

May 18, 2018

Memorandum -- delivered via email

To: Chris Walker, NWP Operations Division Fishery Section  
US Army Corps of Engineers (Corps)

From: Anne Mullan, <sup>AM</sup> Endangered Species Biologist, Willamette Branch  
West Coast Region, National Marine Fisheries Service (NMFS)

Subject: NMFS' comments on MFR "WVP02 Winter Steelhead Maximum Flows"

Thank you for this opportunity to review this Memorandum for the Record (MFR). This memo summarizes comments prepared by NMFS' West Coast Region technical staff.

#### **North Santiam Comments**

This MFR notifies the Services of flows greater than the 3,000 cfs maximum in the Biological Opinion (BiOP) Table 9.2-2, Minimum and Maximum Tributary Flow Objectives below Willamette Dams. In the North Santiam, the flows were greater than 3,000 cfs from April 26-May 2 reaching a high of 4,790 cfs during April 27-29. While flows decreased, following that there was a spike in the spill on May 2, which also resulted in a spike in TDG to 125%.

NMFS considers it likely some early spawning winter steelhead adults and incubating eggs were affected by the high TDG shown (Figure 1). As adults and eggs are believed to be the salmonid life stages least sensitive to TDG, impacts are expected to be minor. However, chronic exposure to elevated TDG is known to increase morbidity and mortality of other life stages even at lower percent saturation levels (i.e., 110-120%). The short duration of high TDG exposure should minimize potential impacts, although it would be ideal if impacts from TDG could be avoided in the future. We appreciate any explanation of how this event could have been avoided.

In addition to the TDG, we are concerned about winter steelhead redds that may be exposed following the drop in flows which is anticipated for June. Total count for adult unclipped steelhead through April 30 at Bennett Dams was 179, representing more than 10% of those counted at Willamette Falls by that date. We suggest that the Corps work with NMFS and ODFW to identify where redds may be vulnerable to dewatering at lower flows. Initially, we would like to see modeling of flow levels that could be held throughout June, greater than the normal 1200 cfs target for incubation. This would increase the likelihood of keeping all redds under water. Simulating rates of 1300 cfs and 1400 cfs for the North Santiam could be coordinated with attempts to continue to meet mainstem Willamette flow targets at Salem. We recommend finding an opportunity to view areas with known redds in past years, as releases from Big Cliff drop closer to incubation targets.

## USGS 14181500 NORTH SANTIAM RIVER AT NIAGARA, OR

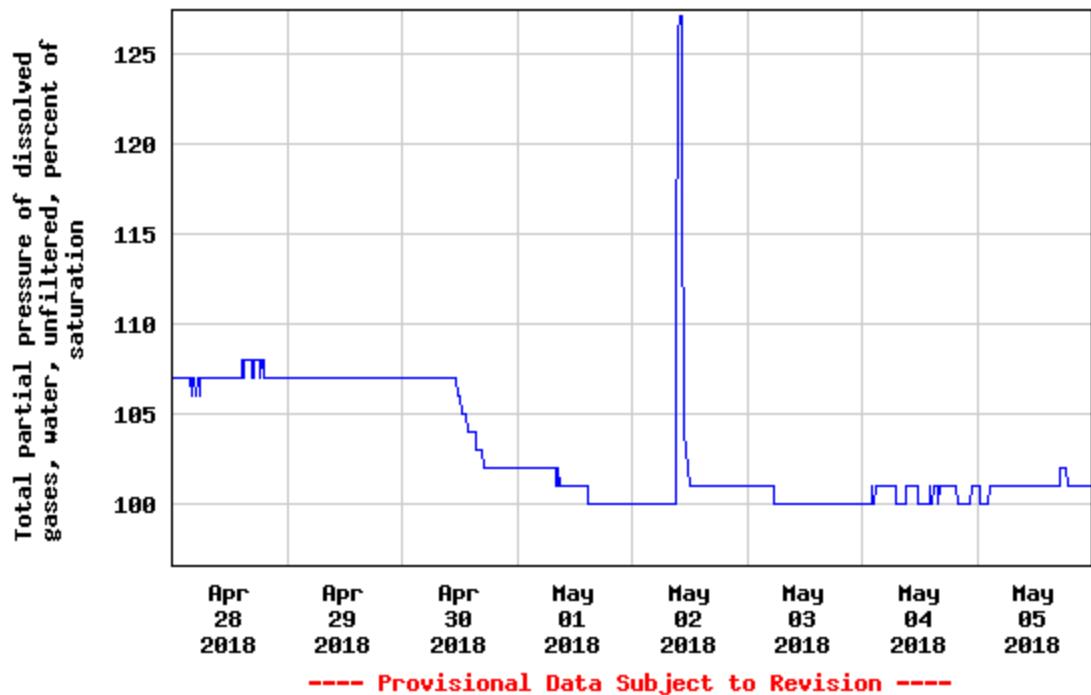


Figure 1. TDG levels at Niagara, on North Santiam River in late April and early May, 2018.

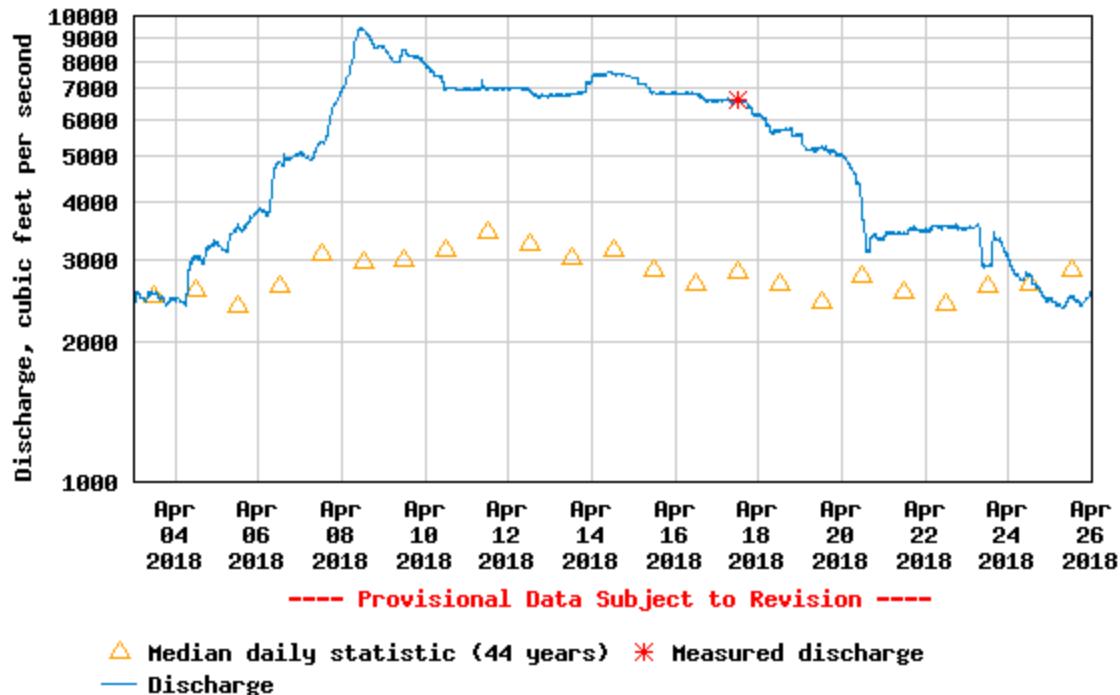
### South Santiam Comments

The MFR noted that flows on the South Santiam near Foster were greater than 3,000 cfs from April 27-29, 2018. However flows were also much higher April 4-24, 2018 (Figure 2), reaching past 9,000 cfs and staying at 7,000 cfs for several days, during which time the few adult winter steelhead spawners counted at Foster Dam rose from 2 to 21. Counts lower in the South Santiam from spawning surveys are not available yet, so we would recommend that those data be obtained as well, with as much information on location as possible. Because South Santiam flows were so much higher than usual, the spawners may have been delayed or moved into the North Santiam.

We have similar concerns about redds being built, and spawning taking place in areas that will later be dewatered were flows to drop to the minimum flow for incubation in late May and throughout June. We recommend finding out if there are areas that would benefit from higher incubation flows, as well as modeling how these higher flows would affect meeting minimum average flows at Salem for the rest of May. If the majority of the spawners are near Foster Dam, please notify us of any possible areas of concern during lower flows.



## USGS 14187200 SOUTH SANTIAM RIVER NEAR FOSTER, OR



Please direct questions or concerns about these comments to Anne Mullan at [anne.mullan@noaa.gov](mailto:anne.mullan@noaa.gov) or Diana Dishman at [diana.dishman@noaa.gov](mailto:diana.dishman@noaa.gov).

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