



King County

## ENVIRONMENTAL CHECKLIST

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### UPPER CARLSON FLOODPLAIN RESTORATION PROJECT

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#### *Purpose of the Checklist:*

The State Environmental Policy Act (SEPA), Chapter 43.21 RCW, requires all governmental agencies to consider the environmental impacts of a proposal before making decisions. An environmental impact statement (EIS) must be prepared for all proposals with probable significant adverse impacts on the quality of the environment. The purpose of this checklist is to provide information to help you and the agency identify impacts from your proposal (and to reduce or avoid impacts from the proposal, if it can be done) and to help the agency decide whether an EIS is required.

#### *Instructions for Applicants:*

This environmental checklist asks you to describe some basic information about your proposal. Governmental agencies use this checklist to determine whether the environmental impacts of your proposal are significant, requiring preparation of an EIS. Answer the questions briefly, with the most precise information known, or give the best description you can.

You must answer each question accurately and carefully, to the best of your knowledge. In most cases, you should be able to answer questions from your own observations or project plans without the need to hire experts. If you really do not know the answer, or if a question does not apply to your proposal, write “**do not know**” or “**does not apply.**” Complete answers to the questions now may avoid unnecessary delays later.

Some questions ask about governmental regulations, such as zoning, shoreline, and landmark designations. Answer these questions if you can. If you have problems, the governmental agencies can assist you.

The checklist questions apply to all parts of your proposal, even if you plan to do them over a period of time or on different parcels of land. Attach any additional information that will help describe your proposal or its environmental effects. The agency to which you submit this checklist may ask you to explain your answers or provide additional information reasonably related to determining if there may be a significant adverse impact.

#### *Use of Checklist for Nonproject Proposals:*

Complete this checklist for nonproject proposals, even though questions may be answered “**does not apply.**” In addition, complete the SUPPLEMENTAL SHEET FOR NONPROJECT ACTIONS (PART D).

For nonproject actions, the references in the checklist to the words “**project,**” “**applicant,**” and “**property or site**” should be read as “**proposal,**” “**proposer,**” and “**affected geographic area,**” respectively.



**A. BACKGROUND**

1. *Name of the proposed project, if applicable:*

UPPER CARLSON FLOODPLAIN RESTORATION PROJECT

2. *Name of Applicant:*

King County Department of Natural Resources and Parks  
Water and Land Resources Division (WLRD)

3. *Address and phone number of applicant and contact person:*

Dan Eastman, Project Manager  
King County Water and Land Resources Division  
201 South Jackson Street, Suite 600  
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Phone: 206-263-6319  
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4. *Date checklist prepared:*

Sept 9, 2013

5. *Agency requesting checklist:*

King County Department of Natural Resources and Parks  
Water and Land Resources Division (WLRD)

6. *Proposed timing or schedule (include phasing, if applicable):*

The project will be constructed during the summer of 2014. Planting will occur during the fall and winter of 2014/2015.

7. *Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain.*

The purpose of the project is to restore natural riverine processes such as channel migration, sediment deposition and transport of sediment and large wood at the project site. These natural processes are dynamic and the exact timing and scale of responses cannot be entirely predicted. Therefore, some adaptive management actions may be needed in the future. For example, alterations to the engineered log jams or the newly constructed setback levee may be needed in the future to maintain protection of Neal Road and residential structures from channel migration. The intent is to acquire permits and permissions prior to project construction for a defined (but scalable and movable) amount of potential infrastructure and bank protection work associated with this adaptive management approach. Although this work may occur in the future, it should be considered part of the proposed project, and potential impacts from these actions are addressed in this checklist. There are no other plans for future additions, expansion or further activity related to or connected with this proposal.

Three other large levee setback projects are under consideration in this reach of the Snoqualmie River (at the Barfuse, Aldair, and Hafner levees); these additional levee setback projects may be implemented over the next 10-15 years. More details on these sites can be found in the Snoqualmie at Fall City Reach Restoration

Assessment, King County Water and Land Resources Division, August 2011 at <http://www.govlink.org/watersheds/7/>.

8. *List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal.*

1. Upper Carlson 30 Percent Design Completion Basis of Design Report, Herrera Environmental Consultants, Inc. June 5, 2013

2. Draft Cultural Resources Assessment, Snoqualmie at Fall City. November 15, 2010. ICF International.

3. Upper Carlson Critical Areas Report, King County Water and Land Resources Division, August 2013

4. Snoqualmie At Fall City Reach Restoration Assessment, King County Water and Land Resources Division, August 2011.

9. *Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain.*

No permits or other authorizations for other proposals are currently pending.

10. *List any government approvals or permits that will be needed for your proposal, if known.*

- Clean Water Act Section 404 Permit (U.S. Army Corps of Engineers)
- Endangered Species Act (ESA) Section 7 Consultation (National Oceanic and Atmospheric Administration Fisheries and United States. Fish and Wildlife Service)
- National Historic Preservation Act Section 106 Review
- National Pollutant Discharge Elimination System (NPDES) Permit for Construction (Washington State Department of Ecology)
- Coastal Zone Management Consistency
- Section 401 Water Quality Certification (Washington State Department of Ecology)
- Washington Department of Fish and Wildlife Hydraulic Project Approval
- King County Clearing and Grading Permit
- Shoreline Management Substantial Development Permit Exemption (Washington State Department of Ecology)
- King County Flood Hazard Certification
- Aquatic Use Permit (Washington State Department of Natural Resources)
- Procedures for Considering Public Safety When Placing Large Wood in King County Rivers, Public Rule LUD 12-1, King County Ordinance 16581
- Approval Memo for Altering King County Park Division Properties. King County Department of Natural Resources and Parks
- National Environmental Policy Act, Categorical Exclusion, US Environmental Protection Agency.

11. *Give a brief, complete description of your proposal, including the proposed uses and the size of the project and site.*

The King County Water and Land Resources Division proposes to restore natural river processes along the Snoqualmie River by removing a 1,600 foot-long levee and constructing facilities to control river

channel migration (Figures 1 and 2 below). These actions will restore the river's natural connection to 50 acres of forested floodplain. The project addresses high priority salmon habitat restoration needs for the threatened Snoqualmie Chinook populations identified in the federal Puget Sound Salmon Recovery Plan (2007) as well as for threatened steelhead and other salmon species.

Specific actions associated with the project include:

- Remove 1,600 ft of levee and revetment along the right bank including:
  - Bring down and relocate 80+ year old trees with intact rootballs from the levee into the adjacent floodplain (to access toe rock and levee prism).
  - Place these large trees in a manner that will mimic natural recruitment of trees to the river as it migrates into the right (east) bank.
- Construct a set-back revetment along approximately 1,000 to 1,500 ft of Neal Road to protect property and infrastructure including:
  - A 600' long set-back rock revetment intended to interact with the river only under maximum channel migration.
  - One large, engineered log jam, waterward of the new rock revetment that is designed to recruit and retain wood over time; and
  - 3 to 4 smaller engineered log jams (ELJ's) located in the existing side channel along Neal Road, 200 to 900 feet from the existing mainstem of the River.
- Distribute native alluvium spoils onsite in open areas or areas with primarily invasive species in the understory and/or within placed log clusters.
- 20+ acres of invasive vegetation control and native plantings to restore native plant communities throughout the 50+ acre floodplain.
- Implement post-project adaptive management actions, as necessary.
  - Potentially add levee material to approximately 200' of an existing left (west) bank revetment (Aldair levee) to minimize potential for unintended left bank erosion into this flood control facility.
  - Potentially add levee material to approximately 100' of an existing right bank (east) revetment downstream (lower Carlson Flood control facility) to minimize potential for unintended right bank erosion.

The proposed project will benefit ESA-listed juvenile Chinook salmon and steelhead trout by restoring the habitat-forming processes that create and sustain the river and floodplain ecosystems. Specifically, the project is expected to increase the rate of channel migration and associated geomorphic changes, and to increase the frequency and duration of overbank flows into the floodplain. Consequently, wood and sediment will form complex habitat features and logjams and will promote formation of backwater and side channel habitat.

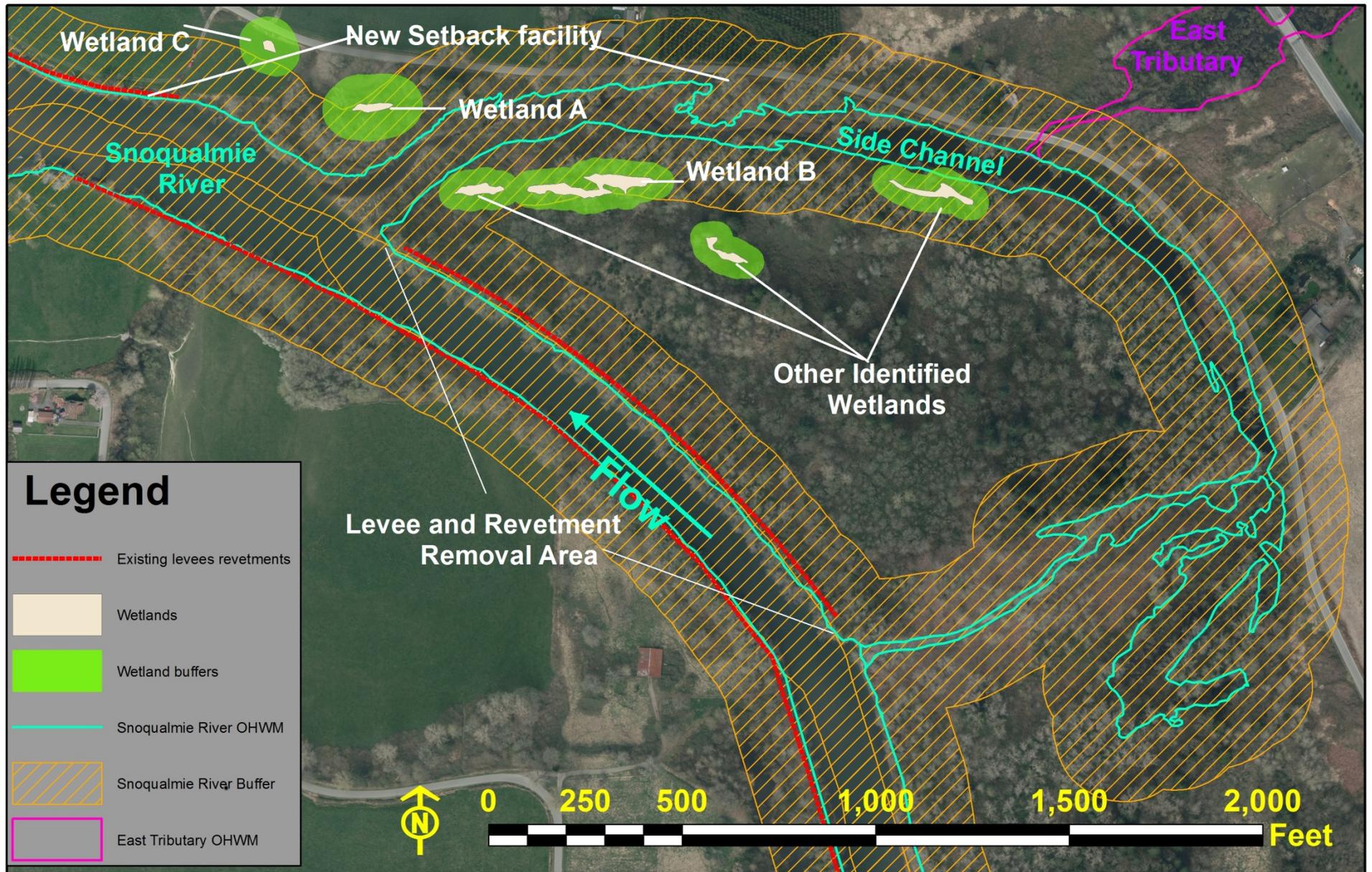


Figure 1. Existing Conditions showing the Snoqualmie River and associated wetlands and buffers.

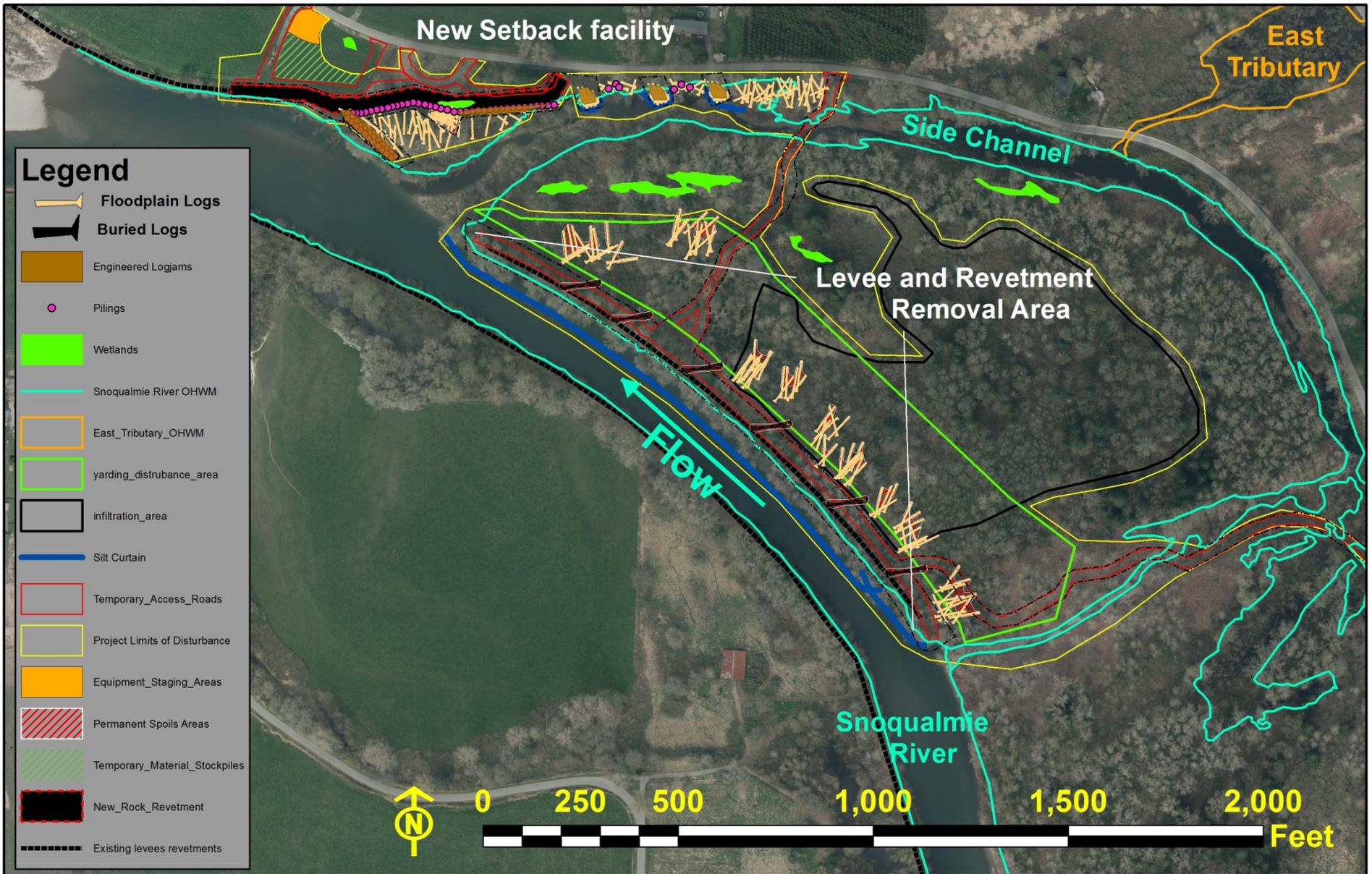
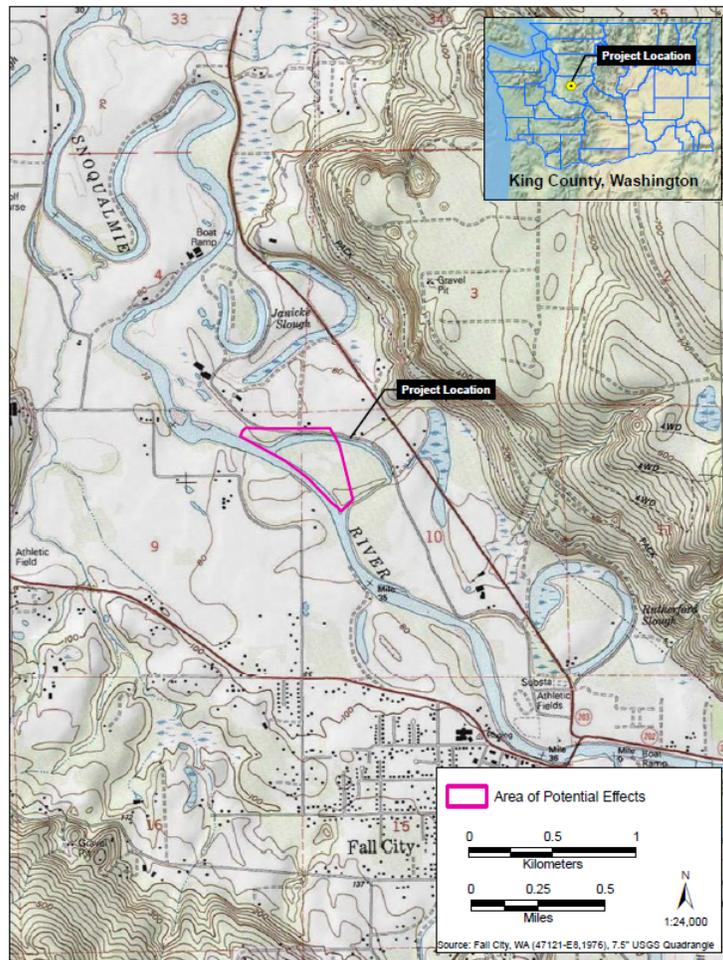


Figure 2. Proposed Primary Actions.

12. *Location of the proposal. Give sufficient information for a person to understand the precise location of your proposed project, including a street address, if any, and section, township, and range, if known. If a proposal would occur over a range of area, provide the range or boundaries of the site(s). Provide a legal description, site plan, vicinity plan, and topographic map, if reasonably available. While you should submit any plans required by the agency, you are not required to duplicate maps or detailed plans submitted with any permit applications related to this checklist.*

The project site is located south of Neal Road SE in Fall City, Washington at approximately the 2500 block of Neal Road in unincorporated King County (Figure 1). The project location is otherwise described as the northwestern quarter of Section 9 and 10, Township 24 North, Range 7 East (Willamette Meridian). The project will take place on seven parcels on the east and west sides of the Snoqualmie River. They include four parcels on the Fall City Natural Area, one property on the Carlson property, one parcel on Washington State Department of Natural Resources property and one parcel on the Richmond property. The Carlson levee/revetment is located on the right (east) bank at River Mile 31 and extends approximately 1,600 feet. The Aldair levee/revetment located on the left (west) bank is approximately 4,600 feet long.



**Figure 3:** Vicinity map showing Project Location

## B. ENVIRONMENTAL ELEMENTS

### 1. Earth

- a. *General description of the site (underline one): flat, rolling, hilly, steep slopes, mountainous, other.*

The project is located on the right and left banks of the Snoqualmie River; the local topography is flat to gently sloping. The north and east boundary of the project site is defined by Neal Road SE. The south and west boundary is the Aldair levee.

- b. *What is the steepest slope on the site (approximate percent slope)?*

The steepest slopes on site are the banks of the Snoqualmie River on the sides of the levees and banks of the side channel found within the Fall City Natural Area. The southern edge of Neal Road is also steep. In some places these slopes exceed 50%.

- c. *What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them and note any prime farmland.*

The Natural Resources Conservation Service (NRCS) soils survey maps the project area as Puyallup fine sandy loam, Puget silty clay loam, Renton silt loam, and River wash. Puyallup fine sandy loam is a nearly level well drained soil formed in alluvium and found on natural levees in the valley bottoms. Puget silty clay loam is a poorly drained soil that formed in alluvium under sedges and grasses in small depressions in the river valleys where slopes are less than 1%. Renton silt loam is a somewhat poorly drained soil that formed in alluvium in river valleys where slopes are 0 to 1 percent. Riverwash consists of long narrow areas of sand, gravel, and stones and is found along channels of larger streams.

Puget silty clay loam soils are used for row crops and pasture. They are mapped on the Carlson Property to the west of Fall City Natural Area. A portion of this property will be used in the construction of the restoration project.

The portion of the levee being removed is composed of a combination of large angular rock, medium to large angular cobbles and gravelly sand fill material.

- d. *Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe.*

The proposed project is in an area that has been periodically reshaped as the channel of the Snoqualmie River migrated across its floodplain. The 1936 aerial photos show the main channel once occupied the current side channel that flows adjacent to Neal Road SE.

Construction of the levee in the early 1930's restricted this process. However, both the levee and the surrounding areas are still subject to erosive forces of the adjacent river, especially during high-water events. Slopes within the project site are relatively stable and appear to have been stable for the entire period of photo record (1936 to present).

- e. *Describe the purpose, type, and approximate quantities of any filling or grading proposed. Indicate the source of fill.*

#### **Angular Rock**

Approximately 5,587 cubic yards of angular rock will be excavated along the upstream 1,600 feet of the right bank Carlson levee to allow channel migration to resume. Approximately 2,794 cubic yards of this material will be reused during construction of the setback levee to enhance erosion protection

along Neal Road. Some of the material (1,142 cubic yards) will possibly be used to improve the stability of the existing left bank Aldair levee. If so, approximately 1,136 cubic yards of material will be excavated from the Aldair levee in order to add this newer material. Approximately 1,188 cubic yards of rock material will be imported to reinforce and extend the downstream portion of the Carlson levee and 1,418 cubic yards will be excavated to accommodate that rock fill.

### **Native Alluvium**

Approximately 10,135 cubic yards of native alluvium (clean cobble, gravel, sand and silt) will be excavated from the right bank levee to improve connectivity of the river with existing floodplain features (side channel). Most native alluvium is intended to be hauled off site but a portion of this material may be used to construct farm pads in the area if there are permitted pads at the time of construction. The remainder of this native material will be redistributed throughout the site within the floodplain in spoils areas shown on the project plans.

### **Imported Boulders**

Up to 4,170 cubic yards of large rock will be placed along the left bank Aldair levee, the right bank setback levee and the Upper Carlson levee. The boulders will be imported to the site to protect infrastructure and private property from erosion damage as the river migrates.

- f. *Could erosion occur as a result of clearing, construction, or use? If so, generally describe.*

Substantial erosion and deposition throughout the riverbanks and floodplain within the Fall City Natural Area are expected and are desirable outcomes of the proposed project. Levee and revetment removal will allow more frequent and higher-velocity flows to leave the main channel of the Snoqualmie River and flow across the Fall City Natural Area floodplain. Erosion of the already engaged right bank floodplain will result after the levee is removed as the river migrates laterally towards the right bank. Sediment mobilized and transported from the site is not expected to result in measurable differences in turbidity levels downstream because this erosion will occur during high flow events when turbidity levels in the river are already high.

- g. *About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)?*

None.

- h. *Proposed measures to reduce or control erosion, or other impacts to the earth, if any:*

Although channel migration and erosion and deposition of sediment within the floodplain are expected outcomes of the project, the following practices and criteria will be used to assure that water quality is maintained during construction:

- A setback revetment will be constructed along Neal Road to contain the channel migration within the Fall City Natural Area and to protect infrastructure and private property.
- High velocity flows will be diverted from the in-water work areas to reduce turbidity during construction. Erosion and sedimentation will be minimized further during construction by employing all necessary and appropriate Best Management Practices (BMPs).
- Clearing along the stream banks and throughout the floodplain will be limited wherever possible to preserve existing native vegetative cover.

- Erosion control BMP's will be employed to minimize the potential for erosion from stockpiles and work areas during construction. Some areas of the floodplain will be planted with native vegetation after construction, but other areas will be left untreated (bare ground) to encourage natural recruitment of early successional tree and shrub species, such as alder and cottonwood.
- After removing the levee and revetment, but before the first flood season, the site will be assessed to determine if additional planting or erosion control is warranted.
- Small rain events may release sediment from disturbed areas on site following project construction. This type of release is unlikely to cause downstream water quality to fall below state water quality standards due to the magnitude of flows in the Snoqualmie River (<3,000 cubic feet per second) relative to surface run-off from disturbed areas on-site (<1 cubic feet per second) during substantial rain events.
- Although substantial fine sediment could be generated from the site during flood events, the site's contribution of turbidity to the mainstem river is unlikely to be significant or measurable during these larger flood events when background levels of turbidity in the river will be high.

## 2. Air

- a. *What types of emissions to the air would result from the proposal (for example, dust, automobile, odors, industrial wood smoke, greenhouse gases) during construction and when the project is completed? If any, generally describe and give approximate quantities, if known.*

The proposed project, once construction is complete, will emit no gasses with the potential to negatively affect climate change.

Construction of the proposed project will use various vehicles and pieces of equipment that emit gasses with the potential to affect climate. These gasses include carbon dioxide (CO<sub>2</sub>), methane and nitrous oxide, as well as others in much smaller amounts. The global warming potential (GWP) of these compounds is measured in "carbon dioxide equivalents," or CO<sub>2</sub>e, which converts the GWP of various gasses into their equivalent in CO<sub>2</sub>. The amount of CO<sub>2</sub>e that may be emitted as a result of constructing the proposed project has been estimated by computing the amount of fuel expected to be consumed by equipment during construction and in transit to and from the project site. Estimated fuel consumption is then converted into CO<sub>2</sub>e emissions using formulae developed by the Energy Information Administration (EIA) of the U.S. Department of Energy.

According to these formulae and estimates, construction of the proposed project will likely result in the discharge of approximately 51.98 tons of CO<sub>2</sub>e to the atmosphere.

However, these emissions will be offset by planting of trees and shrubs that are also an essential component of the proposed project. Trees and shrubs sequester CO<sub>2</sub> during their growth and help to offset emissions of CO<sub>2</sub> to the atmosphere. The EIA has also developed formulae for estimating the rate of carbon sequestration by various types of trees (deciduous or coniferous, fast-, medium-, or slow-growing) at various life stages and these formulae have been used to estimate the carbon sequestration potential of the proposed project.

The Greenhouse Gas (GHG) Emissions Worksheet is attached at the end of this checklist.

- b. *Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe.*

Off-site emissions will not have a direct affect on the proposed project. However, continued emissions of CO<sub>2</sub> and other GHGs worldwide may eventually affect the flow regimes of rivers and streams west of the Cascade Mountains. Predicted effects include higher flows in the winter wet season and lower flows in the spring and summer. These changes may alter conditions at the site, but should not negatively affect the functions and values of the completed project.

- c. *Proposed measures to reduce or control emissions or other impacts to the air, if any:*

Construction will be performed in accordance with the regulations of the Puget Sound Clean Air Agency. Clearing of vegetation will be minimized where applicable. Disturbed areas will be replanted with native vegetation where appropriate. Approximately 23,565 trees will be planted during the planting season following construction of the proposed project. At rates calculated using the method referred to in the answer to Question 2a above, these plantings should sequester the 51.98 tons of CO<sub>2</sub>e emitted during construction of the proposed project in less than three years.

Hydraulic fluid on the heavy equipment will be vegetable based. Engines will not idle unnecessarily and will be kept in proper working order with all filters and other emission control devices functional.

### 3. Water

- a. *Surface:*

- 1) *Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe the type and provide names. If appropriate, state what stream or river it flows into.*

The Snoqualmie River, which is classified by King County as a Type S Aquatic Area, is located within the project area. A side channel of the river and a tributary stream to the side channel are also found within the project boundaries. In addition, there are three wetlands within the project area and they were delineated as part of this project.

#### **Fall City Natural Area**

Prior to levee construction, the main channel occupied the channel that is now considered a side channel of the Snoqualmie River. Two wetlands found on the Natural Area are likely abandoned channels largely cut off from the river when the levees were constructed.

#### **Carlson Property**

One wetland was found on the adjacent farm field on the west side of the project site. It is a depression within the 100-year floodplain between Neal Road and the Snoqualmie River.

- 2) *Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans.*

All of the levee and revetment removal work will occur within 200 feet of the Snoqualmie River. All in-water work will be done in the summer, when flows in the Snoqualmie River are low. The project will involve working in the water for one to two months while heavy equipment is used to remove toe rock from the base of the levee. Most high velocity flow will be isolated from the in-water work areas using various flow diversion methods. The isolation

measures and the rate of in-water work will be managed to minimize turbidity throughout the in-water work window. However, some turbidity will be generated from the site during work in areas where isolation from flowing water will be very difficult. King County is applying for an Individual 401 Water Quality Certification from the Department of Ecology for this in-water work. Work will comply with conditions of the permit.

Additional excavation and fill will occur during construction of the new setback levee along the northern and western boundaries of the site. Setting back the levee will improve the function of the floodplain and connect the floodplain to the mainstem of the Snoqualmie River. This work will involve fill within the ordinary high water mark (OHWM) of the Snoqualmie River and one associated wetland.

- 3) *Estimate the amount of fill and dredge material that could be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material.*

Approximately 5,587 cubic yards of large angular rock and 10,135 cubic yards of alluvium (sand and gravel) material will be removed from the Carlson levee. Approximately 455 cubic yards of soil will be removed from Wetland A and 585 cubic yards of fill material largely salvaged from onsite construction will be placed in Wetland A to build the setback levee and engineered log jams (Figure 2).

If deemed necessary, approximately 1,142 cubic yards of angular rock will be placed within the existing levee footprint of the Aldair levee to maintain the function of this facility.

- 4) *Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities, if known.*

**Levee/Revetment removal:** The in-water work required to remove the levee/revetment will take approximately one to two months depending on river discharge and site conditions. BMP's needed to protect water quality during construction may include one or more of the following:

- Local work area isolation using bulk bags filled with gravel or other means to minimize flow velocity in the work area;
- Deployment of turbidity curtain(s) to isolate the work area; and/or
- Temporary use of large (6-8") pumps (with approved intake screens) to minimize turbidity impacts downstream.

All withdrawn water will be discharged to a suitable, stable location within the project site that will provide adequate water quality treatment before infiltrating or re-entering wetlands or other aquatic areas.

**Setback Revetment Construction:** Ground water levels and water surface elevations within the side channel area adjacent to the proposed setback revetment and engineered log jams may require temporary isolation of the work area and dewatering to construct the project as planned. Work area isolation is likely to require bulk bags filled with sand and rock, temporary sheet piles, or other structural measures, and may require turbidity curtains. Dewatering will require a pump system with an approved intake screen or other dewatering means. Water levels may be dropped temporarily by removing beaver dam(s) which would be reconstructed upon completion of in-water work. Discharge of any pumped surface or groundwater would be in a suitable, stable location within the project interior where turbid water will receive adequate

water quality treatment prior to infiltration or re-entering wetlands or other aquatic habitat areas.

5) *Does the proposal lie within a 100-year floodplain? If so, note location on the site plan.*

Yes, the entire project is located within the 100-year floodplain of the Snoqualmie River.

6) *Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge.*

No waste material will be discharged to surface or groundwater.

b. *Ground:*

1) *Will ground water be withdrawn, or will water be discharged to ground water? Give general description, purpose, and approximate quantities, if known.*

No. This project will not withdraw from or discharge to groundwater.

2) *Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (for example: domestic sewage; industrial containing the following chemicals...; agricultural; etc.). Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve.*

No waste material will be generated or discharged.

c. *Water Runoff (including storm water):*

1) *Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe.*

Most stormwater runoff within the construction area will infiltrate on the site due to the porous nature of the onsite soils. A small amount of runoff may discharge to the river (see response 1h). No impervious surfaces will be added to the site. Most rainfall will infiltrate on the site.

2) *Could waste materials enter ground or surface waters? If so, generally describe.*

No.

d. *Proposed measures to reduce or control surface, ground, and runoff water impacts, if any:*

Measures to minimize surface water impacts are the same as those described to control erosion in **Section 3a(4)** above.

The rate of discharge of turbid water will be managed to maintain standards established through the Individual 401 Water Quality Certification process by isolating the work area from flowing water, controlling the rate of rock removal and slowing discharge of turbid water at the downstream end of the work areas with BMP's (silt booms, pumps, , etc.), as necessary.

## 4. Plants

a. Check or underline types of vegetation found on the site:

- Deciduous trees: alder, maple, black cottonwood, big leaf maple
- Evergreen trees: Douglas fir, western red cedar, Sitka spruce
- Shrubs: Red twig dogwood, Pacific ninebark, salmonberry, snowberry, vine maple
- Grass: Reed canary grass
- Pasture: Pasture grasses
- Crop or grain
- Wet soil plants: slough sedge
- Water plants:
- Other types of vegetation: Knotweed, Himalayan blackberry, English ivy, clematis.

### Wetland

Wetland emergent plants include reed canary grass (*Phalaris arundinacea*) and slough sedge (*Carex obnupta*). The wetland shrub layer is dominated by red-twig dogwood (*Cornus sericea*) and salmonberry (*Rubus spectabilis*). The forested wetland canopy is dominated by black cottonwood (*Populus balsamifera*) and big leaf maple (*Acer macrophyllum*).

### Upland

Species observed on the upland include snowberry (*Symphoricarpos albus*), Himalayan blackberry (*Rubus discolor*), Douglas fir (*Pseudotsuga menziesii*), vine maple (*Acer circinatum*), Indian plum (*Oemlaria cerasiformis*), Western red cedar (*Thuja plicata*), big leaf maple (*Acer macrophyllum*), Japanese knotweed (*Polygonum cuspidatum*) and English ivy (*Hedera helix*).

Invasive species such as Japanese knotweed, English ivy, and Himalayan blackberry, are common on site. Japanese knotweed and English ivy on the King County noxious weed list as class B and C respectively.

b. What kind and amount of vegetation will be removed or altered?

The following number and size of trees will be cleared to remove the levee at the Fall City Natural Area:

- Up to 115, <6" diameter at breast height (DBH) red alder, cottonwood, and big leaf maple.
- Up to 84, 6-12" DBH red alder, cottonwood, and big leaf maple.
- Up to 83, 12-18" DBH red alder, cottonwood, and big leaf maple.
- Up to 96, 18-30" DBH red alder, cottonwood, and big leaf maple.
- Up to 57, > 30" DBH red alder, cottonwood, and big leaf maple.

All of the trees on site will be used as roughness features in the floodplain and are expected to be recruited to the river as it migrates into the right bank floodplain. In addition, three trees greater than 12 inches in diameter at breast height (DBH) will be removed to construct an access road from Neal Road SE. Minimal clearing of native vegetation will be required for this temporary access road because it will be established around existing trees, wherever possible.

- c. *List threatened or endangered species known to be on or near the site.*

There are no threatened or endangered plant species known to exist on the site. The Washington Department of Natural Resources' (DNR) Natural Heritage Information System indicated no listed species are found on the subject properties or nearby.

- d. *Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any:*

High visibility flagging or fencing will be installed to protect existing native trees and shrubs. Once construction is completed, the most disturbed areas will be revegetated with native plants where appropriate. Approximately 18 acres of the project site within the floodplain and riparian/wetland buffers will be revegetated and maintained after construction to restore native riparian plant communities to areas currently dominated by invasive, non-native plants.

## 5. Animals

- a. *Check or underline any birds or animals that have been observed on or near the site, or are known to be on or near the site:*

- Birds: hawk, heron, eagle, songbirds, other  
 Mammals: deer, elk, beaver, coyote, other  
 Fish: salmon, trout, other

This reach of the Snoqualmie River is used by Chinook and coho salmon, and steelhead trout for spawning and rearing. The wetlands and the forested river margin provide habitat to a variety of terrestrial wildlife such as coyote, deer, elk and smaller mammals including river otter, muskrat, amphibians and various rodents.

Numerous snags (dead trees) and mature trees in the project vicinity provide excellent habitat for raptors such as bald eagles, osprey, hawks and cavity nesting and insect eating birds. Waterfowl such as ducks and geese use the wetlands and the Snoqualmie River within the project area. The project site is located along the Pacific Flyway.

- b. *List any threatened or endangered species known to be on or near the site.*

Fish: Puget Sound Chinook salmon (*Oncorhynchus tshawytscha*), steelhead (*Oncorhynchus mykiss*) and bull trout (*Salvelinus confluentus*) are present in the Snoqualmie River and are currently listed as Threatened species under the Endangered Species Act (ESA). Coho salmon (*O. kisutch*), currently a species of concern under the ESA, are also present in the Snoqualmie River.

Wildlife: Bald eagles (*Haliaeetus leucocephalus*), delisted from a threatened status on June 28, 2007, are present in the vicinity of the project site, but no nests are known to occur in the project area.

- c. *Is the site part of a migration route? If so, explain.*

Juvenile and adult anadromous and resident fish migrate through the project area. The site is also located on the Pacific Flyway used by waterfowl and other migratory bird species.

- d. *Proposed measures to preserve or enhance wildlife, if any:*

The project is intended to increase floodplain complexity, thereby providing diverse habitat for numerous fish and wildlife species. Restoring improved fish access to the channel isolated from the mainstem river by the levee is a significant benefit to those species. In addition, most disturbed areas, including areas currently dominated by non-native plants, will be revegetated with native plant species, where appropriate.

## 6. Energy and Natural Resources

- a. *What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc.*

The completed project will require no energy.

- b. *Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe.*

No.

- c. *What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any:*

Not applicable.

## 7. Environmental Health

- a. *Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste, that could occur as a result of this proposal? If so, describe.*

There is a very small risk of a hydraulic fluid or other fuel spilling or leaking from heavy equipment.

- 1) *Describe special emergency services that might be required.*

None.

- 2) *Proposed measures to reduce or control environmental health hazards, if any:*

Excavators and other heavy equipment working within the project area will use a vegetable-based hydraulic fluid. Maintenance and refueling of equipment will be completed in designated areas set up to prevent release of oil, gas, or other pollutants into the stream. Appropriate containment and spill response materials will be present on the site to ensure crews are well prepared to deal with any accidental spills.

- b. Noise:

- 1) *What types of noise exist in the area that may affect your project (for example, traffic, equipment, operation, other)?*

The project site is located in a rural area with little road noise. Neal Road is closed on the west end and contributes minimally to road noise. The project boundary is approximately 530 feet from Highway 203 and 3,860 feet to Highway 202. Both highways have considerable large truck traffic and associated noise but will have no impact on the project.

- 2) *What types and levels of noise would be created by or associated with the project on a short-term or long-term basis (for example, traffic construction, equipment operation, other)? Indicate what hours noise would come from the site.*

Heavy equipment operation will increase noise levels during construction. Construction noise from heavy equipment will be temporary and will occur between the hours of 7 a.m. and 7 p.m. on weekdays and between 9 a.m. and 5 p.m. on Saturdays. The completed project will not change existing noise levels.

- 3) *Proposed measures to reduce or control noise impacts, if any:*

Construction activities will comply with the provisions of the King County Noise Ordinance (Ordinance No. 3139). Equipment operation will be limited to the hours of 7 a.m. to 7 p.m. on Monday through Friday and 9 a.m. to 5 p.m. on Saturdays.

## **8. Land and Shoreline Use**

- a. *What is the current use of the site and adjacent properties?*

The project site includes a King County-owned natural resource land (Fall City Natural Area) used for passive recreation. The other properties within the project site are privately owned farmland. The Snoqualmie River is used for recreational fishing and boating.

- b. *Has the site been used for agriculture? If so, describe.*

Aerial photos dating back to 1936 show that the Fall City Natural Area was used in the past for agriculture. A small portion of the project will be constructed on the adjacent farmland to the west and material may be added to the levee on the farmland across the river. The project site is located within the Snoqualmie Agricultural Production District (APD).

- c. *Describe any structures on the site.*

The structures on site include the right and left bank levee/revetments and Neal Road SE. The right bank levee is approximately 1,600 feet long and the left bank levee is approximately 4,600 feet long. The levee/revetments consist of large angular rock placed on the river bank to prevent channel migration. The surfaces of the levees are gravel and heavily vegetated with mature trees and shrubs. The surface is approximately 10' wide, with moderate to steep slopes on both sides. No other structures are present in the Fall City Natural Area or on the farmlands to the west within the construction footprint. A gravel parking lot and trail to the river is located on the WDFW property.

- d. *Will any structures be demolished? If so, what?*

The restoration project will remove approximately 1600 feet of levee/revetment.

- e. *What is the current zoning classification of the site?*

All parcels are classified as A-35.

- f. *What is the current comprehensive plan designation of the site?*

King County Open Space (Fall City Natural Area).

g. *If applicable, what is the current shoreline master program designation of the site?*

The right bank of the Snoqualmie River at the project site is considered a “Natural Shoreline” and the left bank is considered a “Resource Shoreline”.

h. *Has any part of the site been classified as an “environmentally sensitive” area? If so, specify.*

All parcels within the project boundaries are considered seismic hazard areas, Class 2 critical aquifer recharge areas and within the 100-year floodplain of the Snoqualmie River. Four parcels are also considered erosion hazard areas. The National Wetland Inventory indicates that two wetlands with a rating of 4 exist in the Fall City Natural Area and the Notice on Title for the Carlson property indicates the presence of wetlands. King County has delineated three wetlands (A, B and C) within the project boundaries that are outside the ordinary high water mark of the Snoqualmie River. Wetland A has been given a Washington State Department of Ecology wetland rating category of II, and Wetland B and C, Category III. Under the King County Critical Areas Ordinance (CAO) the Snoqualmie River is designated a Type S aquatic area.

i. *Approximately how many people would reside or work in the completed project?*

None.

j. *Approximately how many people would the completed project displace?*

None.

k. *Proposed measures to avoid or reduce displacement impacts, if any:*

Not applicable.

l. *Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any:*

Considerable effort has been made to ensure that the project is consistent with current land uses adjacent to the site. The set-back revetment will protect private property and public infrastructure (Neal Road) from erosion. Hydraulic analyses demonstrated that the project will not have any negative effects on the surrounding agriculture. The project is likely to benefit agriculture overall by:

1. Replacing and extending the existing right bank revetment (Lower Carlson) with a modern facility built to current engineering standards;
2. Storing sediment in the active channel as it widens and thereby reducing storage of sediment on the gravel bar downstream;
3. Reducing left bank erosion of current agricultural land that is exacerbated by rapid right bank gravel bar growth; and
4. Contributing material and facilitating the construction of additional farm pads in the area used for sheltering livestock during flood events.

The project is located on King County property and within the floodplain of the Snoqualmie River which severely limits its potential uses. The project is consistent with intended land-use within the Fall City Natural Area. The project will restore natural riverine processes and addresses high priority salmon habitat restoration needs for the threatened Snoqualmie Chinook population identified in the federal Puget Sound Salmon Recovery Plan (2007). The project is located in a “primary restoration” mainstem sub-basin and addresses four of the Snohomish River Basin Salmon Conservation Plan’s

highest priority ecological actions in the Upper-Mainstem Snoqualmie River sub-basin: reconnection of off-channel habitats; restoration of shoreline conditions; restoration of hydrologic and sediment processes; and riparian enhancement. The project is part of the Snoqualmie Fall City Reach Reconnection (Project ID# 07-MPR-305) in the 2012 Snohomish Basin 3-year work plan.

The project is otherwise consistent with the goals of the Critical Areas Ordinance and Shoreline Master program that attempts to maintain and restore important ecological areas.

## 9. Housing

- a. *Approximately how many units would be provided, if any? Indicate whether high-, middle-, or low-income housing.*

None.

- b. *Approximately how many units, if any, would be eliminated? Indicate whether high-, middle-, or low-income housing.*

None.

- c. *Proposed measures to reduce or control housing impacts, if any:*

Not applicable.

## 10. Aesthetics

- a. *What is the tallest height of any proposed structure(s), not including antennas? What is the principal exterior building material(s) proposed?*

N/A. There are no buildings or structures being proposed that protrude above the existing grade.

- b. *What views in the immediate vicinity would be altered or obstructed?*

None. Numerous mature cottonwood, alder, and big leaf maple trees will be removed from the project site. Many new native plants will be installed throughout the project site.

- c. *Proposed measures to reduce or control aesthetic impacts, if any:*

Native riparian plantings will be installed, where appropriate, in areas disturbed by construction.

## 11. Light and Glare

- a. *What type of light or glare will the proposal produce? During what time of day would it mainly occur?*

None.

- b. *Could light or glare from the finished project be a safety hazard or interfere with views?*

No.

c. *What existing off-site sources of light or glare may affect your proposal?*

None.

d. *Describe proposed measures to reduce or control light and glare impacts, if any.*

None.

## 12. Recreation

a. *What designated and informal recreational opportunities are in the immediate vicinity?*

The Fall City Natural Area and WDFW property within the project area do not provide any formal recreational facilities but are open for public use. The area is currently used for passive recreation such as walking, fishing, birding and wildlife viewing via informal trails to the river. The WDFW parking lot and trail will remain intact after the project. The remainder of the project area is privately owned farmland, which is not accessible by the public.

The adjacent Snoqualmie River is regularly used by recreational boaters. Jet boats, drift boats and rafts are common in this reach during salmon and steelhead runs. The primary launch point is upstream of the project reach at the WDFW property near Tokul Creek and the take-out is a formal boat launch at the mouth of the Raging River, with another just downstream of the bridge in Fall City. Floating the Snoqualmie River, particularly on inner tubes and small rafts, is a popular recreational activity in the summer, but most inexperienced floaters do not float through this reach. Some floaters take out at the west end of Neal Road, several thousand feet downstream of the project site. King County is currently conducting a survey of aquatic recreational use in this reach of the Snoqualmie River in order to have a better understanding of the amount and type of in-water use in the project area and to inform project design.

b. *Would the proposed project displace any existing recreational uses? If so, describe.*

No recreational uses will be eliminated, but changes in the types of uses may occur. The character of the river reach resulting from the levee removal may at times make it less suitable or desirable for some recreational floaters. Removal of the levee will initiate channel migration, which will in turn cause some trees to fall into the river as the bank retreats. The widening channel and more accessible floodplain will also encourage large wood floating from upstream to deposit within the reach. The position and orientation of these future wood accumulations will be determined by river conditions and are expected to change over time as a result of natural river processes. King County is committed to monitoring these conditions after the project is completed and will work closely with the King County Sheriff and a boater safety consultant to evaluate and respond to future recreational safety concerns. Protocols are specified in “*Procedures for Managing Naturally Occurring Large Wood in King County Rivers*”, available on King County’s website.

Other recreational uses will be enhanced by restoring river and floodplain processes in the project area. For example, habitat restoration helps promote recreational fishing by improving fish survival and provides a more natural river environment in which to fish.

- c. *Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any:*

The project will install informational signs upstream of the site alerting users to changing site conditions and potential hazards. News releases and website alerts will also be used to provide updated information to recreational users. These improvements are intended to provide options for river users, but will not eliminate the inherent risk that users take when recreating in or around the river. Consistent with safe recreational practices, recreational users need to take appropriate precautions, pay close attention to river conditions and make wise decisions consistent with their skills and abilities.

Consideration of potential recreational impacts is progressing through a series of steps during the design process including early identification of risks, data collection to understand specific site conditions and recreational uses affected by those risks, evaluation and assessment using available tools and incorporation of mitigation measures. Most importantly, King County has convened a recreational user group to provide feedback on the project design. King County is following the County's *Procedures for Considering Public Safety When Placing Large Wood in King County Rivers*, which provides numerous opportunities for the public to provide input during the design process for projects which will place wood in King County rivers.

A post-project management plan is being developed and will be finalized using input received from river safety experts, recreational users and the public via the local recreational user group. The plan will include a series of progressive steps that allow for a flexible response to addressing safety concerns using the least intrusive, yet effective means. Those may include: education and outreach; monitoring; public notices; web alerts; signs posted along the river to alert users to conditions; temporary and/or seasonal use advisories; temporary or seasonal closure (by order of King County Sheriff only); and finally, modification of wood accumulations where safe portage or passage is not possible. The plan will be consistent with the goals of the project and the draft *Natural Wood Policy* being developed by King County.

### **13. Historical and Cultural Preservation**

- a. *Are there any places or objects listed on, or proposed for, national, state, or local preservation registers known to be on or next to the site? If so, generally describe.*

As part of the early project planning process, King County hired an archaeological consultant to perform a site specific assessment of the property to determine if historic and/or cultural resources are present and if the project has the potential to adversely affect such resources on adjacent properties. The consultant conducted a search of relevant records and literature on the archaeology, ethnography, and history of the project area to provide information on previously identified cultural resources and determine the existence or probability of other cultural resources in the project area. The consultant reviewed local, state and federal records and data bases and work by previous investigators.

The assessment found no inventoried or documented cultural resource sites on the project property. One historic resource close to the project was identified. This resource, the Rutherford Homestead, is located across the road from the proposed restoration area.

- b. *Generally describe any landmarks or evidence of historical, archaeological, scientific, or cultural importance known to be on or next to the site.*

The Rutherford Homestead, located at 2556 Neal Road, across the street from the project site, is a cultural resource which is historically significant.

The absence of archaeological sites within the project area may be a function of the lack of archaeological surveys conducted in the area. A survey of cultural resources investigation reports from projects located near the project area revealed that half of these investigations resulted in the discovery of buried archaeological sites and deposits.

Therefore, assuming that the landforms located within the project area are similar to those surveyed in adjacent areas, it is highly likely that subsurface archaeological investigations within the project area would result in the discovery of archaeological sites and deposits. The presence of multiple ethnographic sites near the project area further supports this conclusion.

- c. *Proposed measures to reduce or control impacts, if any:*

On-site inspection of the site and subsurface soil conditions are currently underway. The cultural resource consultant may recommend additional cultural resource work. This may include cultural resource monitoring onsite during additional design-related subsurface explorations and cultural resource monitoring during construction. A map will be made of pre-construction exploration areas and areas where monitoring of construction is recommended.

The project actions within the existing levee footprints involve working in previously disturbed areas, but the design team has taken precautions including early consultation with historic and cultural resource experts to minimize the potential for adverse impacts. Although there will be no impacts to known historic or cultural resources on the site, there is always the potential for discovery of unknown and/or uninventoried materials. The possibility of uncovering materials of archaeological or historic or cultural significance and appropriate response procedures will be discussed during a pre-construction conference with construction crews prior to construction. Experts in historic and cultural resource issues will be on-call during construction to evaluate and direct crews should potential resources be encountered. A cultural resources expert will be on site to observe excavations into native soils in any areas previously identified as potentially sensitive.

If cultural or archaeological resources are uncovered or encountered during project construction, work will cease immediately and appropriate steps necessary to protect those resources will be taken prior to resuming construction. If resources are discovered, the Washington State Department of Archaeology and Historic Preservation, the King County Historic Preservation Program, and any affected tribal groups will be notified immediately, and an on-site inspection will be conducted by a state-certified archaeologist and other qualified resource professionals. A mitigation plan will be prepared prior to construction resuming at the site.

## **14. Transportation**

- a. *Identify public streets and highways serving the site and describe proposed access to the existing street system. Show on-site plans, if any.*

Access to the site is from Neal Road, west of Highway 203 in Fall City WA.

- b. *Is the site currently served by public transit? If not, what is the approximate distance to the nearest transit stop?*

No. The nearest transit stop is approximately 1.7 miles east of the project site in Fall City.

- c. *How many parking spaces would the completed project have? How many would the project eliminate?*

The proposed project will neither create nor eliminate any parking spaces.

- d. *Will the proposal require any new roads or streets, or improvements to existing roads or streets, not including driveways? If so, generally describe (indicate whether public or private).*

No.

- e. *Will the project use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe.*

No.

- f. *How many vehicular trips per day would be generated by the completed project? If known, indicate when peak volumes would occur.*

None.

- g. *Proposed measures to reduce or control transportation impacts, if any:*

Not applicable.

## **15. Public Services**

- a. *Would the project result in an increased need for public services (for example: fire protection, police protection, health care, schools, other)? If so, generally describe.*

No.

- b. *Proposed measures to reduce or control direct impacts on public services, if any:*

Not applicable.

## **16. Utilities**

- a. *Underline utilities currently available at the site: electricity, natural gas, water, refuse service, telephone, sanitary sewer, septic system, other.*

No utilities are available at the site.

- b. *Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity that might be needed.*

None.

**C. SIGNATURE**

*The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.*

Signature:

  
\_\_\_\_\_

Title:

Project Manager  
\_\_\_\_\_

Date Submitted:

9/18/13  
\_\_\_\_\_

Greenhouse Gas (GHG) Emissions Worksheet

**Upper Carlson Levee Setback Project**

Note: The finished project will emit no GHGs aside from those occurring in the environment by natural processes. All emissions are therefore related to construction of the proposed project.

Distance of project site from Renton Shops, where most daily construction-related vehicle trips will start and end: 23 miles

Estimated days of construction activity:

<u>Vehicle</u>	<u>Miles/hours</u>	<u>Rate</u>	<u>fuel used</u>	<u>Em. Coef.</u>	<u>Emissions</u>	<u>Tons CO<sub>2</sub>e</u>
Pickup	1840	20.7	88.89	19.564	1739.02	0.79
Pickup	1840	20.7	88.89	19.564	1739.02	0.79
Pickup	1840	20.7	88.89	19.564	1739.02	0.79
dumptruck	20000	6.15	3252.03	22.384	72793.50	33.02
Tractor /Tub	625	1.9	328.95	22.384	7363.16	3.34
PC 120 Trackhoe	240	6.3	1512.00	4.924	7445.81	3.38
CAT 330	240	8.3	1992.00	4.924	9809.56	4.45
D6 LGP w/13' blade	120	8.3	996.00	4.924	4904.78	2.22
Pile Driver	120	8.3	996.00	4.924	4904.78	2.22
Heavy Equip Transport	184	1.9	96.84	22.384	2167.71	0.98
<b>TOTAL:</b>					<b>114606.38</b>	<b>51.98</b>

Project plans call for planting of 10,765 deciduous and 12,800 coniferous trees. These trees, assuming an 80% survival rate, will sequester over 65 tons of carbon within three years of their planting, more than offsetting the carbon emissions generated by construction of the project.