UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
West Coast Region
1201 NE Lloyd Boulevard, Suite 1100
PORTLAND, OR 97232-1274

MEMORANDUM

December 13, 2024

To: Nik Blosser, Executive Director, Columbia River Task Force

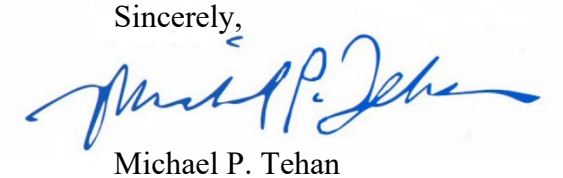
From: Michael Tehan, Senior Policy Advisor, NOAA Fisheries, West Coast Region

Re: Final Mid-Columbia River Restoration Plan

The December 14, 2023, Resilient Columbia Basin Agreement (RCBA) included a United States commitment to work with the Six Sovereigns through a whole-of-government approach to develop recommended actions to rebuild Mid-Columbia salmon and steelhead stocks. This U.S. commitment was in response to the Six Sovereigns' Columbia Basin Restoration Initiative, which identified the need for a comprehensive suite of actions to support the rebuilding of salmon and steelhead in the Mid-Columbia geography to healthy and abundant levels.

The attached final Mid-Columbia Restoration Plan (Plan) was developed in collaboration with the Six Sovereigns and the Columbia Basin Federal Caucus agencies and is substantively unchanged from the September 30, 2024 review draft. The Plan includes the latest list of high-priority Mid-Columbia restoration projects and identifies federal funding sources that could enable implementation of these projects in the near term (Attachment B). The Plan also includes an updated 10-year list of Mid-Columbia restoration projects that address documented threats and priority restoration needs (Attachment C).

Sincerely,



Michael P. Tehan
Senior Policy Advisor

Mid-Columbia Restoration Plan

September 30, 2024

Introduction

The Six Sovereigns' 2023 *Columbia Basin Restoration Initiative* (CBRI) "…provides a framework for a durable long-term strategy that restores salmon and other native fish populations to healthy and abundant levels, ensures a clean energy future, supports local and regional economic resilience, restores ecosystem function and honors longstanding unmet commitments to Tribal Nations"[1]. The CBRI drew from information and findings assembled by NOAA in its September 2022 *Rebuilding Interior Columbia Basin Salmon and Steelhead* (Rebuilding Report). The Rebuilding Report responded to the Biden-Harris Administration commitment to develop a long-term, durable strategy to restore Columbia River basin salmon, steelhead, bull trout, and other listed and vulnerable species[2]. The Rebuilding Report built off a recent collaborative effort within the Columbia River Basin to identify goals and objectives for rebuilding salmon and steelhead populations, the Columbia Basin Partnership[3].

The Columbia Basin Partnership (CBP) was a Task Force chartered by NOAA's Marine Fisheries Advisory Committee in 2017 to develop a common vision and goals for the Columbia River Basin's salmon and steelhead. CBP members included tribal and state sovereigns and a diverse suite of regional stakeholder groups, representing ports, electric utilities, local watershed recovery, irrigators, agriculture, sport fishing, commercial fishing, and more. The CBP examined the science and history of salmon in the region and developed a common vision and qualitative and quantitative goals that went beyond achieving Endangered Species Act (ESA) delisting levels to rebuild healthy and harvestable runs of all salmon and steelhead stocks that would restore the economic, ecological, and cultural benefits the region wants from the Columbia River Basin. CBP members unanimously agreed that urgent and immediate action is required. The CBP members also concluded that to achieve their regional vision and goals for salmon and steelhead, bold actions would be needed to address the full range of threats that the species face. Furthermore, they noted that reliable and predictable funding for these actions would be essential.

Columbia River salmon and steelhead abundance remains far below historical levels. NOAA's Rebuilding Report outlined the actions it felt would be necessary to provide the greatest likelihood of making significant progress towards achieving the CBP's mid-range goals for adult salmon and steelhead abundance by 2050. These mid-range goals look beyond recovering species from the brink of extinction but remain below the historical levels of fish returns. The Rebuilding Report addresses the 16 interior Columbia River basin salmon and steelhead stocks that spawn above Bonneville Dam, both ESA-listed and unlisted, and emphasized the CBP's call for urgent action.

This Mid-Columbia Restoration Plan is intended to provide a comprehensive strategy to rebuild Mid-Columbia salmon and steelhead stocks consistent with the goals and recommendations of the CBRI, CBP Phase 2 Report, Rebuilding Report, NOAA's 2022 5-year ESA status review findings and

[1] Columbia Basin Restoration Initiative: A proposal to the Biden Administration from the "Six Sovereigns"

[2] Columbia River Basin Fisheries: Working Together to Develop a Path Forward, The White House, March 28, 2022.

[3] Marine Fisheries Advisory Committee Columbia Basin Task Force Phase II Report.

recommendations, and the federal commitments in the Resilient Columbia Basin Agreement[4]. The Plan demonstrates an urgent need for action and a significant need for increased funding for salmon recovery in the Columbia River Basin.

Implementing the restoration priorities identified in this Plan at funding levels that are necessary to achieve healthy and abundant fish populations in the Columbia River Basin will require the collaborative participation of federal, state and tribal governments through a whole of government approach. There is generally adequate recovery planning knowledge to design and plan priority actions by sovereign fish and wildlife managers, local recovery partners, and relevant federal and state agencies. However, the resources required to make significant progress towards the CBP mid-range goals will require the collaborative development of not just lists of restoration projects, but rather at least doubling of investment in restoration planning, program development, and collaborative restoration implementation infrastructure to fully manage and deliver, through adaptive management, the future restoration effort commensurate to the Basin's challenges and needs.

Comprehensive Suite of Restoration Actions

The Rebuilding Report noted that no single action is enough to meet the basin-wide rebuilding goals developed by the CBP and described a comprehensive suite of management actions across the Basin needed to make progress towards rebuilding healthy and abundant stocks.

For Mid-Columbia stocks, the greatest potential to make progress towards healthy and harvestable abundances depends on improving water quality and quantity and passage survival in focused areas of low- to mid-elevation tributary habitats. Maximizing functional tributary habitats (primarily instream

[4] Resilient Columbia Basin Agreement (RCBA) – On 14 December 2023, the Departments of the Army, Interior and Energy, along with other federal agencies including National Oceanographic and Atmospheric Administration (NOAA) and Bonneville Power Administration (BPA) signed a Memorandum of Understanding (MOU) with the Six Sovereigns. The MOU included a detailed list of U.S. Government (USG) commitments in support of the "Columbia Basin Restoration Initiative" and in partnership with the Six Sovereigns, including:

- ***Mid-Columbia Restoration Plan.*** The Six Sovereigns and the USG will work together (with other sovereigns as appropriate) to develop recommended actions to rebuild mid-Columbia salmon and steelhead stocks as described in the Rebuilding Interior Columbia Salmon and Steelhead report, including, but not limited to, appropriately managing predation and protecting and restoring instream flows, water quality, and fish passage and habitat improvements in Oregon and Washington in low- to mid-elevation tributary and mainstem habitats. NOAA will coordinate with the appropriate USG agencies/departments and the relevant regional sovereigns (including the Six Sovereigns) to develop, by June 30, 2024, an agreed upon 10-year suite of mid- Columbia actions in Oregon and Washington for implementation beginning FY 2026, understanding that these actions will likely require at least doubling current levels of mitigation and restoration funding. To support this agreed upon suite of actions, the USG will identify available funding across agencies and departments, as well as other sources; and consistent with the September 27, 2023 Presidential Memo will evaluate new appropriations needs, and, as appropriate, potential future Congressional legislation necessary for implementation. BPA's obligation to fund any Fish and Wildlife projects identified in this Mid-Columbia Restoration Plan will be subject to the limitations outlined in the "BPA Fish and Wildlife General Funding" and "Increased Funding in Support of Basin-Wide Restoration" commitment sections, below.

- ***Mid-C Subset of Near-Term Priority Actions.*** The Six Sovereigns have identified and provided to the USG a short-list of high-priority mid-Columbia habitat actions, implementable in the near term. The USG, using a whole-of-government approach, will identify opportunities to provide funding to implement these projects beginning in FY 2024-2025.

- ***Cold Water Refuge Projects.*** The Environmental Protection Agency (EPA) and the Corps will work with the Six Sovereigns to identify and seek funding, as appropriate, to study and complete 3 to 5 projects to enhance or protect existing cold water refuge or provide additional cold water refuge in the Columbia Basin in Oregon and Washington. At least two of the five projects will be accomplished in Oregon. Special emphasis will be made toward reducing both warm waters and predation in tributary mouths. At least 2 of 5 projects will be focused on Mid- Columbia (Zone 6 and its tributaries) salmon and steelhead populations. Projects will be identified by June 30, 2024 for implementation beginning in FY 2024-2025.

flows, water quality, and fish passage improvements) is necessary to provide the highest likelihood for achieving midrange CBP goals for Mid-Columbia stocks. For example, for high-risk Yakima basin stocks, smolt survival through the Yakima River should be significantly increased by increasing spring flows, making structural and operations improvements at diversion dams, providing pulse flows and other actions to facilitate sockeye migration, and continued investigation of reintroduction opportunities.

In addition to priority tributary habitat restoration actions, the comprehensive suite of actions to address other threats and life-cycle needs for Mid-Columbia stocks includes:

- Protecting and restoring cold-water refuges to improve survival of migrating salmon and steelhead;
- expanding predator and competitor management to increase juvenile and adult survival;
- reducing direct and indirect mortality from mainstem dams through implementing the 10-year federal hydro system actions from the RCBA and addressing fish passage infrastructure needs; and
- continuing hatchery reform measures and increasing investments in aging hatchery infrastructure.

Habitat

Habitat Threats. The goal of the Columbia Basin Restoration Initiative (CBRI) is to rebuild all five species of salmon and steelhead in the Mid-Columbia geography, both listed and unlisted. The most recent 5-year review for the ESA-listed Middle Columbia River (MCR) steelhead Distinct Population Segment (DPS), completed by NOAA Fisheries in 2022, assessed the status of habitat threats for the four steelhead Major Population Groups (MPGs), and recommended priority actions that could improve the viability of the species over the next five years. These habitat threats and priority actions would also generally apply to the freshwater life stages of other Pacific salmon in the Mid-Columbia geography (Attachment A).

In summary, NOAA found that since 2016, there has been some improvement in freshwater and estuary habitat conditions for MCR steelhead spawning, rearing, and migration in specific locations. In particular, the construction of a fish ladder at Opal Springs Dam gave steelhead access to 125 miles of habitat in the Crooked River drainage (Cascades Eastern Slope Tributaries MPG), and removal of the final barrier on Manastash Creek (Yakima River MPG) opened access to more than 20 miles of new tributary habitat. Improvements to fish passage and numerous tributary habitat restoration and enhancement projects involving large wood supplementation, floodplain reconnection, riparian fencing and replanting, and work with property owners to increase water conservation and summer flows should result in improved survival for this DPS.

However, widespread areas of degraded or inaccessible habitat continue to persist for all four MPG's due to: (1) dams and irrigation infrastructure; (2) low summer flows and high summer water temperatures; (3) disconnected floodplains; and (4) loss of riparian function. Other factors pertain to some MPG's more than others, such as grazing effects in the John Day River MPG, and levees in the Walla Walla and Umatilla Rivers and in the Yakima River MPG's.

Finally, NOAA identified significant ongoing concern with the inadequacy of existing regulatory mechanisms to prevent further habitat degradation, particularly related to water quantity and quality, levee repair and replacement, and floodplain development. The effects of increasing floodplain development and other anthropogenic factors likely offset at least some restoration benefits, but are not well documented or quantified. There remain numerous opportunities for habitat restoration and protection throughout the Mid-Columbia geography. Additional priority recovery actions and best management practices that apply to all populations and protect the highest quality habitats and conserve ecological processes that support population viability are necessary to bring this DPS to viable status.

Holistic Habitat Restoration. Scientists are focusing increasingly on more interconnected riverscape approaches at the basin scale. Such integrated thinking seeks to address multiple root causes of degradation by focusing on physical and ecological processes and functions for the entire riverscape rather than focusing only on individual locations (Skidmore and Wheaton 2023). This mode of rehabilitation work is known as process-based restoration (Beechie et al. 2010). Process-based restoration results in thinking 'outside the channel', including more riverscape actions that address the access to space, flow inefficiency, and structurally forced complexity, all ultimately integrating into healthy habitats (Palmer et al. 2014). In this "nature based" approach, addressing root causes results in a natural prioritization of restoration actions, both across and within riverscape functional requirements (space, flow inefficiency, structural forcing). Process-based restoration encourages critical thinking about interrelated restoration actions that work together to achieve broader restoration goals (Beechie et al. 2010).

The whole system approach of riverscape revitalization provides the context for examining sets of suggested restoration actions for their immediate, individual benefits as well as their larger, long-term potential impact to riverscape-scale recovery (Beechie et al. 2010, Luoma et al. 2015). The broad-scale evaluation provides a starting point for larger conversations among co-managers who need to consider many other factors including the socio-ecological nature of riverscapes, particular species conservation needs, cultural needs, and financial or legal constraints. To determine how well projects are working to restore ecological function, watershed restoration plans need to have defined goals, objectives, and indicators for tracking progress towards the desired state of the system, as well as an underlying adaptive management paradigm that facilitates adjustment based on learning from acting.

Prioritizing habitat actions in the Mid-Columbia. The urgency of the comprehensive suite of actions is accentuated by ongoing climate change. Actions that have the highest likelihood to buffer climate change impacts and support restoration generally fit into three categories:

1. **Maintaining suitable water temperatures and flows in mainstem and tributary habitats.** Juvenile and adult salmon and steelhead use migration corridors in the mainstem Columbia and Snake Rivers to move between their spawning and rearing areas and the ocean. These corridors suffer from rising water temperatures and reduced flows. Increased temperature and reduced flow in adult holding and spawning areas and juvenile rearing areas is also becoming a concern. Some examples of actions necessary to provide reasonable confidence in addressing this need include:

- Normalizing reach-scale hydrology and hydraulics in the mainstem Columbia and Snake Rivers.
- Attaining EPA Clean Water Act water quality standards and associated TMDLs for temperature, turbidity, toxics, and nutrient loading.
- Systematically and extensively restoring tributary habitat, especially at the riverscape scale. Restoring natural rates and dynamics of biological and physical processes that create and maintain healthy functioning riparian and floodplain habitats.
- Durable, targeted agreements to accomplish increased instream flow volumes through water acquisitions, irrigation system conversions, improved irrigation diversion dam operations, water conservation, and land-use rule modifications and practices to benefit salmon and water quality and quantity.

2. **Maximizing survival and production from freshwater habitats (including migration corridors).** This will help reduce productivity declines during periods of poor ocean conditions, and increase rebuilding during periods of good ocean conditions. Some examples of actions necessary to provide reasonable confidence in addressing this need include:

    - Maintain and enhance fish passage structures and operations at remaining mainstem dams and reservoirs. This will increase juvenile survival, decrease indirect mortality, and increase adult returns.
    - Minimizing predation on juveniles as they migrate to the ocean.
    - Minimizing predation on adults as they return to their spawning grounds.
    - Minimizing passage delays and removing passage barriers to adults returning to spawning grounds.
    - Increasing tributary habitat quality and quantity through focused actions that support sustained productivity across much broader return rates.
    - Increasing the quantity and quality of and access to estuary habitat that provides migration corridor refugia and highly productive juvenile rearing environments.

3. **Maintaining and restoring access to climate resilient habitats for spawning and rearing (e.g., high-elevation spawning and rearing habitats with snowpack-driven hydrology, or extensive connected floodplain habitats).** Some examples of actions necessary to provide reasonable confidence in addressing this need include:

    - Restoring or improving adult and juvenile passage to and from high elevation production areas and reintroduction and passage into currently blocked tributary areas (e.g., above Yakima and Umatilla basin reservoirs).
    - Protecting and restoring cold-water refugia in tributary adult holding areas and in spawning and nursery areas.
    - Maintaining and maximizing thermal refugia within the mainstem migration corridor.
    - Restoring connected floodplain habitat throughout the Mid-Columbia geography.

10-Year Strategy to Enhance Support for Mid-Columbia Recovery. The USG has committed to thoroughly evaluate the potential options for increasing non-rate-payer fish restoration funding in the Basin, taking into account the CBRI's recognition that at least a doubling of basin-wide funding is needed

to make meaningful progress towards healthy and abundant salmon, steelhead, and other native fish rebuilding goals[5]. This evaluation will include a thorough assessment of all available mechanisms without additional rate impacts, through a whole of government approach, including direct congressional requests; increased requests in future Presidential budgets; and other avenues as they may present themselves. This funding will support those actions that the USG and regional sovereigns (including the Six Sovereigns) agree are important for advancing the recovery of healthy and abundant Columbia Basin fisheries consistent with the Sept. 27, 2023 Presidential Memorandum, the CBP Phase II Report, the NOAA Rebuilding Report, and the Columbia Basin Restoration Initiative (CBRI).

This Mid-Columbia Restoration Plan represents the initial results of the United States, in partnership with the Six Sovereigns, to identify needed actions to rebuild Mid-Columbia salmon and steelhead stocks. The Six Sovereigns provided to the U.S. an initial short-list of high-priority mid-Columbia habitat actions, implementable in the near term. The U.S. has, and continues to, identify relevant authorities and opportunities to expedite funding to implement these projects beginning in FY 2024- 2025 (Attachment B).

On May 31, 2024, the Six Sovereigns provided the U.S. with a working draft list of potential projects (Attachment C) to be implemented in the mid-Columbia section of the Columbia River to address the U.S. commitment for a "10-year suite of mid-Columbia actions in Oregon and Washington for implementation beginning in FY 2026." This is a working draft that includes 13 categories of restoration actions across 13 watersheds/sub-basins. The 300+ actions on the list can help shape the size and scope of funding programs over 10 years, or more, to contribute to achieving healthy and abundant salmon stocks[6]

This initial draft 10-year project list was shared with federal departments and agencies with relevant management and regulatory authorities in the Mid-Columbia Basin for review and consideration in their FY 25 and 26 budget planning. Consistent with the September 27, 2023 Presidential Memorandum, departments and agencies are evaluating new appropriations needs, and, as appropriate, potential future Congressional authorizations or legislation necessary for implementation over the 10-year period. NOAA will continue to work with the sovereign fish managers and local watershed groups to develop implementation priorities based on existing recovery plans and local restoration knowledge.

Cold Water Refuges

Importance of Cold Water Refuges. Cold water refuges are areas that are colder than the main river temperature. Adult salmon and steelhead temporarily use cold water refuges to escape warm summer river temperatures and help them successfully migrate up the Columbia River to their spawning grounds. Protecting and restoring these cold-water refuges is important for the survival of migrating salmon and the recovery of salmon populations.

[5] Resilient Columbia Basin Agreement, December 14, 2023.

[6] Preliminary contributions in this table are from the Confederated Tribes and Bands of the Yakama Nation, the Confederated Tribes of the Umatilla Indian Reservation, the Confederated Tribes of the Warm Springs Reservation of Oregon, the Nez Perce Tribe, Oregon Department of Fish and Wildlife, and the Washington Department of Fish and Wildlife.

In January 2021, EPA released its Columbia River Cold Water Refuges (CWR) Plan. The CWR Plan includes several main findings. First, EPA identified 23 CWR sites in the Lower Columbia River, twelve of which are primary refuges making up 98% of the total volume of available refuge. Second, EPA found that adult steelhead and fall Chinook salmon use CWR the most because they migrate when Columbia River mainstem temperatures are warmest (>68 degrees Fahrenheit). On the other hand, sockeye salmon, which died in large numbers in 2015 and 2021 due to warm early summer Columbia River temperatures, are most successful migrating upstream before river temperatures warm. The EPA CWR Report further explained that, when temperatures rise above 21°C, about 80% of steelhead and 30% of fall Chinook salmon move into the CWR. The warmer the river, the more fish use the CWR. EPA's CWR Report found that this use is an adaptation to rising Columbia River temperatures. With summer river temperatures predicted to rise over time from climate change, fish will likely use CWR more in the future. Next, EPA's CWR the Report found that, in an average year, about 65,000 steelhead and 5,000 fall Chinook are in eight CWR sites between the Bonneville Dam and The Dalles Dam during the end of August. Ultimately, using CWR appears to benefit the fish by reducing their exposure to high river temperatures and associated loss of energy, stress, disease, and mortality.

Cold Water Refuge Projects. The CWR Memorandum (Attachment D) documents the United States Government's and Six Sovereigns' agreement on identifying and seeking funding to study and implement high priority river mouth confluence projects beginning in FY 2024-2025 to enhance and protect, or provide additional cold-water refuges in the Columbia Basin in Oregon and Washington. The five priority projects are Hood River, Oregon, Columbia River Delta Enhancement, Washington (Wind River, Klickitat River, White Salmon River confluences in Washington and Herman Creek Cove confluence in Oregon with the Columbia River), Deschutes River, Oregon (confluence with the Columbia River), Umatilla River, Oregon (confluence with the Columbia River), Walla Walla River, Washington (Bi-state Sovereign benefit, confluence with the Columbia River). All five projects are expected to benefit upper Columbia River, Snake River, and Mid-Columbia River salmon and steelhead populations with adult migration timing that occurs June through September and use the above cold-water refuges. The projects will benefit Mid-Columbia and lower Columbia salmon and steelhead populations indigenous to the above basins. Efforts to maintain and enhance CWRs in the Columbia River Basin (including the five identified priority delta projects) will require both funding in FY26 and after.

Predation

Threats from Predation. NOAA assessed threats related to predation and invasive aquatic species in its MCR steelhead 5-year review report. NOAA concluded that limited information available indicates that avian predation rates on juvenile MCR steelhead could be around 15.5 percent in the Columbia River estuary, and potentially 18 percent in the mainstem Columbia River. Total avian predation appears to be a significant factor limiting juvenile MCR steelhead survival.

Information considered for the 5-year review suggests that the pinniped predation rate on MCR steelhead adults remains low, though data is limited. However, pinniped predation remains a significant threat to spring/summer Chinook recovery in the Basin, even with ongoing pinniped control efforts. In the 5-year review for Snake River spring-summer Chinook salmon, NOAA noted adult predation rates in the estuary are between 20% and 44%.

Several fish species prey on juvenile salmonids within the Columbia River migration corridor. Although data indicates that the predation rate by northern pikeminnow (a native species) has decreased from 8 percent to 6 percent, there are also indications that at least some other non-native predator species' populations are increasing (e.g., smallmouth bass, walleye). Predation by smallmouth bass and other species is a growing concern in tributaries such as the Yakima, Deschutes, and John Day and the mainstem Columbia River. While NOAA was not aware of data that quantifies the predation rates on MCR steelhead specifically, due to the number of fish predator species and the likelihood that some populations are increasing, NOAA concluded that juvenile mortality from fish predation remains a factor limiting the MCR steelhead DPS.

Enhanced Predator Management. NOAA concluded that the combination of avian and fish predation on MCR steelhead juveniles in the Columbia River and estuary posed a major risk to the persistence of MCR steelhead. While pinniped predation on adult MCR steelhead is an apparent low risk, pinniped predation poses a significant threat to other salmon stocks, particularly for spring/summer Chinook salmon. Both the high-priority list of near-term projects (Attachment B) and the 10-year project list (Attachment C) include enhanced resources to expand management efforts for pinniped, avian, and piscivorous predators to improve survival for Mid-Columbia salmon and steelhead.

Columbia River Hydro System

Operations. Appendix B of the RCBA identifies interim fish operations beginning in 2024 and beyond. It is intended that these agreed-upon operations, including monitoring and adaptive management, will remain in place for a period of 10 years or until decisions are made and implemented regarding whether to breach the LSR dams.

Fish Passage Infrastructure. Under the RCBA, the Corps will provide at least $50 million in funding to the Columbia River Fish Operation and Maintenance (O&M) and construction funding in FY 2024 to begin addressing and prioritize the backlog of projects identified by the Columbia River Inter-Tribal Fish Commission (CRITFC)[7] at Columbia and Snake River facilities for fish passage and survival.
The USG and the Six Sovereigns agreed to work collaboratively on identifying high priority needs and potential funding sources for the Corps' O&M and CRFM budgets for FY 2025 and beyond to address the backlog of infrastructure needs that constrain fish operations.

Hatcheries

Role of Hatcheries. Pacific salmon and steelhead are culturally and economically significant species for the communities of the Pacific Northwest. These fish sustain tribal communities, hold cultural significance, and are deeply woven into tribal traditions and beliefs. Hatcheries provide an opportunity for self-determination by supporting federally reserved and/or adjudicated fishing rights for tribes while habitat restoration and rebuilding actions are underway, while also providing valuable non-treaty recreational and commercial fishing opportunities that help keep the region connected to the resource. The hatchery/mitigation goal in the CBP Phase 2 Report includes three subgoals that recognize that artificial production is an important tool for supporting conservation and providing fish for harvest. Each

[7] https://critfc.org/documents/critfc-overview-of-columbia-river-usace-fish-budget-needs

hatchery subgoal requires consistency with natural production goals, and it is presumed that hatchery managers will use best management practices to achieve conservation needs[8]. Current hatchery actions are not meeting mitigation obligations, primarily due to under-funding[9]. The *US v Oregon* Production Advisory Committee has conducted an extensive review of hatchery program deferred maintenance and repair needs in the Columbia Basin and developed a funding needs table that is summarized in Attachment E, with Mid-Columbia priorities highlighted.

Hatchery production serves a critical function in the Basin, primarily as fishery mitigation for systemic declines in natural production, but also as an effective tool for conservation. Juveniles released by hatcheries provide clear benefits in the form of increasing total returns of salmon and steelhead to the Columbia Basin. In fact, hatchery-origin fish currently account for two-thirds of the total return of adults, and comprise the majority of the harvest of Columbia Basin salmon and steelhead. Hatcheries are also one tool to help support wild populations. When using this approach, fish managers carefully consider interactions between hatchery and natural-origin fish in the context of the overall goals for conserving threatened or endangered fish. Hatchery programs can provide short-term demographic benefits, such as increases in abundance during periods of low natural abundance. They also can help preserve genetic resources until limiting factors can be addressed. Conservation hatchery programs have saved certain stocks or populations from extinction (e.g., Snake River sockeye salmon). Moreover, hatchery fish have been used to reintroduce salmon or steelhead into areas where they were previously extirpated (e.g., upper Cowlitz, upper Deschutes, and Clearwater Rivers). Hatchery fish are also being used in some areas to increase natural production by supplementing spawning by natural-origin fish in the wild. Fish co-managers and other parties actively work to balance conservation goals with the fulfillment of treaty Tribal fishing rights and other applicable laws and policies.

The relative benefits and risks of hatchery fish are a source of uncertainty and debate across the region. There is, however, general recognition that historical hatchery practices, which did not fully appreciate the potential for adverse genetic and ecological impacts, adversely affected natural production in many areas. As a result, the regional co-managers have undertaken extensive reviews of hatchery practices and have been implementing reforms to reduce those risks. However, even with these reforms, the long-term use of artificial propagation may pose risks to natural productivity and diversity. The magnitude and type of the risk depends on the status of affected populations and on specific practices in the hatchery program.

Overall, while benefits and risks ultimately depend upon specific circumstances, hatchery fish can be an effective tool for supporting fisheries, reintroduction efforts, conservation, and enhancing abundance of depressed stocks in the short term.

Enhanced investment in Hatchery Infrastructure. The Production Advisory Committee through *US v Oregon* identified a billion-dollar backlog in hatchery deferred maintenance and repair funding needs across the Columbia Basin. Over a multi-year process involving three federal agencies, multiple sovereign tribes, and three states, this list has received census approval at the Policy Committee within

[8] Columbia Basin Partnership Task Force Phase 2 Report.

[9] Historic and Ongoing Impacts of Federal Dams on the Columbia River Basin Tribes, June 2024, Department of Interior.

US v Oregon. Within the Mid-Columbia region, large federal funding needs include: 1) Leavenworth Complex infrastructure fixes and adequate O&M budget, 2) Mitchell Act facilities that produce fish above Bonneville infrastructure and sufficient O&M to meet mitigation goals, 3) John Day Mitigation funding to support adequate infrastructure and O&M to meet JDM mitigation, and 4) Warm Springs National Fish Hatchery infrastructure needs addressing significant climate change challenges. These needs and others are highlighted in the attached list of hatchery infrastructure funding needs for the Columbia Basin (Attachment E).

List of Attachments

Attachment A: Summary of NOAA's 2022 Mid-Columbia Steelhead 5-year Review: Threats and Restoration Priorities

Attachment B: Six Sovereigns' Near-Term High-Priority Mid-Columbia Project List

Attachment C: Six Sovereigns' Draft 10-Year Mid-Columbia Project List and Summary Table

Attachment D: Final Cold Water Refuge Memorandum

Attachment E: US v OR PAC Hatchery Infrastructure Needs

Mid-Columbia Restoration Plan

September 30, 2024

Attachment A

Summary of NOAA's Mid-Columbia Steelhead 5-year Review: Threats and Restoration Priorities

This Mid-Columbia Restoration Plan was informed by the most recent ESA 5-year reviews completed by NOAA Fisheries in 2022. While the goal of the Columbia Basin Restoration Initiative (CBRI) is to rebuild all five species of salmon and steelhead in the Mid-Columbia geography, the most recent 5-year review analysis for the ESA-listed Middle Columbia River (MCR) steelhead Distinct Population Segment (DPS) completed by NOAA Fisheries in 2022 highlights the current status of threats and identifies priority recovery recommendations for freshwater habitat that would also be relevant to other species in the area (Appendix E).

Cascades Eastern Slope Tributaries MPG

Population-Specific Key Emergent or Ongoing Habitat Concerns Since the 2016 5-Year Review

The Cascades Eastern Slope Tributaries MPG includes the following populations: Klickitat River, Rock Creek, White Salmon River (functionally extirpated), Fifteenmile Creek, Deschutes River Eastside, Deschutes River Westside, and Crooked River (extirpated, but reintroduced as a nonessential experimental population (NEP) under the ESA). Ongoing and emerging habitat concerns for this MPG include:

- Low summer stream-flows, altered hydrographs, and elevated water temperatures continue to limit habitat quantity, quality, and resiliency for the Fifteenmile Creek, Deschutes River Eastside, Deschutes River Westside, and Crooked River populations (NMFS 2009, 2016a; ODFW 2010, 2012, 2019a; DRC and DWA 2013; Faber et al. 2018; Macnab and Springston 2019).
- Fish passage barriers at the Tenold, Underhill, and Lyda Diversion Dams on Fifteenmile Creek, and the Highway 197 culvert on Fivemile Creek (Fifteenmile Creek population) (ODFW 2019a).
- Floodplain disconnection and loss of function due to roads and railroad prisms (Klickitat population) (Yakama Nation Fisheries 2020).
- Lack of habitat quantity and diversity, low summer flows and high water temperatures, lost riparian function, disconnected floodplain, increased fine sediment delivery, an altered food web, and non-native fish effects (Rock Creek population) (Hardiman and Harvey 2019; Yakama Nation Fisheries 2020).

Population-Specific Geographic Areas of Habitat Concern Since the 2016 5-Year Review

- Documented increased smallmouth bass use of the lower Deschutes River since 2016 that could potentially displace or compete with juvenile steelhead for space and prey resources (Jason Seals, Fish Biologist, ODFW, personal communication, Feb 2, 2021) (Deschutes River Eastside and Deschutes River Westside populations).
- Coldwater refuges in the Columbia River mainstem and its tributaries for returning adult steelhead exposed to high temperatures in the Columbia River (all populations).

Recommended Future Recovery Actions Over the Next Five Years Toward Achieving Population Viability

- Protect the highest quality habitats and apply best management practices to conserve ecological processes that support population viability and primary life history strategies (all populations).
- Implement recovery actions to measurably increase summer streamflow, decrease summer water temperatures, and increase spatiotemporal habitat connectivity and resiliency (Crooked River, Deschutes River Eastside, Deschutes River Westside, Fifteenmile Creek, and Rock Creek populations). Potential actions include: riparian buffer protection, riparian vegetation planting, water conservation actions and agreements, beaver habitat protection and restoration, floodplain-channel reconnection through process-based methods (NMFS 2009; ODFW 2010, 2012, 2019b; Macnab and Springston. 2019; Nelson 2019; EPA 2021).
- Provide upstream passage at the Tenold, Underhill, and Lyda Diversion Dams on Fifteenmile Creek, and at the Highway 197 culvert on Fivemile Creek (ODFW 2019a) (Fifteenmile Creek population).
- Continue to support and implement the Fifteenmile Action Plan for Stream Temperature (FAST) to improve streamflows and water temperatures (Fifteenmile Creek population).
- Protect and enhance identified primary coldwater refuge areas between Bonneville and McNary dams in the Columbia River (EPA 2021).

John Day River MPG

Population-Specific Key Emergent or Ongoing Habitat Concerns Since the 2016 5-Year Review

The John Day River MPG includes the John Day River Lower Mainstem Tributaries, North Fork John Day River, Middle Fork John Day River, John Day River Upper Mainstem, and South Fork John Day River populations. Ongoing and emerging habitat concerns for this MPG include:

- High stream temperatures and low summer baseflow conditions in tributaries (Bare et al. 2017, 2019; McHugh et al. 2017; Middle Fork Intensively Monitored Watershed Working Group 2017; ODFW 2019b) (all populations). Irrigation withdrawal is one example of the factors contributing to these conditions.
- Degraded floodplain connectivity and function, channel structure and complexity, and riparian communities and large wood recruitment (all populations).
- Insufficient fish passage and irrigation diversion screening in the Lower Mainstem and Upper Mainstem John Day River population areas.
- John Day River wild, pre-spawn adult steelhead mortality in the Bonneville Dam to the Dalles Dam reached an average 16 percent during 2013-2019 (DART 2020b). Maintaining perpetual surface-water migration routes, providing sufficient flows and low water temperatures may reduce tributary overshoot pre-spawn mortality.
- Tributary overshoot - Approximately 53 percent of wild John Day adult steelhead overshoot their natal tributaries and migrate above McNary Dam. An imprecisely quantified percentage successfully return to the John Day River to spawn (Carmichael et al. 2012; Ruzycki and Tattam 2014; Ruzycki et al. 2015; Bare et al. 2017; ODFW 2017; Richins 2017; ODFW 2019b). This is a habitat concern because downstream dam passage can be hazardous for large adult fish and can contribute to migration delays. (All populations).

Population-Specific Geographic Areas of Habitat Concern Since the 2016 5-Year

- Review Coldwater refuges in the Columbia River mainstem and its tributaries needed for returning adult steelhead exposed to high temperatures in the mainstem (all populations) as identified in EPA's Columbia River Cold Water Refuges Plan (EPA 2021).

Recommended Future Actions Over the Next Five Years Toward Achieving Population Viability

- Decrease summer stream temperatures and increase summer baseflow connectivity and complexity in the John Day River watershed (all populations). Achieve these through a combination of riparian protection (e.g., fencing to manage grazing and browsing impacts), process-based restoration of floodplain-riparian habitats, and, where practical, water leasing or purchase agreements (McHugh et al. 2017; Middle Fork Intensively Monitored Watershed Working Group 2017; Weber et al. 2017; Macfarlane et al. 2018, 2019; Wathen et al. 2018; ODFW 2019b citing MacFarlane et al. 2017; Silverman et al. 2019; EPA 2021).
- Further reduce the effects of grazing in the Middle Fork John Day, roads, and water withdrawal for irrigation (including the removal of legacy structures in the floodplain) on Federal lands, to improve floodplain and riparian function, and channel structure.
- Improve fish passage and irrigation screening in areas affecting the Lower Mainstem and Upper Mainstem John Day River populations (ODFW 2019b).
- Protect and enhance Columbia River habitat in identified coldwater refuge areas between Bonneville and McNary Dams (WDFW 2019; ODFW 2020; EPA 2021).

Yakima River MPG

Population-Specific Key Emergent or Ongoing Habitat Concerns Since the 2016 5-Year Review

The Yakima River MPG includes the Satus, Toppenish, Naches, and Upper Yakima River populations. Ongoing habitat concerns for this MPG include:

- Altered mainstem flow regimes, physical impacts of diversions on juveniles and smolts, and changes in predation rates resulting from in the Bureau of Reclamation's Yakima Project infrastructure and operations (all populations) (YBFWRB 2015).
- Altered stream hydrology and channels from land management and levees resulting in loss/reduced floodplain connectivity and riparian habitat (all populations).
- Fish passage barriers (Upper Yakima River population) (YBFWRB 2015) that limit spatial diversity and productivity.
- Smolt entrainment through water diversion structures for irrigation and wetland management (Toppenish Creek population).
- Migratory corridor habitat conditions from Bonneville Dam to Prosser Dam that result in about 40 percent of adults lost prior to reaching Prosser (all populations) (Conley 2020). • Reduced stream flows (all populations) (YBFWRB 2015). Generally, reduced flows most severely impact juvenile rearing and smolt outmigration.
- Degraded habitat conditions from grazing (all populations). Example streams include Cowiche, Ahtanum, and Swauk Creeks, and Teanaway Basin streams (YBFWRB 2015).

- Severely compromised habitat in both the Tieton River (Naches population) and Wenas Creek (Upper Yakima population) by a combination of altered instream flows, entrainment at diversion facilities, and major passage barriers (YBFWRB 2009) (Tieton Dam and Wenas Dam).

Population-Specific Geographic Areas of Habitat Concern Since the 2016 5-Year Review

- Lack of habitat development because of regulated spring flows in the Upper Yakima and Yakima River (all populations).
- Habitat causes of smolt mortality at the Bureau of Reclamation's Roza, Sunnyside, and Prosser dams, as well as the Bureau of Indian Affairs' Wapato Dam (all populations).
- Fish passage barriers at Cle Elum, Keechelus, and Kachess Dams and barriers in the Wilson-Naneum, Caribou, and Wenas watersheds (Upper Yakima River population). Fish passage barriers at Tieton and Bumping Dams (Naches population).
- Entrainment through water diversion structures for irrigation and wetland management at Toppenish Creek (Toppenish Creek population).

Recommended Future Actions Over the Next Five Years Toward Achieving Population Viability

- Increase April and May river flows from Roza Dam to the mouth of the Yakima River (all populations).
- Modify Prosser Dam to prevent steelhead entrainment into the Prosser Canal (all populations).
- Modify Roza Dam to ensure that all steelhead smolts are passed through surface spill (Upper Yakima population).
- Monitor effectiveness of the interim smolt passage project at Sunnyside Dam and determine how to proceed with a permanent modification (Upper Yakima and Naches populations).
- Complete the Cle Elum Dam fish passage project and establish steelhead spawning above Cle Elum Reservoir (Upper Yakima population).
- Remove all or part of the Bateman Island causeway to allow improved steelhead passage (all populations).
- Develop a strategic plan and prioritization of levee setback projects along the Yakima River to improve floodplain function (all populations).
- Protect riparian areas from grazing and improve instream flows through water conservation projects and water acquisition in Cowiche, Ahtanum, and Swauk Creeks, and Teanaway Basin streams (Upper Yakima and Naches populations).

Walla Walla and Umatilla Rivers MPG

Population-Specific Key Emergent or Ongoing Habitat Concerns Since the 2016 5-Year Review

The Walla Walla and Umatilla Rivers MPG includes the Walla Walla, Umatilla, and Touchet Rivers populations. A fourth population, Willow Creek, is considered functionally extirpated. Ongoing habitat concerns for this MPG include:

- Low streamflows, high water temperatures, degraded habitat quantity and quality (instream, riparian, excess sediment), a lack of floodplain function, and impaired access to historic habitat areas (Hanson et al. 2017, 2020; ODFW 2019b) (Umatilla, Walla Walla, and Touchet populations).

- Limited floodplain and riparian habitat function due to the Milton-Freewater levee system and its maintenance under the Corps' PL 84-99 program on the Walla Walla River (Walla Walla population). • Impaired fish passage to upstream habitat at Bennington Dam, Nursery Bridge Dam (Walla Walla population), and McKay Dam (Umatilla population).
- Fish passage - Columbia River mainstem migratory corridor between Bonneville Dam and the Dalles Dam resulting in an average of 13 percent wild, pre-spawn adult Umatilla River and Walla Walla steelhead mortality from 2013-2019 (DART 2020b), and an estimated annual wild adult steelhead pre-spawn mortality between Bonneville Dam and John Day Dam is approximately 26 percent (Hanson 2018).
- Habitat concerns resulting in tributary overshoot – approximately 44 percent of wild Umatilla River steelhead and 37 percent of Walla Walla River wild steelhead overshoot above McNary and Snake River Dams (Richins 2017; Hanson 2018).

Population-Specific Geographic Areas of Habitat Concern Since the 2016 5-Year Review

The BLM managed access route that provides access to inholdings in the South Fork Walla Walla River is a concern due to numerous fords and recent road reconstruction to maintain access.

Recommended Future Actions Over the Next Five Years Toward Achieving Population Viability

- Continue flow and passage improvements in the Umatilla (Bureau of Reclamation), Walla Walla and Touchet Rivers, especially at Bennington Dam, the Mill Creek channel, and at Nursery Bridge.
- Construct a new Bennington Dam fish ladder.
- Complete the Walla Walla Integrated Flow Enhancement Study, which should include selecting an alternative and implementation.
- Provide passage: (1) and evaluate reintroduction feasibility over McKay Dam, a high priority passage action identified by the State of Oregon (Umatilla population); and (2) up Mill Creek, a tributary to the Walla Walla River to achieve abundance, productivity, and spatial structure goals for summer-run steelhead (Walla Walla population).
- Implement the Walla Walla Water 2050 Strategic Plan, including implementing levee setback projects up- and downstream of Milton Freewater (Walla Walla population).
- Work with Federal land managers and stakeholders to develop alternative routes to access private land on the South Fork Walla Walla River to ensure functional stream and riparian habitat for the Walla Walla population.

Protect and enhance Columbia River coldwater refuge areas between Bonneville and McNary Dams (EPA 2021

Mid-Columbia Priority Near-Term Habitat Actions

1) Lower Deschutes Tributary Habitat Enhancement Project This project will 1) restore instream flows in Trout Creek and 2) address the Jones Canyon Ford Crossing in the Lower Deschutes. The Trout Creek sub-basin is approximately 692 square miles and includes three major spawning areas for the Deschutes Eastside summer steelhead population (NMFS 2009, ODFW 2010). Habitat restoration efforts over the last twenty years in Trout Creek have improved riparian and in-channel habitat conditions, however low instream flows during the summer season remain a primary limiting factor for steelhead rearing, migration, and survival. Trout Creek flow restoration will establish a water transactions program to coordinate with landowners on instream leasing agreements to improve early and late summer season flows for steelhead rearing, migration, and survival. Flow improvements would improve ecological benefits from past habitat restoration efforts and also support future habitat restoration actions in the watershed. In 2012, the Bureau of Land Management paved the access road and gravel ford crossing at Jones Canyon, a tributary to the Lower Deschutes Wild and Scenic River and a designated spawning area for summer steelhead per the Middle Columbia Steelhead Recovery Plan (NMFS 2009, ODFW 2010). The paved ford is a fish passage barrier, and the crossing allows vehicles to drive through the mouth of Jones Canyon, creating additional mortality impacts to ESA-listed steelhead. Project activities will include developing technical designs for ford removal, re-channelization, and instream habitat restoration and project implementation to provide unimpeded summer steelhead passage and instream fish habitat improvements. This project does not have dedicated federal funding for its specific suite of actions. Applicable federal funding sources: NOAA, USFWS, USDA-NRCS, BPA, USBLM (programs TBD).

					Fiscal Year 2025												
Funding Levels for FY 2025	Total Funding Level Needed for FY25	Total Funding Secured in FY25	Total Funding Level Needed for FY26	Total Funding Secured in FY26	NOAA 2022 Fish Passage	NOAA 2023 Fish Passage	NOAA 2023 Tribal Fish Passage	BPA F&W Program	USBOR EWRP							CDS Requests*	6S CBRI
Lower Deschutes Tributary Habitat Enhancement Project	$ 1,250,000.00		$ 1,250,000.00														

2) Warm Springs Reservation Watershed Restoration Project:This project compliments the Accord project 2008-308-00 by working on watershed functions such as decreasing road density, improving culvert sizing/ removals, wet meadow treatments to ensure proper function and species adequacy. In areas where the 2020 Lionshead fire occurred (part of the 2020 labor day fire complexes) riparian enhancements and plantings to provide shade protection and runoff controls.

					Fiscal Year 2025												
Funding Levels for FY 2025	Total Funding Level Needed for FY25	Total Funding Secured in FY25	Total Funding Level Needed for FY26	Total Funding Secured in FY26	NOAA 2022 Fish Passage	NOAA 2023 Fish Passage	NOAA 2023 Tribal Fish Passage	BPA F&W Program	USBOR EWRP							CDS Requests*	6S CBRI
Warm Springs Reservation Habitat Enhancement Project	$ 900,000.00		$ 1,000,000.00														

3) Upper Deschutes Basin Aquatic Habitat Enhancement Project: The upper Deschutes subbasin has been the conter of attenction for the re-ntorguction of salmon and steelhead Since 2010 when the new FERC license was issued. Projects would focus on three key areas; water quantity, water quality, and salmon habitat. Imlementation would occur theough developing partenrships with watershed councils and land trusts and water conservation organizations as well as tribal implmeentation. On farm water effeciences, creating riparian easements, instream aquatic restoration ahve been identifed in the Deschutes, Crooked and MEtolius watersheds. Prtners include Oregon watershed Enhancement Board, Portland General Electric and the Confederated Tribes of Warm Springs among other private landowners, and other entities.

					Fiscal Year 2025												
Funding Levels for FY 2025	Total Funding Level Needed for FY25	Total Funding Secured in FY25	Total Funding Level Needed for FY26	Total Funding Secured in FY26	NOAA 2022 Fish Passage	NOAA 2023 Fish Passage	NOAA 2023 Tribal Fish Passage	BPA F&W Program	USBOR EWRP	USFS						CDS Requests*	6S CBRI
Upper Deschutes Basin Aquatic Habitat Enhancement Project	$ 2,148,537.00		$ 1,311,230.00							Deschutes National Forest is actively restoring aquatic and riparian habitat in the upper Deschutes River drainage.							

4) John Day Flow Enhancement and Riverscape Restoration This project will restore 1) instream flows in the John Day River and its tributaries by establishing the John Day Flow Restoration Program and 2) riverscape habitats and processes through a transformative landscape-scale restoration initiative, to address the primary limiting factors of low instream flows, high instream water temperatures, and reduced habitat connectivity for ESA-listed John Day summer steelhead ---the only wholly wild Middle Columbia summer steelhead Major Population Group (NMFS 2009, 2022; ODFW 2010, 2012, 2019; CTWSRO 2014; JDBP 2021). Project activities include funding a full-time Qualified Local Entity (QLE) project manager to coordinate landowner outreach, and develop and maintain water transaction and leasing agreements for the middle and upper Mainstem John Day and tributaries. Riverscape restoration initiative activities will include coordination with partners to conduct landowner outreach, pre- and post-project surveys (e.g., beaver activity surveys, geomorphic surveys, stewardship planning assessments), in-channel and floodplain restoration through the use of low-tech process-based restoration methods (beaver dam analogs, post-assisted log structures, small wood structures), riparian vegetation community protection and restoration (riparian fencing, vegetation planting and/or management, and grazing management practices), and protection and restoration of wet meadows in low elevation watersheds most susceptible to climate change impacts. This coordinated, transformational restoration project does not have dedicated federal funding for its specific suite of focal watershed actions. A request of $650,000/year for the first two years of program development is included in the CBRI Committment funding package (pending). The request in the table below is for the first two years of program implementation. Applicable federal funding sources: NOAA, USFWS, USDA-NRCS, BPA, USDA-USFS, USBOR, USBLM (programs TBD).

					Fiscal Year 2025												
Funding Levels for FY 2025	Total Funding Level Needed for FY25	Total Funding Secured in FY25	Total Funding Level Needed for FY26	Total Funding Secured in FY26	NOAA 2022 Fish Passage	NOAA 2023 Fish Passage	NOAA 2023 Tribal Fish Passage	BPA F&W Program	USBOR EWRP	NRCS Irrigation Efficiencies						CDS Requests*	6S CBRI
John Day Flow Enhancement and Riverscape Restoration	$ 1,000,000.00		$ 1,000,000.00														

5) John Day Basin Land Acquisition and Easement Project: This project will protect and conserve high-priority habitat areas, through land acquisition and conservation easements, e.g., Phipps Meadow, within the John Day River and its tributaries that support ESA-listed summer steelhead and s

					Fiscal Year 2025												
Funding Levels for FY 2025	Total Funding Level Needed for FY25	Total Funding Secured in FY25	Total Funding Level Needed for FY26	Total Funding Secured in FY26	NOAA 2022 Fish Passage	NOAA 2023 Fish Passage	NOAA 2023 Tribal Fish Passage	BPA F&W Program	USBOR EWRP							CDS Requests*	6S CBRI
John Day Basin Land Acquisition and Easement Project	$ 2,300,000.00		$ 2,500,000.00														

6) McKay Creek Fish Passage Restoration and Monitoring Project McKay Creek is a relatively large tributary by area (191 square miles) of the Umatilla River and includes approximately 25% of the suitable Mid-C steelhead spawning and rearing habitat in the subbasin. McKay Dam completely blocks fish passage at river mile six. The dam is 165 feet high with 65,500 acre-feet of managed storage capacity and was constructed during 1923-1927 to furnish water to the Stanfield and Westland Irrigation Districts. The Middle Columbia Steelhead Recovery Plan (2009) and the 2022 5-Year Review, National Marine Fisheries Service (NMFS) identifies impaired fish passage to upstream habitat at McKay Dam as a key habitat concern and limiting factor for the Umatilla River steelhead population. Currently the Umatilla River steelhead population does not meet criteria for recovery. Restoring passage at McKay Dam will reconnect the population with an additional 80-plus miles of spawning and rearing habitat that would results in increased spatial distribution and likely contribute to the overall abundance of Umatilla River steelhead, both of which are criteria that need to be meet for delisting and meeting goals of healthy and abundant populations.

					Fiscal Year 2025												
Funding Levels for FY 2025	Total Funding Level Needed for FY25	Total Funding Secured in FY25	Total Funding Level Needed for FY26	Total Funding Secured in FY26	NOAA 2022 Fish Passage	NOAA 2023 Fish Passage	NOAA 2023 Tribal Fish Passage	BPA F&W Program	USBOR EWRP							CDS Requests*	6S CBRI

McKay Creek Fish Passage Restoration and Monitoring Project	$ 110,000.00	$ -	$ 300,000.00														

7) UmaBirch Habitat Restoration and Conservation Easement Project The project goal is to restore full floodplain connection to the confluence of the Umatilla River and Birch Creek Watershed. Birch Creek is one of the main producers of ESA-Listed Mid-C steelhead in the Umatilla Basin. Additional goals include restoring instream habitat for ESA-listed and non-listed fish, which benefit channel morphology and instream processes, and protect existing infrastructure at the Birch Creek confluence which includes Birch Creek from RM 0.0 to RM 0.7 and RM 1.8 to RM 2.7, the Umatilla River from RM 47.8 to RM 49.9, the entire Birch Creek alluvial fan, and the associated floodplain areas on both sides of Birch Creek and the Umatilla River. The Conservation Easement is about 4 miles/950 acres and 3.5 cfs water. The total cost of the overall project is $16,985,347 with a contribution of $10,000,000 in Capital funds from BPA F&W Program leaving a $7,000,000 shortfall in funding. Project milestones would include:
• Complex floodplain connectivity project of 3.8 river miles and 313.9 acres
of riparian wetland habitat
• Transferring Water Rights and development of groundwater wells to
support farm and building envelopes.
• Decommissioning 42.6 acre feed lot. Transform manure effluent ponds into new wetlands
• Decommission USACE - certified levee
•Installation of large wood instream for river complexity and fish habitat.

					Fiscal Year 2025												
Funding Levels for FY 2025	Total Funding Level Needed for FY25	Total Funding Secured in FY25	Total Funding Level Needed for FY26	Total Funding Secured in FY26	NOAA 2022 Fish Passage	NOAA 2023 Fish Passage	NOAA 2023 Tribal Fish Passage	BPA F&W Program	USBOR EWRP	NFWF America the Beautiful						CDS Requests*	6S CBRI
UmaBirch Habitat Restoration and Conservation Easement Project	$ 4,000,000.00		$ 3,000,000.00							$3,200,000							

8) Walla Walla River USACE Nursery Reach Ecosystem Restoration General Investigation Study: Complete passage design and implementation of the proposed Nursery Bridge sill notching and channel design to orient low flow to the east bank for reliable activation of the Eastside Fishway. Consolidate the WWR Irrigation District Eastside irrigation diversion with the Little WWR Diversion removing in-stream infrastructure, eliminating a seasonal fish passage barrier and in-water channel manipulations. Obtain US Army Corps of Engineers authority and funding to complete an ecosystem restoration feasibility study under Section 216 of the Flood Control Act of 1970. Utilize feasibility study conclusions to develop designs that address impaired floodplain-riverine processes within the project reach. Increase right-of-way of the floodway where feasible Congressional Authority for GI Study and Funding. The USACE GI Study has an estimated cost of $1.6 million for CTUIR in FY2025 as project sponsor ($1.5 million study 50% cost share, $100,000 project management). An additional $100,000 for project management is needed for FY25 and FY26.

					Fiscal Year 2025												
Funding Levels for FY 2025	Total Funding Level Needed for FY25	Total Funding Secured in FY25	Total Funding Level Needed for FY26	Total Funding Secured in FY26	NOAA 2022 Fish Passage	NOAA 2023 Fish Passage	NOAA 2023 Tribal Fish Passage	BPA F&W Program 2025	USBOR EWRP	USACE Tribal Waiver (Tentative)					USACE 1135	CDS Requests*	6S CBRI
Walla Walla River USACE Nursery Reach Ecosystem Restoration General Investigation Study	$1,600,000	$ 1,200,000.00	$ 100,000.00	$ -	$ 1,000,000.00			$500,000		$700,000							

9) Mill Creek Gose Street Fishway Passage Project. The Mill Creek Gose Street Fishway Passage Project is planned for FY2025 construction. The sponsor, Tri-State Steeelheaders, and partner CTUIR are at 60% design with completed basis for design report. The preferred alternative includes an updated pool and chute fishway and about 900 feet of newly constructed channel downstream. The project is currently in BPA HIP IV review process for environmental compliance with cost share funding from the BPA F&W Program and NOAA 2023 Tribal Fish Passage funding (Total $800,000 funding). NOAA is participating in the BPA HIP IV review process and recently sent their passage team out to look at this particular passage problem. Extensive cost share funding has been applied for by the sponsor with CTUIR support, however, funding is listed as tentative. We are identifying the current short fall of $3.2 million given secured funding.

					Fiscal Year 2025											
Funding Levels for FY 2025	Total Funding Level Needed for FY25	Total Funding Secured in FY25	Total Funding Level Needed for FY26	Total Funding Secured in FY26	NOAA 2022 Fish Passage	NOAA 2023 Tribal Fish Passage	NOAA 2023 Tribal Fish Passage	BPA F&W Program 2025	USBOR EWRP	WA SRFB Targeted Investment	WA BAFBRB Grant	WA DOE Walla Walla Water 2050			USACE 1135	CDS Requests*	6S CBRI
Mill Creek Gose Street Fishway Passage Project	$4,000,000	$800,000	$ -	$ -		$500,000		$300,000		$ 2,814,404.00	$ 2,814,404.00	$ 500,000.00					

10) Yakima Delta Temperature and Flow – Including Batemen Island Causeway. Bateman Island appears to be fully funded for FY25 due to positive sediment sampling results. There may be some cost overruns that arise, but the BPA 6S CBRI contingency funding will hopefully meet that need. Previous estimates Secured by USACE suggest that final design and real estate costs (PED and LERRD) are $2,437,000. USACE should finish final design in FY25. YN will provide $75,000 of BPA 6S CBRI for permitting support, $80,000 for facilitation support from YBIP (including staff time), $20,000 for WDFW staff support. There may also be a very large buyout payment related to the causeway this year but those negotiations are confidential including the amount, paid for by the state. The remaining $609,250 is likely to be covered by the 2022 NOAA fish passage grant, though the full $2,732,000 in that grant for bateman may be obligated in FY25 for a design build contract if the USACE contracts the design and construction. As for the $725,000 in FY25 CDS funding that passed, we do not know how that fits into this picture, but assume it contributes to the USACE 1135 federal costs.

					Fiscal Year 2025												
Funding Levels for FY 2025	Total Funding Level Needed for FY25	Total Funding Secured in FY25	Total Funding Level Needed for FY26	Total Funding Secured in FY26	NOAA 2022 Fish Passage	NOAA 2023 Fish Passage	NOAA 2023 Tribal Fish Passage	BPA F&W Program	USBOR EWRP	USBOR AERP Prosser	USBOR AERP Wapato	USBOR YRBWEP Funding	YN Funding (match)	WA State YBIP Funding	USACE 1135	CDS Requests*	6S CBRI
Yakima River Delta and Bateman Causeway Removal	$ 2,612,000.00	$ 2,612,000.00			$ 609,250.00			$ -						$ 100,000.00	$ 1,827,750.00	725,000?	$ 75,000.00

11) Toppenish Creek Fan – Including Pom Pom Toppenish Floodplain Restoration. The $10.42 million in the table for Toppenish Fan is way too high, it looks like they added the multi-year total for the Toppenish Creek 638, plus all BPA funds, plus a USFWS passage grant for work in another area of Topennish Creek. The Toppenish Creek fan projects are a very specific subset of work on Toppenish Creek; most of the funds identified by the federal agencies went to other needs on Toppenish Creek. BPA funding is not significant for the projects in the Toppenish Fan area (~$25,000). BPA funding in FY25 is about $1.7M and is focused on fish monitoring and habitat work on other parts of Toppenish Creek, and on Satus and Ahtanum Creeks. YRWP works on about 600 stream miles within the Reservation, the Toppenish Fan projects are in a critical 8 miles of those.

					Fiscal Year 2025												
Funding Levels for FY 2025	Total Funding Level Needed for FY25	Total Funding Secured in FY25	Total Funding Level Needed for FY26	Total Funding Secured in FY26	NOAA 2022 Fish Passage	NOAA 2023 Fish Passage	NOAA 2023 Tribal Fish Passage	BPA F&W Program	USBOR EWRP	USBOR AERP Prosser	USBOR AERP Wapato	USBOR YRBWEP Funding	YN Funding (match)	WA State YBIP Funding	USACE 1135	CDS Requests*	6S CBRI
Toppenish Creek Fan	$3,400,000	$ 2,400,000.00	$3,000,000	$ -	$700,000	$400,000	$ -		$ -	$ -	$ -	$2,000,000	$ -	$ -	$ -	$3,000,000	

12) Yakima Basin BOR Irrigation Infrastructure Improvements. For the USBOR fish passage improvements on the lower river dams (Wapato, Sunnyside, Prosser, Wanawish), our current estimate is a total FY25 funding need of $9,881,123 with secured or currently being negotiated funding amount of $7,101,647. The $2 million dollar difference is largely a result of reduced scope due to NOAA providing a partial award of $14 million rather than $20 million in the last NOAA Fish Passage grant funding round, and an additional $600,000 to begin design and conduct value planning for electrification of KIDs pumps. Substantial additional funding is needed to address fish passage at the four lower Yakima River dams, and will likely be needed for years to come. Despite success in receiving several grants, the scale of the projects simply makes it difficult to fund these projects using grants alone. We would also add $2 million for a study of the water energy environment nexus in the basin to help find appropriate replacement power for run of river hydroelectric generation by using USBOR or partner infrastructure and right of ways. A secondary goal of this study would be to also find additional power projects that could provide power at the project rate for fish passage improvement and water delivery reliability projects such as electrification of KIDs hydraulic pumps, and potentially a pumping plant for YTID, etc.

					Fiscal Year 2025												
Funding Levels for FY 2025	Total Funding Level Needed for FY25	Total Funding Secured in FY25	Total Funding Level Needed for FY26	Total Funding Secured in FY26	NOAA 2022 Fish Passage	NOAA 2023 Fish Passage	NOAA 2023 Tribal Fish Passage	BPA F&W Program	USBOR EWRP	USBOR AERP Prosser	USBOR AERP Wapato	USBOR YRBWEP Funding	YN Funding (match)	WA State YBIP Funding	USACE 1135	CDS Requests*	6S CBRI
BOR Irrigation Improvements (Wapato, Sunnyside, Prosser, Wanawish)	$ 9,881,123.18	$ 7,101,647.18			$ 253,002.00	$ 3,566,097.00	$ 778,253.00	$ -	$ 95,250.00	$ 1,073,379.45	$ 303,691.05	ughly $300,000?	$ 294,792.87	$ 187,181.81			$ 250,000.00

13) Fund, Execute, and Expand Pinniped Predation Actions in the Columbia Basin This project has two major efforts, one would increase sea lion removal efforts upstream of RM 112 and two would inform us on overall predation contribution of sea lions residing in the lower Columbia River tributaries and provide a pathway toward implementing management actions there. The project would be implemented by the Columbia River Inter-Tribal Fish Commission, Washington Department of Fish and Wildlife, and the Oregon Department of Fish and Wildlife. We propose to increase the sea lion removal effort in the management area (RM 112 to McNary Dam) as a means to removing more sea lions. Additional crew and equipment must accompany the increase in effort because trap avoidance occurs when there isn't a weekly resting period. We identified a couple of locations where an additional trap array could be deployed within the sea lion management area. Those locations are Phoca Rock (45.572378, -122181745) and near the mouth of the Sandy River (45.566843, -122.41107). Both locations are haul-out sites for sea lions and there are pros and cons for each location. Regardless of which specific location is selected, the crew and equipment requirements will be very similar. This trapping and removal effort will temporally overlap with removal efforts at Bonneville Dam. We propose additional monitoring in and around the lower Columbia River tributaries to assess sea lion impacts on upriver salmon stocks and the extent that sea lions may use these areas as steppingstones to move further up the Columbia River. We also want to establish trapping locations and evaluate success in the proposed "bubble areas" near the tributary mouths. This work would occur from January through March coinciding with eulachon runs. Initial trapping locations will be Coffin Island and docks in Rainer, OR. Proposed monitoring and assessment will be composed of trapping, tagging, and releasing sea lions to track their movements, to determine the proportion of animals that may switch from impacting eulachon to upriver salmon and steelhead. Scat collections will be used to determine sea lion diet. Under the current 120(f) removal authority, we cannot euthanize sea lions trapped in the mainstem Columbia River downstream of RM112. If few of the sea lions switch to upriver salmon predation, management of these animals becomes a lower priority. Alternatively, if many of these sea lions switch to upriver salmon predation, these data will help an argument to the regulatory agency that "bubble area" trap and removal should be incorporated in the removal permit.

					Fiscal Year 2025												
Funding Levels for FY 2025	Total Funding Level Needed for FY25	Total Funding Secured in FY25	Total Funding Level Needed for FY26	Total Funding Secured in FY26	NOAA 2022 Fish Passage	NOAA 2023 Fish Passage	NOAA 2023 Tribal Fish Passage	BPA F&W Program	USBOR EWRP						USACE 1135	CDS Requests*	6S CBRI
Fund, Execute, and Expand Pinniped Predation Actions in the Columbia Basin	$ 8,000,000.00							$ 281,480.00									$ 1,720,000.00

14) Expand Current Avian Predation Suppression Actions in the CRB The COE has commented in the Proposed Action (PA) that they will implement affective hazing at the hydroelectric projects. Currently that is not occurring at all projects. Gulls are the predominate avian predators, normally located in the tailrace where the majority of predation occurs.
The COE maintains passive and active hazing backed by lethal take at the different dams. The current program effectives varies between the projects due to lack of adequate funding to maintain 7/day a week hazing as well as some project do not have adequate passive hazing structures such as bird wires.
Current program for all 8 dams is likely 100-200k. McNary dam has no bird wires a plan to construct in 2026 is underway. Cost is project to be 6 – 10 million depending on the final design. Repairs to existing bird lines at the various projects is likely to 60-100K.

					Fiscal Year 2025												
Funding Levels for FY 2025	Total Funding Level Needed for FY25	Total Funding Secured in FY25	Total Funding Level Needed for FY26	Total Funding Secured in FY26	NOAA 2022 Fish Passage	NOAA 2023 Fish Passage	NOAA 2023 Tribal Fish Passage	BPA F&W Program	USBOR EWRP						USACE 1135	CDS Requests*	6S CBRI
Expand Current Avian Predation Suppression Actions in the CRB								$ 530,000.00									

15) Basin-wide CRS Related Piscine Predation Reduction Actions [add narrative here]

					Fiscal Year 2025												
Funding Levels for FY 2025	Total Funding Level Needed for FY25	Total Funding Secured in FY25	Total Funding Level Needed for FY26	Total Funding Secured in FY26	NOAA 2022 Fish Passage	NOAA 2023 Fish Passage	NOAA 2023 Tribal Fish Passage	BPA F&W Program	USBOR EWRP	USFS					USACE 1135	CDS Requests*	6S CBRI
Basin-wide CRS Related Piscine Predation Reduction Actions										USFS currently active							

Attachment C Mid-Columbia
10-year Project List

(See separate spreadsheet)

Attachment D

Resilient Columbia Basin Agreement (RCBA) - United States Government and Six Sovereigns Cold Water Refuge Projects Memorandum

26 July 2024

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1. Summary

This Memorandum documents the United States Government's (USG) and Washington State, Oregon State, the Nez Perce Tribe, the Confederated Tribes and Bands of the Yakama Nation, the Confederated Tribes of the Warm Springs Reservation of Oregon, and the Confederated Tribes of the Umatilla Indian Reservation's (Six Sovereigns) agreement on identifying and seeking funding to study and implement three to five projects for implementation beginning in Fiscal Year (FY) 2024-2025 to enhance and protect, or provide additional cold-water refuge (CWR) in the Columbia Basin in Oregon and Washington. The five priority projects are:

- Hood River, Oregon
- Columbia River Delta Enhancement, Washington (Wind River, Klickitat River, White Salmon River confluences in Washington and Herman Creek Cove confluence in Oregon with the Columbia River)
- Deschutes River, Oregon (confluence with the Columbia River)
- Umatilla River, Oregon (confluence with the Columbia River)
- Walla Walla River, Washington (Bi-state Sovereign benefit, confluence with the Columbia River)

All five projects are expected to benefit upper Columbia River, Snake River, and mid-Columbia River salmon and steelhead populations with adult migration timing that occurs June through September and use the above cold-water refuges. The projects are also expected to benefit mid-Columbia and lower-Columbia salmon and steelhead populations indigenous to the above basins.

Efforts to maintain and enhance CWRs in the Columbia River Basin (including the five identified priority delta projects) will require both funding in FY26 and after and increased coordination with other habitat protection and restoration efforts like those stemming from US Government commitment to fund mid-Columbia tributary habitat restoration projects over the next 10 years.

2. Background

On 14 December 2023, the Departments of the Army, Interior and Energy, along with other federal agencies including National Oceanographic and Atmospheric Administration (NOAA) and Bonneville Power Administration (BPA) signed a Memorandum of Understanding (MOU) with the Six Sovereigns. As part of that MOU, the United States Army Corps of Engineers (USACE) and Environmental Protection Agency (EPA) agreed to work with the Six Sovereigns to:

"…identify and seek funding, as appropriate, to study and complete 3 to 5 projects to enhance or protect existing cold water refuge or provide additional cold water refuge in the Columbia Basin in Oregon and

Washington. At least two of the five projects will be accomplished in Oregon. Special emphasis will be made toward reducing both warm waters and predation in tributary mouths. At least 2 of 5 projects will be focused on Mid-Columbia (Zone 6 and its tributaries) salmon and steelhead populations. Projects will be identified by June 30, 2024 for implementation beginning in FY 2024-2025." The United States' Government Commitments in Support of the "Columbia Basin Restoration Initiative," December 14, 2023 (Resilient Columbia Basin Agreement)[1].

EPA's January 2021 Columbia River Cold Water Refuges Plan[2], hereafter, EPA's 2021 Plan, indicated tributaries of the Columbia River main stem have considerably lower water temperatures which migrating adult salmon and steelhead temporarily use to escape warm summer river temperatures. CWRs serve an increasingly important role to some salmon species, particularly adult summer steelhead and fall Chinook salmon, as the Lower Columbia River has warmed over the past fifty years and will likely continue to warm in the future (Figure 1)[3].

To develop this list of priority projects, staff from the USACE, EPA, NOAA, and the Six Sovereigns met on a bi-weekly basis beginning on April 26, 2024, and discussed their perspectives on potential restoration sites including previous work conducted in these areas, potential future work, applicable authorities, potential benefits, and other related aspects. This Memorandum documents the results of those efforts.

[1] https://critfc.org/wp-content/uploads/2024/02/USG-Commitments-toCBRI.pdf
[2] https://www.epa.gov/sites/default/files/2021-01/documents/columbia-river-cwr-plan-final-2021.pdf
[3] https://critfc.org/fish-and-watersheds/climate/

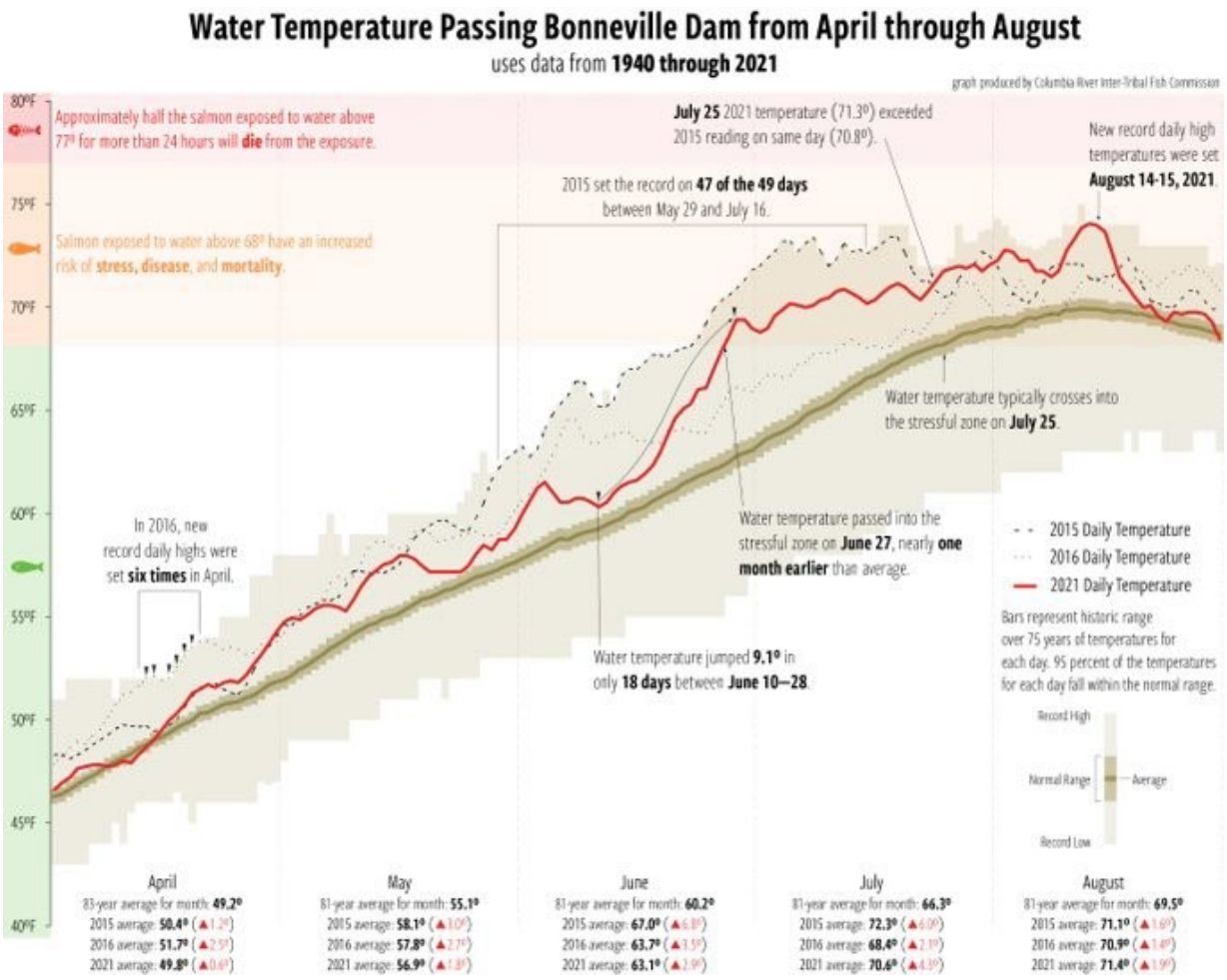

Figure 1. Water Temperature passing Bonneville Dam, 1940 to 2021, https://critfc.org/fish-and-watersheds/climate/.

3. Factors Considered

The USG and Six Sovereigns collaborated to develop an initial list of projects considering (i) EPA's and USACE's authorities; (ii) location; and (iii) potential CWR and ancillary benefits to native species. In addition, an emphasis was placed on the results from the EPA's 2021 Plan. Due to the nature and intent of this commitment in the RCBA, these projects are focused on tributary river mouths, or confluences, where they intersect with the Columbia River mainstem.

The Six Sovereigns have requested that the other CWR commitments in the RCBA (described below) remain closely aligned and consistent with, but not limited to, these five projects to ensure maximum effectiveness of these CWRs.

3.1 Authorities

The USG has identified the following list of authorities that might be utilized to address the cold water refuge work. The list is not intended to be an exclusive of other authorities or funding mechanisms.

3.1.1 Environmental Protection Agency

Clean Water Act Section 319 Grants. Pass-through funding to States and Tribes. Section 319 grants of the Clean Water Act focus on non-point pollution program implementation and projects. States and Tribes select projects once these grant funds are received. Washington, Oregon, Idaho, and Pacific Northwest Tribes respectively receive about $3M, $2M, $2M, and $2.5M annually.

State Revolving Funds (SRF). Pass-through funding to States. SRF Clean Water funds are used for infrastructure improvements historically focused wastewater treatment plants. Funds are typically provided as low interest loans, but a percentage of the program funds qualify for loan forgiveness (which are effectively grants). In recent years, there has been a focus on green infrastructure for a percentage of the annual funds, which can include stormwater projects, irrigation efficiency projects, and perhaps large-scale riparian projects. States select the projects from applicants. Respectively, Washington, Oregon, and Idaho receive about $27M, $18M, $8M annually.

EPA-Directed Special Project Funds. EPA awards Columbia River restoration grants under Section 123 of the Clean Water Act. Funding has been focused on toxic reduction and monitoring to date. Initial annual funding in 2020 was about $2M, but the Bipartisan Infrastructure Law authorized $79M in 2021. Recipients include State, Tribes, local governments, universities, and non-profits.

3.1.2 United States Army Corps of Engineers

Continuing Authorities Program (CAP) Studies authorized under various Water Resource Development Acts (WRDA), commonly referred to as **Sections 1135**, **206** and **536**. These authorities may be used for small-scale ecosystem restoration projects. Specifically, Section 1135 applies to areas affected by existing USACE projects and section 536 specific to the Columbia River estuary. All are standing authorities that compete for funding with other projects nationally and require non-federal cost-share sponsors with a federal contribution cost limit of $10M, and total project cost of $13.3 – $15.3M with cost-share, depending on the authority.

Section 216 Studies authorized under the Flood Control Act of 1970 can potentially modify existing USACE projects in response to changed physical, economic, or environmental conditions. Operation and maintenance funds the initial appraisal effort. These projects compete nationally for USACE “new start” funding, require Congressional authority for construction and require a non-federal cost-share sponsor.

Tribal Partnership Program is a standing authority for projects on Tribal lands. These projects also compete with other projects nationally for USACE funding and requires non-federal cost-share sponsors; However, Tribes receive numerous cost-sharing benefits including the first $200,000 being fully federally funded and waiving a portion of the cost-share for both study and implementation phases. Implementing projects over $26M require Congressional authorization.

Large-Scale Investigations Studies and Construction require specific authorization from Congress. Projects compete nationally for USACE “new start” funding and require non-federal cost-share sponsor. These projects do not have a cost limit.

Original Authorities for Columbia River Dams can be used to conduct Operations and Maintenance of USACE-owned facilities. These projects could be used in combination with Columbia River Fish Mitigation appropriations that are consistent with authorized purposes of the existing project. Funding is typically prioritized for legal / ESA requirements.

3.2 Project Locations

Tributary confluence areas lying in the mid-Columbia region (Bonneville Dam to McNary Dam reservoir) were identified for their potential contribution to CWR. Three are located in Oregon and two in Washington (Figure 2). Four of these projects reside within the Zone 6 fishery management zone. Confluences of all these selected projects are affected by hydro system operations and reside within the dam impounded portion of the mainstem and tributary confluence.

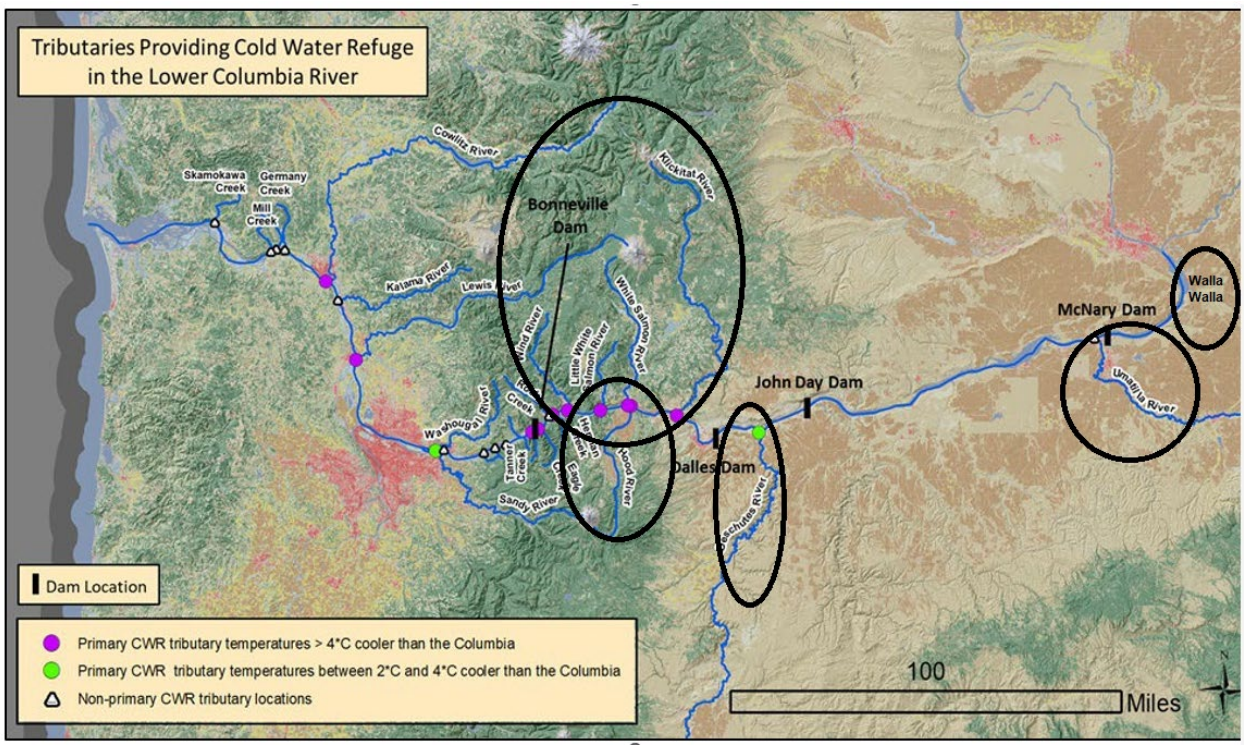

Figure 2. Location of five priority CWR projects and their relation to the 12 primary CWR identified in EPA's 2021 Plan.

3.3 Fish Stocks Benefitting

The date when fish migrate through the Lower Columbia River and the associated water temperatures significantly affect whether or not fish use CWRs. The migration timing of the salmon and steelhead species that migrate up the Columbia River and pass Bonneville Dam each summer is displayed in Figure 3 along with the average Columbia River temperature during that time. The mainstem Columbia is warming earlier and CWRs are likely becoming more important for a broad suite of native cold water Columbia River species.

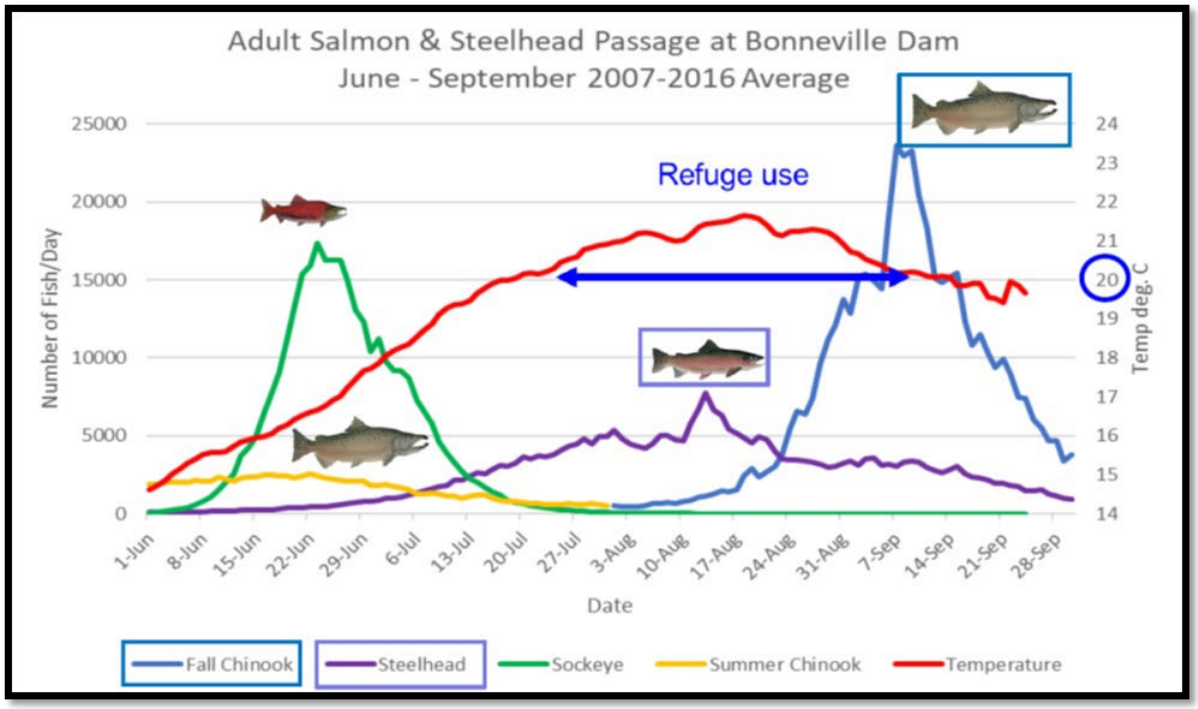

Figure 3. Salmon and steelhead passage timing and water temperature at Bonneville Dam (DART)

3.4 Benefits

3.4.1 EPA's 2021 Cold Water Refuge Plan summary

The EPA's 2021 Plan includes several main findings. First, EPA identified 23 CWR sites in the Lower Columbia River, twelve of which are primary refuges making up 98% of the total volume of available refuge. Second, EPA found that adult steelhead and fall Chinook salmon use CWR the most because they migrate when Columbia River mainstem temperatures are warmest (>68 degrees Fahrenheit). On the other hand, sockeye salmon, which died in large numbers in 2015 and 2021 due to warm early summer Columbia River temperatures are most successful migrating upstream before river temperatures warm. The EPA's 2021 Plan further explained that, when temperatures rise above 21°C, about 80% of steelhead and 30% of fall Chinook salmon move into the CWR. The warmer the river, the more fish use the CWR. EPA's 2021 Plan found that this use is an adaptation to rising Columbia River temperatures. With summer river temperatures predicted to rise over time from climate change, fish will likely use CWR more in the future. EPA's 2021 Plan Report found that, in an average year, about 65,000 steelhead and 5,000 fall Chinook are in eight CWR sites between the Bonneville Dam and The Dalles Dam during the end of August. Ultimately, using CWR appears to benefit the fish by reducing their exposure to high river temperatures and associated loss of energy, stress, disease, and mortality.

Recently, warm river water and delayed fall cooling has caused coho runs to hold up in the Bonneville Pool at Drano Lake rather than moving upstream to the tributaries.

EPA concluded that maintaining the volume of 12 primary CWR sites and increasing the amount of CWR provided by the Umatilla River is necessary to meet Oregon's CWR narrative criteria. In addition, EPA

recommends restoration of other tributaries to create more CWR considering predicted continued warming of the Lower Columbia River.

3.4.2 Need to Maintain and Improve Current CWR Conditions

EPA's assessment is that CWR is sufficient under current Columbia River temperatures if the volume of the 12 primary CWR is maintained, and the Umatilla River is cooled to provide increased CWR volume in August and September. EPA reached this assessment primarily because there do not appear to be significant capacity limitations on the use of currently available CWR, adult steelhead and fall Chinook migration adjusted survival rates generally exceed 90% between Bonneville Dam and McNary Dam, and increasing CWR in the Umatilla River is important for the overall distribution of CWR in the Lower Columbia River.

Of significant concern to the USG and Six Sovereigns are those primary CWR tributaries that are predicted to have August mean temperatures that exceed 18°C. Tributary temperatures exceeding 18°C, although still serving as CWR if more than 2°C cooler than the Columbia River, are at levels associated with increased risk of disease and energy loss. For instance, by 2040, the Deschutes, Lewis, and Sandy Rivers are predicted to have August mean temperatures exceeding 18°C, temperatures that will diminish their CWR function. By 2080, the Cowlitz, White Salmon, and Klickitat Rivers are predicted to have August mean temperatures exceeding 18°C, diminishing their CWR function.

Improvements to CWR are not expected to significantly cool mainstem Columbia River temperatures but rather contribute to cooling tributary river mouth area temperatures and prevent or protect those waters from warming. Additionally, CWR projects may provide deeper areas where adults may find cooler bottom water and groundwater seeps, etc.

3.4.3 Sediment Deposition

Despite a significant increase in soil runoff from agriculture and other human development, only around 8 million tons of Columbia River sediment reaches the Pacific Ocean each year. Instead, there is a significant deposition at the tributary river mouths above Bonneville Dam. These changes are particularly noticeable at the mouths of tributaries in the impounded pools. Where still water of a reservoir can no longer transport sediment, it quickly settles, creating a sediment fan or delta. Significant deltas have formed at mouths of the Klickitat, Hood, White Salmon, Wind, and Deschutes Rivers.

These deltas have negatively impacted safe ingress and egress for tribal fishers accessing the Columbia River at the treaty in-lieu fishing sites. Deepening these areas would not only enhance the volume of cold water contained in these cold-water refuges at the mouths of these tributaries but would also provide safer access to tribal fishers at the Wind, Klickitat, and Deschutes River boat launches.

Additionally, these deltas may negatively impact juvenile salmon and steelhead by creating favorable habitat to predatory fish (e.g., smallmouth bass, pikeminnows, northern etc.) and avian predators (e.g., cormorants, gulls, etc.). In addition to enhancing these CWR to benefit adult salmon and steelhead, deepening these areas could also benefit juvenile salmon and steelhead by improving access (i.e., channel depth) to cool waters, and reducing the amount of favorable habitat for predatory species.

3.4.4 Actions to Protect and Restore CWR

EPA's 2021 Plan identifies the following actions that can be taken to restore tributaries: enforcement of existing regulatory processes that protect riparian function, restoration actions identified in existing

plans, cool water releases from tributary reservoirs, and sediment management, augmentation through pumped groundwater and engineered flow diversions.

4. Cold Water Refuge Projects Identified

4.1 Hood River, Oregon

Located at river mile 166 of the Columbia River, the Hood River is approximately halfway between the Bonneville Dam and Dalles Dam. It is located one mile upstream from the White Salmon River, the next downstream refuge. **Hood River** temperatures in August average 15.5°C, **6°C cooler than the Columbia River**. This classifies the Hood River an excellent CWR (<16°C). However, the large sand bar at the confluence, channelization in the lower Hood River, and relatively low depth (~0.8 meters) in the summer may present barriers to salmon using the Hood River as a refuge. Additionally, a fish monitoring station near the mouth of the Hood River detected few out-of-basin steelhead (10-15 annually) migrating upstream of the station between 2010-2015. For that reason, only the mouth of the Hood River is included as a CWR. See Photo 1.

Project elements may include deepening the Hood River channel entrance / confluence to improve access and volume of cold water. Hood River is one of twelve primary CWR that contribute to 98% of total CWR volume in Lower Columbia River. Section 202 of the WRDA of 2020 included specific authorization for ecosystem restoration at the confluence of the Hood River with the Columbia River. The Confederated Tribes of the Warm Springs Reservation (CTWS) and USACE with funding through the Planning Assistance to States and Tribes (PAST) Program, are implementing an active tag study evaluating juvenile use at the confluence of the Hood River and Columbia River.

Section 202 of the WRDA of 2020 included specific authorization for ecosystem restoration at the confluence of the Hood River with the Columbia River. The project has two sponsors (the CTWS and the Port of Hood River) that have provided letters of interest to the USACE's Portland District, requesting a new start study under General Investigations. USACE's Portland District has requested funding since 2022.

Photo 1. Hood River

4.2 Columbia River Delta Enhancement, Washington and Oregon

The Columbia River Delta Enhancement project may include the Wind, Klickitat, White Salmon and Herman Creek confluences with the Columbia River. These watersheds are four of twelve primary CWR that contribute to 98% of total CWR volume in Lower Columbia River. Project elements may include potentially filling-in shallow areas (e.g., near the boat ramp at Wind River confluence, which is a potential heat source); converting other shallow areas to riparian uplands; and deepening the exit channels into Columbia River; and ongoing maintenance to maintain habitat function. Project plans will consider opportunities to optimize multi-uses. The project(s) could be funded through WRDA Section 216 or as a series of CAP studies by USACE.

On March 22, 2024, the Columbia River Inter-Tribal Fish Commission (CRITFC) submitted a letter of intent to partner with the USACE on a feasibility study to address tributary river mouth delta sedimentation in Zone 6 of the Columbia River, between Bonneville and McNary dams. This sediment accumulation affects water temperature and habitat in ways that negatively impact salmon survival and is therefore a high priority for our member tribes to address.

Given the current federal Columbia River hydro system configuration and operation, these river confluences cannot be restored to pre-dam conditions. The goal of this feasibility study is to build on existing information to inform designs to modify deltas to benefit both juvenile and adult salmon survival and provide an overall ecological lift to the area. This project will complement the work already being done by the USACE in collaboration with the Yakama Nation and CRITFC on a Columbia River delta assessment focusing on the Wind, White Salmon, and Klickitat deltas and with the USACE and the Warm Springs Tribe on a Hood River fish survival study.

Located at river mile 147.5, Herman Creek is one of eight primary CWR between Bonneville Dam and the Dalles Dam that fish use as they migrate upstream. Herman Creek is 4.5 miles upstream of the next closest refuge at Eagle Creek. **Herman Creek** temperatures in August average 12°C, **9°C cooler than the Columbia River**. This temperature makes Herman Creek an excellent quality CWR (<16°C). The lower portion of Herman Creek is designated by Oregon Department of Environmental Quality (ODEQ) for salmon and trout rearing and migration, with a water quality criterion of 18°C for maximum water temperatures. Herman Creek and cove has been designated by the State of Oregon as a thermal angling sanctuary that is closed to angling during the period of high CWR use (July 15 – September 15). See Photo 2.

Located at river mile 151, the Wind River is one of eight primary CWR between Bonneville Dam and The Dalles Dam that fish use as they migrate upstream. The Wind River is 3.5 miles upstream of the next closest refuge in Herman Creek. **Wind River** temperatures in August are estimated to be **7°C cooler than the Columbia River** with average temperatures of 14.5°C, making the Wind River an excellent quality CWR (<16°C). Washington Department of Ecology has designated the lower portion of the Wind River as core summer salmonid habitat with a water quality criterion of 16°C for maximum water temperatures. See Photo 3.

Located at river mile 165, the White Salmon River is one of eight primary CWR between Bonneville Dam and The Dalles Dam that fish use to migrate upstream. The White Salmon River is 6.3 miles upstream of the next closest refuge at the Little White Salmon River. Average water temperatures in the **White Salmon River** in August are roughly 15.7°C, **5.5°C cooler than the Columbia River.** This feature makes the White Salmon River an excellent CWR (<16°C). The Washington Department of Ecology designates the lower portion of the White Salmon River for core summer salmonid habitat and has assigned a water quality criterion of 16°C for maximum water temperatures. See Photo 4.

The Klickitat River is located at river mile 177 of the Columbia River. It is one of the first tributaries migrating salmon encounter east of the Cascades. The Klickitat River is eleven miles upstream of the CWR in the Hood River. Average August temperatures in the **Klickitat River** are estimated to be 16.4°C, approximately **5°C cooler than the Columbia River**. This classifies the Klickitat River as a good CWR (16-18°C). With mean flows of 851 cfs and lower temperatures relative to the Columbia River, migrating fish use the confluence and approximately 1.8 miles of stream in the Klickitat River as a CWR. See Photo 5.

Photo 2. Herman Creek (yellow pin is estimated CWR upstream extent)

Photo 3. Wind River (yellow pin is estimated CWR upstream extent)

Photo 4. White Salmon River (yellow pin is estimated CWR upstream extent)

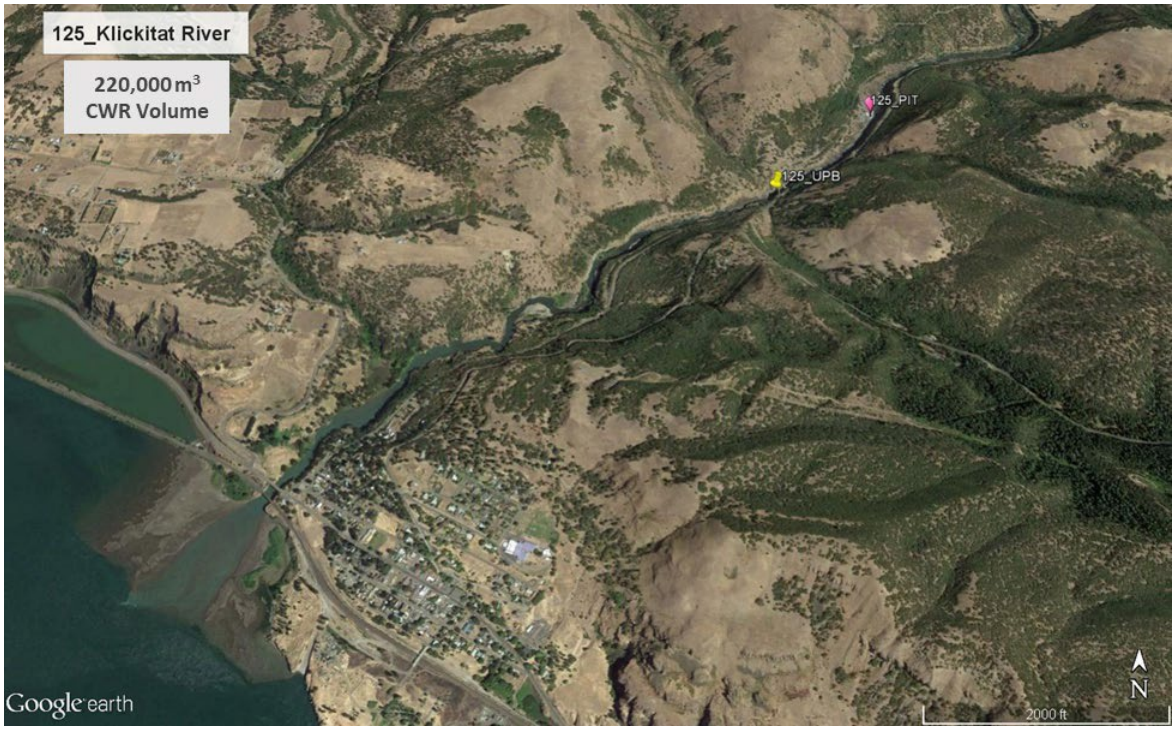

Photo 5. Klickitat River (yellow pin is estimated CWR upstream extent)

4.3 Deschutes River, Oregon

Like the Columbia River Delta Enhancement Project, project elements in the Deschutes River may include deepening confluence area, removing shallow sediment, and restoring, to the extent practicable, tributary confluence habitat in the lower delta, including riparian plantings. The project could be pursued as a CAP Study by USACE. The Deschutes River is one of twelve primary CWR that contribute to 98% of total CWR volume in Lower Columbia River. This is the only CWR identified in The Dalles reservoir.

The Deschutes River joins the Columbia River at river mile 201, approximately 24 miles upstream of Klickitat River, the closest downstream refuge. In August, the mouth of the **Deschutes River** averages 19°C, typically about **2°C colder than the Columbia River** in August, making the Deschutes River confluence an important CWR area. This status is recognized by the State of Oregon which has designated the confluence area and the Deschutes River upstream to Moody Rapids a thermal angling sanctuary that is closed to angling during the period of high CWR use (July 15 – September 15). Additionally, 18°C is recognized as threshold temperature in terms of salmon and steelhead vulnerability, which is near the existing average August temperature in the Deschutes. Therefore, targeted CWR restoration efforts at the Deschutes River confluence are expected to deliver substantial benefits as they bring the average temperature down to or below the 18°C threshold. See Photo 6.

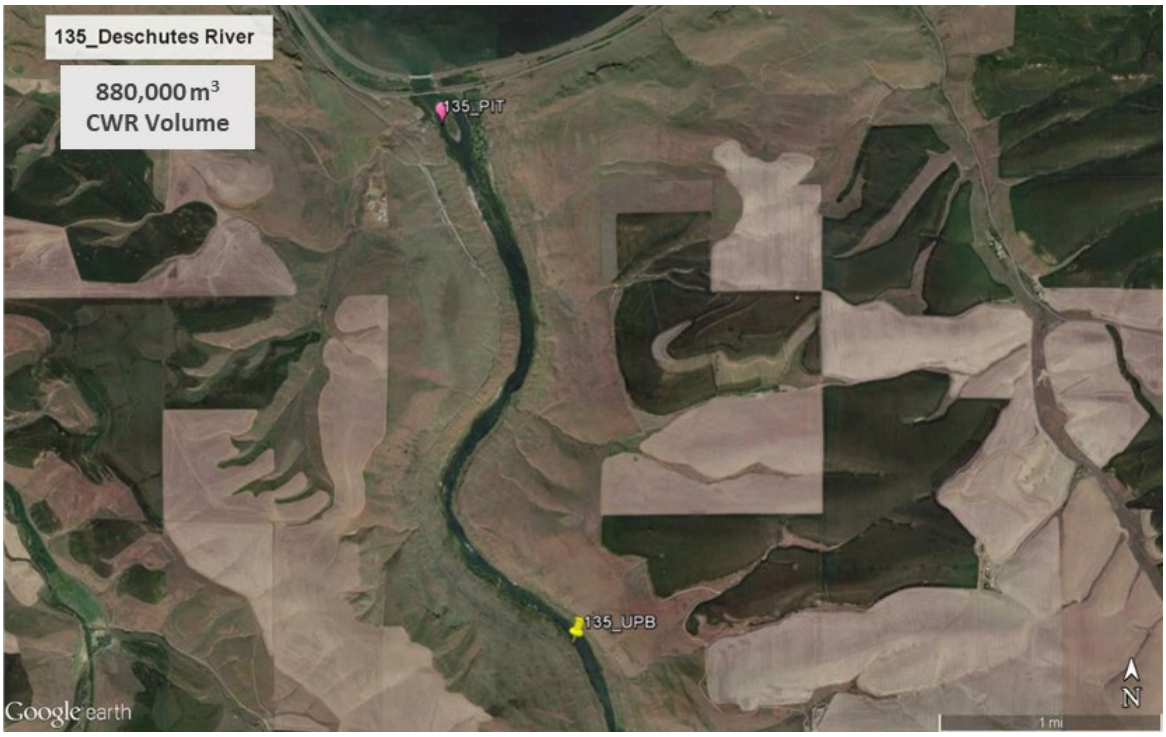

Photo 6. Deschutes River (yellow pin is estimated CWR upstream extent)

4.4 Umatilla River, Oregon

The project would be located near the town of Umatilla, in John Day Pool below McNary Dam and would be similar in scope to the Columbia River Delta Enhancement and Deschutes projects. The Initial study would determine conservation measures and feasibility that support CWR. Project could be pursued through WRDA 216 or series of CAP studies by USACE. New studies Increasing CWR in the Umatilla River is important for the overall distribution of CWR in the lower Columbia River. In addition to a proposed

confluence study, Congressional authority and funding is necessary for additional water exchange for improved summer base flows needed for Umatilla flow management. The proposed Umatilla Basin Water Right Settlement by CTUIR would likely be used to improve instream flow.

These studies and projects, along with other in-basin conservation measures such as water acquisition to restore summer river flows, restoring stream morphology and floodplain connectivity to reduce channel widths and create pools and groundwater connectivity, and restoring riparian vegetation to provide river shading will be instrumental in supporting CWR at the confluence of Umatilla River. The goal of the project will be to cool Lower Umatilla River temperatures in August and September consistent with the Oregon and Confederated Tribes of the Umatilla Indian Reservation (CTUIR) Temperature TMDLs (ODEQ 2001 and EPA 2005) to provide increased CWR volume to make the Umatilla River a more consistent and viable CWR and would help address the overall distribution of CWR in the Lower Columbia River.

The Umatilla River confluence with the Columbia River is located at river mile 284.7, just downstream of McNary Dam. The Deschutes River is the nearest downstream refuge, 84 river miles downstream. The Umatilla River is only considered a CWR in late August and September when it is cooler than the Columbia River. The average temperature of the Umatilla River is warmer than the Columbia River in June and July, and the two rivers have the same average temperature of 20.8°C in August. In September, the **Umatilla River** is on average **1.9°C cooler than the Columbia River** but has portions of the day that are more than 2°C cooler than the Columbia River, thereby providing intermittent CWR. See Photo 7.

Photo 7. Umatilla River (yellow pin denotes upstream extent of refuge)

4.5 Walla Walla River, Washington

The study or project scope would be similar to the Umatilla River confluence. The initial confluence study would determine conservation measures and feasibility that support CWR, including addressing

accumulated sediments at the confluence of the Walla Walla. This project could leverage the on-going *Walúula Floodplain Restoration Project scope of* work by the CTUIR and USFWS at McNary Wildlife Refuge. The project goal is to restore the lower 6-miles (1,500 acres) of floodplain habitat currently in assessment and design phase. The project could be pursued under an existing Planning authority.

In addition to a proposed confluence study, Congressional authority and earmarked funding is necessary for additional water exchange for improved summer base flows in the Walla Walla River. These efforts are supported by the Walla Walla Water 2050 Strategic Plan (2021). This effort is led by the 3-Sovereign partnership of the State of Washington, State of Oregon and CTUIR and is a strategic effort for water resource management. There is currently an integrated flow enhancement study identifying and evaluating broad scale strategies, and where possible specific projects, necessary to meet stream flow targets in the Walla Walla Basin. The Walla Walla Water 2050 Strategic Plan also recognizes conservation values of flow acquisition, floodplain restoration and riparian vegetation beneficial to CWR.

State legislation has been approved in both Oregon and Washington to manage flow and instream conservation flow protection across state lines. The Walla Walla Subbasin is bi-state, Oregon and Washington and within the Umatilla Tribes' homeland with confluence as defined in Washington. A bi-state flow study is in-progress and Congressional authority, and funding will be needed for the Walla Walla River for flow management. This will be instrumental in supporting CWR at the confluence of Walla Walla River. The 2016 NOAA Mid-Columbia Steelhead 5-yr Status Review Report concluded that the greatest opportunity to advance recovery in the Walla Walla and Umatilla Rivers Major Population Group (MPG) would be to increase flows and identified reducing water temperatures and removal/improvement of passage barriers as priority actions.

The Walla Walla River enters the Columbia River at roughly river mile 315, approximately 30 miles upstream from the Umatilla River and 10 miles downstream from the confluences of the Snake River. See Photo 8.

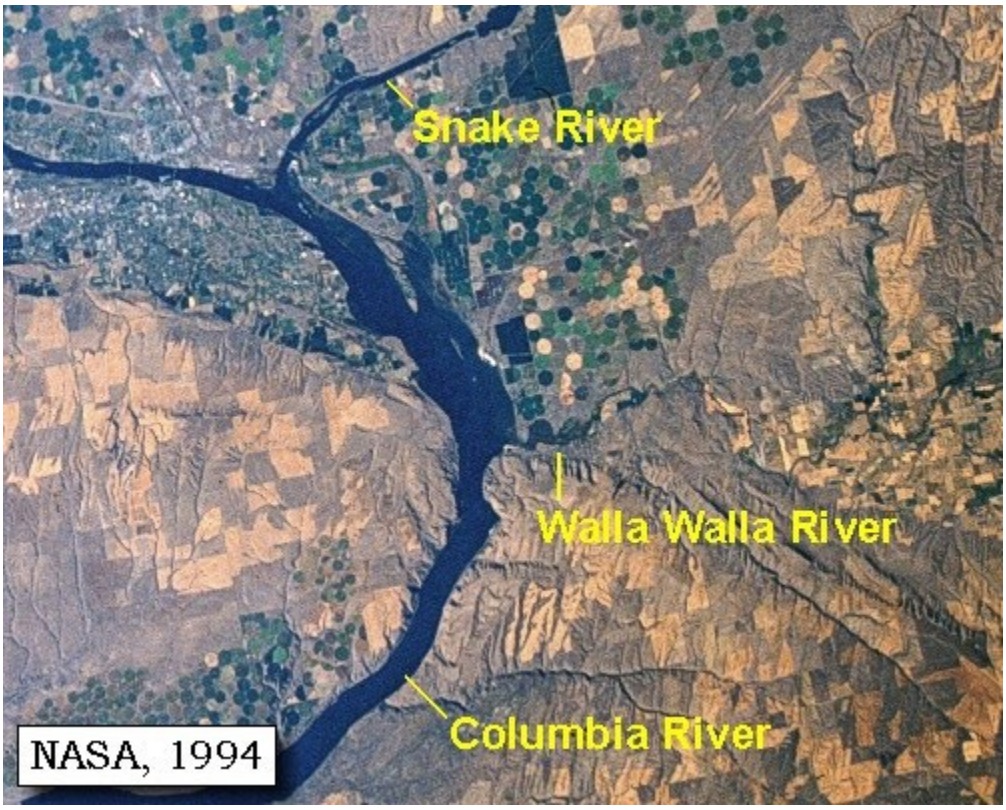

Photo 8. Walla Walla River

5. Additional Recommendations

The Six Sovereigns and USG recognize the value of continuing to work together to further plan, design and construct this initial list of projects; and to develop a **broader, comprehensive strategy** per the following CWR-related federal commitment:

*"**Cold Water Refuge.** EPA's 2021 Cold Water Refuge Plan identifies various actions to protect cool tributaries and reduce temperatures in specific tributaries to enhance their function as a cold-water refuge. For example, a priority action in in many watersheds is to restore stream riparian areas and geomorphology to cool streams and improve salmon habitat, especially on agricultural lands. These stream restoration projects can be implemented through grant funding and Federal, state, Tribal, and local partnerships. Costs could run to as much as $50 million over 10 years. FWS recognized the need for additional cold water refuge assessments within the Columbia and Snake River basins in the 2020 FWS Biological Opinion and will work with sovereigns and other Federal agencies to identify methods and funding mechanisms to develop the assessments and implementation plans. The USG will work with states and Tribes to agree on a timeline and further refine cost estimates for these projects. In addition to funding from the USG, EPA will partner with the states to assist them in understanding how to leverage EPA Clean Water Act (e.g., State Revolving Fund and Section 319) funding for these same projects. EPA will work to identify thermal pollution, both point source and non- point source, and larger sources of warm water will be investigated and remedied to protect cold water sources and cold water habitat in the mainstem and tributaries to the Columbia River in Oregon and Washington."* [Resilient Columbia Basin Agreement, Pages 11-12]

This continued collaboration would primarily focus on projects in the CWR tributary watersheds and upper basins to protect and restore cold water sources consistent with, and in support of, the Mid-Columbia 10-year planning exercise being led by NOAA Fisheries.

"Mid-Columbia Restoration Plan. *The Six Sovereigns and the USG will work together (with other sovereigns as appropriate) to develop recommended actions to rebuild mid-Columbia salmon and steelhead stocks as described in the Rebuilding Interior Columbia Salmon and Steelhead report, including, but not limited to, appropriately managing predation and protecting and restoring instream flows, water quality, and fish passage and habitat improvements in Oregon and Washington in low- to mid-elevation tributary and mainstem habitats ...."*

Additionally, building a broader, comprehensive strategy may include CWR work in the USFWS 2020 Biological Opinion on the Operation and Maintenance of the Columbia River System.

"Term and Condition 17.2.2.d*: "Within eight years of the date of this Opinion (i.e., July 2028), the Action Agencies shall assess existing research and available data (similar in scope to Torgersen et al 2012, EPA 2019 or Mejia et al 2020) to determine existing nearshore habitat and cold water refugia in the Snake River from the mouth of the Clearwater to Columbia River to identify opportunities for restoration and protection of those areas and/or operational actions to minimize loss of refugia areas. If data gaps are identified, then additional field studies may be required.*

Coordinating these above, related efforts would bring the "whole of government" approach to reducing stream temperatures in support of the priorities and opportunities identified in the EPA's 2021 Plan.

6.0 Conclusion

This memo helps to identify priorities and may be used to develop state, tribal and federal agency budget requests for FY26 and after to expedite investigation and implementation of CWRs in the mainstem Columbia River. Details for most of the projects recommended here are included in the "Snapshots" section of the EPA's 2021 Plan starting on Page 120.

7.0 Contributors

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Attachment E

Columbia Basin Federal Hatchery Infrastructure Needs - Deferred Maintenance and Capital Fixes, originally developed in 2020 and updated in January 2024. Developed by the U.S. vs. Oregon Production Advisory Committee. Infrastructure funds secured or obligated identified up to May 2024. Cost estimates are subject to inflation and changes in the price of materials (concrete, steel, lumber, oil) etc. hatcheries (Mid-Columbia needs shaded violet)

Funding Authorization & Primary facility	Federal Authorization	Capital Infrastructure/Deferred Maintenance Cost Estimate	Funds Obligated	Capital Funding/ Authorization	Asset Management Documentation/Justification	Owner	Operator	O&M/M&E Funding
Bonneville Power Administration FCRPS Mitigation - Anadromous facilities in black font & Resident facilities in blue font								
Chief Joseph Hatchery & Satellites	Northwest Power Act (Public Law 96-501) Mitigation for FCRPS	$0.479 M	2023 - RDC funds $25M from Bonneville Power Administration to NPCC Fish and Wildlife Program. Prioritization of funding asset elements at each facility is being identified in collaboration with the operators.	Bonneville Power Administration	NPCC Asset Management Strategic Plan (Estimates in column C represent individual assets that will expire in the next 5 years, 2023-2027. Note that these estimates represent minimum costs for existing asset elements, and do not include cost for labor/install, permitting, etc. and full replacement of asset elements may cost more).	Bonneville Power Administration	Colville Tribe	Bonneville Power Administration per NPCC Fish and Wildlife Program
Levi George Hatchery & Satellites		$2.541 M					Yakama Nation	
Eagle and Springfield		$1.299 M					Idaho Dept Fish and Game	
Melvin R. Sampson Coho Facility		$0					Yakama Nation	
Grande Ronde Supplementation Satellite facilities		$1.187 M					Nez Perce Tribe, Umatilla Tribe, Oregon Dept Fish and Wildlife	
Nez Perce Tribal Hatchery & Satellites		$ 0.949 M					Nez Perce Tribe	
Klickitat (joint funding with Mitchell Act)		proposed repairs and fixes per				Washington	Yakama Nation	
Lyle & Castile Falls		$0.120 M				Bonneville Power Administration	Yakama Nation	
Parkdale Fish Hatchery & Satellite		$1.504 M					Warm Springs/Oregon Dept	
Walla Walla Hatchery		$0.659 M					Umatilla Tribe	
Umatilla Hatchery & Satellites		$6.117 M					Oregon Dept Fish and	
Colville Tribal Hatchery		$2.442 M					Colville Tribe	
Sekokini Springs		$0.045M					Montana Fish, Wildlife &	
Kalispel Tribal Hatchery		$0.288 M					Kalispel Tribe	
Kootenai Tribal and Twin Rivers		$0.879 M					Kootenai Tribe	
Spokane Tribal Hatchery and Sherman		$1.271 M					Spokane Tribe	
TOTAL BPA		**$19.781 M**	**Update: $25M obligated by BPA from RDC (Reserve Distribution Clause) funds in 2023**					
Total Anadromous		$14.856 M						
Total Resident Fish		$4.925 M						
Bureau of Reclamation - Grand Coulee Dam Mitigation - Department of Interior								
Entiat NFH	Grand Coulee Dam Project, 49 Statutue 1028 in 1935; Reauthorized under Columbia Basin Project Act, 57 Statute 14 in 1943; then under the Fish and Wildlife Coordination Act, 60 Statute 1080 in 1946. Mitigation for Grand Coulee Dam	$7.668 M	None to date	BOR through Appropriations	Leavenworth Fisheries Complex Project Implementation Plan: 2017-2027 & Winthrop NFH Rearing Units and Pipe Replacement Alternatives Analysis. Note these estimates are for alternatives to rehab existing rearing structures and not moderization. Leavenworth fixes only support 1.2M of the 2.2M spring Chinook juveniles required for mitigation	U.S. Fish and Wildlife Service	US. Fish and Wildlife Service	Appropriations through BOR with 92% reimbursement to Treasury by BPA
Leavenworth NFH		$34.454 M				U.S. Fish and Wildlife	U.S. Fish and Wildlife Service	
Winthrop NFH		$19.3 M				U.S. Fish and Wildlife Service	U.S. Fish and Wildlife Service	
TOTAL BOR		**$61.422 M**	**Update:**					
Lower Snake River Compensation Plan - Lower Snake River Dam Mitigation - U. S. Fish and Wildlife Service - Department of Interior								
Clearwater	Water Resource Development Act 1976 (90 Stat. 2917). Mitigation for four Lower Snake River Dams	$75.4 M	2023 - RDC funds $25M from Bonneville Power Administration to USFWS/LSRCP. 2024 - USG Commitments/CBRI (Columbia Basin Restoration Initiative) Stay Settlement $200M	No federal authorization for capital construction and no identified funding for capital infrastructure projects. LSRCP annual budget < $1M annually to address deferred maintenance	LSRCP 2023-2025 Asset Mngt Plan	U.S. Fish and Wildlife Service	Idaho Dept Fish and Game	Bonneville Power Administration - 100% reimbursable. Direct Funding MOA btwn BPA & USFWS
Dworshak NFH Spring Chinook (USFWS Assets)		$0.8 M					USFWS/Nez Perce Tribe	
Hagerman NFH		$14.1 M					Idaho Dept Fish and Game	
Irrigon		$12.2 M					Oregon Dept Fish and Wildlife	
Lookingglass		$8.2 M					Oregon Dept Fish and Wildlife	
Lyons Ferry		$61 M					Washington Dept Fish and	
Magic Valley		$15.2 M					Idaho Dept Fish and Game	
McCall		$2.4 M					Idaho Dept Fish and Game	
Sawtooth		$15 M					Idaho Dept Fish and Game	
Tucannon		$6.6 M					Washington Dept Fish and	
Wallowa		$900K					Oregon Dept Fish and Wildlife	

Pre-Decisional / Deliberative

Programmatic		$3.5 M		issues			USFWS	
TOTAL LSRCP		**$216 M**	**Update: $225M obligated by BPA. $25M from RDC funds in 2023 and $200M from USG Commitments in 2024**					
US Fish and Wildlife Service - Columbia River Development Mitigation - Department of Interior								
Kooskia NFH	Congressional Appropriation 1961 - 75 Statute 255. Mitigation for Columbia River development	$13 M	None to date - but potential for Non-Mitchell Act IRA hatchery infrastructure funds	USFWS owned facilities - no authorization required for USFWS making capital improvments - just funding	USFWS -R1 FYP 2019-2025 DM.CI Asset Plan	U.S. Fish and Wildlife Service	Nez Perce Tribe	Appropriation through Dept of Interior to USFWS
Warm Springs NFH		$30-40 M			Warm Springs NFH/Schoolie Springs Feasbility Study Report & USFWS -R1 FYP 2019-2025 DM.CI Asset Plan	U.S. Fish and Wildlife Service	U.S. Fish and Wildlife Service	
TOTAL USFWS		**$43-53 M**	**Update:**					
Mitchell Act - Columbia River Development Mitigation - National Marine Fisheries Service - Department of Commerce								
Carson NFH	Mitchell Act (Public Law 75-502), 1938. Mitigation for Columbia River development	$6.0 M	2023 - $60M - U.S. Dept. Commerce Inflation Reduction Act funding through NOAA Fisheries	No identified funding for capital infrastructure or large defered maintenance expenses. Current O&M budget barely sufficient to support continued operation of facilities to rear fish.	USFWS -R1 FYP 2019-2025 DM.CI	U.S. Fish and Wildlife	U.S. Fish and Wildlife Service	Appropriations through Commerce - NOAA Fisheries
Little White Salmon NFH (joint funding		$10.0 M			USFWS -R1 FYP 2019-2025 DM.CI	U.S. Fish and Wildlife	U.S. Fish and Wildlife Service	
Bonneville (joint funding with JDM)		$3.5 M			Mitchell Act Deferred Maint List	Corps of Engineers	Oregon Dept Fish and Wildlife	
Cascade		$2.1 M			Mitchell Act Deferred Maint List	Oregon	Oregon Dept Fish and Wildlife	
Oxbow		$1.1 M			Mitchell Act Deferred Maint List	Oregon	Oregon Dept Fish and Wildlife	
Klickitat (joint funding with BPA)		$11.4 M			Mitchell Act Deferred Maint List	Washington	Yakama Nation	
Prosser (joint funding with JDM)		$0.6 M			Mitchell Act Deferred Maint List	BOR	Yakama Nation	
Ringold (joint funding with JDM)		$12.5 M			Mitchell Act Deferred Maint List/	Washington	Washington Dept Fish and	
Kalama Falls		$14.5 M			Mitchell Act Deferred Maint List/	Washington	Washington Dept Fish and	
Skamania		$31.7 M			Mitchell Act Deferred Maint List/	Washington	Washington Dept Fish and	
Washougal		$24.7 M			Mitchell Act Deferred Maint List/	Washington	Washington Dept Fish and	
Willard NFH		$10.25 M			USFWS -R1 FYP 2019-2025 DM.CI	U.S. Fish and Wildlife	U.S. Fish and Wildlife Service	
Snake coho assets at Kooskia NFH/NPTH		$0.4 M			Mitchell Act Deferred Maint List	Nez Perce Tribe	Nez Perce Tribe	
Eagle Creek NFH		$22.4 M			USFWS -R1 FYP 2019-2025 DM.CI	U.S. Fish and Wildlife	U.S. Fish and Wildlife Service	
Programmatic (i.e., marking trailer, truck		$5.1 M			Mitchell Act Deferred Maint List			
BELOW BONN Fallert Creek		$24 M			Mitchell Act Deferred Maint List/	Washington	Washington Dept Fish and	
NF Toutle		$40 M			Mitchell Act Deferred Maint List/	Washington	Washington Dept Fish and	
Beaver Creek		$32 M			Mitchell Act Deferred Maint List/	Washington	Washington Dept Fish and	
Clackamas		$2.8 M			Mitchell Act Deferred Maint List	Oregon	Oregon Dept Fish and Wildlife	
Klaskanine		$2.5 M			Mitchell Act Deferred Maint List	Oregon	Oregon Dept Fish and Wildlife	
Big Creek		$10.2 M			Mitchell Act Deferred Maint List	Oregon	Oregon Dept Fish and Wildlife	
Gnat Creek		$1.9 M			Mitchell Act Deferred Maint List	Oregon	Oregon Dept Fish and Wildlife	
Sandy		$6.1 M			Mitchell Act Deferred Maint List	Oregon	Oregon Dept Fish and Wildlife	
WDFW Hatchery Fishway		$6 M			Mitchell Act Deferred Maint List	Washington	Washington Dept Fish and	
TOTAL MITCHELL ACT		**$281.75M**	**Update: $60M IRA funding obligated by NOAA Fisheries in 2023**					
US Army Corps of Engineers - John Day Dam Mitigation - Department of Defense								
Spring Creek NFH	Rivers and Harbors and Flood	**$12 M**	None to date			U.S. Fish and Wildlife	U.S. Fish and Wildlife Service	Appropriations through
Bonneville (JDM assets)	Rivers and Harbors and Flood	**$2.9 M**				Oregon/USACE	Oregon Dept Fish and Wildlife	Appropriations through
John Day Mitigation buildout/Ringold or Umatilla.		**$25-175 M?**			Integrated Limited Reevaluation Report (aka LRR). Full implementation of the John Day Mitigation program is still being developed by the Corps, the U.S. vs. Oregon Parties, and BPA.			
US Army Corps of Engineers - Dworshak Dam Mitigation - Department of Defense								

Pre-Decisional / Deliberative

Dworshak NFH (Corps assets)	Flood Control Act of 1962, P.L. No. 87-874, 76 Sat. 1180. Mitigation for Dworshak Dam	**$107.8 M**	2022/23 - Corps of Engineers small cap budget allocation $35M FY22-24	No federal authorization for capital construction and no identified funding for capital infrastructure projects in excess of small cap	Asset Reinvestment Plan for COE assets; LSRCP for LSRCP assets	Corps of Engineers	U.S. Fish and Wildlife Service/Nez Perce Tribe	Appropriations through Corps/DOD and reimbursement to the Treasury by BPA for 82.3%
US Army Corps of Engineers - Willamette Basin Dam Mitigation - Department of Defense								
South Santiam/Foster	Act Authorizing the Construction of Public Works on Rivers and Harbors for Flood Control, and for Other Purposes, 1938, (52 Stat. 1215) and Flood Control Act of 1950 (P.L. No. 516-81)		None to date			Corps of Engineers	Oregon Dept Fish and Wildlife	Appropriations through Corps with reimbursement to Treasury by BPA
Marion Forks/Minto		**$ 100M**			Passage structure required	Oregon/Corps of	Oregon Dept Fish and Wildlife	
Leaburg		**$9 M**			Intake and pipeline for Leaburg Hatchery, $4M for lladder and adult holding to consolidate Leaburg/McKenzie, and $2 M upgrade to incubation and early rearing	Corps of Engineers	Oregon Dept Fish and Wildlife	
McKenzie						Corps of Engineers	Oregon Dept Fish and Wildlife	
Willamette/Dexter Acclimation		**$50 M**			Dexter acclimation modifications	Corps of Engineers	Oregon Dept Fish and Wildlife	
TOTAL CORPS		**$300 M to $450 M**	**Update: $35M obligated by USACE in 22/2023 for Dworshak Hatchery electrical fixes and upgrades**					

This summary does not include hatchery facilities owned and funded by public or private utilities (i.e., Mid Columbia PUDs, Idaho Power Co.). Those hatcheries are maintained and upgraded by the utilities.

Pre-Decisional / Deliberative