

## MEMORANDUM FOR THE RECORD

Subject: Final minutes for the 07 April 2020 Willamette Fish Facility Design Work Group meeting.

The meeting was held via conference call. In attendance:

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**Meeting Purpose:**

Finalize previous meeting notes. Provide an update on status of active design projects and discussions/presentations from the Foster DSP (Fish Weir) and High Head Bypass PDTs.

1. Final Decisions or recommendations made at this meeting.
  - 1.1. The March meeting was only emailed updates so there were no minutes to approve.
2. Schedule of reviews

<b>Document</b>	<b>Review Dates</b>
Foster Ladder 30% DDR Report	coming soon
Foster DSP with modeling results	Later this spring
Cougar DSP 2.0 60% report	Completed
Cougar DSP 90% Plans and Specs	June
High Head Bypass 90% report	coming soon

3. Updates on active design/construction projects

3.1. Fall Creek AFF –The new flume was tested and it functioned properly. There are some leakage issues that still need to be addressed. Helms reported ~ 20 STW have returned to the facility.

3.2. Cougar DSP – The 90% P&S package for review has been delayed until June due to software issues and telework adjustments.

3.3. Cougar DSP 2.0 –The PM, Jeff Hicks, has been tasked with working on the COVID-19 response and has a replacement filling in for him. Comments on the 50% report were received. The team is addressing comments now and will incorporate into the 90%. Low reported that the team is on hold, but clarified she meant the contractor for the EDR is on pause (i.e. the EDR is on pause). The PDT is trying to bring alignment within the Corps. The alternatives that require drawing down the reservoir have dam safety concerns and impacts recreation and other purposes. The team is gathering more information on the dam safety concerns, and require modeling efforts to address the unknowns. The report is on hold pending more information, for example, identifying studies that have to be completed to inform the alternatives. There are just a lot of unknowns with developing the alternatives. The team is looking bringing three alternatives to the 90%, rather than on alternative. The dam safety model is necessary, but hasn't been happened yet. Reis asked why they still need to review reports and provide comments if the PDT will not have a definitive choice at the end of the EDR. Low said that biological input from the agencies are important to the process. Hill said that the comments help develop the EIS. Reis said that reviewing reports is a time consuming process and ODFW has to prioritize their schedules and resources to be most effective. Mullan is concerned about getting fish passage as soon as possible; not spend many rounds of report reviewing and developing alternatives. Mullan wants models to be used for multiple purposes and for several teams. Khan will make sure that comments from report reviews by the agencies are addressed and communicated to managers within the Corps.

3.4. Detroit Temp Control and DSP – The team is working on plans and specs for the above water work. Rerecich is taking all the IEPR comments and developing the EIS and BA. He is developing the performance criteria documents of the BA similar to Cougar. The team is on hold on design work on the FSS and temperature tower because of funding. Schlenker said the machine shop at ERDC working on the penstock bifurcation physical model is closed due to COVID-19. The PDT is proceeding with the CFD modeling for the penstock bifurcation and stilling basin. Litzenberg reiterated that the physical model is on hold but the CFD modeling is moving forward.

3.5. Foster AFF ladder Improvements – The Foster assessment final report was sent to WFFDWG in March. A 30% DDR is going through internal review and will be sent to WFFDWG soon for review. Not many changes were made between the final assessment report and the 30% DDR.

The team will keep working towards 60%. The 30% DDR will go out to the region for review soon.

- 3.6. Foster DSP - Fish Weir Design Improvements – The weir had good attraction of fish, but injuries occurred on the spillway once the fish passed through the weir. The team has been using CFD modeling (Flow 3D) to evaluate the new proposed designs (plunge pool on the spillway). The CFD modeling was evaluated using four metrics: impact, overspill (weir flow did not spill over the weir and put fish in an undesirable location), retention time and spillway chute hydraulics. The models for the proposed design were run under low and high pool conditions. The model ran tracking particles for smolt and kelt sized fish, with and without the middle chute on the spillway. The kelt sized particles had some improvements but also some increased acceleration which is not an improvement. In summary, PNNL sensor fish data and Normandeau balloon tag data indicated the weir design was an improvement over the old weir but injuries occurred from impacting the spillway and tumbling down the spillway. CFD modeling with the proposed plunge pool and chute design showed improvements for smolts at high pool but no improvements at low pool. The model did not show an improvement for kelts in either pool elevation. The Obermeyer weir design is not showing enough improvement to justify the cost or level of modification to the spillway. Designing a chute to channelize the water would provide the most benefit while utilizing the good attraction of the current fish weir. The team is now looking at a spillway coating which would reduce abrasion injury from tumbling down the spillway and improve survival. Loffink asked why the team is evaluating only one configuration of the Obermeyer weirs. Litzenberg said they did look at other configurations after the original CFD tests were run but none of them had enough improvement to continue developing them as an alternative. Jundt asked if the CFD modeling results will be documented in a report that would be available to WFFDWG. Khan said yes, the modeling results will be documented, and they had been waiting on the results to finish their EDR report. The CFD modeling report will be separate that goes along with the EDR report. Mullan asked about the distinction between the two injury sites (impact and tumbling down the spillway). Khan said the sensor fish data indicate that the primary injury site is the tumbling down the spillway and the original impact coming over the weir is the secondary concern.
- 3.7. High Head Bypass - The 60% comments were addressed in the 90% report. The 90% will be sent out for WFFDWG review soon after the internal review is complete. Alternative 5 (the multiple inlet- Green Peter style) is the preferred alternative. Woolbright presented/reviewed all the proposed alternatives and their pros/cons from the 90% report. The PDT evaluated the ODFW alternative as well. The ODFW alternative could have impacts to other authorized purposes so it was not reviewed by the contractor (was not part of their contract), but was evaluated by the PDT. The team did the Res Sim modeling internally. The results showed that the pool would not refill in ~75% of years. BiOp flows would be impacted greatly. Woolbright said that they are still considering this alternative internally but not in the document. Khan and Hill said the alternative will be moved over to the Willamette Basin EIS for further evaluation. This will be discussed during an upcoming cooperative agency meeting for the EIS. Mullan asked if the results have been shared already. Woolbright said that this is the first time the results have been shared. Ziller requested the graphs and results from the ODFW alternative. Woolbright said the results are in the 90% EDR. If the results are not in the 90% then Khan will send the information to the group. Reis asked if interim measures might be in place while moving forward with the

EIS process. Khan said as far as PDT designs for passage goes, all designs are continuing to move forward for Detroit and Cougar. The HHB team and contractor are just finishing the 90% EDR report. Once the contractor completes the EDR per their contract, the HHB PDT will continue to further investigate the alternatives, more RME or internal modeling might be necessary to inform the alternative for bypass. Ziller expressed concern about the amount of effort going into three PDT processes and into alternatives that had little to no chance of moving forward. He said, from the perspective of people not used to the Corps process, that alternatives from all of the PDT's should be evaluated against each other to determine the best options and move on. Khan said that many people work on multiple teams and that the information/alternatives are shared between teams. Khan said at some point, all of the information from the different PDTs (Cougar FSS, Cougar 2.0, and HHB) will feed into the EIS process. The EIS is being done to inform the next BiOp. Hill said that interim actions at Foster will continue as one example of interim fish passage. The PDTs are required to keep moving forward on designs for fish passage at Detroit, Cougar, and Foster. Hill said the Corps will document comments and decisions and keep everyone informed about what the different PDTs are doing within the EIS process. Khan understands the frustration from the agencies about report reviews and processes, when it looks like progress for fish passage is not moving at a faster rate, and assured the group that the PDTs are working as hard as they can internally. These monthly meetings are to help update and inform our partners on status of the different teams. Loffink said that the main drawback in the helical design for HHB is the pressure but asked if it could be open design to alleviate the pressure. Woolbright said yes, they considered a tight helical with an open channel but that the main problem is the limited space available at the site. The Cle Elum design took years of modeling beyond what they have time to do in the contract. The idea is still out there as possibility depending on the location. The PDT can still look further at the modeling in-house especially on a case by case basis just not in this contract.

#### 4. Next Steps

4.1. Next WFFDWG meeting currently scheduled for May 5

4.2. Upcoming reviews

4.2.1. Foster AFF Ladder 30% DDR

4.2.2. High Head Bypass 90% EDR