



DEPARTMENT OF ECOLOGY

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WATER QUALITY PROGRAM

September 26, 2019

MS. HEATHER BARTLETT
WATER QUALITY PROGRAM MANAGER
WASHINGTON DEPARTMENT OF ECOLOGY
PO BOX 47600
OLYMPIA, WA 98504-7600

RE: Draft EIS Washington State's Proposed Changes to Water Quality Standards for Surface Waters of the State of Washington -WAC 173-201A, Publication 19-10-022

Dear Ms. Bartlett,

Thank you for the opportunity to comment on the Washington State Department of Ecology's proposal to permanently amend the numeric criteria for total dissolved gas (TDG) at the eight federal dams on the lower Columbia and lower Snake rivers. It is our understanding that this rule change could also apply to the five mid-Columbia dams as well, should the PUD operators of these facilities choose to adopt the criteria.

In Seattle City Light's (City Light) letter of December 7, 2018, on the scoping of the draft EIS for considering a 2019 short term elevation of TDG criteria to 120% in the tailraces of these dams, we voiced concern that the scientific evidence for elevating TDG gas allowances over 120% could substantially increase the risk of injury and mortality from gas bubble trauma (GBT) in salmonids and other aquatic species. Despite this concern, City Light supported the temporary action as a means to explore whether increased spill could improve smolt-to-adult returns (SAR) in part because the Flexible Spill Agreement (FSA) was proposed over a short term (2019-2021). City Light considered that the three-year experimental flex spill period offered the opportunity to evaluate the complexities related to TDG effects and the ecological cost-benefit to salmon populations. However, we also noted that if temporary levels of TDG-related impacts were deemed unacceptably high during the experimental spill period, Ecology should be prepared to lower allowable TDG levels as appropriate.

While supportive of the temporary testing of elevated TDG criteria as scoped for 2019, we also noted the need for an updated literature review, given the 120% TDG level in 2019 (and 125% TDG criteria envisioned for 2020 and 2021 under the FSA) had been demonstrated in some laboratory and field studies to cause GBT. Upon reviewing the DEIS, we are pleased to note the expanded literature review and acknowledge that it addressed several of our concerns—particularly in relation to effects on aquatic invertebrates. Although the expanded literature review and DEIS analyses provide a better foundation for decision making on the proposed rule change, we believe the uncertainties associated with the proposed action remain. Furthermore, these uncertainties are now magnified by the higher allowable TDG levels that could be allowed, in essence, permanently. The low margin of safety of the proposed

125% TDG criterion magnifies the inherent risk of harm to salmonids and other native aquatic species, and as such, we cannot support the permanent rule change at this time. This position is supported by a number of relevant technical points that we summarize below.

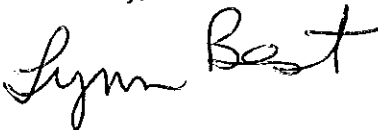
- The proposed rule change evaluated in the DEIS is based on numerous assumptions inherent in the Comparative Survival Study (CSS) model conducted by the Fish Passage Center which concludes that increased spill will substantially increase SAR. While the model appears robust for several empirical measures input into the model, conclusions of limited risk appear to be based, at least in part, on the assumption that salmonid smolts will behaviorally adjust to high TDG through depth compensation. This presumption is not consistently supported in the literature. The presumption of directional depth compensation in response to elevated TDG levels should not be a basis for minimizing the potential for an adverse effect.
- Related to the above point, it is our understanding that current sampling of smolts to determine whether they are affected with GBT is conducted in bypass systems at the dams. Entering most bypasses requires smolts to enter at elevations significantly below the surface and varies by dam. However, smolts using these bypass systems are not descending to avoid high TDG levels, but rather as a pathway to outmigrate. This descent greatly lessens the susceptibility to GBT. It is our understanding that the incidence of GBT in fish sampled in bypass systems is used to correlate spill-related TDG levels to GBT in exposed fish. As it is our understanding that TDG is actually measured in the surface waters of the forebay and tailraces of the dams, the empirical data used to forecast the effects of the action on GBT incidence appears based on faulty exposure assessment assumptions. In other words, the fish being evaluated for GBT are not likely the same fish that would be spilled and exposed to the high levels of TDG experienced in spillways.
- As the rule would apply to all 8 federal dams in the lower Columbia and lower Snake rivers, and potentially the five mid-Columbia dams, the cumulative effects from exposure need to be fully evaluated. Smolts outmigrating from upper river locations could potentially be exposed repeatedly to excessive levels of TDG. It is not clear if the CSS model has considered the effect of repeated exposure to supersaturated TDG. This exposure represents, in essence, a chronic or sub-chronic exposure profile for which increased injury does not appear to be fully considered. The effects of repeat or chronic exposure to elevated TDG is discussed in the DEIS to only a limited degree, and not to a level to support the conclusion that such repeat exposure would not result in adverse survival outcomes.
- The CSS model focuses on salmonid smolts and does not appear to evaluate information for all life-stages of salmonids in the entirety of the river systems potentially affected. While most young salmon in the mainstem Snake and Columbia Rivers are derived from tributary spawners, this is not an absolute (e.g., Hanford Reach Chinook). Early life stages of such salmonid populations in mainstem habitats—as well as other non-salmonid native fish—will be disproportionately exposed to higher levels of TDG as they will preferentially use shallow water habitats for rearing where TDG levels will be highest. As the rule change could theoretically allow surface waters between dams to accommodate TDG levels as high as 125% (i.e., as the

criteria would apply to both the tail races and forebays), it is entirely possible that early life stages of fish of many different species will experience prolonged exposure to TDG levels that have been shown to elicit GBT. This outcome appears counter to the intent of increased spill.

- Adaptive management is presumed to be exercised under the proposed action through biological monitoring. Unfortunately, the DEIS provides limited detail on the specifics of the monitoring program and, as described above, it does not consider all species and life stages that could experience exposure to high TDG levels. Regional stakeholders have not been provided with the results of monitoring in 2019, the first of the three-year FSA. These results should first be evaluated, and if results are unclear to describe the effects of higher levels of TDG, efforts should increase to establish a more comprehensive monitoring, research and assessment program for 2020 and 2021. The region needs clear empirical information on the biological effects of TDG levels over 120% on all life stages of all aquatic species that inhabit the river system through each dam facility. This should include juvenile and adult salmonids and other native fish and invertebrates. Regional stakeholders need to determine if the benefits of higher amounts of spill provide more benefit than harm. It is perplexing that a permanent rule could be advocated in the absence of presenting the monitoring data from (at a minimum) the initial 2019 testing. To this end, we do not support removing the requirement for a TDG biological monitoring plan for TDG levels up to 120 percent, as presently proposed, until such time that initial results can be independently reviewed and verified.

To conclude, Seattle City Light does not support a permanent rule change at this time. We encourage Ecology to continue with the initially envisioned three-year FSA to resolve significant uncertainties associated with the impacts of high TDG from increased spill. The lessons to be learned from this period of flexible spill should provide the guidance for appropriate policy implementation in the future, including a potential permanent rule change. The permanent rule change currently considered brings too many uncertainties associated with a high risk of harm and narrow margin of safety. Moving forward with the full course of action initially envisioned for 2019-2021 allows for a period of full data disclosure and review to evaluate effectiveness, before a precedent is set for which reversion could be very challenging and costly.

Sincerely,



Lynn Best, Ph.D.
Chief Environmental Officer
Seattle City Light

