

<b>Project Name</b>	Cowlitz Falls Dam 2016 Evaluations
<b>Date Proposal Submitted</b>	2/22/2016
<b>Date of Requested Decision</b>	3/1/2016
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**FTC Decision and Justification**

The decision to move forward evaluating the Existing Collector at Cowlitz Falls Dam and the Smolt Collector at Cowlitz Falls Tailrace in 2016 using PIT-tags similar to proposed approach for 2015.

**Proposed Decision or Consideration**

The Existing Collector at Cowlitz Falls Dam and the Prototype Smolt Collector at Cowlitz Falls Tailrace will be evaluated for Fish Capture Efficiency and Retention Efficiency in 2016 using PIT-tags.

**Background**

In 2015 the Cowlitz Falls Fish Facility was operated under baseline condition with a C-slot baffle panel configuration. Environmental covariates in Lake Scanewa and Operations near at Cowlitz Falls Dam were measured as covariates to describe Fish Capture Efficiency relationships. In the 2015 draught year Season-wide FCE estimates were 82.2% (range = 67 to 91%) for steelhead and 90.7% for coho salmon (range = 57 to 99%). However for Chinook salmon, extreme weather conditions may have been responsible for low season-wide FCE estimates (4%) and consistently poor estimates across release groups (range = 1 to 15%).

In 2014 the Smolt Collector at Cowlitz Falls Tailrace was installed for the first time. Installation was delayed 3 weeks, and was not tested under as great a range of conditions as anticipated (only twice exceeding 2,500 cfs; designed for 0-5,000 cfs).

Preliminary results in 2014 illustrated that Fish Capture Efficiency was not effective, with 0% of PIT or coded wire tagged fish recaptured (n=590 and n=590, respectively), Tacoma 2015 in draft). Further, radio tagged fish showed low Discovery Efficiency (10%), and no propensity for Entrance (0.0%) or Retention Efficiency (0.0%) (n=230) (USGS 2015 in draft).

While the mark-release groups from Lake Scanewa illustrated challenges with the collector, additional insights were gained with small groups of marked fish released directly into the live box, net system, and directly in front of the collector. In these instances it was observed that live box Retention Efficiency was (50%, n=10), while net Retention Efficiency and Entrance Efficiency were each (0.0%, n=10 and n=8, respectively) (Tacoma 2015 in draft).

Total fish collection for unmarked fish was also low with 102 Chinook smolts captured in 2014 between the start date and the date of removal (September 12, 2014). While collection rates were slightly higher following lateral movement of the trap and during the two discharge events above 2,500 cfs sample sizes were low resulting in weak relationships (Tacoma 2015 draft).

In FTC Decision Document 2014-8 dated 10/24/14, the decision was made to install the Upper Riffe Lake Collector (aka Smolt Collector at Cowlitz Falls Tailrace) in 2015 in a similar configuration to 2014 so that it may be tested across a more full range of flows. Additionally, it was determined that guide nets would be implemented at lower flows if 2014 data warranted. This was not possible in 2015 due to draught conditions that resulted in lake levels lower than the minimum design operation conditions for the prototype collector. Instead these actions will be implemented in 2016 as described in Decision Document 2015-3.

Tacoma proposes the inclusion of guide nets to provide a robust indirect test for improved Discovery Efficiency, by evaluating both FCE of PIT tagged fish and capture rate of unmarked fish both originating from Lake Scanewa, and distributed through the water column upon approach to the Smolt Trap at Cowlitz Falls Tailrace. Further, Tacoma recommends a more rigorous evaluation of Retention Efficiency in the live box and in the net via weekly releases of PIT marked Chinook.

**Coordination Need**

Marking and release plan to be developed and implemented with Tacoma Power and WDFW staff.

Preliminary 2016 results will be evaluated by FTC in October. Steps for 2017 will be conducted based on larger strategy associated with first year evaluation of Cowlitz Falls North Shore Collector.

**Summary of Potential Impacts**

PIT tagged steelhead, coho and Chinook smolts released at the Day Use Park for Performance Monitoring will be used to evaluate Fish Capture Efficiency at the CFFF and the Smolt Trap at Cowlitz Falls Tailrace. This is anticipated to include up 7 groups of 110 steelhead (770 total) 11 groups of 110 coho (1210 total) and 8 groups of 110 Chinook (880 total). Additionally, PIT tagged Chinook will be used to evaluated the Smolt Trap at Cowlitz Falls Tailrace. This is anticipated to include up to 8 groups of 30 (240 total).