

Project Name	SA 2: Mayfield Juvenile Bypass System Remodel
Date Proposal Summited	February 04, 2025
Date of Requested Decision	March 04, 2025
Requested By	Tacoma Power – Matt Bleich
Date of Decision¹	

¹ Decision will become final if committee members who were not present at this meeting do not oppose this proposed decision within 7 days.

FTC Decision and Justification

The FTC approved the decision to support Tacoma moving forward toward final design and construction the Mayfield Juvenile Bypass System Remodel based on the 25% design proposal, including Alternative 3B, with future coordination at design milestones as described herein.

FTC representatives present included Tacoma Power, WDFW, Ecology, Yakama Nation, Trout Unlimited.

NMFS was not present at the meeting. They notified Tacoma Power ahead of time that they would be refraining (abstaining) from the vote because the information provided to date was not enough for their decision-making and look forward to receiving more information on the proposal as it becomes available.

Proposed Decision for Consideration

Obtain FTC approval and support of the 25% design proposal after satisfactorily addressing any questions and comments from the FTC. Proposal includes the Alternative 3B that includes moving the counting house and eliminating the sagging bridge. This decision document seeks FTC support to move forward toward final design and construction of Alternative 3B to complete this project in support of Settlement Agreement 2 objectives prior to seeking funding approval and staffing support.

Background

Settlement Agreement Article 2, Downstream Fish Passage at Mayfield:

License Article 2:

d) Tacoma shall implement additional downstream passage facility modifications or measures and file additional reports at 18-month intervals in accordance with the preceding paragraph until either: 1) a 95% downstream fish passage survival rate is achieved; or 2) the National Marine Fisheries Service and U.S. Fish and Wildlife Service, in consultation with the FTC or agencies, determine that passage effectiveness and survival are high enough to support self-sustaining populations of anadromous fish stocks; that protection of anadromous fish migrating downstream at Mayfield Dam has been maximized by all reasonable measures and that adjustments to hatchery production (using then-existing

facilities) and/or habitat measures will be required in lieu of further attempts to improve downstream passage at Mayfield Dam.

Beginning in 2013 a series of directed studies were conducted to evaluate the survival of Steelhead, Coho, and Fall Chinook salmon through various routes at Mayfield Dam. The 2013 study indicated that a large proportion of tagged fish (89% of coho; 84% of steelhead; and 58% of Chinook) released into the forebay above the louvers, entered the juvenile bypass system (JBS) in lieu of the turbines (Steig et al 2014). However, passage survival for all three species was lower than anticipated with Coho and Chinook smolts exhibiting significant delays in passing from the secondary separator to the bypass tunnel and into the bypass system. This set the framework for the 2014 and 2015 studies that focused primarily on investigations of fish survival and delays through the fish bypass system. Results indicated that smolt survival through the bypass system varied as a function of species: Steelhead (98%), Coho salmon (80%), and Chinook salmon (28%; Steig et al 2015). Chinook smolts also exhibited significant delays in passing from the secondary separator through the bypass to the counting house. Two primary problems have been documented: dewatering within the secondary separator and the suspension bridge. To further investigate dewatering, three JBS operational regimes were implemented for evaluation: 1) the continuous operation of all 3 pumps that pull water through the secondary separator, 2) a secondary separator drawdown once during the treatment, and 3) the normal secondary separator operation that utilizes 1-3 pumps depending on the river flow through the dam. These studies illustrated that JBS passage survival was significantly higher during the drawdown treatment (0.41 ± 0.07), when compared to the continuous operation of all three pumps (0.25 ± 0.06) and the normal baseline operation that utilizes 1-3 pumps (0.19 ± 0.06). As a result of these findings, and per the direction of the FTC, the manual process of flushing has been automated resulting in increased drawdowns since 2020.

Although the improvements to the Secondary Separator have helped with fish survival in one section of the JBS, the suspension bridge remains a challenge due to a sag in bridge that causes fish to hold resulting in mortality. An Alternatives Analysis was commissioned by Tacoma in 2021 to evaluate options and determined Alternative 3A (existing counting house and crane with left bank JBS) to be most favorable. Beginning in 2023, a preliminary design began and included tasks to evaluate flaws for the selected alternative and evaluate cost. This also included a re-evaluation and cost/benefit analysis between Alternative 3A along with Alternative 3B, which includes a new counting house on the left side of the bank. Following this 25% design and analysis, it was concluded that moving the counting house (3B) at this design/build phase was more effective in improving fish passage survival rates by eliminating the sagging bridge and facilitating a quicker and safer fish arrival. The new counting house will increase capacity and allow for a safer fish exit below turbine wash. Prior to seeking funding approval and staffing support, Tacoma seeks FTC support to move forward toward final design and construction of Alternative 3B. The FTC would be kept apprised of design status at 60%, 90% and final design. In addition, upon request the 60%, 90% and final design drawings and other design materials will be shared and a formal 30-day review period provided. All necessary permits would be obtained prior to execution of work.

Coordination Need
Support of all FTC members.

The FTC will be kept apprised of design status at 60%, 90% and final design. At the request of FTC representatives, the 60%, 90% and final design drawings and other design materials will be made available, and a formal review 30-day period will be provided.

Discuss the need, options and potential timeline for implementing an evaluation of the Mayfield juvenile collector to determine the current collection efficiency of the system and define the proportion of outmigrants that utilize the collector versus moving through the turbines. This will inform potential infrastructure needs for incorporation into future designs of the new counting house (e.g., PIT tag detectors).

Summary of Potential Changes

Design and construction of a redesigned Juvenile Bypass System for Mayfield will result in significantly higher survival rates, or all fish captured and transported through the facility, with Fall Chinook anticipated to experience the greatest positive benefit.