

MEMORANDUM FOR THE RECORD

Subject: Final minutes for the 04 August 2020 Willamette Fish Facility Design Work Group meeting.

The meeting was held via conference call. In attendance:

Last name	First Name	Agency	Email
Brink-Roby	Jonathon	NWP-ENC	Jonathon.C.Brink-Roby@usace.army.mil
Budai	Chris	NWP	Christine.M.Budai@usace.army.mil
Dunlop	Shari	NWP-ENC-HD	Shari.L.Dunlop@usace.army.mil
Garletts	Doug	NWP -ODV	Douglas.F.Garletts@usace/army.mil
Helms	Chad	NWP-ODV	Chad.K.Helms@usace.army.mil
Hicks	Jeff	NWP-PMF-P	Jeffrey.T.Hicks@usace.army.mil
Hudson	Mike	USFWS	michael_hudson@fws.gov
Janes	Kelly	NWP-PM-E	Kelly.A.Janes@usace.army.mil
Jundt	Melissa	NMFS	melissa.jundt@noaa.gov
Kelley	Elise	ODFW	elise.x.kelley@state.or.us
Khan	Fenton	NWP-PM-E	Fenton.o.khan@usace.army.mil
Kirkendall	Keith	NMFS	Keith.Kirkendall@noaa.gov
Kovalchuk	Erin	NWP-ODT-F	Erin.H.Kovalchuk@usace.army.mil
Litzenberg	Aaron	NWP-ENC	Aaron.D.Litzenberg@usace.army.mil
Mackey	Tammy	NWP-ODT-F	Tammy.M.Mackey@usace.army.mil
Mullan	Anne	NMFS	Anne.Mullan@noaa.gov
Murauskas	Josh	Four Peaks Consulting	jmurauskas@fourpeaksenv.com
Phillips	Marie	NWP-ENC-HD	Marie.J.Phillips@usace.army.mil
Pierce	Todd	NWP-ODV	Todd.M.Pierce@usace.army.mil
Reis	Kelly	ODFW	Kelly.E.Reis@state.or.us
Rerecich	Jon	NWP-PM-E	Jonathon.G.Rerecich@usace.army.mil
Royer	Ida	NWP-PM-E	Ida.M.Royer@usace.army.mil
Schwabe	Lawrence	Grand Ronde Tribe	Lawrence.Schwabe@grandronde.org
Sedey	Jeff	NWP-ENC	Jeffrey.A.Sedey@usace.army.mil
Souders	Ryan	NWP-ENC	Ryan.D.Souders@usace.army.mil
Spear	Dan	BPA	DJSpear@bpa.gov
Steere	Molly	Four Peaks Consulting	msteere@fourpeaksenv.com
Tarbox	Erica	NWP	Erica.M.Tarbox@usace.army.mil
Walker	Chris	NWP-OD-TF	Christopher.E.Walker@usace.army.mil
Watts	Joel	ODFW	Joel.Watts@state.or.us
Welton	Brent	NWP-ENC-DM	Brent.C.Welton@usace.army.mil
Ziller	Jeff	ODFW	Jeffrey.S.Ziller@state.or.us

Meeting Purpose:

Finalize previous meeting notes. Provide an update on status of active design projects and a presentation from the Cougar DSP PDT on the 90% P&S for the FSS.

1. Final decisions or recommendations made at this meeting.

- 1.1. June meeting minutes were approved.
- 1.2. ACTION: Hicks will find out the review schedule of the Willamette Valley System EIS.
- 1.3. ACTION: Litzenberg will provide the inches of water depth and the length of the flume after the meeting.

2. Review dates

Document	Review Dates
Foster Ladder 60%DDR Report	Late August
Cougar DSP 90% Plans and Specs	Mid-August

3. Updates on active design/construction projects

- 3.1. **Fall Creek AFF** – The Dewatering flume and the braille modifications were completed. The pipe lining from the intake to each of the three fish horns will be done in November. There are some chemical and geometrical challenges to the pipe lining work. The contractor will be spraying the liner. The PDT is carrying over money to do the work. Pierce said that there is a shutdown scheduled from 10-15 and 17-22 August to address issues at the facility which is separate from this work. The MOC about the outage was sent out to the WFPOM group.
- 3.2. **Cougar DSP 2.0** – The PDT negotiated a mod to the contract which was awarded in July to bring additional alternatives forwarded. The EDR should be complete by late January and the contract will close out in February. The PDT reached out to Sacramento district for modeling help. Sacramento will do a FLAC model to figure out dam safety issues to add to the top three alternative selections in the EDR. The FLAC model is a 3-D model of Cougar which predicts the strains and stresses of the dam under different circumstances. The model will help the team resolve the dam safety concerns under each alternative.
- 3.3. **Detroit Temp Control and DSP** – The PDT is working with ERDC to construct a physical model. The PDT is supplying all the drawings and construction will start in December. Janes has been working the NEPA part and it will be incorporated in the Willamette Valley System EIS. Mullan asked if any documents for review will be sent out in the near future. ACTION: Hicks will update the WFFDWG about any upcoming reviews at the next meeting.

3.4. **High Head Bypass** – [Presentation of preliminary results from the Year 1 HHB fish stress study] The peer review (ATR) is complete and the PDT is addressing comments. The final EDR will be distributed in the next few weeks. The PDT is not sure if the project will move to the DDR phase; it will be a management decision.

Presentation on Truck v Bypass Year 1 Study. Khan presented the preliminary results of the year 1 study that was conducted in fall 2019 to evaluate fish stress and survival through a bypass versus truck transport. The Green Peter Bypass was used as a test site for the High Head Bypass PDT and research as in previous years. The truck transport test scenario mimicked the plan for the Cougar FSS trap and haul, including estimated holding time in the pods on the FSS and driving times during transport for release. The study looked at the stress levels of healthy fish for the two conveyances. OSU was not able to provide fully copepod infected fish for this year 1 study, but they provided partially infected fish for the researchers to evaluate how these infected fish will survive after transport from OSU to Green Peter. This is to inform the full study planned for the fall of 2020, which will test a larger sample size of healthy fish and fully copepod infected fish. The primary objective of the year 1 study was a feasibility study. Secondary objectives include evaluating stress levels in healthy fish and evaluating the practicality of using copepod infected fish. Khan reminded the group that a few years ago OSU transported copepod infected wild fish from Cougar reservoir to Corvallis for a study and a majority of the fish died during transport or soon after arriving at OSU. This raised concerns that infected fish may not do well during transport. For this year 1 study, the research team and the HHB PDT recognized that the study isn't an exact 1:1 comparison to the real world; it is a laboratory experiment performed in the field. The study include mitigation measures, including transporting the study fish to Green Peter 2 weeks prior to the start of the study, so the fish could acclimate, minimize disturbances to the fish while in the tanks at Green Peter, minimized human contact, and each day a researchers moved a net around the tank, so the fish could get used to net presence. Khan explained the simulations of bypass and truck transport. OSU did the cortisol analysis for PNNL. Preliminary results showed that it is possible to conduct a full study with healthy and infected fish, mimicking the Cougar FSS trap and haul scenarios. Results of the study showed all fish in every test scenario were stressed. The highest level of stress was in the first hour of both the bypass and the truck transport. All fish were nearing recovery by 24 hrs. The fish from the bypass pipe and 1 hr. holding time in the pod had similar stress levels. The fish held in the pods for 12 and 24 hrs. before transport were significantly more stressed. The partially infected fish survived transport from OSU to Green Peter and remained alive several days after. The next step is to conduct a Year 2 Study in fall 2020. OSU will provide 2K healthy fish and 2K copepod infected fish for the study. Mullan asked where the fish were held post treatment. Khan said that each treatment had their own pod of fish. As soon as fish came out of a test, a subsample was used for cortisol

samples immediately and the others were held for either ½, 1, 6, 12 or 24 hrs in their own pod for additional cortisol samples. OSU will get copepod infected adult fish from the hatcheries and as a source of copepods to infect the juvenile fish for the study. This infection work will be going on during this summer and early fall. Kelley asked about the stress levels post trucking. Khan said that the fish were tested after the holding plus transport time. Welton asked about capacity in the pod for fish being held for 24hrs because that pod may not be as full of fish. Khan said all the pods were tested at the same capacity/density. Welton wanted to know if less density in the pod could be less stressful. The team can't test all possible densities for this study. The take home message from the study was do not hold fish for a long time in the pod before transport. Fish held in the pod for 1 hr. before transport were less stressed after transport than fish held in the pod for 12 and 2 hrs before transport. Ziller asked about the details about the specific time intervals but Khan said that this presentation is meant to be an overview and the details will be in the report. Pierce asked about the fish recovery. Khan said that all of the fish did recover but the fish that were held in pods for 12 and 24hrs had much higher levels of stress than the bypassed or fish held for 1hr before transport. A draft report for the study will be available later this summer.

- 3.5. **Foster/Green Peter Spill test** – The GPR spill was a test to validate the USGS model. The test worked and they were able to warm up temps of Foster forebay and eventually the ladder. The GPR spill test validated the USGS model and informed the PDT. The PDT is using this information for their ladder improvements design plan. ODFW was able to collect adequate numbers of adult salmon at the fish facility during the spill test because the Foster ladder had warmer water, which attracted the fish into the facility. The Foster fish weir spill started after the GPR spill. The Foster fish weir spill was to warm up the river downstream of the dam to get adult fish back to the AFF. The fish weir spill concluded at the end of July. Khan will keep checking with Boyd to see if the fish collection numbers go down and if the fish weir should be operated again to get fish back to the facility. BPA is conducting testing at Foster this week and not generating power, so Foster is spilling out of the spillway to pass water.
- 3.6. **Foster AFF ladder Improvements** – Dunlop said that they have finished the 60%DDR. The internal review will wrap up this week and then they will address comments. The WFFDWG review will be in August. The PDT will do a presentation in September.
- 3.7. **Foster DSP - Fish Weir Design Improvements** – The PDT is finishing up the 100% EDR. As discussed in previous WDDFW meeting, CFD modeling results indicate the Obermeyer (hinged crest gate) weir design will not work. It would not provide a pool on the spillway with enough cushioning for fish. The team looked at several other alternatives, including the alternatives that were considered in the original EDR for the fish weir. However, none of the alternatives looked promising and there is no funding for the PDT to continue to evaluate alternatives in FY21. The PDT will complete the 100% EDR before the end of this FY. Litzenberg is writing up the CFD modeling results

for the Obermeyer gate, which will include the hydraulics for the plunge pool, for the final EDR. The 100% EDR will be finished in September and delivered to the WFDWG. Khan reported that an interim measure for downstream fish passage for the next few years will be using the same interim spill operations used this year, which is nighttime spill operations for fish passage, with limited turbine generation for Station Service and no spill and full power generation during daylight hours. Khan reminded the Group that RME data indicated 98% of downstream migrants pass the dam during nighttime hours, which informed the interim nighttime spill operation.

- 3.8. **Cougar DSP FSS** – updates, presentation and discussion of the 90% Plans and Specs package for the FSS. (Tarbox, Sedey, Welton and Litzenberg) The 90% will be distributed in mid-August. Tarbox and others gave an overview of the Plans and Specs package including the excavation area, construction timeline, drawdown timeline, debris management, staging area, the FSS design and the fish handling area. Jundt asked how the PDT is planning on removing the current debris boom. Tarbox said it would be corralled to the dam access road and picked up with an excavator into a dump truck. The trash rack space on center is 4-in on the top 4-ft and 8-in on bottom 16-ft. Pierce asked about the brackets on the side of the trash rack. Pierce would like it flat and not protruding. Rerecich said it needs to have rounded edges; anything a fish could have contact with needs to be rounded. Litzenberg described the major changes since the last report. The original design had submerged weirs to modulate flow through the primary and secondary screens but the design has changed to offsetting porosity plates. Once the porosity plates are set during commissioning, they will not change. Plenum gates will control the flow. The fish handling area had several changes to the water flow path as well. Kelley asked for inches of water rather than GPM. **ACTION: Litzenberg will provide the inches of water depth and the length of the flume – complete- see diagrams at end of this document.** The fish would be in the flume for ~ten seconds with a depth of 1.5-2” except for the counter area. The counter requires sheeting flow so the depth would be minimal at that point. Khan will send out the presentation with the meeting minutes. Khan said that if the FSS is converted to the bypass system, fish would be routed directly to the pipe avoiding the pod area and have subsampling on the downstream side. The pipes or cutouts are already designed into the back of the FSS. Ziller asked if the pipe would be for both juvenile and adult fish. Khan said no, the bypass pipe is only for juveniles. Adult fish and Bull Trout would be screened out in the FSS. Ziller questioned the decision not to include adults since ODFW had requested this. Khan said that the pipe would have to be much larger and they are not expecting many adult fish. Rerecich said that the Disposition Table in the EDR was approved years ago by the region. Certain times of the year, Bull Trout would be transported upstream. Rerecich said that the discussion is still open. Ziller wants to discuss it now since the pipe size would not be able to change. Khan said the decision was based on the Disposition Table discussions in the EDR. Ziller said that ODFW’s position has always

been to pass all fish. Welton said there are two different sized pipes already and the larger size should be able to pass all sized fish. To switch to a by-pass pipe would require some equipment modification and design changes. Welton said for adults, it is either transport or bypass but they don't have the ability to do both like they do for the juveniles. Ziller said the Disposition Table is old and the adult fish should be collected along with the juveniles for a bypass system. The HHB team will go on hiatus in September because they don't have funding for the DDR. Rerecich pointed out that the Disposition Table used is Appendix C in the report. He requested that comments can be sent in on this section. Watts asked about cleaning the screen underneath the adult fish sorter. Welton said the sorter can be lifted up and the ends can be removed also. Rerecich said that the capacity estimates and used the Fish Benefit Workbook had to be recalculated. The estimated time is 2 hours to go through the system. Mullan asked for clarification on the time line of two hours that it takes for a fish to move through the system. The cycle time starts when the hoist moves the pod and ends once the empty pod returns to the FSS and is back into position to collect fish. The time doesn't include leeway for inclement weather issues. They are trying not to exceed 24hrs of holding. Rerecich used the workbook and other inputs for the model to estimate the rate for filling the pods. Under heavy collection, pods would be moved every two hours. This estimate and cycle times are in Appendix B of the report. There will be an extra pod waiting during heavy times so that they don't have to wait until the pod returns. The release site is downstream of the powerhouse. The exact site location is in Volume 2 of the report. Due to COVID-19, the PDT hasn't been able to go to the site to verify flows and velocities. Welton said that the information should be updated by the time the report goes out.

4. Next Steps

- 4.1. Next WFFDWG meeting currently scheduled for September 1.
- 4.2. Cougar DSP FSS 90% P&S review scheduled for August.
- 4.3. Foster AFF Ladder Improvements 60% DDR review scheduled for late August.

Cougar DSP FSS: Question during the presentation: Kelley asked for inches of water rather than GPM. **ACTION: Litzenberg will provide the inches of water depth and the length of the flume after the meeting**

Below are two diagrams with the answers.



