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Nason Creek RM 9.4 - Th...

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*Project Title	Nason Creek RM 9.4 - Thermal Refuge Enhancement and Abutment Removal
*Sponsor	Chelan County Natural Resource Department
*Primary Contact	Scott Bailey
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*Anticipated Request - SRFB	\$89,097
*Anticipated Request - Tributary Committee	\$0
*Anticipated Other Funding	\$0
*Anticipated TOTAL Budget	\$89,097
*Other Funding Source(s)	N/A
*Briefly describe the location of the project	The project will occur in Nason Creek at its confluence with Butcher Creek, RM 9.4.
*Latitude (decimal degrees)	47.7695
*Longitude (decimal degrees)	-120.8016
*Project subbasin	Wenatchee
*Wenatchee Assessment Unit(s)	Lower Nason Creek
*Reach(es) Name	Reach 8
1. *In one or two sentences, what do you propose to do?	This project will evaluate Nason Creek at RM 9.4 where Butcher Creek, documented cold water surface feature, enters the stream and the creosote-treated wooden abutments of a defunct bridge are located. We propose to complete all work necessary to evaluate the site, develop a restoration strategy, and prepare draft permit applications to enhance this area for adult and juvenile salmonids and remove a potential source of

contamination. We will hire contractors to complete several tasks including on-site data collection (including cultural resources survey), compilation of existing data, hydraulic modeling, and preparation of a cultural resources report and conceptual and preliminary design packages.

2. *What species will the project benefit?

Spring Chinook

Steelhead

Bull Trout

3. *Select the project's objectives and the associated tracking metrics

Design, Monitoring or Assessment

4. *Does this project or any of its phases (e.g., design) already exist in Salmon Recovery Portal or PRISM?

No

5. *Has this project been submitted previously for funding through the SRFB and/or Targeted process(es)?

No

6. *What category is the project?

Design

7. *What project phase(s) are proposed for completion?

Conceptual Design

Preliminary Design

8. Is your project within a completed (or soon-to-be completed) Reach Assessment or other type of assessment (e.g., Rapid Site Assessment, other)?

Nason Ck Tributary Assess. (BOR, 2008) and Upper Wenatchee Thermal Refuge Assess. (Roumasset, 2020)

9. *Which limiting factors does the project propose to address?

Contaminants

Cover - Wood

Pool Quantity & Quality

Temperature - Adult Holding

Temperature - Adult Spawning

Temperature - Rearing

10. *Which life stages will the proposed project address?

Fry

Holding and Maturation

Smolt Outmigration

Spawning and Incubation

Summer Rearing

11. *Freshwater Benefits - To what extent will your project improve survival, capacity and/or distribution for target species at the project scale?

Upon implementation, the proposed project is expected to add in-stream structure (e.g., large wood) to increase pool quantity, depth and cover; enhance riparian conditions through selective planting of native trees and shrubs; and remove creosote-treated wood and concrete bridge abutments in proximity to a documented cold-water surface feature.

Addition of in-stream structure and riparian planting at this site are intended to improve adult holding and juvenile rearing habitats by augmenting shade, enhancing pool quantity and quality, and adding in-stream cover where cold water from

Butcher Creek enters Nason Creek. High water temperature is an identified limiting factor for this portion of Nason Creek, and climate change is expected to exacerbate this problem. A substantial number of spawning redds have been recorded just downstream of the project site and pre-spawn mortality for spring Chinook in the upper Wenatchee Basin is quite high. Although the causes of this mortality have not been determined, high water temperature is suspected to be a factor. High water temperatures also have been shown to adversely affect juvenile salmonids by reducing or eliminating feeding, increasing harmful metabolic effects, decreasing growth rates, impairing smoltification and increasing vulnerability to predation and the feeding rates of potential predators.

The defunct bridge abutments are located immediately downstream of the Butcher Creek confluence. In addition to affecting hydraulic processes in this area, they are a potential contaminant source in a reach where contaminants are an identified limiting factor. Salmonids can be directly and indirectly affected by toxic constituents released from treated wood structures. Sub-lethal effects can include reduced vigor, narcosis, and reduced growth, and these impairments can increase risk of predation and disease susceptibility. Embryos and juvenile fishes are most at risk, so the proximity of these abutments to a well-used spawning area is especially problematic.

This project will improve the quantity and quality of holding and rearing habitats by enhancing a documented cold water feature and removing a contaminant point source. Spring chinook and steelhead trout spawn and rear in this area and we expect the project to increase holding and rearing capacity, improve survival and enhance reproduction and fitness.

12. *Temporal Effect - Briefly describe how and to what extent the project would promote natural stream/watershed process consistent with reach-scale geomorphology?

The project focus is to enhance the functionality and habitat value of a documented cold water surface feature to increase the quantity and quality of cold water refuge at this location. In addition, it will remove an anthropogenic feature that influences channel morphology and hydraulics and is also a contaminant point source. This phase will prepare conceptual and preliminary designs.

The design process will be supported by extensive data collection and modeling, anticipate projected effects of global climate change, and be consistent with reach-scale geomorphology. The project is also consistent with the 2020 RTT prioritization effort which has identified a number of actions to address Reach 8 Life Stage Limiting Factors. These include: 1) improve temperatures for holding/maturation, spawning/incubation, summer rearing and smolt outmigration life stages; 2) improve pool quality/quantity for holding/maturation and summer rearing life stages; 3) reduce/eliminate contaminant point sources for spawning/incubation and summer rearing life stages; and 4) improve cover wood for holding/maturation, fry, summer rearing, and winter rearing life stages.

13. Temporal Effect - How long will it take for the benefits of the project to be realized?

1-10 years

14. Temporal Effect - How long will the restoration action and its benefits persist?

20-50 years

15. Temporal Effect - What level and/or interval of maintenance is anticipated? What is the plan for any anticipated maintenance?

It is our objective to design a project that is self-maintaining and requires no further human intervention once construction is completed. However, we will monitor the project post-construction and maintain as needed to ensure the project continues to function as designed.

16. Methods - Briefly describe the potential (for design) or proposed restoration methods and how they will achieve project objectives.

Our goal is to design a project that increases pool quality and quantity and enhances an identified cold water plume for improved cold water refuge in proximity to a well-used spawning area. We will gather a variety of data (including stream temperature data from Nason Creek and Butcher Creek) and prepare a 2D hydraulic model to evaluate stream dynamics under existing and proposed conditions. This will be used to understand the extent and characteristics of the existing cold water plume and the influence of the defunct abutments and other elements on channel forming processes and the plume. It will also be used to identify the location(s), characteristics (e.g., size, materials, etc.) and influences of any proposed structural elements employed to meet project goals. The engineering design process will follow best available science and design guidelines and will explore a variety of potential implementation techniques to meet project objectives including, but not necessarily limited to, engineered log jams and selected riparian plantings.

1. *What is the landownership?

Chelan County Road R-O-W and private

2. *Have you secured landowner participation in or acceptance for this project?

Yes

*Please explain

We have secured a Landowner Acknowledgement Form from Chelan County Public works. A large portion of the proposed project area is located within the R-O-W. We have not yet secured landowner participation from the adjacent private landowners, but are working on those at the time of proposal preparation.

3. Describe any land owner requirements (e.g., design elements, right-of-ways, access agreements, liability waivers, etc.) and if/how they could affect the project

At this time, we know of no land owner requirements that could affect the project.

4. Will the project raise potential concerns for interest groups (e.g., recreational users) or the community at large (including upstream/downstream/ adjacent landowners)?

Possibly. We know of no concerns at present, but the project will explore several potential in-stream treatment types that have raised potential concerns at other project sites (including LWD placement).

5. Who will have the

This proposal supports the design phase of the proposed

responsibility to manage and maintain the project? What is the responsibility of current or future landowners?

project. Post-implementation management and maintenance of the project site may be needed, but none is expected following this proposed phase. As to post-implementation, Chelan County NRD will monitor the project site for up to 5 years post-construction and will be responsible for any necessary management and maintenance during that time. Current or future landowners will bear no responsibility for the designs produced under this phase or for maintenance or management following subsequent phases.

6. Please describe the risk of failure associated with this project.

This proposal is for the design phase and there is little risk of failure for the tasks that will be undertaken. We also believe that there will be a low risk of failure for any potential actions developed during this phase and implemented during a subsequent phase.

For the design phase, we will use licensed engineers from reputable companies with river restoration experience. This will assure a high factor of safety and minimize potential for failure. In addition, methods of construction for this type of work are well-established at this point and there are many construction firms with stream restoration experience. This further minimizes potential for failure of any actions implemented under this project.

7. Is there any public outreach planned during and/or after implementation? Does the project build community support for salmon recovery efforts?

There will be public outreach to assure that local residents and landowners are aware of the project and its potential effects and benefits. Outreach will be structured such that it informs the public about the type of restoration actions being implemented, emphasizes the need for and benefits of stream restoration, and builds support for salmon recovery efforts.

8. Does the project represent an opportunity for economic benefit? How much benefit does the project create for the dollars invested?

The project will provide economic benefit during both this proposed design phase and the subsequent restoration phase. During the design phase, the project will support employment of staff from one or more consulting firms (prime contractor and potential subcontractors) and the Sponsor Agency. In addition, travel to and from the site needed for reconnaissance and data collection will financially support local businesses. The subsequent implementation phase will support additional contracted firms and their suppliers. Since construction crews are likely to be operating at the site for a longer period than the design team, local businesses stand to benefit even further from work completed during the implementation phase.

9. Describe any partnerships, their experience, and types of contributions supporting the project.

Chelan County NRD has extensive experience implementing projects such as the one proposed. The bulk of the proposed project area lies within a R-O-W administered and maintained by Chelan County Public Works Department (CCPWD), and the abutments that will be removed are CCPWD assets. These two County departments regularly work together on projects like the one proposed, and CCPWD engineering staff will provide review and comment on design products. Additionally, CCRND has a long partnership with the Bureau of Reclamation, who

completed the geomorphic assessment for this portion of lower Nason Creek, and has partnered with SRFB, BPA (and other funders) and numerous landowners to implement completed and ongoing projects along Nason Creek. In addition, CCNRD has working relationships with numerous technical services providers and construction firms with experience conducting these types of projects. Given the above, CCNRD is well situated to complete the project on-time and on-budget and to achieve the expected results.