OFFICIAL COORDINATION REQUEST FOR
NON-ROUTINE OPERATIONS AND MAINTENANCE

COORDINATION TITLE- 21 IHR 12 Unit 1 intake gate downpull testing
COORDINATION DATE- 27 July 2021
PROJECT- Ice Harbor Dam
RESPONSE DATE- 10 August 2021

Description of the problem: The intake gate hydraulic system upgrade is currently in design phase**.** In order to appropriately design the system, the Hydroelectric Design Center (HDC) has requested Ice Harbor to conduct downpull testing on Unit 1.

Intake gates are used to shut off flow to a turbine unit if control of the wicket gates are lost (ie- emergency closure). During an emergency closure, the water flow beneath the gate creates a downpull force that can greatly exceed normal operating loads.

The downpull test consists of lowering all three intake gates under flow at various wicket gate openings until flow stops and intake gates are on sill.

Model test data is not available and downpull forces are extremely difficult to predict and can be inaccurate using analytical calculations. Original design documentation for Ice Harbor included calculations for downpull forces, but tests conducted in 1955 on MU6 measured nearly double the estimated loads.

Type of outage required: Testing will be conducted on Unit 1, requiring Ice Harbor to operate out of priority.

Impact on facility operation: Ice Harbor will operate outside of Unit Priority on multiple occasions throughout the duration of the downpull testing (Fish Passage Plan, Chapter 6, Table IHR-4).

Impact on forebay/tailwater operation: Unit 1 is utilized as attraction flow for adult passage and will be operated at various wicket gate openings.

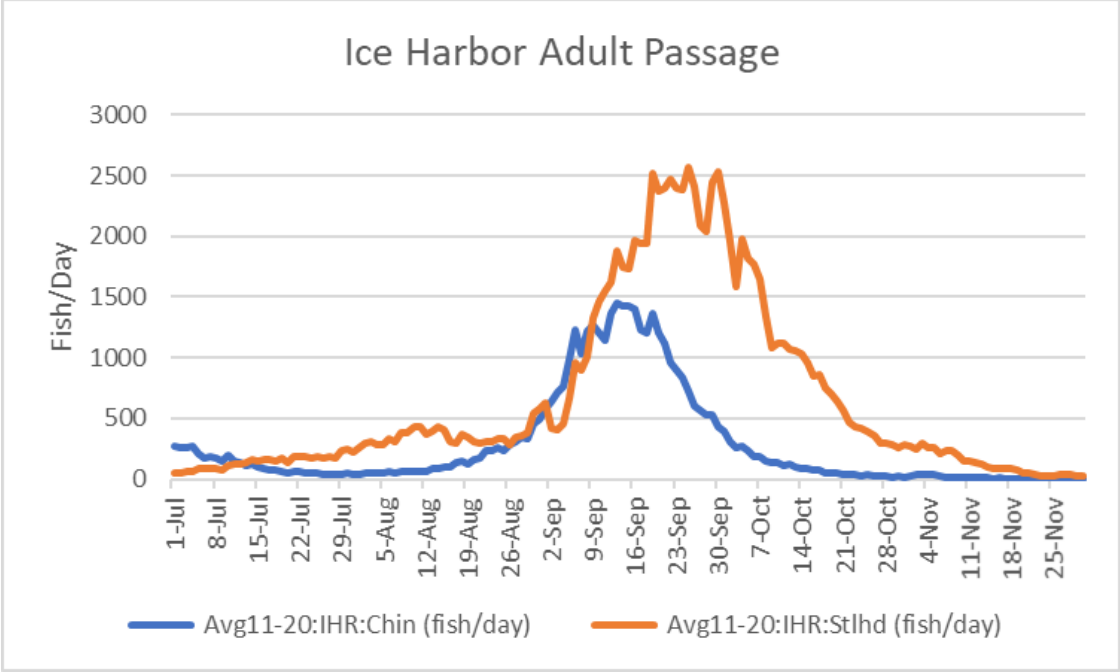
Impact on spill: None.

Dates of impacts/repairs: Week of 25 October 2021.

Length of time for repairs: Setup, testing and equipment removal will take 4-5 days, with 2-3 days of pulldown testing occurring.

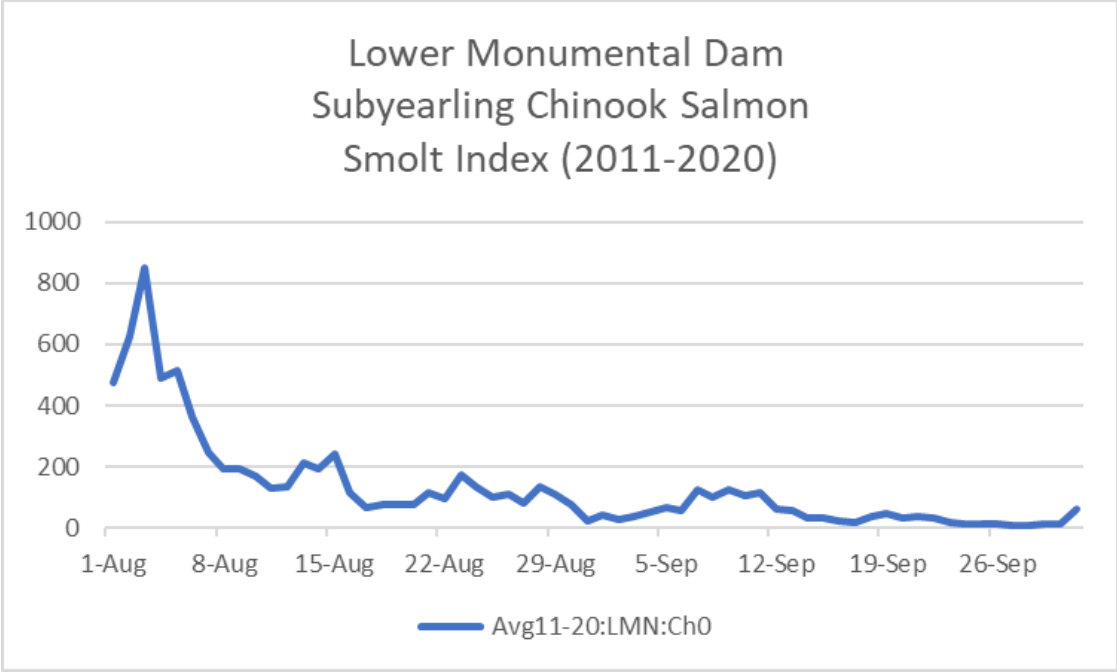
Analysis of potential impacts to fish: The 10-year average daily adult counts for October 25-29 included 24 Chinook salmon and 324 steelhead. Peak passage for fall Chinook salmon typically occurs in September with peak steelhead passage occurring in late September and early October (Figure 1).

Figure 1: Ice Harbor adult fish passage, 2011-2020.



Juvenile smolt index data is not available at Ice Harbor, and data beyond September 30 is not available at Lower Monumental. Subyearling Chinook salmon are the predominant juvenile species at the end of sampling at SMP sites in the lower Snake River, however numbers are relatively low (Figure 2).

Figure 2: Lower Monumental Dam 10-year average (2011-2020) subyearling Chinook salmon smolt index.



Summary statement - expected impacts on:

Testing is scheduled to occur after the peak passage of both adult Chinook salmon and steelhead. However, upstream migration may be delayed due to the lack of attraction water from Unit 1 during testing. Impact to juveniles should be negligible, however FGE is unknown under all of the testing operations. Additionally, impacts to bull trout and lamprey are unknown.

Comments from agencies

From: Josie Thompson - NOAA Federal <josie.thompson@noaa.gov>
Sent: Tuesday, July 27, 2021 10:10 AM
To: St John, Scott J CIV USARMY CENWW (USA) <Scott.J.StJohn@usace.army.mil>
Cc: Peery, Christopher A CIV USARMY CENWW (USA) <Christopher.A.Peery@usace.army.mil>; Fone, Kenneth R CIV CENWW CENWD (USA) <Kenneth.R.Fone@usace.army.mil>
Subject: [Non-DoD Source] Re: 21 IHR 12 MOC Unit 1 pulldown testing
Hello Scott,
I am curious as to whether this could be done at least a month later when less adults are passing, and what are the constraints on timing. Will this be on the agenda for the August FPOM meeting?

On Tue, Jul 27, 2021 at 10:24 AM St John, Scott J CIV USARMY CENWW (USA) <Scott.J.StJohn@usace.army.mil> wrote:
Josie,
Due to constraints with a variety of other maintenance occurring at IHR this year, the latest available week this work can be completed is the week of 25 October. Originally, I had written this MOC for the end of November, but the Project could not support the work. Brad Trumbo did point out that there is not much impact to upstream adult passage when operating any of the first 3 turbine units (attached).

From: Josie Thompson - NOAA Federal
To: St John, Scott J CIV USARMY CENWW (USA)
Cc: Peery, Christopher A CIV USARMY CENWW (USA); Fone, Kenneth R CIV CENWW CENWD (USA)
Subject: Re: [Non-DoD Source] Re: 21 IHR 12 MOC Unit 1 pulldown testing
Date: Tuesday, July 27, 2021 11:37:14 AM
Thank you, Scott.

From: Bettin,Scott W (BPA) - EWP-4
To: St John, Scott J CIV USARMY CENWW (USA)
Cc: Sullivan,Leah S (BPA) - EWP-4; Petersen,Christine H (BPA) - EWP-4
Subject: [Non-DoD Source] RE: 21 IHR 12 MOC Unit 1 pulldown testing
Date: Tuesday, July 27, 2021 10:31:18 AM

Any idea how they will need to operate the unit? Minimum generation up to generator limit? With
the very low flows we will need to know in advance to make sure we pond enough water to do the
test is why I'm asking. -s

From: Thompson, Seth J CIV (USA)
To: St John, Scott J CIV USARMY CENWW (USA); Vorheis, Brian P CIV USARMY CENWW (USA); Reyes, Zachary K
CIV CENWP CENWD (US); Anderson, Karl R CIV USARMY CENWW (US); Stredwick, Floyd L CIV USARMY CENWW
(USA); Hsieh, Y C (CALVIN) CIV USARMY CENWP (USA); Monger, Kurt E CIV USARMY CENWW (USA); Ahmann,
Martin L CIV USARMY CENWW (USA); Willard, Caleb M CIV USARMY CENWW (USA); Boone, David C CIV
USARMY CENWW (USA); Siracusa, Kortney M CIV USARMY CENWP (USA); Schmode, Michelle M CIV (USA);
Fuller, Lucas N CIV USARMY CENWP (USA)
Cc: Law, Martin J CIV USARMY CENWW (USA); Hinnen, Scott W CIV USARMY CENWP (USA); Courson, Donald R CIV
USARMY CENWP (USA); Scott Bettin; Sullivan,Leah S (BPA) - EWP-4; Petersen,Christine H (BPA) - EWP-4
Subject: RE: U-1 Downpull Testing
Date: Tuesday, July 27, 2021 11:10:55 AM
Attachments: DRAFT -Downpull Testing Plan.docx
I believe the attached draft test plan from Zach Reyes of HDC answers all of BPA's questions, and I have no
concerns with sharing this test plan with them. Pretty sure this is the most recent/current test plan so far.
Seth

Final coordination results No objection

After Action update: Downpull testing occurred as requested during the week of October 25 (Table 1). Unit 1 was out of service from 07:05 on October 25 through 16:06 on October 28. Testing equipment was installed on October 25 and removed on October 28.

Table 1: Ice Harbor Dam downpull testing dates and times.

Date	Start	End	Load
26-Oct	16:27	16:34	SNL
27-Oct	10:07	10:14	SNL
27-Oct	11:30	11:44	40 MW
27-Oct	14:58	15:04	56 MW
27-Oct	16:30	16:36	68 MW
28-Oct	09:15	09:22	54 MW
28-Oct	10:42	10:48	70 MW
28-Oct	12:06	12:12	82 MW
28-Oct	13:38	13:44	82 MW

*Speed-no-load (SNL), megawatt (MW)

Please email or call with questions or concerns.
Thank you,
Scott St. John
Fish Biologist
Natural Resource Management, NWW
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(509)-527-7122