

**OFFICIAL COORDINATION REQUEST FOR  
NON-ROUTINE OPERATIONS AND MAINTENANCE**

**COORDINATION TITLE:** *14BON14 LFS Attraction Flow Test*

**COORDINATION DATE:** 2014-06-12

**PROJECT:** Bonneville Dam

**RESPONSE DATE:** COB Wednesday 18 June.

**Description of the problem:** This is a test to determine optimal attraction flow through the Lamprey Flume Structure (LFS). There are two entrances to the LFS at PH2's NDE. High flow will be 60% open or just less than amount open that causes entrained (bubbles) to deter fish passage at the NDE. Low flow will be ½ of high setting.

**Type of outage required:** None

**Impact on facility operation:** One electrician will be needed to program the PLC for the random block design (attached Excel spreadsheet).

**Dates of operation:** June to 4 September

**Length of time for operation:** One hour of work three hours with crane coordination

**Expected impacts on fish passage:** Minimal, entrained air will be monitored visually from 55' deck and flows reduced if a problem is noted. If needed the low flow open setting will be adjusted to ½ of the high flow open setting.

**Comments from agencies:**

**12 June 2014 FPOM.** BON WA Shore LFS/LPS. UI would like to test attraction flows to find the best flow to attract lamprey. The butterfly valve only indicates percent open/closed, not actual flow. 40% open = ~23cfs through the LFS. Looking at 60% high treatment and 30% low treatment. Fredricks said he doesn't want to see a lot of bubbles entrained in the entrance area. Lorz asked if any testing has occurred. Zorich said there was testing in 10% increments. At 70% bubbles were seen. Fredricks said he would come out for the testing to see the conditions.

**Final results: Lamprey flume structure auxiliary water supply entrained air demonstration**

There is concern that too much entrained air exiting the lamprey flume structure (LFS) could inhibit salmonid use of the Bonneville north downstream entrance. Today, 6/18/14 between 11:20am and 11:45am NWP-OD demonstrated the amount of entrained air that passes through the LFS to the north downstream fishway entrance for Gary Fredricks of NOAA. Also attending were: Ida Royer BON Project Fisheries, Jon Rerecich NWP, Sean Tackley NWP, and Nathan Zorich NWP. No other FPOM representatives were present.

11:00am

40% open, 23.0 cfs, 20.5 foot tailwater (existing condition).

11:20am

60% open (proposed test attraction flow), 40.5 cfs, 20.5 foot tailwater.

There was a fair amount of entrained air, more than I witnessed at 60% open during the previous test (6/2/14 with 28.5 foot tailwater). Gary Fredricks from NOAA felt this amount of entrained air looked bad and could have negative impacts on salmonid passage. The group generally agreed.

11:31am

50% open, 37.6 cfs, 20.5 foot tailwater.

This combination had substantially less entrained air near the fishway opening and was deemed the maximum acceptable level for LPS attraction water testing.

11:43am

40% open, 28.9 cfs, 20.5 foot tailwater (present condition).

The recommendation for trials to optimize LPS attraction flows was to use 50% open as a maximum but closely monitor the amount of entrained air as the tailrace drops. If air bubbles increase beyond comfort level of project biologist, then the percent open should be reduced to a favorable fish passage condition.

Note - there is currently a planning effort to install venting to the LFS and possible the LPS rest box 1 in hopes of reducing entrained air.

Thanks to NOAA, Bonneville Fisheries, and NWP Planning for participating in demonstration.

Please email or call with questions or concerns.

Thank you,

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