King County

INSTREAM PROJECT DESIGN CHECKLIST

For Design and Construction of Flood and Erosion Protection Facilities and Habitat Restoration Projects that May Include Large Wood Placement or Natural Wood Recruitment

Project Name Harris Creek Fish Passage Restoration – Snoqualmie Basin 2015

Project Manager Carolyn Butchart

River/River Mile/Bank Harris Creek, RM 5.0/Both Banks Date 4/20/2015

Check one or both:

X Project includes placement of large wood elements

X Project may influence the recruitment, mobility and accumulation of natural large wood.

Note: If the project is comprised of emergency work, then fill out and file this form within 30 days of completion of emergency work.

I. Project Background and Preliminary Design (30-40 Percent) Information

(Provide general information at a conceptual level)

1. Describe the overall river management context, strategy and objectives for the river reach. Refer to pertinent plans, policies or documents pertaining to flood hazards, salmon recovery, etc.

A fishway located in Harris Creek at the outfall of the NE Stossel Creek Way culvert is deteriorating and is currently a barrier to upstream fish passage. Harris Creek is a tributary to the Snoqualmie River and the fish passage barrier was prioritized in an assessment of fish barriers within the Snoqualmie watershed conducted by the Wild Fish Conservancy (WFC 2011). WFC developed a prioritized list of all surveyed fish passage barriers (complete and partial) in the Snoqualmie watershed largely following the guidance in the Washington Department of Fish and Wildlife (WDFW) Fish Passage Barrier and Surface Water Diversion Screening Assessment and Prioritization Manual (WDFW 2009).

2. Describe the goals and objectives of the project and its relative importance to the success of DNRP program goals and mandates. Identify funding source(s) and describe any applicable requirements or constraints.

The goal of the project is to provide unimpeded fish passage to more than four miles of upstream habitat in Harris Creek and its tributaries. The project will remove a non-functional 25-foot long fishway which prevents fish from accessing upstream habitat. The fishway is located at the downstream end of the NE Stossel Creek Way culvert. The project will construct approximately 90 feet of roughened channel with a well-graded bed mixture and logs. This channel work will restore fish passage in compliance with fish passage requirements described in RCW 77.57.030.

The project design was sponsored with a KCD grant and supplemented with SWM funding. Construction will be funded with SWM funds.

3. Describe the existing (and historic, if relevant) site and reach conditions, including structural features, channel form, and the presence of naturally-deposited large wood. Describe known utilization by salmonids and any important or unique biological or ecological attributes.

The stream channel downstream and upstream of the fishway is a low gradient, pool-rifle complex, with a bank full width of approximately 16 feet and no observed signs of bed erosion or head-cutting. The stream reach within the project area flows within a relatively wide, shallow, U-shaped glaciated valley with no signs of unimpeded access to its flood plain upstream or downstream of the project area. However, in the immediate vicinity of the fishway, the channel is confined between fill prisms associated with

roads. Small beaver dams, wood debris and wetlands are prevalent within the surrounding project reach channel and floodplain, and these characteristics persist for at least one mile downstream and half mile upstream of the project site. These channel and floodplain features, combined with a largely forested upstream watershed, contribute to a channel that is not susceptible to significant vertical changes in bed elevation. Horizontal channel movement is possible within the floodplain, but is limited by the numerous road crossings upstream and downstream of the site that limit lateral channel migration.

4. Describe what is known about adjacent land uses and the type, frequency, and seasonality of recreational uses in the project area. Are there nearby trail corridors, schools or parks? What is the source(s) of your information?

The project is located on private property and that there are no adjacent trails or other passive recreation uses/features nearby. The adjacent land use is rural residential properties and open space parcels. The creek, especially during the typical recreational season is a low flow system, getting to as low as single digit flows in the summer months. Recreational uses, if any, would be for wading at water depths up to the ankle.

5. If the project includes wood placement, describe the conceptual design of large wood elements of the project, including, if known at this stage in the design, the amount, size, location, orientation, elevation, anchoring techniques, and type of interaction with the river and stream at a range of flows.

The project will place four clusters of wood scaled to match the channel size and surrounding landscape. Each cluster consists of 4 pieces of wood, ranging between 4 and 14-inch diameter at breast height, with and without rootwads. Approximately two-thirds of the length of the wood will be buried to provide ballast. The other one-third of the tree will be placed within the low flow channel, oriented upstream at approximately 15-20-degrees. Some of the wood is expected to be in contact with water at all flows.

6. If the project includes wood placement, what is the intended structural, ecological or hydraulic function of the placed wood? What role does the placed wood have in meeting the project's goals and objectives? Is the project intended to recruit or trap additional large wood that may be floating in the river?

The purpose of the project is to provide fish passage in a self-sustaining channel and restore natural processes by the placement of woody debris that was historically abundant in Puget Sound lowland streams. The wood placement for this project is designed to mimic existing wood found on the site. A reference reach in Margaret Creek was used to help determine the size of wood. The quantity of wood varies widely in natural conditions and is very dynamic.. Woody debris provides structure, cover and hydraulic complexity in streams, an important and limited resource for fish habitat.

7. Is the project likely to affect the recruitment, mobility or accumulation of natural large wood, e.g., by encouraging wood deposition on or near the site or promoting bank erosion that may cause tree toppling? Describe expected site evolution and its potential effects on natural wood dynamics.

While the project may recruit a small amount of natural large wood, it is unlikely to recruit a significant quantity of additional wood. Harris Creek is a small creek that does not have the ability to move large pieces of wood and any small wood will likely pass through due to the steeper gradient within the project reach.

8. Describe how public safety considerations have been incorporated into the preliminary project design. For placed wood, address each of the considerations:

   a. Type, frequency, and seasonality of recreational use;

   Recreational uses, if any, would be for wading at water depths up to the ankle during the summer low flow months.

   b. Wood location, positioning, and anchoring techniques.

Four clusters of wood, four pieces per cluster, with and without rootwads, will be placed within the project reach. Two-thirds of the lengths of the logs will be buried to provide ballast up to the 100-year storm event. The exposed one-third length of the wood will be angled slightly upstream and will be engaged in the low flow channel.

c. Maximizing achievement of project goals and objectives while minimizing potential public safety risks.

This reach of Harris Creek is managed for open space and habitat values. Harris Creek is a wadable stream but flows are too low to support floating or boating. In addition, the project is located on private property so there is no general public access. The project does not pose hazards to the existing or potential recreational use of the project area. The project design team includes an ecologist and engineer with experience in wood placement, wood mobility, habitat benefits and public safety concerns.

d. Use of established and recognized engineering, geological, and ecological expertise.

The design follows the Washington Department of Fish and Wildlife roughened channel methodology described in the Water Crossing Design Guidelines (2013).

9. Has the project been reviewed and approved by a Licensed Professional Civil Engineer? Please list other licensed technical staff who have reviewed and provided input on the design (e.g., Licensed Geologist and Licensed Engineering Geologist). Specify the Engineer of Record for the design and any other Licensed Professionals who have sealed their portion of the design plans. Were all reviews and approvals completed?

Will Mansfield, P.E., is the Engineer of Record for the project. He has reviewed all project design elements and will stamp the project plans. Carolyn Butchart, P.E., is the Project Manager and project engineer and has completed the design including wood mobility analysis for wood placement.

10. Has the project been reviewed and approved by a King County Professional Ecologist (e.g., person with an advanced degree in aquatic and/or biological sciences from an accredited university or equivalent level of experience) if ecological benefits are an intended project objective, to evaluate the consistency of the design with project goals, existing environmental policies and regulations, and expected or known permit conditions? Specify the Reviewing Ecologist for the project. Was this review and approval completed?

The project design has been reviewed and approved by King County Senior Ecologist Stephen Conroy.

11. What is the anticipated schedule for completing project milestones (30-40% design, final design, major construction/earthmoving) and for soliciting public input)?

Project Construction is scheduled for the summer of 2015 during the permitted fish window July 1 – September 15th.

Carolyn Butchart 5/6/15

Project Manager Date

William 5/6/15

Supervising Engineer, Project Supervisor or Unit Manager Date