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: Remlinger Levee Repair Project Manager: Stella Torres

River/River Mile/Bank: Tolt River Left Bank (River mile 1.15) Date: June 15, 2018

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.

   River management approaches in this river reach are informed by several plans and related documents that provide context for flood hazard management and salmon recovery.

   - *This project is consistent with the primary goals and objectives of the adopted 2006 King County Flood Hazard Management Plan.*
   - *This project was identified in the Tolt River Capital Investment Strategy (CIS), which was approved by the Flood Control District as policy guidance in July 2017, as project "A" in Efforts Underway. Project "S" in the Tolt River CIS Proposed Long Term Actions (Beyond 10 years) proposes a levee setback in this project location.*
   - *The Snohomish River Basin Salmon Conservation Plan (2005) identifies the Lower Tolt River as a major Chinook spawning area. The salmon recovery focus is to restore watershed process by restoring forest and increasing floodplain connectivity and channel complexity. The levee setback will increase floodplain connectivity and channel complexity.*

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 repair the erosion damage by replacing missing face rock. Primary objectives for this project include:

   - *Identify and evaluate alternatives for repair of each damaged facility.*
   - *Design and permit the selected alternatives.*
   - *Implement/construct selected alternatives in summer 2018.*
   - *The project is funded by the King County Flood Control District.*

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.

   Development within the Tolt River Watershed has had a profound effect on channel complexity. These changes are related to changes in flows as a result of South Fork Tolt River reservoir and dam operations and levee and revetment

facilities constructed to protect various forms of land development in the project reach. The reservoir has reduced flood magnitudes and frequency, which have reduced the channel width by 30 percent compared to historical conditions. This part of the Tolt River is used by salmonid and trout species, including three federally-listed threatened species (Chinook salmon, Steelhead, and Bull Trout). There is a bridge 100 feet downstream of the repair site (Snoqualmie Valley Trail) that includes in-water concrete abutments. Large wood was documented as being prevalent throughout the Tolt River in 2001(Snoqualmie Watershed Aquatic Habitat Conditions Report, Summary of 1999-2001 data. Prepared by Herrera Environmental Consultants for King County, 2002). There were a few jams with excellent salmonid rearing and refuge habitat at River Miles 3.3, 5.2, and 5.8. According to more recent anecdotal reports, there have been a number of large wood jams formed in the reach in the last few years that have been left in place by the King County Sheriff, including a sizable logjam in 2009 that formed at the confluence of the Tolt/Snoqualmie Rivers.

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?

   According to the King County 2013 River Recreation Study, this reach experiences high use by anglers, low use by kayaks/canoes, and medium use by tubers and floaters. Additionally, the Snoqualmie Valley Trail is located less than 100 feet downstream of the repair site and includes an elevated trestle over the river. It is likely a location where hikers on the trail approach the river on the opposite bank from the repair. The repair location also includes Remlinger Farms.

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 repair does not include any large wood incorporated into the design. The repair will be large rock at the toe and coir lifts and willow stakes planted on the upper bank. There is one willow tree currently on the bank that will need to be cut down in order to repair the rock levee. As part of the County's mitigation requirements for obtaining a Hydraulic Project Approval from Washington Department of Fish and Wildlife, we will be placing the removed willow tree into the river (unanchored) with at least 1/3 of its length within the low flow channel. This tree includes four separate leaders, each measuring 6 inches in diameter at breast height. The exact location of placement cannot be determined until low flow season (i.e. July-September). The wood will be placed approximately parallel to the shoreline to avoid spanning the channel.

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 wood placement near (but not a part of) the levee repair site is intended to serve an ecological function as fish habitat. State of Washington's Integrated Streambank Protection Guidelines (2003) and WAC 220-660-130 call for "No Net Loss" of aquatic habitat functions when conducting bank stabilization projects. Because removal of the existing willow tree from the levee is effectively removing a future source of large wood input to the aquatic habitat, placing the removed tree into the river and planting new willows for future input satisfy this requirement under the "no net loss" framework.

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.

   Because of the relatively small size of this wood, it is not expected to influence recruitment, mobility, or accumulation of natural large wood. Repair of the facility is expected to restore the site to its pre-damaged site conditions.

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; *According to the King County 2013 River Recreation Study, this reach experiences high use by anglers (late summer/fall), low use by kayaks/canoes (spring through fall), and medium use by tubers and floaters (summer).*

   b. Wood location, positioning, and anchoring techniques; *Wood will not be anchored. It will be placed immediately adjacent to the bank repair approximately parallel to shore with at least 1/3 of its length in the low flow channel. The exact location of the low flow channel potentially changes every year therefore location will be determined on site during construction in late summer.*

c. Maximizing achievement of project goals and objectives while minimizing potential public safety risks; *The repair project goals do not include wood placement. It is a requirement in order to receive necessary environmental permits. The wood that will be placed as permit conditions is not expected to change the background wood loading in the system.*

d. Use of established and recognized engineering, geological, and ecological expertise; *The requirement for placing at least 1/3 of the length of the wood in the low flow channel is an ecological consideration related to providing salmon habitat throughout the year. If the wood was placed high up near the bank it would not be available as habitat to fish except during periods of high flow.*

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?

   Yes. Mark Beggs and Mark Ruebel (Engineer of Record), Professional Engineers, designed the levee repair and will oversee the wood placement. The project is currently at 30% design. All design reviews and approvals have been completed.

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

    Tom Bloxton, Environmental Scientist, approved of the levee repair design and placement of the wood. The project is currently at 30% design. The anticipated project construction date is August-October 2018.

Stella Thomas — 7/2/18

Project Manager — Date

Mark Ruebel P.E. — 7.2.18

Supervising Engineer, Project Supervisor or Unit Manager — Date