

Detroit Long Term Temperature Control and Downstream Fish Passage Water FPT Update: Oct 2014

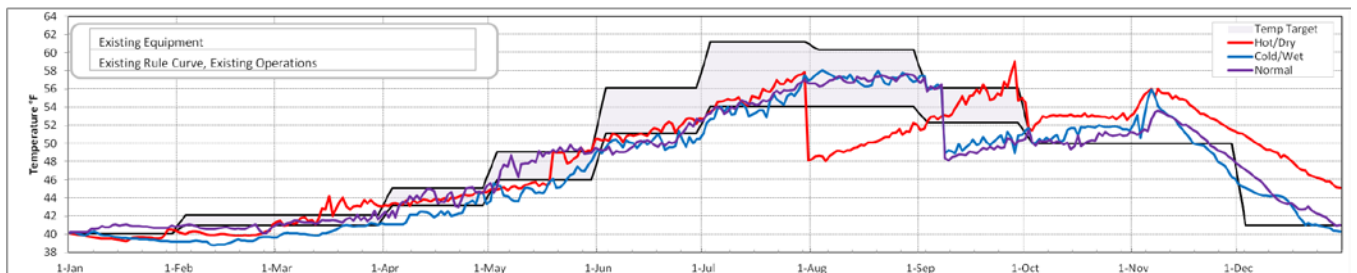
1. Description and Goal/Objective:

The NMFS 2008 BiOp identified the RPA to avoid jeopardy of ESA listed fish in the Willamette basin. Measure 4.12.3 of the RPA (Detroit downstream passage) requires downstream fish passage at Detroit dam by 2023. Measure (5.2) in the RPA requires the Action Agencies to minimize water quality effects associated with operations of Detroit and Big Cliff dams by making structure modifications or major operational changes. Further, Measure 5.2 directs “if feasible and more efficient to achieve both purposes through one construction project, the Action Agencies will include downstream fish passage in this effort, rather than delaying it until 2023, as stated in RPA measure 4.12.3.

The objective is to address the feasibility of and project-specific alternatives for achieving long term temperature control (e.g. using existing equipment with upgrades, or with a new permanent facility) that can provide target water temperatures for listed species in the North Santiam River, and minimize the number of TDG exceedances in the North Santiam River. The temperature control design will take into account the potential for inclusion of downstream fish passage facilities, if it is determined to be feasible to combine both structures.

This study shall develop a broad range of temperature control structures and TDG reduction alternatives, evaluate, reduce, and refine the alternatives, and present relative costs. Potential requirements and costs to model and prototype field test alternatives studied in this report are also part of the scope, but call for much less detail.

In general terms, operational temperature control is hampered by the current project configuration due to the inability to access warm water (upper part of the reservoir) when the pool falls below the spillway crest, resulting in a release of cooler water than desired in Summer/early Fall. As the pool continues to draft (per minimum outflow and/or rule curve), the warm water approaches the penstock elevation resulting in releases of warmer water than desired (early Fall/Winter)



2. Key Milestones/Upcoming Activities:

- HDR task order moving along: construction considerations, cost estimates.
 - refinement of stand-alone SWS structure and independent mooring of FSS
 - development of FSO alternative
- Review of FSO and Stand alone SWS alternative development Nov 2014

3. Issues/Changes from Previous Meetings:

We are moving forward, refining parameters for the FBW with regional input and providing results to SLAM/VSP models.

Fish Passage PDT will investigate flow rates/flow nets for Floating Surface Outlet alternative (formerly known as “glory hole”). Original testing showed 400 cfs constant outflow worked (temperature wise), 1000 cfs constant outflow did not (although there was only a short window that flows needed to be reduced).

Flow net work: look at potential for FSO device to connect to Test Conduit, compare to using upper RO closer to the Penstocks.

Fish Passage PDT will also coordinate with High Head Bypass team, ensuring the specific design criteria needed at DET will be collected in that effort. If some data gaps exist, what could be “filled” with the FSO testing.

Due to authority issues, we will move the temperature control investigations back to EDR level, but continue to develop the alternatives and explore construction methods. One alternative that has limited data on is the FSO, so in addition to the flow rate/net work mentioned above, the PDTs are working with an AE to develop design concepts for the FSO and construction methods for this and the SWS alternative, and mooring systems for a juvenile fish collector. This information will provide cost information to the COP team, and will be provided to the FPT for review.

**Foster Dam Downstream Fish Passage PDT
WATER FPT Update: 28 October 2014**

1. Description and Goal/Objective:

- a. The purpose of this PDT is to evaluate existing information related to downstream fish passage at Foster Dam and develop conceptual actions for possible long-term solutions to improve downstream passage.
- b. The 30% Engineering Documentation Report (EDR) will describe the existing structural and operational conditions, provide a list of alternatives (operational and structural) for enhancing downstream passage, and a comparative evaluation of the merits of individual alternatives to be further examined in the development of the EDR.
- c. Major tasks remaining include:
 - i. Completion of the EDR - summarizes alternatives and documents selection of preferred alternative.

2. Key Milestones/Upcoming Activities:

Milestone	Date (Mo/Yr)
Draft 30% EDR	Jan 2015*
60% EDR	2015*
90% EDR	2015*
100% EDR	2015*

3. Issues/Changes from Previous Meetings:

The PDT is reviewing and incorporating feedback from the FPT on our initial list of Measures and proposed Evaluation Criteria in preparation for the draft 30% Alternatives EDR scheduled for early 2015. *EDR schedule with associated contents at each milestone will be updated by the next FPT meeting.

High Head Bypass Water FPT Update: Oct 2014

1. Description and Goal/Objective:

Both the Cougar Downstream Passage PDT and the Detroit Downstream Passage and Temperature Control PDT are assessing alternatives that include bypasses as a means of fish transport through/around the dam. These volitional systems would likely have lower O&M costs and may have similar or better biological performance than a non-volitional system that uses trucks to transport fish. Though high head bypass systems have been used at Willamette dams in the past none are currently in use. The reasons that they were removed from service included high injury and mortality within the bypass system, and in some cases, failure of adequate passage (upstream and down) elsewhere at the dam.

The feasibility of constructing and operating a bypass system following current NMFS guidelines will likely be difficult to achieve and be costly, likely leading to truck transportation. Therefore, NWP recommended that a high head bypass system be investigated to determine design parameters and considerations for our high head, with large forebay fluctuation, dams where downstream passage is being considered. If successful, this data will facilitate attaining concurrence of volitional bypass systems, at our dams that support such transport, by WATER stakeholders.

The objective of the project is to investigate, design, and construct an experimental induction system to transport fish through/around a high head dam. This effort will need to consider:

- The design constraints for production scale bypass systems at both Cougar and Detroit
- Potential locations where such a system could feasibly be tested
- Review and consideration of the components of historic systems and performance

2. Key Milestones/Upcoming Activities:

- 90% Review – FPT review underway – Awaiting comments.

3. Issues/Changes from Previous Meetings:

Proceeding with design in support of testing. Collecting data on the condition and configuration of pipes in the forebay and through the dam.

Middle Fork Willamette Temperature Control and Downstream Fish Passage Water FPT Update: Oct 2014

1. Description and Goal/Objective:

The purpose of this study is to evaluate existing information related to downstream passage and water temperature conditions in the Middle Fork Willamette River specific to Dexter, Lookout Point, and Hills Creek dams and develop conceptual actions to address downstream passage and water temperature control for possible long-term solutions.

The Middle Fork Willamette currently is the most challenging system in regards to improving fish passage and water quality due to the interrelated and complex nature of the three dam system (Dexter/Lookout Point/Hills Creek). Habitat quality and quantity available above the dams and historic information suggests substantial production of spring Chinook could occur above the projects if adequate downstream passage and water quality conditions could be provided. Approximately 95% of the available salmonid habitat is located above Dexter Dam. Both Dexter and Lookout Point reservoirs contain exotic warm water species that may be causing high levels of reservoir mortality to juvenile spring Chinook salmon. Additionally, water temperatures under normal operations typically result in complete spring Chinook recruitment failure in the limited habitat available below Dexter Dam due to elevated temperatures in the fall during spawning and incubation.

The goals and objectives of this study are to develop long-term solutions to address downstream passage survival and water temperature improvements to increase the number of wild spring Chinook in the Middle Fork Willamette. Solutions may be structural or operational and the level of improvement for long-term solution will be determined through the COP process which will assess the technical feasibility, biological benefit, and cost to determine the proper action within this subbasin. By spring 2015, this PDT will identify a preferred alternative to address passage and water temperatures, including cost estimates. This information will be used for planning budget purposes and will also be the basis for any construction actions that may be pursued. The 2008 BiOp states that a downstream passage solution be constructed by December 2021 (if structural solution) and begin operations by March 2022.

2. Key Milestones/Upcoming Activities:

- 30% EDR FPT review Nov 2014 – Currently out for NWP-DQC and BPA review

3. Issues/Changes from Previous Meetings:

Temperature Targets: Regional team members attended another meeting. Great discussion about temperature control as it affects ESA listed fish. Somewhat unique solution – Temp control at Hills Creek, DSP at Lookout Point.

Data inventory: Fenton Khan is starting to populate a biological data inventory sheet. So far, it's fairly sparse, but it will help show the RM&E timeline for collecting the information and how that might feed into study design/implementation schedules.