Cowlitz Fish Technical Committee **2017-09**
Decision Document

Project Name	Cowlitz Restoration and Recovery Habitat Assessment Scope of Work
Date Proposal Submitted	September 26th, 2017
Date of Requested Decision	October 2nd, 2017
Completed By	Florian Leischner

FTC Decision and Justification

Proposed Decision or Consideration

The CRR subcommittee has been working on the scope of work for the CRR Habitat Assessment since June and recommends FTC approve:

1) Expenditure by Tacoma Power of up to $215,000 from the Cowlitz Restoration and Recovery (CRR) Fund to complete the proposed scope of work towards implementing a habitat assessment and creation of habitat evaluation tools for the Upper Cowlitz basin;
2) Reimburse Tacoma from the CRR Fund once federal (NOAA/NMFS and FERC) approval of the Plan to Abandon Upstream Volitional Passage, the Cowlitz Restoration and Recovery Fund Implementation Plan, and the CRR Implementation Strategy has been secured (see Coordination Need section).

A draft scope of work, schedule, and budget narrative was provided to FTC members for review on September 8th with comments requested by September 21st. No comments were received.

Background

Tacoma Power, in consultation with the Cowlitz Fisheries Technical Committee (FTC), finalized and submitted the "Plan to Abandon Volitional Upstream Fish Passage" to the federal services for approval according to Settlement Agreement Article 3.

"Tacoma Power proposes to abandon volitional upstream fish passage for the Cowlitz Hydroelectric Project during the current license period and implement the Plan to Abandon Volitional Upstream Fish Passage and Cowlitz Restoration and Recovery (CRR) Fund Implementation Plan (January 2014)."

The CRR Implementation Plan and Strategy provides general guidance regarding the use of the CRR Fund and recommends expenditure of the funds to support a habitat assessment of the Upper Basin to identity and prioritize restoration and protection actions to be funded by the program.

The CRR subcommittee considered a range of alternatives for development of habitat evaluation tools and has prepared the following scope of work provided as Table 1 as the preferred scope of work to complete a desktop exercise to obtain updated habitat assessment information to guide the prioritization of projects to be funded by the CRR program. The preferred scope of work includes: a literature review, compilation of existing geo-spatial data sets, review of EDT model inputs, data quality, and results, collection and digitization of historical channel form and assessment of geomorphology, hydraulic flow modeling of the Big Bottom valley in the Randle area, habitat unit mapping and fish capacity estimating, coordination with the Cowlitz Monitoring and Evaluation group to track status and trends of outmigration timing and adult to outmigrant survival rates in the upper basin, and finally, review of existing climate forecasting information relevant to the Upper Cowlitz.

The CRR subcommittee considered other approaches for obtaining updated habitat and fish information to inform prioritization of CRR projects and ultimately came to consensus to request CRR funds to build technical habitat evaluation tools. Other approaches and work items considered by the CRR subcommittee are documented in Table 2 with rationales for not including them the recommended proposal to the FTC.

Table 1. CRR Recommended Scope of Work- habitat data gathering and analysis tool development.

#	Recommended Task Items	Description	Lead	CRR Fund	Schedule
1	**Literature Search, EDT Review, and Data Compilation**	**Compile data sets to build a foundation of knowledge to develop analysis tools and identify data gaps. Review EDT model results, inputs, and validations metrics, summarize strengths and weaknesses.**	**Tacoma CRR**	**$6,000**	**Dec 2017**
2	**Geomorphic Assessment**	**Digitize channel alignments and channel plan form evolution using available historical imagery record.**	**Tacoma CRR/ Consultant**	**$17,000**	**Dec 2017**
3	**Hydrology and Flow Modeling**	**Utilize HEC-RAS2D software to generate flood, base and RI model runs for mainstem Cowlitz Downstream of Packwood**	**Tacoma CRR/ Consultant**	**$124,000**	
3.1	*Start-up flood model*	Run coarse level 100 year flood model of 24 miles Cowlitz River	Consultant	$8,000	Dec 2017
3.2	*Lower flow (in-channel) model runs*	2D model runs for annual mean, 2, 10 year RIs for 100% coverage in areas identified by CRR and LCFRB stakeholder group	Tacoma CRR/ Consultant	$111,000	Jan 2017- March 2018
	Subtask	Topo-bathy Lidar 15,000 valley bottom acres	Consultant	$68,000	
	Subtask	Base model (annual mean low) set up, run, QA/QC	Tacoma CRR/ Consultant	$21,000	
	Subtask	2 year and 10 year RI run, QA/QC	Tacoma CRR/ Consultant	$21,000	
3.3	*Mapping and reporting*	Produce base map tiles of model results and evaluate effects	Consultant	$5,000	
4	**Habitat-Based Production Estimates**	**Utilize main channel and side channel habitat unit digitization methods (Beechie et al 2005) and paired fish density literature values (Beechie unpublished data) to generate spring Chinook smolt production estimates to compare to EDT.**	**Tacoma CRR**	**$18,000**	**March-June 2018**
5	**Spring Chinook Population Monitoring**	**Work with Tacoma M&E biologists to generate adult to outmigrant estimates and monitor status and trends of productivity over time and in response to CRR activities.**	**Tacoma M&E/WDFW**	**NA**	**Ongoing**
6	**Climate Change Modeling**	**Compile relevant, existing data sources to evaluate effects of climate change on temperature, snow pack, flow, groundwater, and biota**	**Consultant**	**$2,000**	**May-Sept 2018**
7	**Reporting and Delivery of Analysis Tools**	**Compile technical reports, maps and data from each task and prepare culminating report.**	**Tacoma CRR/ Consultant**	**$5,000**	**May-Sept 2018**
Sub-Total				**$172,000**	
Contingency 25%				$43,000	
Total NTE Estimate				**$215,000**	

Table 2. Habitat Assessment work items considered by the CRR subcommittee but not recommended.

Work Item	Description	Rationale not to recommend work item
The LCFRB SRFB proposal to develop the Habitat Strategy with no additional work items	LCFRB's SRFB proposal proposes to utilize the existing EDT model results, perform a literature search, gathering existing information, identify data gaps, collect field surveys to fill data gaps, host community outreach workshops, and create a working group inclusive of a consultant to site and prioritize projects to benefit multiple species in the upper basin, and complete a preliminary design for one project. Tacoma Power would not develop habitat evaluation tools.	The CRR subcommittee decided that the LCFRB habitat strategy process should not be a stand-alone project. The group decided the habitat strategy process would benefit from habitat evaluation tools provided by Tacoma Power. The subcommittee felt updated habitat information to look at landscape level processes and validate EDT-based recovery plan targets was a valuable investment of CRR capital and directed Tacoma to develop a proposal focused on habitat assessment metrics geared towards Spring Chinook that would feed into LCRFB's habitat strategy development.
Fish focused study	Conduct spawning ground, snorkel, and beach seining studies to determine fish distribution and abundance and develop a life cycle model for the recovering upper Cowlitz spring chinook population.	This type of survey really needs to be completed over a long time scale to account for natural inter-annual variability expressed by salmon populations. This type of information does not provide process based evaluation of habitat form and function and therein does not help inform restoration actions needed to lift habitat capacity and salmon productivity of the upper watershed.
Re-run of the EDT Model	Perform another run of the EDT model with updated watershed information.	After much discussion, the subcommittee decided that running EDT with updated information would not likely change the reach designation (Tier 1 and 2) and project priority list. The subcommittee decided that a secondary check of the EDT model assumptions and output would be of higher value.
2D Hydraulic Modeling for the whole upper basin	Build a 2D model for the Upper Cowlitz and Cispus (180 miles) and run annual mean low flow, 2year, 10 year and 100 year reoccurrence flows.	Hydraulic modeling at this scale is can be data intensive, especially for lower flow recurrence intervals. The Subcommittee considered the whole upper basin as the area of interest and identified the "Big Bottom" valley downstream of Packwood to Lake Scanewa as a likely candidate for the 2D model (broad floodplain, high rearing potential, and capacity for flood storage). The subcommittee recommends initial modeling focus on the 24 mile stretch as the first run of the model to test this as an assessment method. The model could be expanded into other reaches if the results prove effective at evaluating landscape level processes and effects to fish and habitat.
Climate change modeling	Forecast future storm events and the shape and timing of the hydrograph when the upper basin becomes a rain dominated system.	Several tools already exist for predicting and forecasting climate effects. Rather than creating new models, the CRR subcommittee recommends focusing the proposal on utilization of existing resources to evaluate potential effects and barriers to meeting habitat restoration targets. If needed, the created hydraulic model can be re-run with updated inputs based on climate change predications and used to identify additional impacts to salmon in the upper basin.

Coordination Need
Expenditure of CRR funds is contingent upon NOAA Fisheries/NMFS approval of the plan to abandon upstream volitional passage and subsequent FERC approval. Tacoma Power will work with the CRR sub-committee to coordinate habitat assessment results with the development of the LCFRB's habitat strategy.

Summary of Potential Impacts
The proposed approach allows for investment of CRR funds to develop tools for evaluating the validity of EDT model results and will serve as the technical foundation for the LCFRB and their work group to build the Upper Cowlitz habitat strategy. The development of updated habitat assessment tools for preparation of the habitat strategy will lead to better formed and technically sound projects to be funded by the CRR program.