

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 Issaquah Creek Mitigation Project

Project Manager Josh Latterell

River/River Mile/Bank Issaquah Creek near SE 156th Ave and Cedar Grove Road

Date 07/26/18

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.

King County has acquired a series of contiguous parcels along this reach of Issaquah Creek in order to preserve open space and allow restoration of habitat. Surrounding land use is residential and agricultural. Restoration including structure removal and planting has occurred on adjacent parcels with the intent that over time a high functioning stream and wetland corridor will be restored. In order to achieve those goals, remaining revetments and residential infrastructure will be removed along with historic fill. Large wood will be placed in order to provide structure, cover and hydraulic diversity until the creek and riparian conditions provide natural recruitment and replenishment of large woody debris. The Issaquah Creek Mitigation Project also aligns with three goals in the 2017 WRIA 8 Chinook Salmon Conservation Plan Update: 1) increase area of riparian cover; 2) increase wood volume to support sustainable and harvestable Chinook salmon populations, and; 3) invasive control

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.

This project will fulfill in-lieu fee mitigation credit obligations for the Mitigation Reserves Program, which is providing compensatory mitigation for unavoidable wetland and aquatic area impacts associated with development in the Sammamish Service Area. By creating and enhancing wetlands, placing large wood and planting riparian areas, the project generally aims to protect and improve water quality, provide wetland and aquatic habitat, store floodwaters, and maintain water flow during droughts. Restoring these ecosystem services will improve the Middle Issaquah Creek Natural Area, benefit area residents, and support the Water and Land Resource Division's mission and strategic plan. Funding for the project is provided through the sale of mitigation credits as part of the ongoing operations of the Mitigation Reserve Program

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.**

Aerial photos and site topography suggest that Issaquah Creek has migrated throughout the project site and occupied the central portion of the site as recently as the early 1900's. Since that time, earthwork and revetments have straightened and confined the channel to the southern margin of the site, and disconnected wetlands, side channels and other off channel floodplain habitats. Clearing has removed much of the former forested riparian area. Some large wood is present in the channel, notably in the bends at the upstream and downstream ends of the project site. In some locations large wood is present and individual pieces and in others it forms small jams. Most wood appears to be less than about 18 inches in diameter and 30 feet in length and it all appears to be mobile during floods under current conditions. Eight species of salmonids (six anadromous) utilize the Issaquah Creek Basin. The Issaquah Creek Hatchery at river mile (RM) 3.0 currently produces Chinook salmon, and coho salmon.

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?**

Adjacent land uses include residential and agricultural properties as well as King County Parks Natural Areas. Current recreational use of the project parcel and adjacent portions of Issaquah Creek appear to be minimal. No recreational facilities or constructed amenities are on the project site and none are proposed. No trails corridors or schools are within 1 mile of the site per a review of data available on the King County IMAP database. Recreational use may increase over time as more people become aware of public ownership and as the size of the publicly owned corridor expands, but because the land is designated a natural area, recreational use is likely to be limited to informal walking trails. Recreational (floating) use of the creek in this reach is limited by low water depth during summer months.

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.**

Per pending mitigation agreements with WSDOT, placed logjams will include 138 pieces of large wood (70 racking logs and 68 structural logs). Large wood accumulations and logjams serve different purposes and have different designs depending on their location in the project site. As a result, each structure type has a different natural analog and conceptual models. Logjams have been separated into mainstem jams at the upstream end of the site, backwater jams in the middle of the site, and a side channel jam at the downstream end of the site. See the attached 30% design plans.

In general, the large wood design is intended to provide hydraulic complexity and cover that will benefit salmonids of all life stages. The wood will be placed in excavated embayments adjacent to the active channel and will likely be stabilized through a combination of burial and anchoring to live vegetation. Large wood placed as part of this project will not encroach more than 10% into the existing wetted channel width at low flow in the as-built condition. Placed wood will become more engaged as flows rise during the winter months. Over time, natural wood recruitment may expand constructed jams and channel migration may engage jams more fully, but placed wood has been designed to deform and adjust to changes in the river in an effort to closely mimic naturally occurring large wood in similar stream settings.

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?**

Proposed large wood placement in this reach is intended to provide hydraulic complexity in the form of pools and backwaters, and provide structure and cover important for all life stages of salmonids. Large wood is underrepresented along Issaquah creek and is a necessary component to provide habitat as well as reinitiate and sustain habitat forming processes. It will also meet the need for mitigation of off-site impacts to aquatic habitat areas. Placed wood is likely to recruit additional large wood floating in Issaquah creek. As in a natural system, that wood may accumulate and then be remobilized during large floods or in response to channel changes.

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.**

Channel migration and tree recruitment are desired and expected outcomes from this project. Along with channel migration, we anticipate that the channel will become more sinuous, shallower and wider with rougher margins and improved floodplain

connectivity. All of these factors will increase the likelihood of retaining large wood on the site. Therefore, the project is expected to increase both recruitment and retention of large wood. As a result it likely has no significant effect on long term downstream wood loads in Issaquah creek.

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 suggests limited recreational use. Low water levels during typical floating months suggests that recreational use, if it occurs will likely be wading. Site management will not encourage recreational use.

b. *Wood location, positioning, and anchoring techniques;*

Wood is located outside or on the margin of the current channel. It is either on relatively straight sections of channel or in locations with good visibility or both, and all wood will be anchored in a way that will prevent large scale mobilization, but will allow adjustments to changing channel conditions which should mimic natural log jams and reduce hazards.

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

Site selection, placement methods, proposed monitoring and maintenance have all been developed or performed with recreational safety in mind. The majority of wood placed will be in backwater features where water velocity will be very low and recreational risk is minimized. Remaining structures that will be placed in higher energy environments have been designed to be visible, avoidable and as low risk as possible.

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

The project has been designed by an interdisciplinary team of experienced ecologists, engineers and geologists who all have extensive experience addressing recreational risks on similar project sites.

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?

The Project Supervising engineer and Senior Engineer are Licensed Professional Engineers. A Licensed Engineering Geologist and Senior Professional Ecologist supported the Senior Engineer during project design. Willis R. Mansfield P.E. is the engineer of record and will perform final review of the plans and provide his seal.

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 has been reviewed and approved at 30% design by Josh Latterell, Ph.D., a professional ecologist. He has verified that the project design is consistent with project goals, existing policies and regulations, and expected permit conditions.

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

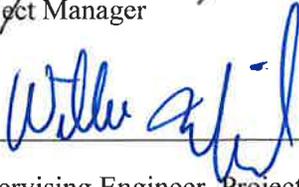
Final design is expected in 2018 with construction in summer 2019.



Project Manager

7-27-18

Date



Supervising Engineer, Project Supervisor or Unit Manager

7/27/18

Date

II. Pre-Construction Information (70% or 100% design with permits) *These questions relate to the designed and permitted project. Information should include input resulting from permit review process, SEPA, boater safety meetings and any other stakeholders.*

1. Have any answers provided in Section I at the Preliminary Design Phase changed in the interim? If so, provide the new answers and the rationale for the change.
2. What regulatory review or permits are required for the project (e.g. HPA, Clearing and Grading permit, COE permits)? List any conditions or requirements included in the permit approvals relevant to placement of large wood in the project.
3. What specific actions or project elements were employed to address public safety in the final, permit-approved design?
4. Describe how the project team solicited public input on the preliminary design. Describe the input received from the public and how, if appropriate, the project team has responded to this input.
5. Describe any additional design modifications or mitigating actions that were or will be taken in response to the public comments.
6. Will further educational or informational materials be made available to the public to heighten awareness of the project (e.g., public meeting, press release, informational website, or temporary or permanent signage posted in the vicinity of the project)? If so, explain.
7. If the project is expected to influence the recruitment, mobility or accumulation of natural wood, has a Public Safety Management Plan been completed?

Project Manager

Date

Supervising Engineer, Project Supervisor or Unit Manager

Date

III. Post-Construction Actions or Project Modifications

8. Have any answers provided in Sections I and II at the Preliminary design and Pre-Construction phases changed in the interim? If so, provide the new answers and the rationale for the change.
9. Briefly describe the scope and timing of post-construction monitoring and inspection activities planned for the project as they relate to large wood. If a Public Safety Management Plan or Monitoring Plan has been developed for the project, you may simply reference and attach that document.

10. If post construction monitoring or inspections result in modifications to the project, please describe the action taken and the rationale and consistency with the Public Safety Management Plan, if applicable.

Project Manager

Date

Supervising Engineer, Project Supervisor or Unit Manager

Date