

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

COORDINATION TITLE- 21 IHR 04 – Unit 2 Index Testing

COORDINATION DATE- March 26, 2021

PROJECT- Ice Harbor Dam

RESPONSE DATE- April 2, 2021

Description of the problem

Unit 2 runner replacement was completed in 2019. Index testing is required to establish new 1% operating efficiency ranges for the unit. Index testing of the unit without STSs installed occurred in 2020. Now index testing with STSs installed will be done to complete the testing. Testing is scheduled to occur on April 7 and will take approximately 8 hours of running the unit under various loads. During the test period, unit 2 will be intermittently operated below the existing 1% operating efficiency range, totaling 1-2 hours outside of the 1% range. Depending on river flow and how much spill is occurring during the testing, it may be necessary to run unit 2 out of unit operating priority.

Type of outage required

Impact on facility operation (FPP deviations)

Unit 2 will be intermittently operated below the 1% operating efficiency range, at 60-90 MWs, for a total of 1 or 2 hours.

Impact on unit priority

The unit operating priority at Ice Harbor Dam is unit 1, 2, 6, 4, 5 (unit 3 is out of service for runner replacement). Unit 2 may be operated ahead of unit 1 to conduct the testing. The March 22 Single Trace Process (STP) forecast is for approximately 45 kcfs of inflow at Ice Harbor Dam on April 7. If the project is spilling to 125% of the gas cap, only unit 2 will be operating. If performance spill (30%) is occurring, unit 1 and 2 (and possibly a third unit) will be running.

Impact on forebay/tailwater operation

None.

Impact on spill

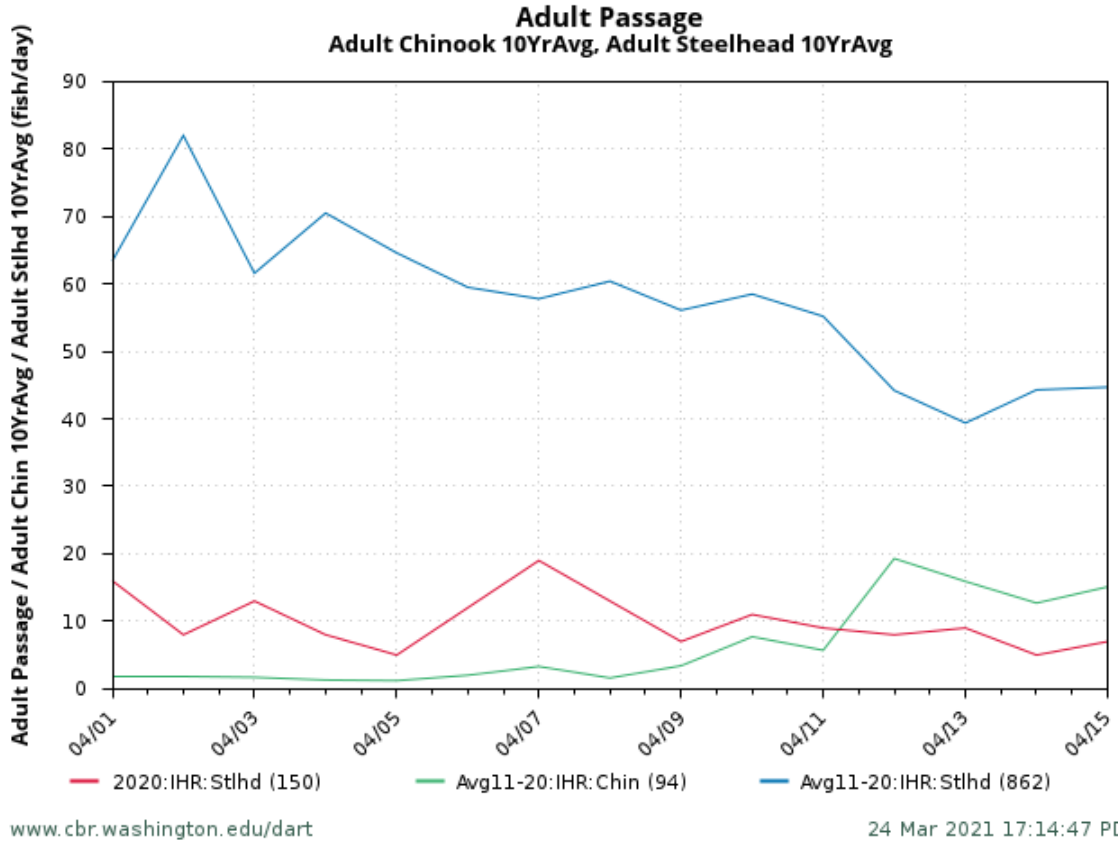
None.

Dates of impacts/repairs - April 7, 2021.

Length of time for repairs - Index testing on unit 2 will begin at approximately 1100 hours and should be completed by 1700 hours. Unit 2 may be operated in place of unit 1 for up to the entire 6 hours, or possibly not at all. Unit 2 will be run below the 1% operating efficiency range for a cumulative total of up to 2 hours.

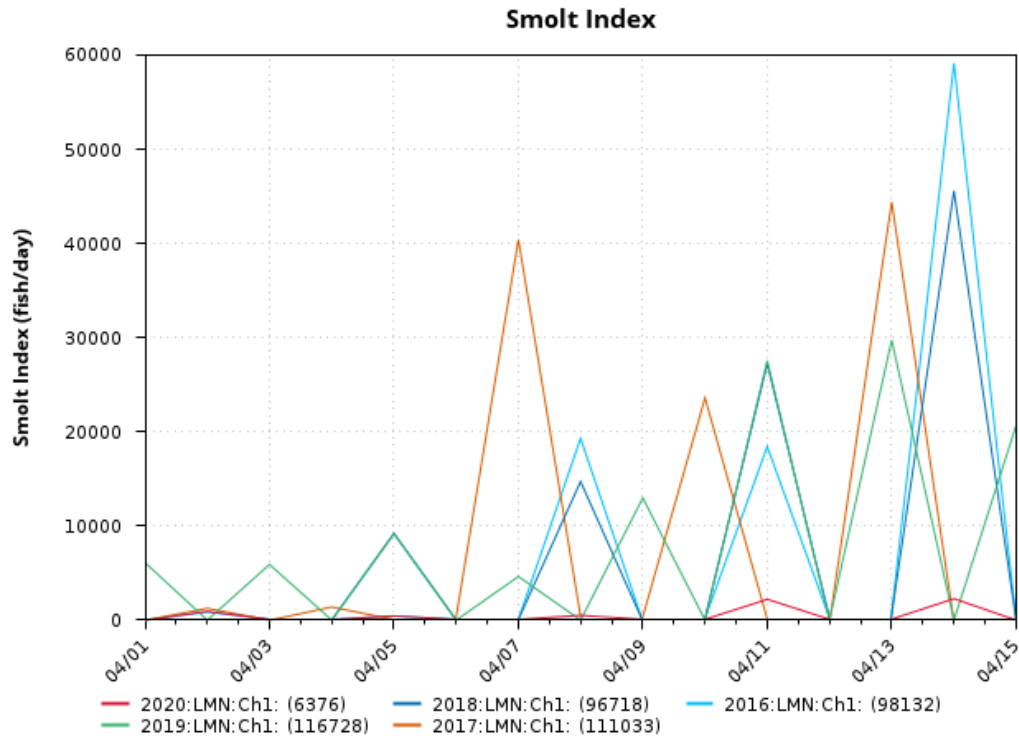
Analysis of potential impacts to fish

1. 10-year average passage by run during the period of impact for adults and juvenile listed species, as appropriate for the proposed action and time of year;



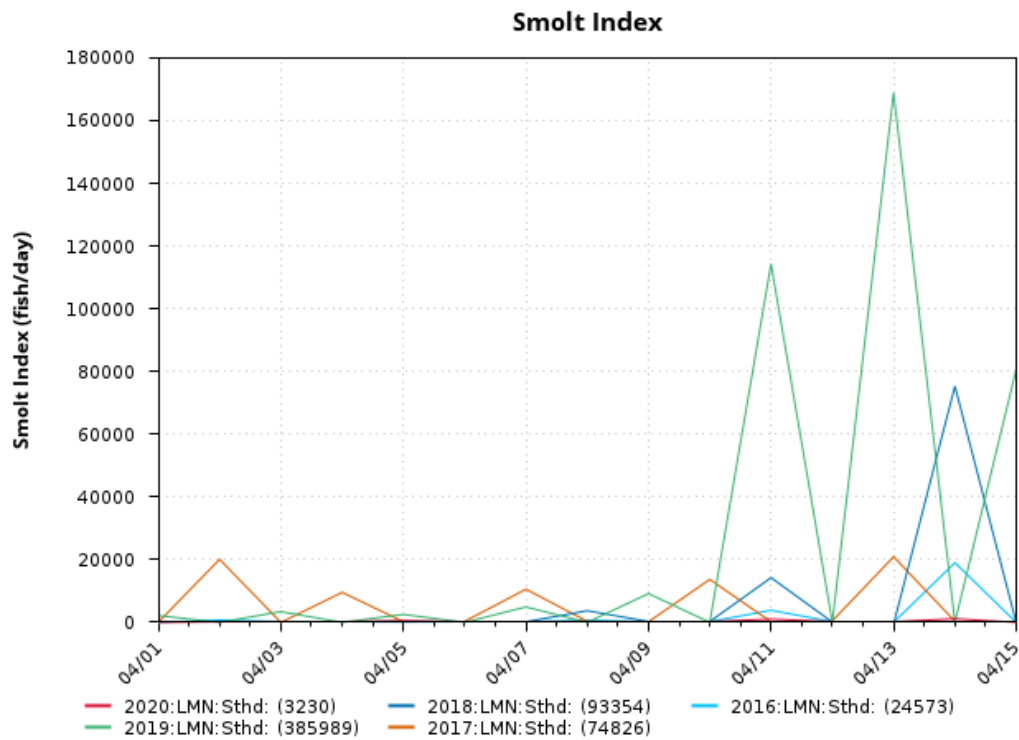
The 10-year average number of adult fish passing the counts windows on April 7 is 58 steelhead and 3 Chinook (see graph above), with incidental lamprey (average of less than 1 fish or no fish per day) being the only other adult fish observed passing during the first half of April.

Ice Harbor Juvenile Fish Facility conducts only limited fish condition sampling. Therefore, Lower Monumental Juvenile Fish Facility passage numbers for Chinook and steelhead for each of the previous 5 years are shown in the following two graphs. Lower Monumental 24-hour fish sampling occurred several times a week in April. Juvenile Chinook and steelhead numbers were generally relatively low the first week in April but started increasing by the second week. There were very few, if any, of other fish species observed.



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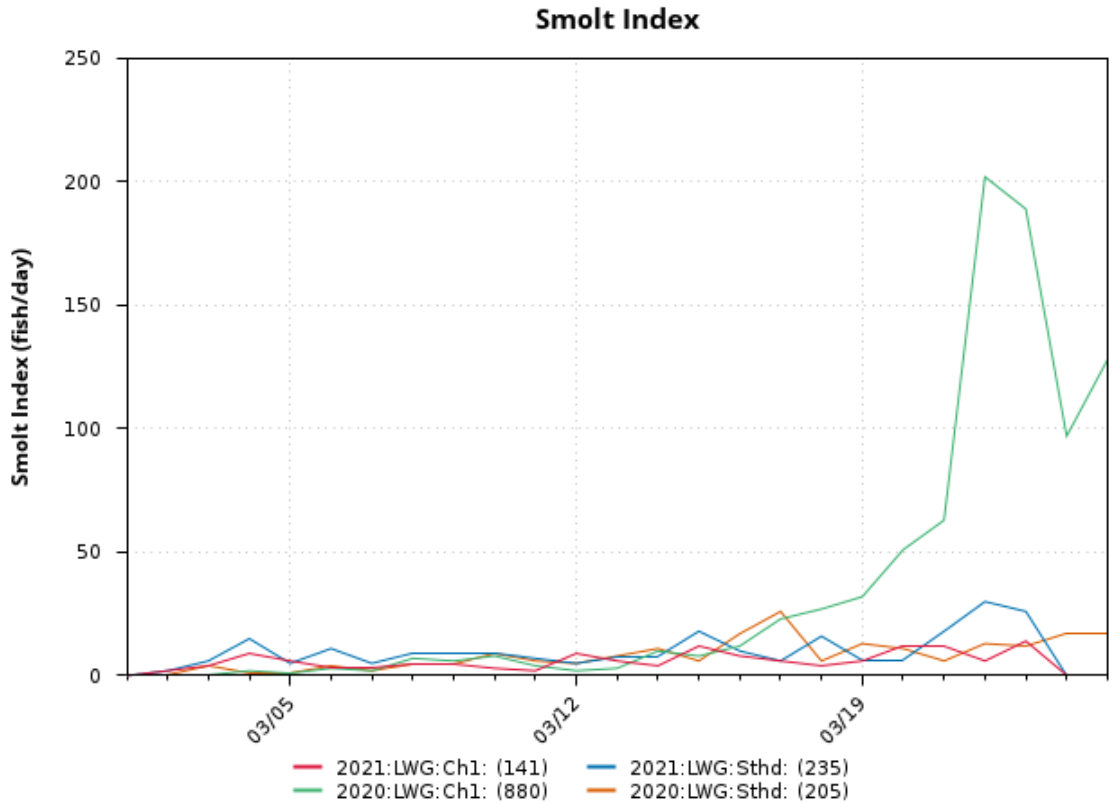
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- Statement about the current year's run (e.g., higher or lower than 10-year average);



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25 Mar 2021 12:41:11 PDT

Only Lower Granite Juvenile Fish Facility started fish sampling on March 1 this year, and the only other early startup at Lower Granite in the last 10 years occurred in 2020. Juvenile Chinook and steelhead numbers have been very low so far this year. Last year Chinook passage started increasing after the middle of March (see the graph above).

WDFW projects that the Snake River adult spring Chinook run will be below the previous 10-year average. The current adult steelhead run has been below the 10-year average.

- Estimated exposure to impact by species and age class (i.e., number or percentage of run exposed to an impact by the action);

The percent of the adult and juvenile Chinook and steelhead runs passing the dam during the index testing will be very low. Adult and juvenile passage is relatively low in early April. Adult fish tend to enter the fish ladder more in the morning hours and the index testing will not start until about 1100 hours. If 30% spill is occurring, unit 2 will not be operating out of priority order.

Juvenile fish pass the dam more at night and the early morning hours. Most of the juvenile fish that are drawn towards the turbines are diverted away by the STSs

and go through the juvenile fish bypass. If 125% gas cap spill is occurring, more fish will pass over the spillway than through the juvenile fish bypass or turbines.

4. Type of impact by species and age class (increased delay, exposure to predation, exposure to a route of higher injury/mortality rate, exposure to higher TDG, etc.);

Running unit 2 ahead of unit 1 may affect the attraction flow from the units that help guide adult fish to the south shore entrance, possibly causing a delay for fish to enter the south ladder. Juvenile fish that pass through unit 2 turbine are going through the unit with the “fish friendly” blade design. When the unit is operating out of the 1% operating efficiency range, fish may be subjected to harsher physical conditions in the turbine environment.

Summary statement - expected impacts on:

Downstream migrants

A minor negative impact is expected, since a small proportion of fish will be passing the dam through unit 2 turbine, and the unit will be operating out of the 1% operating efficiency range for a total of up to 2 hours.

Upstream migrants (including Bull Trout)

Adult fish may experience a minor delay in entering the south fish ladder when unit 2 is operating out of priority. The overall impact is expected to be low, because of the relatively low numbers of fish passing and the unit operating out of priority for 6 hours or less.

Lamprey

Adult lamprey will be minimally impacted. There are very few adult lamprey passing the dam this time of year. Juvenile lamprey tend to migrate lower in the water column, so they are more prone to go through the turbines instead of being diverted into the juvenile fish bypass. If river flows stay relatively low in early April as projected by the STP, there should be fairly low numbers of juvenile lamprey migrating. Also, the duration of operating unit 2 out of the operating efficiency range will be 2 hours or less.

Comments from agencies

From: Morrill, Charles (DFW) <Charles.Morrill@dfw.wa.gov>

Sent: Monday, March 29, 2021 1:28 PM

To: Peery, Christopher A CIV USARMY CENWW (USA)
<Christopher.A.Peery@usace.army.mil>

Cc: lort@critfc.org; Tom <t.k.iverson@comcast.net>; Jay Hesse <jayh@nezperce.org>; Jonathan Ebel <jonathan.ebel@idfg.idaho.gov>; trevor.conder@noaa.gov; Claire McGrath - NOAA Federal <claire.mcgrath@noaa.gov>; David Swank <david_swank@fws.gov>; Brandon Chockley <bchockley@fpc.org>; Scott Bettin <swbettin@bpa.gov>; Sears, Sheri <Sheri.sears@colvilletribes.com>; Jen Graham <jennifer.graham@ctwsbnr.org>; Morrill, Charles (DFW)

<Charles.Morrill@dfw.wa.gov>; Erick VanDyke <erick.s.vandyke@state.or.us>
Subject: [Non-DoD Source] RE: 21 IHR 04 MOC Unit 2 Index Testing -

Hi Chris,

I/WA would prefer this test occur outside the spring-summer-fall juvenile migration and concur that relative abundance of juvenile salmonids and adults is typically low in early April, however, there may be more juvenile lamprey present than expected.

Through today 3, 996 juvenile lamprey have been tallied in the JFF sampling at Lgr, 1024 Ammocetes and 2972 Macrothalmia.

We know that lamprey easily evade collection in the JFF sample so this suggests that juvenile lamprey are more abundant than we would expect and may well be passing IHR in greater abundance than in prior years.

I've attached a detailed FPC daily sample summary for Lgr to date fyi.

Charlie

From: Peery, Christopher A CIV USARMY CENWW (USA)

Sent: Tuesday, March 30, 2021 3:30 PM

To: Morrill, Charles (DFW) <Charles.Morrill@dfw.wa.gov>

Cc: lort@critfc.org; Tom <t.k.iverson@comcast.net>; Jay Hesse <jayh@nezperce.org>; Jonathan Ebel <jonathan.ebel@idfg.idaho.gov>; trevor.conder@noaa.gov; Claire McGrath - NOAA Federal <claire.mcgrath@noaa.gov>; David Swank <david_swank@fws.gov>; Brandon Chockley <bchockley@fpc.org>; Scott Bettin <swbettin@bpa.gov>; Sears, Sheri <Sheri.sears@colvilletribes.com>; Jen Graham <jennifer.graham@ctwsbnr.org>; Erick VanDyke <erick.s.vandyke@state.or.us>; Griffith, Denise S CIV (USA) <Denise.S.Griffith@usace.army.mil>

Subject: RE: 21 IHR 04 MOC Unit 2 Index Testing -

Charlie,

Yes, we would have preferred to have conducted the testing prior to the spill season. The previous test scheduled for 2020 without STS's was postponed because of COVID. It was conducted last month (information in the MOC was incorrect on that timing). Tests with STS's could not be conducted until repairs to the intake crane was completed and the crane was load tested this last weekend. Ice Harbor hopes to start installing screens this week. With that delay, the soonest they could schedule the test was 7 April. Testing is used to confirm the 1% range for operation which, up to now, has been based on model results. Testing will take about 8 hours with an estimated 1-2 hours of that being operated below the 1% range. I believe the sooner we can get these results the lower the risk to fish passage.

Chris

From: Morrill, Charles (DFW) <Charles.Morrill@dfw.wa.gov>
Sent: Tuesday, March 30, 2021 4:29 PM
To: Peery, Christopher A CIV USARMY CENWW (USA)
<Christopher.A.Peery@usace.army.mil>
Cc: lort@critfc.org; Tom <t.k.iverison@comcast.net>; Jay Hesse
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Erick VanDyke <erick.s.vandyke@state.or.us>; Griffith, Denise S CIV (USA)
<Denise.S.Griffith@usace.army.mil>
Subject: [Non-DoD Source] RE: 21 IHR 04 MOC Unit 2 Index Testing -

Thank you Chris !

I appreciate your response and agree given what has happened that sooner is better than later.

Charlie

From: Erick VanDyke <Erick.S.VanDyke@state.or.us>
Sent: Monday, March 29, 2021 2:51 PM
To: Peery, Christopher A CIV USARMY CENWW (USA)
<Christopher.A.Peery@usace.army.mil>
Subject: [Non-DoD Source] RE: 21 IHR 04 MOC Unit 2 Index Testing

Hi Chris,

I see that the testing for a replacement that occurred in 2019 was done without STS installed. Where the results markedly different between pre-2019 ops and 2020 test ops?

When were IHR unit 2 STS scheduled to be installed this year? Could they have been installed in Unit 2 before spill season? It would have been Oregon's preference that this testing operation occur before April 3rd?

It should go without saying that operations within the 1% range for the unit are preferred. Given this test is scheduled with little flexibility to avoid other operations, what overlap is possible for this test during current performance spill hours that seek to use the higher market demand period for 8 hours? Given the action is testing power needs how will time be replaced for the impacts to fish during spill season by increasing attraction to the powerhouse passage route? What efficiencies are being considered or are possible to combine power needs and operation testing requirements during fish passage season (i.e., use performance hours to assign 2 hour test at Ice Harbor)? I assume any MW produced will be marketed like the other units power production or is there some other treatment of the power produced from unit 2 during these tests? It may be useful to

know more about these topic before weighing in more. I appreciate anything that can be shared on the topic.

Erick

From: Peery, Christopher A CIV USARMY CENWW (USA)

Sent: Tuesday, March 30, 2021 3:17 PM

To: 'Erick VanDyke' <Erick.S.VanDyke@state.or.us>; Charlie Morrill <cfm97@me.com>; Charles Morrill (Charles.Morrill@dfw.wa.gov) <charles.morrill@dfw.wa.gov>; Jonathan Ebel <jonathan.ebel@idfg.idaho.gov>; Josie Thompson <josie.thompson@noaa.gov>; Tom Lorz (lort@critfc.org) <lort@critfc.org>; David Swank <david_swank@fws.gov>; trevor.conder@noaa.gov; Scott Bettin <swbettin@bpa.gov>

Cc: Griffith, Denise S CIV (USA) <Denise.S.Griffith@usace.army.mil>; Fone, Kenneth R CIV CENWW CENWD (USA) <Kenneth.R.Fone@usace.army.mil>

Subject: RE: 21 IHR 04 MOC Unit 2 Index Testing

Erick,

The information in the MFR was incorrect, the tests without STS's was scheduled for 2020 but was postponed because of COVID and was completed in February 2021. They do not yet have the results from that test.

Ice Harbor is hoping to get screens installed this week. There have been delays because repair work to the intake crane and then the issue with the trash rake as described in the MFR Denise sent out yesterday.

The purpose of index testing is to accurately determine the actual 1% range for the new Voith turbine, which requires that the unit be operated through a sufficient width of flows and configurations to make sure it encompasses the 1% range. The 1% range tables in use since unit 2 was placed in operation are based only on the model results and may be off. Results of the index tests will be used to determine if the spill table in the FPP need to be adjusted.

The indexing testing is estimated to take 8 hours with 1-2 hours of that outside (below) the 1% range. If the unit is operating below the 1% range, I believe that means less power is being generated. Scott can correct me if I have that backwards. The test is not expected to affect spill.

Let me know if you have any other questions,

Chris

Final coordination results - Approved

After Action

Please email or call with questions or concerns.
Thank you,

Ken Fone
Fishery Biologist
Ice Harbor Dam
509-544-3137
kenneth.r.fone@usace.army.mil