Project Review Comments

PROJECT: 21-1078 R, Upper Germany Creek Restoration Project

Sponsor: Cowlitz Conservation Dist Program: SALMON ST PROJ Status: Application Resubmitted

MEETING: Initial Review

Shared: 4/2/2021

Review Status: Needs more information

Considerations: Scope concern

Topics	Comments
Review Panel Comments - Initial	
Questions (response required)	
	There are 30 anchor log structures proposed on the conceptual map. How was the number of structures determined? How will they be sited and will there be a measurable objective for these structures, such as 25% reduction in gradient or 50% increase in spawning size gravel deposited in x years? Relating to this, is the goal to fill in sediment at each structure, or to recruit additional large wood to the system to help aggrade material? Also, will the design rely on field fit decisions, such as placing wood simply where you can access and anchor material?
	Reply: Our initial estimate of wood placement is based on aerial photography assessment including known areas dominated by bedrock and areas accessible for import of wood. The buffers adjacent to Germany Creek are understocked and hardwood dominated. We could probably recruit some material from the buffer but at a cost to riparian function. We have observed areas where bedload is accumulating which we will avoid with this phase of the project. These areas will be assessed during field reconnaissance and ability/need to introduce large woody material will be evaluated for possible inclusion into a phase II project proposal. The objective of this phase I project is to anchor wood to accumulate bedload being transported through the system. When opportunity allows channel margin wood anchoring will include objective for recruiting additional wood. Approximate spacing of wood structure will be calculated using the tangent length from one structure to the next for the given slope of creek. Equally important is the field fit aspect which does account for where you can get the wood to and local anchoring ability including fit to the bedrock and rock competency. We intend to anchor wood to the bedrock with bedrock anchors drilled and epoxied into the bedrock. Logs will be attached to the anchors using chain. Chain does not have the tendency to stretch like cable. The habitat outcome is to have a cobble:gravel substrate that will provide interstitial spaces for rearing juveniles. Pool habitat will be encouraged to form downstream of each log so long as spacing can be adhered to. This will hopefully encourage rearing and migration habitat in the pool and spawning opportunity on the tail out of the pool. We hope to realize some insulation value of substrate accumulated on bedrock. In the Coweeman River (much wider system) we observed temperature ratcheting up from day to day rather than cooling off like a normal diurnal pattern.
	Please elaborate on SMART objectives to identify biological goals that are specific and measurable (e.g., increase spawnable gravel by 50% , reconnect at least 500 feet of side channel length, add at least 200 conifer trees per acre of riparian area). The current objectives are simply implementation goals.

	Reply: Install wood based channel spanning structures to accumulate substrate upstream of the structure. When available wood structure will be spaced to encourage a pool: riffle sequence. Substrate accumulation will serve to insulate bedrock helping to address stream temperature concerns in the watershed. Improve riparian function by increasing species diversity and restoring the buffer to a fully stocked condition by planting shade tolerant conifer within canopy gaps. Stocking rate will be highly dependent on conditions actually encountered during planting.
	Thank you for providing information about lessons learned from the Coweeman project. It is mentioned that gravel will need to be stocked in the anchored log structures. Is this gravel material included in the materials budget? And more importantly are there abundant natural gravel sources upstream to continue building and replenishing gravel deposits in the project area over time?
	Reply: Based upon bedload observations in the system downstream, there are abundant sources upstream. We anticipate that functioning structures will be completely filled during the first winter. We learned from the Coweeman that it helps considerably to place gravel along the upstream face of structures ahead of the first winter. This helps avoid native wood and large rock saltating through the system from hammering the structure. There are a lot of issues involved with getting "seed" gravel to the structures. Yes, we have attempted to account for these costs within the budget.
Improvements to Make Project Technically Sound (response required)	
	The project includes the reconnection of a side channel area in Reach 8, but very little description of its condition or restoration needs was provided. Please provide information on the existing habitat conditions, fish use, and restoration objectives for this side channel. Is the side channel intended to be available at all flows or only for higher flows?
	Reply: The side channel opportunity was made aware to us through the LCFRB project siting project. We have not laid eyes of the opportunity in the field, yet. This is part of the design component of the design-build project.
	Will the hydrologic modeling that appears in the budget be sufficient to show when and how often the side channel is connected under current and desired conditions?
	Reply: As the side channel opportunity is explored yes, hydrologic modelling will be undertaken to assess present connectivity as well as desired connectivity.
	This project is design/build; therefore not required to provide a preliminary design; however it would improve the proposal if some typicals were provided of anchored log and debris jam structures. Photo documentation of these structures in comparable steams would also make it more clear what is being proposed. The sponsor discussed anchoring techniques from the Coweeman River, if there are pictures or information from that project that would help illustrate the plans for Germany Creek, please provide them.
	Reply: Attached in PRISM
	Please provide a little more information about the conifer planting approach, including specific areas you plan on targeting. The site photos provided show densely packed canopy and a fairly confined valley width so it is unclear what the need is from the information provided.

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	Reply: We intend on sending planting crews up both sides of Germany Creek. We will end up walking and planting within the entire reach and target edge of creek out to 180 feet. The intent is to plant shade tolerant conifer into canopy gaps. The target stocking rate depends on the age of the riparian vegetation. From aerial photos, the surrounding buffers appear to be about 50 feet wide (forest practices at the time). Beyond the 50-foot buffer, the stand appears to be about 30 years old and hardwood dominated. The plan is to bring the stand up to fully stocked by overplanting in canopy gaps. Shade tolerant species will include Grand Fir (Abies Grandis), Western Red Cedar (Thuja Plicata), Western Hemlock (Tsuga Heterophylla).
General Comments (response not required)	
	The proposed Upper Germany Creek project is operating on a reach scale with one landowner and focused on restoring spawning gravels and improving/increasing rearing habitat primarily for mid-columbia steelhead, which are the salmonids most likely to utilize this area of Germany Creek.

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Sponsor: Cowlitz Conservation Dist Program: SALMON ST PROJ Status: Application Resubmitted

MEETING: LE Review

Shared: 4/15/2021

Topics	Comments
Lead Entity Comments	
Questions For Applicant	
	Provide details on how you will determine large wood structure placement and spacing. Include supporting information on the expected habitat outcome of the structures. Relating to this, is the goal to fill in sediment at each structure, or to recruit additional large wood to the system to aggrade material? Also, will the design rely on field fit decisions, such as placing wood simply where you can access and anchor material?
	Reply: Our initial estimate of wood placement is based on aerial photography assessment including known areas dominated by bedrock and areas accessible for import of wood. The buffers adjacent to Germany Creek are understocked and hardwood dominated. We could probably recruit some material from the buffer but at a cost to riparian function. We have observed areas where bedload is accumulating which we will avoid with this phase of the project. These areas will be assessed during field reconnaissance and ability/need to introduce large woody material will be evaluated for possible inclusion into a phase II project proposal. The objective of this phase I project is to anchor wood to accumulate bedload being transported through the system. When opportunity allows channel margin wood anchoring will include objective for recruiting additional wood. Approximate spacing of wood structure will be calculated using the tangent length from one structure to the next for the given slope of creek. Equally important is the field fit aspect which does account for where you can get the wood to and local anchoring ability including fit to the bedrock and rock competency. We intend to anchor wood to the bedrock with bedrock anchors drilled and epoxied into the bedrock. Logs will be attached to the anchors using chain. Chain does not have the tendency to stretch like cable. The habitat outcome is to have a cobble:gravel substrate that will provide interstitial spaces for rearing juveniles. Pool habitat will be encouraged to form downstream of each log so long as spacing can be adhered to. This will hopefully encourage rearing and migration habitat in the pool and spawning opportunity on the tail out of the pool. We hope to realize some insulation value of substrate accumulated on bedrock. In the Coweeman River (much wider system) we observed temperature ratcheting up from day to day rather than cooling off like a normal diurnal pattern.
	Will logs be anchored to bedrock and, if so, by chain or cable?
	Reply: Yes, logs will be anchored to bedrock. They will be anchored through use of an epoxied all-thread bolt and heavy lashing chain. Industrial strength thread lock or hammering threads will be used to prevent the nut from backing off. The all-thread will be cut flush with the anchor nut.
	Where will wood be sourced from?
	Reply: Sierra Pacific is confident that they can source the large woody debris for the project to meet log specifications and to provide local match.
	Include information on how the design is informed by restoration in other bedrock channel systems.

	Reply: We have completed three bedrock projects in the Coweeman River and observed Lower Columbia Fish Enhancement Group bedrock projects. These informed our approach by encouraging channel spanning structures, use of chain over cable, assessing the competency of bedrock simple through drill time, the number of anchors based on drill times, and the importance of seeding the upstream side of a log weir with substrate. All our structures to date filled with substrate during the first couple of high waters. Therefore, a single log weir does not tend to accumulate other LWD very efficiently as it tends to float over the top. Channel margin anchor wood can be positioned easily to recruit additional wood.
	Large wood volume from the 1970's was referenced in your virtual tour. Clarify if there is a reference reach for the target wood loading in Germany Creek or a similar system, or whether you are simply placing wood where you can. Historical photos and details on how current watershed conditions differ from historical conditions would supplement your virtual tour, and help reviewers better understanding geomorphic potential.
	Reply: The reference to the 1970's was about mass wasting in the watershed. The massing wasting events tended to dam the creek resulting in dam-break flood events that scoured out Germany Creek (very similar to splash-damming). We have aerial photography sets about 5 years apart beginning about 1955 in Cowlitz County. In 1980's aerial the creek is fairly visible due to scour. Prior to that the riparian buffers were intact and ability to view wood in the channel very limited. We do have stream habitat survey data from the early 2000's that also show a lack of woody debris. But again, this is post mass wasting that scoured the channel. Ownership has changed hands several times and current foresters are all relatively new so even pre-mass wasting conditions are not readily available. Literature values are the primary indices of wood loading for the system. There are a couple of reaches that show relatively high use by salmon. These reaches appear to have good wood loading. However, recruited wood is small and highly mobile. Therefore, we are focused on building the substrate. As we assess the proposed reach, we will look at opportunities to increase loading. If funding permits, we will add wood, but the plan is to make any additional wood loading a component of a subsequent phase.
	Describe the conifer planting approach, including specific areas you plan on targeting.
	Reply: We intend on sending planting crews up both sides of Germany Creek. We will end up walking and planting within the entire reach and target edge of creek out to 180 feet. The intent is to plant shade tolerant conifer into canopy gaps. The target stocking rate depends on the age of the riparian vegetation. From aerial photos, the surrounding buffers appear to be about 50 feet wide (forest practices at the time). Beyond the 50-foot buffer, the stand appears to be about 30 years old. The plan is to bring the stand up to fully stocked by overplanting in canopy gaps. Shade tolerant species will include Grand Fir (Abies Grandis), Western Red Cedar (Thuja Plicata), Western Hemlock (Tsuga Heterophylla).
General Comments	
	Recommend adding that Chinook do travel about a quarter mile upstream of the 1300 road bridge, and into the project area. You can reference personal communication with Lisa Brown for this information.
	Reply: Per personnel communication with Lisa Brown, Chinook travel about a quarter mile upstream of the 1300 road bridge.