Fish Passage Plan (FPP) Change Request Form

Change Form # & Title:	16LGS003 – SW Close Criteria to 50 kcfs
Date Submitted:	February 4, 2016; Revised February 8, 2016
Project:	LGS
Requester Name, Agency:	Corps NWW
Final Action:	**WITHDRAWN – February 11, 2016**

FPP SECTION: LGS section 2.3.3.7. Juvenile Facilities – Fish Passage Season; LGS section 4.2 Turbine Unit Operating Range; Tables LGS-8 through LGS-11.

JUSTIFICATION: Changes criteria to close the spillway weir (SW) from the previous 35 kcfs trigger to 50 kcfs, based on juvenile fish survival data from performance tests indicating lower survival at lower river discharges with the TSW operating, with follow-up modeling results at ERDC in September 2014.

PROPOSED CHANGES:

2.3.3.7. Spillway Weir (SW)

c. Close SW: On or after ~~August~~ June 21 (start of summer spill), when daily average discharge drops below ~~35~~ 50 kcfs and forecasts indicate flow below ~~35~~ 50 kcfs for at least 3 days, the SW will be closed for the remainder of the spill season and spill distributed in "Uniform" patterns with no SW (**Table LGS-10**). The SW will be closed within 3 normal work days after RCC issues the teletype and coordinated through CENWW-OD-T. During work to close the SW, spill will be distributed in "Alternate Uniform" patterns (**Table LGS-11**) and Bay 2 will be closed to ensure worker safety in adjacent Bay 1.

c.1. The SW will be closed no earlier than ~~August~~ June 21 to enhance subyearling migration even if the low flow criterion~~a~~ (daily average discharge below ~~35~~50 kcfs) is achieved ~~prior to August 1, unless an adult passage delay is observed or if necessary due to turbine unit operational constraints at low flow. Closing the SW prior to August 1 will be coordinated through FPOM by CENWW-OD-T~~.

4.2. Turbine Unit Operating Range.

4.2.4. Unit 1 Special Operation. During fish passage season when the spillway weir (SW) is operating in Bay 1 and total project outflow is greater than 38 kcfs, Unit 1will be operated in the upper 25% of the 1% range. Historically, the GDACS program tended to balance flow out of all units in operation. However, this operation will at times result in an unbalanced operation where more flow is passing through Unit 1 than other operating units. Physical modeling has indicated that a higher flow out of Unit 1 is very important to disrupt the eddy that forms along the south shore downstream of the powerhouse when the SW is operating in bay 1 in order to optimize tailrace conditions for both adult passage and juvenile egress. When the SW is removed from service during summer spill, the tailrace eddy is mostly non-existent and all turbine units may be operated within the full 1% range. ~~When total project outflow is less than 38 kcfs, Unit 1 may be operated within the full 1% range as necessary to maintain MOP and spill operations in accordance with the FOP.~~

Tables LGS-8 through LGS-11 (footnote to spill pattern tables).

e. Flow >85 kcfs = SW-Lo / Flow ~~35~~50-85 kcfs = SW-Hi / Flow <~~35~~50 kcfs = SW close.

COMMENTS:

-----Original Message-----
February 03, 2016 10:36 - From: Milligan, Sean C NWW

Here are my comments on this change form:

1) The ERDC model trip for LGo low-flow operations was Sept 2014...

2) In the justification paragraph, I think we should mention that the initial impetus to look at this was poor survival in the performance study, which identified lower survival at the lower flows with the TSW operating. So then we looked at the model and confirmed acceptable operating conditions with TSW above 50 kcfs and better operating conditions with uniform spill (TSW out) below 50 kcfs. So I suggest a statement like this: "Changes criteria to close the spillway weir (SW) from the previous 35 kcfs trigger to 50 kcfs, based on juvenile fish survival data from performance tests indicating lower survival at lower river discharges with the TSW operating, with follow-up modeling results at ERDC in September 2014."

3) I believe the agreement was that the TSW would be removed when river discharge falls below 50 kcfs, regardless of the date. So Paragraph 2.3.3.7.c.1 needs to be removed entirely, and the first phrase in Paragraph 2.3.3.7.c referring to the date should be removed.

-----Original Message-----
February 04, 2016 12:59 - From: Trevor Conder - NOAA

I agree Aug 1 is probably too late of a trigger date, we should have a trigger date so we don't remove the RSW in the spring where we made the standard for spring migrants under the normal RSW operation. I suggest using the RSW for the bulk of the spring migration, but allow it to come out during the summer migration. Looking at the data in 2015 it appears if we had used June 1 and below 50K we would have captured that idea best.

-----Original Message-----
February 05, 2016 10:09 - From: Tom Lorz

close but needs some work. This was suppose to be for the summer period or at lease that was my way of thinking, the way it is written would affect anytime of year. I would add some language anytime after July 1st? pick your favorite day. Otherwise will need to have some re-install language and then we could be taking the [SW] in and out repeatedly across the season as flows change in a 3 day window, not sure if this is what people wanted. If we do add this to spring part of the run, people could easily ask, since this has not been tested how do we know that it is good idea, especially given the high usage of the TSW by steelhead.

-----Original Message-----
February 08, 2016 10:25 - From: Tom Lorz

I was leaning more towards the [June] 20th to keep the spring/summer switch consistent.

-----Original Message-----
February 08, 2016 10:47 - From: Trevor Conder - NOAA

I just spoke with Bill on this, and we support CRITFC in using the spring/summer transition date for the first step on the LGO RSW removal trigger.

-----Original Message-----
February 08, 2016 12:42 - From: Milligan, Sean C NWW

Ok with me, although at some point we may have to acknowledge that the tailwater doesn't care what the date is -- it will react to whatever the discharge and our operating configuration is, and if the discharge is less than 50 kcfs with the TSW operating, resulting in poor passage conditions for both adults and juveniles, what is the appropriate response? But this is still an improvement over the current plan, and Q<50 kcfs is a relatively rare event in the spring, so let's move forward.

February 11, 2016 – FPOM:
Kiefer said this action is based upon not meeting subyearling performance standards at LGS and is an issue at low flow across the basin. He questioned whether this action will improve survival and is concerned there aren't any tests planned to evaluate impacts.

Setter said this proposal stemmed from the ERDC modeling trip in October, so it's based on an evaluation of hydraulics, not fish data.

Condor said it's also based upon performance test results.

Kiefer asked how we got into a bulk spill pattern, now you're going to change one mortality problem for another. He wants to see a study of survival at flows below 50 kcfs with the SW open versus closed. He does not support this change form.

Condor asked where we should discuss these issues then. There is a chance that the performance standard won't be met at this level and they'll evaluate it during the next performance test.

Bettin said they already took a risk defining the trigger at 35 kcfs, which appears to be too low.

Setter said the NWW hydraulic engineer, Sean Mulligan, feels strongly that this is the best way to improve project survival. Bill Hevlin also strongly supports. She said closing the SW at 50 kcfs might also improve tailrace hydraulics for adult passage.

Baus said the intent of this change form was to finalize what had already been coordinated and agreed to, as discussed at the FPP meeting in January. Not to rehash the proposal. So where to go from here.

Kiefer doesn't support this change without evaluating it and he doesn't want to wait until performance testing.

Lorz said this is a COP discussion.

-----Original Message-----
February 22, 2016 13:34 - From: Kiefer,Russell

I'm sending this email because IDFG wanted to make sure that folks understood why we did not support this change form. The stated justification was that summer dam passage performance was not met in a low flow year with the RSW in operation, and a modeling trip that indicated tailrace eddies would be greatly reduced at these flows with the proposed change.

IDFG's concerns are as follows:
1) There has been a fairly consistent pattern of not meeting dam passage performance survival at lower flows at multiple projects, including those without significant eddy issues.
2) We moved away from flat spill patterns at lower flows at Snake River Projects because of documented increased injury and mortality resulting from smaller gate openings.

3) As proposed, this change would reduce SPE when the most recent results (T:C0 and increased transport stray rates) indicate this may be a net overall negative for the Region.
4) There is disagreement in the Region as to whether reducing eddies (as proposed in the change form) or increasing spill and SPE is the most effective way to improve dam passage performance and resulting adult returns during low flows.
5) This significant change in operation and configuration is being proposed without an evaluation to determine effect.

IDFG recommends that a special SRWG be convened to select an alternative operation and develop a test to compare the two operations.

-----Original Message-----
February 22, 2016 14:17 - From: Setter, Ann L NWW
Russ: Thanks for writing out your concerns. As a reminder, the timeframe when this type of operation would have been implemented is July - August. Once we are past Independence day weekend, it is presumed that 95% of the subyearling run is out of the Snake River, generally speaking. You also need to be weighing reducing impact to adults, and the flat pattern makes the entrance signatures more identifiable during low flows. This change was proposed without a study to determine if the necessary consensus could be reached to allow for an adaptive management change. SRWG studies are facilitated by our Planning group using CRFM funds so I am including them on this response.

RECORD OF FINAL ACTION: WITHDRAWN.