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Comments submitted electronically

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

Dear Director Bartlett,

Thank you for the opportunity to provide comments to the Department of Ecology (Ecology) related to the proposed short-term modifications to the state's total dissolved gas (TDG) standards. Increasing these standards will allow for 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 boost survival rates of 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 that will help restore endangered salmon and orcas. However, Defenders of Wildlife (Defenders) disagree with Ecology's decision to only raise TDG standards to 120% during the 2019 spring migration.

Defenders is a national non-profit conservation organization with over 1.8 million members and supporters nationwide, including more than 24,000 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. This past year, our staff participated in the Orca Task Force's Prey Work Group, which helped develop the recommendation to increase the state's TDG standards. We have also worked 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 spill on the lower Columbia and Snake Rivers is a critically important near-term action to make more salmon available to starving orcas. The evidence presented in the EIS suggests that 125% TDG is a safe and reasonable standard. Increasing TDG standards to this level gives the state more flexibility to adjust spill levels with partners as necessary. Because southern resident orcas face an immediate threat of extinction, **Defenders strongly supports alternative 3 to increase the state's TDG standards to 125%.**

Southern resident orcas cannot wait

Southern resident orcas are among the most endangered marine mammals in the world. With only 75 individuals remaining, the population is the lowest it has been in over three decades. The collapse of chinook salmon, the orcas' primary prey, throughout the Northwest have led to the whales starving to death. Pollution from our cities contaminate the few salmon that remain, which can make orcas (particularly calves) sick. And with ever-increasing vessel traffic through the Salish Sea, underwater noise disrupts the orcas' ability to hunt and communication with each other. Without abundant, healthy, and accessible salmon, these orcas may go extinct in a few decades.

Perhaps the greatest change in the orcas' diet has occurred in the Columbia Basin. Prior to European colonization, the Columbia Basin supported millions of salmon, half of which were from the Snake River, providing orcas with a critical source of food. After these rivers were dammed, salmon runs throughout the basin collapsed. Despite billions of dollars invested in recovery, none of these salmon runs have recovered, further jeopardizing orcas. Increasing spill over the lower Snake and lower Columbia dams would benefit seven of the fifteen most important salmon runs in the orcas' current diet (NOAA and WDFW, 2018). The EIS does not explicitly mention the historical and current importance of the Columbia Basin to southern resident orcas, and we suggest this be added to the section on page 8 titled "Importance."

Recovering southern resident orcas will require multiple actions across the orcas' range. The Fish Passage Center estimates that spilling up to 125% TDG for 24 hours a day would result in roughly 146,000 more adult salmon returning to the Columbia Basin every year. There are few other actions that would result in this many salmon within just a few years. In the EIS, the department acknowledges that increasing spill to 120% "would slightly benefit salmon relative to the 2018 injunction operations" (page 22). A slight benefit will not address the urgent nutritional needs of southern resident orcas. Because of this, **we strongly urge Ecology to demonstrate bold leadership by increasing TDG standards to 125%.**

The most recent, best available science supports increasing TDG standards to 125%

The majority of studies cited in the EIS suggest that spill up to 125% is safe for most native aquatic species, particularly salmonids, despite concerns that increasing TDG and prolonged exposure to saturated water will cause Gas Bubble Trauma (GBT). The studies in the EIS that noted concerns with TDG levels and exposure used net pens and surface cages, preventing salmon from moving to lower TDG areas of the river (i.e. further downstream or deeper in the river channel). The EIS, though, notes that "water depths in the Snake and Columbia rivers broadly provide adequate depth to circumvent TDG related impacts" (page 50) and that salmon can recover from the impacts of GBT after several hours in areas with lower TDG.

It is also worth noting that that vast majority of the studies cited in the section titled "Potential for Negative Impacts of Total Dissolved Gas" are from the 1990s or earlier. The scientific community's understanding of spill and TDG has significantly advanced in the last two decades. The most recent, best, available science supports efforts to increase TDG standards to 125%. These older studies do not provide a holistic analysis of the impact of increased spill and TDG on salmonids.

While there have been more recent studies demonstrating the benefits of spill, the EIS only contains a brief explanation of the models used by the Comparative Survival Study (CSS) and the National

Oceanic and Atmospheric Administration (NOAA) to assess the impacts of spill. Ecology did not cite any other studies in the section titled "Potential Positive Impacts of Increased Spill" despite multiple scientific articles that support increasing spill. Williams (2006) documents multiple studies of how restoring natural processes in rivers, such as increasing flow rates via increased spill, aids in salmon restoration. Other recent studies have shown 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). Salmon in the Columbia Basin evolved in a system that included higher levels of TDG. The EIS should also acknowledge that prior to the damming of the Snake and Columbia rivers, a network of rapids and waterfalls in the region naturally increased TDG in the rivers.

The EIS also fails to acknowledge the substantial mortality caused by the hydropower network in the Columbia Basin. Without spill, smolts are sent through dam turbines and/or elaborate bypass systems. 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, prolonged salmon migration, and increased salmon mortality and injury during dam passage (Budy et al., 2002; Scheuerell et al., 2009; Van Gaest et al., 2001). Because the EIS does not include this holistic analysis of salmon survivability in the Columbia Basin, it implies that any mortality attributable to increased spill would be additive. A more thorough analysis should examine the ability of increased spill to decrease other sources of mortality, primarily by increasing the travel time for juvenile salmon to reach the ocean. This reduces the amount of time juveniles spend in potentially lethally hot reservoir water, which is also where they are vulnerable to predation. As written, the EIS presents only one, dated, side of the science around spill.

Impacts to non-native fish species would further benefit salmon

On page 29, the EIS begins discussing the potential impacts of increased spill on non-salmonids. As the EIS stated, there are no studies indicating that 125% TDG impacts invertebrates or native amphibians. According to the most recent data, only non-native species, several of which predate on juvenile salmon, would be impacted by increased TDG. The EIS cites several studies that increased spill would negatively impact northern pikeminnow, largemouth bass, and smallmouth bass. These three species are non-native predators of chinook salmon and other salmonids, and the state is actively encouraging efforts to reduce populations of these fish. While increased TDG is expected to negatively impact these species, this would further benefit the state's goal of recovering salmon and orcas. The EIS should acknowledge this potential benefit. The majority of the other species that would be negatively impacted by increased TDG are also non-native.

An additional EIS this summer is redundant and unnecessary

Ecology has stated that it plans to undergo an additional public process this summer to increase TDG standards to 125%. This second public process would be redundant and result in unnecessary delay – to the detriment of both salmon and orcas. The data available to inform this decision will not substantially change (if it changes at all) before this summer. The department has offered no justification for why it believes a second EIS is necessary.

Raising TDG standards to 125% gives Ecology discretion and flexibility when working with partners, like Bonneville Power Administration, to set appropriate spill levels. Increasing TDG standards to 125% does not require Ecology or dam operators to spill up to that level. These standards represent a regulator ceiling, not a floor. By increasing TDG standards to 125%, Ecology can still honor the flexible spill agreement and only spill up to 120% in 2019. In fact, on the four lower Columbia dams, spill would be limited by Oregon's TDG standard of 120%. Currently, Washington's more conservative TDG standards limit spill at these four dams. While spilling up to 125% TDG would maximize benefits to southern resident orcas, dams could spill less than that in 2019. These standards represent a regulatory ceiling, not a floor.

Conclusion

We greatly appreciate your efforts to recover both salmon and orcas by increasing spill on the lower Snake and Columbia Rivers. We strongly encourage the department to choose alternative 3 and increase the state's TDG standards to 125%. This would allow spill up to this level at the four lower Snake River dams, which are solely limited by Washington's water quality standards, in 2019. Oregon's lower TDG standards would keep spill to 120% TDG on the four lower Columbia River for 2019. Defenders and our allies are continuing to work with Oregon to increasing their standards to 125% TDG as well. In the meantime, **Washington can show bold leadership and provide immediate relief to southern resident orcas by increasing our standards to 125% TDG.**

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

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