

Scott Boettcher

From: Rob Wilson <RWilson@co.grays-harbor.wa.us>
Sent: Thursday, September 3, 2020 4:23 PM
To: Scott Boettcher
Subject: RE: Additional Information Needs --- RE: Grays Harbor County Application
Attachments: Attachment A - species, lifestage, and limiting factors.docx

Scott,

Below is the County's response to the request for additional information. Also, I have included an updated cost estimate for the Phase II construction with an explanation for the increase and another element of the project, project monitoring, which we would like to include in the project.

Let me know if any additional information is needed.

Updated Cost for Phase II Construction: Based on lessons learned during the construction of Phase I Keys Road Flood Protection project we estimate the cost to be \$1,561,405.

This update includes increases to structure cost, increases to construction oversight cost, and increased dewatering and isolation costs, as well as a contingency for additional piles in the event the design depths cannot be reached.

Project Monitoring: A monitoring plan will ensure project outcomes can be measured in a quantifiable way. Primarily this would be a desktop analysis using aerial imagery of the project collected annually with a drone. Project metrics would include channel length, number of pools, rate of erosion, and acres of agricultural land/riparian vegetation preserved. We estimate this cost to be \$38,105 included in above total.

Additional Information Requests:

a) Please identify species that currently use the project site and habitat types present under current conditions and then as a result of the proposed project.

Species present at the Phase II Project site, as listed in Section 5.8.3 of the ASRP (page 161) and identified through the Statewide Washington Integrated Fish Distribution Dataset, include: Winter-run Steelhead; Coho Salmon; Fall-run Chinook salmon; and Chum salmon. The Phase II Project will restore ecosystem functions that support habitat critical to these species. These habitat features are stable gravels for spawning, cool refugia, and shallow-water margins. The project reach is a migratory route to high quality habitat upstream in the East Fork Satsop River and so the velocity refuge, food production, and cover for species migrating upstream are additionally important habitat functions for these species. The project will improve these habitat features using engineered log jams (ELJs), a riparian planting program, and invasive species removal. A table summarizing how riparian planting, invasive removal, and ELJs address limiting factors by restoring ecosystem processes is included in Attachment A.

b) Please address how you will water new plantings. If you have them, discuss plans and preparations as necessary for acquiring temporary water rights to water riparian plantings.

The need for plant irrigation or watering will be dependent on planting location, planting design, and materials selected. Irrigation can be costly and planting in areas where watering is needed can reduce the number of plants that may be installed. Examples include the need to keep an access unplanted so that a water truck can reach all plantings in an area or the need for larger more established plants that can survive dryer conditions. Because of these considerations Phase II planting is anticipated to occur primarily in areas where plants will not require irrigation or other watering and avoiding planting on high terraces where the current use is agricultural. The final planting plan will make use of underplanting in areas where shade from existing riparian vegetation will protect new plantings, siting smaller less established plants on the floodplain where groundwater will be accessible, and installing plants in the dormant season October 1 - March 1 when they are more easily able to establish in time for the summer growth period. Plans

and specifications for the riparian planting component of the Phase II design have not been developed yet but will follow the general principals discussed above.

c) Please discuss plans and budget for ensuring meaningful archaeological and cultural resource survey and documentation.

As part of the permitting effort for Phase II a cultural resources survey will be conducted. This workplan for the cultural resources survey will be shared with the Chehalis and Quinault tribes for review and comment. The workplan will assume that a discovery will be made so that in the event of an inadvertent discovery funds are available to notify stakeholders and implement the inadvertent discovery plan. The cost estimate for the cultural resources survey was conservatively placed at \$80,000 and was based on the level of effort required for a larger project reach upstream on the EF Satsop River with the same tribal stakeholders. Funding for the cultural resources survey was secured through the 2020 ASRP RFP grant process.

Thanks,

Rob Wilson, PE
 County Engineer
 Grays Harbor County Public Works
 360-249-4222

From: Scott Boettcher [mailto:scottb@sbgh-partners.com]
Sent: Thursday, August 20, 2020 11:34 AM
To: Rob Wilson
Subject: Additional Information Needs --- RE: Grays Harbor County Application

Hello Rob. The 2021-23 Local Projects Review Committee met last week. We have identified additional information needed of you (identified below). Please provide your responses no later than 5:00 p.m., Thursday, 9/03/2020. Thank you. Feel free to call or email with questions.
 Scott

Sponsor	Project	Additional Information Request
4. Grays Harbor County	Lower Satsop Restoration & Protection Program – Phase II (Habitat Connectivity and Reach-Scale Aquatic, Riparian and Floodplain Restoration)	a. Please identify species that currently use the project site and habitat types present under current conditions and then as a result of the proposed project. b. Please address how you will water new plantings. If you have them, discuss plans and preparations as necessary for acquiring temporary water rights to water riparian plantings c. Please discuss plans and budget for ensuring meaningful archaeological and cultural resource survey and documentation.

From: Rob Wilson <RWilson@co.grays-harbor.wa.us>
Sent: Wednesday, July 8, 2020 3:20 PM
To: Scott Boettcher <scottb@sbgh-partners.com>
Subject: Grays Harbor County Application

Scott,

Grays Harbor County's Local Project Application can be found at the following link: <https://www.ezview.wa.gov/DesktopModules/Documents2/View.aspx?tabID=37263&alias=1973&mid=69455&itemID=9072>

Thank you to you and the Flood Authority for your consideration of our project.

Thanks,

Rob Wilson, PE
County Engineer
Grays Harbor County Public Works
360-249-4222

Attachment A

Table 1 lists limiting factors for the project reach, design elements, how proposed actions restore impaired ecosystem processes, and the species and life stage that will benefit from these actions.

Table 1 – Limiting factors, design elements, restored ecosystem processes, & species life stage to benefit.

Limiting Factor	Design Element	Physical Processes by which Design Elements will Restore Ecosystem Process and Function	Life Stage and Species to Benefit
Water Temperature	<ul style="list-style-type: none"> • In channel ELJs • Riparian planting program • Invasive species removal 	ELJs scour deep pools, provide cover, and increase surface to groundwater interactions which push surface water into the stream bed reducing temperature in the water column. Riparian plantings will provide shade which can maintain cool water temperatures. They also support the floodplain large wood cycle where mature species eventually fall into streams providing cover, habitat and the other myriad of benefits associated with wood.	<ul style="list-style-type: none"> • Fall Chinook spawning • Chum spawning • Winter Steelhead rearing • Coho rearing
Low habitat diversity (lack of side channels, large wood, and floodplain connectivity)	<ul style="list-style-type: none"> • In channel ELJs • Riparian planting program • Invasive species removal 	ELJs provide cover, scour holding pools, and locally increase water surface elevations. As the river planform evolves in response to the sediment they sort and collect channel length increases and stream gradient decreases; which along with increased water surface elevations improves floodplain connectivity. When side channels develop naturally it is in locations where hydraulic conditions will maintain them.	<ul style="list-style-type: none"> • Winter Steelhead rearing • Coho rearing • Northern red-legged frog • Olympic mudminnow
Reduced quantity and quality of instream habitat	<ul style="list-style-type: none"> • In channel ELJs • Riparian planting program • Invasive species removal 	ELJs increase benthic macroinvertebrate productivity, provide cover and reduce water temperature by increasing surface water interactions with groundwater. They also sort sediment and maintain stable gravels for spawning by locally reducing the velocity of the water around them. Finally, ELJs improve floodplain connectivity by raising water surface elevations increasing frequency of side channel utilization. The riparian planting program will improve edge habitat by providing cover along shallow margins in floodplain wetlands and backwater habitats.	<ul style="list-style-type: none"> • Winter Steelhead rearing • Coho rearing • North American beaver young • Great blue heron nesting
Channel length and width	<ul style="list-style-type: none"> • In channel ELJs 	ELJs increase channel length by splitting flow and locally raising water surface elevation increasing floodplain inundation and side channel utilization. Their primary hydraulic influence is local, creating velocity and shear stress gradients which result in pool habitat and adjacent sediment sorting. However, once enough structures are installed to change sediment dynamics in a reach, they can have a reach-scale geomorphic effect. This geomorphic effect is a result of natural processes at work in the system which over time settle into a self-regulating low maintenance equilibrium.	<ul style="list-style-type: none"> • Winter Steelhead rearing • Coho rearing • Northern red-legged frog • Olympic mudminnow • North American beaver young
Fine sediment loading	<ul style="list-style-type: none"> • In channel ELJs • Riparian planting program 	ELJs will reduce fine sediment loading by reducing the rate of erosion of agricultural lands. Structures will be placed to aggrade alluvium in areas where erosion is a problem creating a buffer of aggraded alluvium and gravel between the highly erodible soils and the river. The banks will be planted with native riparian species which will	<ul style="list-style-type: none"> • Fall Chinook spawning • Chum spawning

Attachment A

	<ul style="list-style-type: none"> • Invasive species removal 	provide soil cohesion and trap solids present in runoff before they enter the river.	
Predation	<ul style="list-style-type: none"> • In channel ELJs • Riparian planting program 	ELJs provide cover, increase food production of benthic macroinvertebrates, and scour holding pools. The project will also increase complex edge habitat by increasing channel length, improving floodplain connectivity and connecting floodplain wetland and backwater habitats to the main channel with greater frequency. The riparian planting program will reduce predation by providing cover along shallow margins in floodplain wetlands, backwater habitats, and along the main channel.	<ul style="list-style-type: none"> • Winter Steelhead rearing • Coho rearing • North American beaver young • Great blue heron nesting • Northern red-legged frog • Olympic mudminnow
Channel Instability (bed scour and sediment transport)	<ul style="list-style-type: none"> • In channel ELJs • Riparian planting program • Invasive species removal 	The project proposes a design with a reach-scale effect on the sediment dynamics of the system. The ELJs will stabilize eroding banks, sort sediment into areas with stable gravels and reduce the high rate of channel migration to the historic rate. Riparian plantings will control erosion at the river's edge and help filter and keep water clean.	<ul style="list-style-type: none"> • Fall Chinook spawning • Chum spawning
Low flows	<ul style="list-style-type: none"> • In channel ELJs 	ELJs provide pools, and increase surface groundwater interactions which help reduce the temperature of the water column. Additionally, they locally raise water surface elevations increasing floodplain inundation and side channel utilization which support healthy riparian vegetation.	<ul style="list-style-type: none"> • Winter Steelhead rearing • Coho rearing • North American beaver young • Great blue heron nesting