OFFICIAL COORDINATION REQUEST FOR
NON-ROUTINE OPERATIONS AND MAINTENANCE

COORDINATION TITLE - 16 LGS 02 TSW Removal and ASW Installation
COORDINATION DATE - 22 February 2016 (on old form); Updated 8 August 2017
PROJECT- Little Goose Lock and Dam
RESPONSE DATE- 22 August 2017

Description of the problem: The temporary spillway weir (TSW), installed in 2009, is currently in spillway bay 1 at Little Goose Lock and Dam on the Little Snake River is being replaced with an Adjustable Spillway Weir (ASW) for the following reasons:

- The gantry crane is currently used for all TSW component re-stacking during the fish passage season, TSW adjustment, or, if necessary to operate the TSW closure gate. These activities prevent crane usage for other critical needs such as fish screen repairs and turbine unit maintenance.
- For fish passage, the TSW can only be configured in a high crest or low crest position. Several times over the last few years, there have been issues with adult passage requiring either crest elevation change or closure. Crest elevation changes or closure can require more than a day. The ASW will provide the ability to change conditions in less than an hour to benefit fish passage. Regional fish managers have proposed periodically altering the flow out of the TSW as a response to adult passage issues, potentially as often as daily.
- The design of the new structure incorporates a dedicated hoist that can be used to adjust flow out of the ASW by raising or lowering the weir crest height, or shut off flow completely without using the gantry crane.
- Lastly, with the ASW in place at Little Goose Dam, the TSW components can be held in reserve as a backup surface passage structure for Lower Granite Dam if spillbay 1 becomes unusable ~~due to spillway concrete problems~~ or due to RSW operational problems. Note that modifications would be necessary at Lower Granite Dam (vent and hold down installations) prior to any TSW usage.

The ASW will employ a modular design similar to the existing TSW and will be removable to return spillway 1 to maximum flow capacity during major flood events or conventional spillbay operation to assist in-season spill pattern adjustments for eddy reduction and improved tailrace conditions.

The proposed removal of the TSW and installation of the ASW would be from September 19, 2017 through February 28, 2018. Divers are required on the forebay side of closed/tagged-out spillbay 1 gate at various times throughout the removal and installation including removal of the TSW vents and guides and to install new ASW vents and guide infrastructure. Testing and commissioning will occur during February 2018.

Contract clause states:

The Contractor shall complete all work, including installation, training and

commissioning, for the Adjustable Spillway Weir (ASW) by not later than by 28 February 2018.

a. *Removal, temporarily or permanently, of the existing TSW may not commence until after 18 September 2017.*
b. *The contractor may not perform any in water activities during the spill season which runs from 01 April 2017 through 31 August 2017. The Contractor shall complete final cleanup and demobilization by not later than 15 calendar days after completion of work in (1) above.*

Type of outage required: Diving is required ~~inspections~~ throughout the removal of the existing TSW and installation of the new ASW. Diving will require daily coordination with the project, RCC (Reservoir Control Center), and BPA with respect to unit outages and overall river flow conditions to ensure safety. ~~At this time, we do not anticipate any significant in water demolition, repairs or installation efforts.~~ Safety requirements for dive work and work barge placement in the forebay of spillbay 1 require outages for turbine unit 6, and likely unit 5, and most spillbays, from 19 September 2017 until 28 February 2018. Specific dates are not scheduled yet for dive work and barge placement, but will be coordinated once the contractor's proposed schedule is submitted. In the event of forced/involuntary spill related to unanticipated high inflows in any period of the proposed work window (19 September 2017 through 28 February 2018) spill would be prioritized using the north spillbays (spillbays 5-8). If flows dictate removal of the ASW installation and construction equipment notification is needed 48-hours in advance to facilitate equipment removal.

Impact on facility operation (FPP deviations)

Impact on unit priority: Turbine units 5 and 6 and spillbays 1 through 4 ~~may~~ will likely be out of service ~~restricted~~ due to dive operations throughout the construction window. Dives will be coordinated with the Little Goose Project and RCC ~~(Reservoir Control Center)~~ as needed. ~~This work will be conducted prior to the removal of the existing TSW.~~

Impact on forebay/tailwater operation: None anticipated, unless high inflows in any period of the proposed work window (19 September 2017 through 28 February 2018) requires tagged out spillbays to be cleared and opened. Spillbay operation during forced spill will be coordinated with north spillbays opened first, dependent on inflow rate and magnitude to the point of termination of work in spillbay 1.

Impact on spill: None anticipated. The proposed work window (19 September 2017 through 28 February 2018) is outside of the Spill season for Fish Operation Plan (FOP which ends 31 August 2017). The spillway will be out of service from September 19, 2017 through February 2018 except in the event of involuntary/forced spill. In the event of involuntary/forced spill the northern most bays would be opened first and proceeding from the northern most bay south. At a minimum spillbay 1 through 4 ~~may~~ will likely be tagged-out of service throughout the proposed construction window. ~~Spillbay 1 will be out of service~~

~~during the entire work window.~~ Testing and commissioning of the new ASW would be during the last two weeks of February 2018. In addition, ~~There will also be~~ some minor spill ~~as~~ will be required for Little Goose Project to re-test the operation of the existing spillbay 1 tainter valve in late February 2018.

Dates of impacts/repairs: 1 September 2017 through 28 February 2018. In-water work 19 September 2017 – 28 February 2018. Testing and commissioning one week during the last 2 weeks in February 2018.

Length of time for repairs: The proposed work window is for 5 months (1 September 2017 through 28 February 2018). Dive operations are anticipated to be no more than eight hour in length in any one day. The removal of the existing TSW from spillbay 1 and relocation to temporary storage along the downstream lock channel approach is anticipated to take 4 days and include working from a floating plant. In addition, the installation of all components of the ASW is estimated to require ~~may consume up to~~ 6 days ~~work~~ utilizing the same floating plant. Both of these operations assume an extended 10-12 hour work day.

Testing and commissioning of the new ASW will require approximately one week during the last 2 weeks in February 2018.

Analysis of potential impacts to fish

Impacts to both juvenile and adult fish are expected to be minimal throughout the construction window. The adult fishway and the juvenile bypass/collection system will continue to operate according to the Fish Passage Plan (FPP). In addition, this work is scheduled outside of the spill for juvenile fish passage operations. Since spill for fish passage ends 31 August and turbine units 5 and 6 are the lowest priority units at Little Goose, they are unlikely to operate during the remainder of the fish passage season. Late summer and fall flows ~~rarely~~ typically have low probability of need for involuntary spill and/or operation of more than 2-3 turbine units.

During the proposed work window (19 September through 28 February), juvenile fish passage is comprised almost entirely of subyearling Chinook salmon at Little Goose Dam. Adult passage during the proposed work window (19 September through 28 February) at Little Goose Dam is comprised of fall Chinook salmon, Coho salmon and steelhead.

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;

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

   Juvenile fish:

   Ssubyearling Chinook salmon: Through 2 August 2017 the 2017 passage index at Little Goose Dam is 8% higher than the 10-year average (1,054,286 for 2017 vs. 972,806 for the 10-year average).

Adults fish:

Snake River fall Chinook salmon: The 2017 forecast estimate for adult Snake River fall Chinook salmon is 27,191 fish which is 70% of the 10-year average return of 38,844 fish.

Snake River steelhead: The 2017-2018 forecast estimate for adult Snake River hatchery and wild steelhead is 60,000 fish which is 40% of the 10-year average return of 151,687 fish.

Snake River Coho: The 2017 Snake River Coho forecast was not available at the time of preparing this MOC. The Coho return to the 2017 Columbia Basin forecast is for 386,300 which is similar to the 2016 return that represented 73% of the 10-year average.

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

Juvenile fish:
Less than 4% of the subyearling Chinook salmon outmigration would pass Little Goose during the work window from September 19 through February 28 (Figure 1).

Adult fish:
The 10-year average passage timing for adult salmon and steelhead during the proposed work period (September 19 through February 28) would constitute 40% of the adult fall Chinook salmon, 67% of the adult steelhead, and 89% of the Coho salmon passage timing at Little Goose Dam (Figures 2-4).

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.);

Juvenile fish:
No impacts to juvenile fish passage related to the removal of the TSW or installation of the ASW are anticipated because the work area is outside of the influence of passage routes normally operated during the fall.

Adult fish:
No impacts to adult fish passage related to the removal of the TSW or installation of the ASW are anticipated because the work area is outside of the influence of the adult passage facilities at Little Goose Dam. In addition the outages of spillbays and turbine units 5 and 6 would have little impact on adult passage because they do not provide attraction flow for adult ladder entrances for fall migrants. Potential forced spill under unseasonably higher inflows using outside spill bays 6-8 may create eddying on the north side of the tailrace, but as long as spillbay 8 is prioritized there should be minor inconsequential passage entrance effects.

Summary statement - expected impacts on:

Downstream migrants: No anticipated impacts to downstream migrants.

Upstream migrants (including Bull Trout) : No anticipated impacts to downstream migrants.

Lamprey: No anticipated impacts to downstream or upstream migrants.

Comments from agencies:

-----Original Message-----
From: Bill Hevlin - NOAA Federal [mailto:bill.hevlin@noaa.gov]
Sent: Thursday, March 03, 2016 5:43 PM
To: Bailey, John C NWW <John.C.Bailey@usace.army.mil>
Cc: Trevor Conder - NOAA Federal <trevor.conder@noaa.gov>; Bill Hevlin - NOAA Federal <bill.hevlin@noaa.gov>; Ritchie Graves - NOAA Federal <ritchie.graves@noaa.gov>
Subject: [EXTERNAL] Re: MOC 16 LGS 02 TSW Removal and ASW Installation

Hi John,
Please put this MOC on the agenda for FPOM discussion next week on March 10, 2016. I would like to hear the verbal responses from various regional fishery agencies to the MOC before responding directly to you in writing.

Thanks
Bill Hevlin
NOAA Fisheries

From March 10, 2016 FPOM Meeting Minutes:
4.9 16LGS02 TSW Removal and ASW Installation. **Pending.** Setter explained some of her conversation with Kiefer about the numbers of fish passing during a normal flow year when flows get down to 50kcfs. Conder agreed with Setter during a normal year but during a low flow year things could be different. Setter said the form isn't specific to a low flow year. Bettin asked if this issue is covered in the AAR. Conder said it isn't. FPOM discussed this further. Kiefer would like to explore finding agreement based on dates, flows, etc. for language to include in the FPP. Setter said FPOM is deadlocked right now so this issue can be elevated if needed. Hevlin added his two cents about low flows and warm temps. Conder suggested Kiefer come up with some language to take to FPAC. Kiefer agreed but said these issues take time and the longer we take more fish will die, if we wait until an emergency. Kiefer said we can probably find a trigger that is agreeable. Setter said this issue was sent to SRWG to look at a test. Bettin said we can't test because the fish won't be there by the time flows get that low. Kiefer and Bettin will talk later

Final coordination results

Coordination was discussed at August 10, 2017 FPOM meeting. FPOM concurred with this action in the MOC.

After Action update (After action statement stating what the effect of the action was on listed species. This statement could simply state that the MOC analysis was correct and the action went as expected, or it could explain how the actual action changed the expected effect (e.g., you didn't need to close that AWS valve after all, so there was no impact of the action). List any actual mortality noted as a result of the action)

Figure 1. 10-year average subyearling Chinook salmon passage index at Little Goose Dam (2007-2016). Smolt monitoring data not collected November 1 through February 28.

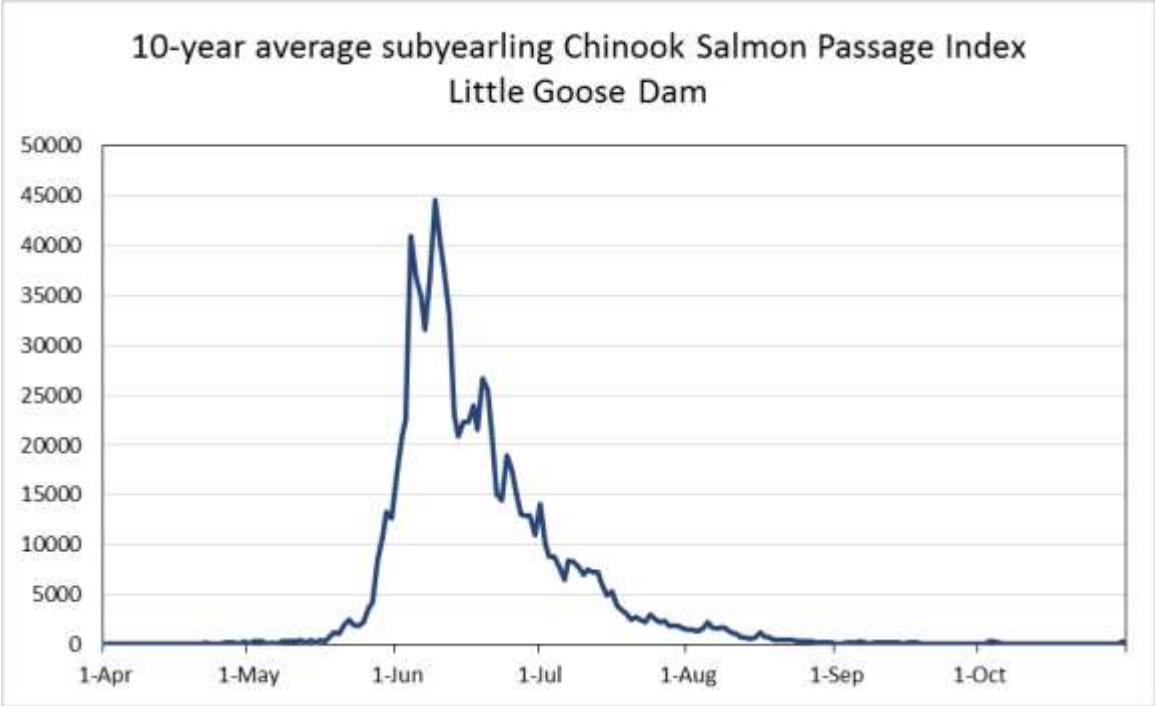


Figure 2. 10-year average adult fall Chinook salmon passage timing at Little Goose Dam. Adult passage not monitored from January 1 through February 28.

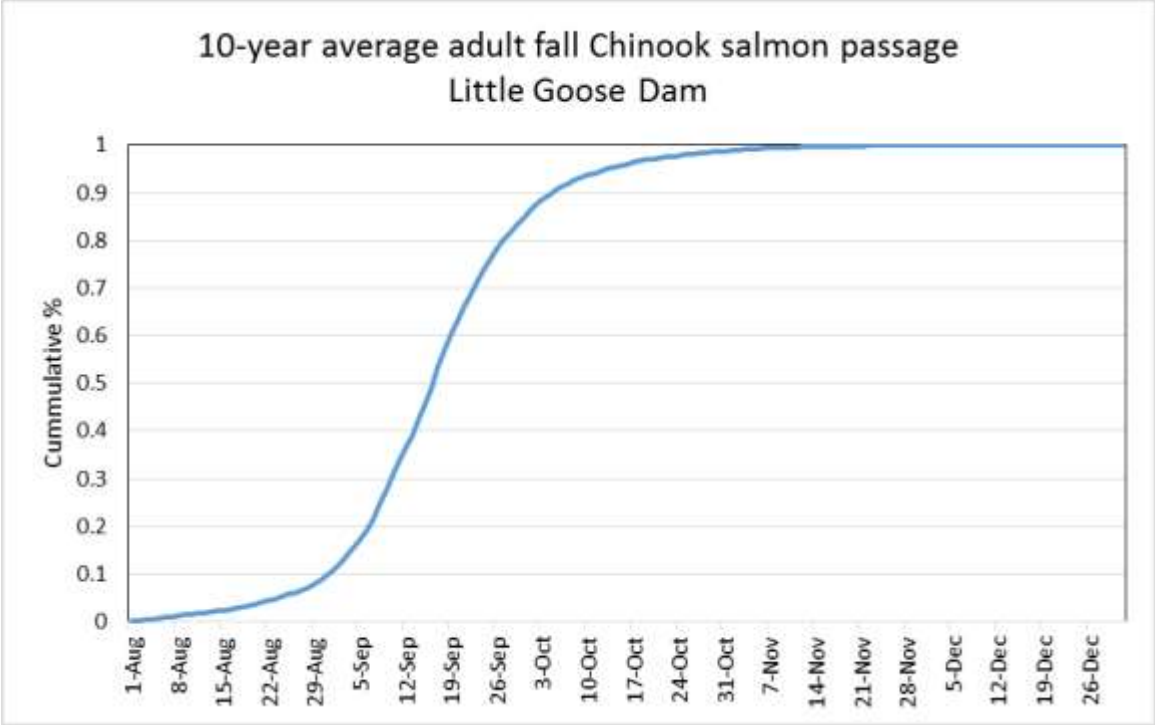


Figure 3. 10-year average adult steelhead passage timing at Little Goose Dam. Adult passage not monitored from January 1 through February 28.

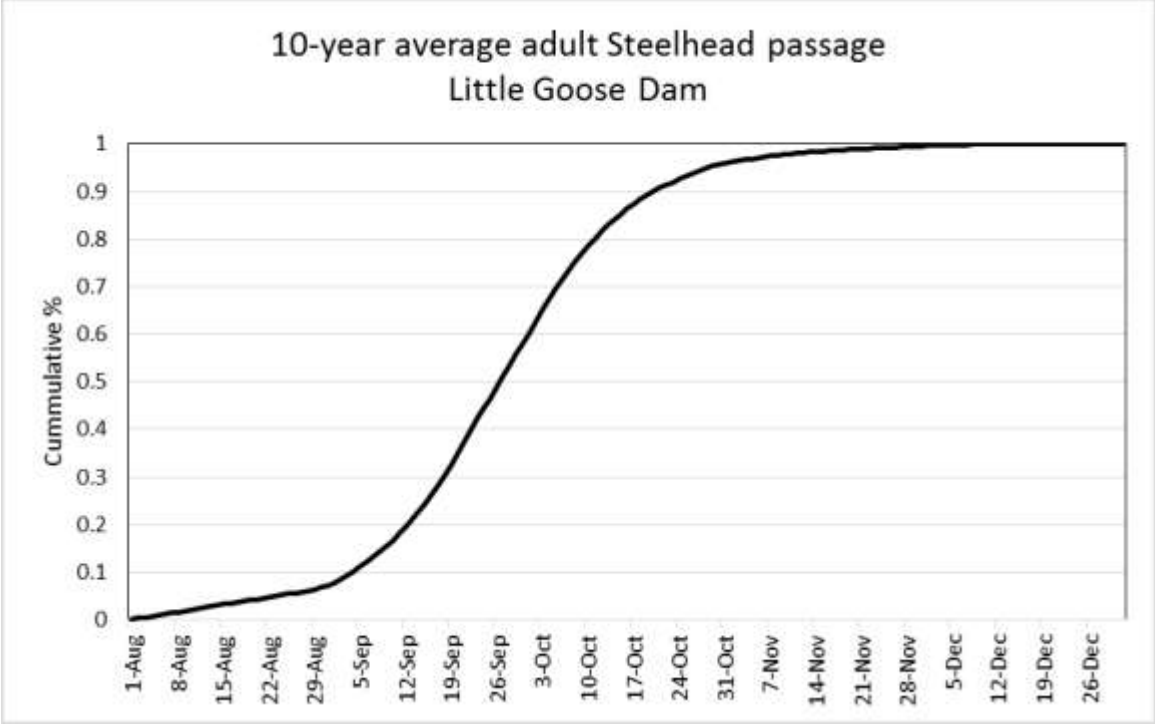
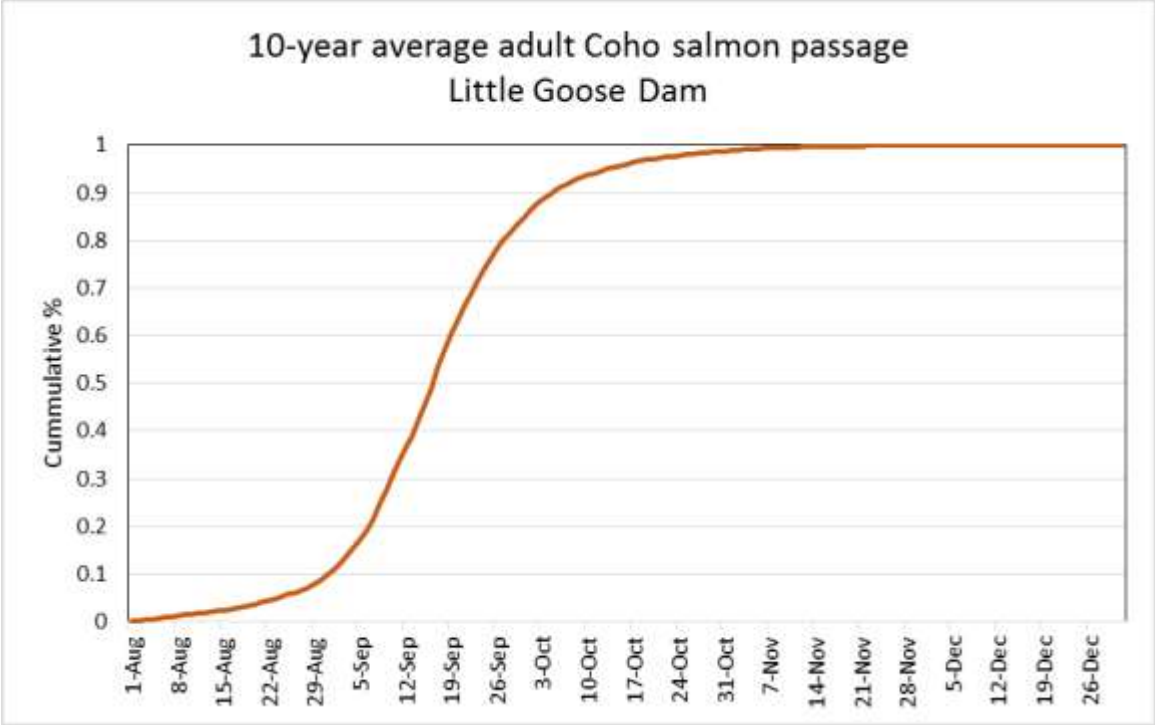


Figure 4. 10-year average adult Coho salmon passage timing at Little Goose Dam. Adult passage not monitored from January 1 through February 28.



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

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