

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

COORDINATION TITLE- 14BON02a FGE Program Gatewell Velocity Testing

COORDINATION DATE- 23 Jan 2014

PROJECT- Bonneville Lock and Dam Powerhouse 2 - Unit 13C and 14A Gatewells

RESPONSE DATE- 29 May 2014

Description of the problem – Elevated mortality has been an ongoing problem in the PH2 gatewells when operating at the upper end of the 1% peak efficiency range.

The USACE Portland District is planning to collect water velocity data at PH2 in late May and early June 2014 to help achieve the following objectives:

1. Calibration of the computational fluid dynamics (CFD) model of the gatewell for the longer term evaluation of flow control alternatives.
2. Obtain better understanding of the hydraulic characteristics in the A and C gatewells at the upper 1% peak efficiency with flows greater than 18,000 cfs.
3. Evaluate the effect of modifying porosity on the two uppermost panels of the VBS to reduce excessive (>1.0 fps) velocities normal to the screen face.

Following the 6 February 2014 FFDRWG, a revised scenario with reduced high flow testing from four days to two days to minimize fish impacts was supported.

A summary of the test scenarios are shown in Table 1 below.

Table 1: Scenarios for Data Collection

Test Number	Configuration	Gatewell data collection	Unit Operation – low and high flow in 1% peak efficiency
1	Existing Conditions	14A	High
2	Existing Conditions	14A	Mid range
3	Modified VBS	14A	Mid range
4	Modified VBS	14A	High
5	Existing Conditions	13C	High

An adjacent unit will be operated at high flow during tests 1, 4, and 5 unless we have not passed peak juvenile sockeye passage.

Length of Time for Testing – 28 May through 10 June 2014

Table 2 below shows the calendar schedule.

Table 2: Preliminary Schedule

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Sat
May 25	26	27 Mob	28 Wet test	29 Setup	30 Demob	31
June 1	2 Mid -Flow 14A	3 High flow14A	4 Sensitivity testing. Mid flow	5 High14A VBS test	6	7
8	9 14A mid flow VBS test	10 13C High flow	11 Equipment Demob	12	13	14

The 28 May wet test will take ½ a day.

Type of outage required - NO NEW OUTAGE COORDINATION.

Dates of Impacts – 28 May – 10 June.

Impact on facility operation.

1. A test frame will be in the A-slot for Unit 14 for each of the five tests. Unit 14 would be held to a specific range of the 1% for each test day. Unit 14 would be operated at the mid 1% during June 2 and 9. Unit 14 would be operated at the upper 1% efficiency for two test days, currently scheduled for June 3 and 5. All testing will occur daylight hours only, 0600-1700.
2. Unit 13C - A test frame will be in the C-slot of Unit 13 for one test day on June 10. Unit 13 would be held to the upper 1%. Adjacent unit 14 will be operated at upper 1% during the test period. All testing will occur daylight hours only, 0600-1700.
3. 57 feet of head or less is needed to be able to pass >18,000 cfs through the unit with STS installed, typical of our most problematic flows for fish passage through gatewells in the screened bypass system. A 74-75 ft forebay operation would require approximately 225 kcfs river flow to achieve that head. Please see Figure 3 for 10 year average and 2013 Bonneville outflows.

Expected impacts on fish passage

Downstream Juvenile Migrants:

No Spring Creek NFH releases are expected to be impacted by the test operation or equipment in the gatewell. The bulk of Spring Creek released fish are expected to pass Bonneville Dam during the 5-6 days following the first release and arrival at Bonneville Dam on 11 April. A second and final release is scheduled for 6 May with arrival to Bonneville on 7 May. Most should pass by 12 May.

The proposed data collection will likely have some impacts to migrating run of the river juvenile salmonids and juvenile lamprey passing through the gatewell, due to the need to acquire data during the upper 1% best efficiency unit operation in the 18+K flow range. Additionally, the data collection equipment will be in the gatewell during mid and upper 1% testing and removed from the water at the end of each test day.

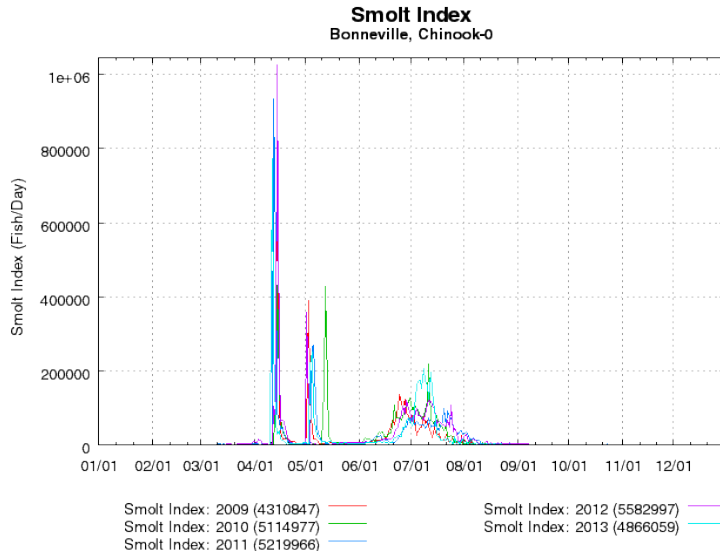
To minimize impacts to juvenile salmonids and lamprey, the upper 1% tests will occur after the 10 year average 90% passage dates (see Table 3 below) for yearling Chinook, steelhead, and coho. In addition, testing is scheduled during daylight hours only, 0600 – 1700. Juvenile sockeye may be impacted during the high flow test period.

Table 3: 2004-2013 average 10%, 50%, and 90% passage dates

Sp.	10% passage date	50% passage date	90% passage date
Ch1	4/21	5/11	5/25
ST	4/29	5/13	5/30
Co	4/23	5/14	5/31
So	5/15	5/21	6/3
Ch0	3/26	6/7	7/15

Source: DART 2014

For sub-yearling Chinook, Figure 1 better illustrates the passage timing. Testing occurs during the lull between the peak spring outmigration of sub-yearlings and the peak summer outmigration of sub-yearlings.

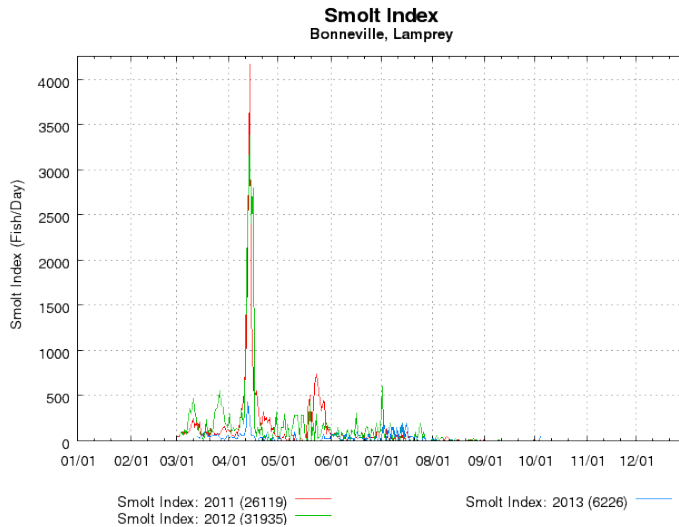


DART Data Citation

Columbia River DART, Columbia Basin Research, University of Washington. (2014). Available from http://www.cbr.washington.edu/dart/query/smolt_graph_text

Figure 1: Bonneville Dam Ch0 smolt passage index, 2009-2013.

Lamprey migration timing is shown in Figure 2 below. Testing will not occur during the peak of juvenile lamprey passage.



DART Data Citation

Columbia River DART, Columbia Basin Research, University of Washington. (2014). Available from http://www.cbr.washington.edu/dart/query/smolt_graph_text

Figure 2: Bonneville Dam Juvenile Lamprey passage index, 2011-2013.

Adult Fallback:

Adult Fallback through the Test Unit – Adult fallback is not expected to increase due to the proposed three day operation with an increase in flow of 3K through each test unit. This falls within the normal FPP Unit operation range. The other three to four days of testing would be within the specially coordinated powerhouse operation limiting Unit flow to the mid-range 1% (15K). Adult fish passing through the test gatewell would be exposed to the Traversing Beam.

Upstream Migrants:

No impacts to adult salmonid and lamprey ladder entry or migration since both end Units remain at the top of the priority list to aid in attraction to the adult ladder monolith entrances.

Comments from agencies

13 February 2014 FPOM. 14BON02 FGE testing. Rerecich reported that this MOC was discussed at NWP FFDRWG and brought back to FPOM for final approval. NOAA is ok. IDFG is ok. USFWS is ok. ODFW expressed ambivalence but eventually felt ok with the MOC. CRITFC is ok. **Approved.**

CRITFC- -----Original Message-----

From: Tom Lorz [mailto:lorz@critfc.org]

Sent: Thursday, May 22, 2014 12:39 PM

To: Mackey, Tammy M NWP

Subject: [EXTERNAL] Re: FPOM: MOC 14BON02a revised COMMENTS REQUESTED BY 29 MAY

It is unfortunate that the luck of Bonneville is upon us and that we will not be getting any information with the flow control plate in, but I do support getting information about the c slot to help verify the model data. This should help insure we make

the best decision with regard to installing a flow control device in slot c or not. thanks for the update.

tom

Final results- This research will occur as coordinated above. Due to it returning to service in time, testing at the higher flows in U15 also occurred.

Please email or call with questions or concerns.

Thank you,

Jon Rerecich

NWP PM-E Fisheries

503-808-4779

Jonathan.g.rerecich@usace.army.mil

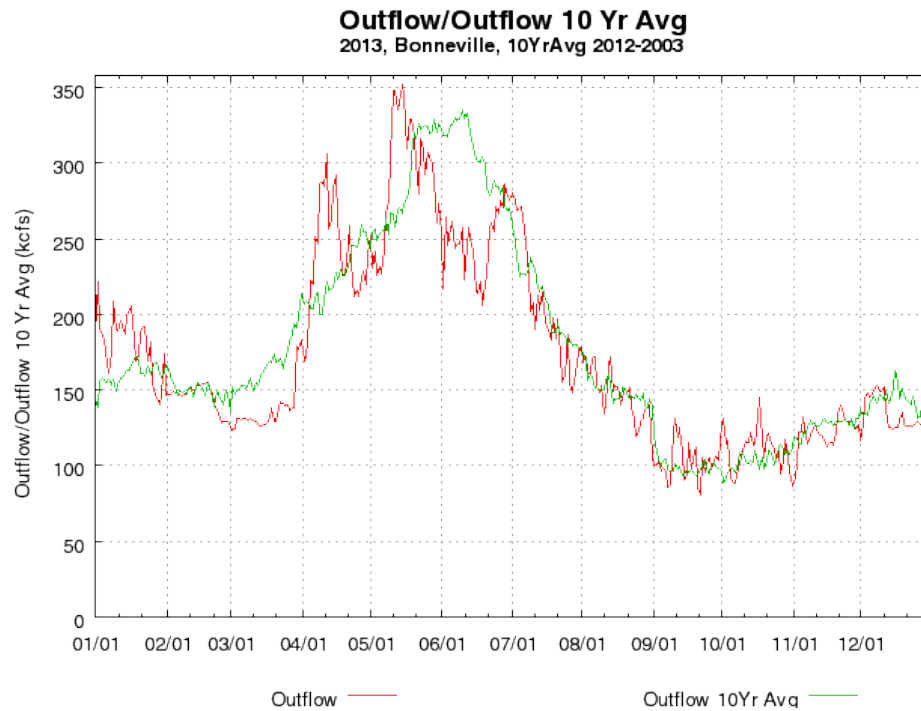
Tammy Mackey

NWP Operations Division Fishery Section

Columbia River Coordination Biologist

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Columbia River DART, Columbia Basin Research, University of Washington. (2014). Available from http://www.cbr.washington.edu/dart/query/smolt_graph_text

Figure 3: Bonneville outflow 10 year average and 2013. Flows depict trends in descending flows during the month of June that could lead to the inability to collect data in the gatewell at >18,000 cfs.



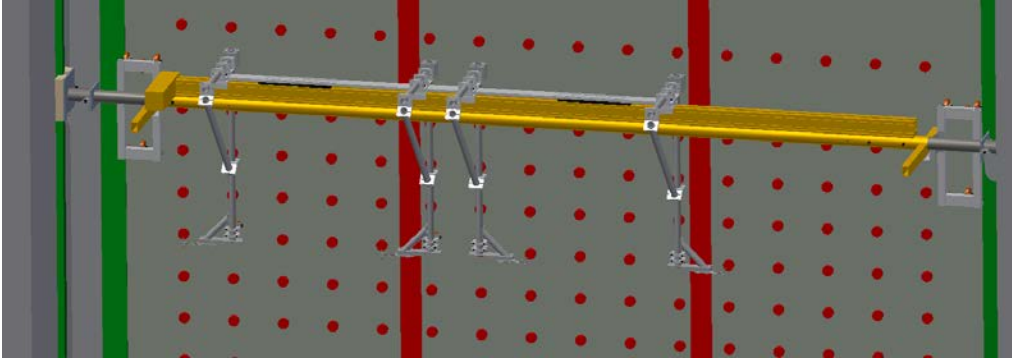


Figure 5: Traversing Beam Inside of Gatewell



Figure 6: Probe Orientation within Gatewell (Looking East)