

MEMORANDUM FOR THE RECORD

Subject: Final minutes for the 23 January 2018 Willamette Fish Facility Design Group meeting.

The meeting was held in the Lobby Conference Room at Block 300 US Army Corps of Engineers in Portland, OR. In attendance:

Last name	First Name	Agency	Email
Ament	Jeff	NWP	Jeffrey.M.Ament@usace.army.mil
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On the phone: Kelly, Malone, Meyers, Pierce, Reis, Spear, Tarbox and Walker C.

Meeting Purpose:

Finalize previous meeting notes. Provide an update on status of active design projects. Provide the Team an overview of the 60% Selective Withdrawal Structure DDR.

1. Action Items

- 1.1. Previous meeting notes were sent out with the agenda. Comments on the notes are due on 26 January.
- 1.2. The 60% DDR SWS is coming in early February for review.
- 1.3. The 30% DDR FSS is coming out in late February for review.
- 1.4. The COE will prepare an updated Gant Chart for the next meeting.

- 1.5. The suggestion of a survival study below Big Cliff will go on the agenda of the next RM&E team meeting.
- 1.6. The PDT team will gather more information on the distribution of flow and temperatures from the questions under 3.5.2.
2. Updates on active design/construction project
 - 2.1. Cougar – The project is on schedule.
 - 2.2. Foster Fish Weir– The project is on schedule. The weir should be delivered on 15 February. The study will start in early March.
 - 2.3. Cougar Downstream passage – The 60% comments have been received and will be incorporated into the 90% review.
3. Detroit Selective Withdrawal 60% DDR overview and the Weir Box

Presentation [Slides on website] –

 - 3.1. Weir Box- The weir box has been deprioritized. The collection efficiency was the main concern. The size of the wet well had to be increased greatly in order to achieve the correct velocities which created configuration and cost issues. The south side of the tower had four warm water gates and the weir box on the opposite side. The CFD images inside the tower showed water hitting the back wall and going down but not towards the weir box. It was asked what the inflows are for the CFD modeling and an estimate would be 2500-4000cfs but Schlenker would have to verify. The team looked at how much of the water was actually going to the weir box and it was only a small portion of the overall flow. They modeled the flow backwards and the flow was not coming from the entrance. The hydraulics within the wet well were too dynamic for the weir box to be successful. Also, the weir box and FSS had competing requirements. The optimal placement of the warm water gates were different for each component. The cost to make the improvements to the wet well, tower and FSS slides was increasing rapidly while the collection efficiency was going down. The PDT has deprioritized the weir box and has concurrence from management. The 60% review will go out later than anticipated to capture all the reasons why the weir box did not work. Malone asked why capture velocity was needed at the entrance. The capture velocity is to maximize the chance of the fish finding the entrance. This is also the temperature control structure and the idea was to skim warm water from the surface. The tower had to keep getting bigger and more expensive.
 - 3.2. Project schedule – The schedule was presented. The Phase 1 SWS 60% DDR is at BPA for review and will go out for the group review at the end of January/early February. The full schedule is as follows:
 - 3.2.1.Phase 1 (Selective Withdrawal Structure)
 - 3.2.1.1. SWS DDR Complete – September 2018 (currently at 60%)
 - 3.2.1.2. SWS P&S Complete – April 2020
 - 3.2.1.3. SWS Construction Contract Award – Oct 2020
 - 3.2.1.4. Phase 1 Complete – 2023
 - 3.2.2.Phase 2 (Floating Screen Structure)
 - 3.2.2.1. FSS DDR Complete – November 2018 (currently at 30%) WFFDWG review in late February
 - 3.2.2.2. Revised FSS DDR complete - 2023 (Incorporates lessons learned)
 - 3.2.2.3. FSS P&S complete – 2025
 - 3.2.2.4. FSS Construction Contract Award – 2025

- 3.2.2.5. Phase 2 Complete – 2028
- 3.2.3. When the Phase 2 FSS DDR is complete in Nov 2018, it will sit until 2023 while the team is focused on the SWS. The dates are subject to change due to the lack of weir box. It could be faster. There are two phases but they work together as a system. Piaskowski asked the partners about the timing of the two reviews coming up in February but no one had major concerns. Fortuny said that the AE has a due date in March for the 60% so the review date cannot be pushed up. The two phases do work together so the concurrent review could be helpful. NOAA would like to see a Gant chart.
- 3.3. SWS – Fortuny explained the isometric drawings of the SWS and FSS with dimensions. Since the 30% DDR, the FSS has moved away from the dam about 90' further for safety reasons. The project has had to be reconfigured but this new dimension aligns up the components better. There will be some fish guidance devices in the new design.
- 3.4. Temperature Modeling-The SWS and FSS are being designed to have the flexibility to meet both the temperature targets until November/December then it is contingent on the existing conditions. The problem is more pronounced in the hot dry year. The second temperature monitoring slide was confusing and the author will explain more fully in the 60% document.
- 3.5. Biological Considerations
- 3.5.1. Fish Interaction with warm and cold water gates. When the FSS is not operational during the maintenance period, the warm water gates will be used as a fish entrance. The cold water gates are very deep and located near the RO entrance. Using the study results from hydro-acoustics, most fish were in the upper end of the water column. When the forebay is very low, the cold water gate usage will be minimalized. There are some trash racks designs still to be made. To achieve the temperature targets, both cold and warm gates need to be utilized. The team will need to look at competing flows and try to minimize the amount of flow to the cold water gates. The competing flows will have some influence on the collection efficiency.
- 3.5.2. Design alignment of the FSS – The team has not decided between trap and haul or a piped by-pass for the collection of fish. A 30% design of the FSS is needed before moving forward with the next step. There are many concerns with the feasibility of routing conduit and geotechnical concerns versus moving the fish around the dam in a trap and haul. A pipe would exit into the tailrace of Big Cliff (not Detroit) but not going all the way to Minto. There was a survival study of fish from Detroit to Big Cliff that showed low survival. Jundt suggested an RM&E study to see what the survival is in the tailrace of Big Cliff. The paired release study had too few numbers of fish for survival data. Trap and Haul has several drawbacks – diseases (copepods), long term O&M, icy roads in the winter. Copepods are a big problem for trucks. Fortuny pointed out that Trap and Haul is the only option in the A&E study but the pipe is still a consideration. Kelly asked if a pipe in the tailrace would increase the TDG and if this is a consideration for this option. A study to look at TDG is being done this year. The study looks into the different routes with the corresponding TDG level. The team is still working on the pathways using the SWS with corresponding temperatures. The intent is for all fish to pass on the surface and go through the FSS. The FSS maintenance will be during the summer only otherwise it will be running. The additional cold water will be from an outlet at a very low elevation. Jundt would like to know the distribution of flow between the warm and cold water. Piaskowski summed up the

- questions. What is the distribution of flow into the tower through the year (seasonally)? And what is the resulting downstream temperatures? What is the surface temperatures and the temperatures at the cold water gate entrance? And add to this corresponding biological data.
- 3.5.3. Shaped weir test on east face SWS – A shaped weir test was mentioned in the 60% but it is unknown if it will be done. The intent is to look at a shaped weir to see if it would be good for the FSS. There is some data from a dam on the Columbia already that the team will look into. A good design could help with hydraulics and fish collection efficiency but no objectives for an actual test have been made. The new Foster weir is shaped and there will be some data from that study this year.
- 3.6. Hydraulic – Fortuny reviewed the SWS flow requirements from the slides. A question was asked about the minimum or entire flow range going into the cold water gates. Fortuny did not know off hand but said it will be in the DDR.
- 3.7. Structural – Once the water is in the tower, wicket gates and the RO are used to control/drain the tower. The dimensions were reviewed from the slides.
- 3.8. Mechanical and Electrical – The mechanical options were reviewed from the slides. The project will have significant electrical needs. Spear asked if the electricity will come from the station service or power lines. There is not enough electricity at the dam currently. The transformer will be sized for the maximum load. A substation is not necessary but these needs will be looked into.
- 3.9. Construction alternatives and challenges – These four alternatives were discussed at the public meetings. Best for recreation is also best for downstream water users. Many municipalities take water for their drinking water supply. This project has drawn the attention of federal and state politicians. The number one concern for the construction had been recreation but now it is impacting the water supply for several cities.
- 3.10. VE study – The Value Engineering study is a non-COE group that reviews the project. The VE only looked at the SWS but the FSS was explained to them. The results of the study go into an appendix of the DDR. One of the alternatives that the team suggested was to tilt the tower onto the rock face. Another option was to move the tower over to the left side but the access, more excavation and plus the known fish congregation point on the other side reduced this option to a design suggestion.
4. Next Steps
- 4.1. Next WFFDWG (TBD – regular meeting date conflicts with the Willamette Fisheries Science Review) The WFSR will be in Corvallis from Feb 6-8. There will be no WFFDWG meeting in February. The next meeting will be in March and Khan will take over as chair.