



COLUMBIA RIVER INTER-TRIBAL FISH COMMISSION

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Heather R. Bartlett
Program Manager, Water Quality Program
Washington Department of Ecology
P.O. Box 47600
Olympia, WA 98504-7600

Dear Ms. Bartlett:

Thank you for preparing the Draft Environmental Impact Statement (DEIS) regarding the short-term modification of total dissolved gas criteria in the Snake and Columbia rivers. At the direction and on behalf of its member tribes, CRITFC has sought improvements in juvenile salmon passage as part of the tribes' comprehensive, gravel-to-gravel life cycle approach to restoring and rebuilding anadromous fish populations throughout the Columbia River Basin. The proposed flex spill operations are consistent with and envisioned by *Wy-Kan-Ush-Mi Wa-Kish-Wit*, the tribes' Spirit of the Salmon Plan. <https://plan.critfc.org/2013/spirit-of-the-salmon-plan/technical-recommendations/juvenile-salmon-passage/>. The operations will require water quality standard modifications from Washington and Oregon, which we strongly support. Please accept these comments on the DEIS.

For several decades, CRITFC has closely participated in technical evaluations of the effects of total dissolved gas (TDG) on salmonids. For example, CRITFC engaged in field studies of gas bubble trauma (GBT) from 1995 to 1999. During this period, CRITFC scientists examined adult fish at Bonneville Dam, including 4,667 chinook, 1,878 sockeye, and 1,431 steelhead, to determine the incidence of relative to TDG levels (Backman, 2002)¹. Among other conclusions from this study, adult chinook salmon were rarely observed with GBT. Severe bubbles were observed in less than 1% of the sampled populations of sockeye (15 fish) and steelhead (2 fish) and only when TDG exceeded 126%. Consistent with these and numerous other field observations, less than 2% of fish sampled at levels from 121-125% TDG have shown any signs of GBT.

TDG and GBT data collected since 1995 from were considered in the Coordinated Survival Studies (CSS). CSS examined Snake River spring chinook salmon survival from smolt to adult returns associated with spill and powerhouse avoidance. Among other things, CSS analyses considered the effects of varying spill levels on the adult return of salmon whose juvenile life history experienced high TDG. According to the CSS analyses, we would expect more than a two-fold increase in resulting Snake River spring Chinook salmon abundance when spill is provided for juvenile chinook salmon survival at water volumes associated with 125% TDG

¹ Backman, T.H.W., and A.F. Evans. 2002. Gas Bubble Trauma Incidence in Adult Salmonids in the Columbia River Basin. *North American Journal of Fisheries Management* 22:579--584.

(McCann, 2017).²

CRITFC staff have reviewed and support the comments of the Fish Passage Center (FPC) submitted to Ecology on February 14, 2019. At the direction of the Commission's member tribes and the Pacific Northwest States, the FPC has carefully evaluated TDG effects in the mainstem Snake and Columbia rivers for more than 20 years. As part of the state TDG waivers, biological monitoring for GBT is conducted throughout the Mid-Columbia, Snake, and Lower Columbia rivers. The data are reported to the fisheries management entities and water quality agencies of Washington and Oregon and are available to other interested parties through Fish Passage Center weekly reports and daily postings to the FPC website.

<http://www.fpc.org/smolt/gasbubbletrauma.html>. We urge Ecology to recognize the significant body of TDG and GBT information that is available in the FPC's annual reports.

http://www.fpc.org/documents/FPC_Annual_Reports.html.

Several comments appended to the DEIS urged Ecology to carefully consider TDG effects on invertebrate species. CRITFC is lending its resources to a multi-agency effort to develop and implement TDG monitoring strategies for aquatic invertebrates. We are coordinating with federal, tribal, and state scientific communities to review the methods that were previously implemented in the Columbia River for flexible spill management.

CRITFC has recently inventoried and implemented methods supporting the development of food web metrics from benthic macroinvertebrate data (Sullivan and White, 2017)³. We believe that methods we have tested in tributary environments will lend themselves to better understanding of the impact of TDG on invertebrate communities.

In conclusion, we observe that Columbia Basin salmon and salmon cultures coexisted in balance for millennia. In the last 200 years, population growth, economic development, and climate change have disrupted the Columbia Basin ecosystem. Returning fish to the tribes' usual and accustomed fishing places as guaranteed in the tribes' 1855 treaties would begin to meet the ceremonial, subsistence, and commercial needs of tribal members. Meeting these obligations benefits the non-Indian public, allowing people to enjoy their legal allotment of harvestable fish and share in a healthier, more natural river system.

If you should have any questions, please do not hesitate to contact Rob Lothrop, Policy Manager at 503-238-0667.

Sincerely,



Jaime A. Pinkham
Executive Director

² McCann, J. et al. 2017. Comparative Survival Study of PIT-Tagged Spring/Summer/Fall Chinook, Summer Steelhead, and Sockeye. Chapter 2 Life Cycle Modeling Evaluation of Alternative Spill and Breach Scenarios. BPA Project #19960200, Contract #74406. http://www.fpc.org/documents/CSS/CSS_2017_Final_ver1-1.pdf We ask that the complete version of this citation be included in the record for the DEIS evaluation.

³ Sullivan, S.P., and S.M. White. 2017. Methods Supporting the Development of Food Web Metrics from Benthic Macroinvertebrate Data. CRITFC technical report 17-05. Portland, OR: Columbia River Inter-Tribal Fish Commission. https://www.critfc.org/wp-content/uploads/2017/05/17_05.pdf

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