



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 Middle Boise Van Wieringen Restoration

Project Manager Sarah McCarthy

River/River Mile/Bank RM 1.7-2 (both banks)

Date 07/23/18

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.

Boise Creek is a channelized stream running through an agricultural area on the Enumclaw Plateau. The overall context for stream management is salmon recovery and water quality (fecal coliform) (Pierce County 2012, Washington State Department of Ecology 2011).

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 overall goal of the project is to increase the channel capacity and complexity of Boise Creek in order to create lateral and margin rearing and refuge habitat for Chinook salmon, steelhead trout, and coho salmon.

The project has been identified as a high priority in the WRIA 10/12 Salmon Habitat Protection and Restoration Strategy (Pierce County 2012). Specifically, Boise Creek is a high priority for aquatic habitat restoration, LWM enhancement, and revegetation.

The project objectives are:

- a. Provide increased channel capacity to accommodate lateral and margin habitat.
- b. Establish riverine flow-through wetlands.
- c. Establish persistent subsurface flow exchange and durable habitat features for egg, alevin and fry life stages within the project area.
- d. Establish new and enhance existing vegetated riparian buffers.
- e. Increase dynamic stream processes within the project area.
- f. Establish large woody debris at sizes and quantities following analog design criteria that will rack and be stable without ballasting.
- g. Maintain or where technically feasible reduce existing levels of erosion risk and water quality degradation.
- h. Reduce the need for long-term maintenance and adaptive management to the extent feasible.

- i. Maintain or improve agricultural productivity where proposed habitat improvements overlap with existing agricultural land. Incorporate beaver management techniques when necessary to maintain agricultural productivity.
 - j. Encourage support for the project from local stakeholders, Tribes, and permit agencies by coordinating regular outreach efforts and project updates.
 - k. Implement a project compatible with future stream habitat enhancement projects upstream to 268th Ave SE and downstream to 252nd Ave SE.
 - l. Be a good neighbor.
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 project area, which is located in a conservation easement, covers approximately 3.7 acres of private land adjacent to approximately 820 lineal feet of Boise Creek. A 160-foot tall, forested hill is located off the left bank of the project site. A rocky outcropping of bedrock is exposed at the east end of the project easement, forming a natural and non-deformable rock sill. The toe of the north side of the hill extends 900-feet along the left bank of the project area, which provides a permanent yet natural flood boundary. An existing farm access route is located on the right bank of the channel with a thick patch of blackberries on the north side of the access route.

The project area includes three Category III wetlands (A,B, and C) located on a flood terrace above the left bank of Boise Creek. Wetland A is dominated by reed canarygrass and used as pasture for dairy cattle. Wetlands B and C support black cottonwood, bigleaf maple, Western red cedar, Western hemlock, Sitka spruce, and red alder. Shrubs include salmonberry, sword fern, cascara, red osier dogwood, Himalayan blackberry.

Boise Creek provides habitat for spring Chinook, fall Chinook, steelhead, pink, coho, and chum salmon, as well as bull and coastal cutthroat trout. Birds include bald eagle, osprey, red-tailed hawks, grey owls, water ouzels, and many passerines and song birds.

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 use is agricultural with no recreational use.

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.

Salvaged logs with rootwads, and imported conifer logs with rootwads, will be anchored by lashing each individual log to a minimum of one standing tree. If two standing trees are nearby, redundancy will be utilized by lashing the wood to both standing trees. Standing trees are located on the right bank, the tree islands retained in the middle of the project, and the left bank.

WOOD SCHEDULE			
Log Type	DBH (in)	Length (LF)	Total Logs (No.)
Salvage logs w/ rootwad	>8	>45	52
Imported conifer logs w/ rootwad	18-24	25-30	12

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 design intent is to provide dynamic wood features secured at the location of the standing tree but the structure itself can respond with the various flows and associated water surface elevations. Wood is intended to provide cover as well as drive scour underneath rootwads for juvenile 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.

The logs are not expected to recruit much, if any, additional wood due to the small size of the stream and lack of wood moving through the system.

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;

Boise Creek has no recreational use.

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

The logs will be tethered to live trees to keep them from floating downstream. Loose logs in the stream could create unintended flow constrictions or hang up on bridges/culverts.

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

Given the relatively low risk to public safety, the logs will be placed in as close to natural configuration as possible.

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

The project team consists of engineers, geologists, and ecologists with experience designing these types of projects.

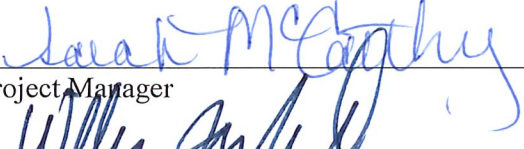

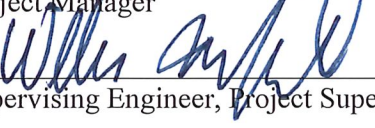
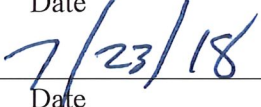
9. Has the project been reviewed and approved by a Licensed Professional Civil Engineer? Please list other licensed technical staff who have reviewed and provided input on the design (e.g., Licensed Geologist and Licensed Engineering Geologist). Specify the Engineer of Record for the design and any other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

Yes – the Engineer of Record (Will Mansfield) reviewed, approved, and stamped the plans. A Licensed Engineering Geologist provided design input.

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 – Mason Bowles provided design input and approved the design from an ecological perspective.

 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.

HPA (streamlined fish enhancement project); NPDES; COE permits – The HPA required that (a) large wood materials must be installed to prevent them being washed downstream up to the 100-yr peak flow, and (b) any large woody material which may be imported to supplement that being used that is available onsite to construct the log or rootwad fish habitat structures shall be fir, cedar, or other coniferous species.

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

None beyond those considered at 30% design.

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.

The project is located on private property. The project team worked with the landowners to make sure that work within the conservation easement would not interfere with farming operations. Outside of the private landowners, the team worked with stakeholders (permit agencies, WRIA 10, and the basin steward) and the Muckleshoot and Puyallup Tribes to design a project that optimizes fish habitat restoration potential. The project did not require public notification aside from the NPDES newspaper postings. However, two letters were sent to adjacent landowners notifying them of the project and providing contact information should they have questions.

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

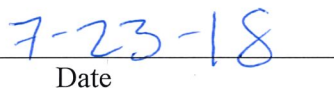
N/A.

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.

The website will be updated with post-construction information. The public was notified of the web address in the mailing materials.

17. 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

18. 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.
19. 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.
20. 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