

SYSTEM OPERATIONAL REQUEST: #2023-2

Walla Walla District

The following State, Federal, and Tribal Salmon Managers have participated in the preparation and support this SOR: Idaho Department of Fish and Game, Nez Perce Tribe, Yakama Nation, Columbia River Inter-Tribal Fish Commission/Confederated Tribes of the Umatilla Reservation, Washington Department of Fish and Wildlife, Oregon Department of Fish and Wildlife

TO:

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FROM: Jonathan Ebel (Idaho Department of Fish and Game)
Jay Hesse (Nez Perce Tribe)

DATE: June 01, 2023

SUBJECT: Spill operations following GBT criteria exceedance on 30 May 2023

SPECIFICATIONS:

During the period spill is reduced due to the non-salmonid Gas Bubble Trauma (GBT) criterion exceedance below Ice Harbor under Washington Department of Ecology's (WDOE) water quality waiver we request that:

- (1) The USACE implement spill to the 125% tailrace gas cap for 24 hours per day at Lower Granite Dam.
- (2) The USACE spill to the 120% tailrace gas cap for 24 hours per day at Little Goose, Lower Monumental, and Ice Harbor dams

JUSTIFICATION:

The goal of our request is two-fold: (1) to maximize surface passage opportunity for currently migrating smolts in the Snake River while acknowledging constraints imposed by WDOE's water quality waiver and (2) further explore flexibility within WDOE spill restrictions to refine and modify the biological plan and consequent implementation under possible future GBT criteria exceedances.

On May 30, 2023, USGS staff observed the second exceedance of the non-salmonid gas bubble trauma criterion since the spill to the 125% TDG limit began in 2020. Both exceedances have occurred in 2023 below Ice Harbor Dam. Like the first exceedance on May 09, the sample was dominated by sculpin and as were nearly all individuals with symptoms of GBT. WDOE's criteria has not been exceeded below Lower Granite Dam. No sampling occurs in the tailraces of Little Goose and Lower Monumental Dams.

Spill is currently the primary strategy for ESA-listed fish passage in the Columbia River with well documented benefits for survival. Under the Washington Department of Ecology water quality regulations, reduced spill is applied to an entire zone, in this case all four Lower Snake River dams rather than only where the GBT criterion exceedance was observed. Following the first exceedance, communication between the USACE and WDOE modified the implementation plan to permit spill to the 125% TDG cap at Lower Granite Dam but reduce spill to achieve a maximum of 115% forebay/120% tailrace TDG at Little Goose, Lower Monumental and Ice Harbor Dams. Despite the reduced spill during the "Gas Cap period", the Action Agencies still maintained the "Performance Spill period" at Lower Monumental, Little Goose, and Lower Granite Dams. While there is a biological reason to maintaining a 30% spill period at Little Goose under some flow conditions (i.e., reducing dam-induced adult passage delays) the biological justification for maintaining a "Performance Spill period" at Lower Granite and Lower Monumental dams during GBT criteria exceedance driven reduced spill is weaker.

The fish managers signatory to this SOR are concerned that an important protection for ESA-listed anadromous fish across the entire Snake River Basin has been disrupted due to the operational impacts observed in a highly abundant non-listed local population of native fish. These concerns are partially outlined in SOR 2023-1 with some changes. The Fish Passage Center estimated that the first reduction in fish passage spill occurring May 10-17 caused by observation of GBT in sculpins increased powerhouse encounters relative to 125% TDG spill operations and impacted upwards of 88% of endangered Snake River sockeye salmon smolts, 23% of threatened Snake River spring/summer Chinook salmon smolts, and 28% of Snake River

summer Steelhead smolts ([FPC memo 26-23](#)). Peak passage of yearling Chinook and steelhead has passed and threatened Snake River Fall Chinook salmon are now the predominant juvenile migrants in the Lower Snake River. Thus, the impact of reducing spill for non-ESA listed fishes in shallow water habitats has shifted to a different ESA-listed anadromous fish in the Snake River basin.

Under projected flows in the Snake River of 90-100kcfs over the next 7 days, performance spill at LMN and LGS will not be substantially different from spill to the [120% gas cap spill](#) (Table 1). Yet, there is a difference as flows continue to recede for Lower Monumental and Little Goose Dams due to the percentage-based Performance Spill and we request spill to the 120% TDG gas cap for 24 hours per day. Given the nuance with LMN and LGS, spill to the 125% TDG gas cap for 24 hours/day at Lower Granite Dam in addition to spill request for LMN and LGS is the clearest way for powerhouse encounter rates to approach what would have occurred in the FOP under these conditions. The requested operations should meet the requirements of WDOE's water quality waiver following a non-salmonid GBT criteria exceedance by achieving 120% TDG in the tailraces of Ice Harbor, Lower Monumental, and Little Goose dams.

Table 1: Powerhouse encounter probability (PITPH index) under three operations of the four Lower Snake River Dams. The FOP operation is described in Appendix E of the 2023 Fish Passage Plan and reviewed by the Regional Implementation Oversight Group. The SOR operation is described in the Specification section of this SOR. The GBT reduced spill operation refers to the implementation of the Action Agencies’ GBT monitoring plan approved by WDOE and ODEQ and modified on May 11 to implement 125% TDG spill at Lower Granite Dam. Spill flow is based on a range of total flow of 90-100kcfs, which is projected by the USACE Single Trace Process circulated to fish managers on 30 May 23. PITPH index was estimated using the Nez Perce Tribe’s [Snake and Columbia River Hydrosystem Spill Operations and Fish Passage Route Planning web application](#)

Operation	Dam	Gas Cap / Performance Spill (Kcfs)	Lower Snake River PITPH Index range
FOP operation	Lower Granite	84 /20	0.43-0.49
	Little Goose	75 / (27-30)	
	Lower Monumental	95 / (36-40)	
	Ice Harbor	110/110	
SOR operation	Lower Granite	84/84	0.41-0.57
	Little Goose	34/34	
	Lower Monumental	40/40	
	Ice Harbor	94/94	
GBT reduced spill (LWG at FOP)	Lower Granite	84/20	0.66-0.8
	Little Goose	34/ (27-30)	
	Lower Monumental	40/ (36-40)	
	Ice Harbor	94/94	