

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: Irwin Right Bank Revetment Repair Project **Project Manager:** Linda Bartolini Venegas

River/River Mile/Bank: Issaquah Creek, 7.75, Right Bank

Date: August 11, 2021

Check one or both:

Project includes placement of large wood elements

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.**

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 alternatives for managing King County's flood protection facilities in the adopted 2006 King County Flood Hazard Management Plan (updated in 2013).
- The project is consistent with recommendations from The Issaquah Creek Basin and Nonpoint Action Plan (1996).

- 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 Irwin Right Bank Revetment Repair Project will repair up to 225-feet of damage on the revetment located at River Mile 7.75 on Issaquah Creek. Erosion and loss of rock from the revetment occurred during the February 2020 flood. The Irwin Revetment protects Issaquah-Hobart Road Southeast, and a private sole access bridge to one private property and a private access road to two private properties. If left unrepaired, the damages could expand, posing increased risk to Issaquah-Hobart Road Southeast and threatening access to three private properties.

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.**

Issaquah Creek in this reach has a history of localized flooding, including the recent flood in February 2020 that damaged the Irwin Right Bank Revetment. Issaquah Creek Basin serves as spawning, rearing and

migration habitat for eight species of salmonids, including Chinook and coho salmon, as well as steelhead. The Issaquah Creek Hatchery at River Mile 3.0 produces Chinook salmon and coho salmon. Currently Chinook and steelhead are listed as threatened under the Endangered Species Act. Upstream within the Middle Issaquah Creek Subbasin good spawning exists due to unconsolidated gravels that are relatively free of fine sediments. Pool riffle sequences are common throughout the reach with riffles being more common due to a scarcity of large wood in the system (King County 1996).

The repair site is located at the transition between the Middle and Lower Issaquah Creek Subbasins on the right riverbank of Issaquah Creek, adjacent to Issaquah-Hobart Road Southeast. The existing Irwin Right Bank Revetment is a flood protection facility made primarily of rock riprap designed to protect the river bank from erosion. A private bridge built into the revetment constricts the channel at the site. Additionally, a culvert that conveys Nudist Camp Creek underneath Issaquah-Hobart Road SE intersects the revetment upstream.

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?

Land use in the immediate vicinity of the project site is residential. Land use in the vicinity is mainly agricultural, low-density residential and commercial use. Current recreational use of the project parcel and adjacent portions of Issaquah Creek appear to be minimal due to low flows during summer months.

Recreational uses in the vicinity are primarily terrestrially focused and include state owned Squak Mountain State Park (Washington State Park) and West Tiger Mountain (Washington Department of Natural Resources). The Poo Poo Point trailhead is approximately 0.8 mile north of the project site and a preschool is located approximately 300-feet east of the project site per a review of data available on the King County IMAP database.

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 large wood design is intended to provide bank stability, hydraulic complexity and cover that will benefit salmonids of all life stages. The design will include large wood with rootwads anchored with ballast rock and placed at the toe of the revetment. This wood will be placed to engage with low flows during the summer. Additionally, the design will include embedded large wood with rootwads to be engaged at flows between summer low flow and the ordinary high water elevation.

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 is intended to serve an ecological function as fish habitat. Ecological functions include:

- Increased structural complexity of riverine habitat.
- Increase shading and refuge for wildlife and fish.

Large wood is underrepresented in this reach of Issaquah creek and is a necessary component to provide habitat. Wood may accumulate and then be remobilized during large floods.

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.

Current patterns of wood mobility or accumulation are not likely to change as a result of the project. Existing recruitment of small/medium woody debris is evident within this reach upstream and downstream of the project site. Racking of small woody debris after construction is expected at the local project site, which will likely be highly transient. This project will not change the accumulation regime of natural large wood, which appears limited in this reach. This project design is intended to stabilize the bank.

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:** Anecdotal information from landowners suggests limited recreational use. Additionally, the 2009 Recreational Use of King County’s River System Report identified Issaquah Creek under Tier Four: infrequent to moderate use by one or two recreational user groups. The 2009 report stated Issaquah Creek was not deep enough to boat and that the flow levels could be so low as to walk easily at ankle depth. Furthermore, the report identified that localized use for swimming, floating, and fishing was unknown. American Whitewater does not list Issaquah Creek as a river for paddling on their website.
- b. **Wood location, positioning, and anchoring techniques:** All large wood will be anchored or embedded into the revetment, which will prevent mobilization of placed wood. All the wood will be placed downstream of the culvert and bridge intersections of the revetment.
- c. **Maximizing achievement of project goals and objectives while minimizing potential public safety risks:** Wood will be used in the margin of the current channel and will be anchored to prevent mobilization. Signage is not proposed to be used at this site.
- d. **Use of established and recognized engineering, geological, and ecological expertise:** Professional engineers, geologists and ecologists have been involved in design and review of the project. The methods used to design this project are consistent with best professional practices.

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 (Engineer of Record, Professional Engineer) and Mark Ruebel (Professional Engineer) designed the revetment 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, Project Ecologist, approved of the revetment repair design and placement of the wood. The project is currently at 30% design. The anticipated project construction date is August 2022.

Linda Bartolini Venegas 8/11/2021
 Project Manager Date

Mark Ruebel 2021.08.12
 Supervising Engineer, Project Supervisor or Unit Manager Date