OFFICIAL COORDINATION REQUEST FOR NON-ROUTINE OPERATIONS AND MAINTENANCE

COORDINATION TITLE – 15 LWG 025 Lower Granite JBS Primary Outfall Construction
COORDINATION DATE – 15 December 2015, follow-on clarifications 08 February 2016; Revised 13 April 2016; Revised 27 May 2016
PROJECT – Lower Granite Lock and Dam
RESPONSE DATE – Initial Response 22 December 2015; Clarifications: 22 February 2016; April 28, 2016; XX June 2016

Description of the problem: The Juvenile Bypass System (JBS) at Lower Granite Dam (LGR) is currently undergoing a variety of upgrades to improve downstream fish passage. As part of this upgrade project, the current primary bypass outfall is being replaced with a new outfall structure that will return downstream migrating fish to a new terminal location in the river. In addition, a new emergency bypass outfall is being installed as part of the JBS upgrade. Additional time during the fall of 2016 is necessary to complete all in-water work activities associated with the installation of the new bypass outfall structures and removal of the existing outfall structures. To complete this bypass outfall work, the Corps proposes to conduct in-water construction activities in the LGR tailrace 15 November 2016 to 28 February 2017.

April 2016 Update: In order to complete construction of the new primary and emergency bypass outfalls, construction work on all outfall structures are anticipated to need to begin 15 November 2016 in order to complete construction activities prior to the 2017 fish passage season.

27 May 2016 Update: NOAA has requested a change to how the Corps implements potential spill modifications, if necessary, to support in-water work during the 15 November to 15 December 2016 period. NOAA has requested the Corps attempts to operate the RSW from 6 pm to 6 am prior to further modifying, reducing, or terminating spill as described below in the "Impact on facility operation" section.

Additionally, while the Corps intent is to continue operating in accordance with the turbine unit priority order specified in table LWG-5 in the 2016 Fish Passage Plan during constructions activities, the Corps may be required to temporarily modify unit priority in order to provide: 1) A safe working environment for divers to remove the existing outfall piers, and 2) suitable hydraulic conditions for in-water construction activities downstream of the dam. It is anticipated that turbine units may need to be temporarily run outside the FPP priorities for up to 3 days during daylight hours. If completion of the construction work requires operating in accordance with a modified unit priority, the Corps will provide FPOM with an update on the operation at the next scheduled FPOM meeting.

The Corps will temporarily implement the spill and turbine unit priority changes described herein for one day (up to 8 hours) early November 2016 to coordinate acceptable tailrace conditions for in-water work with the construction contractor prior to the start of in-water work on 15 November 2017.

Type of outage required: The in-water work window will be extended to occur from 15 November 2016 to 28 February 2017 to support bypass outfall construction activities.

Turbine units may need to be temporarily run outside the FPP priorities for up to 3 days during daylight hours. No additional LGR facility outages will be required to support these construction activities beyond those previously coordinated through FPOM and NWW FFRDWG (e.g. 13 LWG 17).

Impact on facility operation: Construction activities will occur in the LGR tailrace Boat Restricted Zone (BRZ) by a Corps contractor. Therefore, the contractor's activities will be closely coordinated with LGR to ensure constructions activities are conducted safely in the BRZ.

The LGR JBS will be shut down 1 August 2016 to 24 March 2017, as previously coordinated with FPOM and FFDRWG, to support concrete mining of the collection channel and cross-over activities associated with tie-in of new project features to the JBS (13 LWG 17 Juvenile Fish Collection Channel Upgrade; 15 LWG 004 LWG JFF Construction). Per MOC "13 LWG 17 Juvenile Fish Collection Channel Upgrade", the Corps will operate the RSW 12 hours per day (6 am to 6pm) from 1 September to 15 December (i.e. Daytime Hours) if there is sufficient water to operate the RSW and maintain minimum operating pool. Changes to this RSW operation, from 15 November to 15 December 2016, may be necessary to facilitate safe construction of the new bypass outfalls in the LGR tailrace during this in-water work window in order to complete construction activities prior to the 2017 fish passage season.

If modifications the spill levels coordinated in FPOM MOC 13 LWG 17 are necessary to facilitate outfall construction efforts, the Corps will prioritize spill related actions in the following order during the 15 November to 15 December 2016 time period:

1. Continue daytime (6 am to 6 pm) RSW operations as proposed in FPOM MOC 13 LWG 17. As a note, more than 6.8 kcfs may be discharged through the RSW during periods when Lower Granite Dam is operated outside MOP in accordance with the FPP.
2. Operate the RSW from 6 pm to 6 am during construction periods.
3. Pass approximately 6.8 kcfs (4 stops) through 2 bays in a manner that facilitates safe tailrace conditions for construction activities while providing larger spillbay openings for adult salmonids that may be passing through this spill route. This modified bulk pattern will be implemented initially in bays 6 and 8 and, if necessary, subsequently adaptively managed in coordination with RCC and Lower Granite Dam operators to facilitate suitable tailrace conditions.
4. Pass approximately 6.8 kcfs (4 stops) through a non-RSW spill pattern in accordance with the proposed FPP Change Request Form "16LWG005 - Low Flow Spill Patterns w/ No RSW"
5. Pass a reduced amount of water (1-3 stops; 1.7 – 5.1 kcfs) that allows for safe in-water work conditions through a non-RSW spill pattern in accordance with the proposed FPP Change Request Form "16LWG005 - Low Flow Spill Patterns w/ No RSW"
6. Terminate spill during periods when spill operations described herein and in MOC 13 LWG 17 conflict with in-water construction activities

Dates of impacts/repairs: The in-water work window will be extended by one month to occur from 15 November 2015 to 28 February 2017 to facilitate bypass outfall construction. Diving activities associated with removal of the existing outfall piers is

anticipated to take up to 3 days to complete early in the 15 November to 28 February in-water work window.

Length of time for repairs: It is anticipated that the in-water construction activities will occur from 15 November 2016 through February 2017. The new JBS features, including the new primary and emergency bypass outfalls, will be commissioned in February-March 2017 to ensure the LGR JBS is operational prior to the 2017 fish passage season.

Expected impacts on fish passage: In-water work will primarily be conducted from a floating barge platform and from limited distances from shore. As such, fish will be able to pass through the tailrace largely unobstructed during in-water work starting 15 November 2016. There are a limited numbers of juvenile salmonids passing through the project downstream during the 15 November to 15 December timeframe with the JBS typically operated during this time period for bypassing adult salmon fallbacks (Fish Passage Plan Chapter 9 – Lower Granite Dam – 2.4.1 Juvenile Fish Passage Facilities; Table 1).

Typically less than 30 adult chinook per day pass Lower Granite Dam starting 15 November. Up to 500 adult steelhead per day may be passing the project upstream during this time period (Figure 2).

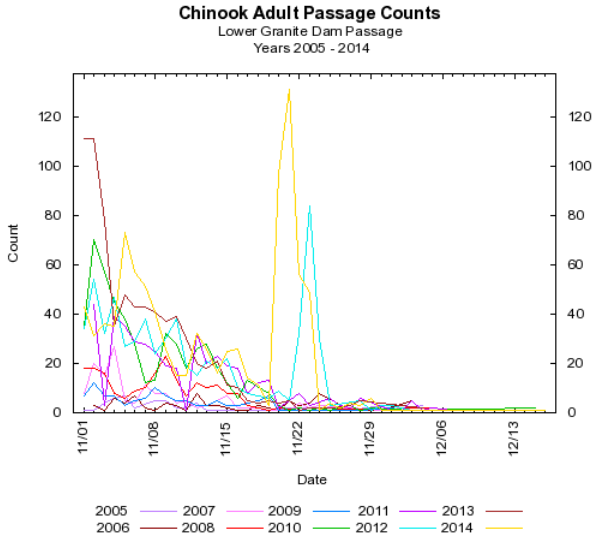

Figure 1. Adult Chinook passage counts for 2005-2014.

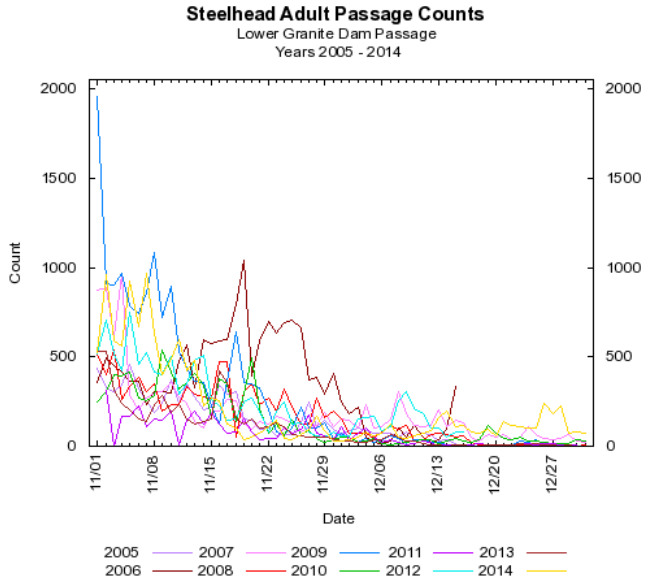

Figure 2. Adult steelhead passage counts for 2005-2014.

Table 1. – Adult salmonid fallback at Lower Granite Dam, 2006 to 2012. Data collected by USACE personnel as adult salmonids cross the JFF separator.

Year	August	September	October
2006	51	335	630
2007	67	270	846
2008	275	798	2,253
2009	247	3,462	2,940
2010	477	1,202	1,919
2011	179	1,547	2,787
2012	81	752	2,090

A known fall Chinook spawning area will be disturbed as part of constructing the new primary bypass outfall structure during this time period. It is possible that 5-10 fall chinook redds may be disturbed based on historical survey efforts (Figure 3). The shutdown of the JBS in August will reduce the likelihood of fall Chinook spawning in the area due to no water discharge from the JBS during the spawning period. As discussed at the 28 May 2015 NWW FFDRWG meeting, no new spawning surveys will be conducted as part of constructing the new primary or emergency bypass outfall.

Figure 3. Typical fall Chinook spawning area in the Lower Granite Dam tailrace and new outfall construction area. The bright red line represents the new primary bypass outfall. The orange line represents the new emergency bypass outfall.

Comments from agencies

NWW FFDRWG Meetings

The proposed in-water work window of 15-November to 29 February was discussed at the NWW FFDRWG meeting 7 December 2015. NOAA and CRITFC indicated they were ok with the extended in-water work window for this primary bypass outfall construction project and that fall 2016 RSW operations could be modified or eliminated if necessary to facilitate successful completion of outfall construction activities. No other FFDRWG members provided feedback at the 7 December 2016 FFDRWG meeting.

The potential to disturb fall Chinook redds during in-water construction activities was discussed at NWW FFDRWG at the 28 May 2015 meeting. All participating fish managers including NOAA agreed to proceed with bypass outfall construction activities during the 2016/17 in-water work window without conducting additional spawning surveys or modifications to the new primary bypass outfall footprint.

The proposed changes to RSW and turbine unit priorities was discussed at the 25 May 2016 CENWW FFDRWG meeting with all participating fish managers in concurrence with the changes as proposed and that an updated MOC would be circulated for the June FPOM meeting for formal documentation of changes to this MOC.

December 2015 FPOM Notes:

3.1.1.1.1. The one month earlier shutdown for the primary outfall at LWG is still planned for November, the MOC is out for comment and they would like to get it into the plans and specs now. Flat spill would need to be discussed to occur during the work. Conder was concerned about juvenile passage. Setter said there weren't very many during that time of year and that a turbine operation that late in the season wasn't an issue. Trumbo asked if unit operations could be changed if the contractor had issues with the hydraulics. Trachtenbarg will check to see if flat spill is an option, if a barge would be allowed in the tailrace if spill is occurring. The project needs to be contacted to see what the contractor will allow. ***ACTION: NWW will have an internal discussion and report back to FPOM.***

February 2016 FPOM Notes:

4.7. 15 LWG 025 LWG Lower JBS Primary Outfall Construction – Revised 08Feb2016. Lorz suggesting looking at spill patterns when he and other travel upriver. Bettin said he's OK with it for now. **Approved.**

-----Original Message-----
From: Bill Hevlin [mailto:bill.hevlin@noaa.gov]
Sent: Thursday, May 26, 2016 6:56 PM
To: Trachtenbarg, David A NWW <David.A.Trachtenbarg@usace.army.mil>
Cc: Bill Hevlin <bill.hevlin@noaa.gov>
Subject: [EXTERNAL] Re: Lower Granite JFF Phase 1b Outfall Relocation - BCOES BACKCHECK

David,
Thank you for following up with NOAA Fisheries on our comments on the Phase 1b outfall design package for Lower Granite. We agree with your assessment that our comments have been adequately addressed by the COE. Also, the FFDRWG discussion on May 25, 2016, addressed our concern for adequate fish passage during construction in the tailrace from November 15 to December 15, 2016. This discussion will be followed up at the June, 2016, meeting of FPOM to modify the MOC per that FFDRWG discussion. Please keep me informed of any changes in the design or planned operations at Lower Granite during the August 1, 2016, to December 15, 2016, construction window.
Thank You,
Bill Hevlin
NOAA Fisheries

-----Original Message-----
From: Bill Hevlin - NOAA Federal [mailto:bill.hevlin@noaa.gov]
Sent: Thursday, May 05, 2016 4:48 PM
To: Trachtenbarg, David A NWW <David.A.Trachtenbarg@usace.army.mil>
Cc: Bill Hevlin - NOAA Federal <bill.hevlin@noaa.gov>; Trevor Conder - NOAA Federal <trevor.conder@noaa.gov>
Subject: [EXTERNAL] Analysis - LWG Bypass Construction

Hi David,

Attached is a Lower Granite subyearling survival comparison for the various operations planned for this summer and fall. We used the data from the most recent sub survival study by Beeman. The comparison confirms that during the alternative operations planned for August and September 1 through December 15 that subyearling survival will not be reduced from the normal FPP operations.

However, with in water work in the tailrace beginning November 15, the possibility exists that daytime RSW operation may negatively impact the barge construction operation from November 15 to December 15. We don't want to see the construction delayed, which could lead to a delay of completion in the spring. If the conflict does develop after November 15, the simplest solution that I see is to switch the RSW operation from 12 daytime hours to 12 nightime hours, so the construction can proceed during the daytime. The assumption we used in the survival comparison was that 12 hour RSW operation would pass 50% of the migrants that would have passed if the RSW was operated for 24 hours. Hence, the subyearling survival remains the same if the RSW is switched to a 12 hour nightime operation.

Otherwise, if the RSW needs to taken out of service from November 15 to December 15, it may take as much as 50% of the river flow spilled through deep gates for 24 hours to equal the same dam survival as the RSW 12 hour operation. This assumes 50% SPE with the 50% spill, a one to one ratio, and uses the route survival estimates in the attached table.

My recollection is that at FPOM we have said that if the conflict develops after November 15, the RSW would be closed and the 8 kcfs of spill would be spread out using deep spill gates, which would minimize tailrace disturbance. Is that your recollection? However, this will reduce SPE, thereby reducing subyearling survival through the dam, which is best avoided. I am suggesting that you consider including in the design/planning specs that after November 15, if the conflict develops, the RSW operation be shifted to 12 hour nightime operation. Please let me know your thoughts on this.

Bill Hevlin
NOAA Fisheries

-----Original Message-----
From: Trevor Conder - NOAA Federal [mailto:trevor.conder@noaa.gov]
Sent: Monday, February 08, 2016 4:28 PM
To: Bailey, John C NWW <John.C.Bailey@usace.army.mil>
Cc: Trachtenbarg, David A NWW <David.A.Trachtenbarg@usace.army.mil>
Subject: [EXTERNAL] Re: 15 LWG 025 LGR JBS Primary Outfall Construction Revised 08Feb2016

John,

Bill and I have looked this over and will support the language as written. Thanks to the Corps for taking the extra time to work through this issue.

-Trevor

On Mon, Feb 8, 2016 at 2:50 PM, Bailey, John C NWW <John.C.Bailey@usace.army.mil <mailto:John.C.Bailey@usace.army.mil> > wrote:

FPOM:

Attached is an updated Memorandum of Coordination 15 LWG 25 for the construction of the new Lower Granite Juvenile Primary Bypass Outfall. This update clarifies some of the activities planned during the inwater work window. Please read the attached modified MOC for additional details. The changes are noted in red font. Responses are requested by the close of business on February 22, 2016.

Thank you

John Bailey
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-----Original Message-----
From: Bill Hevlin - NOAA Federal [mailto:bill.hevlin@noaa.gov]
Sent: Wednesday, March 09, 2016 11:52 AM
To: Trachtenbarg, David A NWW <David.A.Trachtenbarg@usace.army.mil>
Cc: Bill Hevlin - NOAA Federal <bill.hevlin@noaa.gov>
Subject: Re: [EXTERNAL] Re: LGR Tailrace Construction -Redd Survey MOC (UNCLASSIFIED)

Hi David,
The COE contracted a redd survey of known fall chinook spawning areas in the tailrace of Lower Granite in November - December of 2014 to locate any recent spawning activity. If possible, the spawning areas that were found in this recent survey would be avoided during pier

construction for the new juvenile bypass outfall in 2016 - 2017. As it has turned out, the particular location in the tailrace for the outfall, which will ensure the best egress and therefore best survival rate for juvenile fish, requires pier supports in spawning area locations. In an attempt to avoid the disturbance, the COE identified alternative plans, but these compromised juvenile fish survival. NOAA supported the COE's judgement that while there may be several redds disturbed in 2016, the current in-water work plan to construct the outfall in the safest tailrace location was the best path forward because it will protect the greatest number of Snake River Fall Chinook salmon juveniles for years into the future.

Bill Hevlin
NOAA Fisheries
West Coast Region

On Tue, Mar 8, 2016 at 10:07 AM, Trachtenbarg, David A NWW <David.A.Trachtenbarg@usace.army.mil <mailto:David.A.Trachtenbarg@usace.army.mil> > wrote:

Hi Bill-

In reviewing our correspondence to date on the Lower Granite Dam construction efforts, I want to make sure we've captured NOAA's concurrence with the 15 Nov 2016 to 28 Feb 2017 in-water work window and potential disturbance to fall chinook spawning in the tailrace. As discussed at FFDRWG and FPOM and documented in the FPOM MOC, no additional redd surveys will be conducted as it is understood that there is some potential to disturb fall chinook spawning regardless of year the construction is completed and that potential for spawning in the tailrace will be reduced during the upcoming extended JBS outage (1 Aug 2016 to 24 March 2017) as there will be no water discharge from the JBS in the vicinity of historical spawning areas.

Thanks

David Trachtenbarg
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Final results

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