

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: SE 19th Way Road Realignment and Revetment Repair Project Manager: Jay Smith

River/River Mile/Bank: Snoqualmie River / RM 31.55 Left Bank Date May 30, 2018

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.

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

- This project site was identified in and is consistent with the primary objectives of the adopted 2006 King County Flood Hazard Management Plan.
- The Snohomish River Basin Salmon Conservation Plan (2005) provides a snapshot of this mainstem reach on pages 11-29 and 11-43. The recovery focus is to restore watershed process by restoring forest and increasing floodplain connectivity and channel complexity.
- This site is also located in the Snoqualmie Agriculture Production District, and numerous County policies in the Comprehensive Plan and elsewhere support efforts to sustain viable agriculture in this portion of the Snoqualmie River valley.

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 SE 19th Way Road Realignment and Revetment Repair Project (the Project) includes repairing an approximately 150 lineal foot section of existing revetment on the left bank, at RM 31.55, and realigning 400 lineal feet of road further away from the river, within Water Resources Inventory Area (WRIA) 7 – Snohomish River Basin. The revetment provides protection to a public road, SE 19th Way, which provides sole access to one of two remaining large commercial dairy operations in the Snoqualmie Valley. The project is funded by the King County Flood Control District.

The objectives of the project include:

- Repair damages and improve stability of revetment.
- Reduce impacts of river overtopping to SE 19th Way.
- Conduct repair to minimize long-term maintenance needs and associated costs.
- Provide aquatic and riparian habitat benefits.

- Preserve agriculture practices on the properties adjacent to the revetment.

Primary constraints on project implementation include:

- The Project will need to demonstrate no rise in the base flood elevation (100-year recurrence interval) water surface elevations to meet Federal Emergency Management Agency (FEMA) floodplain regulations.
- The project must be in compliance with all federal, state and local permit requirements, including in-water fish construction windows.
- The road must be kept open throughout construction; temporary closures are limited to 30 minutes in duration.

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 Snoqualmie River in the vicinity of the project reach is low gradient and meandering, and predominately confined to a single threaded channel. Sand bars are present on the inside bank of the river meanders and gravel bars are occasionally present where the river is not confined by bank protection and has widened. Naturally deposited large wood is common in the main channel. A significant amount of large wood has naturally deposited along the bank at the project site.

King County commissioned Collins and Sheikh to map historical conditions in the Snoqualmie River valley (2002). This report indicates that large conifers including red cedar and Sitka spruce were present in the riparian corridor. The channel only became navigable to Fall City in the 1880s according to A History of the Snoqualmie Valley by Hill (1970).

Salmon habitat in the Lower Snoqualmie River is degraded compared with historical conditions as a result of land use changes, floodplain development, and river management activities such as channel confinement by levees and revetments. These actions have contributed to the lack of in-stream geomorphic complexity and floodplain reconnection needed to create aquatic habitats that support healthy fish populations, including ESA-listed species such as Chinook salmon, steelhead, and bull trout. Shoreline and riparian areas, including the project site, lack mature trees, resulting in minimal shade and elevated water temperatures.

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 vicinity of the project is primarily agricultural use. The project site was recently acquired by King County to facilitate project construction. The adjacent properties are in private ownership. The nearest parks are near Fall City, approximately 3 miles to the southeast. The Snoqualmie Valley Trail is east of State Route 203. The closest school is approx. 3 miles south in Fall City.

The Snoqualmie River is used for several types of recreational activities in the project site vicinity including jet skiing, fishing, casual floating, stand up paddle boarding, canoeing, and kayaking. However, recreational use in the Snoqualmie River in the project reach has been classified as generally infrequent (Carol MacIlroy Consulting Corporation 2009). Floating of any kind is rare because the put-in locations are widely spaced and the river flows quite slowly, particularly in the summertime, when recreational use is highest. Bank and wading access is also limited by private property and steep bank slopes. Therefore, the dominant user group in the project reach is motorized boaters, rated as having a moderate level of use (Carol MacIlroy Consulting Corporation 2009). Given the slow-moving nature of the river in the project reach when motorized boaters are present (primarily in the summer) and the nature of the use (motorized), the proposed project is not expected to affect this user group. There is a WDFW boat launch downstream from the project at RM 31.

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 does not have any large wood placement incorporated into the face of the revetment design. There will be large wood structures (partially buried logs with attached root wads) installed between the top of slope and SE 19th Way for roughness to reduce overbank flow velocities. Snags will be installed for wildlife habitat. These large wood elements placed at the top of bank will be partially buried in the floodplain and will not be anchored using hardware. They will not

be in contact with the river until Snoqualmie River flows exceed approximately 20,000 cfs, and thus will not be encountered by recreational boaters.

There is an accumulation of naturally occurring large wood along the bank of the project site. This wood will be removed for construction and, following construction, will be replaced (un-secured) on the revetment near the ordinary high water (OHW) elevation for habitat, as per requirements in the Hydraulic Project Approval (HPA) permit.

- 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 large wood structures at the top of the bank are to provide roughness to reduce overbank river flow velocities during periods when the river is overtopping the bank.

It is intended that the large wood that is placed back on the revetment near the OHW elevation will be transported downstream as the river engages with the wood following construction. Additionally, it is anticipated that large wood will continue to accumulate on the bank following construction, and this naturally occurring large wood will be transported downstream when engaged with high river flows.

- 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. Wood from upstream sources may accumulate periodically at the site as it does under existing conditions. It is anticipated that naturally occurring large wood will be transported downstream in the case it is temporarily deposited within the project area.

- 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;

The Snoqualmie River is used for several types of recreational activities in the project site vicinity including jet skiing, fishing, casual floating, canoeing, and kayaking. However, recreational use in the Snoqualmie River in the project reach has been classified as generally infrequent (Carol MacIlroy Consulting Corporation 2009). Floating of any kind is rare because the put-in locations are widely spaced and the river flows quite slowly, particularly in the summertime, when recreational use is highest. Bank and wading access is also limited by private property and steep bank slopes. Therefore, the dominant user group in the project reach is motorized boaters, rated as having a moderate level of use (Carol MacIlroy Consulting Corporation 2009). Given the slow-moving nature of the river in the project reach when motorized boaters are present (primarily in the summer) and the nature of the use (motorized), the proposed project is not expected to affect this user group. The slow nature of the river flow during summer months will make it easy for any river user to avoid the naturally occurring wood. In addition, this low velocity nature of the river minimizes any potential risks to the rare non-motorized boaters who may use the river along this site.

The naturally occurring wood currently at the project area will be removed and stored on-site. Following construction the wood will be placed back on or near the revetment at the direction of the project engineer. The wood will be placed back in such a way as to space out the timing and amount to minimize impacts to public safety risks.

b. Wood location, positioning, and anchoring techniques:

There will be no placed, secured wood in the project below the ordinary high water mark. As mentioned in response to Question 5, there will be large wood structures (partially buried logs with attached root wads) installed between the top of slope and SE 19th Way for roughness to reduce overbank flow velocities.

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

The primary project goal is to create a stable bank with rock and vegetated coir lifts to protect SE 19th Way, which is at risk of becoming impassable with continued bank erosion. Placed wood was not incorporated into the revetment design in order to facilitate obtaining permits.

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?**

Professional Civil Engineers that are integral to project design include King County Project Manager and Engineer Mary Lear, King County Engineers Chase Barton and Jay Smith, and Consultant Design Team Project Manager Jonathan Ambrose (Cardno). The Engineer of Record is Chase Barton, King County, and Nicholas Danis (Cardno), stamped the final design. Chase Barton is also a licensed professional geologist.

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)?**

Yes, Jo Wilhelm, senior ecologist on the Snoqualmie basin team within the River and Floodplain Management Section is on the project team and has reviewed and approved the final design.

Project Manager

Date

Supervising Engineer, Project Supervisor or Unit Manager

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.*

11. **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.**

No

12. **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.**

The following permits are required for this project:

- Hydraulic Project Approval-Washington Department of Fish and Wildlife
- Grading Permit-King County

- Construction Stormwater General Permit – Washington Department of Ecology

Other permissions and agreements include:

- Aquatic Lands Lease-Washington Department of Natural Resources
- Shorelines Exemption

The HPA stipulates an in-water work window between June 15 through September 30.

13. What specific actions or project elements were employed to address public safety in the final, permit-approved design?

Actions to address public safety described in Section 1 have all been incorporated into the final designs. In addition, during construction when the stockpiled large woody material is replaced on the site, signage will be placed at the project and 300 feet upstream as part of the Washington State Department of Natural Resources Aquatic Lands Easement Agreement.

14. 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.

- Public input was solicited at a Large Wood public meeting on May 23, 2017.
- Approximately 25 nearby residents received a SEPA notice with a two week comment period.
- 30% design plans were posted on the King County SE 19th Way Road Protection and Revetment Repair Project website in 2017 and shared with stakeholders and the Snoqualmie and Tulalip Tribes.
- No comments were received from the Large Wood Public Meeting or SEPA notice.

15. Describe any additional design modifications or mitigating actions that were or will be taken in response to the public comments.

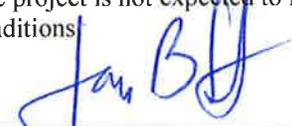
There were no additional design modifications or mitigating actions taken as there were no public comments received.

16. 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.

An informational postcard about the project will be sent to approximately 20 neighbors of the project, inviting them to visit the project website. The postcard includes a phone number of the project manager to contact with questions.

17. If the project is expected to influence the recruitment, mobility or accumulation of natural wood, has a Public Safety Management Plan been completed?

The project is not expected to influence the recruitment, mobility or accumulation of natural wood, relative to existing conditions

 Project Manager	5/30/2018 Date
 Supervising Engineer, Project Supervisor or Unit Manager	5/30/2018 Date

III. Post-Construction Actions or Project Modifications

- 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.
- 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.
- 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