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September 13, 2019

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

Re: Comments on Draft Environmental Impact Statement: Washington State's Proposed Changes to Water Quality Standards for Surface Waters of the State of Washington – WAC 173-201A.

Dear Ms. Bartlett-

Thank you for the opportunity to review and provide comments on the Draft Environmental Impact Statement for the proposed changes to Water Quality Standards for Surface Waters of the State of Washington (Draft EIS). **Our overall recommendation is that the implementation criteria for 2020 at the 125% TDG standard remain the same as what was implemented in 2019, with an average TDG to meet, but not exceed the TDG standard based on the average of the 12 highest hourly TDG measures in a calendar day.** We offer the following comments for your consideration in the development of the final EIS, followed by more detailed discussion.

- In response to recommendations from the Independent Scientific Advisory Board, the Comparative Survival Study Annual Report included an analysis of total dissolved gas and instantaneous mortality. This analysis, which was reviewed by the Independent Scientific Advisory Board, provides additional scientific basis for the EIS. This reference will provide further support for the proposed action and the EIS should include this analysis.
- To avoid confusion, the EIS should specify that the objective of the experimental flex spill is to avoid powerhouse passage of juvenile salmonids.

- The implementation of a 2-hour average TDG criterion is inconsistent with past Flex Spill operations and may result in decreased benefits of the 125% Flex Spill Operation, as the 2-hour average will likely result in less spill than was originally modeled for this scenario. The implementation criterion, the 2-hour average, does not comport with analyses that led to the adaptive management experiment of flex spill.
- The experimental flex spill agreement establishes an adaptive management experiment in which flex spill is implemented at 120% and 125% tailrace gas cap limits. Changing the implementation criteria from a 12-hour average in 2019 to a 2-hour average in 2020 will obliterate the adaptive management experiment and the ability to learn from comparisons of results from the injunctive order (2018), 2019 Flex Spill operations, and 2020 Flex Spill operations and understand the benefits and limitations of the Flex Spill concept.
- There is no technical scientific data, or fish survival data, supporting the implementation of a 2-hour average criterion for Flex Spill in 2020. The 2-hour average is a significant change from historical spill implementation over the past decades and no technical rationale is provided to support that change from historical implementation.
- The Draft EIS specifies that an Ecology approved biological monitoring program will be required to monitor GBT in salmonids and non-salmonids. The FPC believes that the GBT monitoring program through the SMP fulfills this monitoring requirement for salmonids and we offer our technical support to Washington DOE and others in the design and implementation of the biological monitoring program for non-salmonids.

Model Predictions of salmonid and Steelhead Survival (pg. 26)

This section notes that the Comparative Survival Study (CSS) model predicts that the flex spill operation to 125% TDG would benefit salmon juvenile fish survival and adult returns, relative to the 2018 court-ordered operations and 2019 flex spill operations. To encourage a clear understanding of the experimental flex spill operation, we recommend that all references to CSS model predictions of potential benefits of the flex spill operations state that these predictions are based upon predicted reductions of juvenile salmonid powerhouse passage. CSS analyses indicate that reductions in powerhouse passage are associated with increased juvenile survival (McCann et al. 2018) and increased SARs (McCann et al. 2016, McCann et al. 2017).

Include Additional Supporting References from the Comparative Survival Study to Consider in Review of Effects of Total Dissolved Gas

The Draft EIS provides a lengthy review of literature on the effects of total dissolved gas (TDG) on resident and anadromous fish. However, this review does not mention the recent analyses of TDG and instantaneous mortality (see Chapter 3 of McCann et al. 2018). Results from these analyses indicate that the Relative Variable Importance values for TDG variables (average TDG or maximum TDG) were low compared to other variables, indicating that the TDG variables were not consistently included in the top fitting models for explaining variation in instantaneous mortality. In addition, the model-averaged coefficients of the effects of TDG were all near zero and confidence intervals overlapped zero for all species and reaches analyzed. This indicates that there was little association between TDG levels and instantaneous mortality rates. We recommend that WA DOE review Chapter 3 of the 2018 CSS Report (McCann et al. 2018)

and include this in their review of studies on the effects of TDG. A summary of these analyses should be included in the EIS.

The Proposed 2-hour Average TDG will Impact the Implementation of Spill to the 125% Spill Cap and is Inconsistent with Past Operations and will Diminish the Predicted Benefits of the 125% Flex Spill Operation

The Draft EIS proposed to modify historical spill implementation criteria to utilize a 2-hour average TDG criterion, instead of a 12-hour average TDG criterion, without any technical or analytical rationale. In the past, TDG waivers have operated under two criteria. First, a “primary” criterion included a “target” TDG level that could be met but not exceeded, based on an average of the 12-highest hourly TDG measures. This “primary” criterion has undergone several adjustments over the last several years, including adjustments to how the 12-hour average TDG is calculated (rolling averages of consecutive hours vs. non-consecutive hours) and adjustments in the points of compliance (e.g., tailrace and forebay monitors vs. tailrace monitors only). Regardless of these modifications, managing to the “primary” criterion has been consistently based on a 12-hour average TDG. The “secondary” criterion included a maximum TDG level that could not be exceeded for more than one hour. This maximum TDG level was 125%.

On page 8, the Draft EIS states,

“Ecology proposes to remove the 115% TDG forebay numeric criterion and the 120% tailrace criterion, and to set a 125% tailrace criterion. The 125% tailrace criterion would be calculated as an average of the two highest hourly TDG measures in a calendar day. The 125% tailrace criterion would be applicable at any time during the spring spill season on the Snake and Columbia Rivers. This action coincides with the Spill Agreement that aims to benefit salmon and hydropower.”

Similar statements are repeated throughout the Draft EIS document (pp, 20, 48, 50, 53, and 56). We interpret these statements to mean that the “primary” criterion of targeting a TDG level that could be met, but not exceeded, will now be based on an average of the two highest hourly TDG measures in a calendar day and not a 12-hour average. Furthermore, this new target TDG level will be 125% in the tailrace, during spring operations. Because the new TDG standard will be 125% TDG in the tailrace, the “secondary” criterion of a TDG maximum is, effectively, eliminated. This could have been maintained by proposing a new maximum for which to implement a 2-hour average (e.g., 126%).

This is a significant modification to how TDG has been managed in the past, as determining whether a project exceeded TDG criteria will now be based on a 2-hour average, instead of a 12-hour average. If spill operations at a particular project exceed the TDG criteria, the spill cap at that project is often reduced and, therefore, spill at that project for the next day is reduced. A 2-hour average TDG will likely lead to more exceedances in the tailrace TDG levels and, therefore, more reductions in spill caps and spill levels. To illustrate this point, the FPC staff has summarized tailrace TDG exceedances in the spring of 2019, which were based on the average of the 12 highest hourly TDG measures in a calendar day (not necessarily consecutive

hours). For comparison, we also estimated an average TDG based on the two highest hourly TDG measures in a calendar day (i.e., Draft EIS proposal) and determined whether these 2-hour averages would be considered exceedances (Table 1). From our analysis, it is clear that, had spill in 2019 been managed to the proposed 2-hour average TDG criterion, there would have been significantly more tailrace TDG exceedances and, likely, reduced spill levels. In all, we estimated that the 2-hour average TDG criterion would have resulted in 51% more exceedances in 2019 (Table 1).

Table 1. Number of exceedances of the 120% tailrace TDG criterion, based on the 12-hour average criterion versus the proposed 2-hour average criterion.

Site	12-Hour Average	2-Hour Average	Percent Increase
LGR	13	32	146%
LGS	21	32	52%
LMN	30	39	30%
IHR	31	40	29%
MCN	3	9	200%
JDA	3	5	67%
TDA	34	44	29%
BON	11	20	82%
Total	146	221	51%

Furthermore, all of the projected benefits under 125% Flex Spill Operations were based on assumed spill caps for 125% TDG. These assumed spill caps were based on what may occur when managing TDG to a 12-hour average TDG criterion, not a 2-hour average. Given that the proposed 2-hour average TDG criterion will likely result in lower spill volumes, the benefits in reduced powerhouse passage under the 125% Flex Spill Operation will likely be less than what was projected.

The WDOE modification of historical spill implementation criteria will obliterate the adaptive management experiment of the flex spill concept

The Flex Spill Agreement establishes an adaptive management experiment in the Snake and Columbia Rivers to evaluate the flex spill concept. In 2019 the adaptive management experiment was implemented at the 120% tailrace dissolved gas level based upon a 12-hour average TDG criterion. The adaptive management experiment for 2020 included evaluating flex spill at the 125% tailrace dissolved gas level, also based on a 12-hour average TDG criterion. The WDOE proposal to change the 12-hour average TDG criterion to a 2-hour average TDG criterion will make it impossible to compare the 120% flex spill operations in 2019 with 125% flex spill in 2020 or to the court ordered injunction spill that was implemented in 2018. This eliminates an important opportunity to learn and to evaluate whether flex spill is a viable spill operation for the future.

Biological Monitoring Program for Non-salmonids

As is noted in the Draft EIS, the Smolt Monitoring Program has conducted the biological monitoring program for GBT in salmonids since 1995. Training, data collection, and data distribution from this program are managed by the Fish Passage Center (FPC), in conjunction with the Pacific State Marine Fisheries Commission, Washington Department of Fish and Wildlife, Oregon Department of Fish and Wildlife, and Chelan PUD. The Draft EIS specifies that an Ecology approved biological monitoring program will be required to monitor GBT in salmonids and non-salmonids. The FPC believes that the GBT monitoring program through the SMP fulfills this monitoring requirement for salmonids. In addition, we offer our technical support to Washington DOE, the U.S. Army Corps of Engineers, and others in the design and implementation of the biological monitoring program for non-salmonids.

Again, we thank you for the opportunity to review and comment on the Draft EIS. Please do not hesitate to contact us if you have any questions or concerns regarding our comments. We are happy to work with WA DOE on future issues related to this potential rule change.

Sincerely,

A handwritten signature in black ink that reads "Michele DeHart". The signature is written in a cursive, flowing style.

Michele DeHart
Manager, Fish Passage Center

References:

- McCann J. B. Chockley, E. Cooper, T. Garrison, H. Schaller, S. Haeseker, R. Lessard, C. Petrosky, T. Copeland, E. Tinus, E. Van Dyke, and E. Ehlke. 2016. Comparative Survival Study of PIT-tagged Spring/Summer/Fall Chinook, Summer Steelhead, and Sockeye. 2016 Annual Report. BPA Project #19960200. http://www.fpc.org/documents/CSS/CSS_2016_Final.pdf
- 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. 2017. Comparative Survival Study of PIT-tagged Spring/Summer/Fall Chinook, Summer Steelhead, and Sockeye. 2017 Annual Report. BPA Project #19960200. http://www.fpc.org/documents/CSS/CSS_2017_Final_ver1-1.pdf
- McCann J. B. Chockley, E. Cooper, B. Hsu, S. Haeseker, B. Lessard, C. Petrosky, T. Copeland, E. Tinus, A. Storch, and D. Rawding. 2018. Comparative Survival Study of PIT-tagged Spring/Summer/Fall Chinook, Summer Steelhead, and Sockeye. 2018 Annual Report. BPA Project #19960200. http://www.fpc.org/documents/CSS/2018_Final_CSS.pdf