



Northwest Office
1402 Third Avenue, Suite # 930 Seattle, Washington 98101
tel 206.508.5474 www.defenders.org

September 11, 2019

Heather R. Bartlett
Water Quality Program Manager
Department of Ecology
Water Quality Program
P.O. Box 47600
Olympia, WA 98501

Comments submitted electronically

RE: Environmental Impact Statement for Short-Term Modification to Adjust Total Dissolved Gas Levels in the Columbia and Snake Rivers

Dear Ms. Bartlett,

Thank you for the opportunity to provide comments to the Department of Ecology (Ecology) on your draft environmental impact statement (DEIS) related to the proposed modification to the state's total dissolved gas (TDG) standards. Increasing these standards will allow more water to be spilled over dams on the lower Columbia and Snake rivers. The most recent, best available science suggests that increasing spill over these dams will help restore salmon runs that highly endangered southern resident orcas rely on. The flexible spill agreement reached between Oregon, Washington, the Nez Perce Tribe, and Bonneville Power Administration (BPA) is a positive step forward to help restore endangered salmon and orcas.

Defenders of Wildlife (Defenders) is a national non-profit conservation organization with over 1.8 million members and supporters nationwide, including more than 25,000 members and supporters in Washington state. Founded in 1947, Defenders is a science-based advocacy organization focused on conserving and restoring native species and the habitat upon which they depend. We have a long history of contributing to agency-led recovery for endangered species. Our staff participated in the Orca Task Force's Prey and Toxics Work Groups. We have also work with schools, cities, counties, and state agencies on programs to reduce toxic pollution throughout the Salish Sea, helping to recover orcas and the salmon they depend on.

Increasing the water spilled over dams in the Columbia Basin is one of the few actions the state can take that will increase salmon available to orcas in the near-term. Alternative three, Ecology's preferred alternative, would allow all eight dams on the lower Columbia and Snake Rivers to spill up to 125% TDG. Maximizing spill at these dams is critical to providing orcas with additional food and near-term relief. However, Defenders is concerned with language in alternative three. As written, the proposed TDG standards would only be valid if the long-term biological opinion (Bi-Op) for the Columbia River System Operations (CRSO) is legally valid. Should the Bi-Op be found to be illegal, the state's TDG standards would revert to the overly conservative TDG standards of 115% in the forebay and 120% in the tailrace. Defenders supports an amended alternative three that does not include language tied to the Bi-Op.

Support for an amended alternative three

One of our main concerns with alternative three is language implying that changes to TDG standards will only be in place if the federal Bi-Op is legally valid. On page 6 of the proposed rule language state, "In addition to complying with the requirements of this chapter, the tailrace maximum TDG criteria applied at dams operated by the U.S. Army Corps of Engineers must be in accordance with legally valid Endangered Species Act consultation documents on Columbia River system operations, including operations for fish passage." Defenders strongly recommends striking this language from the new rule.

Given the track record of the Army Corps, BPA, and NOAA Fisheries, we are skeptical of the agencies' ability to produce a legally valid Bi-Op. Every Bi-Op from 2001 to 2014 has been found to be illegal and in violation of the DEIS. This should be noted on page 21 of the DEIS, which discusses the history of Bi-Ops in the basin. It excludes from this history the illegality of these Bi-Ops. The current Bi-Op for the interim spill agreement has not been challenged, but it is a short-term opinion that is set to expire once the NEPA process concludes in 2020.

TDG standards are under the sole purview of the state, and these standards represent the ceiling up to which dam operators can spill. The actual level of spill will be determined by operators within the TDG regulatory framework set by the state. Because of this, the state should set its new standards irrespective of the legality of the Bi-Op.

Defenders is also concerned that any dam operator not submitting a biological monitoring plan will default to the state's current, overly conservative TDG standards, which includes a forebay standard of 115%. Oregon removed its forebay standard of 115% years ago, finding it unreliable and unnecessary. Since then, Oregon has solely relied on a tailrace standard. We believe that Ecology should follow suit and eliminate the forebay standard entirely. This standard is overly conservative and unnecessarily limits spill regimes that could benefit salmon.

The draft DEIS understates the benefits and overstates the risks of increasing spill

The DEIS spends two pages discussing the potential benefits of increasing spill and over ten pages discussing the potential negative impacts. When discussing the positive benefits of spill, there is only a brief mention of how it helps juveniles avoid powerhouse mortality. There is little to no mention of how spill reduces juvenile travel time and thus exposure to invasive predators. Increased TDG can also reduce populations of invasive salmon-predators. Williams (2006) documents multiple studies of how restoring natural processes in rivers, such as increasing flow rates via increased spill, aides in salmon restoration. Other recent studies show that management of freshwater systems, such as increasing spill, can affect smolt-to-adult returns, even when taking ocean conditions into account (Schaller et al., 2013; Petrosky and Schaller, 2010; Schaller and Petrosky, 2007; Haesecker et al., 2012).

Throughout the DEIS, Ecology cited several studies suggesting that increasing TDG and prolonged exposure to saturated water is detrimental to aquatic life, particularly with regard to gas bubble trauma (GBT). However, the majority of these studies suggest that spill up to 125% is safe for most native aquatic species, particularly salmonids. The DEIS also fails to acknowledge the substantial mortality caused by the hydropower network in the Columbia Basin. Dams and their reservoirs kill as much as 70 percent of the out-migrating smolts and more than 15 percent of the returning adults. Some smolts die further downstream as a result of cumulative stress and injury (CSS, 2018).

Dams have also reduced water velocity, increased water temperatures, exacerbated predation, prolong salmon migration, and increased salmon mortality and injury during dam passage (Budy et al., 2002; Scheuerell et al., 2009; Van Gaest et al., 2001). The DEIS fails to mention, analyze, or mitigate these impacts.

Several times in the DEIS, Ecology notes that it expects increased salmon mortality due to GBT, but it does not note that other sources of salmon mortality are expected to decrease. As a result, the DEIS presents increased mortality from GBT as additive to existing mortality levels. Ecology should provide a more holistic assessment of mortality levels. While the rate of mortality from GBT may increase, overall mortality in the CRSO is expected to decrease, resulting in more salmon overall reaching the Pacific Ocean. It should also be noted that Ecology may be overstating the risk of increased mortality from GBT. On page 30, the DEIS cites the Fish Passage Center's GBT monitoring program. Of the samples taken since 1995, only 37 samples, 0.013% of the total samples, had GBT rates over 15%, which is the threshold criteria for GBT. Of those 37 samples where GBT mortality exceeded 15%, over three quarters of those occurred with TDG levels exceeded 125%. This shows that in a natural setting, native salmonids can withstand higher levels of spill than what the state currently allows.

Finally, many of the studies Ecology cites when discussing the negative impacts of spill are decades old and were conducted using cages and nets, which do not allow the fish to compensate for higher levels of TDG with depth or moving down-river. These studies expose salmon to continuous and prolonged levels of high TDG and do not reflect natural conditions that the fish experience. Many of these studies also suggest that TDG levels are safe for native species up to 125%.

Impacts to non-native fish species would benefit salmon

Defenders remains concerned with the emphasis that Ecology places on invasive species. Throughout the DEIS, Ecology cites concerns about the impacts of increased spill on non-native species found in the warm-water reservoirs created by the dams. Three species (smallmouth bass, largemouth bass, and northern pikeminnow) are regularly referenced. All three are major salmon predators.

On page 32, the DEIS states, "Non-native species can be used as surrogates for native fish species, especially non-salmonids." This statement was not supported by any examples or scientific studies showing that the health of an invasive species can predict the health of a native species. In fact, most ecological studies state the exact opposite. Ecosystems with large populations of non-native, invasive species are generally considered unhealthy. On the lower Columbia and Snake Rivers, the current habitat conditions, caused by the damming of both rivers, favor invasive species over native ones. Prior to European colonization, the species in the Columbia Basin evolved in a system of fast, cold, and turbulent water. Today, these rivers are largely a connected series of warm ponds. Ecology provided no evidence that small mouth bass and northern pikeminnow (both warm-water-adapted species) are suitable surrogates for cold-water-adapted salmonids. In fact, Ecology acknowledges as much on page 34 of the DEIS when it acknowledges that "relationships between TDG levels and GBT were difficult to establish, potentially due to the (high)¹ variability in field studies and fish life history characteristics." This underscores the inappropriateness of using invasive species as surrogates, particularly given that these invasive species are major predators of salmon.

¹ In the DEIS, you used "highly variability." It should be "high variability."

Ecology defends its emphasis on protecting these invasive fish by citing the “recreational value for (anglers)²”, but the DEIS never mentions the tribal treaty rights reserved by Native American tribes throughout the region. Treaties are the supreme law of the land, and the state of Washington has an obligation to honor these treaty rights. After European colonization, dams caused the collapse of salmon runs across the Pacific Northwest, altering life for countless tribes and flooding villages and spiritual sites in the process. Restoring salmon runs is a key part of the state’s obligations to honor these treaty rights, and the DEIS should place a greater emphasis on honoring these treaties over providing recreational opportunities for a handful of (predominantly white) anglers.

It is also troubling that in the DEIS, the state is preoccupied with maintaining healthy populations of invasive salmon-predators, but the state is simultaneously expanding lethal removal efforts of native predators, including sea lions. Typically, ecologists advise that invasive species should be eradicated and contained while native species should be protected and managed. It is disappointing to see the state take the opposite approach, particularly given the impact these invasive species have on our most iconic and economically important species.

The majority of studies cited in the DEIS show that the most sensitive species to higher levels of TDG are invasive, non-native, salmon predators. The DEIS should view this as a benefit to salmon and orca recovery. While the DEIS states that these invasive species may be “detrimental to native fish species,” it fails to discuss the high level of juvenile salmon mortality from these invasive species. Reducing and/or eliminating populations of these invasive fish would be a benefit to salmon and orcas.

The DEIS also states that monitoring, which will inform adaptive management, will include non-native salmonids. Defenders is concerned that this will allow dam operators to reduce spill if it is impacting non-native, invasive fish populations, even if the spill regime is benefiting endangered, native salmonids. The state should not curtail spill purely because invasive species are negatively impacted. The associated biological monitoring plan should explicitly note that, while invasive species will be monitored, adjustments to TDG levels will not be dictated by the health of invasive species, particularly if native species show either no signs of damage or show signs of recovery. Currently, the biological monitoring program could allow for spill levels to be curtailed if populations of non-native fish begin to decline. This would be inappropriate given the current orca and salmon crisis.

Miscellaneous comments

On page 22, the DEIS states that Snake River chinook and steelhead have “rebounded.” This characterization is inaccurate and implies that these species are on track to being recovered. While these populations have increased from historic lows, they are a small fraction of what they were prior to dam construction.

On page 23, the DEIS states that natural processes can increase TDG, but it does not estimate TDG levels on the lower Snake and Columbia rivers prior to dam constructions. This information would provide a helpful baseline of the natural TDG levels experienced by native fish and wildlife prior to dam construction and help managers set appropriate spill levels. These rivers had large rapids that would have increased TDG on the rivers. The DEIS should either estimate what TDG levels were

² The DEIS says “recreational value for fisherman.” Ecology should avoid using sexist and gendered language and instead use the term “anglers” to describe this community. Also, “fisherman” is singular, not plural.

prior to dam construction or at least acknowledge that native species in the Columbia Basin evolved with naturally higher TDG levels.

On page 27, the DEIS should acknowledge that much of suitable chinook salmon spawning habitat on the mainstems of the Columbia and Snake Rivers was lost due to flooding from dam construction.

Conclusion

We greatly appreciate your efforts to recover both salmon and orcas by increasing spill on the lower Snake and Columbia Rivers. Defenders supports an amended alternative 3 that would increase the state's TDG standards irrespective of the legality of the federal Bi-Op and that would eliminate the 115% TDG forebay standard for dam operators that do not submit a biological monitoring plan. The most recent, best available science indicates that spill up to 125% TDG is safe for native aquatic species and can increase the number of salmon available to southern resident orcas. It is imperative that the state do all that it can to advance the recovery of orcas and the salmon runs they rely on. We urge Ecology to adopt an amended and strengthened alternative three to provide important near-term relief for orcas.

We look forward to working with you and your staff further to prevent the extinction of orcas and salmon.

Sincerely,



Robb Krehbiel
Northwest Representative
Defenders of Wildlife

References:

Budy, P., G.P. Thiede, N. Bouwes, C.E. Petrosky, and H. Schaller. 2002. Evidence linking delayed mortality of Snake River salmon to their earlier hydrosystem experience. *North American Journal of Fisheries Management* 22:35-51.

CSS (Comparative Survival Study Oversight Committee). 2017. Comparative Survival Study of PIT-tagged Spring/Summer/Fall Chinook, Summer Steelhead, and Sockeye. 2017 Annual Report. BPA Project #19960200. Available at: <http://www.fpc.org/documents/CSS/CSS 2017 Final ver1-1.pdf>

CSS (Comparative Survival Study Oversight Committee). 2018. DRAFT 2018 Annual Report. Comparative Survival Study of PIT-tagged Spring/Summer/Fall Chinook, Summer Steelhead, and Sockeye. BPA Project #19960200. Available at: <http://www.fpc.org/documents/CSS/DRAFT2018CSSReportv1-1.pdf>

Haeseker, S.L., J.A. McCann, J. Tuomikoski and B. Chockley. 2012. Assessing freshwater and marine environmental influences on life-stage-specific survival rates of Snake River spring-summer Chinook salmon and steelhead. *Transactions of the American Fisheries Society* 141:121-138. ISAB 2013-1. Review of 2009 Fish and Wildlife Program. Available: <http://www.nwcouncil.org/fw/isab/isab2013-1/> (June 2015).

McCann, J., B. Chockley, E. Cooper, B. Hsu, H. Schaller, S. Haeseker, R. Lessard, C. Petrosky, T. Copeland, E. Tinus, E. Van Dyke, A. Storch and D. Rawding. Comparative survival study (CSS) of PIT-tagged spring/summer Chinook summer steelhead, and sockeye. 2017 annual report. CSS Oversight Committee and Fish Passage Center, BPA Contract 19960200, Portland, Oregon. Available: <http://www.fpc.org/documents/CSS/CSS 2017 Final ver1-1.pdf>

McCann, J., B. Chockley, E. Cooper, T. Garrison, H. Schaller, S. Haeseker, R. Lessard, C. Petrosky, T. Copeland, E. Tinus, E. Van Dyke and R. Ehlke. 2016. Comparative Survival Study (CSS) of PIT-tagged Spring/Summer Chinook and Summer Steelhead. 2016 annual report. BPA Contract # 19960200. Prepared by Comparative Survival Study Oversight Committee and Fish Passage Center. 187 pp. plus appendices. <http://www.fpc.org/>

NOAA and WDFW. 2018. Southern resident killer whale priority chinook stocks report. Prepared by NOAA Fisheries West Coast Region and Washington Department of Fish and Wildlife. June 22, 2018. Available at: https://www.westcoast.fisheries.noaa.gov/publications/protected_species/marine_mammals/killer_whales/recovery/srkw_priority_chinook_stocks_conceptual_model_report_list_22june2018.pdf

Petrosky, C.E. and H.A. Schaller. 2010. Influence of river conditions during seaward migration and ocean conditions on survival rates of Snake River Chinook salmon and steelhead. *Ecology of Freshwater Fish*, 19(4), 520–536.

Schaller, H.A., C.E. Petrosky, and E.S. Tinus. 2013. Evaluating river management during seaward migration to recover Columbia River stream-type Chinook salmon considering the variation in marine conditions. *Canadian Journal of Fisheries and Aquatic Sciences*, Published on web 22-Oct-2013.

Schaller, H.A. and C.E. Petrosky. 2007. Assessing hydrosystem influence on delayed mortality of Snake River stream-type Chinook salmon. *North American Journal of Fisheries Management*, 27(3), 810-824.

Scheuerell, M.D., Zabel, R.W., and Sandford, B.P. 2009. Relating juvenile migration timing and survival to adulthood in two species of threatened Pacific salmon (*Oncorhynchus* spp.). *J. Appl. Ecol.* 46: 983-990.

Van Gaest, A.L., Dietrich, J.P., Thompson, D.E., Boylen, D.A., Strickland, S.A., Collier, T.K., Loge, F.J., and Arkoosh, M.R. 2011. Survey of pathogens in hatchery Chinook salmon with different out-migration histories through the Snake and Columbia rivers. *J. Aquat. Anim. Health*, 23: 62-77.