvements, and handling of fish (trapping, transporting, spawning, marking, rearing, releasing, maintaining broodstock, or stocking). Equipment purchased includes water treatment, lab equipment, supplies, computers, fish marking systems, mass marking trailers, traps, shelters, and feed for hatcheries. Infrastructure improvements include buildings, rearing pond improvements, abatement ponds, paving, and wells.
  - Harvest Management. Includes enforcement costs (fuel, boats, and personnel), observers, analysis, modelling, sampling, forecasting, and planning. May include fishing gear to test improved retention of hatchery fish and decrease post-release mortality.
- **Cluster 3: Water and upland habitat projects.** These projects focus on instream flow and water quality.
  - Instream flow. Includes water acquisition, flow management, and improved irrigation practices.
  - Water quality. Includes nutrient replenishing, carcass recycling, and upland habitat improvement projects.
- **Cluster 4: Directed restoration projects.** These projects include fish passage, estuarine/nearshore improvements, fish screening, instream and riparian habitat, and wetlands.

**TABLE 1: ANALYSIS GROUPS AND NEPA CLUSTERS**

NEPA Analysis Group (Cluster)	Total Project Cost (All funds)	PCSRF Funds <sup>1</sup>	Number of projects	Project Examples
Habitat Restoration (4)	\$1,375m	\$417m	5,975	Estuarine/nearshore, fish passage improvement, fish screening, habitat
Restoration Planning and Assessments (1)	\$602m	\$318m	3,658	Staffing, technical assistance, planning, analysis, partnerships
Research, Monitoring, and Evaluation (1)	\$449m	\$323m	2,262	Research, life cycle monitoring, monitoring water quality, sampling, estimation, analyses, and surveys,
Hatchery Reform and Fish Marking (2)	\$130m	\$107m	356	Staffing, technical assistance, meetings, infrastructure, and equipment
Land Acquisition and Nursery Operations (1)	\$102m	\$89m	534	Land and easements acquisition, nursery infrastructure, large wood purchases, equipment
Public Outreach, Education, & Landowner Recruiting (1)	\$119m	\$54m	1,095	Outreach, technical assistance, planning, education, public processes
Instream Flow (3)	\$86m	\$33m	165	Water acquisition, flow management, seepage reduction, improved irrigation practices
Program Administration (1)	\$51m	\$40m	213	Administrative costs, oversight, management, staffing
Harvest Management (2)	\$15m	\$15m	142	Enforcement, observers, analysis, forecasting, and gear testing
Water Quality (3)	\$5m	\$2m	119	Nutrient replenishing, effluent treatment, carcass placement

- Source: Pacific Coastal Salmon Recovery Fund, Project and Performance Metrics Database, Summary by Grantee, captured April 1, 2021.
  - All costs are presented in millions (m).
  - Totals do not add up to 100% because not all historic subcategories are available for future funding under the Proposed Action.
1. PCSRF Funds are allocated or spent depending on the project’s status.

## 3.2 Analysis Approach

### 3.2.1 Resources

§ 1508.1(g) defines effects to include “ecological (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems), aesthetic, historic, cultural, economic (such as the effects on employment), social, or health effects.” Based on this definition, NMFS found that the proposed action may primarily affect the following resources (the affected environment):

- Physical Resources and Land Use
  - Hydrology and water quality
  - Land Use—upland agriculture, livestock management, and forestry
  - Climate change—emissions
- Biological Resources



- Aquatic resources—salmonids, other fish, invertebrates, and vegetation
- Terrestrial resources— wildlife, vegetation, and invertebrates
- Human Dimension
  - Historic and cultural resources
  - Social, economic, and environmental justice

This PEA addresses a large number project categories and sub-categories. If a particular type of activity is expected to result in only a negligible impact to a particular resource, NMFS does not consider it relevant to the decision-making process and does not discuss it. For example, many activities will not result in any noticeable social or economic impact. Therefore, these resources are not discussed under each section.

NMFS also discusses, where applicable, any effects on air quality, noise, transportation. Effects considered include all direct, indirect, or cumulative effects, as well as short- or long-term effects. Effects on other resources that are not reasonably foreseeable or do not have a reasonably close causal relationship to the proposed action are not considered (§1508.1(g)).

### 3.2.2 Definitions

Given the nature of each PSCRF sub-award, the breath of PSCRF funding categories, and the vast analysis area, NMFS cannot determine the individual or collective impact of each year’s funding decision on each component of the affected environment. Instead, this document focuses on whether the broad impact of funded activities is significant for each resource.

This PEA applies the following definitions found in the Glossary of the NEPA Companion Manual (NOAA 2017):

- Long-term – refers to a potential impact of long duration, relative to the proposed project and the environmental resources. Long-term impacts continue after the project has ceased. Permanent impacts that remain after the construction phase of a project is an example of a long-term impact.
- Short-term – this term refers to a potential impact of short duration, relative to the proposed project and the environmental resource. Short-term impacts occur while the activity is underway, and do not persist once the activity ends. Noise produced by temporary construction activities are an example of short-term impacts.
- Negligible – this term refers to a level of impact that is below minor to the point of being barely detectable and therefore discountable. Factors for consideration include: procedures that employ generally accepted industry standards or best management practices that have been tested and verified at the time an activity is proposed; whether an activity has understood or well-documented impacts at the time an activity is proposed; whether control and quality measures are in place (e.g., monitoring and verification; emergency plans and preparedness); the direct, indirect, and cumulative effects of the proposed activity on a resource; and the context and intensity of expected discharges or deposits and disturbances to resources, like the submerged lands of any sanctuary, corals, and other living, cultural, and historical resources.

### 3.2.3 Project Scales

PCSRF projects are small-scale. They are designed to meet specific needs that the states or tribes have in conserving salmonid populations. Given that NMFS does not review project level budgets or detailed project descriptions (see Section 1.3), NMFS can only use available data to demonstrate the scale of the PCSRF funded projects for this PEA; the most relevant available indicators to understand scale are project costs and performance measures:

(1) **Total project cost**—Construction projects require substantial materials, labor, and equipment (including heavy construction equipment). The more complex a project, the more expensive it will be, regardless of the proportion of federal funding.

NMFS reviewed the PCSRF Database (downloaded April 1, 2021). A total of 1,404 projects met the following criteria: they had *some* PCSRF funding; had a physical component (hatchery, harvest, or habitat) or categories 2 and 3 in Appendix A; and were initiated within the past 10 years. Table 2 shows that 91 percent of projects cost less than \$1 million and only 2 percent were over \$2 million.

Table 2: Project Size based on funding

Total Project Funding	Number	%
<\$100,000	349	25%
\$100,000-\$250,000	402	29%
\$250,001-\$500,000	327	23%
\$500,001-\$1m	193	14%
\$1m-\$2m	92	7%
\$2m-\$3m	21	1%
\$3m-\$5m	13	1%
\$5m-\$10m	7	<0.5%

Source: PCSRF Database, as of April 1, 2021.

(2) **Available performance measures**—recipients track key performance measures in the PCSRF Database. Some of these measures demonstrate the overall physical size of each project that NMFS uses as an indicator of the scope and scale of physical construction or disturbance. Table 3 shows the mean of medians for completed projects funded under the PCSRF program (2000-2020). The output categories match the categories in Appendix A.

Example indicators from other non-PCSRF projects serve as a benchmark for this PEA:

- With FY 2013 funds, the NOAA Restoration Center supported 37 projects that restored approximately 15,000 acres. (average 405 acres each) (NOAA 2015).
- The specific areas designated for Puget Sound steelhead include approximately 2,031 miles of freshwater habitat in Puget Sound (NMFS 2019).
- Pierce County, Washington’s 6-year capital improvement program for flood hazard management proposed 16 miles of levee setbacks and 2,000 acres of floodplain reconnection (Pierce County 2012).
- NMFS issued a Finding of No Significant Impact (FONSI) and adopted an Environmental Assessment to support a Restoration Center to restore and enhance 280 acres within San Diego Bay (NMFS 2009).

Table 3: Summary Statistics on the scale of completed projects

Category	Performance Measure	Number of Projects	Mean of Medians
Instream Habitat Projects	Stream Miles Treated	2,579	0.7
Wetland Habitat Projects	Acres Created	35	3.4
	Acres Treated	207	7.1
Estuarine Habitat Projects	Acres Created	32	10.1
	Acres Treated	142	13.2
Riparian Habitat Projects	Stream Miles Treated	3,301	1.4
	Acres Treated	3,178	2.7
Upland Habitat Projects	Acres Treated	2,234	16.4
Land Acquisition Projects	Acres Acquired or Protected	490	62.6
	Stream Bank Miles Acquired or Protected	440	1.0
Fish Passage Projects	Number of Barriers Removed	2,497	1.1
	Stream Miles Opened	1,837	2.1
	Number of Fish Screens Installed	426	2.7
Research, Monitoring and Evaluation Projects	Miles of Stream Monitored	1,890	26.6

Source: PCSRF Database, as of April 23, 2021.

These cost and performance indicators together demonstrate that PCSRF-funded projects are small-scale. The impacts of these small-scale projects are described in Sections 5.1 to 5.5.

### 3.3 Affected Environment

This section describes the environment of the areas to be affected or created by the alternatives under consideration, including reasonably foreseeable environmental trends and planned actions in the areas.

#### 3.3.1 Existing Conditions

The resources discussed in Section 3.2.1 constitute the affected environment for the Proposed Action. The conditions of each of these resources vary substantially across the six state analysis area. Chapter 3 of the June 2015 NOAA Restoration Center Programmatic Environmental Impact Statement (Restoration PEIS) provides a broad nationwide synopsis of the existing physical, biological, and socioeconomic conditions that influence salmonids, while the salmon and steelhead Recovery Plans (Appendix B) identify the ecosystem and habitat requirements, population status, factors leading to ESA-listing, and limiting factors.<sup>7</sup>

While each species and geographic region may have specific, local limiting factors, many are common to each species. Two recent Recovery Plans, the Puget Sound Steelhead (NMFS 2019) and the Snake River Fall Chinook (NMFS 2017) collectively describe the following broad limiting factors:

- Climate change
- Dams, including fish passage, flood control, injury, dam turbines, and increased predation
- Degraded water quality (including temperature and sediment)

<sup>7</sup> Material is not incorporated by reference (§1501.12) unless specified.

- Early marine survival
- Ecological and genetic interactions between hatchery and natural origin fish
- Fish passage barriers at road crossings
- Floodplain impairments, including agriculture
- Harvest pressures on natural origin fish
- Loss of spawning habitat
- Residential, commercial, and industrial development (urban development)
- Timber management
- Water withdrawals and altered flows

While these past and current limiting factors have shaped the affected environment, climate change and reasonably foreseeable current and future actions are shaping and will further shape the affected environment.

### 3.3.2 Climate Change

Changes in temperature, precipitation, wind patterns, ocean acidification, and sea level height have profound implications for survival of salmonids in their freshwater, estuarine, and marine habitats. Five climate change conditions contribute to these implications: warmer water temperatures, higher peak flows, lower base flows, increased sediment, and an altered marine environment (NMFS 2019).

The NEPA Companion Manual distinguishes between the effects of climate change on the future condition of the affected environment (primarily salmonids and their habitat) and the proposed action's effects on climate change (primarily construction-related emissions). NMFS separately addresses these effects in the analysis of environmental effects in Chapters 4 and 5.

### 3.3.3 Reasonably Foreseeable Actions

Numerous, widespread, and overlapping limiting factors contribute to the decline of salmonids. These factors are not static; continued development pressures further exacerbate them, while mitigation efforts attempt to counter them. For example, if a licensing agency issues a renewal permit for an existing dam that blocks upstream fish passage, the action will further exacerbate the limiting factor. At the same time, based on public input, the consulting agency's opinion, and the licensing agency's mitigation requirements, the applicant may control flows, temperature, and provide non-volitional fish passage. The benefits may not fully offset the adverse effects. In another example, a county may purchase and reclaim a historic floodplain, providing new spawning habitat. The long-term benefits likely offset the short term construction-related effects.

The federal, tribal, state, and local governments, together with environmental groups, corporations, academic institutions, private sector, and private citizens all contribute to numerous projects that attempt to address these limiting factors. The NMFS Office of Habitat Conservation's Restoration Center also implements projects across the same region.<sup>8</sup>

For ESA-listed species, Recovery Plans (Appendix B) identify specific strategies and actions for each applicable resource within the affected environment. For example, the Puget Sound Steelhead Recovery

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<sup>8</sup> <https://www.fisheries.noaa.gov/resource/map/restoration-atlas>

Plan (NMFS 2019a) identifies strategies and actions for freshwater habitat, marine environment, hatchery management, harvest, and climate change. For non-listed species, other evaluations that identify limiting factors may apply. Regardless of listing status, Priority One projects selected for PCSRF funding are required to address the factors limiting the productivity of Pacific anadromous salmonid populations.

Because of the concerted federal-state-tribal-local partnership in salmon recovery, there are thousands of reasonably foreseeable future actions that are intended to positively affect anadromous salmonids within the six state project area. The specifics of these contributions, big and small, positive and negative, are beyond the scope of this assessment.

At the proposed action's geographic scale, actors aim for the net benefits to outweigh the net adverse effects. In this PEA, NMFS describes the specific incremental role of the No Action and Proposed Action alternatives, within the context of the affected environment as climate change and reasonably foreseeable future actions influence it.

## 4 No Action Alternative

Under the No Action Alternative, NMFS would terminate the PCSRF and not award new grants. Recipients may continue to sub-award funds over a five year period, through 2025 for grants NMFS provided in 2020. Thereafter, the beneficial and adverse effects would linger, as work is completed, and short-term adverse effects dissipate. However, for this No Action Alternative, NMFS assumes that by 2030, all funds awarded through 2020 are expended, all grants are closed, and there would be no new beneficial or adverse effects associated with the Fund.

NMFS assumes that development pressures on salmon habitat and benefits from salmon recovery projects would continue without the Fund. The Fund is important to the individual projects, communities, and sub-recipients who rely on the Fund to leverage other funding, bring together diverse stakeholders, and support sub-recipients' operating costs, personnel costs, and projects.

### 4.1 Physical Resources and Land Use

Under the No Action Alternative the effects on physical components of the environment (**hydrology and water quality**) would likely remain the same as they are today, with development pressures balanced out by mitigation efforts. Changing **land use**, continued agricultural, livestock management, and forestry practices are likely to continue to adversely impact ecosystem indicators (e.g., sediment and flow), while best management practices (BMPs), conservation efforts, and innovation attempt to counter these adverse effects. These efforts may compensate for new, adverse effects but not necessarily those of long-term historic and on-going practices.

The No Action Alternative would have no net impact on emissions that contribute to **climate change**, because if project funding ends, NMFS would not be contributing PCSRF funding to restoration projects across the six states. However, NMFS assumes that the greenhouse gas emissions associated with restoration project construction (primarily heavy equipment emissions) would continue, to some degree, with alternative sources of funding. NMFS also assumes that the carbon sequestering credits

and debits associated with riparian tree planting, silviculture, floodplain and wetland expansion, and sediment relocation would continue.

## 4.2 Biological Resources

Under this alternative, the funds would not be issued to contribute to these type of restoration projects to help recover salmon and their habitat. When considering the reasonably foreseeable trend of climate change, this alternative is not likely to change the status quo. NMFS anticipates a continued need for salmon recovery projects. In a 2019 study, researchers found that some the most southernmost, interior, and late-fall or winter run species have the higher risk of extinction when coupling limiting factors with climate change (Crozier et al. 2019).

## 4.3 Human Dimension

NMFS expects that this alternative would have a marginal, local adverse effect on **economics**. State and tribes rely on PCSRF funding to support some of their activities, including, but not limited to management of other grant programs, research, monitoring, aquatic surveys, marking of fish, restoration planning, and assessments. Recipients would have to find other sources of funding for these activities, and NMFS anticipates a decrease in personnel and associated activities under this alternative.

Because NMFS would not fund any new activities under this alternative, no changes to **historic** or **cultural resources** and **aesthetics** are expected. Restoration projects that affect these resources are likely to continue, with other federal, tribal, state, and private funding.

From an environmental justice (EJ) perspective, both the states and tribes would lose an important revenue source for habitat restoration projects. This loss is not disproportionate because both the EJ communities (tribes)<sup>9</sup> and non-EJ communities (states) would be proportionally adversely affected.

However, NMFS looked at the impact that the Fund has on activities other than ground-breaking restoration. Based on the PCSRF Database, over the 21 year history of the Fund, approximately 54 percent of the grants to tribes and tribal commissions/consortia were used for: (1) program administration, (2) research, monitoring, and evaluation, or (3) planning and acquisition. By comparison, for the same period, only 28 percent of the grants to the states was used for these same purposes.

To ensure that this trend reflected the current conditions, NMFS calculated the same ratios for the last three years (2018-2020). These categories accounted for 49 percent of the grants to the tribes and tribal commissions, and 32 percent of the grants to the states. Therefore the No Action Alternative would lead to a disproportionate high adverse effect on **environmental justice** populations.

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<sup>9</sup> Under Executive Order 12898, tribes constitute environmental justice communities because of their subsistence use of fish and wildlife.

## 4.4 Summary

The No Action Alternative is expected to have a negative, adverse effect on salmonids and a marginal, local adverse effect on economics, and a disproportionate high adverse effect on the tribes. It is not expected to have a noticeable impact on other resources.

## 5 Preferred Alternative

NMFS analyzes the effects of the Preferred Alternative by contrasting the effects anticipated from the use of the funding to the effects of the No Action Alternative discussed above. Given the wide spectrum of project types, these effects are presented by the four broad clusters introduced in Section 3.1.

### 5.1 Cluster 1: Non-Physical Projects

The projects in this cluster focus on staffing, technical assistance, studies, planning, and travel. They include program administration (category 6 in Appendix A); land acquisition (sub-category 2.10); research, monitoring, and evaluation (category 4); public-outreach, education, and landowner recruitment (category 5); and interpretive sites (sub-category 5.3). Most of these activities do not directly disturb soil, water, or fish and therefore have no impact on **physical** or **biological** resources.

Monitoring (in-water counts or water quality measurements) and installation of interpretive sites may have minor, short-term adverse impacts on **physical** or **biological** resources; they are conducted only by trained personnel and designed to minimize all adverse effects. The long-term benefits to ecosystem management and project effectiveness monitoring offset these adverse effects.

This cluster of projects would have a marginal, non-significant positive impact on **economics**. Tribes and states would be able to draw on some additional sources of funding for management of other grant programs, research, monitoring, aquatic surveys, marking of fish, restoration planning, and assessments.

These grants would have no effect on **historic** or **cultural resources** because they do not involve any physical components. The funding would be equally available to tribes and states. Therefore, the continued support to tribes ensures that this alternative does not cause a disproportionate adverse effect on **environmental justice** populations.

### 5.2 Effects Common to all physical projects

The remaining clusters (2-4) result in some form of physical impacts. Two sources of adverse effects, **construction** and **fish handling** are common to many projects with a physical component. These are described here and referenced in each of the subsequent sections in this Chapter. Impacts to **historic** and **cultural resources** are also discussed in this section as any physical project may have an adverse impact on these important resources.

#### 5.2.1 Construction

PCSRF funding supports a variety of projects that have a construction component. Construction, in this PEA, refers to any type of dry or wet ground-altering activity that requires heavy construction equipment. This includes, but not limited to, demolishing, building, or rehabilitation; road or trail

repairs, construction, or removal; installing, replacing, or removing culverts, small dams, levees or revetments; fish screen repair or installation; plantings; and shoreline or channel modifications.

Construction causes a variety of adverse effects as listed below. The type of effects and intensity or degree depend on the specific location, the affected environment, and the duration of the construction effort. Given that NMFS, at the time of making its Federal Action, does not have specific project details or location information, this section looks broadly at all construction impacts. The specific application and potential longer-term benefits of these construction activities to a PCSRF-funded project depend on the type of activity as discussed in Sections 5.3 to 5.5.

**Physical resources** (NOAA 2015):

- Land-based activities would disturb terrestrial habitat through trampling, noise, and displacement.
- Construction vehicles compact soil in construction staging or access areas.
- In-water work may modify water flow and hydrology.
- Construction activities may contribute to erosion, temporarily increase sediment input, and increase turbidity. Turbidity may lead to the deposition of fine sediments.
- Damage to aquatic habitat through in-water activities such as anchoring work vessels or building coffer dams.
- Construction equipment and construction worker-related traffic release emissions that adversely affect air quality and contribute to climate change.
- Construction activities may release contaminants while soils mobilized during project work may act as a delivery mechanism for chemical pollutants.
- The use of heavy equipment can result in accidental spills of fuel, lubricants, and hydraulic fluids.

**Biological resources** (NOAA 2015):

- All species present will be disturbed or displaced by construction activities. These activities include human presence, noise, blasting, reverberations, and contaminants. The extent of the impact of these activities is related to the adaptability and habituation of each species to various levels and types of noise.
- Noise is most likely to lead to avoidance and displacement. Displaced species may have to occupy areas with a lower habitat quality, potentially altering essential behavior and increasing stress, competition, and predation risk in the short term.
- Riparian vegetation may be removed or crushed to build construction staging or access areas.
- Detrimental impacts to aquatic organisms include physiological stress, reduced growth, productivity, migratory behavior, and adverse effects on survival.
- Aquatic species including fish, marine mammals, reptiles, amphibians, and sessile invertebrates may be affected directly by in-water work, by sediment transported from shore-based work, or by the release of in-water sediments in the case of dam or levee removals.
- Artificial lighting in construction areas may adversely impact biological resources while assisting predators.



- Temporary dewatering (coffer dam or other method) can lead to stranding, desiccation, or displacement of aquatic resources. Dewatering may temporarily impact macroinvertebrates, crucial to riverine food chains, in the disturbed area.
- High turbidity concentrations can reduce feeding efficiency, decrease food availability, reduce dissolved oxygen in the water column, result in reduced respiratory functions, reduce tolerance to diseases, and cause mortality.
- Water diversions are also likely to maintain the flow of these food sources from upstream areas. In addition, changes in flow due to dewatering are expected to be small, gradual, and short-term.
- Construction zones may temporarily delay upstream or downstream migration of aquatic organisms.
- Immobile invertebrates may be the most impacted by mechanical forces and turbidity because they are unable to avoid crushing, trampling, or sediment plumes.
- Chemical exposures can alter natural processes and reduce the overall health of species. These releases as well as mechanical forces may injure or kill organisms.
- Non-native species may be introduced by construction vehicles.

**Human Dimension (NOAA 2015):**

- Construction-related noise may impacts local communities and recreation users.
- Construction equipment and work-sites may temporarily impact traffic patterns. Short-term traffic detours are common place in all construction areas.
- Short-term construction-related costs are not considered adverse economic costs because they are partially or fully offset by the PCSRF and leveraged funding. In-kind volunteered labor and donated materials are considered part of each project's cost-sharing component.
- Construction impacts to historical and cultural resources are discussed in Section 5.2.3 below.

Modern construction practices, local and state ordinances, and state or federal permits require best management practices (BMPs) that are expected to reduce impacts on air quality, traffic, noise, water quality, and wildlife. Standard BMPs include preventing runoff into water bodies through bioswales, gravel roads, dust suppression, and other erosion control approaches. Other impacts are reduced through managing construction work windows, especially for in-water work, reducing leakage, and traffic (vehicles in roadways, pedestrians on sidewalks and trails) detours. In all cases, project proponents will obtain necessary federal, state, tribal, and local permits, as well as ESA consultations before proceeding with their projects.

The occurrence and magnitude of many of the physical and behavioral effects noted above are greatly determined by the frequency and the duration of the exposure. Although the scope of adverse construction impacts is wide, the broad and effective range of BMPs, proven across multiple landscapes and environments, substantially reduces the adverse effects. Given the scope of work, scale of PCSRF funding, short duration of work, diversity of landscapes, interagency and inter-governmental oversight, disturbances are expected to be small relative to the total habitat area, and quick recovery is likely to occur (NOAA 2015).

### 5.2.2 Handling

Fish are the most likely species type to require handling; however, it is possible that mammals, amphibians, reptiles, sessile and mobile invertebrates, birds, and plants may also need to be handled during restoration activities (NOAA 2015).

Handling of fish during dewatering activities or by hatchery or reintroduction operators may cause stress, injury, or death, which typically are due to overdoses of anesthetic, differences in water temperatures between the river and holding buckets, depleted dissolved oxygen in holding buckets, holding fish out of the water, and physical trauma. Fish transferred to holding buckets can experience trauma if care is not taken in the transfer process, and fish can experience stress and injury from overcrowding in traps, nets, and buckets. Decreased survival of fish can result when stress levels are high because stress can be immediately debilitating and may also increase the potential for vulnerability to subsequent challenges. If measures that minimize the harmful effects of capturing and handling fish are followed, fish typically recover fairly rapidly from handling (NMFS 2020a).

### 5.2.3 Historic and Cultural Resources

Construction activities could result in adverse impacts to historic and cultural resources. These impacts include physical damage or direct alteration, alteration of the setting, or the unanticipated introduction of intrusive elements. Some actions may have beneficial impacts, such as increased productivity for culturally important practices, such as subsistence harvest.

Given the nature of cultural and historic resources, adverse impacts are generally considered permanent, except for when impacts are restricted to restoration activities that temporarily prevent the use of a site for culturally important practices or temporarily impair a viewshed.

When there is a potential for impact to archeological or historical resources, the sub-recipients will work with the grant recipients (states or tribes) to consult with the appropriate state, tribal, or local officials and consider their views and concerns regarding the potentially affected resources prior to making a final project implementation decision.

The final implementation decision may result in a letter from the State Historic Preservation Officer (SHPO) or the Tribal Historic Preservation Officer (THPO) with a determination of “no historic properties affected.” In some cases where the SHPO or THPO determine that historic properties will likely be affected, the state or tribal process may require the grant recipient and sub-recipients to work with the SHPO and/or THPO to develop a memorandum of agreement, with stipulations to reduce the adverse impacts such as:

- Archival quality photographs of structures prior to removal and documentation on appropriate state- or tribal-designated forms.
- Immediate notification of State or Tribal Historic Preservation Offices if previously undocumented historic properties or sites are discovered during the project.
- Interpretive signage.
- Development and implementation of unanticipated discovery plans.
- Installation or remediation of structures.
- Monitoring of excavations and site disturbance by a qualified historian or archaeologist.

### 5.3 Cluster 2: Incidental Physical Projects

While most of the activities in these projects would fall in cluster 1 that have no biological or physical impacts, the projects in this cluster have historically include some physical components.

#### 5.3.1 Hatcheries

Hatchery managers continue to look for opportunities to improve operations, reduce adverse effects, or increase production to reduce fishing pressures on at-risk populations. Hatcheries across the study area are also continually being evaluated and adaptively managed to ensure impacts are acceptable to ESA-listed species (NMFS 2014). For example, NMFS developed the Mitchell Act FEIS (2014) to evaluate 62 hatchery programs across the basin. These programs could also receive PCSRF funding.

For improvements, expansions, or to meet ESA requirements, hatchery managers may be required to submit Hatchery Genetic and Management Plans (HGMPs) for NMFS review. Hatchery managers may need to improve facilities, obtain new equipment, or modify their operations. Hatchery managers may turn to PCSRF funds, administered through the states or tribes, to fill a gap or provide a complementary need. Some of these initiatives may require a variety of environmental permits and undergo different federal, state, tribal, and local environmental reviews, including consultations by NMFS under the ESA, or permits under the Clean Water Act. Other federal agencies that may have to issue permits or funding include Federal Emergency Management Agency (FEMA), U.S. Forest Service, U.S. Department of Agriculture, or USFWS. Large hatchery projects would also be subject to state and local permitting, water quality, and water withdrawal approval processes.

The sequencing of NEPA and these larger hatchery projects can be very fluid and interwoven. In some cases, a hatchery program may have already been analyzed under NEPA before PCSRF funding is approved. In other cases, PCSRF funding may support initial design or equipment that the hatchery manager needs well before the expansion or relocation can take place. Irrespective of the source of funding, NMFS or other federal agencies may have to initiate a new, subsequent NEPA analysis at a later stage if undergoing a Major Federal Action.

The analysis of the PCSRF Database shows that the majority of grants in this category contribute to staffing, travel, studies, and plans. These do not have environment impacts and would be captured under Cluster 1 (Section 5.1 of this PEA). However, sub-recipients may use PCSRF funding to purchase **equipment**, enhance their **infrastructure**, or improve their hatchery **operations**. PCSRF funding has also supported **reintroduction** or **stocking**. **Fish marking** constitutes approximately half of the historic PCSRF funding for hatcheries. These elements all fall within the Fund categories 3.1 (Hatchery Production) and 3.4 (Hatchery Reform) listed in Appendix A.

#### Equipment

PCSRF funding for hatchery equipment funded has supported the purchase of incubation facilities, chillers, water pumps, water treatment, recirculating systems, tangle nets, net pens, laboratories, computers, transport vehicles, backhoes, generators, rearing troughs as well as operating supplies such as feed, laboratory or sampling equipment. This equipment is essential for the hatchery operations and by themselves has negligible impacts on the physical or biological resources or the human dimension

addressed in this PEA. The impacts associated with this equipment result from their use in infrastructure development, installation, or operations as discussed below.

#### Infrastructure

Hatchery infrastructure improvements have and may include construction, demolition, or rehabilitation of hatchery buildings; roadway or parking improvements; incubation or other facility improvements; rearing or abatement pond expansion or improvements; surface or groundwater supply or storage systems; access roads or driveways; wells to reduce surface water consumption; or installation, removal, or maintenance of weirs for trapping and sorting fish.

Approximately 50 grants over the past 21 years have included some form of small-scale construction or demolition. Most activity takes place on previously disturbed ground, such as current or past building footprints, pavement, raceways, or abatement ponds. PCSRF grants may support improvements, replacements, or new weirs that form an integral part of hatchery operations. Weirs that impact ESA-listed species may require a consultation with NMFS and/or the USFWS under the ESA. The terms and conditions of the Incidental Take Statement associated with the consultation would minimize adverse impacts to ESA-listed species.

The primary impacts associated with hatchery-related infrastructure improvements are short-term. The specific impacts depend on whether the hatchery is located in a developed or rural area, the scale of the work, and the quality of the affected environment. General construction-related impacts are discussed in Section 5.2.1. Construction may require relevant federal, local, tribal, or state permits or approvals. Given the scale of the small projects, the PCSRF emphasis on filling funding or planning gaps, specific permit requirements, and standard construction best-management practices, the impacts to **physical** or **biological** resources are not expected to be significant.

Construction projects may adversely impact **historical** and **cultural** resources as discussed in Section 5.2.3. Construction projects both contribute beneficial **economic** and **social** impacts to the local community in the form of employment, goods, services, and taxes, while adversely impacting short-term traffic, air quality, and noise. These elements, and the associated best practices, were discussed in Section 5.2.1. Based on the discussion presented in Sections 5.2.1 and 5.2.3, the incremental contribution of PCSRF funding to construction projects, and the processes that PCSRF recipients (states and tribes) have to prevent or address adverse effects, NMFS does not anticipate any significant effects to these components of the **human dimension**.

#### Operations

PCSRF funding may also support daily operations—collection, spawning, incubation, rearing, outplanting fry or smolt, reintroduction or stocking, relocation, and fish marking. These funds may contribute to either fixed or variable hatchery program expenses (Section 3.3.3, NMFS 2014).

Hatchery production can result in benefits to aquatic resources, predators, and long-term benefits to fishing communities. Hatchery operations can also pose risks to aquatic species and elements of the physical environment. Details of the potential **physical** and **biological** risks from the operation of hatchery facilities are presented in Section 3.2.3.1.2 of the Mitchell Act FEIS. This section is incorporated by reference and summarized here. The risks include: facility failure (power or water loss leading to

catastrophic fish losses); facility water intake effects (stream dewatering and fish entrainment); passage effects (blocking upstream or downstream fish passage); and facility effluent discharge effects (deterioration of downstream water quality) (NMFS 2014).

Section 3.2.3.1.3 of the Mitchell Act EIS presents approaches for reducing these operational risks. Given that many hatcheries have implemented or are implementing recommendations from the Hatchery Scientific Review Group (HSRG), NMFS assumes, for this PCSRF PEA, that many operational and environmental risk reduction approaches are common across hatcheries.

Hatchery operators and state agencies monitor a hatchery's **physical** effects on water quality and water quantity. Section 3.6.3.2 of the Mitchell Act EIS, which is incorporated by reference, discusses, federal, state, and tribal water quality standards. Section 3.6.4, also incorporated by reference, discusses, for Washington, Oregon, and Idaho, the water permit and rights use requirements. While these three states comprise only half of the PCSRF analysis states, the permit requirement and level of oversight are indicative of implementation of the Clean Water Act and ensure that the hatchery operational impacts are minimal. Therefore, the adverse effects anticipated from PCSRF funding are not expected to be significant on **physical** resources.

This PEA does not address NEPA requirements for the genetic and long-term effects of hatchery production programs or of reintroduction efforts, only of specific PCSRF funding for hatchery operations. While the distinction may be difficult to discern in rare circumstances when hatchery operators use PCSRF funding to run entire programs for short periods of time, the biological impacts are beyond the scope of this NEPA analysis. As indicated above, NMFS addresses the genetic impacts of hatchery releases or reintroduction programs in its consultations under the ESA.

Within the scope of hatchery operations, the impacts to **biological** resources may stem from:

- Handling—The impacts of handling fish are less than significant based on the volume of handled fish, less than 1% mortality (discussed in the Fish Marking section below), and the training and tools that handlers use to minimize adverse effects (discussed in Section 5.2.2 above).
- Transportation risks—Broodstock, fry, juveniles, and adult fish may be accidentally injured or killed during transportation. Trained operators use specially equipped trucks (purchased or rented), helicopters, and other innovations (e.g. innovative fish passage technologies). Many of these transportation modes are automated to eliminate handling and adverse effects such that these effects are less than significant.
- Stocking— Fish stocking efforts that increase population abundance, rebuild depleted stocks, or reintroduce stocks to previously habited areas (Section 2.2.2.4.3, NOAA, 2015). These efforts rely on species that are or were previously present in the ecosystem or those that have similar ecological requirements. Stocking can reduce resource availability for host individuals, increase predation by stocked individuals, and may have other indirect or long term impacts. Section 4.5.2.4.3 of the Restoration PEIS, which is incorporated by reference, further describes these longer term impacts (e.g., cascading effects down the food web, changes in lower trophic level production, and introduction of non-native organisms). The section also discusses preventative and mitigation efforts that would ensure that the impacts are less than significant. These efforts include integration or segregation, comprehensive monitoring and evaluation, pre-release disease management, and compliance with local, state, and federal laws and regulations.

- Operational risks—Power or water failures or other accidents may occur. However, the incidence of these failures, as analyzed in each of the NMFS NEPA analysis<sup>10</sup> for HGMPs are minimal and the effects are less than significant.
- Facility water intake effects—Stream dewatering and fish entrainment may adversely affect aquatic resources. All in-water work, as discussed under Construction in Section 5.2.1, will need relevant permits or authorizations, and will be carried out by trained operators that use established BMPs. While incidental mortality or long-term adverse effects may occur, these effects are not significant.

Under the **human dimension**, hatcheries would have to comply with local zoning, traffic, and business rules, to ensure that hatchery improvements are not a nuisance to neighboring land uses and do not result in a significant impact. Hatchery employment funded by public funds, while important to individuals and communities, does not have a measurable beneficial or adverse effect because of the unknown opportunity costs of the federal funds. The objective of some hatchery programs is to produce more fish for commercial, recreational, subsistence, or cultural fishing. That objective is extremely important. However, NMFS does not consider it to be a beneficial or adverse effect for this PEA as the effects of fishing depend on a lot more than the gap that the PCSRF funding is filling. Adult returns depend on many other factors including marine and freshwater survival, while harvest of adult returns occur much later in time and further removed in distance from the PCSRF funding. In addition, when ESA-listed species are involved, NMFS will analyze harvest-related actions separately under the ESA. These actions are Federal Actions that trigger their own NEPA assessment in which NMFS will assess and disclose the beneficial and adverse effects.

Hatchery facilities routinely use chemicals in the management of their facilities. PCSRF funding may be used to purchase chemicals or medicines required for hatchery operations. These include disinfectants, therapeutics, anesthetics, pesticides, herbicides, and feed additives. Some chemicals (e.g., antibiotics) do not have established water quality criteria. If discharged to surface waters near hatchery facilities, these chemicals may pose another threat to human health. Exposure to these pathogens may also occur through skin contact with fish or accidental needle-stick injuries during vaccination of fish. Given safe handling and operating requirements within hatcheries, and the reliance on trained professionals, the public health risk impact on employees is minimal and less than significant (NMFS 2014).

Parasites, viruses, and bacteria are potentially harmful to human health and may be transmitted from fish species. Many of these are transmitted primarily through seafood consumption (i.e., improperly or under-cooked fish). However, these adverse effects depend more on the exposure to contaminants in the natural environment and not whether the fish were of hatchery or natural origin (O'Neill et. al. 2020). The Washington State Department of Health concludes that “The controversy about eating farmed versus wild salmon is complex, and reports available in the media, online, and in scientific publications often seem contradictory. Issues fall into three main categories: environmental concerns, contamination, and omega-3 fatty acid levels in edible portions. The good news is both wild and farmed

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<sup>10</sup> <https://www.fisheries.noaa.gov/west-coast/hatchery-national-environmental-policy-act-nepa-documents>

salmon have low levels of mercury, PCBs, and other contaminants.”<sup>11</sup> Therefore, the chemical and consumption risks associated with PCSRF support of hatcheries are less than significant.

### Fish Marking

A common strategy used to identify hatchery-origin fish, for fishing, hatchery performance monitoring, and for managing hatchery fish on the spawning grounds, is to mark the fish. Marking may consist of removing the adipose fin prior to release, coded-wire tag implant, thermal-marking of the otolith (inner ear bone), passive integrated transponder (PIT) tagging, or ventral fin clipping. The marking process requires physical handling of the fish. The PCSRF Database and fund category 3.2 (Appendix A) show that funding has and may continue to contribute to marking costs (supplies or labor) or to equipment for mass-marking (e.g., mass-marking trailers or automated fish marking and tagging systems).

The impacts associated with handling of fish were discussed in Section 5.2.2. NMFS has found that fin clipping, tags, or marking results in short term **biological** effects that heal quickly. No significant difference in mortality has been found between clipped and un-clipped fish, while safe tagging procedures have little effect on growth, mortality or behavior. Fish with internal tags often die at higher rates than fish tagged by other means because of handling during tagging, since tagging is a complicated and stressful behavior. NMFS concludes, for its analysis of six lower Snake River Spring/Summer Chinook Salmon hatchery programs, that, “mortality from production marking and tagging would be 1%.” This mortality can be acute (occurring during or soon after tagging) or delayed. (NMFS, 2016). NMFS concludes that the adverse impacts from fish marking are not significant. Funding for fish marking would not have any effect on **physical** resources, the **human dimension**, or any other **biological** resources.

### 5.3.2 Harvest Management

Harvest management activities funded by the PCSRF, such as fishery evaluations, plan development, and management improvement, would largely fall into cluster one with no physical impacts. However, the PCSRF Database and sub-category 3.3 (Appendix A) include the purchase and operation of boats or vehicles (including purchase of fuel) to support enforcement or observers, as well as fishing gear to test the improved retention of hatchery fish, reduce bycatch, or decrease post-release mortality of fish. These sub-categories may cause environmental impacts.

Commercial boats and vehicles may cause adverse **physical** impacts to air quality, contribute to climate change, and affect water quality with accidental discharges or leaks. Given the large affected environment of the study area, the small number of boats and vehicles purchased (NMFS expects 1-2 per year), and the current and future expected EPA emission standards<sup>12</sup>, the adverse impacts to air quality and greenhouse gas emissions are negligible and not significant. Funds for these activities are not expected to have any measurable effect on **biological** resources, the **human dimension**, or any other **physical** resources.

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<sup>11</sup> Washington State Department of Health, Farmed Salmon vs. Wild Salmon, <https://www.doh.wa.gov/CommunityandEnvironment/Food/Fish/FarmedSalmon>. Captured May 10, 2021.

<sup>12</sup> <https://www.epa.gov/regulations-emissions-vehicles-and-engines>

Gear testing may result in impacts to **biological** resources. The type of impacts depend on the type of gear and target fish. Three related previous PCSRF funded projects<sup>13</sup> involved contracting with commercial fishermen to test the efficiency and effort using modified or new gear types. These type of projects generally require observers on board each vessel, appropriate tagging, handling, and release techniques, and may involve holding fish in net pens to assess post-capture survival rates. Twenty fishermen each participated in the first two projects while only two fishermen participated in the third project.

While NMFS does not know the scope and details of any future PCSRF funded gear testing efforts, any PCSRF funded effort will be extremely small scale, when compared to a full fishery, and the recipient tribes and states will ensure that all catch is accounted for within any fishery harvest plans or quotas. Physical impacts to habitat, water quality, and essential fish habitat (EFH) from gear testing efforts will be minimal.

Funds for these gear testing efforts are therefore not expected to have any measurable and reasonably foreseeable effect on other **biological** resources, **physical** resources, or the **human dimension**. Gear testing may result in long-term, indirect impacts to the human dimension by affecting economics, social cohesion or practices, or cultural fisheries. These impacts will only accrue in the future if the test gear is incorporated into the fishery. The future permitting of new or modified gear in state or tribal waters is left to the discretion of the states or tribes and is not a reasonably foreseeable future action.

## 5.4 Cluster 3: Water Projects

Most of the components of these projects would fall in cluster 1 (staffing, technical assistance, studies, planning, outreach, education, travel, and acquisition), described above, that would have no biological or physical impacts. However, some types of projects in this cluster do include some incidental physical components.

Each larger restoration project (see Cluster 4) likely includes one or more of the projects describe in this section: removal (debris and invasive species), instream flow, water acquisition, other water quality improvements and other terrestrial improvements (upland improvements). Therefore NMFS is considering the associated environmental impacts of these related projects as a cluster.

### 5.4.1 Removal

The purpose of debris removal (sub-category 2.5 in Appendix A) or structure removal (sub-category 2.9) is to eliminate physical, biological, or chemical threats to salmon and steelhead. Physical threats, which include fishing gear, household solid waste, abandoned vessels, pilings, piers, floating decks and docks, degrade the quality of the habitat or directly harm biological resources. Biological threat removal targets invasive species such as weeds, plants that adversely affect native riparian vegetation, soils, or streamflow, as well as fish species (NOAA 2015). Chemical threats include solid waste, mine or dredge tailings, herbicides, pesticides, or toxic sediments (sub-category 2.7, Appendix A).

Debris can be removed by hand, mechanical methods, or by divers with lift bags. Debris removal activities ultimately restore habitat for aquatic species and reduce the hazards of debris. The removal

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<sup>13</sup> 11-1419E (2010), 11-1672E (2011), and 14-2262E (2013) all with the state of Washington.



results in short-term beneficial impacts to water quality and aesthetics, long-term beneficial impacts to biological resources and their habitats in the project area and downstream.

The removal will also cause short-term adverse effects to **physical** resources in the immediate habitat, from trampling, increases in turbidity, and potential releases of contaminants (e.g. creosote from pilings and fuel from abandoned vessels). **Biological** resources may also be impacted. Mobile aquatic resources may be temporarily disturbed, while sessile resources may be killed or injured. Shore-based supporting activities would disturb terrestrial habitat and species through trampling, noise, and displacement. The use of heavy equipment or motor vehicles for access to the site and removal of the debris would create construction-related impacts, including impacts to air quality and climate change.

On the **human dimension**, NMFS recognizes that cultural and historic resources may be impacted during debris removal activities (see Section 5.2.3). However, since the state and tribes are the lead project recipients, they would ensure coordination with the SHPO or THPO and ensure that impacts are not significant. Aesthetics and recreation uses may be enhanced with these removals.

None of these impacts, short- or long-term, are expected to be significant. NMFS expects that standard industry BMPs will be followed: construction vehicle operators have BMPs for operating in riparian areas, while debris removal and salvage companies are well versed in minimizing contaminant releases during their operations. Details on construction-related impacts and BMPs are presented in Section 5.2.1.

Invasive species control (biological threats) ultimately benefits the ecosystem by allowing native species the change to re-establish. Section 4.5.2.4.1 of the Restoration PEIS describes the short-term adverse and long-term beneficial impacts of invasive plant and fish removal (NOAA 2015). NMFS summarizes and incorporates that section by reference. The PEIS shows that short-term adverse effects from herbicides would be minimized by following local established protocols and BMPs. All BMPs that minimize the short-term adverse impacts are described. The long-term benefits to water resources and species, described in the FEIS, outweigh the short-term impacts to the same species and soils during the in-water work window.

None of the impacts are significant given the small scale of the activities spread out across the six-state area and a five-year period for each annual funding cycle.

#### 5.4.2 Instream Flow

Instream flow activities are designed to maintain access to water for humans while maintaining habitat needs for aquatic resources. Activities that the PCSRF may support (sub-category 2.3 in Appendix A) include providing appropriate levels of in-stream flow, providing off-channel watering systems for livestock while maintaining in-stream water quality, and maintaining the availability of water for fire suppression (e.g., dry hydrant systems). Past projects have included flow monitoring and management, installing storage tanks, water saving measures (e.g., seepage reduction and gravity irrigation), or installing wells to eliminate diversions.

Instream flow activities are designed to increase, maintain, or provide more reliable flow, thereby benefitting both **physical** and **biological** resources and the **human dimension** in the long-term. These flows generate higher dissolved oxygen levels, increased nutrient exchange between habitats, unimpeded fish migration and feeding, and cooler water temperatures. Increased or more reliable flows

may prevent fish eggs from being desiccated due to dropping water levels. Agriculture, livestock, and businesses may benefit from more reliable flows and operating environment. The long-term, beneficial impacts extend well beyond the project site.

The immediate project area will experience short-term adverse effects. Construction activities will adversely affect **physical resources** by impacting geology and soils through grading and trenching activities; stream flow and stream gravels through temporary coffer dams or berms; and water turbidity and flow through instream pump and pipe modifications. Shore-based supporting activities (see Section 5.2.1) will also result in short term impacts to **physical, biological, historical, or cultural** resources.

**Biological resources** would be adversely impacted by turbidity, noise, altered hydrology, and displacement. Fish and amphibians may be relocated if dewatering is required. Handling effects were discussed in Section 5.2.2.

Longer term adverse impacts are possible. Increased water flow may inundate streamside habitats that were not previously wet during dry periods. However, these changes are unlikely to extend beyond the historic floodplains and would help improve the riparian habitat. New pumping facilities should be adequately screened to avoid injury to fish.

Instream flow activities will create short- and long-term benefits, while potentially causing some short-term adverse effects. The degree or intensity of the effects will depend on the scale of the project. The installation of a flow meter will have different degree of effect than the conversion of a long irrigation ditch to pipes. Given the scale of PCSRF funded activities in this category, standard industry mitigation measures, and the results from previous similar analyses (e.g., NMFS 2020b), NMFS expects the short-term adverse effects will be offset by the long-term benefits and does not expect any significant impacts associated with this cluster of projects.

#### 5.4.3 Water Acquisition

Water acquisition (sub-category 2.3 in Appendix A) seeks to preserve or increase water quantity within rivers to conserve freshwater biodiversity while maintaining the human water needs. Water acquisition agreements would provide temporal and quantitative assurances that would result in reduced water withdrawal during low flow or environmentally sensitive periods. The agreements may include water rights acquisition and transfers, long-term and permanent water easements, temporary forbearance agreements, or other financial incentives to improve in-stream flows (e.g., short-term and split-season leasing, source switching, point of diversion changes, and rotational pooling agreements) (NOAA 2015).

Acquisition projects would improve the environment and/or enhance human use values (e.g., recreation) following completion. In the case of transfer or purchase of credits developed through a conservation or restoration bank, typically by a nonfederal entity, the effects on the environment are independent of the federal action, and no further environmental impacts would be expected (NOAA 2015).

Beneficial impacts will accrue to **physical** resources (soils and habitat) and **biological** resources (fish and other wildlife that require water during low flow periods). In the **human dimension**, depending on the nature of the acquisition project, recreational opportunities may be improved as natural areas and ecosystems are preserved, while cultural and historic resources, if located on a protected parcel, would

benefit from not being disturbed by development or other degrading activities that might otherwise occur (NOAA 2015).

Adverse impacts to agriculture or other water-using land use may occur if less water is available. However, NMFS anticipates these effects would be minor; the seller would not likely engage in a voluntary transaction and elect to experience significant land use impacts.

#### 5.4.4 Other Water Quality Initiatives

Directed habitat projects, such as fish passage improvement, described under [Cluster 4](#) also improve water quality. However, the initiatives described in this section (Section 5.4.4) are generally efforts specifically directed at water quality and not part of a larger restoration project.

Initiatives to improve water quality are either designed to put nutrients in or prevent further damage to water resources. Projects in the first category are carefully designed and supported by research to ensure appropriate inputs, monitor effectiveness, and adaptively manage the outcomes. For example, in a PCSRF-supported on-going lake nutrient enhancement program, sub-recipients add liquid nitrogen and phosphorus fertilizers weekly by boat, monitor physical, biological, and chemical variables, and manage data and maintained equipment. The nutrient prescription was intended to enhance production of edible phytoplankton and zooplankton, the food source of sockeye fry, while avoiding the occurrence of nuisance algae responses.

Projects may directly replenish nutrients upstream. Spawning salmon serve an important role in the flow of nutrients back upstream, from the productive marine environment to relatively unproductive terrestrial ecosystems. Birds, mammals, and aquatic invertebrates feed directly on spawned salmon and steelhead carcasses, and the decomposer communities (i.e., organisms including bacteria, fungi, and invertebrates) that develop on carcasses are, in turn, consumed by other aquatic invertebrate species (Sections 3.5.6.5 and 4.5.3.4, NMFS 2014). PCSRF funding supports hatchery operators that place carcasses of fish spawned at hatcheries into streams. Where salmon carcasses are not available, sub-recipients may opt to use fishmeal bricks.

These replenishing projects result in small, incremental benefits to **physical** and **biological** resources. They do not measurably impact resources in the human dimension. While excessive releases of nutrients may result in adverse effects, constant monitoring and incremental release of nutrients into water bodies reduces the degree of these potential impacts. Together, the accrued benefits and low risk of adverse impacts results in less than significant impacts.

Projects in the second category, those designed to prevent further adverse impacts to water quality, also accrue small, incremental benefits to physical and biological resources with possible adverse effects. These projects may be targeted at specific polluted areas (e.g., sewage clean-up or enhancements to sewage outfalls or failed septic systems) or at the prevention of future inputs. They may be initiated in upland areas or in the riparian zones. The initiatives in this category (2.7 in Appendix A) capture unwanted pollutants from entering the water and influencing water quantity in a variety of innovative ways, not limited to the following:

- Stormwater or wastewater modification or treatment for point sources.
- Replacing old open return ditches with underground pipes.
- Rain gardens, planting for erosion and sediment control, or bioswales for runoff.

- Erosion control structures (sediment basins, collection ponds or traps, or water bars).
- Invasive species prevention.
- Clean-up or reduction of mine or dredge tailings, herbicides, pesticides, or toxic sediments.
- Temperature reduction of returning extracted water that is used for cooling.

Some of these efforts may result in adverse effects if not managed carefully. Professional companies and contractors that deal with tailings, toxins, herbicides, invasive species, or wastewater will comply with all government requirements and implement best management practices that are part of the industry standards. The definition of negligible from the NEPA Companion Manual (NOAA 2017) incorporates “procedures that employ generally accepted industry standards or best management practices that have been tested and verified at the time an activity is proposed.”

NMFS therefore does not anticipate any significant beneficial or adverse effects given the small nature of the initiatives, the degree or intensity of the problems that PCSRF recipients and sub-recipients undertake, and industry norms.

#### 5.4.5 Other Terrestrial Activities

Appendix A (sub-category 2.6) captures other upland terrestrial projects that are also intended to improve or protect water quality. These projects, spanning roads, trails, campgrounds, agriculture, livestock, forestry, and slope stabilization, address three primary salmon recovery-related objectives: sediment management, water use reduction, and overall ecosystem improvement.

##### Roads, Trails, and Campgrounds

Road projects prevent sediment, oils, brake pads, and other vehicle residue from being delivered into water bodies. Projects include road system drainage improvements; road reconstruction; roadside vegetation enhancements; parking lot or road closure, abandonment, or decommissioning or removal; and road relocation from riparian areas or instable slopes. Efforts relating to road closure (including abandonment or relocation) also improve ecosystem functioning by allowing the natural processes to reclaim the previously disturbed land. Trail and campground repairs or relocation aim to achieve these same outcomes (sediment management and ecosystem functioning).

Section 2.2.2.7 of the Restoration PEIS (NOAA 2015) elaborates on the advantages of road and trail improvement or decommissioning efforts and is incorporated by reference. Advantages include vehicle restrictions, reduced maintenance needs, and restoration. The short-term adverse impacts to **physical** and **biological** resources, are common to all construction efforts as described in Section 5.2 of this PEA, and for the same reason as other PCSRF supported construction activities discussed in this PEA, are not expected to result in significant impacts (Section 4.5.2.7, NOAA 2015). These projects are unlikely to incur any handling of aquatic resources given that they largely occur outside of the riparian area.

##### Agriculture

Improved upland agriculture management practices reduce water through low or no-till agriculture, conservation land management, and irrigation water management. Some of these elements are discussed in the NMFS 2020 Environmental Assessment for the Issuance of a Safe Harbor Agreement for Conservation of Coho Salmon in the Shasta River in California (NMFS 2020b). These efforts may include instream flow activities described above (including irrigation improvement, water or tailwater recovery,

gated pipes, and removal of small dams). These activities would result in similar, non-significant short-term adverse effects associated with instream flow projects and all construction projects. Long-term, non-significant beneficial **physical** and **biological** effects with improved water flow and benefits to the **human dimension** with improved agricultural practices are anticipated.

#### Livestock

Upland livestock management practices reduce water consumption and divert manure and sediment from entering the water system. Initiatives include livestock watering schedules, conservation grazing management plans and rotational grazing, livestock water development (off-channel watering, installation of upland ditches, wells, and ponds), livestock manure management, and relocation or modification of livestock manure holding structures and/or manure piles. Initiatives aimed at removing livestock from direct contact with water include upland exclusion and fencing, fenced livestock stream crossings, or installation of livestock bridges.

These activities also result in non-significant short-term adverse and long-term beneficial **physical** and **biological** effects similar to the instream flow projects and all construction projects. In addition, the efforts are expected to provide both short-term adverse effects for land owners (increased labor, materials, and changes in livestock management practices) and long-term benefits (water savings and associated costs). None of the effects are expected to be significant given the small scale of the interventions, industry BMPs, and previous NMFS analysis of such efforts (e.g., NMFS 2020b).

#### Slope Stabilization

Slope stabilization efforts include landslide reparation and non-agricultural terracing. These efforts reduce sediment displacement into water bodies and offer greater stability for vegetation and other ecosystem functions. The magnitude of benefits diminish the further away the project site is from a riparian zone.

Given the scale of PSCRF funding, these activities are expected to be small-scale stabilization-focused activities with proportional impacts. Construction-related impacts will be similar to those discussed under the construction section earlier in this chapter. NMFS does not anticipate significant **physical** or **biological** impacts or impacts to the **human dimension** given the small scale of the interventions and industry BMPs.

#### Forest Management

These efforts comprise prescribed burning and silviculture.

##### *Prescribed Burning*

Prescribed burning is an effective method of controlling various invasive plant species or other non-native plant species while simultaneously stimulating the growth of native plants and encouraging the development of a broader diversity of organisms that previously occurred there.

Short-term impacts to **biological** resources, some of which may be fatal for organisms that may not be able to move out of the burn area, will occur. Short-term adverse impacts to **physical** resources, including sediment movement into streams, elimination of cover and material used for insulation,

elimination of moisture, and the retention of heat due to burning, may extend beyond the project site. Controlled burns contribute to adverse air quality and greenhouse gas emissions (NOAA 2015).

As a management tool, prescribed burning recycles nutrients tied up in old plant growth, eliminates many woody plants and herbaceous weeds, improves poor-quality forage, increases plant growth, reduces the risk of large wildfires, and improves certain wildlife habitat. These long-term benefits outweigh the short-term adverse effects. Within the **human dimension**, cultural and historic resources would be protected from long-term impacts by excluding them from burn areas (NOAA 2015).

Past PCSRF-funded prescribed burns have generally covered less than 2,000 acres per project. These small-scale efforts are targeted and result in reduced adverse effects when combined with appropriate management efforts (e.g., a burn plan that is subject to state or local fire jurisdictions, that minimizes or avoids impacts to water and air resources, requires burn to take place when ESA-listed species are the least vulnerable and wind speeds are appropriate, ensuring firefighting equipment and personnel on standby, protecting adjacent land uses and water bodies, and ensuring safety to people and property). The reduced adverse effects are outweighed by uncontrolled wildfires that may occur in the absence of prescribed burns. The loss of vegetation associated with wildfires could increase erosion and sedimentation as well as increase peak flows as more groundwater becomes available for streamflow. When considering all of these factors (scale, local oversight, management) and the adverse effects of not funding prescribed burns, the overall adverse effects of small, controlled prescribed burns are not significant.

### *Silviculture*

Silviculture encompasses a variety of management tools including stand thinning, stand conversions, invasive plant removal, and undergrowth removal. The goals of silviculture within the context of habitat conservation are to 1) increase resistance/resilience of forests stands to wildfire, drought, insects, and disease; 2) to restore more characteristic stand structure and species composition; 3) to maintain and promote structural complexity (e.g., increase growing space and decrease competition); 4) to maintain critical habitat for wildlife (BLM 2014).

Future silviculture efforts will comply with any applicable federal, state, and local forest management requirements, including prescriptions for minimum riparian buffer areas, tree retention requirements, and noise disturbance prevention windows. Vegetative treatments have and will continue to occur as part of any silviculture maintenance program.

Short-term impacts to **physical** resources, both during and after silviculture activities are completed, include sediment dislodged from vehicle and heavy equipment use. However, roads are generally located outside of riparian buffers that serve an important filtering role. Coupled with standard forestry BMPs for roads and sedimentation, the short-term adverse effects on water resources will not be significant (BLM 2014). Stream temperatures would not be affected by silviculture activities, as work is generally excluded from riparian buffers. Forest activities could adversely impact carbon storage. However, silviculture activities that result in improved tree resilience, species composition, and structural complexity lead to a net increase in carbon storage (BLM 2014).

**Biological** resources will be impacted by noise and disturbances from silviculture activities. Each species will respond differently to changes, non-sessile species may relocate out of the work areas. The effects to species associated with these forest habitats are measured by the magnitude (total treatment acres)

and intensity of the treatments, both of which would be small for PCSRF grants (Section 3.2.3). Effects are also linked to changes in ecosystem function resulting from silviculture management. These effects are expected to be beneficial in the long-term.

Herbicides may be used in silviculture activities to control invasive species. Exposure to herbicides could have lethal and sub-lethal effects on **biological** resources depending on their sensitivities. This exposure can lead to changes in physiological or behavioral functions that can adversely affect the survival, reproductive success, or migratory behaviors. Herbicide application is only done by qualified individuals and designed to reduce impact to non-target species and surface waters. Some jurisdictions restrict herbicides in the riparian zones. Project proponents will have to obtain necessary permits and consultations before proceeding with a project involving herbicides. All appropriate BMPs will be used to minimize any such releases and environmental impacts to a level of non-significance. Long-term beneficial impacts to threatened and endangered species, and to the ecosystem as a whole, will result as non-native species are replaced by diverse native plant communities.

Therefore, while some species may be adversely impacted by silviculture activities, the overall benefits to the ecosystem health will allow for rapid growth. Given the small scale of these efforts, and the coordination with other resource agencies, the net adverse impacts will not be significant. The long-term benefits of managed silviculture include large wood recruitment for engineered and non-engineered logjams that also benefit aquatic resources.

Within the **human dimension**, silviculture activities may have short-term adverse effects on recreation users; however, these activities are spread out over time and space and forest managers do not generally close entire areas at the same time. The effects are not considered significant.

## 5.5 Cluster 4: Directed Restoration Projects

This cluster encompasses projects that have the greatest amount of physical work. Projects in this cluster may interweave more than one restoration action<sup>14</sup>. For example, a fish barrier project removal may include a fish screen, sediment removal, channel reconstruction, shoreline planting, and bank stabilization.

### 5.5.1 Definitions and Purposes

This section summarizes the actions and their individual purpose(s).

#### Beaches and shorelines

1. **Beach re-nourishment**<sup>15</sup> or replenishment provides clean sediment for beaches that have been degraded from human-caused activities or washed away due to natural and human initiated processes (Section 2.2.2.1, NOAA 2015). The new material is transported to the site and placed above the mean high water mark, distributed over the entire beach, or placed in an offshore sand bar. Rakes, bulldozers, or natural processes may distribute the sand, which will be reworked by wind or wave action to establish equilibrium beach slope profiles.

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<sup>14</sup> Definition and grouping of actions in this section (e.g., fishways, culverts, wetlands) are adapted from the definitions in NOAA 2015 and the PCSRF categories and sub-categories in Appendix A.

<sup>15</sup> Item number and **bold** text match the row headings in Table 4.

2. **Shorelines, wetlands, and banks**, may involve stabilization, expansion, and other activities, including riparian planting, fencing or exclusion to help restore natural habitats, reduce erosion, and improve water quality. Approaches may include planting, large wood recruitment, bioengineering, removal of shoreline armoring, stabilizing structures (living shoreline, green armoring, or bioengineering) that facilitate vegetation growth, stormwater management, wetland restoration or creation, erosion and sediment control, and non-native or invasive species removal and control (Sections 2.2.2.5.2 and 2.2.2.7.2, NOAA 2015).

Fish passage, screening, hydrology, and channels

3. **Fish Passage** improvements allow for upstream passage past a particular migratory obstruction. Restoration may completely remove migration barriers or provide some level of improved passage (e.g., fishway) (Section 2.2.2.3, NOAA 2015). Project proponents generally establish a long-term operational and maintenance plan to ensure the effectiveness of the fishway. Construction of a fishway is often completed with less site disturbance because the barrier is only modified and not removed entirely from the site. Fish passage barrier removal is a high priority in many recovery plans (Appendix B).
4. **Dams, culverts, screens** and similar infrastructure (e.g., weirs, concrete trapezoidal channels, seasonal push-up dams, failed step/pool structures, stream crossings) may be removed, modified, or replaced to protect fish from entrainment, enhance fish passage, and improve habitat function (Section 2.2.2.3.1, NOAA 2015). These efforts generally require the placement of temporary fill into the water body and surrounding areas for equipment access, isolating the work area, and dewatering the stream channel via constructed side channels or installed pipes. Pre-existing transportation structures may have to be recreated if the previous structure provided for a pedestrian, road, or rail bridge.
5. **Levees, berms, dikes, tide gates**, and similar infrastructure may have to be removed or modified to enhance or restoring natural flow and hydrology (Section 2.2.2.11.1, NOAA 2015). These efforts require the physical removal of the structure, construction of replacement set back structures that expand aquatic habitat while protecting adjacent infrastructure, or channel reconstruction. As noted in Appendix A, PCSRF funding does not support dams or other perpendicular obstructions to flow in the estuarine or nearshore area. Efforts may involve the alteration or removal of barriers or structures that prevent tidal or riverine access to the estuary. Grading may be required to restore elevations appropriate for wetland function (NOAA 2015). Climate change impacts greatly influence the design of these projects; the upgrading of older structures to address changes in water flow resulting from climate change projections offer project proponents the opportunity to upgrade habitat at the same time.
6. **Channel connectivity and off-channel** features such as side channels, ponds, and oxbows provide fish with refuge from high-velocity winter flows, provide ample and diverse food resources for accelerated growth, and capture fine sediments that can cause excess turbidity. Habitat quality is increased when wood, brush, and boulders are placed in these off-channel habitats. They also provide floodplain water storage capacity, thus reducing flooding damages (Section 2.2.2.5.1, NOAA 2015). Projects may require excavation; wood,



gravel, or boulder placement; channel shaping or sediment removal; and floodplain roughening or fencing.

#### Wetland and subtidal planting

7. **Wetland planting** involves placing shrubs or trees in high marsh, floodplains, and other frequently flooded areas (Section 2.2.2.7.5, NOAA 2015).
8. **Submerged aquatic vegetation** restoration involves transplanting or seeding nearshore or subtidal habitats in bays and estuaries (Section 2.2.2.6.1, NOAA 2015). Seagrass beds dampen wave energy, stabilize sediments, improve water quality, and provide food and shelter for marine organisms.
9. **Marine algae** (kelp forests and seaweeds) are important structural components of the near-shore marine environment that provide nursery and feeding grounds for marine species. They are also instrumental in the carbon sequestration process, which is important to maintaining healthy CO<sub>2</sub> levels in the environment. Methods of restoration includes transplanting, moving algae attached to boulders, or transplanting the receptacles (reproductive structures) in mesh bags to facilitate release of gametes (Section 2.2.2.6.2, NOAA 2015).

#### 5.5.2 Environment Effects

The intensity or degree of effects depends greatly on the duration of the work and the size of the site. Sites for submerged aquatic vegetation planting tend to be small, due to the hands-on, very time-intensive nature of the work (NOAA 2015). Larger fishway, fish screening, or road culvert projects may take substantially longer.

All types of restoration actions will result in some form of short-term **construction**-related impacts as defined in Section 5.2.1. The intensity or degree of short-term, direct effects to the project site will depend on the type of activity. For example, a small-scale, manual wetland planting project will involve minimal transportation to the site, limited vehicle trampling or soil compaction, human activity, and minor disturbances to aquatic and terrestrial biological resources. On the other hand, a road culvert replacement project may involve heavy machinery, dewatering, temporary channels, and handling and temporary removal of fish. Other effects are proportional to the intensity of construction vehicles. The manual wetland planting, with only a few light trucks, would have substantially fewer impacts to air quality and greenhouse gases, noise, and traffic. The movement of a large crane for the culvert project would result in a greater degree of these impacts.

The following table identifies the environmental resources introduced in Section 3.2 for which NMFS can determine a short- or long-term impact that results from restoration activities. Blank spaces indicate a negligible impact. Details on each action's impacts are presented after the table.

**TABLE 4: RESTORATION ACTIONS AND IMPACTS**

Restoration Action	Water Quality	Hydrology	Aquatic Resources	Terrestrial Resources	Social or Econ
1. Beach re-nourishment	Short: A Long: B		Short: A Long: B	Short: A Long: B	Long: B
2. Shorelines, wetlands, and banks	Short: A Long: B	Short: A Long: A/B	Short: A Long: B	Short: A Long: B	
3. Fish passage	Short: A	Short: A	Short: A Long: B	Short: A	
4. Dams, culverts, screens	Short: A Long: B	Short: A Long: B	Short: A Long: B	Short: A Long: B	Long: A/B
5. Levees, berms, dikes, tide gates	Short: A Long: B	Short: A Long: B	Short: A Long: B	Short: A Long: B	Long: A/B
6. Channel connectivity and off-channel features	Short: A Long: B	Short: A Long: B	Short: A Long: B	Short: A Long: B	Long: A/B
7. Wetland planting	Short: A Long: B		Short: A Long: B		
8. Submerged aquatic vegetation	Short: A Long: B		Short: A Long: B		
9. Marine algae	Short: A Long: B		Short: A Long: B		

Adapted for PCSRF from Table 11 of the Restoration PEIS (NOAA 2015).

Impacts may be (A)dverse, (B)eneficial, or unknown (A/B). Impacts may be Short-term or long term.

### Physical Resources

All actions supported by PCSRF funds are intended to restore and/or protect habitat to help protect, conserve, or restore salmonids. Therefore, all activities that impact **water quality** would result in incremental, marginal, **long-term** benefits. Fish passage activities (actions 3 in Table 4) are not designed to impact water quality and therefore have no long term impact. Work on dams, culvers, levees, berms, dikes, tide gates, channel connectivity and off-channel features (actions 2, 4, 5, and 6) are designed to improve ecosystem functioning (and therefore water quality) in the long-term, returning the habitat to a more natural state. Beach nourishment activities (action 1), may result in a long-term beneficial impact if it reduces bank erosion, associated increased sediment, and discourages encroachment of homes or other structures into the nearshore environment. Planting activities (actions 7, 8, and 9) increase the presence of roots and vegetation, leading to long-term soil stabilization, sediment retention, and filtering that help improve water quality (NOAA 2015).

All activities require in-water and/or shore-based equipment work that can disturb sediment and increase turbidity in the project area, thereby resulting in **short-term** adverse effects to **water quality**. Wetland planting, submerged aquatic vegetation, and marine algae planting are generally performed by hand, with negligible impacts to water quality, although some projects may require heavy equipment for the delivery of materials or to move boulders or concrete anchors to which plants are attached.

Work on dams, culvers, levees, berms, dikes, tide gates, channel connectivity and off-channel features (actions 4, 5, and 6 in Table 4) are designed to improve **hydrology** in the **long-term** by returning the habitat to a more natural state. Work on shorelines, wetlands and banks (action 2) are likely to result in

mixed long-term impacts to downstream hydrology depending on the nature of the work and the conditions of the surrounding riparian areas.

Some activities will not impact hydrology in the short- or long-term (actions 1, 7, 8, or 9). Other actions (2, 3, 4, 5, and 6) that require some form of work on banks, waterways, or channels, would result in **short-term** adverse effects to **hydrology**. The degree of those effects depends on the type and scale of the work. Work on fish passages, dams, culverts, screens, and tide gates all require in-water diversions during construction and therefore result in a greater degree of short-term impacts.

Overall, given the scale of the projects (see Section 3.2.3), the duration, degree, and mitigation of construction work (Section 5.2.1), any short-term adverse impacts to water quality and hydrology will be limited to the work area and will quickly dissipate to a non-significant level. Long term impacts will be beneficial and not significant.

When considering the short-term adverse effects and the long-term local beneficial effects within the scale of the action area, the size of the individual projects, and the reasonably foreseeable future actions (see Section 3.3), the proposed action will result in an important contribution to improvements in water quality and hydrology across the six-state project area.

These actions have no impact on land use; all work in this cluster will occur in or immediately adjacent to the water ways and not alter or restrict land use beyond the construction staging zones or access areas. These zones or areas would be returned to their original use after the work is completed. As discussed in Section 5.2.1 on construction, heavy machinery will adversely impact emissions, but these impacts will be less than significant given the scale of these projects and the construction BMPs discussed earlier.

#### Biological Resources

All restoration actions supported by PCSRF funds are intended to restore and/or protect habitat to help protect, conserve, or restore salmonids. NMFS assumes that at the project scale, long-term benefits to salmonids also accrue to other **aquatic species**, albeit at different magnitudes. Therefore, all activities result in **long-term** improvements to aquatic species (other fish, invertebrates, and vegetation). However, all aquatic species would experience short-term adverse effects from construction. The degree of the effects will vary depending on the type of activity. For example, the adverse effects on fish disturbed by hand planting of kelp (action 9) would be negligible, while the adverse effects on fish from temporary handling and dewatering for a fish screen installation would be greater. Best management practices and techniques for reducing impacts to **aquatic resources**, as discussed in the construction (5.2.1) and handling sections (5.2.2), coupled with the **short-term** nature, small scale, and geographic spread of these projects reduce the impacts to less than significant.

**Terrestrial** resources will, as discussed in Section 5.2.1 (Construction), experience **short-term** adverse effects primarily from construction vehicle access and staging for all actions (1-6). For actions that require land-based work, for example beach re-nourishment (action 1), shorelines, wetlands and banks (action 2), levees or berms (action 5), and channel connectivity or off-channel work (action 6), vegetation management or loss of land may further exacerbate the adverse impacts.

However, the **long-term** benefits to the immediate habitat (actions 1, 2, 5, and 6) or downstream habitat (actions 3, 4, 5, and 6) would outweigh these short-term adverse impacts. These projects result

in benefits to riparian, stream and river channel habitats, beaches, and shoreline habitats such as wetlands. Restoration of natural hydrology would aid in the development of vegetated communities that provide vital rearing, feeding, and refuge habitat for fish and benthic communities and wildlife species (NOAA 2015). As discussed under Forest Management in Section 5.4.5, a net long-term increase in carbon storage is anticipated with the restoration of vegetated communities.

#### Human Dimension

Impacts to **historical and cultural resources** (see Section 5.2.3) also depend on the nature of the site, historic land uses, and intensity of the work. However, the processes identified in Section 5.2.3 for the states and tribes to address historic and cultural resources as they arise, aim to reduce the impacts such that they are not significant.

All projects both contribute beneficial **economic** and **social** impacts to the local community in the form of employment, goods, services, and taxes, while adversely impacting traffic, air quality, aesthetics, and noise in the short-term. ) However, depending on downstream riparian conditions and water use for human consumption, activities 4, 5, and 6 may result in mixed social or economic impacts.

These elements, and the associated best practices, were discussed in Section 5.2.1. Based on the discussion presented, the incremental contribution of PCSRF funding to restoration projects, and the processes that PCSRF recipients (states and tribes) have to prevent or address adverse effects, NMFS does not anticipate any significant effects to components of the **human dimension**.

## 5.6 Summary

The previous sections (5.1-5.5) describe the possible range of projects that PCSRF funding could encompass under the Preferred Alternative. These projects were divided into clusters based on their potential environmental impact. As demonstrated, each project under this alternative is expected to have a net marginal, beneficial impact on habitat, leading to benefits on water quality and salmonids. The adverse short-term and long-term impacts depend on the specific type of project. However, given the scale, BMPs, and affected environment, the adverse impacts are not expected to be significant.

The states and tribes are both able to access PCSRF funding as established by Congress and subject to the competitive process established by NMFS. Therefore, the Proposed Action does not create a disproportionate adverse effect on tribes as **Environmental Justice** populations under Executive Order 12898.

## 6 Listings

The following persons and agencies were consulted for this document:

- NMFS: Jennie Franks, PCSRF Program Coordinator; Shelby Mendez, NEPA Coordinator; Robert Markle, Portland Branch Chief, Protected Resources Division.
- Saltwater Inc.: Galeeb Kachra, author.
- NOAA General Counsel: Rachel Morris.

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## Appendices

### Appendix A: PCSRF Category Types

These categories and sub-categories constitute the options in the [PCSRF Database](#). The list may be found in the Data Dictionary, which is available using the *download* button on the Projects Page

#### 1. Salmonid Restoration Planning and Assessments

Projects that assess current or baseline salmonid habitat conditions to determine factors limiting native salmonid production and develop/implement/coordinate necessary measures to restore habitat and recover salmonid populations. There are 13 different types (sub-categories) of planning/assessment projects:

- 1.1. Development of a Recovery Plan
- 1.2. Coordination on implementation of a Recovery Plan
- 1.3. Coordination of watershed conservation and restoration efforts
- 1.4. Watershed council support
- 1.5. Tribal infrastructure support
- 1.6. Support to local entities or agencies
- 1.7. Developing monitoring plans or sampling protocols
- 1.8. Conducting habitat restoration scoping and feasibility studies
- 1.9. Evaluation/analysis of restoration plans and projects
- 1.10. Designing or maintaining restoration data systems
- 1.11. Engineering/design work for restoration projects
- 1.12. Developing restoration/action plan
- 1.13. Management or enforcement of habitat protection ordinances and regulations

#### 2. Salmonid Habitat Restoration and Acquisition

Projects that restore ecosystem characteristics and processes and address priority habitat factors that are limiting salmonid production. There are 12 different types (sub-categories) of habitat projects:

- 2.1. Fish Screens
  - New fish screens
  - Pre-existing fish screens that are replaced, repaired, or modified
- 2.2. Fish Passage Improvement
  - Fish passage blockages removed or altered
  - Fishway chutes or pools Installed
  - Culvert installed or Improved at road stream crossing
  - Bridge installed or improved at road stream crossing
  - Rocked ford - road stream crossing
  - Road stream crossing removal
  - Unspecified or other fish passage project
- 2.3. Instream flow improvement
  - water gauges
  - irrigation practice improvements
    - reducing withdrawals
    - installing a headgate with water gauge to control water flow into irrigation canals and ditches

- regulating flow on previously unregulated diversions
- installing a well to eliminate a diversion
- replacing open canals with pipes to reduce water loss to evaporation
- water lease or purchase
- maintain adequate flow or reducing withdrawals
- Unspecified or other instream flow project

2.4. Instream habitat projects

- channel connectivity
  - instream pools added/created
  - removal of instream sediment
  - meanders added
  - former channel bed restored
  - removal or alteration of levees or berms (including setback levees) to connect floodplain
  - creation of off-channel habitat consisting of side channels, backwater areas, alcoves, oxbows, ponds, or side-pools
- Channel structure placement
  - Placement of large woody debris or rocks/boulders (including deflectors, barbs, weirs)
  - floodplain roughening or fencing.
- streambank stabilization
  - resloping and/or placement of rocks, logs, or other material on streambank
- spawning gravel placement

2.5. Riparian habitat projects

- Riparian planting
- Fencing
- Riparian Exclusion
  - Preventing or removing access to riparian areas by means other than fencing
- water gap development
  - fenced livestock stream crossing or livestock bridge
- Conservation grazing management
  - Alteration of agricultural land use practices to reduce grazing pressure for conservation (rotational grazing)
- Riparian plant removal/control
- Forestry practices/stand management
  - Prescribed burns
  - Stand thinning
  - Stand conversions
  - silviculture
- debris/structure removal
- Unspecified or other riparian habitat project

2.6. Upland habitat projects

- Road drainage system improvements and reconstruction
  - placement of structures to contain/ control run-off from roads
  - road reconstruction or reinforcement
  - surface and peak-flow drainage improvements
  - roadside vegetation



- Road closure/abandonment
  - Closure (abandonment)
  - Relocation
  - decommissioning or obliteration of existing roads (including pavement such as parking areas)
- Erosion control structures installed
  - sediment basins
  - sediment collection ponds
  - sediment traps
  - water bars (other than road projects or upland agriculture)
- Planting for erosion and sediment control
- Slope stabilization
  - Landslide reparation
  - Non-agricultural terracing
- Upland vegetation management
  - Plant removal (juniper or noxious weeds)
  - Selective tree thinning
  - Undergrowth removal
  - Prescribed burning
  - Stand conversion
  - Silviculture
- Upland agriculture management
  - Low or no till agriculture
  - Conservation land management
  - Upland irrigation water management
- Upland livestock management
  - Livestock watering schedules
  - Grazing management plans
  - Upland exclusion and fencing
  - Livestock water development (off-channel watering, installation of upland ditches, wells, and ponds)
- Trail or campground improvement
- Upland wetland improvement
- Unspecified or other upland project

#### 2.7. Water quality projects

- Refuse/debris removal
- Sewage clean-up
  - Sewage outfalls and failed septic systems
- Toxin reduction
  - Clean-up/reduction of min or dredge tailings, herbicides, pesticides, or toxic sediments
- Carcass or nutrient placement
  - Salmonid carcasses
  - Fishmeal bricks
  - Other fertilizer in or along stream for nutrient enrichment
- Livestock manure management

- Relocation/modification of livestock manure holding structures and/or manure piles to reduce or eliminate drainage into streams
  - Stormwater wastewater modification or treatment
    - Bioswales and rain gardens
  - Return flow cooling (extracted water that has heated during use is cooled before it is returned to the stream)
  - Replacing old open return ditches with underground PVC pipe
  - Other urban impact reduction activity
- 2.8. Wetland project
- Wetland planting
  - Wetland plant removal/control
  - Wetland improvement/restoration
  - Artificial wetland created
- 2.9. Estuarine/Nearshore project
- channel modification
    - Deepening or widening an existing tidal channel
    - adding structures to improve salmonid habitat
    - creation of new channels
  - dike or berm modification or removal
    - Removal, breaching, reconfiguration or other action affecting the physical presence of barriers or structures that prevent tidal or riverine access to the estuary
    - lateral structures only
    - does not include dams or other perpendicular obstructions to flow
  - tidegate alteration/removal
  - estuarine culvert modification/removal
  - removal of existing fill material not associated with a dike
  - fill placement
  - regarding slope
  - estuarine plant control/removal
  - removal/modification of shoreline armoring
  - beach nourishment
  - contaminant removal/remediation
    - Physical removal (through chemical remediation or biological treatment, if possible)
    - prevention of contaminant sources (stormwater modification)
  - debris removal
  - overwater structure removal/modification
    - piers, floating decks and docks
  - Exclusion devices
    - Fencing
    - Mooring buoys
    - Boardwalks/trails
  - Creation of new estuarine area
  - Estuarine planting
- 2.10. Land/Easement Acquisition or lease
- 2.11. Site maintenance
- 2.12. Pre-restoration acquisition and nursery operations
- purchase restoration structures or equipment for future projects

- nursery operations for plants to be used in future projects

### **3. Salmonid Hatcheries and Harvest Management**

Projects that are for enhancing naturally spawning anadromous salmonid populations through improvements to hatchery production and/or supplementation. There are 4 different types (sub-categories) of hatchery/harvest projects:

#### **3.1. Hatchery Production**

- Collect and spawn adult salmon
- Incubate eggs
- Rear and maintain fry/smolt in a hatchery facility or pond
- Outplant fry/smolt
- Hatchery operations-facility or equipment
  - Purchase, replacement or modification of equipment or structures

#### **3.2. Fish Marking**

- Marking or tagging hatchery salmonids (clipping or coded wire tags)
- Purchase, replacement, or modification of marking equipment (including marking trailers) or development of new technology for marking/tagging

#### **3.3. Harvest Management**

- Fishery evaluations
- ESA fishery management plans development
- Fisheries management improvements
  - Regulations/management actions
- Enforcement
- Fishing strategy or gear development

#### **3.4. Hatchery Reform**

- Hatchery assessments
- Hatchery reform development/implementation
  - HGMP development for facilities

### **4. Salmonid Research, Monitoring, and Evaluation (RME)**

Field projects that conduct research or monitoring/evaluation. There are 2 different types (sub-categories) of RME projects:

#### **4.1. Monitoring projects**

- Adult salmonid population monitoring
- Salmonid smolt or fry monitoring
- Biological instream monitoring (other than salmon)
- Redd counts
- Carcass counts
- Harvest monitoring
- Test fishery
- Water quality monitoring
- Water quantity monitoring
- Ocean condition monitoring
- Habitat condition monitoring
- Post-project implementation or design compliance monitoring

- Restoration effectiveness monitoring
- Restoration validation monitoring
- Intensively monitored watersheds
- Monitoring effectiveness of forest management strategies
- Monitoring stormwater, wastewater, or sewage outfall
- Predator/competitor monitoring

4.2. Research project

- Modeling and data analysis
- Tissue sampling and analysis
- Genetic analysis
- Life history study
- Habitat attribute study
- Wild salmonid tagging/marking study
- Investigating fish health/disease/parasites
- Climate change studies

**5. Public Outreach, Education, and Landowner Recruitment**

Projects that educate constituencies on the value and types of actions that should be taken for conservation, restoration, and sustainability of Pacific salmonid populations and their habitat. There are 3 different types (sub-categories) of outreach projects:

5.1. Outreach/education

- Outreach documents/reports
- Exhibits/posters
- Media material
- Interpretive signs
- Outreach events
- Workshops/trainings
- Presentations at educational institutions

5.2. Landowner recruitment

5.3. Interpretative site

- Viewing structures/platforms developed

**6. Program Administration**

Oversight and administrative activities conducted by the grantee or Subgrantee to disperse funds to contractors/sponsors and support PCSRF projects. This category consists of grantee administrative overhead costs and does not include individual project, contractor or sponsor costs.

## Appendix B: Pacific Salmon and Steelhead Recovery Plans

*As of April 5, 2021*

NMFS Pacific Salmon and Steelhead Recovery Plans	<i>Date Published</i>
ESA Recovery Plan for the Puget Sound Steelhead Distinct Population Segment ( <i>Oncorhynchus mykiss</i> )	12/30/2019
Recovery Plan for Snake River Spring/Summer Chinook Salmon and Snake River Basin Steelhead	11/30/2017
Recovery Plan for Snake River Fall Chinook Salmon	11/1/2017
Recovery Plan for Oregon Coast Coho Salmon	12/1/2016
Final Coastal Multispecies Recovery Plan for California Coastal Chinook Salmon, Northern California Steelhead and Central California Coast Steelhead	10/1/2016
Recovery Plan for Snake River Sockeye Salmon ( <i>Oncorhynchus nerka</i> )	6/8/2015
Recovery Plan for The Evolutionarily Significant Units of Sacramento River Winter-run Chinook Salmon and Central Valley Spring-run Chinook Salmon and the DPS of California Central Valley Steelhead	7/1/2014
Final Recovery Plan for the Southern Oregon/Northern California Coast Evolutionarily Significant Unit of Coho Salmon ( <i>Oncorhynchus Kisutch</i> )	1/1/2014
Final Recovery Plan for South-Central California Steelhead	12/1/2013
Recovery Plan for Lower Columbia River Coho Salmon, Lower Columbia River Chinook Salmon, Columbia River Chum Salmon, and Lower Columbia River Steelhead	6/1/2013
Recovery Plan for the Evolutionarily Significant Unit of Central California Coast Coho Salmon	9/1/2012
Southern California Steelhead Recovery Plan	1/1/2012
Upper Willamette River Conservation and Recovery Plan for Chinook Salmon and Steelhead	8/5/2011
Recovery Plan for Middle Columbia River Steelhead Distinct Population Segment	11/30/2009
Recovery Plan for Lake Ozette Sockeye Salmon ( <i>Oncorhynchus nerka</i> )	5/4/2009
Recovery Plan for Upper Columbia Spring Chinook Salmon and Steelhead	8/01/2007
Recovery Plan for Puget Sound Chinook Salmon	1/19/2007
Hood Canal & Eastern Strait of Juan de Fuca Summer Chum Salmon Recovery Plan	11/15/2005

## Appendix C: Acronyms

BMPs	Best Management Practices
CEQ	Council for Environmental Quality
CFR	Code of Federal Regulations
DOC	Department of Commerce
EA	Environmental Assessment
EFH	Essential Fish Habitat
EJ	Environmental Justice
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FONSI	Finding of No Significant Impact
HGMP	Hatchery Genetic and Management Plan
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
PCSRF	Pacific Coastal Salmon Recovery Fund
PEIS	Programmatic Environmental Impact Statement
PEA	Programmatic Environmental Assessment
SHPO	State Historic Preservation Officer
THPO	Tribal Historic Preservation Officer
USFWS	United States Fish and Wildlife Service

## Appendix D: Finding of No Significant Impact (FONSI)

### **I. Purpose of Finding of No Significant Impact (FONSI):**

The National Environmental Policy Act (NEPA) requires the preparation of an Environmental Impact Statement (EIS) for any proposal for a major federal action significantly affecting the quality of the human environment. 42 U.S.C. § 4332(C). The Council on Environmental Quality (CEQ) Regulations direct agencies to prepare a Finding of No Significant Impact (FONSI) when an action not otherwise excluded will not have a significant impact on the human environment. 40 CFR §§ 1500.4(b) & 1500.5(b). To evaluate whether a significant impact on the human environment is likely, the CEQ regulations direct agencies to analyze the potentially affected environment and the degree of the effects of the proposed action. 40 CFR § 1501.3(b). In doing so, agencies should consider the geographic extent of the affected area (i.e., national, regional or local), the resources located in the affected area (40 CFR § 1501.3(b)(1)), and whether the project is considered minor or small-scale (NAO 216-6A CM, Appendix A-2). In considering the degree of effect on these resources, agencies should examine both short- and long-term effects (40 CFR § 1501.3(b)(2)(i); NAO 216-6A CM Appendix A-2 - A-3), and the magnitude of the effect (e.g., negligible, minor, moderate, major). CEQ identifies specific criteria for consideration. 40 CFR § 1501.3(b)(ii)-(iv). Each criterion is discussed below with respect to the proposed action and considered individually as well as in combination with the others.

In preparing this FONSI, we, the National Marine Fisheries Service (NMFS) reviewed the Pacific Coastal Salmon Recovery Fund (PCSRF) Programmatic Environmental Assessment (PEA), which evaluates the affected area, the scale and geographic extent of the proposed action, and the degree of effects on those resources (including the duration of impact, and whether the impacts were adverse and-or beneficial, and their magnitude). The PEA is hereby incorporated by reference. 40 CFR § 1501.6(b). Based on the information presented in the PEA, we are selecting the Preferred Alternative as described in Section 2.3, as the Proposed Action.

### **II. Approach to Analysis:**

The project constitutes the decision to annually award grants to states, tribal consortia or commissions, and tribes. The state and tribal commission/consortia recipients, in turn, sub-award approximately 15-250 sub-grants per PCSRF grant. Individual tribe recipients identify and propose approximately 1-3 projects per PCSRF grant. Each project (awarded or sub-awarded) constitutes a small-scale activity for the protection, conservation, or restoration of salmonids. Section 3.2 of the PEA describes the approach to the NEPA analysis, focusing on the relevance of resources that the Proposed Action may impact, the definition of small-scale, and the definitions of key impact terms (long-term, short-term, and negligible).

The PEA demonstrates that impacts to aquatic and terrestrial resources, hydrology, water quality, land use, and emissions (indicator for climate change) will not be significant. The PEA also documents potential, non-significant impacts to elements of the human dimension—historic and cultural resources, traffic, noise, economics.

### III. Geographic Extent and Scale of the Proposed Action:

Based on the 21-year history, as documented in the PCSRF Database, we conclude that PCSRF-funded projects will continue to be small-scale, protection, conversation, and restoration activities as mandated by Congress. Congress has established that the states of Alaska, Washington, Oregon, California, Idaho, and Nevada, and to the federally recognized Tribes of the Columbia River and Pacific Coast (including Alaska) are eligible for PCSRF funding. Therefore, the geographic extent of the Proposed Action is vast.

Grants to the tribes may be awarded directly, or through tribal commissions or consortia as defined in the annual notice of funding opportunity. Most state and tribal commission or consortia funds are sub-awarded, after NMFS completes its Federal Action, to sub-recipients that implement the individual projects across the program's geography or in tribal lands. The PEA assesses the anticipated impacts across this geographic scale.

### IV. Degree of Effect:

- *The potential for the proposed action to cause an effect to any other physical or biological resources where the impact is considered substantial in magnitude (e.g., irreversible loss of coastal resource such as marshland or seagrass) or over which there is substantial uncertainty or scientific disagreement.*

Protection, conservation, and restoration activities maintain or create habitat for salmonids. Section 5 of the PEA demonstrates that the Preferred Alternative does not result in significant impacts to any resource of the human environment (40 CFR § 1508.1(m)). NMFS has a 21-year established history of PCSRF funding, captured in a robust database of past and present activities. NMFS, and other federal agencies, have supported and analyzed these type of projects in past NEPA assessments and Endangered Species Act (ESA) consultations. Therefore, there is no uncertainty or disagreement about the types of projects and their impacts.

As summarized in Section 5.6 of the PEA, PCSRF projects may have a short-term impact on environmental resources such as water quality, aquatic species, and construction-related noise or emissions. While adverse effects are unavoidable for all projects that have a ground-disturbing, construction-related impact, these impacts would be less than significant, and outweighed by the long-term benefits to habitat and salmonids. The collective, short-term, construction-related adverse effects of the PCSRF-funded projects are negligible as they are distributed across multiple years and watersheds across the six-state project area.

- *The degree to which the proposed actions is expected to affect a sensitive biological resource*

Most projects, historically, have not had a physical component, and therefore do not cause any biological or physical impacts. Projects with a physical component are likely to have short-term adverse effects on biological resources, hydrology, water quality, vegetation, air quality, and noise during construction. (Sections 5.2 – 5.5 of the PEA). In needing to comply with local construction permitting requirements, project activities will employ accepted industry standards or best management practices. Grant recipients and sub-recipients will follow all and any applicable local, state, or federal requirements for environment protections. Together, these measures will ensure that all short-term impacts are less



than significant and outweighed by the long-term benefits to aquatic and terrestrial species, water quality, habitat, biodiversity, and ecosystem functioning.

- *The degree to which the proposed action is likely to result in effects that contribute to the introduction, continued existence, or spread of noxious weeds or nonnative invasive species known to occur in the area or actions that may promote the introduction, growth, or expansion of the range of the species.*

Construction best management practices will ensure that sediment and non-native invasive species do not adversely impact water bodies. Vegetation management efforts along shorelines, wetlands, riverbanks, and upland habitats will remove invasive species as part of the habitat protection and restoration efforts. The short-term implementation impacts will not be significant and will be outweighed by the long-term ecosystem functioning benefits.

- *The degree to which the proposed action is expected to affect public health or safety.*

Given safe operating requirements within hatcheries, and local, state, tribal, and federal chemical handling requirements, the impacts to public health and safety would be minimal and not significant.

- *The potential for the proposed action to threaten a violation of federal, state, or local law or requirements imposed for environmental protection.*

NMFS cannot specify the permitting requirements for each individual projects as described in Section 1.3 of the PEA. However, each recipient undergoes a number of steps in making their sub-awards, during which the recipient and sub-recipient ensure compliance with all requirements. In addition, projects that have the highest likelihood of adverse impacts are likely to require some form of other federal permit or consultation, including but not limited to a NMFS consultation under the ESA. Therefore, the proposed action will not threaten a violation of federal, state, or local law or requirements imposed for environmental protection.

- *The degree to which the proposed action is reasonably expected to affect a cultural resource: properties listed or eligible for listing on the National Register of Historic Places; archeological resources (including underwater resources); and resources important to traditional cultural and religious tribal practice.*

Any project with ground disturbance has the potential to affect cultural, historical, or archeological resources. As described in Section 5.2.3, in compliance with the grant and sub-grant award processes—which vary between states, tribal commissions/consortia, and tribes—grant recipients and sub-recipients are responsible for consulting with the State Historic Preservation Officer (SHPO), or the Tribal Historic Preservation Officer (THPO) when there is a potential for impact to these resources. Based on this subsequent site-specific analysis, NMFS does not expect the Proposed Action to have a significant impact on any of these important resources.

- *The degree to which the proposed action has the potential to have a disproportionately high and adverse effect on the health or the environment of minority or low-income communities, compared to the impacts on other communities (EO 12898).*

Section 4.3 of the PEA demonstrates that the No Action Alternative may have a disproportionate high and adverse economic effect on tribes. No other impacts in the human dimension (cultural, noise, emissions, or traffic) are expected to be high. The Proposed Action does not create an adverse tribal economic effect, and therefore does not create a disproportionate high and adverse effect.

**V. Other Actions Including Connected Actions:**

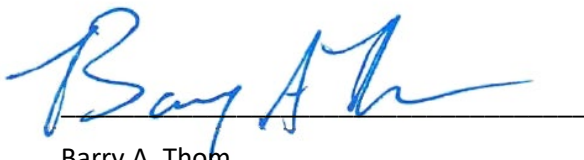
There are no other connected actions (§ 1501.9(e)(1). Section 3.3.3 of the PEA discusses other beneficial and adverse actions that are occurring or reasonably certain to occur, and that affect the same resources as the Proposed Action. PEA Sections 4 and 5 demonstrate that the effects of these collective actions, for each resource analyzed, do not result in synergistically significant impacts.

**VI. Mitigation and monitoring:**

NMFS does not anticipate any high or significant impact from the Proposed Action. Therefore, NMFS is not adopting any mitigation measures. As a standard requirement, each grant award contains the [Department of Commerce Financial Assistance Standard Terms and Conditions](#), which requires that “Each non-Federal entity must comply with all environmental standards, to include those prescribed under the following statutes and E.O.s, and must identify to the awarding agency any impact the award may have on the environment.” (Section G.04, 12 November 2020).

**DETERMINATION**

The CEQ NEPA regulations, 40 CFR § 1501.6, direct an agency to prepare a FONSI when the agency, based on the PEA for the proposed action, determines not to prepare an EIS because the action will not have significant effects. In view of the information presented in this document and the analysis contained in the supporting PEA prepared for the Pacific Coastal Salmon Recovery Fund, it is hereby determined that the annual decision to award grants from the Pacific Coastal Salmon Recovery Fund will not significantly impact the quality of the human environment. The Pacific Coastal Salmon Recovery Fund Programmatic Environmental Assessment is hereby incorporated by reference. In addition, all beneficial and adverse impacts of the proposed action as well as mitigation measures have been evaluated to reach the conclusion of no significant impacts. Accordingly, preparation of an EIS for this action is not necessary.



Barry A. Thom  
Regional Administrator  
West Coast Region  
National Marine Fisheries Service

June 8, 2021

Date