Executive Summary

Draft Environmental Impact Statement on Two Joint State and Tribal Resource Management Plans for Puget Sound Salmon and Steelhead Hatchery Programs

Introduction

Salmon and steelhead have been produced in Puget Sound hatcheries since the late 1800s. The benefit of hatcheries at the outset was to produce large numbers of hatchery-origin fish for harvest purposes. Hatcheries have contributed 70 to 80 percent of the catch in coastal salmon and steelhead fisheries. As the fish's natural habitat was degraded by human development and activities like dams, forest practices, and urbanization, the role of hatcheries shifted toward mitigation for lost natural production and reduced harvest opportunity. In recent decades, the hatcheries and associated hatchery practices have evolved to support conservation and recovery of natural-origin salmon populations (i.e., wild or native salmon) by preserving important genetic resources, reintroducing fish to areas where local populations have been lost, and guarding against the catastrophic loss of naturally spawned populations at critically low abundance levels. Hatchery production also presents risks to natural-origin salmon and steelhead. These include genetic risks from hatchery-origin fish to natural-origin fish as a result of poor broodstock and rearing practices, risks of competition with and predation on naturally spawned populations, and incidental harvest of natural-origin fish in fisheries targeting hatchery-origin fish.

The Washington Department of Fish and Wildlife (WDFW) and the Puget Sound treaty tribes (hereafter referred to as the co-managers) have jointly submitted to the National Marine Fisheries Service (NMFS) two resource management plans (RMPs) for hatchery programs in Puget Sound. The RMPs are the proposed frameworks through which the co-managers would jointly manage Puget Sound salmon and steelhead hatchery programs to achieve the conservation requirements of the Endangered Species Act (ESA). The plans are consistent with the framework of the Puget Sound Salmon Management Plan

implemented under *United States v. Washington* (1974) for coordination of treaty fishing rights, non-tribal harvest, artificial production objectives, and artificial production levels. One RMP describes hatchery programs that produce Chinook salmon (titled *Puget Sound Chinook Salmon Hatcheries - A Component of the Comprehensive Chinook Salmon Management Plan*). The other RMP describes hatchery programs for steelhead and coho salmon, pink salmon, fall-run chum salmon, and sockeye salmon (titled *Puget Sound Hatchery Strategies for Steelhead, Coho Salmon, Chum Salmon, Sockeye Salmon & Pink Salmon*).

Appended to the hatchery RMPs are hatchery and genetic management plans (HGMPs) that describe the hatchery programs that produce salmon and steelhead, including fish life stages produced and potential measures proposed by the co-managers to minimize the risk of negatively affecting listed salmon and steelhead (Table S-1). These measures include research, monitoring, and evaluation actions that would guide future program adjustments under adaptive management. Adaptive management is the deliberate process of using research, monitoring, and scientific evaluation in making decisions in the face of uncertainty.

Table S-1. ESA status of listed Puget Sound salmon and steelhead.

Species	ESU/DPS	Current Endangered Species Act Listing Status
Chinook salmon (*Oncorhynchus tshawytscha*)	Puget Sound	Threatened (76 Fed. Reg. 50448, August 15, 2011)
Chum salmon *(O. keta)*	Hood Canal summer-run (includes Strait of Juan de Fuca summer-run)	Threatened (76 Fed. Reg. 50448, August 15, 2011)
Steelhead (*O. mykiss*)	Puget Sound	Threatened (76 Fed. Reg. 50448, August 15, 2011)
Coho salmon (*O. kisutch*)	Puget Sound/Strait of Georgia	Species of Concern (69 Fed. Reg. 19975, April 15, 2004)

Source: NMFS

NMFS' determination of whether the RMPs and appended HGMPs achieve the conservation standards of the ESA, as set forth in Limit 6 under the salmon and steelhead 4(d) rules, is the Federal action requiring National Environmental Policy Act (NEPA) compliance. Although this environmental impact statement (EIS) itself will not determine whether the RMPs or HGMPs meet ESA requirements—those determinations are made under the specific criteria of the ESA and the section 4(d) rule—the analyses within the EIS will inform NMFS, hatchery operators, and the public about the current and anticipated cumulative environmental effects of operating Puget Sound hatchery programs under the full range of alternatives.

What are 4(d) rules?

Section 4(d) of the Endangered Species Act (ESA) directs NMFS to issue regulations to conserve species listed as threatened. This applies particularly to "take," which can include any act that kills or injures fish, and may include habitat modification. The ESA prohibits any take of species listed as endangered, but some take of threatened species that does not interfere with survival and recovery may be allowed.

The salmon and steelhead 4(d) rules apply take prohibitions to all actions except those within the 13 limits to the rules. The limits, or exemptions, describe specified categories of activities that contribute to conserving listed salmon. A separate, but closely related, tribal 4(d) rule creates an additional limit for tribal resource management plans.

Limit 5 of the 4(d) rule, using specific criteria, provides limits on the prohibitions of “take” for a variety of hatchery purposes, based on NMFS’ evaluation and approval of hatchery and genetic management plans (HGMPs) submitted by hatchery operators. Limit 6 of the 4(d) rule provides limits on the prohibitions of “take” for joint tribal and state plans developed under *United States v. Washington* processes, including artificial production actions.

Proposed Action

Under the Proposed Action, NMFS would evaluate the two proposed Puget Sound hatchery RMPs and appended HGMPs for ESA compliance. The two RMPs and appended HGMPs for Puget Sound hatcheries would be implemented by the co-managers. Adaptive management provisions in the resource management plans would apply.

Project Area

The project area covered in this EIS includes Puget Sound freshwater and marine areas within the United States from the Canadian border south and west to exclude rivers and marine areas in the Strait of Juan de Fuca west of the Elwha River (Figure S-1). Portions of 12 counties in Washington State are included. There are 133 salmon and steelhead hatchery programs in the project area described in 117 HGMPs. The programs are operated by WDFW and the Puget Sound treaty tribes, including one program that is operated by the U.S. Fish and Wildlife Service. These hatchery programs operate using 49 hatcheries and 34 net pens, and produce over 146 million salmon and steelhead per year.

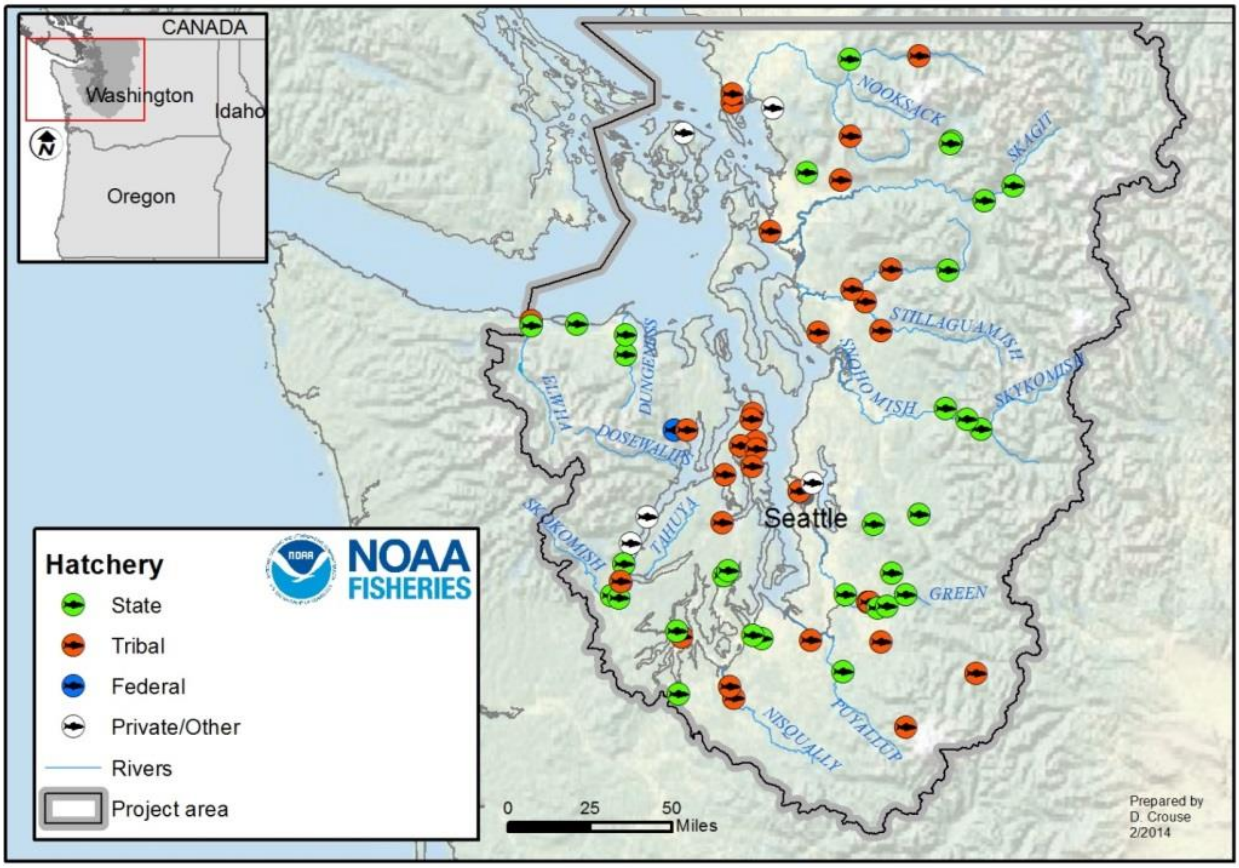

Figure S-1. Project area and general hatchery locations.

Purpose and Need

NMFS' purpose for the Proposed Action is to ensure the sustainability and recovery of Puget Sound salmon and steelhead by conserving the productivity, abundance, diversity, and distribution of listed species of salmon and steelhead in Puget Sound.

NMFS' need for the Proposed Action is to:

- Respond to the request of the co-managers for an exemption from the take prohibitions of section 9 of the ESA for their hatchery programs triggered by submission of RMPs and appended HGMPs under Limit 6 of the 4(d) rule.
- Provide, as appropriate, tribal and non-tribal fishing opportunities as described under the state and tribal co-managers' Puget Sound Salmon Management Plan implemented under *United States v. Washington.*

The co-managers' purpose in developing and submitting RMPs and HGMPs is to operate their hatcheries to meet resource management and protection goals with the assurance that any harm, death, or injury to fish within a listed evolutionarily significant unit (ESU) or distinct population segment (DPS) does not appreciably reduce the likelihood of a species' survival and recovery and is not in the category of prohibited take under the ESA's 4(d) rule.

What is an ESU? What is a DPS?

NMFS lists salmon as threatened or endangered according to the status of their Evolutionarily Significant Units (ESUs). An ESU is a salmon population that is 1) substantially reproductively isolated from conspecific populations and 2) represents an important component of the evolutionary legacy of the species.

In contrast to salmon, NMFS lists steelhead under the joint NMFS-U.S. Fish and Wildlife Service (USFWS) policy for recognizing distinct population segments (DPSs) under the ESA. This policy adopts criteria similar to, but somewhat different than, those in the ESU policy for determining when a group of vertebrates constitutes a DPS. A group of organisms is discrete if it is "markedly separated from other populations of the same taxon as a consequence of physical, physiological, ecological, and behavioral factors." NMFS lists steelhead according to the status of the steelhead DPS.

The co-managers' need for the Proposed Action is to continue to maintain and operate salmon and steelhead hatchery programs for conservation, mitigation, and tribal and non-tribal fishing opportunity pursuant to the Puget Sound Salmon Management Plan implemented under *United States v. Washington*, and treaty rights preservation purposes while meeting ESA requirements. WDFW and the Puget Sound treaty tribes strive to protect, restore, and enhance the productivity, abundance, and diversity of Puget Sound salmon and steelhead and their ecosystems to sustain treaty ceremonial and subsistence fisheries, treaty and non-treaty commercial and recreational fisheries, non-consumptive fish benefits, and other cultural and ecological values.

Relationship of New or Changed HGMPs to this EIS

The two hatchery RMPs reviewed in this EIS were submitted to NMFS in 2004. The appended HGMPs are identified and analyzed in this EIS. Under the RMPs, changes to HGMPs (including new programs) resulting from adaptive management, new information, or actions may occur over time. If changed or new

HGMPs are submitted to NMFS while this EIS is being developed, they will be addressed in the final EIS, or publication of a draft supplemental EIS may be required per Council on Environmental Quality regulations for supplemental reviews.

Relationship between the ESA and the National Environmental Policy Act (NEPA)

The relationship between the ESA and NEPA is complex, in part because both laws address environmental values related to the impacts of a Proposed Action. However, each law has a distinct purpose, and the scope of review and standards of review under each statute are different.

The purpose of an EIS under NEPA is to promote disclosure, analysis, and consideration of the broad range of environmental issues surrounding a proposed major Federal action by considering a full range of reasonable alternatives, including a No-action Alternative. Public involvement promotes this purpose.

The purpose of the ESA is to conserve listed species and the ecosystems upon which they depend. Determinations about whether hatchery programs in Puget Sound meet ESA requirements are made under section 4(d) or section 7 of the ESA. Each of these ESA sections has its own substantive requirements, and the documents that reflect the analyses and decisions are different than those related to a NEPA analysis.

It is not the purpose of this EIS to suggest to the reader any conclusions relative to the ESA analysis for this action. While the NEPA Record of Decision (ROD) identifies the selected NEPA alternative, the ROD does not determine whether that alternative complies with the ESA.

NMFS acknowledges that the terminology and analyses of environmental effects on listed species under the ESA and under NEPA are similar and can lead to confusion. Language in this draft EIS has been chosen in an effort to minimize the confusion between a NEPA analysis and an ESA analysis. For instance, ‘jeopardize,’ ‘endanger,’ ‘recover,’ and similar terms are commonly used to describe the effect of actions under an ESA analysis. This EIS minimizes use of those terms by alternatively using in their place terms and phrases, such as ‘risks and benefits’ that describe how hatchery actions affect natural-origin fish.

Alternatives Analyzed in Detail

Alternative 1 (No Action)

Under this alternative, NMFS would not evaluate and make take determinations under the ESA section 4(d) rules for the co-managers' Puget Sound hatchery RMPs and appended HGMPs. For analysis purposes, it is assumed that hatchery production would continue at current levels (Table S-2). It is also assumed that adaptive management provisions would not be applied.

Table S-2. Annual hatchery releases of juvenile salmon and steelhead (in thousands) under the alternatives and percent changes relative to Alternative 1.

	Alternative 1 (No Action)	**Alternative 2 (Proposed Action)**		**Alternative 3 (Reduced Production)**		**Alternative 4 (Increased Production)**	
Species	**Number**	**Number**	**Percent Change from Alt. 1**	**Number**	**Percent Reduction from Alt. 1**	**Number**	**Percent Increase from Alt. 1**
Chinook Salmon	45,317	45,317	0	37,182	18	51,307	13
Coho Salmon	14,592	14,592	0	11,391	22	18,478	27
Steelhead	2,468	2,468	0	1,409	43	2,561	4
Chum Salmon	44,995	44,995	0	44,475	1	57,495	28
Pink Salmon	4,500	4,500	0	4,500	0	5,000	11
Sockeye Salmon	35,125	35,125	0	35,125	0	35,125	0
Total	**146,997**	**146,997**	**0**	**135,082**	**8**	**169,967**	**16**

Source: Draft HGMPs.

Alternative 2 (Proposed Action)

This alternative consists of hatchery operations as proposed under the co-managers' RMPs and appended HGMPs. NMFS would evaluate and make take determinations under the ESA section 4(d) rules, and adaptive management provisions in the RMPs would be applied. Hatchery production would be the same as under existing conditions (Table S-2), program sizes would meet conservation requirements for listed species, harvest benefits would continue, and adaptive management conservation measures would be applied to all programs to reduce risks to listed species.

Alternative 3 (Reduced Production)

Compared to Alternative 2, this alternative would provide greater conservation benefits to salmon and steelhead. Under this alternative, hatchery production for the purpose of harvest would be reduced 50 percent for all Chinook salmon, coho salmon, and steelhead programs in watersheds where watershed management strategies are oriented at protecting and recovering indigenous Chinook salmon populations where they still occur, and where management actions use the most locally adapted stock to re-establish natural production in watersheds in which suitable habitat exists but indigenous Chinook salmon populations no longer occur (Table S-2). Reductions would not occur in watersheds that may not have historically supported self-sustaining natural Chinook salmon populations. NMFS would evaluate and make take determinations under the ESA section 4(d) rules, and adaptive management provisions in the RMPs would be applied. Harvest benefits would be reduced but would continue, and conservation measures would be applied to all programs to reduce risks to listed species.

Alternative 4 (Increased Production)

Compared to Alternative 2, this alternative would provide more harvest benefits. Under this alternative, hatchery production would increase for programs where existing facility and funding capacity exists (Table S-2). No new facilities or water sources would be developed. The additional production would depend on the match of available hatchery capacity with the broodstock collection, spawning, incubation, and rearing needs of the fish species produced. Increases could occur for programs whose purposes include harvest and/or conservation. Increases in production would need to be in compliance with the ESA. NMFS would evaluate and make take determinations under the ESA section 4(d) rules, and adaptive management provisions in the RMPs would be applied. Program size and harvest benefits would increase, and conservation measures would be applied to all programs to reduce risks to listed species.

A summary of key distinguishing features of the alternatives is shown in Table S-3.

Table S-3. Summary of key distinguishing features of the alternatives.

Alternative	NMFS Review, Evaluation, and Approval of Plans under 4(d) Rules	Number of Hatchery-origin Fish Released	Adaptive Management and Mitigation Measures[1]	Changes in Hatchery Programs	Conservation Benefit to Salmon and Steelhead
Alternative 1 (No Action)	No evaluation and determination under the 4(d) rules	146,997,000	Unknown	Unknown	Unknown
Alternative 2 (Proposed Action)	Evaluation and determination under the 4(d) rules	146,997,000	Adaptive management provisions of plans would apply, and mitigation measures would reduce risks	Conservation measures would be applied to all programs to reduce risks and increase benefits while meeting conservation requirements	Conservation requirements for listed salmon and steelhead would be met
Alternative 3 (Reduced Production)	Same as Alternative 2	135,082,000	Same suite of measures as Alternative 2, but potentially fewer measures applied than under Alternative 2	Same as Alternative 2 Hatchery production for harvest purposes would be reduced 50 percent in watersheds with recovery categories 1 and 2 Chinook salmon populations	Greater than Alternative 2
Alternative 4 (Increased Production)	Same as Alternative 2	169,967,000	Same suite of measures as Alternative 2, but potentially more measures applied than under Alternative 2	Same as Alternative 2 Hatchery production would increase to the extent there is capacity at existing facilities	Less than Alternative 2

[1] The purpose of adaptive management mitigation measures is to reduce risks to salmon and steelhead from hatchery programs. The suite of potential mitigation measures to apply is the same for each action alternative, but implementation of the measures may vary depending on the specific risk being addressed.

Summary of Resource Effects

Provided in Table S-4 is a summary of the predicted resource effects under each of the four alternatives. The summary reflects the detailed resource discussions in Chapter 4, Environmental Consequences.

Table S-4. Summary of environmental consequences for EIS alternatives for each resource.

Resource	Alternative 1 (No Action) [1]	Alternative 2[2] (Proposed Action)	Alternative 3[2] (Reduced Production)	Alternative 4[2] (Increased Production)
Fish				
Listed Salmon, Steelhead, and Trout: Chinook salmon and summer-run chum salmon, steelhead, and bull trout	Hatchery production would pose a moderate risk and low benefit to the Chinook salmon ESU.	Risks would be reduced and benefits would increase through adaptive management compared to Alternative 1.	Overall risk to the Chinook salmon ESU would decrease compared to Alternative 2, and the overall benefit would be the same as Alternative 1.	Overall risk to the Chinook salmon ESU would be similar to Alternative 1, and the overall benefit would increase.
	Hatchery production would pose a low risk to the Hood Canal summer-run chum salmon ESU.[3]		Same as Alternative 1.	Same as Alternative 1.
	Hatchery production would pose a moderate risk and low benefit to the steelhead DPS.		Overall risk to the steelhead DPS would decrease compared to Alternative 2, and the overall benefit would be the same as Alternative 1.	Same as Alternative 1.
	Hatchery production would pose a low risk and low benefit to bull trout.		Same as Alternative 1.	Same as Alternative 1.
Non-listed Salmon: coho salmon, chum salmon, pink salmon, and sockeye salmon	Hatchery production would pose competition, predation, genetics, and hatchery facilities and operation risks and would provide total return, viability, and marine-derived nutrient benefits.	Risks would be potentially reduced and benefits would be potentially increased through adaptive management compared to Alternative 1.	Risks and benefits are further reduced compared to Alternative 2.	Risks and benefits are further increased compared to Alternative 2.

Table S-4. Summary of environmental consequences for EIS alternatives for each resource.

Resource	Alternative 1 (No Action) [1]	Alternative 2[2] (Proposed Action)	Alternative 3[2] (Reduced Production)	Alternative 4[2] (Increased Production)
Other Fish Species	Depending on the species, other fish species would be affected if they compete with, are prey of, or prey on salmon and steelhead.	Adaptive management would not be expected to affect abundance compared to Alternative 1.	Potential reductions in the food supply for fish species that prey on salmon and steelhead, and reduced risk to other fish species that are preyed on, compete with, or are caught in fisheries targeting salmon and steelhead compared to Alternative 1.	Potential increases in the food supply for fish species that prey on salmon and steelhead while also increasing risk to other fish that are preyed on, compete with, or are caught in fisheries targeting salmon and steelhead compared to Alternative 1.
Socioeconomics				
Commercial Salmon and Steelhead Fishing	Annual non-tribal and tribal commercial harvest value would be 2,679,392 fish and $15,577,897 in gross economic value.	Same as Alternative 1.	Commercial harvest value would decrease by 4 percent and gross economic value would decrease by 7 percent compared to Alternative 1.	Commercial harvest value would increase by 7 percent and gross economic value would increase by 10 percent compared to Alternative 1.
Recreational Salmon and Steelhead Fishing	Annual net economic value of recreational fisheries is $58,965,077. Recreational fishing trips and expenditures would be 997,380 trips and $70,245,440 in expenditures.	Same as Alternative 1.	Annual net economic value of recreational fisheries, fishing trips, and expenditures would decrease by 8 percent compared to Alternative 1.	Annual net economic value of recreational fisheries, fishing trips, and expenditures would increase by 18 percent compared to Alternative 1.
Regional and Subregional Economic Impacts	Annual hatchery operations and personal income would be $106,888,758 and 2,060 jobs. Overall personal income would be $92,249.981.	Same as Alternative 1.	Annual hatchery operations and personal income would decrease by 10 percent, jobs would decrease by 8 percent, and personal income would decrease by 8 percent compared to Alternative 1.	Annual hatchery operations and personal income would increase by 15 percent, jobs would increase by 13 percent, and personal income would increase by 14 percent compared to Alternative 1.
Fisheries in Major River Systems	Tribal commercial and recreational fisheries would occur in 15 major river systems.	Same as Alternative 1.	Decreases in hatchery production would have a major negative effect on fisheries for nine of the major river systems for at least one species of salmon and steelhead compared to Alternative 1.	Increases in hatchery production would have a major positive effect on fisheries for six of the major river systems for at least one species of salmon and steelhead compared to Alternative 1.

Table S-4. Summary of environmental consequences for EIS alternatives for each resource.

Resource	Alternative 1 (No Action) [1]	Alternative 2[2] (Proposed Action)	Alternative 3[2] (Reduced Production)	Alternative 4[2] (Increased Production)
Ports and Fishing Communities	Annual personal income from commercial and recreational fishing would be $41,724,837 in north Puget Sound, $46,838,604 in south Puget Sound, and $5,686,540 in the Strait of Juan de Fuca. Annual employment from commercial and recreational fishing would be 975 jobs in north Puget Sound, 913 jobs in south Puget Sound, and 173 jobs in the Strait of Juan de Fuca.	Same as Alternative 1.	Annual personal income and employment from commercial and recreational fishing would decrease by 6 percent to 12 percent for each subregion compared to Alternative 1.	Annual personal income and employment from commercial and recreational fishing would increase by 10 percent to 19 percent for each subregion compared to Alternative 1.
Environmental Justice				
Native American Tribes of Concern	Annual tribal harvest would be 1,321,156 fish and tribal gross economic values would be $9,148,467. Harvest would contribute to ceremonial and subsistence uses.	Same as Alternative 1	Annual tribal harvest would decrease by 7 percent and tribal gross economic values would decrease by 11 percent compared to Alternative 1. Harvest would contribute to ceremonial and subsistence uses similar to Alternative 1.	Annual tribal harvest would increase by 8 percent and tribal gross economic values would increase by 11 percent compared to Alternative 1. Harvest would contribute to ceremonial and subsistence uses similar to Alternative 1.
Non-tribal User Groups of Concern	Annual net revenues for commercial fishers would be $3,335,926.	Same as Alternative 1	Annual net revenues for commercial fishers would decrease by 1 percent compared to Alternative 1.	Annual net revenues for commercial fishers would increase by 8 percent compared to Alternative 1.
Communities of Concern	Annual per capita income would range from $18,056 to $29,521 for King, Mason, Pierce, and Clallam Counties.	Same as Alternative 1.	Annual per capita income would decrease by less than 1 percent for each of the four counties compared to Alternative 1.	Annual per capita income would increase by less than 1 percent for the four counties compared to Alternative 1.

Table S-4. Summary of environmental consequences for EIS alternatives for each resource.

Resource	Alternative 1 (No Action) [1]	Alternative 2[2] (Proposed Action)	Alternative 3[2] (Reduced Production)	Alternative 4[2] (Increased Production)
Wildlife				
Hatchery Operations and Wildlife	Potential for slight transfer of pathogens from hatchery-origin fish to wildlife, hatchery weirs may restrict some wildlife movements, wildlife may benefit from salmon and steelhead carcasses, and hatchery program operations (e.g., use of screens and water) may have a negative effect on wildlife presence and mortality.	Same as Alternative 1.	Potential water use would decrease, which would be beneficial to wildlife, compared to Alternative 1.	Potential water use would increase, which would make slightly less water available for wildlife, compared to Alternative 1.
ESA-listed Species: Southern Resident killer whale	Southern Resident killer whales would occupy their existing habitat in the project area with a similar abundance, and would continue to prey on salmon, especially Chinook salmon.	Same as Alternative 1.	Supply of salmon as food would decrease (i.e., adult hatchery-origin Chinook salmon would decrease by 13 percent), which may negatively impact Southern Resident killer whales, compared to Alternative 1.	Supply of salmon as food would increase (i.e., adult hatchery-origin Chinook salmon would increase by 11 percent), which may benefit Southern Resident killer whales, compared to Alternative 1.
Non-listed Species: Birds	Bald eagles and other birds that feed on salmon and steelhead would continue to occupy their existing habitat in the project area with similar abundances, and would continue to feed on salmon and steelhead. Similarly, other birds that are not as dependent on salmon as a food supply would also continue to occur in the project area similar to existing conditions.	Same as Alternative 1.	Supply of hatchery-origin salmon and steelhead as food for bald eagles and other birds that feed primarily on salmon and steelhead would decrease up to 8 percent, compared to Alternative 1. This effect would generally not affect other birds that only occasionally feed on salmon and steelhead.	Supply of hatchery-origin salmon and steelhead as food for bald eagles and other birds that feed primarily on salmon and steelhead would increase up to 16 percent compared to Alternative 1. The effect on other birds that only occasionally feed on salmon and steelhead would be the same as Alternative 3.

Table S-4. Summary of environmental consequences for EIS alternatives for each resource.

Resource	Alternative 1 (No Action) [1]	Alternative 2[2] (Proposed Action)	Alternative 3[2] (Reduced Production)	Alternative 4[2] (Increased Production)
Non-listed Marine Mammals: Steller sea lion, California sea lion, and harbor seal	Steller sea lions, California sea lions, and harbor seals would continue to occupy their existing habitat in the project area with similar abundances, and the species would continue to feed as generalists on fish species that include salmon and steelhead.	Same as Alternative 1.	Same as Alternative 1.	Same as Alternative 1.
Other Wildlife Species	Other wildlife species would continue to occupy their existing habitat in the project area with similar abundances, and would continue to feed on a variety of prey including salmon and steelhead.	Same as Alternative 1.	Supply of hatchery-origin salmon and steelhead as food would decrease 8 percent, which would primarily affect river otter, compared to Alternative 1. Other wildlife species are generalists and feed on a variety of prey species, and thus would not be affected by the decrease in salmon and steelhead.	Supply of hatchery-origin salmon and steelhead as food would increase 16 percent, which would primarily benefit river otter. The effect on other wildlife species that are generalists and feed on a variety of prey species would be the same as Alternative 3.
Water Quality and Quantity	Hatchery operations would comply with NPDES permits. The potential would exist for effluents to periodically exceed permit limits and for instances of non-reporting, and the nutrient contributions from decomposition of salmon carcasses would continue.	Potential improvements in water quality and reduction in water use through adaptive management.	Same as Alternative 2.	Same as Alternative 2.
Human Health	Chemical and antibiotic use would be consistent with Federal and state guidelines. Potential exposure to pathogens.	Potential decrease in the use of chemicals and antibiotics through adaptive management.	Potential for further decrease in the use of chemicals and antibiotics relative to Alternative 2. Potential exposure to pathogens would be the same as Alternative 2.	Potential increase in the use of chemicals and antibiotics relative to Alternative 1. Potential exposure to pathogens would be the same as Alternative 2.

[1] An adaptive management process is not part of Alternative 1.
[2] Potential differences between the no-action and the action alternatives would be due to differences in hatchery production and application of adaptive management mitigation measures under the action alternatives.
[3] Effects of releases of listed hatchery-origin summer-run chum salmon are not evaluated in this EIS because they are addressed in previous environmental reviews.

Preferred Alternative

This draft EIS does not contain a preferred alternative. NMFS anticipates identifying the preferred alternative in the final EIS after considering the comments received on this document. The preferred alternative may be a blend of more than one of the alternatives evaluated in this EIS. The preferred alternative may or may not be the environmentally preferred alternative, which will be identified in the ROD. The environmental effects of the preferred alternative will be explained in the final EIS and summarized in the ROD.

How should reviewers approach this EIS?

NMFS encourages reviewers to perform the following activities:

1. Review the draft EIS to gain an understanding of how it is organized and how the alternatives are framed and analyzed.
2. Carefully consider the information provided in Chapters 4 and 5, Environmental Consequences and Cumulative Effects, respectively.

After considering the effects, comment on how NMFS should formulate a preferred alternative for publication in the final EIS and ROD.