OFFICIAL COORDINATION REQUEST FOR
NON-ROUTINE OPERATIONS AND MAINTENANCE

COORDINATION TITLE – Lower Granite Dam JBS Post-Construction Evaluation – Unit Priorities Updated 5 April 2018
COORDINATION DATE – 27 March 2018
PROJECT – Lower Granite Lock and Dam
RESPONSE DATE – COB Monday 2 April 2018
Description of the problem – The Lower Granite Dam Juvenile Bypass System (JBS) has undergone an upgrade to improve downstream fish passage. Once the JBS returns to service for the 2018 fish passage season, the Corps will be conducting a post-construction evaluation of the JBS to identify any areas of biological concern. This evaluation is being conducted by Pacific Northwest National Laboratory (PNNL) using yearling Chinook raised in their Aquatic Research Laboratory and is anticipated to last 4-8 days depending on results. To capture the variation in hydraulic conditions within the JBS collection channel, fish will be released into gatewells 1A and 5A as coordinated through the Study Review Work Group (SRWG).

Type of outage required – Due to 2018 spill operations and current inflows, it is anticipated that 1-3 units will be operating in early April. As such, a change in turbine unit priorities for twelve hours per day (noon to midnight) is requested such that turbine units 1 and 5 are operating during the study.

Impact on facility operation (FPP deviations) – Standard unit priorities, as specified in the 2018 Fish Passage Plan "Table LWG-5. Lower Granite Dam Turbine Unit Priority Order" are 1, 3, 4–6 any order, then 2.

Impact on unit priority – Unit priorities will be changed from the currently specified order to start in the following order: 1, 5, 3, 4 and 6 either order, then 2. Units will be stopped in the following order: 4 or 6 either order, then 3, 2, 5, 1.

Impact on forebay/tailwater operation – N/A

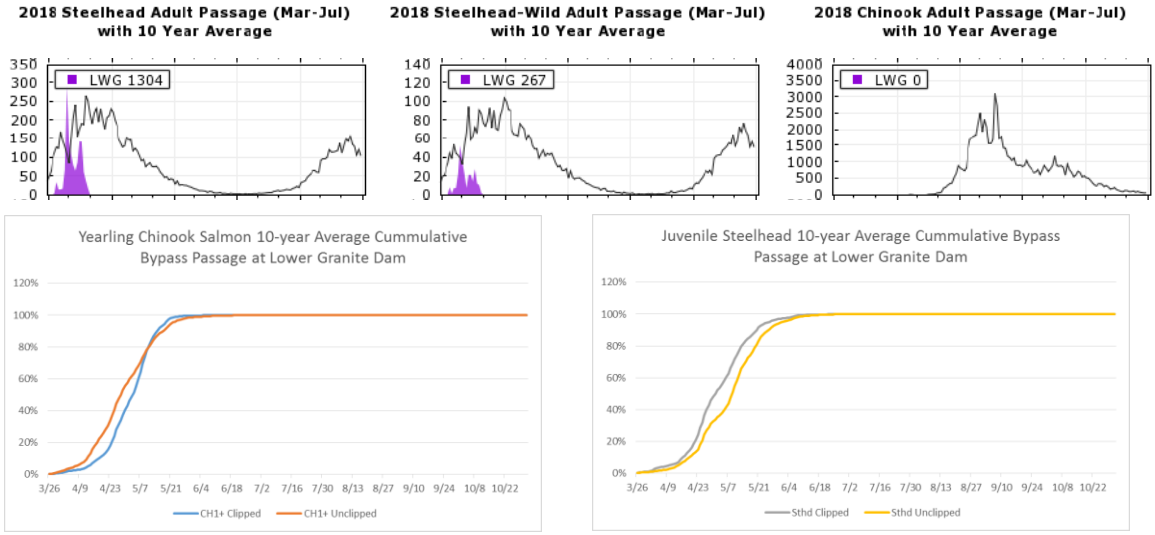
Impact on spill – N/A – No changes to spring spill operations will occur. All study fish will be released into gatewell A of the operating unit if inflows result in only one unit operating during the study period

Dates of impacts/repairs – Anticipate four days in early April (tentatively first week of April, contingent on JBS RTS) with potential for four additional days, if necessary for follow-on analysis in April 2018.

Length of time for impacts/repairs – Four to eight days; twelve hours per day (noon to midnight).

Analysis of potential impacts to fish

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



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

-Adult steelhead passage over Lower Granite Dam is lower than the 10-year average.

-The juvenile salmonid outmigration is just beginning for the 2018 season. For reference, the Little Goose Dam JBS has been seeing approximately 95 smolts per day for the past week. Additional upstream hatchery releases are anticipated to occur starting March 28-30, 2018. The 10-year average yearling Chinook salmon passage at Lower Granite Dam through the first 2-weeks of April comprised 6% of the clipped and 13% of the unclipped portions of the out migrating populations. The 10-year average juvenile steelhead passage at Lower Granite Dam through the first 2-weeks of April comprised 7% of the clipped and 5% of the unclipped portions of the out migrating populations.

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

-For adult salmonid passage, a limited portion of the tail end of the adult steelhead passage run will be potentially impacted. The unit priority change requested is for afternoon and evenings during periods of time when adult passage is relatively low.

-For juvenile salmonid passage, only a limited percentage of fish passing the project will be impacted as no changes to spill or JBS passage routes will be made. Limited impacts may occur to fish passing via turbines.

3. **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.);**

   -Adult steelhead may experience slight delays in finding the south shore ladder entrance, however it is anticipated that steelhead will still be able to locate this entrance as unit one will continue to provide attraction flows.

   -Impacts to juvenile salmonid passage are anticipated to be minor with a potential for slight increases in tailrace egress times for in-river migrants if the change in unit priority results in tailrace eddies.

Summary statement - expected impacts on:

Downstream migrants (including lamprey) - Impacts to juvenile salmonid and lamprey passage are anticipated to be minor with potential for slight increases in tailrace egress times for in-river migrants.

Upstream migrants (including Bull Trout and lamprey) – Upstream migrants may experience slight delays in finding the south shore ladder entrance.

Comments from agencies:
April 2, 2018 conference call between VanDyke, Trachtenbarg and Hockersmith

USACE and ODFW further discussed the MOC with ODFW. ODFW did not support the MOC because 1) Operation of unit 5 without unit 3 deviates from the normal operation in the FPP and 2) the projected flows are anticipated to be sufficient to support 3 turbines operating along with gas cap spill.

-----Original Message-----
From: Trachtenbarg, David A CIV USARMY CENWW (US)
Sent: Friday, March 30, 2018 3:29 PM
To: Erick VanDyke Erick.S.VanDyke@state.or.us & FPOM Distribution

Subject: RE: 18 LWG 02 MOC for JBS-Post Construction Evaluation Change in Unit Priority for review (UNCLASSIFIED)

Hi Erick-

The intent of this post-construction evaluation is to test the operation of the new bypass components as early as feasible to verify safe fish passage as coordinated through SRWG. The study design specifies testing in only gatewells 1A and 5A during the first week of testing. See attached final proposal from PNNL.

PIT-tag detection infrastructure has been installed to conduct the study in gatewells 1a and 5a, at the request of NOAA, which

cannot be moved to alternative units prior to the start of the study. Specifically, we have non-metallic infrastructure setup in 1a and 5a for PIT-tag detection and the 3a unit does not have this necessary non-metallic infrastructure.

Conducting the study in Unit 1 and 5 allows evaluation of the upper and lower ends of the collection channel which better examines the range of hydraulic conditions within the channel of fish passage (e.g., increasing water velocities and orifice submergence). Releases into Unit 3 reduces the range of hydraulic conditions examined in this part of the new system by approximately one third of the collection channel length.

Utilizing gatewell 5a allows comparison to the previous 2013-14 fourteen inch orifice studies. Not releasing into Unit 5a eliminates any comparison to pre-upgrade conditions.

With gas cap spill starting early next week, it is unlikely 3 units will be consistently available for the study in early April. While inflows may allow 3 units to operate (i.e., Units 1, 3, 5), it is unlikely that three units will be operating for the full length of each release block (~12 hours). Shorter test blocks will censor the data thus reducing the precision for the sample sizes.

In the brief periods where a given powerhouse flow is sufficient to operate three units near the lower 1% or two units near the upper 1%, past studies have shown that survival of turbine passed fish is better through the upper 1% relative to the lower 1%. While turbine passed fish are not part of this study, operating near the upper 1% provides a more open geometry, less opportunity for blade strike, and better draft tube conditions for turbine passed fish relative to near the lower 1%.

Respectfully,

David Trachtenbarg
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-----Original Message-----
From: Erick VanDyke [mailto:Erick.S.VanDyke@state.or.us]
Sent: Tuesday, March 27, 2018 2:49 PM
To: Hockersmith, Eric E CIV USARMY CENWW (US) and FPOM Distribution
Subject: [Non-DoD Source] RE: 18 LWG 02 MOC for JBS-Post

Construction Evaluation Change in Unit Priority for review (UNCLASSIFIED)

Thanks Eric. Based on the last RCC STP for Lower Granite outflow should be adequate outflows to run 3 units at lower 1% while spilling to anticipated spill cap after April 1. Which would provide a less confounded test condition while sticking to the current unit priority. I recommend the test be done with the outflow conditions at the time they occur so that at least 3 units are operating while meeting the spring spill planned or not depending on the day. Would be the least confounding situation.

-----Original Message-----
From: Morrill, Charles (DFW) [mailto:Charles.Morrill@dfw.wa.gov]
Sent: Tuesday, March 27, 2018 2:31 PM
To: Hockersmith, Eric E CIV USARMY CENWW (US) and FPOM Distribution
Subject: [Non-DoD Source] RE: 18 LWG 02 MOC for JBS-Post Construction Evaluation Change in Unit Priority for review (UNCLASSIFIED)

Thanks Eric,

I suspected that might be the case for units 1 and 5 ... thanks

Charlie

-----Original Message-----
From: Hockersmith, Eric E CIV USARMY CENWW (US) [mailto:Eric.E.Hockersmith@usace.army.mil]
Sent: Tuesday, March 27, 2018 2:20 PM
To: Erick VanDyke Erick.S.VanDyke@state.or.us and FPOM Distribution Subject: RE: 18 LWG 02 MOC for JBS-Post Construction Evaluation Change in Unit Priority for review
CLASSIFICATION: UNCLASSIFIED

Erick,

The rationale for Unit 5 rather than Unit 3 is based on the following:
-Unit 5 provides post-construction comparison to the historical pre-construction study that was conducted in Unit 5 -Unit 5 provides the ability to compare between fish entering the south (unit 1) and north (unit 5) locations of the collection channel.

If flows are sufficient to meet the Gas Cap spill and operate 3 turbine units no change in turbine priority would be needed. The change in turbine priority is only needed when flows would result in only 2 turbines operating. We don't want to confound the study results by reducing the sample sizes and replication of the

experimental design part way through the study, thus the request for the unit priority change.

I do not know the language in the contract (David Trachtenbarg is the POC for the study), however, I think their release mechanism is easily moved among various gatewells during the study.

Let me know if I have not adequately addressed your question.

Eric Hockersmith
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-----Original Message-----
From: Erick VanDyke [mailto:Erick.S.VanDyke@state.or.us]
Sent: Tuesday, March 27, 2018 1:32 PM
To: Hockersmith, Eric E CIV USARMY CENWW (US) Eric.E.Hockersmith@usace.army.mil and FPOM Distribution
Subject: [Non-DoD Source] RE: 18 LWG 02 MOC for JBS-Post Construction Evaluation Change in Unit Priority for review (UNCLASSIFIED)

I'm not following why having Unit 5 is necessary for the testing when regular priority is for Unit 3, or that the unit priority that currently exists wouldn't be the appropriate condition to be tested. With the current MOC I am not seeing justification that is compelling enough to alter unit priority to support this test, especially given that the dates have slid into spill season. Help me by providing some more information that includes:

*If there is a limit to infrastructure needed to release fish into gate well 3A;

*If the contract specified testing in gate wells 1A and 5A only;

*If the expected outflow (kcfs) at Lower Granite will meet the Spill cap plus the require 3 units operating to get to unit 5 fitting the current spill priority list during the readjusted test dates?

If this were part of the original plan then I might be able to understand the desire to move from Unit 3 to Unit 5 (shifting roughly 2 kcfs away from the spill way back to the powerhouse at lower flows). As it is I am not supportive of shifting flow away from spill using a priority order that is not consistent with the FPP, FOP or other coordinated operations. I would recommend

testing effectively mimic the unit priority order that will be used under the condition that is present at the time while meeting 2018 spill consistent with maximizing applicable state gas regulations.

Erick S. Van Dyke
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-----Original Message-----
From: Kiefer,Russell [mailto:russ.kiefer@idfg.idaho.gov]
Sent: Tuesday, March 27, 2018 1:55 PM
To: Hockersmith, Eric E CIV USARMY CENWW (US)
<Eric.E.Hockersmith@usace.army.mil>
Subject: [Non-DoD Source] RE: 18 LWG 02 MOC for JBS-Post Construction Evaluation Change in Unit Priority for review (UNCLASSIFIED)

Eric,

IDFG has no objections.

Russ

Trevor Condor (NOAA) and David Trachtenbarg (Walla Walla District) discussed this MOC via phone on Monday 26 March 2018. Trevor supported the unit priority change, if limited to twelve hours per day in April.

Final coordination results

The MOC was **Not Approved** because ODFW did not support temporary changes in the Lower Granite Dam turbine unit priority from the FPP as requested in FPOM MOC "18 LWG 02 JBS-PostConstructionEvalUnitPriority."

Based on current flow predictions, it is anticipated that river flows will support operation of three units along with gas cap spill operations starting Friday 6 April 2018 and continue for at least the four days of the study duration to support releases into both Gatewell 1a and 5a. The study start date was delayed one day to April 6 to align with projected flow increases so the evaluation can follow the SRWG coordinated study design. If river flows are not sufficient for 3 units operating on a given day of the study, all study fish for the specific day will be released into Gatewell 1a. If flows do not support the operation of at least three units, the evaluation will not assess fish passage through the upper end of the collection channel and the ability to make meaningful comparisons to the previous 2013-14 pre-upgrade conditions will be reduced.

Lower Granite turbine priority was coordinated with the project for unit 5 to be the 3rd unit on during the Post-construction Evaluation from April 6 through April 9. This unit priority complies with the existing FPP guidelines.

After Action update

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

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