CENWP-PM-E 01 October 2020

MEMORANDUM FOR THE RECORD

Subject: Final minutes for the 01 October 2020 FFDRWG meeting.

The meeting was held via Web-Ex and conference call.

In attendance:

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| --- | --- | --- | --- |
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1. Final decisions or recommendations made at this meeting.
   1. Ebner will investigate the grid line measurements on the JDA tailrace at ERDC and send to the group.
   2. Comments on the 60% DDR/P&S John Day Turbine Rehab are due on 05 October 2020.
2. The following documents are provided or discussed at this meeting. All documents can be found at: <http://pweb.crohms.org/tmt/documents/FPOM/2010/FFDRWG/FFDRWG.html>.
   1. Agenda
   2. John Day Turbine Rehab presentations (NWP)
   3. Rock Removal PDT presentation (NWP)
3. Ongoing project updates:
   1. John Day Turbine Rehab – *Steve Sipe (PM), Curtis Lipski (TL),* *Jon Rerecich (FL)*

* 60% DDR/P&S review comments are due 10/5 (Monday)
* 9/21 plan-in-hand site visit – At the site visit, there was a discussion of unit 1 and whether it should be a Kaplan or fixed blade. Currently, there is a limit of 100MW. The objective is to maintain FPP criteria and good entrance conditions. On the site visit day, the MW was 140 with tailwater at 160.5 and the entrance looked okay. Unit 1 is a good candidate for a Kaplan. The post construction evaluation plan hasn’t been decided. VanDyke asked if there is a plan for the skeleton bays. During phase 1A, skeleton bays were considered. The economic modeling determined that the investment would not be worth the cost. Sipe confirmed that the scope is for units 1-16. Morrill is surprised that considering the power demands in the next 50 years that they wouldn’t need additional power. The problem is flow of the river and JDA can only use 14 out of the 16 units with the current flow. The bottle neck is at MCN even with the improvements.
  + *Clarifications (added after the meeting):*

1. *The analysis completed as part of the Phase 1A effort supports replacing turbine runners for 14 of the 16 units at JDA and is based on a snapshot of estimated costs, electricity pricing, and a specific type of plant operation. To account for potential changes in the future, the contract will be constructed in such a way, with the use of optional items, as to allow for up to 16 turbine runners to be replaced. The final decision on the number of runners to be replaced will be made well into the contract execution once the PDT has better costs, pricing, and powerhouse operation information.*
2. *The brief discussion of MCN being a “bottle neck” was incomplete. MCN has often had relatively high levels of involuntary spill due to powerhouse capacity and other factors, however, MCN powerhouse configuration in the future and total river flow will not impact JDA total flows (other than DO levels).*

* Presentation (Shide) – The project will replace up to 16 turbines and rewind up to 16 generators. All new turbines will be Improved Fish Passage turbine; the terminology has changed from fish friendly turbine. The project is currently in Phase 1. This phase is expected to last 3 years and depending on how many iterations of design, construction wouldn’t start until 2031. The powerhouse configuration is unit specific. A mix of fixed and adjustable blades will be evaluated while taking into consideration the unit priority. Several design options include oil free hubs, increasing the efficiency and changing the number of turbines, station service changes and a new idea that is an overlap of adjustable and fixed blades. The collaboration design process will include the CFD modeling and ERDC observational model. In the DDR, the team identified 14 factors for the decision making. Bettin asked if a fixed blade could run in synchronous condensing (SC) mode. Shide said that either fixed or Kaplan can run in SC mode, but they are having trouble with the hydraulically locked units at JDA. HDC must modify the units in order for them to SC. Bettin said that currently adjacent units cannot SC due to the transformers. The PDT is looking at adding piping, every other unit or low priority units to allow for SC. The team is also looking at two units per transformer instead of four. Lorz asked if there are advantages to fixed or adjustable on an SC unit. Shide said there is no advantage but the adjustable is lower in elevation. Lorz asked if the PDT is considering draft tube modification like IHR. The draft tube will be looked at in January at the ERDC trip. There will be options to review draft tube modifications and it is part of scope. Lorz understands the importance of flexibility and reserves at JDA. He questions how many fixed blades will go in and wonders if it is worth the cost of modeling for a couple of units. Shide said that fixed blades are better in every aspect except operating range. Even a couple of Kaplans can expand the flexibility of the system. Shide isn’t sure of the values of the reserves and reserves are system wide that can be manipulated. Lorz thinks they need to be working with BPA to have the dollar value of the reserves. He worries that the team will spend a lot of time and effort and then find out only one or two can go in. Sipe confirmed that they have been working with BPA. Sipe talked to people who have said that the reserves can be held at Chief Joe. Rerecich said comments are due Monday, October 5.
* Hydraulic Modeling (Litzenberg) The previous ERDC physical model was 1:80. After adding the flow deflectors, the model didn’t accurately reflect the real-world conditions. The old model had friction and less energy came down the spillway. The energy coming out of the powerhouse was also higher than it was supposed to be. The new physical model was built in 2018 with the redesigned spillway. It is very large about the size of a football field. Tow boat operators confirmed the energy out of the spillway is now like real life conditions. The team used the BPA tailrace condition video to validate the model. The conditions were validated by CFD and the ERDC pink dye trial. Litzenberg said that the flow from the adult ladders has been added since the trip in 2018. Morrill asked about the lines in the grid in the tailrace. Ebner will investigate the length of the grid lines. There is also an observational model of a turbine that should be completed by 2021. Ebner said that there will be a packet of information coming as requested by Bellerud. Morrill requested that the material be shared with the group.
  1. Bonneville Spillway Rock Removal – Jeremiah Woodard (PM), Max Wilson-Fey (TL), Ida Royer (FL)- The project was presented at the last meeting. Modeling is progressing but no new updates.
  2. Review recent survey results (Ebner) - The hydro-survey was conducted on 01 September. The data has not been processed by the GIS section. A preliminary picture created by the data was shown. There are rocks in the stilling basin of bay 17 and bay 2. Bay 5 and bay 7 have a mass but Ebner is not sure what it is. The GIS people need to do another plot and should be completed by next week. The apron, besides bay 17, is clean. A PDT is working on a project to remove the rocks. The construction is scheduled to start in February. The mass in bay 5 and 7 can be reviewed by processing the data; there is no need for another survey. Lorz asked about volume estimates. Ebner thinks it is similar to 2017 but will update volumes when she knows. BON was above 150Kcfs for ~200 hours this year.
  3. Bonneville Second Powerhouse FGE – *Jim Adams (PM), Bridget Bell (TL), Jon Rerecich (FL)*- the team had to work through some technical issues on the contract. They will re-solicit the contract next week. The award will be mid-November. The timeline now must be adjusted. The PDT is coordinating with Operations to make sure keeping MU15 out of service past the IWWP will work with the outage schedule.

1. New and upcoming projects for FFDRWG coordination:
   1. The Dalles AWS Trash Rake – *Mark Dasso (PM), Artem Kuryachy (TL), Jon Rerecich (FL)-* Chane had briefed SCTthat he has found funding. No update on the project.
   2. Fish Accords Adult Lamprey Passage Improvements – *Bob Winters (PM), Jonathon Brink-Roby (TL), Jacob Macdonald (FL)*
      1. Multiple design efforts beginning in FY21 for FFDRWG coordination
      2. Initial priorities being considered include extensive minor modifications to the Bradford Island fishway, a complete redesign of the Washington Shore control section, entrance improvements at B-Branch and John Day South, and new lamprey passage structures in the transition pools at all three dams.
      3. BON – Bradford Island system. In 2006, an LPS was completed in the control section. There is still more work on the entrance of the B-branch and the serpentine section. Macdonald is expecting the entrance modifications to be like the Cascade Island modifications. The serpentine section modifications will be paid for by both lamprey and salmonid funding since it would benefit both species. Morrill asked about the WA SH serpentine section PIT detection system integration. He wants to make sure that there is collaboration between PSMFC and the Corps so there is no lapse in adult salmonid detections. The construction is in 2024 at the earliest. Macdonald recommends replacing the antennas now because the construction is a long way out. Warf said that they have a new design for the antennas. The old antennas are breaking under their own weight. The new antennas could be reused in another location, specifically Bradford Island. Conder asked if the design for the overflow weirs will be integrated with the PIT detections system. The PIT detection system added to the weirs increased the height of the weir. Conder would prefer that the weir design includes the PIT detection, so the overflow weirs are the correct height. Conder expects all work to be completed within the IWWP. The Bi Op has reiterated the concerns about working outside the window. Bettin asked about the LFS hatch. During the outage, the divers will install the new hatch and the hatch is being fabricated now. Hausmann is coordinating the work.
      4. TDA – The plan is to build a new LPS for the EFL in 2022 and modify weirs 154-157.
      5. JDA – The plan is to increase the size of the collection box at the NFL LPS and look at volitional passage. On the south ladder, the team wants to make improvements to the SE entrance weir and add an LPS at transition pool. In 2013, there was a counter installed that they will be modifying. The plating on the NFL fixed weir is coming off under water. They are looking at a replacement for the weir that will work for hydraulics and lamprey passage. Lorz asked about the NFL LPS water source. The pumps have been problematic. A design team is looking at using a gravity feed water system with water from the ladder. Macdonald confirmed that this topic is not just on the list of proposed actions but actively being worked. The team is investigating volitional passage as well.

**The next meeting is 03 December 2020.**