

<b>Project Name</b>	Smolt Collector at Cowlitz Falls Tailrace Study Design 2015
<b>Date Proposal Submitted</b>	2/3/2015
<b>Date of Requested Decision</b>	3/3/2015
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**FTC Decision and Justification**

The decision to move forward evaluating the Smolt Collector at Cowlitz Falls Tailrace in 2015 using PIT and VIE and not radio telemetry is based on knowledge gained in 2014.

**Proposed Decision or Consideration**

The Prototype Smolt Collector at Cowlitz Falls Tailrace will be evaluated for Fish Capture Efficiency and Retention Efficiency in 2015 using PIT and VIE. Radio Telemetry will not be used to evaluate the Smolt Collector at Cowlitz Falls Tailrace in 2015.

**Background**

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. These actions will be implemented in 2015. The same decision document also indicated in the “Summary of Potential Impacts” section that “90 fish are anticipated to be implanted with active tags for Directed Studies evaluated Retention Efficiency, Entrance Efficiency and Discovery Efficiency around the Upper Riffe Lake Collector.”

Tacoma recommends not conducting radio telemetry studies in 2015, due to the apparent need to focus on multiple components of the prototype. Instead Tacoma proposes the inclusion of guide nets. This will provide a robust indirect test for improved Discovery Efficiency, by evaluating both FCE of PIT tagged fish and capture rate of unmarked fish 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 VIE marked Chinook.

**Coordination Need**

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

Preliminary 2015 results will be evaluated by FTC in October to determine appropriate 2016 steps for the Smolt Trap at Cowlitz Falls Tailrace. Examples of resulting data may include a greater focus on Retention Efficiency by modifying live box or net structures, or gaining additional information regarding Discovery Efficiency.

**Summary of Potential Impacts**

PIT tagged 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 to 8 groups of 120 (960 total). Additionally, VIE tagged smolts will be used to evaluate the Smolt Trap at Cowlitz Falls Tailrace. This is anticipated to include up to 8 groups of 30 (240 total).