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*Sent via email to comment@crso.info*

RE: Comments on the Notice of Intent to Prepare an Environmental Impact Statement for the Columbia River System Federal Operations

Trout Unlimited (TU) appreciates the opportunity to provide comments on the U.S. Army Corps of Engineers (Corps), Bureau of Reclamation (BOR) and Bonneville Power Administration's (BPA) (referred to collectively as the Action Agencies) Notice of Intent to Prepare (NOP) an Environmental Impact Statement (EIS) for their Columbia River System Operations (CSRO). TU is a non-profit organization with a mission to conserve, protect and restore North America's coldwater fisheries and their watersheds. With more than 150,000 members nationwide and more than 14,000 in the Columbia basin states, TU works to restore wild trout, salmon, and steelhead and their watersheds throughout the U.S. TU has long considered it a priority to ensure the restoration of the Columbia basin's great runs of salmon and steelhead.

## I. INTRODUCTION

It has been 25 years since Snake River sockeye were listed under the Endangered Species Act (ESA); an event that was followed by the listings of twelve additional runs of Columbia and Snake River salmon and steelhead. These runs remain ESA-listed and status reviews released in 2016 found a familiar suite of causes impeding their recovery, including that they must navigate the extensive system of hydroelectric dams, powerhouses and reservoirs that comprise the Federal Columbia River Power System (FCRPS).<sup>1</sup> Consequently, the status reviews

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<sup>11</sup> See 5-Year Review: Summary and Evaluation of Snake River Sockeye, Snake River Spring-Summer Chinook, Snake River Fall-Run Chinook, Snake River Basin Steelhead, National Marine Fisheries Service West Coast Region (2016); see also 5-Year Review: Summary and Evaluation of Lower Columbia River Chinook Salmon, Columbia

recommended no change in status for any of the listed runs. Over the past 25 years, the National Marine Fisheries Service (NMFS) has issued eight separate biological opinions for the FCRPS; all but two have been declared legally inadequate in federal court,<sup>2</sup> the most recent invalidated in May 2016.<sup>3</sup>

During the legal wrangling, significant resources (both money and manpower) were spent to implement the measures contained in the overturned plans, mostly in the form of habitat restoration projects. While these individual habitat efforts are necessary and praiseworthy, they are not enough on their own to reverse the trajectory of Columbia basin's imperiled salmonids. To fully realize the benefit of these habitat actions, they must be accompanied by implementation of larger scale actions that have the potential to address major causes of mortality in the system and substantially boost smolt-to-adult (SAR) survival rates. For example, for the four listed stocks in the Snake River, once the Columbia Basin's largest producer of spring/summer Chinook salmon and summer steelhead and currently containing the most restoration potential of any sub-basin in the Columbia, removal of the four Lower Snake dams is likely necessary to realize the recovery potential of Snake River populations – particularly in light of our warming climate. The EIS provides the opportunity to apply good science, good economics and good planning to evaluate such actions.

TU encourages the Action Agencies and all stakeholders in the Columbia Basin to seize this opportunity to take a fresh look at suites of actions that have the potential to restore healthy, resilient and fishable populations of naturally reproducing salmon and steelhead, meet legal requirements, and – more important – provide substantial benefits for Columbia Basin communities and the region's economy. TU is approaching this scoping process in this spirit and looks forward to working constructively with the Action Agencies and basin stakeholders to engage in a thorough, objective analysis that seriously considers all actions that might be

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River Chum Salmon, Lower Columbia River Coho Salmon, Lower Columbia River Steelhead, National Marine Fisheries Service West Coast Region (2016)

<sup>2</sup> Since the first ESA listing of Snake River sockeye in 1991, NOAA Fisheries has issued eight separate biological opinions: 1992 (challenged and upheld); 1993 (concluding that the operations of the FCRPS would not jeopardize the listed species, but rejected by U.S. District Judge Malcolm Marsh); 1995 (challenged and upheld) 2000 (finding jeopardy and superseding previous BiOps, but rejected by U.S. District Judge James Redden); 2004, 2008 and 2010 supplemental BiOp (all rejected by Judge Redden); and 2014 supplemental BiOp (now rejected by Judge Simon)

<sup>3</sup> *National Wildlife Federation v. National Marine Fisheries Service*, 184 F.Supp.3d 861 (D. Or. 2016).

necessary to recover Columbia basin's fish populations in concert with maintaining the region's economic vitality and high quality of life.

These goals are not mutually exclusive, but they do require a fresh, fact-based and unbiased analysis to identify actions that benefit people and fish together. Small steps or minor improvements will not get the job done. The Action Agencies and interested stakeholders must think bigger and must consider actions that will dramatically improve fish survival. While it is important to meet the legal requirements of the ESA, the major benefits to people will only be realized if we recover healthy, resilient and fishable salmon and steelhead populations. This higher level of recovery, measured by abundance, diversity and resilience, has been described by NOAA Fisheries in its new Columbia Basin Partnership as "broad sense recovery", and it is what is necessary to meet the social, legal and cultural revitalization objectives that will have a profound positive impact on peoples' lives. Merely "squeaking by" avoiding extinction will not address the needs of fishing-dependent communities and tribes with treaty-based fishing rights, and it will not unify Columbia Basin communities around a common future vision and end the pervasive uncertainty that has hung like a dark cloud over all stakeholders for decades.

TU believes that the upfront effort of producing a comprehensive analysis now will pay for itself in the years to come by identifying a suite of measures that will produce the most benefit for both people and fish for the least cost. To ensure a successful analysis the Action Agencies must use the best available scientific information, including current climate change information, along with the latest economic information.

TU requests an inclusive, transparent process that delays the identification of a final preferred alternative until all impacts and alternatives have been thoroughly analyzed and validated by independent reviewers. We believe that independent review by individuals with expertise in the relevant subjects is essential to establish the credibility of the analysis and obtain the political and community support necessary to make needed changes. TU is optimistic that an effective, affordable and scientifically defensible path forward can be achieved; one that not only ensures healthy, resilient and fishable Columbia basin fish runs but also maintains important functions provided by the FCRPS.

## II. DISCUSSION

### A. The Action Agencies must conform the EIS to the Court's directives in *National Wildlife Federation v. National Marine Fisheries Service*, 184 F.Supp.3d 861 (D. Or. 2016).

The Action Agencies are entering into this NEPA process pursuant to the Federal District Court's directives in *National Wildlife Federation v. National Marine Fisheries Service*, 184 F. Supp.3d 861 (D. Or. 2016). The Court ordered that they conduct a NEPA analysis before they adopt and implement a NMFS biological opinion for listed Columbia River salmon and steelhead. The Agencies had argued that they did not have to conduct such an analysis because (1) the right to argue for such an analysis had been waived; (2) that existing NEPA documents were sufficient to meet NEPA requirements; (3) the BiOp actions are not sufficiently connected to require the development of a single EIS; and (4) the development of a single EIS is not feasible. The Court rejected these arguments stating:

For more than 20 years, NOAA Fisheries, the Corps, and BOR have ignored the admonishments of Judge Marsh and Judge Redden to consider more aggressive changes to the FCRPS to save the imperiled listed species. The agencies instead continued to focus on essentially the same approach to saving the listed species—minimizing hydro mitigation efforts and maximizing habitat restoration. Despite billions of dollars spent on these efforts, the listed species continue to be in a perilous state. One of the benefits of a NEPA analysis, which requires that all reasonable alternatives be analyzed, is that it allows innovative solutions to be considered and may finally be able to break through any bureaucratic logjam that maintains the status quo. The agencies, public, and public official will be able to evaluate the costs and benefits of various alternatives. The FCRPS remains a system that “cries out” for a new approach. A NEPA process may elucidate an approach that will finally move the listed species out of peril.

184 F.Supp.3d at 876. In the Notice of Preparation (NOP), the Action Agencies described the scope of this NEPA process as an analysis of “the system operation and maintenance of fourteen Federal multiple purpose dams and related facilities located throughout the Columbia River basin.” *Notice of Intent to Prepare the Columbia River System Operations Environmental Impact Statement*, 81 Fed. Reg. 67382 (Sept. 30, 2016). This formulation of the scope of the NEPA process needs to be revised to reflect that the primary purpose of this court-ordered NEPA process is to evaluate actions necessary to ensure that the FCRPS is configured and operated in a manner that allows for recovery of Columbia Basin salmon, steelhead and other affected fish and

wildlife, and mitigates the FCRPS's unavoidable impacts. Survival and recovery of the ESA-listed anadromous fish species must be the foundation for the EIS Purpose and Need, and on which the range of alternatives are built. It cannot be a recitation of water project facts and figures.

**B. The Action Agencies must ensure that the EIS meets the legal requirements of NEPA.**

The Action Agencies have requested assistance gathering information that will help define the issues, concerns and scope of alternatives for the EIS. "Section 101 of NEPA declares a broad national commitment to protecting and promoting environmental quality."<sup>4</sup> In furtherance of this commitment, NEPA requires federal agencies to analyze the environmental impact of their proposed actions by preparing environmental impact statements for actions "significantly" affecting the environment.<sup>5</sup> The purpose of this requirement is to assure that agencies take a "hard look" at environmental consequences," and "provide for broad dissemination of relevant environmental information."<sup>6</sup> NEPA does not mandate particular outcomes, only consideration of "every significant aspect of the environmental impact of a proposed action."<sup>7</sup> All impacts must be considered, whether direct, indirect, or cumulative, so long as they are reasonably foreseeable.<sup>8</sup> TU requests that the Action Agencies address the following points in their NEPA analysis.

**1. Purpose and Need Statement**

NEPA requires federal agencies to articulate the "purpose and need" for a proposed action for which environmental review is required. 40 CFR 1502.13. The articulation of a purpose and need statement is critical for a properly framed and robust alternatives analysis-- the "heart" of NEPA -- because only a sufficiently broad statement will allow full development of an adequate range of alternatives which enables the EIS to provide "a clear basis for choice among options by the decision-maker and the public."<sup>9</sup> Given the importance of this statement, it bears

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<sup>4</sup> *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 348 (1989) ("*Robertson*") (citing 42 U.S.C. §4331).

<sup>5</sup> 42 U.S.C. § 4332(2)(C).

<sup>6</sup> *Biodiversity Conservation Alliance v. BLM*, 404 F.Supp.2d 212, 216 (D.D.C.2005).

<sup>7</sup> *Baltimore Gas & Elec. Co. v. NRDC*, 462 U.S. 87, 97 (1983) (quotation omitted).

<sup>8</sup> See 42 U.S.C. § 4332(2)(C); 40 C.F.R. §§ 1508.7, 1508.8.

<sup>9</sup> See, e.g., *Simmons v. U.S. Army Corps*, 120 F.3d 664 (7th Cir. 1997); *Davis v. Mineta*, 302 F.3d 1104, 1118 (10th Cir. 2002); see also 40 CFR 1502.14.

emphasis that the Action Agencies must not define the purpose and need statement in such a manner that it curtails full assessment of alternatives.<sup>10</sup> Accordingly the purpose and need statement must clearly articulate that the EIS is intended to be a robust, comprehensive analysis of alternative actions, including FCRPS projects' physical configuration and operations, that could offset the impacts of the FCRPS, enable timely recovery of Columbia Basin salmon and steelhead, and be responsive to the deficiencies of the recently invalidated biological opinion as articulated in the Court's decision.

## 2. Scope

The Council of Environmental Quality's (CEQ) NEPA regulations state that actions which are connected, cumulative or similar should be evaluated in one EIS when it is the best way to assess adequately their combined effects. 40 CFR 1508.25. In the matter at hand, the Court emphasized the importance of a single EIS that enables a comprehensive assessment of various actions that could offset the harmful effects of the FCRPS:

Without a single or programmatic EIS, no other site-specific EIS provides the opportunity to meaningfully consider programmatic alternatives, such as comparing the cost and effect of dam bypass with the cost and effects of habitat mitigation, or determining if some other alternative provides enough survival benefit to replace killing [double-breasted cormorants], hazing Caspian terns, or improving habitat in the estuary.

184 F.Supp.3d at 940. Consistent with both the intent of NEPA, the Court's direction, and controlling case law<sup>11</sup> the Action Agencies should develop an EIS that analyzes together the major actions being taken to offset the impacts of the FCRPS and recover Columbia Basin salmon and steelhead. Those major actions include: (1) changes to dam structures and operations; (2) habitat restoration; (3) changes to hatchery operations; (4) changes to harvest/fishing regimes; and (5) predation control. This breadth of analysis has not happened in the past; instead, separate, narrowly defined NEPA processes have been used. The Court found this piece-meal approach inadequate, noting that a single, comprehensive analysis evaluating a broad range of alternatives is needed to "break the decades-long cycle of court-invalidated biological opinions that identify essentially the

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<sup>10</sup>*City of Carmel-by-the-sea v. United Dep't of Transp.*, 123 F.3d 1142, 1155 (9<sup>th</sup> Cir. 1997).

<sup>11</sup>*Earth Island Ins. V. U.S. Forest Serv.*, 351 F.3d 1291, 1304-05 (9<sup>th</sup> Cir. 2003) (noting that a single EIS is required where projects are similar, connected or cumulative actions).

same narrow approach to the critical task of saving these dangerously imperiled species.”  
184 F.Supp.3d at 871.

As a practical matter, as discussed in more detail below in the Alternatives section, the piecemeal approach taken in the past has frustrated rather than enabled informed decision-making. The fact is that the major actions listed above are interdependent. Their respective impact on salmon and steelhead (positive and negative) depends on what happens in the other major action areas. Together, they have cumulative impacts on salmon and steelhead. For example, tributary habitat restoration will only substantially improve salmon and steelhead productivity if: (1) survival through the dams and reservoirs is sufficient to allow the gains from tributary habitat improvement to accrue; (2) hatchery fish don't depress the productivity of wild fish by occupying available spawning and rearing habitat; and (3) harvest and predation are kept at levels that allow a sufficient number of wild fish to use the restored habitat.

In urging the Action Agencies to adopt our recommended scope, we want to emphasize that NEPA requires a thorough assessment of the impacts of alternative actions; it does not require particular policy choices among alternatives. There may indeed be compelling policy and legal reasons not to take certain actions analyzed in the EIS that would substantially boost wild salmon and steelhead survival and productivity, but those decisions need to be made after the impact analysis is completed.

### **3. Affected Environment**

CEQ's NEPA rules require a description of the environment affected by the actions being analyzed in an EIS:

The environmental impact statement shall succinctly describe the environment of the area(s) to be affected or created by the alternatives under consideration. The descriptions shall be no longer than is necessary to understand the effects of the alternatives. Data and analyses in a statement shall be commensurate with the importance of the impact, with less important material summarized, consolidated, or simply referenced. Agencies shall avoid useless bulk in statements and shall concentrate effort and attention on important issues. Verbose descriptions of the affected environment are themselves no measure of the adequacy of an environmental impact statement.

40 CFR 1502.15. The affected environment includes the entire area of potential effect including potentially affected areas outside the immediate project area. *Reclamation's NEPA Handbook* 8-15 (Feb. 2012). The continued operation of the FCRPS affects a large geographic area. Dam

operations in the upper reaches of the Columbia Basin outside of the currently occupied habitat have an impact on river flows that affect ESA-listed salmon and steelhead. Several FCRPS dams block passage to large areas of historically productive salmon and steelhead habitat in the Columbia and Snake Basins. The FCRPS has altered sediment transport throughout the basin, including in the estuary. The river channel from the estuary to Lewiston, Idaho has been altered by dredging necessary to allow barge transportation. The effects of the FCRPS even extend beyond the Basin to Puget Sound, where ESA-listed orcas are harmed by the loss of Columbia Basin Chinook salmon. Accordingly, the affected environment should encompass the entire Columbia Basin and specific areas outside the basin where FCRPS impacts manifest.

Central to the description of the existing environment is the status and trends for the salmon and steelhead runs. The description should include information expressed in the metrics used in the biological opinion, as well as metrics that the Court found lacking in or missing from the biological opinion. At a minimum the EIS will need to display information on both the “survival prong” and the “potential for recovery” elements of the jeopardy standard. Information should be displayed at the scale for each population that makes up a listed species. For example, this would mean for Snake River Chinook salmon that readers of the EIS must see information about each of the 27 populations and not an aggregate for the species as a whole. This is essential for being able to understand the current status of the salmon because the minimum population levels needed to ensure survival are found at the individual population level and not the aggregate species level.

At a minimum the three quantitative measures that are part of the “trend towards recovery” analysis must be shown in tabular or graphic form: abundance trend, the median annual change in population in four year running sums, and the recruit per spawner ratios. While necessary, these three measures are not sufficient. There should also be information on the abundance of each of the 27 populations. This information will disclose to readers of the EIS which populations are of alarmingly low numbers where survival may be in question, or where the low abundance numbers are trending at a level that diminish the likelihood of recovery.

Finally, in addition to the metrics that were used in the biological opinion, or ignored but called out in the Court’s opinion finding the biological opinion wanting, the EIS should also disclose the information on survival rates associated with migration through the FCRPS. At a



minimum the SARs for all populations studied should be part of the description of the existing environment, and the year to year changes in SAR as water flows/velocity differ in each year. SARs for populations in different areas of the Columbia River Basin should be displayed.

The Court also noted that the “Affected Environment” section of the EIS should address the changing climate. In 2010, CEQ provided draft guidance on how climate change effects should be considered by federal agencies in their NEPA analyses:

As with analysis of any other present or future environment or resource condition, the observed and projected effects of climate change that warrant consideration are most appropriately described as part of the current and future state of the proposed action’s “affected environment.

Draft NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions, CEQ, at 6 (February 18, 2010) (“Draft Guidance”). The Draft Guidance further states:

Climate change effects should be considered in the analysis of projects that are designed for long-term utility and located in areas that are considered vulnerable to specific effects of climate change (such as increasing sea level or ecological change) within the project’s timeframe.

Draft Guidance at 7.

The Court described the many ways climate change will impact Columbia River salmon and steelhead:

The best available information indicates that climate change will have significant negative effect on the listed populations of endangered or threatened species. Climate change implications that are likely to have harmful effects on certain of the listed species include: warmer stream temperatures; warmer ocean temperatures; contracting ocean habitat; contracting inland habitat; degradation of estuary habitat; reduced spring and summer stream flows with increased peak river flows; large-scale ecological changes, such as increasing insect infestations and fires affecting forested lands; increased rain with decreased snow; diminishing snow-packs; increased flood flows; and increased susceptibility to fish pathogens and parasitic organisms that are generally not injurious to their host until the fish becomes thermally stressed. Even a single year with detrimental climate conditions can have a devastating effect on the listed salmonids.

184 F.Supp.3d at 874.<sup>12</sup> These climate change impacts now and in the foreseeable future must be accounted for in the EIS. The Action Agencies must incorporate the best available science in assessing the efficacy of the alternatives in light of probable changes caused by the warming climate. The differential impact of climate change on specific regions in the Columbia Basin may affect the selection of restoration actions and priority salmon and steelhead populations. For example, it may make sense to prioritize populations that occupy vast areas of high quality habitat that is likely to remain high-quality in the face of climate change, such as those in the Snake River Basin.<sup>13</sup>

#### 4. Alternatives

NEPA requires agencies to:

study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources.” This requirement ... seeks to ensure that each agency decision maker has before him and takes into proper account all possible approaches to a particular project ... which would alter the environmental impact and the cost-benefit balance.

42 U.S.C. § 4332(2)(D).<sup>14</sup> Consistent with this requirement and as discussed above, the Action Agencies should select a range of alternatives that allows for evaluation of all major actions available to offset FCRPS impacts and allow for recovery of Columbia Basin salmon and steelhead. “A ‘viable but unexamined alternative renders [the] environmental impact statement inadequate.’”<sup>15</sup>

Resources are not limitless and calculated risks will likely need to be taken on the path toward a plan. However, providing stakeholders with an honest assessment of the available

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<sup>12</sup> Impacts not mentioned by the Court include increased ocean acidity, invasions of coldwater fish habitat by warmwater species and the differing effect of increasing water temperatures on stratified versus non-stratified reservoirs.

<sup>13</sup> See for example “Climate Shield Cold-Water Refuge Streams for Native Trout” at <https://www.fs.fed.us/rm/boise/AWAE/projects/ClimateShield.html>

<sup>14</sup> *Calvert Cliffs' Coordinating Committee, Inc. v. U. S. Atomic Energy Commission*, 449 F.2d 1109, 1114 (D.C. Cir. 1971). Further, NEPA section 102(2)(E) requires that the federal lead agency “study, develop, and describe appropriate alternatives to recommended course of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources....” 42 U.S.C. § 4332(2)(E). The duty to consider alternatives under NEPA 102(2)(E) is “at least as broad” as the duty under NEPA section 102(2)(C)(iii). The purpose is “to insist that no major federal project should be undertaken without intense consideration of other more ecologically sound courses of action, including shelving the entire project or of accomplishing the same result by entirely different means.” *Environmental Defense Fund v. U.S. Army Corps of Engineers*, 492 F.2d 1123 (5<sup>th</sup> Cir. 1974); see Mandelker, *supra* § 9:22, p. 9-53.

<sup>15</sup> *Muckleshoot Indian Tribe, supra*, 177 F.3d at 814 (quoting *Citizens for a Better Henderson v. Hodel*, 768 F.2d 1051, 1057 (9<sup>th</sup> Cir. 1985)).

actions and the cost/benefit of choosing certain actions over others or identifying which ones must occur concurrently to achieve optimal effectiveness will increase the likelihood that thoughtful discussion ensues and an efficient, effective, widely supported plan emerges. Truly understanding the trade-offs involved in decision-making might push stakeholders toward an action that otherwise would have been disfavored without such an analysis. To that end, TU recommends that the following alternatives be included in the EIS and that the analysis of each alternative clearly articulate whether and to what degree they achieve the goals and objectives outlined in the purpose and need statement.

a. No Action Alternative

The No Action Alternative should describe the state of the environment if no changes to existing actions are taken pursuant to this NEPA document. Consistent with the comments above regarding the proper scope of the EIS, the No Action Alternative should include current FCRPS facilities, operations and mitigation measures being implemented pursuant to the invalidated biological opinions,<sup>16</sup> with current hatchery operations, and current harvest/fishing regimes established in extant agreements such as *US v. Oregon*,<sup>17</sup> the Columbia River Compact and the Pacific Salmon Treaty.

b. Dam Removal Alternatives

Large, channel-spanning dams fundamentally change river ecosystems. They turn flowing rivers into slack water reservoirs, block or impede fish passage, change water quality and alter food webs to name a few of the profound impacts. One potentially powerful salmon and steelhead recovery action that should be analyzed in the EIS is removal of one or more of the federal dams on the Columbia and Snake rivers within the area currently occupied by salmon and steelhead.

In recommending these alternatives, TU is mindful of the large economic benefits provided by some, but not all, of the federal dams that constitute the FCRPS. Several produce a large

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<sup>16</sup> In May 2011, the 2008 BiOp was found to be legally inadequate and not in compliance with ESA. The EIS should therefore conclude that continuing operation of the FCRPS in accordance with the 2008 BiOp would cause an irreconcilable conflict between the legal requirement that the Action Agencies operate the FCRPS system and that they not jeopardize the species listed under the ESA.

<sup>17</sup> *United States v. Oregon*, 302 F. Supp. 899 (D. Or.) is the ongoing federal court proceeding that instigated the *United States v. Oregon* Management Agreement that provides the current framework for managing fisheries and hatchery programs in much of the Columbia River Basin.

amount of hydroelectric power, the loss of which would likely have serious negative impacts on the Pacific Northwest. Such impacts should be considered in determining the reasonableness of evaluating removal of specific dams in this alternative.

The four dams on the lower Snake River in particular should be subject to a rigorous analysis for several reasons. First, they produce a small amount of power relative to dams on the mainstem Columbia. Second, they provide no flood control. Third, though they provide a shipping channel to Lewiston, Idaho, that navigation system receives little use and is heavily subsidized by taxpayers and ratepayers. Fourth, they take a heavy toll on Snake River salmon and steelhead on their migration to and from the Pacific, a situation that is projected to get much worse as the region's climate warms. They also inundate many miles of potential mainstem spawning and rearing habitat for fall chinook. Fifth, the Snake River sub-basin possesses by far the greatest salmon and steelhead recovery potential of any sub-basin in the Columbia given the thousands of miles of high quality habitat.<sup>18</sup>

The best available science indicates that recovery of Snake River salmon and steelhead will not be possible if the four lower Snake River dams remain in place. Moreover, the Court expressly stated that removing the lower Snake River dams is an action that deserves analysis in the EIS.<sup>19</sup> Fortunately, this analysis does not need to be done from scratch. Removing the four lower Snake River dams received extensive analysis in 2002 when the Army Corps produced an EIS focused on alternatives to improve juvenile salmon and steelhead survival as they migrate through the lower Snake River.<sup>20</sup> However, that analysis was too narrow (it did not look at the substantial benefits of dam removal beyond improving juvenile survival or thoroughly evaluate means to replace the benefits provided by the dams) and used now-outdated information. The Action Agencies should take a hard look at removing the lower Snake River dams in this new NEPA process, using the best available scientific and commercial information including relevant information from the 2002 Army Corps analysis and evaluating all potential benefits and costs (biological, ecological, and economic).

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<sup>18</sup> See footnote 13 above.

<sup>19</sup> 184 F.Supp.3d at 942.

<sup>20</sup> See Alternative 4, Lower Snake River Juvenile Study Migration Feasibility Study Final Environmental Impact Statement, Army Corps of Engineers (February 2002).

In addition to evaluating the fairly straight-forward direct effects of dam removal, indirect and cumulative effects should also be evaluated as required by NEPA.<sup>21</sup> It also bears emphasis that dam removal is unique among the suite of potential actions to rebuild salmon and steelhead runs because it creates (or more accurately, restores) a functional river ecosystem and resurfaces currently inundated land. These profound landscape changes provide potential new opportunities for river-related recreation and tourism, as well as opportunities for community waterfront re-development. No other restoration action possesses the potential for such major ancillary benefits.

The analysis should also consider the economic costs and benefits associated with dam removal. Factors to be considered include but are not limited to: the costs of maintaining the aging infrastructure of the dams if they are not removed, the expected changes to the transportation sector as a result of reduced shipping on the lower Snake including increased rail use, changes to reservoir recreation and its associated industry, economic benefits associated with a restored commercial and recreational fishery and the tourism that accompanies it, the economic benefits associated with increased recreation on a free-flowing Snake River such as increased boating, camping, hiking and hunting opportunities, projected savings from switching to more efficient energy sources to secure power lost from dam removal, potential reduction of dam and transportation system operations and maintenance costs, potential reduction of flow augmentation costs, potential for waterfront redevelopment in Lewiston/Clarkston and projected costs of flood risk mitigation projects that will be needed if the dams remain (such as raising levees in Lewiston).

The alternative should also consider alternative actions to secure the services currently provided by the dams that may be lost with removal. Potential actions include replacement power and energy conservation, alternative irrigation mechanisms such as extending pumps into the free-flowing Snake River and different transportation options to move products that currently use barge services.

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<sup>21</sup> NEPA regulations specify that an EIS should consider cumulative impacts of agency action in an EIS. 40 C.F.R. § 1508.25(c). “Cumulative impact” is defined as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency... undertakes such other actions.” *Id.* § 1508.7. NEPA regulations also require analysis of “indirect effects” of an agency action. The indirect effects of an action are those “caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable.” 40 C.F.R. § 1508.8(b).

Additional dam removal alternatives should be designed to examine the pace and order of dam removal and monitoring of results, such as an additional alternative to consider Lower Snake River dam removal coupled with modification of John Day Dam to operate at lower reservoir elevations (with project and economic mitigation actions) to increase water velocities and smolt migration, and increase SARs. The other bookend of dam removal can examine a slower and phased removal of lower Snake River dams, such as two dams followed by monitoring of effects. This array of alternatives will allow the EIS to be responsive to a purpose and need to “not appreciably delay recovery of Columbia Basin salmon and steelhead” as articulated by the Court decision.

We also ask for an analysis that phases out the flow augmentation from the upper Snake River Basin Bureau of Reclamation projects coupled with lower Snake River dam removal so that upper Snake River water is available for reallocation to other compelling basin and ecological needs such as aquifer recharge, winter flows for fish and wildlife, and climate change adaptation.

c. Dam Operations/Facility Modification Alternative

A Dam Operations/Facility Modification Alternative should explore a range of changes to FCRPS dam operations and facilities (excluding dam removal) that could help rebuild salmon and steelhead populations. Over the years operational and structural (e.g., installation of removable spillway weirs) changes at the dams have increased salmon and steelhead survival, and there may be additional gains that could be achieved, particularly from spilling more water over the dams during the juvenile outmigration period. Other than increased spill, potential changes that should be considered include but are not limited to: (1) modification of flood control rule curves; (2) seasonal reservoir drawdowns; and (4) enabling (Upper Columbia; North Fork Clearwater) or improving fish passage.

d. Hatchery, Harvest and Predation-Reduction Alternative

The Hatchery, Harvest and Predation-Reduction Alternative should evaluate the potential changes to current hatchery operations, harvest regimes and predator control programs to both reduce mortality and increase natural production of ESA-listed salmon and steelhead. In proposing this alternative, we note that most hatchery, harvest and predation reduction actions are outside the jurisdiction of the Action Agencies, and yet development and operation of the

FCRPS has taken a heavy toll on harvest and fishing opportunity on Columbia Basin stocks. We don't believe that tribal, sport and commercial fisherman should shoulder the burden that fairly resides with the hydropower system. Similarly, some predators (e.g., pinnipeds) are part of the natural ecosystem in the Columbia Basin and should not be the scapegoat for salmon and steelhead losses due to habitat destruction and hydropower development. They are part of the food web and fill an important ecological niche. That said, as the Independent Science Advisory Board (ISAB) has observed, the Columbia Basin today is a novel, altered ecosystem, and it requires active management to achieve ecological and societal goals including healthy, harvestable/fishable wild salmon and steelhead populations. For this reason, improvements that could be made to hatchery operations, harvest/fishing regimes and predator control programs that have potential to substantially boost the productivity and survival of ESA-listed salmon and steelhead warrant thorough evaluation in this EIS.

In its 2015 report to Congress, the congressionally-appointed Hatchery Scientific Review Group (HSRG) stated:

Hatcheries cannot replace lost habitat and the natural populations that rely on it. It is now clear that the widespread use of traditional hatchery programs has actually contributed to the overall decline of wild populations.

*Annual Report to Congress on the Science of Hatcheries, 2015*, Hatchery Scientific Review Group, (July 2015), p. 2. The current science of hatchery impacts on wild salmon and steelhead compels evaluation of current hatchery operations in the Basin, particularly in light of the fact that much of that hatchery production, such as production from hatcheries built pursuant to the Lower Snake River Compensation Plan (LSRCP), was designed to replace production from lost habitat "in kind and in place," which -- as the HSRG has plainly stated -- is no longer a scientifically sound approach.

This fact is corroborated by the recent finding of the Independent Scientific Advisory Board (ISAB) that density dependence (i.e., overcrowding of available habitat) reductions in wild population productivity in the interior Columbia basin is becoming evident and that too many hatchery fish spawning in the wild is a major and pervasive problem. *Density Dependence and Its Implications for Fish Management in the Columbia Basin*, Independent Scientific Advisory Board (ISAB) (February 25, 2015). Accordingly, we need to determine how much benefit for ESA-listed stocks can be obtained from improvements in hatchery operations,

including changes in broodstock, production levels, hatchery closures, and changes in release locations.

Current harvest and fishing regimes should also be evaluated to determine if changes can contribute to recovering ESA-protected wild populations. Changes that should be evaluated include gear, area, and time restrictions. Improving selectivity of commercial gear and prohibiting fishing in cold water refuges on the mainstem Columbia are examples of actions that should be evaluated in the EIS. In the above-referenced report the ISAB pointed out the need to improve fishery management as one means of improving the productivity of ESA-listed stocks. ISAB at 12, 143.

Lastly, predation on ESA-listed salmon and steelhead is a growing concern in the Columbia Basin and elsewhere, including Puget Sound. Pinnipeds, birds, and non-native fishes all consume salmon and steelhead at various life stages. The altered ecosystem combined with policies that prohibit lethal control of some predator populations has resulted in large predator populations. In addition, changes to the river caused by the FCRPS and maintenance of the navigation channel have made salmon and steelhead more vulnerable to predation in specific locations, such as dam forebays and tailraces, and have created habitat for both avian and fish predators. Actions that would reduce predation should be evaluated in the EIS as another potential recovery tool.

e. Habitat Restoration Alternative

The Habitat Restoration Alternative should evaluate a range of habitat restoration actions designed to increase the quality and quantity of salmon and steelhead habitat. This alternative should include habitat restoration actions in tributaries, mainstems and estuaries. Habitat restoration actions have constituted the vast majority of actions that have been included in “reasonable and prudent alternatives” in FCRPS biological opinions over the decades. Our knowledge of habitat factors limiting salmon and steelhead productivity and survival and of the relative effectiveness of various restoration actions continues to grow, and this knowledge should be reflected in the selection and analysis of potential habitat restoration actions.



f. Combined Action Alternative

The alternatives recommended above will enable decision-makers and the public to understand the potential contribution of specific types of actions, viewed in isolation, toward offsetting the adverse impacts of the FCRPS on ESA-listed salmon and steelhead and enabling their recovery, as well as the specific costs of each action. It is well established and recognized, however, that an effective and fiscally responsible strategy for offsetting FCRPS impacts and recovering Columbia Basin salmon and steelhead requires a multifaceted plan that contains coordinated improvements in habitat, dams, water management, hatcheries, harvest and predator control. The ISAB's density dependence report cited above contains a cogent explanation of the need to coordinate actions in order to maximize benefits and avoid contradictory actions.

Accordingly, the Combined Action Alternative should evaluate the combinations of actions likely to have synergistic, positive effects on the survival and productivity of Columbia Basin salmon and steelhead. Given that different Evolutionary Significant Units (salmon) and Distinct Population Segments (steelhead) in the Columbia Basin have different limiting factors, it is necessary for this alternative to include several parts with each part including a suite of actions tailored to meet the needs of similarly situated ESUs and DPSs (e.g., Upper Columbia, Snake, Middle Columbia, Lower Columbia). For example, for Snake River fish this alternative could include lower Snake River dam removal combined with: (1) changes in hatcheries and harvest to decrease the number of hatchery fish on the spawning grounds; (2) changes in harvest and predator-control programs to increase survival of in-migrating adults and out-migrating smolts; (3) changes in spill at the four lower Columbia River dams; and (4) tributary and estuary habitat restoration targeted at primary limiting factors.

The importance of such an integrated alternative cannot be overstated. A major impediment to progress to date has been the lack of analysis of coordinated actions across the categories of potential actions that would maximize benefits for fish and people. This has had profound and costly impacts to the region, both in inadequate recovery gains and cost-ineffective recovery investments. This NEPA process presents an opportunity to remedy this major flaw in Columbia Basin salmon and steelhead management.

Examples abound of why a comprehensive EIS addressing the major limiting factors to recovery in one analysis is essential. Here is one. Billions of dollars have been spent restoring

degraded habitat in the Columbia Basin, and most of those investments have provided real benefits for salmon and steelhead and ecological health. However, the full value of those investments will be realized only if wild salmon and steelhead are able to use that habitat. The recent study by the Independent Science Advisory Board has shown that in the Snake River sub-basin and other parts of the Columbia there is evidence of density dependence, which means that as the number of spawning adults increases, smolt production decreases. In other words, the carrying capacity of available habitat is being fully utilized. The ISAB found that “[s]trong density dependence is now evident in at least 25 of 27 spring/summer chinook populations, the Snake River fall chinook population, and all 20 steelhead populations examined upstream of Bonneville Dam.” ISAB, *supra* at 139. As the ISAB points out, this is likely due in part to supplementation programs that result in large numbers of adult hatchery fish on the spawning grounds: 35-80% of chinook spawners and 15-80% of steelhead spawners per ESU and DPS, respectively. ISAB at 141. Ample research demonstrates clearly that the productivity of wild populations decreases when hatchery fish spawn in the wild. ISAB at 141.

There are several potential actions to alleviate density-driven limits on wild salmon and steelhead including: (1) increasing habitat quality and quantity, particularly rearing habitat which appears to be the primary need according to the ISAB; (2) reducing the number of hatchery fish on the spawning grounds by reducing hatchery production or removing more hatchery fish before they reach the spawning grounds; (3) increasing wild fish survival through the life-cycle (as measured by smolt-to-adult ratios (SARS) through actions such as reducing mortality during migration through the mainstem dams and reservoirs; and (4) allowing selective harvest of returning adults in areas where surplus fish exceed that necessary to seed the habitat and ensure a much greater than 1:1 spawner to spawner replacement rate. These actions are not of equal impact (measured both in terms of magnitude and timing) and the costs almost certainly differ. In addition, the level of improvements needed from each type of action is often dependent on the improvements in the others. Thus, in order to have a highly effective and fiscally responsible strategy these potential actions need to be considered together. Until now the hatchery, harvest and hydropower/habitat actions have been considered in isolation, hatcheries through the Mitchell Act EIS, harvest through *U.S. v. Oregon* proceedings, and hydropower/habitat through the FCRPS system reviews. Now is the time to analyze the potential gains from various actions in a comprehensive, holistic manner.

Indeed, NEPA requires such an analysis. NEPA regulations specify that an EIS should consider cumulative impacts of agency action in an EIS. 40 C.F.R. § 1508.25(c). “Cumulative impact” is defined as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency... undertakes such other actions.” *Id.* § 1508.7. NEPA regulations also require analysis of “indirect effects” of an agency action. The indirect effects of an action are those “caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable.” 40 C.F.R. § 1508.8(b). All of the major actions that we recommend be evaluated in the alternatives analysis relate to direct, indirect or cumulative effects of development and operation of the FCRPS, or constitute connected, similar or cumulative actions.

The Alternatives section of the EIS needs to disclose the effects on survival and potential for recovery of salmon and steelhead at the population level. The metrics and scale of analysis we recommend in the description of the existing environment section (see above) needs to be used in analyzing the effects of the alternatives.

## **5. Independent Expert Review**

The assurance of objectivity in the EIS will be critical for its acceptance by the public and policy makers as a basis for decision-making regarding the Columbia River system. To that end, we recommend that the Action Agencies obtain independent scientific and economic review at appropriate junctures in the NEPA process. Entities such as the Independent Scientific Advisory Board and Independent Economic Advisory Board, which advise the Northwest Power and Conservation Council, seem well equipped to provide such review. Members of both bodies have expertise in their respective disciplines and understand the salmon and steelhead management in the Columbia Basin.

A second source of expertise and independent review can be achieved by designation of the Environmental Protection Agency, the US Fish and Wildlife Service and the United States Geological Survey as Cooperating Agencies. In addition, the state fish and wildlife agencies and tribal governments should also be provided cooperating agency status in particular for their role through the Fish Passage Center and the long-standing analyses published annually in the Comparative Survival Study (CSS). Inclusion of these agencies by virtue of their subject matter

expertise and jurisdiction would help the Action Agencies accrue some credibility by showing openness to the input of other entities with relevant expertise and management authority.

### III. CONCLUSION

Trout Unlimited appreciates the magnitude and complexity of a NEPA analysis that takes the requisite “hard look” at a reasonable range of alternatives to offset the impacts of the FCRPS on ESA-listed Columbia Basin salmon and steelhead and enable their timely recovery. The difficulty of the undertaking makes it no less necessary, however. The fact that Columbia Basin salmon and steelhead continued to be imperiled with little significant progress toward recovery despite decades of effort and billions of dollars spent underscores the need for a fresh look at the FCRPS and potential major mitigation actions that could lead to abundant, healthy, and resilient populations of naturally reproducing salmon and steelhead populations.

We recommend an EIS scope that will illuminate the positive contributions major actions could make toward restoring wild salmon and steelhead, both individually and collectively, so the Action Agencies and other decision-makers can make informed decisions. TU appreciates the opportunity to comment, and stands ready and willing to work with the Action Agencies and other Columbia Basin stakeholders to recover these magnificent fish and the enormous benefits they provide to communities in the Columbia Basin and beyond.

Trout Unlimited



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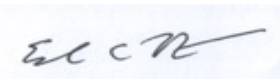
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