

kenm@cascadiacd....

Entiat Prioritization Asse...

Submission Date
March 1, 2021 03:33

*Project Title	Entiat Prioritization Assessments
*Sponsor	Cascadia Conservation District
*Primary Contact	Ken Muir
*E-Mail Address	kenm@cascadiacd.org
*Anticipated Request - SRFB	33000
*Anticipated Request - Tributary Committee	5000
*Anticipated Other Funding	8000
*Anticipated TOTAL Budget	41000
*Other Funding Source(s)	US BOR
*Briefly describe the location of the project	Entiat River RM 11-16
*Latitude (decimal degrees)	47.763948
*Longitude (decimal degrees)	-120.365579
*Project subbasin	Entiat
*Entiat Assessment Unit(s)	Entiat River-Potato Creek
*Reach(es) Name	177-180?
1. *In one or two sentences, what do you propose to do?	Assist the prioritization process by completing and updating missing data gaps by doing Level 2 surveys to assess the remaining sections of the Entiat River and tributaries to the Entiat.
2. *What species will the project benefit?	Spring Chinook Steelhead Bull Trout Summer Chinook

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)?

Yes

Please explain which process(es) and how this proposal differs from the previous submission (e.g., different phase, modified scope, etc.)

This is different as it will specifically target the missing data gaps from the up-to-date prioritization list from UCSRB.

6. *What category is the project?

Monitoring

7. *Information Need - Does this project address a Tier 1 data gap in the MaDMC Regional Data Gaps List?

Yes

8. Information Need - To what extent does your project address a regional data gap?

UCSRB's prioritization tool is a work in progress. However, the tool is missing key data in order for it to have a proper analysis of reaches and tributaries. This tool's intentions are to produce a sound product that will be utilized regionally to help create priority areas for habitat restoration. Cascadia Conservation District is proposing this project to further gather the necessary data to assist UCSRB in their efforts with the prioritization tool. This project will cover the missing mainstem Entiat River reach assessment, as well as high-ranking tributaries such as Potato, Mills, Stormy and Mud Creek.

9. *Information Need - What is the scale of inference?

Assessment Unit(HUC 12)

10. *Purpose - How will the monitoring complement, enhance, or leverage ongoing monitoring efforts?

The monitoring project we are proposing will complement current assessments that have been done in the Entiat River watershed. This project will enhance the prioritization tool by filling the data gaps that currently exist. There are currently no ongoing efforts to update habitat metrics, therefore no updates to the prioritization process.

11. *Methods - Briefly describe the methods and how they are appropriate to the monitoring question

In order to do an efficient job of gathering information to be utilized by the UCSRB prioritization tool, a USFS Level 2 survey will be completed. This will provide sufficient data to help in the prioritization efforts. Cascadia will hire field techs to get this job accomplished.

12. Information Need - How will data and

Once the data has been gathered and QA/QC'd, then Cascadia will promptly distribute the information to apply and help inform

information be disseminated, accessed and applied once the project is complete?

the UCSRB Prioritization tool. Cascadia will have the information available to others who may be interested in the information.

13. Explain why SRFB project funds are being requested rather than funds from other sources

SRFB is a great fit for this monitoring effort, as it is a data gap in basic watershed habitat information. This will help conceptualize potential projects in the future based on their priority.

1. *What is the landownership?

Private, DNR (navigable waters), Forest Service. A mixture of all.

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

No

*Please explain

Since the extent of this project is vast and wide, the landowners will be contacted and notified of this monitoring effort when funded. Prior landowner acceptance is not required since it is a monitoring project and not a typical construction/design project.

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

Landowner outreach will be made to those areas that are affected by this monitoring effort. We do our due diligence in letting landowners be aware of any activity associated with and/or alongside their property. There is no legal obligation for landowners since we will not be doing any construction or disturbance on the property. This is strictly a monitoring effort and gathering information from the current status of the river. The only landowner requirement that may be required is just access to the river. Since the Entiat has a sensitivity to landowner acknowledgment of ongoing river activities, there will be an effort to properly communicate these efforts to the local community.

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

Since there isn't any disturbance, changes in the river, and construction associated with this project, there are no potential concerns for any interest groups and/or the community at large. The risk factors are very low due to the simplicity of the project since it's a monitoring effort. The community at large will be informed of the efforts, if funded, through multiple channels including Entiat Habitat Subcommittee, Entiat Watershed Planning Unit, as well as on Cascadia's website and community newsletter.

5. Who will have the responsibility to manage and maintain the project? What is the responsibility of current or future landowners?

Cascadia will be responsible for project management and coordination effort. The only responsibilities for landowners are to allow access on/across their property on an as-needed basis to complete the monitoring tasks.

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

The only risk of failure associated with this project is if there's a major or catastrophic event to which the river changes during the sample study period of the assessments.

7. Is there any public outreach planned during and/or after implementation? Does the project build

Public outreach is the priority for Cascadia when it comes to any project. We do our due diligence in communicating to all participating parties as well as the community on planned and implemented projects in any watershed we work in. In the Entiat, we will outreach to the Entiat Habitat Subcommittee and

community support for salmon recovery efforts?

the Entiat Watershed Planning Unit as well as advertise it on our website and community newsletter.

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

The direct economic benefit is the opportunity to hire a small crew to implement the monitoring project. The indirect economic benefit is in the future after the prioritization tool gets updated. After that, there is the potential of endless economic benefit from potential projects by prioritizing areas properly.

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

Currently have the potential to work with the Washington Dept. of Fish and Wildlife to help with this effort. Conversations are currently ongoing with them and potentially others who are interested.

mike.kaputa@co.ch...
Derby Canyon BNSF Fis...

Submission Date
February 28, 2021 20:59

*Project Title	Derby Canyon BNSF Fish Passage Project
*Sponsor	Chelan County Natural Resources Department
*Primary Contact	Mike Kaputa
*E-Mail Address	mike.kaputa@co.chelan.wa.us
*Anticipated Request - SRFB	200,000
*Anticipated Request - Tributary Committee	0
*Anticipated Other Funding	600,000
*Other Funding Source(s)	Fish Barrier Removal Board
*Briefly describe the location of the project	This project will occur at RM 0.1 on Lower Derby Canyon adjacent to the confluence of the Wenatchee River.
*Latitude (decimal degrees)	47.56969
*Longitude (decimal degrees)	-120.58755
*Project subbasin	Wenatchee
*Wenatchee Assessment Unit(s)	Wenatchee River-Derby Canyon
*Reach(es) Name	Wenatchee River-Derby Canyon
1. *In one or two sentences, what do you propose to do?	This culvert barrier is a 33% passable slope barrier with a water surface drop off the apron of the culvert that leads to a 7% gradient cascade at the confluence of the Wenatchee River. This proposal includes conceptual design development, preliminary design development, permitting, and final designs to remove and replace the lowest fish passage barrier at RM 0.1 on Lower Derby Canyon and address the cascade barrier at the confluence with the Wenatchee River.
2. *What species will the	Steelhead

project benefit?

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

Fish Passage

Fish Passage: Reporting Code

Quantity of fish passage blockages removed or altered

Miles of upstream made accessible

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

Yes

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

Yes

Please explain which process(es) and how this proposal differs from the previous submission (e.g., different phase, modified scope, etc.)

Previously submitted for SRFB. The proposal has not changed other than we are looking for funding to address BNSF-specific requirements.

6. *What category is the project?

Restoration

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

Construction

mike.kaputa@co.ch...

Entiat River Fish Monitor...

Submission Date
February 28, 2021 21:11

*Project Title	Entiat River Fish Monitoring
*Sponsor	Chelan County Natural Resources Department
*Primary Contact	Mike Kaputa
*E-Mail Address	mike.kaputa@co.chelan.wa.us
*Anticipated Request - SRFB	100,000
*Anticipated Other Funding	50000
*Anticipated TOTAL Budget	150000
*Other Funding Source(s)	USFS
*Briefly describe the location of the project	Middle Entiat River
*Latitude (decimal degrees)	NA
*Longitude (decimal degrees)	NA
*Project subbasin	Entiat
*Entiat Assessment Unit(s)	Entiat River-Lake Creek
1. *In one or two sentences, what do you propose to do?	<ul style="list-style-type: none">• Identify fish habitat selection patterns relative to restoration in the middle Entiat and previously restored sites. Test of foraging theory to evaluate success of fish relative to restoration.• Conduct surveys at both the habitat unit scale and whole reach scale to better identify the spatial scale at which fish response may be observed• Analyze use of restored habitat in the middle Entiat in the context of the restoration that has taken place in the upper and lower Entiat.• Determine whether movement in and out of habitat units enhanced with ELJs and those not restored indicates increased use of restored habitat in the middle Entiat. Such studies can inform the size and placement of ELJs

2. *What species will the project benefit?

Spring Chinook

Steelhead

Bull Trout

Summer Chinook

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?

Don't Know

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

Don't Know

6. *What category is the project?

Monitoring

7. *Information Need - Does this project address a Tier 1 data gap in the MaDMC Regional Data Gaps List?

Yes

1. *What is the landownership?

Private, land trust

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

Yes

kanenaturalresourc...

Nason Creek RM 1.5 Co...

Submission Date
March 1, 2021 13:05

*Project Title	Nason Creek RM 1.5 Complexity
*Sponsor	Chelan County Natural Resource Department
*Primary Contact	Mike Kane
*E-Mail Address	kanenaturalresources@gmail.com
*Anticipated Request - SRFB	86700
*Anticipated Request - Tributary Committee	15300
*Anticipated Other Funding	0
*Anticipated TOTAL Budget	102000
*Other Funding Source(s)	N/A
*Briefly describe the location of the project	The project will occur in Nason Creek between RM 1.5-2.2. This is the reach extending upstream from the confined reach at the Kahler Golf Course.
*Latitude (decimal degrees)	474723.29
*Longitude (decimal degrees)	1204259.75
*Project subbasin	Wenatchee
*Wenatchee Assessment Unit(s)	Lower Nason Creek
*Reach(es) Name	Lower Nason Creek RM 0-4.6 (BOR 2011), Nason Creek Lower 1
1. *In one or two sentences, what do you propose to do?	This project will evaluate the mainstem channel and adjacent floodplain wetland complexes on river left and right (~RM1.5-2.2) to identify and develop restoration actions that will improve in-stream conditions and reconnect the floodplain. We propose to complete all work necessary to evaluate the site, develop and analyze alternative restoration strategies and

prepare conceptual and preliminary designs for the preferred alternative, and anticipate hiring a contractor to complete tasks including onsite data collection (land survey, characterization of in-stream and wetland habitats, etc.), compilation of existing data, hydraulic modeling, opportunities and constraints analysis, and development of conceptual and preliminary designs.

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)?

yes, Lower Nason Assessment of Geomorphic and Ecologic Indicators Nason Creek, Wenatchee Subbasin (2011)

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

Cover - Undercut Banks

Cover - Wood

Off-Channel - Floodplain

Pool Quantity & Quality

Temperature - Rearing

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

Fry

Summer Rearing

Winter 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 will improve in-stream complexity along ~0.7 stream miles by adding structure (large wood) and floodplain habitats would be better connected to provide rearing. We expect that the proposed project will enhance habitat capacity, improve fish survival, and broaden target species distribution within lower Nason Creek.

12. *Temporal Effect -

The project seeks to promote natural channel processes and

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

treat incision to the degree possible. The project is one in a series of projects that combine to restore natural processes in Lower Nason Creek. Benefits realized immediately after implementation.

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?

Monitoring will be performed to determine if project maintenance is necessary after project implementation, but little if any maintenance is anticipated. Access routes might require some weed management or fill planting if riparian objectives are not met.

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

We will focus primarily on methods to create 4-6 LWD structures to enhance mainstem conditions and floodplain interaction. This site will need a creative approach for access to minimize disturbance.

1. *What is the landownership?

Chelan Douglas Land Trust, Western Rivers Conservancy and Kahler Glen Golf Course

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

Yes

*Please explain

CDLT and WRC are supportive of the project at this stage. Kahler Glen owns a portion of the downstream area and has yet to be contacted, but has indicated interest in restoration in this area previously.

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

These will be identified as part of the design process.

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

It is unlikely that this project will raise concerns for interest groups. This reach sees very little, if any recreational use and is not accessible to the general public.

5. Who will have the responsibility to manage and maintain the project? What is the responsibility

This proposal supports the design phase of the proposed project. Management and maintenance of the project site may be needed, post-implementation but none is expected following this proposed phase. As to post-

of current or future landowners?

implementation, Chelan County NRD will monitor the project site for up to 5 years postconstruction and will be responsible for any necessary management and maintenance during that time. Current landowners will participate in the design phase.

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 safety factor 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.

Sponsor Agency has extensive experience implementing projects such as the one proposed and a long and successful track record with the funding agencies to whom this proposal is directed. In addition, Sponsor has developed a successful working relationship with the CDLT and WRC on previous projects in Nason Creek and elsewhere.

scott.bailey@co.ch...
Nason Creek RM 9.4 - Th...

Submission Date
February 22, 2021 14:42

*Project Title	Nason Creek RM 9.4 - Thermal Refuge Enhancement and Abutment Removal
*Sponsor	Chelan County Natural Resource Department
*Primary Contact	Scott Bailey
*E-Mail Address	scott.bailey@co.chelan.wa.us
*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.

kanenaturalresourc...

Nason Creek RM 12 Floo...

Submission Date
February 28, 2021 15:32

*Project Title	Nason Creek RM 12 Floodplain Reconnection
*Sponsor	Chelan County Natural Resource Department
*Primary Contact	Mike Kane
*E-Mail Address	kanenaturalresources@gmail.com
*Anticipated Request - SRFB	95200
*Anticipated Request - Tributary Committee	16800
*Anticipated Other Funding	0
*Anticipated TOTAL Budget	112000
*Other Funding Source(s)	N/A
*Briefly describe the location of the project	The project will occur in Nason Creek between RM 12.0 and 12.5. This is the reach extending upstream from the confined reach at Merritt to the straight reach adjacent to US 2.
*Latitude (decimal degrees)	474707.46
*Longitude (decimal degrees)	1205049.23
*Project subbasin	Wenatchee
*Wenatchee Assessment Unit(s)	Lower Nason Creek
*Reach(es) Name	Nason Creek Upper White Pine Reach (BOR 2009), Nason Creek Lower 12 and 11
1. *In one or two sentences, what do you propose to do?	This project will evaluate the mainstem channel and adjacent floodplain wetland complexes on river left and right (~RM 12.0-12.5) to identify and develop restoration actions that will improve in-stream conditions and reconnect the floodplain. We propose to complete all work necessary to evaluate the site, develop and analyze alternative restoration strategies and

prepare conceptual and preliminary designs for the preferred alternative, and anticipate hiring a contractor to complete tasks including on-site data collection (land survey, characterization of in-stream and wetland habitats, etc.), compilation of existing data, hydraulic modeling, opportunities and constraints analysis, and development of conceptual and preliminary engineering designs.

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?

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)?

Yes, Nason Creek Upper White Pine Reach Assessment

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

Cover - Wood

Off-Channel - Floodplain

Off-Channel - Side-Channels

Temperature - Rearing

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

Summer Rearing

Winter 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 will improve in-stream complexity along ~0.5 stream miles by adding structure (large wood) and side channel habitats that are currently disconnected from the primary channel would be reconnected to provide rearing. We expect that the proposed project will enhance habitat capacity, improve fish survival, and broaden target species distribution within lower Nason Creek.

12. *Temporal Effect - Briefly describe how and to what extent the project would promote natural

The project seeks to promote natural channel processes and treat incision to the degree possible. The project is one in a series of projects that combine to restore natural processes in

stream/watershed process consistent with reach-scale geomorphology?

Lower Nason Creek. Benefits realized immediately after implementation.

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?

Monitoring will be performed to determine if project maintenance is necessary after project implementation, but little if any maintenance is anticipated. Access routes might require some weed management or fill planting if riparian objectives are not met.

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

We will explore a variety of potential implementation techniques including, selective grading at 2-3 floodplain channel confluences and along existing channels to provide seasonal or perennial flow and LWD structures to enhance mainstem conditions and side channel flow.

1. *What is the landownership?

Chelan County, Chelan Douglas Land Trust, WSDOT and private

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

Yes

*Please explain

The county and CDLT own the main project focus area and are onboard. The private landowner is at downstream end of project and has yet to be reached. WSDOT has been a willing landowner on past Nason Creek projects and will participate in the design process.

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

These will be identified as part of the design process.

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

There is a local beach at this location and a project could create a temporary closure of access during the construction phase.

5. Who will have the responsibility to manage and maintain the project? What is the responsibility of current or future landowners?

This proposal supports the design phase of the proposed project. Management and maintenance of the project site may be needed, post-implementation 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 postconstruction and will be responsible for

any necessary management and maintenance during that time. Current landowners will participate in the design phase.

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 safety factor 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.

Sponsor Agency has extensive experience implementing projects such as the one proposed and a long and successful track record with the funding agencies to whom this proposal is directed. In addition, Sponsor has developed a successful working relationship with the CDLT and WSDOT on previous projects in Nason Creek and elsewhere.

allison.lutes@co.ch...
Nason Kahler Instream C...

Submission Date
February 25, 2021 13:22

*Project Title	Nason Kahler Instream Complexity Project
*Sponsor	Chelan County Natural Resources Department
*Primary Contact	Allison Lutes
*E-Mail Address	allison.lutes@co.chelan.wa.us
*Anticipated Request - SRFB	510390
*Anticipated Request - Tributary Committee	323718
*Anticipated TOTAL Budget	834108
*Other Funding Source(s)	n/a
*Briefly describe the location of the project	The project will occur in the main stem Nason Creek starting at RM 6.0 and ending at RM 7.1
*Latitude (decimal degrees)	47.769841
*Longitude (decimal degrees)	-120.775542
*Project subbasin	Wenatchee
*Wenatchee Assessment Unit(s)	Lower Nason Creek
*Reach(es) Name	Kahler Reach - map portal reach layer not working
1. *In one or two sentences, what do you propose to do?	The project will complete the final phase of the Nason Kahler Instream Complexity Project and will include construction of areas 2 and 3. The purpose of the project is to increase instream complexity and access to peripheral off-channel habitat, thereby improving holding habitat for adult spring Chinook and steelhead and increasing winter rearing habitat for juvenile spring Chinook and steelhead in the Kahler Reach of Nason Creek.
2. *What species will the project benefit?	Spring Chinook Steelhead Bull Trout

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

Instream Habitat (Includes Floodplain & Off-Channel Reconnection)

Instream Habitat: Reporting Code

Acres of channel/off-channel connected or added

Miles of instream habitat treated

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

Yes

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

Yes

Please explain which process(es) and how this proposal differs from the previous submission (e.g., different phase, modified scope, etc.)

Funding was provided for Final Designs, all permitting, and construction of Site 1 in the 2020 SRFB round. This proposal is for construction of sites 2 and 3.

6. *What category is the project?

Restoration

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

Construction

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)?

2016 Kahler Creek Conceptual Design and Geomorphic Assessment

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

Cover - Wood

Off-Channel - Floodplain

Off-Channel - Side-Channels

Percent Fines/Embeddedness

Pool Quantity & Quality

Pools - Deep Pools

Temperature - Adult Holding

Temperature - Rearing

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

Adult Non-Spawning (Bull Trout)

Natal Rearing (Bull Trout)

Holding and Maturation

Spawning and Incubation

Summer Rearing

Winter Rearing

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

The purpose of this project is to improve adult spring Chinook and steelhead holding habitat and increase winter and summer rearing habitat for juvenile spring Chinook and steelhead by increasing instream complexity and increasing access to peripheral off-channel habitat in the Kahler Reach of Nason Creek. In 2016, CCNRD and Natural Systems Design (NSD) completed the Kahler Conceptual Design and Geomorphic Assessment, in order to evaluate habitat suitability for both adult holding and juvenile rearing based on summer low flow. Results inform the Final Designs, which have been developed to specifically address these reach-specific limiting ecological factors (summarized below) to increase both fish capacity and survival of the identified limited life stages.

Spring Chinook and steelhead spawning and holding habitat is very limited from River Mile (RM) 6.0 to -RM 7.4 in Nason Creek when compared to reaches up and downstream. The 2016 Geomorphic Assessment found that overall holding habitat for adult spring Chinook is very poor in the project reach, with a mean Habitat Suitability Index (HSI) of 0.07 on a scale from 0 - 0.42. Furthermore, the majority of the reach is totally unsuitable for holding, as indicated by the majority of HSI scores being zero. Abnormally high prespawn mortality in the Upper Wenatchee basin is likely associated with poor holding habitat (Cram, personal communication).

Both winter and summer rearing habitat is also limited. The 2016 Assessment found rearing habitat for Chinook fry in the Kahler reach is moderate during the 58 cfs summer base flow condition, with a range in HSI values of 0 – 1.0 and an average value of 0.38. We did not look at winter flows to evaluate HSI, which are predominately above 100cfs from early November to late July with periodic spikes in flow associated with warm rain events. However winter rearing habitat for spring Chinook juveniles has been identified as a potential limiting factor in the Wenatchee and Entiat basins. Juvenile Chinook currently emigrate from the reach prior to winter, in part due to a lack of viable habitat (Cram, personal communication).

The reach is also temperature limited. The recently completed Thermal Refuge Assessment, as well as the 2001 - 2003 FLIR data showed a high rate of downstream warming in the project reach (compared to other reaches in Nason Creek) and maximum temperatures that reached above 19 – 22 deg C. This is well above the thermal limits of the species and life-stages present during that time, which includes juvenile spring chinook and steelhead, and adult spring Chinook.

Specific project objectives were designed to address the limiting habitat factors and associated life-stage above, including 1) increase adult holding habitat and raise pre-spawn survival by installing ELJs to improve the quantity and quality of pool habitat and reduce the width: depth channel ratios; 2) reduce stream temperature impacts by restoring vegetation structure in disturbed corridors, reducing width: depth ratios, and increasing floodplain water storage; 3) improve floodplain connectivity to activate existing floodplain areas and shallow margin flows for high flow refugia 4) increase fish cover and juvenile rearing capacity with ELJs 5) Restore fish access to a 1,140 ft ground water sourced wetland complex and off-channel rearing zone, providing both summer and winter temperature refuge. These improvements in habitat capacity will result in increased survival of both juvenile and adult spring Chinook and steelhead by the mechanisms detailed above.

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

The reconnaissance level 2016 Geomorphic Assessment developed a summary of baseline site conditions describing the geomorphic setting and hydraulic parameters of the project reach.

Key findings of the Geomorphic Assessment, which describe current reach-scale geomorphology, are listed below:

1) The active channel averages approximately 120 feet in width, is generally lacking in physical complexity, and dominated by riffle and glide habitat types. 2) Large wood is generally absent from the channel with only 5 large wood assemblages observed over the 1.4 mile project reach. The low abundance of functional wood jams in the project reach is attributed to a lack of key pieces large enough to remain stable and resist forces exerted by flood flows. Only 6 pool features mapped over the 1.4 mile project reach. 3) Significant off-channel habitat exists in the reach but in one case a forested relic channel is completely disconnected by an unnecessary road and in another, the channel is severely degraded by the lack of surrounding vegetation and structure. 4) Riparian vegetation is completely missing from three large areas traversed by BPA Transmission line corridor constituting over ½ mile of shoreline.

The project will promote natural stream/watershed process consistent with these findings by:

1) strategically adding Large Wood to: force scour pool(s); reduce local flow-velocities to provide holding habitat for adults; locally sort bedload for substrate complexity; and elevate stage near areas of low-lying floodplain. The resulting increase in floodplain connectivity will also improve water storage, increase hyporheic cooling effects, and improve riparian health. 2) Remove infrastructure that impedes floodplain connectivity and contribute to sediment inputs.

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?

50+ years

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

Little maintenance is anticipated, as this project has been designed by WA state licensed engineers and geologists within the knowledge of constraints of the BPA transmission lines, Highway 2, and other infrastructure. During the preliminary design phase of the project, NSD project engineer ran Engineered Log Jam Stability calculations and Developed Risk Matrices for the ELJ project elements (NSD 2020) to evaluate risks. Further, a Construction Considerations Memo (NSD 2020) was developed for the project to evaluate the construction and access considerations for the project including design factors of safety, stabilization methods, and force calculations. In 2020 a test pile driving effort was under-taken to inform the best method of ELJ constructability for the project. Post-project, CCNRD will maintain and monitor the project during high and low flow every year, in coordination with the USFS, for 10 years. Regular maintenance of riparian plantings are expected for 10 years post project, as needed.

16. Methods - Briefly describe the potential (for

River Mile (RM) 7.1 - 6 of the Kahler Reach of Nason Creek has been severely altered from its historic condition by wood

design) or proposed restoration methods and how they will achieve project objectives.

removal, highway construction, and construction and maintenance of transmission lines. Spring Chinook and steelhead spawning and holding habitat is very limited from River Mile (RM) 6.0 - RM 7.1 in Nason Creek when compared to reaches up and downstream. Abnormally high prespawn mortality of spring Chinook adults appears to be an issue in the Upper Wenatchee basin based on recent analysis (Cram, pers. com.). Juvenile Chinook currently emigrate from the reach prior to winter, in part due to a lack of viable habitat (Cram, personal communication). Previous work has shown that adult holding habitat in the reach is limited by a lack of pools greater than 5 ft in depth, which is likely due to the historic removal of large wood (Reclamation 2009). Chinook spawning in the Kahler reach is limited by a lack of suitable substrate and the majority of spawning takes place upstream in lower gradient channel segments (Reclamation 2009). Off-channel rearing habitat and low-velocity refugia in the reach have also been impacted by road construction, channelization, and wood removal. Riparian cover in the Kahler reach has been reduced by road and utility construction and historic logging (Reclamation 2009). These impacts, coupled with low pool frequency, severely impact thermal refugia available to holding adults and juveniles, increasing fish mortality during hot summer months (Reclamation 2008, Reclamation 2009). Restoring natural river processes in Nason Creek has been identified as a high priority in the region for ESA species recovery. Nason Creek, a tributary to the Wenatchee River, is an important creek within the upper Wenatchee Subbasin in that it currently supports major spawning areas for ESA-listed Upper Columbia River (UCR) spring Chinook salmon, UCR steelhead, and is a Columbia River bull trout core area, and also has a high potential for habitat restoration (UCSRB 2007, UCRTT 2014). Nason Creek is the highest priority assessment unit within the Wenatchee Subbasin for habitat restoration (UCRTT 2017).

As part of the 2016 Kahler Conceptual Design and Geomorphic Assessment, CCNRD and NSD evaluated habitat suitability based on summer low flow for both adult holding and juvenile rearing. Overall, holding habitat for migrating adult Chinook is poor in the Kahler project reach (RM 7.6 – 6). Habitat Suitability Index (HSI) values for adult holding habitat range from 0 – 0.42 in the project reach, with a mean HSI value of 0.07. With a max HSI value of 0.42, no portion of Kahler reach is considered to have good holding habitat. In addition, the majority of the reach is unsuitable for holding, as indicated by the majority of HSI scores being zero. Rearing habitat for Chinook fry in the Kahler reach is moderate during the 58 cfs summer base flow condition, with a range in HSI values of 0 – 1.0 and an average value of 0.38. We did not look at winter flows to evaluate HSI, which are predominately above 100cfs from early November to late July with periodic spikes in flow associated with warm rain events. Winter rearing habitat for spring Chinook juveniles has been identified as a potential limiting factor in the Wenatchee and Entiat basins.

The purpose of this restoration project is to improve adult spring Chinook and steelhead holding habitat and increase winter rearing habitat for juvenile spring Chinook and steelhead by increasing instream complexity and increasing access to peripheral off-channel habitat the in the 1.6 mile Kahler Reach of Nason Creek. This project, implemented in 4 phases (3 of which are already funded), is the final phase of the Kahler Reach project and will result in construction of Site 2 and 3. Final Design, all necessary permitting, and Construction of Site 1 are

in process (phase 3) and this project will be "shovel-ready" by time of contracting. Sites 2 and 3 include the construction and strategic placement of 15 ELJs designed to increase instream complexity, promote pool formation, reduce width to depth ratios, and promote floodplain inundation.

Specific objectives include:

Objective 1: Increase the numbers of pools for adult holding and juvenile rearing in 1.2 mile reach of Nason Creek to 15/mile with target depths of 4-8 ft. by installing 1 Type 1 LWM deflector structures and 14 Type 2 LWM apex structures within 1 year of construction. Excavate starter pools around ELJs to ensure immediate project benefit.

Objective 2: Reduce stream temperature impacts for the benefit of all life stages by reducing width-to-depth ratios in channel and increasing pool habitat by installing 1 Type 1 LWM deflector structures and 14 Type 2 LWM apex structures within 1 year of construction.

Objective 2: Reduce stream temperature impacts by increasing stream shading and riparian bank structural integrity by re-establishing riparian vegetation along 0.5 miles of Nason Creek within 5 years.

Objective 3: Improve floodplain connectivity to off-channel habitat in Site 3 at RM 6.2 by strategically positioning one ELJ to encourage increased hydrologic connectivity to 0.2 acres wetland/off-channel habitat. The current off channel habitat is fed by cool groundwater and has been observed to have an average depth of 12" during the low-flow season and offers a rare opportunity for off-channel habitat for juvenile rearing in this reach.

Objective 4: Gain community support for the project by presenting project goals and objectives at 1 project meeting prior to project construction.

1. *What is the landownership?

United States Forest Service

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

Yes

*Please explain

Forest Service employees have been involved at every stage of this project. CCNRD has acquired a land owner agreement form.

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

The USFS completed NEPA, ESA and cultural resource consultation as well as are providing ongoing design review. No access issues are anticipated.

4. Will the project raise

A 2013 study of large wood and on-water recreation indicated

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

that both access to and use of the Kahler Reach by recreational boaters is limited. Boaters that did use Nason Creek were typically experienced and informed kayakers and rafters that used the creek during spring runoff months. No commercial guided trips were reported on this section of the river (MIG Inc. 2013). Due to the presence of boaters, no channel spanning structures are proposed. Private property extends downstream from the USFS land beginning near RM 5.9. The project does not intend to increase flood or erosion risk adjacent to these properties.

5. Who will have the responsibility to manage and maintain the project? What is the responsibility of current or future landowners?

CCNRD is responsible for project management, overseeing landowner coordination and incorporation of feedback into the final design. The final designs are being developed (phase 3) by licensed engineers and geologists from Natural Systems Designs. The USFS is responsible for completing NEPA, ESA and cultural resource consultation as well as providing ongoing design review, also all implemented under the already funded phase 3 of this project. Construction oversight will be provided by CCNRD construction manager and NSD Licensed engineers. Post-project CCNRD will maintain and monitor the project in coordination with the USFS for 10 years.

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

No high risk of failure. This project has been designed by WA state licensed engineers and geologists within the known constraints of the BPA transmission lines, Highway 2, and other infrastructure. During the preliminary design phase of the project, NSD project engineer ran Engineered Log Jam Stability calculations and Developed Risk Matrices for the ELJ project elements (NSD 2020) to evaluate risks. Further, a Construction Considerations Memo (NSD 2020) was developed for the project to evaluate the construction and access considerations for the project including design factors of safety, stabilization methods, and force calculations.

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

Details of this project have been and will continue to be shared at biennial community outreach meetings that CCNRD hosts in each sub-watershed of the Wenatchee basin. In general these meetings have been successful in building community support for salmon recovery.

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

The project provides a great opportunity to provide economic benefit within the local Chelan County community. Given the current economic downturn, with many local contractors unsure of construction opportunities that may be available - this project will provide living wage jobs for construction companies which can be significant. The project will be put out to public bid and work will be subject to prevailing wage. Many of the projects that are of similar scale and size currently managed by CCNRD are being constructed by contractors based in Chelan County. Additionally, plants for the project will be collected by seed from within the watershed and grown at local nurseries and then planted by planting crews subject to prevailing wage.

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

CCNRD has implemented over 60 salmon habitat restoration projects in the Wenatchee and Entiat subbasins. These projects range in complexity from small riparian planting projects on private land to fish barrier removals on both public and private land to large floodplain reconnection projects requiring multiple years of planning and design with multiple entity coordination and negotiated agreements. CCNRD has successfully

completed projects with USFS, WA Department of Transportation, BPA Transmissions, large organized private landowner groups, individual private landowners, irrigation districts and other local and state government landowners. As described above, USFS has been actively involved in the design and permitting phases of this project.

kanenaturalresourc...

Upper Wenatchee RM 41....

Submission Date
March 1, 2021 14:44

*Project Title	Upper Wenatchee RM 41.4-43.0 Design
*Sponsor	Chelan County Natural Resource Department
*Primary Contact	Mike Kane
*E-Mail Address	kanenaturalresources@gmail.com
*Anticipated Request - SRFB	63750
*Anticipated Request - Tributary Committee	11250
*Anticipated Other Funding	0
*Anticipated TOTAL Budget	75000
*Other Funding Source(s)	N/A
*Briefly describe the location of the project	The project will occur in the Upper Wenatchee River between RM 41.4- 43.0 This includes a portion of Reach 4 and 3 on both sides of the BNSF RR crossing.
*Latitude (decimal degrees)	474304.91
*Longitude (decimal degrees)	1203945.79
*Project subbasin	Wenatchee
*Wenatchee Assessment Unit(s)	Wenatchee River-Beaver Creek
*Reach(es) Name	Wenatchee River Beaver 4 and 5, UPPER WENATCHEE RIVER STREAM CORRIDOR ASSESSMENT AND HABITAT RESTORATION STRATEGY Reach 3 and 4
1. *In one or two sentences, what do you propose to do?	This project will evaluate the mainstem channel and adjacent floodplain wetland complexes on river left (~RM 41.4-43.0) to identify and develop restoration actions that will improve in-stream conditions, reduce erosion and reconnect the floodplain. This

effort will include a focus on engaging with 12-15 landowners as part of the concept development process to determine project opportunities. We propose to complete all work necessary to evaluate the site, develop and analyze alternative restoration strategies and prepare conceptual designs for the preferred alternative, and anticipate hiring a contractor to complete tasks including onsite data collection (land survey, characterization of in-stream and wetland habitats, etc.), compilation of existing data, hydraulic modeling, opportunities and constraints analysis, and development of conceptual designs.

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

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)?

UPPER WENATCHEE RIVER STREAM CORRIDOR ASSESSMENT AND HABITAT RESTORATION STRATEGY 2012

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

Cover - Boulder

Off-Channel - Floodplain

Off-Channel - Side-Channels

Percent Fines/Embeddedness

Temperature - Rearing

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

Fry

Summer Rearing

Winter Rearing

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

Upon implementation, the proposed project will improve habitat along ~1.6 stream miles by improving access to left bank side channel habitats that are currently seasonally disconnected from the primary channel to provide rearing. We expect that the proposed

species at the project scale?

project will enhance habitat capacity, improve fish survival, and broaden target species distribution within the Upper Wenatchee River.

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 is limited in its ability to promote natural channel processes and treat incision due to the existing infrastructure, including homes, roads and the BNSF RR crossing. Instead the project will seek to develop habitats that were cutoff or otherwise affected by infrastructure development and reduce erosion from river access points. The addition of LWD is also limited in this reach based on existing infrastructure and community recreation concerns.

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?

50+ years

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

Monitoring will be performed to determine if project maintenance is necessary after project implementation. Access routes will likely require some weed management and possibly watering and other site maintenance.

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

We will explore a variety of potential implementation techniques including, selective grading at 2-3 floodplain channel confluences and along existing channels to provide seasonal or perennial flow to improve rearing habitat. Erosion control practices, like bioengineering will also be explored to address erosion at river access points.

1. *What is the landownership?

Ownership is predominately private with multiple parcels. Also BNSF ROW goes thru the middle and USFS owns small portion of left bank.

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

No

*Please explain

Due to the large number of private landowners, we have only been in communication with a limited number of community members along River Road. A portion of the funding would cover outreach to landowners to explain the project goals and secure interest in participation.

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

Previous engagement with River Road landowners has included a general lack of interest in seeing LWD projects in this reach due to the recreation. Also, a river access point at the BNSF crossing has ongoing weed and erosion issues and some landowners have enquired about eroding bank concerns. Past experience with BNSF has provided Chelan County with insight as to how to work with them on their ROW.

4. Will the project raise potential concerns for interest groups (e.g.,

See above.
We would avoid the controversial issues by not promoting large wood in these reaches and instead engage with the local

recreational users) or the community at large (including upstream/ downstream/ adjacent landowners)?

community through an effort to improve access sustainability and find restoration techniques with less risk.

5. Who will have the responsibility to manage and maintain the project? What is the responsibility of current or future landowners?

This proposal supports the design phase of the proposed project. Management and maintenance of the project site may be needed, post-implementation 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 postconstruction and will be responsible for any necessary management and maintenance during that time.

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 safety factor 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?

Public outreach is a key component of this project. 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.

Sponsor Agency has extensive experience implementing projects such as the one proposed and a long and successful track record with the funding agencies to whom this proposal is directed. In addition, the Sponsor has developed a successful working relationship with members of the River Road community on a

downstream project in the Upper Wenatchee and with BNSF RR
on other projects.

*Project Title	Restore Lower Peshastin Creek
*Sponsor	Cascade Fisheries
*Primary Contact	Jason Lundgren
*E-Mail Address	jason@ccfeg.org
*Anticipated Request - SRFB	495,112
*Anticipated Request - Tributary Committee	495,112
*Anticipated Other Funding	0
*Anticipated TOTAL Budget	990,224
*Briefly describe the location of the project	The project will occur in lower Peshastin Creek RM 0 - 0.3
*Latitude (decimal degrees)	47.557207
*Longitude (decimal degrees)	-120.578137
*Project subbasin	Wenatchee
*Wenatchee Assessment Unit(s)	Lower Peshastin Creek
*Reach(es) Name	Wenatchee River Derby 01
1. *In one or two sentences, what do you propose to do?	This project addresses several needs within the area; the need for additional spawning habitat for steelhead in Peshastin Creek and the Lower Wenatchee, the need for high quality rearing habitat for both species (slow velocity and complex) in Lower Peshastin, and the need for high quality, cool off-channel habitat for fish using the mainstem Wenatchee in this area. Lower Peshastin Creek is an important migration corridor, linking the Wenatchee River to the cooler waters of the upper Peshastin watershed and its tributaries, which serve as important spawning and early rearing areas for Chinook, Steelhead, and bull trout. The design intent of the restoration project is to

return a degree of fluvial dynamism to the project reach by increasing frequency and extent of floodplain inundation during higher flows, decreasing the rate of transport of sediment (volume and size of sediment) through the project reach and thus promoting depositional processes, increasing retention of mobile large and small woody debris and increasing quality and density of riparian vegetation.

2. *What species will the project benefit?

Spring Chinook

Steelhead

Bull Trout

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

Instream Habitat (Includes Floodplain & Off-Channel Reconnection)

Instream Habitat: Reporting Code

Miles of off-channel stream created

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

Yes

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

Yes

Please explain which process(es) and how this proposal differs from the previous submission (e.g., different phase, modified scope, etc.)

The SRFB funded preliminary design in 2014 (#14-1736) Restore Lower Peshastin Creek - Preliminary Design. This effort was the foundation of our current 60% design, however, a key landowner withdrew support after we completed the preliminary design so we had to seek funding to redesign the project. In 2017, through the BPA Targeted Solicitation we were granted funding to redesign project given new project constraints listed above. Mid-design, BPA elected to pause the project to explore a more holistic approach that would maximize use of the WDFW-owned floodplain. That effort concluded that we were on the right path with our previous design effort, so in 2020 BPA committed funding to take our earlier (2018) preliminary design to 80%. As of February 2021, we have a 60% design and will proceed to 80% in the next two months.

6. *What category is the project?

Restoration

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

Final Design

Construction

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)?

Lower Peshastin Creek Reach and Tributary Assessment (Interfluv 2010)

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

Contaminants

Cover - Wood

Off-Channel - Floodplain

Off-Channel - Side-Channels

Pool Quantity & Quality

Pools - Deep Pools

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

Adult Migration

Adult Non-Spawning (Bull Trout)

Fry

Holding and Maturation

Smolt Outmigration

Spawning and Incubation

Summer Rearing

Winter Rearing

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

Due to its location in the heart of the Wenatchee watershed, and being a perennial cool water tributary, Lower Peshastin serves as a biological hotspot providing habitat for both natal Peshastin and Wenatchee river fish stocks, including our three threatened and endangered species. Tributary junctions are predicted to be hotspots of diversity and production (Rice et al. 2001b, 2008, Power and Dietrich 2002). Steelhead spawn immediately upstream of the project area and would likely spawn in the project area if conditions allowed, they also rear lower Peshastin in the summer and winter. Steelhead also use the mainstem Wenatchee in this area extensively for all life stages and would most likely use this area for off-channel habitat. Spring Chinook spawn further upstream in Peshastin Creek and juveniles use the project area for rearing. They also use the mainstem Wenatchee in this area for winter rearing and would use it as off-channel habitat potentially (Greer Maier, UCSRB, personal communication 2021).

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

Peshastin Creek and it's watershed have experienced over a century of resource extraction (logging and mining) and has been fundamentally altered due to road building, agriculture and rural residential development along the shoreline and throughout the floodplain. Watershed and stream process at the reach scale are and will continue to be a challenge to restore. With that said, the WDFW-owned 24 acre parcel at the confluence of Peshastin Creek and the Wenatchee River offers the most significant opportunity to regain the kind of dynamism that is so rare and critical for our threatened and endangered species. - This project addresses the following high priority habitat impairments (deemed by the RTT as "unacceptable" in these reaches)- riparian, cover- wood, pool quality and quantity, off-channel-floodplain, off-channel-side channels, channel stability, bank stability (Greer Maier, UCSRB Personal communication, 2021).

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?

Working closely with WDFW, Cascade Fisheries developed a three year adaptive management plan whereby maintenance thresholds and intervals have been identified. The current draft plan has fourteen project metrics that will be monitored, and if necessary, addressed over the three year period following

implementation. Once grant funds are extinguished, monitoring and maintenance will be on a more ad hoc basis.

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

The primary restoration project features incorporated into the draft 60% engineering drawings are listed below (refer to 60% designs).

Engineered Logjams (ELJs) – 19 each
- Type 1 ELJ
- Type 2 ELJ

Channel and floodplain earthwork – approximately 19,300 cy of excavation (3.8 acres)

Reconnection of an isolated meander bend, resulting in a 2x increase in channel length (1,100 linear feet of new low flow channel and creation of 1,000 linear feet of secondary channel)

Excavation and expansion of floodplain adjacent to the main channel

Additional overflow channel grading

Boulder, cobble, and gravel placement (s) – approximately 2,340 cubic yards (0.85 acres)

Rebuilding of the incised current streambed to a higher elevation to maintain split flows and an elevated water table (e.g. secondary channel construction)

Riparian restoration – 3 acres planting of native plants

Protecting existing riparian trees and shrubs

Other work associated with the project currently in the development process by others that may be implemented during this project includes:

Removal and disposal of lead-contaminated floodplain soils as described and delineated by Hart Crowser (2011).

Modifications of approximately 1,000 linear feet of overhead utility line pole locations to be setback from the new creek channel

Modifications to an existing PUD access road to be out of the flood and erosion hazard limits

1. *What is the landownership?

Washington Department of Fish and Wildlife

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

Yes

*Please explain

we are working our way through WDFW's restoration pathway. WDFW has indicated explicit support for the project, now at the

60% design phase.

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

Our project fits entirely on WDFW property. In order for this project to gain support from WDFW, Cascade Fisheries has been working through WDFW's detailed Restoration Pathway Process. We are currently at the 60% design review phase and expect to have our 80% design reviewed by April 1, 2021.

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

Potentially, although we've conducted extensive landowner and stakeholder outreach over the past few years and have not identified any concerns that we haven't, or will not, mitigate for. We have received support from the boating community and will continue to keep them engaged as we identify appropriate portages around the project site.

5. Who will have the responsibility to manage and maintain the project? What is the responsibility of current or future landowners?

Cascade Fisheries will be the lead on project maintenance activities for three years following construction.

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

We believe the risk of failure is low due to the robust and prolonged engagement by our interdisciplinary team of scientists and engineers. The project is design to withstand the 100 year flood, and includes the dynamism and multiple flow paths to spread out flows and therefor velocities across a wide area.

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

Cascade Fisheries has sent mailers to adjacent landowners and called local commercial whitewater rafting companies. There are no commercial rafting/boating outfits that run Peshastin Creek, but they do use the site as a portage and put-in for rafting the Wenatchee. While our project will not impede these activities, we did hear positive feedback for our project and suggestions to sign our project and provide an upstream portage. Since this project is located on public property and heavily used, there are ample opportunities to build community support for salmon recovery. In fact, we hope, as a seperate project, to build an interpretive trail around the property educating the public about Peshastin Creek and its fish inhabitants.

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

If funded, this project will be bid through a competitive process. While we cannot guarantee the successful bidder will be local, many of the project expenses, supplies (wood, rock, asphalt, etc.), fuel, lodging and other costs, and taxes, will be incurred in the Wenatchee valley.

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

SRFB through a grant contributed \$119k to design. BPA also contributed/committed approximately \$150k to design. WDFW, WA Department of Ecology, Chelan PUD, Natural Systems Designs, and members of the Regional Technical team have all participated in the design team over the past six years providing technical expertise to various elements of the project.

aaron@ccfeg.org
Thirteen Fish Passage De...

Submission Date
February 25, 2021 17:44

*Project Title	Thirteen Fish Passage Designs for Lower Chiwawa Tributaries
*Sponsor	Cascade Fisheries
*Primary Contact	Aaron Rosenblum
*E-Mail Address	aaron@ccfeg.org
*Anticipated Request - SRFB	115,500
*Anticipated Request - Tributary Committee	115,500
*Anticipated Other Funding	0
*Anticipated TOTAL Budget	231,000
*Other Funding Source(s)	n/a
*Briefly describe the location of the project	The project will occur at 13 fish passage barriers on 7 Lower Chiwawa Tributaries: Brush Creek, Gate Creek, Grouse Creek, Twin Creek, Goose Creek, Deep Creek, Pole Creek
*Latitude (decimal degrees)	47.869972222
*Longitude (decimal degrees)	-120.688525
*Project subbasin	Wenatchee
*Wenatchee Assessment Unit(s)	Lower Chiwawa River
*Reach(es) Name	Brush Creek RM 0.3 - 0.96; Gate Creek RM 0 - 1.33; Grouse Creek; Twin Creek; Pole Creek; Goose Creek; Deep Creek; Lower Chiwawa River RM 2.92-5.46; Lower Chiwawa River RM 5.46-7.15; Lower Chiwawa River RM 9.53-11.17; Lower Chiwawa River RM 11.17 - 13.1
1. *In one or two sentences, what do you propose to do?	This project will result in preliminary designs for correcting thirteen fish passage barriers on tributaries to the Lower Chiwawa River. The culvert barriers occur on Brush Creek (1),

Gate Creek (2), Grouse Creek (2), Twin Creek (2), Goose Creek (2), Pole Creek (1), and Deep Creek (3), and the correction of these barriers will improve connectivity to cold, clean, and complex habitat, while maintaining and improving ecosystem functionality vital to the persistence and recovery of ESA-listed species.

2. *What species will the project benefit?

Steelhead

Bull Trout

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

Fish Passage

Fish Passage: Reporting Code

Quantity of fish passage blockages removed or altered

Miles of upstream made accessible

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?

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)?

Upper Wenatchee Pilot Project: Aquatic Habitat Assessment and Restoration Strategy Report (Cramer Fish Sciences)

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

Off-Channel - Side-Channels

Temperature - Rearing

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

Natal Rearing (Bull Trout)

Subadult Rearing (Bull Trout)

Fry

Summer Rearing

Winter Rearing

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

This project will primarily benefit steelhead (*Oncorhynchus mykiss*) and bull trout (*Salvelinus confluentus*), and to a lesser degree may benefit spring chinook (*Oncorhynchus tshawytscha*) as well. Each of the seven tributaries proposed contain intrinsic potential (IP) for steelhead, and six contain IP for bull trout. Cumulatively, the replacement of all proposed barriers would result in improved access to 6.02 miles of IP for steelhead and 4.84 miles for bull trout. Cramer Fish Science (2019) reports that the correction of the fish passage barriers

identified in this proposal on Gate Creek, Grouse Creek, Twin Creek, Goose Creek, and Deep Creek would result in a gain of 6.08 miles of fish habitat.

This project occurs in a Major Spawning area for spring Chinook and steelhead. The project addresses the limiting factor of fish passage in the Chiwawa River and provides additional benefits to other limiting factors. Step 1 of the recent prioritization effort (2020) identifies the Lower Chiwawa AU as a Tier 1 restoration priority for spring chinook, and a Tier 2 restoration priority for steelhead and bull trout. High priority life stages in the Lower Chiwawa that will benefit from this project (from Step 2) include summer rearing and winter rearing for spring chinook and winter rearing for steelhead. The Lower Chiwawa AU is noted in Step 2 as having limiting factors related to temperature and side channel/off-channel habitat. The goal of this project to provide improved access to thermal refuge and off-channel rearing habitat provided by tributaries, thus helping to address those limiting factors.

All culverts proposed for correction in this proposal have been surveyed and identified as fish passage barriers based on WDFD protocols. The barriers have been run through the Upper Columbia Fish Passage Barrier Removal Prioritization and scored based on metrics developed by the barrier sub-group and approved by the RTT. Ten of the barriers (Brush Creek, both Gate Creek, both Twin Creek*, both Goose Creek*, and Pole Creek (*see note on scoring in summary table below)) are currently scored as Tier 3 Priorities. The Deep Creek barriers are Tier 4 priorities, scoring lower because they only benefit steelhead based on model parameters. One thing the model does not account for well is how to score barriers that are addressed as a group, where all barriers in one creek are corrected as one project, as the eventual implementation of this proposal would do. A summary table of barrier scores and notes on scoring is provided at the end of this section.

O.mykiss have been confirmed in all of the tributaries identified in this proposal (Cramer Fish Science 2019; T.Hillman, personal comms; US Forest Service fish data), except for Pole Creek where they are likely to be present. A 2002 survey documented steelhead redds in the lower 1.6 Rkm of Twin Creek (US Forest Service fish data). Juvenile spring chinook have been documented in the lower reaches of Brush Creek (T.Hillman, personal comms) and have a presumed presence in Goose Creek (WDFW fish distribution layer) up to the first culvert barrier. Quantile regression forest capacity estimates (QRF), based on CHaMP monitoring sites, suggest habitat capacity for redds, summer rearing, and winter rearing for both steelhead and spring chinook in the tributaries identified in this proposal (UCSRB webmap).

The tributaries in the Lower Chiwawa identified in this proposal provide a cold-water input and refugia for ESA fish during warm months. Water temperatures are projected to continually warm over the coming decades. The NorWest Steam Temperature Model (2017) shows temperatures in the Upper Wenatchee River and Lower Chiwawa River ranging from 15.5°C to 20.8°C in 2080 (under scenario A1B). ESA species will be seeking cold water refugia to escape these near lethal temperatures. The same NorWest model projects colder, tolerable temperatures in 2080 for all of the tributaries at the culvert locations identified in this proposal: Brush Creek 13.5°C, Gate Creek 13.59°C, Grouse Creek 12.35°C, Twin Creek 12.34°C, Pole Creek 13.37°C, Goose

Creek 13.85°C, and Deep Creek 14.7°C. Increasing connectivity to cold water refugia can improve the Viable Salmonid Populations (VSP) parameters abundance, productivity and spatial structure for ESA-listed species in the Wenatchee Basin.

The tributaries in the Lower Chiwawa identified in this proposal provide important habitat for fish. The mainstem of the Lower Chiwawa is lacking in habitat features such as side channels, large wood, cover, and diverse substrate. Tributaries of the mainstem can act akin to side channels in that they provide slower, shallower water with abundant cover. These attributes are especially important for rearing fry and parr salmonids. The tributaries identified in this proposal occur within largely intact, functioning and protected sub-watersheds, and quality rearing habitat can be projected to persist into the future. Providing improved access to high quality rearing habitat can improve the VSP parameters abundance and productivity for ESA-listed species in the Wenatchee Basin.

The tributaries identified in this proposal provide genetic refuge and contributions for upper Wenatchee steelhead. *O. mykiss* have a highly complex and adaptable life history. McMillan, Katz and Pess (2007), documented resident male *O. mykiss* spawning with female anadromous steelhead in rivers on the Olympic Peninsula. A 2016 study conducted in Big Bear Creek, Idaho, “identified evidence of limited downstream gene flow [over a partial natural fall barrier], suggesting that resident [*O. mykiss*] fish contributed genetic material to the downstream anadromous population” (Bowersox, Wickersham, Redfield and Ackerman). Thrower et al. (2004) found that resident fish that had been isolated from anadromy for 80 years still smolted and returned to the ocean under experimental conditions. A 2013 study in the Yakima Basin, Washington, concluded that, “Basin-wide, 20% and 7% of steelhead collected in 2010 and 2011, respectively, had resident maternal life histories” (Courter et al.). These authors go on to conclude that, “Cross-life-history form production may be critical to persistence of anadromous life histories within partially anadromous salmonid populations, particularly in areas where anadromous fish abundance is low due to natural or anthropogenic influences” (ibid). Indeed, many authors have concluded that the resident life history form can be viewed as a genetic cache to be considered in steelhead conservation (Hayes et al., 2012; Holecek & Scarnecchia, 2013; McPhee et al., 2007; Van Doornik, Berejikian, et al., 2013; Van Doornik, Eddy, et al., 2013; Weigel, Connolly, & Powell, 2014). Therefore, correcting these barriers and improving the connectivity of headwaters to the ocean can improve the VSP parameter Diversity for ESA-listed steelhead in the Wenatchee Basin.

The correction of the undersized culverts that are identified in this proposal will improve the function of natural watershed processes. Undersized culverts restrict the flow of water, wood, and streambed substrate, and the associated flow of nutrients, in addition to fish movement. The design of replacement structures will allow high volume flows and associated wood and streambed substrate to pass freely through the structure and feed downstream habitat without causing backwatering, restrictions, or blockages. These blockages can cause damage to instream habitat via rapid, catastrophic erosional events. Allowing natural substrate transport and sorting to occur can potentially improve spawning conditions in these tributaries. The Lower Chiwawa River is somewhat starved of wood and diverse sediment classes. If future restoration actions in the

Lower Chiwawa provide the needed structure, the natural sediment and wood input regimes of tributaries, restored by the barrier corrections identified in this proposal, would have a higher potential to remain in the system and could contribute to the long-term maintenance and functionality of engineered structures. Restoring natural watershed function can improve the VSP parameters abundance, productivity and spatial structure for ESA-listed species in the Wenatchee Basin.

The Lower Chiwawa mainstem is one of only a few remaining strongholds for Wenatchee steelhead. The correction of the 13 fish passage barriers in this proposal will improve connectivity to cold, clean and complex habitat, addressing all four VSP parameters required for recovery, and helping to improve the likelihood of the continued survival of this ESA species.

Barrier ID	Stream	Barrier	Prioritization Score	Note on score
603117	Brush Creek		123	
603259	Gate Creek		126	
603260	Gate Creek		116	
603275	Twin Creek		126	
603124	Twin Creek	0*		This barrier should have a score. The 0 is a QA/QC error as the model thinks the barrier is "not on stream network"
40080	Goose Creek	0*		This barrier will have a score based on new scoring criteria proposed by the barrier sub-group in which all upstream IP gets counted
40081	Goose Creek		112	
603902	Pole Creek		99	
40058	Deep Creek	44		Steelhead only
40059	Deep Creek	48		Steelhead only
40057	Deep Creek	61		Steelhead only
603262	Grouse Creek	0		Although no upstream IP (hence 0 score), Cramer Fish Science notes 1.43 miles of fish habitat upstream
603261	Grouse Creek	0*		This barrier will have a score based on new scoring criteria proposed by the barrier sub-group in which all upstream IP gets counted

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

The replacement structures for the 13 barrier culverts in question will be engineered and designed to specifications described in WDFW's Water Crossing Design Guidelines (2013) and the USFS' Stream Simulation: An Ecological Approach to Providing Passage for Aquatic Organisms at Road-Stream Crossings (2008). These approaches require that project design and structure specifications, including span, height, channel bankfull width, slope, and channel bed size class, are based on upstream geomorphology and natural watershed processes. Along with fish movement and the associated flow of nutrients, barriers restrict the downstream flow of water, wood, and streambed substrate. The design of replacement structures would allow for high volume flows and associated wood and streambed substrate to pass freely through the structure and feed downstream habitat without causing backwatering, restrictions, or blockages, which often cause damage to instream habitat.

13. Temporal Effect - How long will it take for the

1-10 years

benefits of the project to be realized?

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

50+ years

1. *What is the landownership?

United States Forest Service

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

Yes

*Please explain

Cascade Fisheries has discussed the proposed project with the Zone Fisheries Biologist and the District Ranger. All proposed culverts fall within the Upper Wenatchee Pilot Project Area. A Decision Notice (DN) is expected for this programmatic NEPA in the summer of 2021. After the DN is issued, implementing projects that fall within this planning process will be a priority for the district.

kmelefson@grantc...

Road B SE Culvert Repla...

Submission Date
February 26, 2021 17:40

*Project Title	Road B SE Culvert Replacement
*Sponsor	Grant County
*Primary Contact	Keith Elefson
*E-Mail Address	kmelefson@grantcountywa.gov
*Anticipated Request - SRFB	1190000
*Anticipated Request - Tributary Committee	0
*Anticipated Other Funding	210000
*Other Funding Source(s)	County Road Fund
*Briefly describe the location of the project	The project will occur at two culvert locations on Lower Crab Creek where Road B SE crosses, and are located approximately 2.3 miles and 2.5 miles south of SR 26.
*Latitude (decimal degrees)	46.8225N
*Longitude (decimal degrees)	119.4538W
*Project subbasin	Multiple Subbasins
Please explain why there are multiple subbasins	This is a project on Lower Crab Creek, which is not part of the other subbasins.
*Reach(es) Name	No reach
1. *In one or two sentences, what do you propose to do?	Replace two sets of two culverts each with bridges. The culverts are failing.
2. *What species will the project benefit?	Steelhead
3. *Select the project's objectives and the associated tracking metrics	Fish Passage

Fish Passage: Reporting Code

Quantity of fish passage blockages removed or altered

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

Final Design

Construction

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)?

Not that we are aware of.

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

Adult Migration

Fry

Smolt Outmigration

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

The project will improve fish passage for all stages.

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 will replace four culverts with bridges, allowing the channels to maintain more natural flows.

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?

50+ years

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

The bridges will be scheduled to be inspected and maintained regularly.

plan for any anticipated maintenance?

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

Remove four culverts and replace with bridges to promote more natural flow in the stream.

1. *What is the landownership?

County Road

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

No

*Please explain

The County owns the road, but right-of-way may be needed.

alexa.mbp@metho...
Beaver Coexistence & Mi...

Submission Date
March 1, 2021 02:49

*Project Title	Beaver Coexistence & Mimicry for Salmonid Habitat Benefits
*Sponsor	Methow Salmon Recovery Foundation - Methow Beaver Project
*Primary Contact	Alexa Whipple
*E-Mail Address	alexa.mbp@methowsalmon.org
*Anticipated Request - SRFB	\$75,000
*Anticipated Request - Tributary Committee	\$15,000
*Anticipated Other Funding	\$15,000
*Anticipated TOTAL Budget	\$105,000
*Other Funding Source(s)	Defenders of Wildlife, The Burning Foundation
*Briefly describe the location of the project	Projects will occur in the Methow sub-basin in several reaches including the Upper Methow, the Chewuch, Beaver Creek, the Lower Twisp reach, the Methow Twisp to Carlton reach, and SF Gold Creek in the Lower Methow Reach.
*Latitude (decimal degrees)	48.36554
*Longitude (decimal degrees)	-120.03774
*Project subbasin	Methow
*Methow Assessment Unit(s)	Lower Beaver Creek
*Reach(es) Name	Beaver Creek Lower 06
1. *In one or two sentences, what do you propose to do?	We propose to provide beaver coexistence strategies, services, and adaptive management where beaver activity already exists or build beaver mimicking structures where beaver benefits are desired in identified sites within anadromous side channels and off channel habitat to improve salmonid survival. These actions will contribute to the restoration of natural processes, support

base stream flows, and increase habitat complexity and ecosystem resilience including the increase in quantity and quality of off channel and side channel habitat providing critical hydraulic refugia, rearing, and overwintering habitat to salmonids.

2. *What species will the project benefit?

Spring Chinook

Steelhead

Bull Trout

Summer Chinook

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

Instream Habitat (Includes Floodplain & Off-Channel Reconnection)

Instream Habitat: Reporting Code

Acres of channel/off-channel connected or added

Miles of instream habitat treated

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?

Restoration

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

Construction

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)?

Chewuch RA

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

Cover - Wood

Flow - Summer Base Flow

Food - Food Web Resources

Icing

Off-Channel - Floodplain

Off-Channel - Side-Channels

Pool Quantity & Quality

Pools - Deep Pools

Temperature - Rearing

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

Adult Migration

Subadult Rearing (Bull Trout)

Spawning and Incubation

Summer Rearing

Winter Rearing

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

Our proposed projects will increase water residency time in anadromous side channel and off channel habitat, support summer/fall base stream flows, increase structure for cover and habitat complexity, engage greater floodplain area to support water storage and reduce sediment transport, and provide increased hydraulic refugia which will improve survival, capacity, & distribution of salmonids.

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

Process restoration via beaver management & mimicry is the primary goal of our projects and will be accomplished with landowner/manager partnership through development of contextual coexistence solutions. Solutions and services will be implemented when beaver dam building has been determined to compromise salmon restoration priorities or habitat use or is desired in a location where it does not currently exist but could be supported. Solutions to coexist with beavers includes but is not limited to use of flow devices to control water elevation and sufficient fish access & passage, physically controlling dam height, creating & protecting permanent notches in dams, protecting road culverts from damming while allowing fish passage. When beaver activity is desired but ideally in a different location or is absent all together, the addition of small wood structures can substitute, distract, and eventually may attract beaver establishment. Both beaver coexistence and mimicry promote and sustain natural processes through increased stream structure, floodplain connection, and extended water residency time.

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

In sites identified for beaver coexistence and adaptive management for the benefit of salmonid survival, capacity, and distribution, services will address conflict with beaver structure building and fish passage with regard to site context and landowner priorities ranging from control of surface water elevation, control of dam height for natural fish passage at high flows, providing alternative fish passage, protecting available fish passage, protecting riparian vegetation, and protecting human infrastructure.

In sites identified for process restoration, small wood structures will be installed as complexes of 3-15 redundant structures per complex, in 2 or more complexes per restoration site to reduce stream power, force channel and habitat unit complexity through erosion, scouring, and aggradation, capture sediment, nutrients, and woody debris promoting further enhanced cover, activate floodplain connectivity, and increase water residency time and base flows to the benefit of salmonid survival, capacity, and distribution.

1. *What is the landownership?

Private, WDFW

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

Yes

*Please explain

We are working with five private landowners for restoration and/or beaver coexistence: Methow Salmon Recovery Foundation is the owner of two proposed parcels on the Twisp River, and one on Beaver Creek. The Devany family is the owner

of one proposed parcel on the Twisp River. The Olsen family is the owner of one proposed parcel on the Chewuch River. The Plante and Bastian families are the owners of two proposed parcels on the South Fork Gold Creek. The Molesworth/Saladay family is the owner of one proposed parcel on Beaver Creek.

All other proposed restoration and/or beaver coexistence sites are owned by WA Dept of Fish & Wildlife including the Fender Mill site in the Upper Methow, RM 4.2 on the Chewuch River, RM 6.3 on the Twisp River, and Silver Side Channel and Alder Creek Side Channel sites in the Twisp to Carlton reach of the Methow (RM 34-34.25).

We will work with adjacent private landowners to increase awareness, understanding, and support for restoration and coexistence actions on public lands.

jessica@methowsal...
M2 RM 41.75

Submission Date
February 24, 2021 19:50

*Project Title	M2 RM 41.75
*Sponsor	MSRF
*Primary Contact	Jessica Goldberg
*E-Mail Address	jessica@methowsalmon.org
*Anticipated Request - SRFB	650,000
*Anticipated Other Funding	185,000
*Anticipated TOTAL Budget	835,000
*Other Funding Source(s)	Reclamation design support
*Briefly describe the location of the project	The project will occur along the Methow River between RM 41.25 and RM 42
*Latitude (decimal degrees)	48.3751
*Longitude (decimal degrees)	-120.0441
*Project subbasin	Methow
*Methow Assessment Unit(s)	Methow River-Thompson Creek
*Reach(es) Name	Middle Methow
1. *In one or two sentences, what do you propose to do?	MSRF is seeking funds to advance this project from current 10% design level through construction. The project proposes to restore annual connection to a 1/2-mile-long side channel on floodplain of the Methow River to improve and extend the period of accessibility when salmonids can access the channel side channel and existing perennial ponds and wetland areas.
2. *What species will the project benefit?	Spring Chinook Steelhead Bull Trout Summer Chinook

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

Instream Habitat (Includes Floodplain & Off-Channel Reconnection)

Instream Habitat:
Reporting Code

Acres of channel/off-channel connected or added

Miles of off-channel stream created

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?

Restoration

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

Preliminary Design

Final Design

Construction

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)?

Middle Methow RA

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

Cover - Wood

Off-Channel - Side-Channels

Temperature - Rearing

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

Summer Rearing

Winter Rearing

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

This project will enhance and expand fish access to 0.3 acres of side channel habitat and additional 0.3 acres of existing groundwater-fed wetland habitat. This habitat will provide a rich food source and increase the quality and quantity of connected rearing habitat. The side channel may be constructed with either a perennial or annual flow connection to the upper end of the channel, but in either event would maintain a perennial connection at the outlet, thereby increasing the amount of habitat available during all times of the year.

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

This project is located in an area where channel confinement and bank armoring actions have simplified the main stem habitat and isolated and cutoff several natural side channels. This project is proposed to increase the amount of connected floodplain and restore lost side channel length. The proposed actions would increase the width of the river corridor and allow opportunity for a more natural rate of channel migration.



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

1. *What is the landownership?

private, DNR

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

Yes

*Please explain

MSRF owns a portion of the private property included in the project area and has ongoing discussions with adjacent landowners and DNR. The adjacent private property owner is supportive of this project.

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

This reach of the Methow River features a number of other restoration actions completed to support recovery of listed salmonids. MSRF acknowledges that the preferred alternative for levee modifications upstream of this project will need to provide assurance to funders, sponsors and local landowners that it will not adversely impact the benefits achieved by the proposed actions at this site.

jessica@methowsal...
M2 RM 42.25

Submission Date
February 24, 2021 20:04

*Project Title	M2 RM 42.25
*Sponsor	MSRF
*Primary Contact	Jessica Goldberg
*E-Mail Address	jessica@methowsalmon.org
*Anticipated Request - SRFB	675,500
*Anticipated Request - Tributary Committee	130,000
*Anticipated Other Funding	235,000
*Anticipated TOTAL Budget	1,040,500
*Other Funding Source(s)	Reclamation design support, BPA
*Briefly describe the location of the project	The project will occur along the Methow River between RM 41.25 and RM 42
*Latitude (decimal degrees)	48.3808
*Longitude (decimal degrees)	-120.1202
*Project subbasin	Methow
*Methow Assessment Unit(s)	Methow River-Thompson Creek
*Reach(es) Name	Middle Methow
1. *In one or two sentences, what do you propose to do?	MSRF is seeking funds to advance this project from 10% design through construction. The project will modify an existing levee, create off-channel refuge habitat, remove fill, add in-channel and side-channel complexity through ELJ and smaller wood placements to reconnect annual flow through an existing seasonal side channel and reconnect adjacent floodplain.
2. *What species will the	Spring Chinook Steelhead Bull Trout

project benefit?

Summer Chinook

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

Instream Habitat (Includes Floodplain & Off-Channel Reconnection)

Instream Habitat: Reporting Code

Acres of channel/off-channel connected or added

Miles of off-channel stream created

Miles of instream habitat treated

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)?

Yes

6. *What category is the project?

Restoration

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

Preliminary Design

Final Design

Construction

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)?

Middle Methow RA

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

Cover - Wood

Off-Channel - Floodplain

Off-Channel - Side-Channels

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

Holding and Maturation

Summer Rearing

Winter Rearing

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

This project is proposed to increase both the quality and quantity of suitable rearing habitat available throughout the year. Side channel actions will add about 1600 ft. (0.2 acres) of secondary channel to support juvenile rearing and high flow refuge. Levee alterations will reconnect floodplain and side channel habitat, supporting high water refugia and support the development of riparian forest. The proposed ELJ's and smaller wood features will both increase habitat directly and support sediment mobility needed to restore perennial flow in the existing side channel. These actions will help increase the total amount of habitat available during low flow summer and winter

rearing periods. Deep pools maintained by the ELJ's will provide valuable holding habitat for pre-spawn adults.

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

The proposed levee alterations will reconnect side channel and floodplain areas and reduce velocity through the project reach. This will help return the river to more natural rates of channel migration, and increase the effective river corridor in the project area. Levee alterations and regrading of fill placed behind the constructed levee will support development of off-channel high flow refuge areas and connected riparian forest.

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?

50+ years

1. *What is the landownership?

private, DNR (SOAL)

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

Yes

*Please explain

The majority of the private land within the project area was purchased by MSRF with RCO, PRCC, and Tributary Committee support to facilitate future restoration projects. We have initiated on-going conversations with the majority of the adjacent landowners and have obtained their support to develop targeted actions to improve habitat conditions. The work will require work within areas of State Owned Aquatic Lands and lands managed by the Corps of Engineers and Okanogan County (Levee). Each of the agencies have expressed support for actions designed to improve habitat functions without increasing risk to private and public properties.

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

Portions of the levee in the project area are actively managed by Okanogan County and the Corps of Engineers through the Public Lands 8499 system for cost-share of Corps-constructed levees. MSRF acknowledges that the preferred alternative for levee modifications will need to provide assurance to the management agencies and local landowners that it will not reduce current protections.

jessica@methowsal...
M2 RM 43

Submission Date
February 25, 2021 13:05

*Project Title	M2 RM 43
*Sponsor	MSRF
*Primary Contact	Jessica Goldberg
*E-Mail Address	jessica@methowsalmon.org
*Anticipated Request - SRFB	367,000
*Anticipated Other Funding	82,000
*Anticipated TOTAL Budget	448,000
*Other Funding Source(s)	Reclamation design support
*Briefly describe the location of the project	The project will occur along the Methow River between RM 42.8 and 43.2
*Latitude (decimal degrees)	48.3872
*Longitude (decimal degrees)	-120.1304
*Project subbasin	Methow
*Methow Assessment Unit(s)	Methow River-Thompson Creek
*Reach(es) Name	Middle Methow
1. *In one or two sentences, what do you propose to do?	The project proposes to increase connection between the main stem Methow and adjacent riparian by constructing a groundwater side channel to provide cool water refugia. In-stream placements of LWD and ELJ structures will be included to provide point complexity the Methow River.
2. *What species will the project benefit?	Spring Chinook Steelhead Bull Trout Summer Chinook

3. *Select the project's objectives and the associated tracking metrics	Instream Habitat (Includes Floodplain & Off-Channel Reconnection)
Instream Habitat: Reporting Code	Acres of channel/off-channel connected or added
	Miles of off-channel stream created
	Miles of instream habitat treated
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?	Restoration
7. *What project phase(s) are proposed for completion?	Preliminary Design Final Design Construction
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)?	Middle Methow RA
9. *Which limiting factors does the project propose to address?	Cover - Wood Off-Channel - Side-Channels Temperature - Rearing
10. *Which life stages will the proposed project address?	Holding and Maturation Summer Rearing Winter Rearing
11. *Freshwater Benefits - To what extent will your project improve survival, capacity and/or distribution for target species at the project scale?	This project proposes to provide approximately 0.1 acres (4000 sq. ft.) of groundwater fed off-channel habitat to support juvenile rearing during both the summer and winter periods. Connection of the cold, groundwater source water with the alcove outlet will provide thermal refuge for pre-spawn adult Chinook on their journey to the upstream spawning areas. Increased habitat complexity on the main-stem Methow will provide cover for rearing juveniles and increase the amount of suitable rearing habitat available. The enhanced off-channel habitat will provide additional area with a distinct thermal regime that supports rearing juvenile fish and their food source.
12. *Temporal Effect - Briefly describe how and to what extent the project	This project will be designed to be consistent with reach-scale geomorphology. Habitat structures will mimic natural wood

would promote natural stream/watershed process consistent with reach-scale geomorphology?

accumulations on the heads of gravel bars and support sediment transport and sorting.

1. *What is the landownership?

Private, DNR (SOAL)

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

Yes

*Please explain

MSRF has established an ongoing dialogue with the private landowner and DNR and they are supportive of increasing habitat through the proposed concepts.

jessica@methowsal...
M2 RM 46.25

Submission Date
February 22, 2021 13:45

*Project Title	M2 RM 46.25
*Sponsor	MSRF
*Primary Contact	Jessica Goldberg
*E-Mail Address	jessica@methowsalmon.org
*Anticipated Request - SRFB	288,000
*Anticipated Request - Tributary Committee	56,000
*Anticipated Other Funding	80,000
*Anticipated TOTAL Budget	423,000
*Other Funding Source(s)	Reclamation design support
*Briefly describe the location of the project	The project will occur along the Methow River between RM 45.6 and 46.2
*Latitude (decimal degrees)	48.4190
*Longitude (decimal degrees)	-120.1424
*Project subbasin	Methow
*Methow Assessment Unit(s)	Methow River-Thompson Creek
*Reach(es) Name	Middle Methow
1. *In one or two sentences, what do you propose to do?	MSRF is seeking funds to advance this project from 10% design through construction. The project will build on prior restoration at the site to support a perennial flow split and increase habitat complexity through placement of up to 6 engineered logjams around the existing side channel inlet and selective grading of the river bed to balance flows.
2. *What species will the	Spring Chinook Steelhead Bull Trout

project benefit?

Summer Chinook

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

Instream Habitat (Includes Floodplain & Off-Channel Reconnection)

Instream Habitat: Reporting Code

Acres of channel/off-channel connected or added

Miles of instream habitat treated

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

Yes

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

No

6. *What category is the project?

Restoration

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

Preliminary Design

Final Design

Construction

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)?

Middle Methow RA

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

Cover - Wood

Off-Channel - Side-Channels

Pool Quantity & Quality

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

Holding and Maturation

Summer Rearing

Winter Rearing

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

This project is proposed to increase the amount and availability of high quality rearing habitat for juvenile spring Chinook and Steelhead. The additional engineered logjams will add complex cover and support higher densities of juvenile fish. These structures will also maintain scour holes that support pre-spawn adults and support channel processes engineered to maintain the desired flow split. Selective grading will also be completed to ensure that both channel threads retain perennial flows to ensure that fish rearing and migrating throughout the project site will not be stranded by the river abandoning one of the two channels. The action is also needed to ensure that the fish return from the MVID/Barkley diversion continues to be connected to active river flows through the irrigation season.

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

The addition of large wood in the main stem Methow will help maintain sediment transport processes through the site. Wood placements in the side channel will be designed to be consistent with reach and site scale geomorphology, support sediment movement and reduce the risk of channel avulsion. The project actions build on past restoration success with a significant emphasis on large wood structures that have proven to be both stable and providing highly productive fish habitat since 2013.

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

1. *What is the landownership?

WDFW, DNR (SOAL)

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

Yes

*Please explain

The project area is primarily public lands owned by WDFW and WA DNR. MSRF has engaged with local and regional staff at both state agencies and has initiated coordination through the restoration pathways process to secure permission for the project. WDFW and WA DNR staff have indicated support for project development and will participate in project development.

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

WDFW and WA DNR staff will participate in project development through the WDFW Restoration Pathways process and DNR SOAL process. Because actions have the potential to impact private lands on both channel threads, we will be working closely with these owners even though no actions are proposed on private lands.

andy.hover@co.oka...
Mazama Bridge Habitat ...

Submission Date
March 1, 2021 12:43

*Project Title	Mazama Bridge Habitat Acquisition
*Sponsor	Okanogan County
*Primary Contact	Commissioner Andy Hover
*E-Mail Address	andy.hover@co.okanogan.wa.us
*Anticipated Request - SRFB	\$160,000
*Anticipated Request - Tributary Committee	\$27,500
*Anticipated Other Funding	0
*Anticipated TOTAL Budget	\$187,500
*Briefly describe the location of the project	The project site is on the Methow River, just upstream of the Lost River Road bridge north of the SR 20 Mazama Junction at RM 68.
*Latitude (decimal degrees)	48.590191
*Longitude (decimal degrees)	-120.407695
*Project subbasin	Methow
*Methow Assessment Unit(s)	Methow River-Fawn Creek
*Reach(es) Name	Methow River Fawn 11
1. *In one or two sentences, what do you propose to do?	Okanogan County seeks grant to purchase an intact riparian property located in a priority area on the Methow River near Mazama for Spring Chinook, Steelhead and Bull Trout being offered by Washington State Department of Transportation prior to WSDOT's planned disposition by way of public auction.
2. *What species will the project benefit?	Spring Chinook Steelhead Bull Trout Summer Chinook Numerous upland species and birds.

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

Acquisition, Easements, Leases

Acquisition, Easements, Leases: Reporting Code

Acres of land, wetland or estuarine area protected from degradation or development

Miles of stream bank or riparian protected

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?

Protection

7. *What type of protection are you proposing?

Fee Simple

8. *Is this protection project associated with a current or future restoration project?

Maybe

9. *Placement - Does the project protect important high quality habitat and/or watershed processes and to what degree?

Yes, this property is located immediately adjacent to an area of high spawning activity and consists primarily of mature cottonwood forest on the south side of the river which provides shading. Much of the property is located within the flood plain. Additionally, the property is located in an area where there has been significant private land conservation in support of salmon recovery where this parcel exists as an "in-holding" of sorts and acquisition would represent an opportunity to build upon these previous investments by private individuals and other public funders.

10. *Freshwater Benefit - What would be the anticipated loss in survival, capacity or distribution for target species at the project scale if the proposed area is not protected?

Sale of this property at public auction to the lowest bidder, and subsequent commercial or residential development in almost any scenario where vegetation removal occurs would result in the degradation of the mature cottonwood gallery, and potential negative impacts along the shoreline in an area of documented spawning habitat.

11. *Threat - How imminent is the threat of habitat degradation to the proposed land if the project is not implemented?

If Okanogan County is not successful in obtaining funding, WSDOT will re-start the property surplus process they already had underway in late 2020. That public auction would take place sometime in early 2021. Actual development post-auction is unknown at this time, though any development of the parcel would have likely negative impacts upon the site's current natural status as a mature cottonwood forest located within and adjacent to the flood plain. Because public funding sources are

typically too slow to support participation in the auction by a non-profit entity, it is unlikely that a conservation-oriented organization will be able to participate in an auction if that process moves forward.

12. Conditions - Briefly describe if there are any conditions regarding the protection of the property that could limit the protection benefits

We are not aware of any such conditions.

13. Will there be public access?

No

1. *What is the landownership?

Washington State Department of Transportation

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

Yes

*Please explain

WSDOT has agreed to halt the public auction process they had underway to allow Okanogan County, working with support from the Methow Conservancy, to secure funding for a purchase by Okanogan County as allowed by RCW 47.12.063 for WSDOT surplus properties.

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

Aside from negotiating the purchase itself, we are not aware of any landowner / WSDOT requirements.

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

Given that the project is located in an area where significant land conservation work has been completed over the past 20 years, we do not anticipate public concerns with a habitat protection strategy on this parcel which has been in public ownership for 70+ years.

5. Who will have the responsibility to manage and maintain the project? What is the responsibility of current or future landowners?

Okanogan County has responsibility for parcels that it owns, but may seek future partnership opportunities in the future to work with organizations like the Methow Conservancy or others who have resources, including volunteer labor, available to support on-going stewardship needs, if any.

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

If this property is not secured by Okanogan County, or another eligible entity (we are aware of none who are pursuing this), then it will be auctioned to the highest bidder in a WSDOT public auction. Because most public funding processes are slow, it is unlikely that a conservation-oriented organization working in the watershed will be able to participate successfully in a public auction. While private ownership does not necessarily mean a loss of conservation value on the property, any significant development activity would result in degradation to what is an otherwise intact piece of high quality riparian habitat.

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

Okanogan County will consult with the Mazama Advisory Committee (County appointed citizen advisory committee on land use matters in Sub-Unit "A" of Okanogan County) for input as part of development of the final project application. Given the historic salmon recovery work in this part of the Methow Valley, we believe that a successful project will help to build community support for salmon recovery.

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

This property is located at the gateway from Scenic Highway 20 to the community of Mazama, a fast-growing and increasingly popular tourist and recreation destination at the foot of the North Cascades. People travel the Scenic Highway corridor, and recreate in Mazama to enjoy the natural setting along the many trails in the area. This project is located along the Methow Community Trail, and contributes to the visitor experience to this part of Okanogan County. Additionally, the project site builds upon previous conservation investments in the immediate vicinity, including the Methow Conservancy's recent acquisition and planned public access point located immediate downstream (across Lost River Road). While it is difficult to quantify the direct economic benefit per dollar invested, it is clear that in-tact habitat and the rural character of Mazama contribute to its desirability and the level of private economic investment underway currently, and over the past decade in the upper Methow Valley.

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

Okanogan County is working with support from the Methow Conservancy which has offered staff support in taking advantage of the opportunity provided by WSDOT for Okanogan County to pursue this acquisition.

*Project Title	Wenatchee-Entiat Beaver-Powered Restoration
*Sponsor	Trout Unlimited
*Primary Contact	Kodi Jo Jaspers
*E-Mail Address	kodijo.jaspers@tu.org
*Anticipated Request - SRFB	128,399
*Anticipated Request - Tributary Committee	107,298
*Anticipated Other Funding	99,959
*Anticipated TOTAL Budget	335,657
*Other Funding Source(s)	Other funding sources are currently being explored and submitted for, including corporate and public sources. In-kind time and materials has also been used as a match.
*Briefly describe the location of the project	Beaver relocation and landowner assistance will occur in multiple locations along the Columbia River, Wenatchee River, and various sites within the upper Wenatchee subbasin. Beaver Dam Analogs will be potentially implemented within Lower Entiat, Mad, Chiwawa, Peshastin, Upper-Middle Entiat or Upper Wenatchee Assessment Units.
*Latitude (decimal degrees)	47.74295
*Longitude (decimal degrees)	-121.04671
*Project subbasin	Multiple Subbasins
Please explain why there are multiple subbasins	In order to maximize the benefit of beaver-powered restoration, we focus our work in multiple subbasins. This type of work is low-cost processed based restoration that allows us to implement at a larger scale than traditional restoration practices. Through work focused in multiple subbasins we increase our reach on beaver relocations and beaver dam analog implementation.

*Reach(es) Name

Multiple Reaches

1. *In one or two sentences, what do you propose to do?

This project will address and reduce stream and habitat concerns in multiple tributary watersheds by harnessing beaver-powered restoration realized through landowner assistance, beaver relocations, and beaver dam analog (BDA) implementation.

2. *What species will the project benefit?

Spring Chinook

Steelhead

Bull Trout

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

Instream Habitat (Includes Floodplain & Off-Channel Reconnection)

Instream Habitat: Reporting Code

Miles of instream habitat treated

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

Yes

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

Yes

Please explain which process(es) and how this proposal differs from the previous submission (e.g., different phase, modified scope, etc.)

This project builds off the successful work of the previously submitted and funded Wenatchee-Entiat Beaver Project. The focus is to continue landowner assistance, beaver relocation, and installation of beaver dam analogs in new stream reaches. We propose, over the course of a two-year period, to assist 10-20 landowners, relocate 20-30 beavers, and install 80-100 BDAs. Through these three beaver-powered restoration techniques we will restore and conserve important natural stream and habitat processes, such as pool quality and quantity, floodplain reconnection, late season flow and wildfire resiliency.

6. *What category is the project?

Restoration

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

Construction

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)?

Yes, multiple assessments.

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

Flow - Summer Base Flow

Food - Food Web Resources

Off-Channel - Floodplain

Off-Channel - Side-Channels

Pool Quantity & Quality

Pools - Deep Pools

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

Summer Rearing

Winter Rearing

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

Proposed project activities will occur in multiple watersheds and, in the case of beaver dam analogs (BDAs), at a multi-reach or watershed scale. Survival at all life stages will be enhanced through habitat creation, water quantity/quality improvement, and increased habitat access. Specifically, research has shown beavers to support the following habitat components that support survival, capacity and/or distribution of target species:

1. Beaver ponds retain surface water, store ground water, and elevate water tables to enhance base flows and promote aquifer recharge. (Naiman, Johnston and Kelley, 1988)
2. Ponds offer habitat for salmonids and other aquatic/terrestrial species including invertebrate food sources. (Pollock et al., 2004)
3. Beaver dams and BDAs increase stage to aggrade incised streams, reconnect streams with floodplains, and create critical off-channel habitat. (Bouwes, et al., 2016)
4. Beaver activities attenuate flooding and sediment transport. (Rosell and Parker, 1996)
5. Beaver habitats create a natural fire break, riparian vegetation fire resistance and refugia creation. (Fairfax and Whittle, 2020)
6. Beavers recruit woody debris to the stream system. (Orr, et al., 2020)

A recent study of coho salmon production in the Stillaguamish River basin found that a reduction in beaver ponds and other slow-moving water habitats limited the smolt production potential in both summer and winter habitat (Pollock et al., 2004). Bouwes et al. (2016) also found that beaver activities and beaver dam analogs lead to a “significant increases in the density, survival and production of juvenile steelhead without impacting upstream and downstream migrations”. We anticipate all of these beaver-powered freshwater benefits to lead to improved survival, capacity and distribution of target species in our project area.

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

Research surrounding beaver-powered restoration shows that beaver create complex stream habitats with increased water quality and overall healthy watersheds (Naiman, Johnston and Kelley, 1988; Bouwes, et al., 2016; Orr, et al., 2020). As outlined in our response to question 11, beaver-powered restoration leads to the promotion of numerous stream processes. With the loss of beavers on the landscape the natural systems supported by this species have been degraded, such as pool quality/quantity, floodplain and off-channel habitat connections and riparian habitat quality. For example, the 2019 Upper Wenatchee Pilot Project: Aquatic Habitat Assessment and Restoration Strategy Report found the upper watershed contained at risk or poor pool quality/quantity, reduced floodplain connectivity and increased duration of low flow conditions; these are all natural stream processes that can be restored through beaver-powered restoration and the reestablishment of beavers on the landscape.

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?

>10 years

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

Beaver-powered restoration is built on active adaptive management practices. Just as a natural beaver dam is meticulously maintained by the animal, so too do we maintain and adjust our beaver dam analogs as natural stream processes begin to reestablish themselves. Our plan following BDA installation is to regularly (at least quarterly) revisit the sites to determine the need for maintenance and adaptive management. Beaver relocations are also regularly monitored for success, including pre-release site evaluation, and at least three post-release site visits.

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

Over the course of a two-year period the project proposes to assist 10-20 landowners, relocate 20-30 beavers, and install 80-100 BDAs.

The project offers landowner assistance that encourages beaver co-existence so that the ecosystem benefits currently being provided by beavers for the stream systems can continue to be realized. This effort includes site assessments, tree caging and painting and flow device installations. When this is unsuccessful, we will utilize beaver relocation to move the beavers to upstream in the watershed where their ecosystem benefits can continue to promote healthy streams in our watershed. Beavers will be relocated in pairs and/or family-units to increase the success of reestablishment. Based on linear beaver colony densities reported in the literature (Scrafford et al. 2018; Cox and Nelson, 2009; Boyce, 1980; Busher et al. 1983; Busher et al. 1983) we anticipate that for every relocated beaver family they have the potential to treat 0.9 – 1.6 km of stream with ecosystem benefits (instream habitat).

Lastly, we will utilize low-cost processed based restoration techniques, such as beaver dam analogs (BDAs), to restore natural stream processes. Based off Hafen (2017) we estimate that with BDA installation we can increase surface water storage by a range of 0.11 – 0.3 acre/ft, dependent on dam height. Using prioritization based on fish presence and ecological concerns and the Upper Columbia Beaver-Powered Restoration Decision Support System (DSS) we have narrowed the potential BDA site locations to the following list. Site visits will be conducted this spring/summer and at a minimum two stream stretches will be selected for BDA installation. All potential BDA sites will be presented to the Tributary Committee for approval prior to implementation.

Note: Identified by Watershed, Assessment Unity, Tributary

1. Entiat, Lower Entiat, Roaring
2. Entiat, Mad, Mainstem below Tillicum
3. Entiat, Mad, Tillicum
4. Entiat, Upper-Middle, Mud
5. Wenatchee, Chiwawa, Brush
6. Wenatchee, Chiwawa, Minnow
7. Wenatchee, Upper Wenatchee, Skinny

All three elements of this project harness beaver-powered restoration so that we can achieve our objective of restoring stream systems for salmonid species. Specifically, an increase in

pool quality/quantity, reconnection of floodplains, flow augmentation and storage and landscape resiliency to wildfire.

1. *What is the landownership?

Both Private and Public

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

Yes

*Please explain

Through the first three years of the project we have established a relationship with both private and public landowners. We anticipate working with private landowners for beaver issue assistance and relocation efforts. On public lands, primarily US Forest Service Lands, we will continue our relocation efforts and beaver dam analog implementation. As we move forward in selecting BDA site locations we will coordinate and receive approval from appropriate landowners. We also have a strong established partnership with the Leavenworth National Fish Hatchery (LNFH) as the beaver acclimation facility that will continue forward.

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

Approval from landowners and permitting will be required prior to BDA implementation, this could affect the project by delaying the season of implementation.

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

We do not anticipate there being any potential concerns for interest groups. In the first three years of the project we have successfully received support from landowners, local organizations, federal agencies, and the public. We plan to leverage this diverse support to ensure we continue to provide a community focused project that incorporates interest groups to reduce any concerns that we have not anticipated.

5. Who will have the responsibility to manage and maintain the project? What is the responsibility of current or future landowners?

Relocated beavers will be marked/tagged. Trout Unlimited and its restoration partners will be responsible for managing animals relocated by the project. Trout Unlimited and its restoration partners will also be maintaining and monitoring BDA installations.

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

Risk of complete failure is negligible. BDA installations are a semi-engineered approach with relatively certain outcomes as shown with our previous BDA implementation. Beaver relocations are less predictable but in our first three years of the project we have made strides in successfully tracking and monitoring released beavers, we also hope to be able to partner with university researchers in the future to help us better understand the outcomes of released beavers.

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

Community engagement is a vital component to the success of this project. Outreach has occurred through multiple volunteer opportunities, internship positions, and coordination with other local organizations and entities. A strategic community engagement plan is currently being developed and will be implemented concurrently with this proposed project. As our beaver acclimation facility, the Leavenworth National Fish Hatchery provides an unparalleled outreach opportunity to

build community support for salmon restoration and resource conservation. Over the last year we have increased our community outreach through multiple social media outlets (Facebook and Instagram) and articles through local news outlets. We have also increased our outreach to local landowners through a Chelan County wide virtual landowner event where we created a WEB project video.

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

Yes. Materials, equipment, and contractors will be procured locally as much as possible. Importantly, project activities will result in greater resilience to drought (water storage), flood (stream power reduction and flood mitigation), wildfire (wetland buffers and green firebreaks), erosion (sediment storage), and other natural conditions that impact our economies and ways of life. This is a low-cost, large-scale project. The ecological, social, and economic benefits achieved for the price make it extremely cost effective.

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

Throughout the first three years of the project we have built strong partnerships to support our beaver-powered restoration work. We have in-kind support (BDA designs and other technical support, relocation program assistance, and labor) from the US Fish and Wildlife Service and other regional restoration partners such as Cascadia Conservation District and Cascade Fisheries. We continually have volunteer support from the Wenatchee Valley Fly Fishers group and landowner and facility support from US Fish and Wildlife and US Forest Service. As beaver restoration work grows, we have partnered and learned from other beaver projects both within and outside of Washington State and other Trout Unlimited projects across the United States implementing similar beaver-powered restoration projects. All these partnerships have provided expertise to support the growth and continuation of the WEB project. We are continually investigating other ways to involve the community and other partners in our work and anticipate further partnerships into the future.

clec@yakamafish-n...

Fox Creek & Silver Falls P...

Submission Date
March 1, 2021 01:03

*Project Title	Fox Creek & Silver Falls Project Areas Habitat Restoration Project
*Sponsor	Yakama Nation Fisheries
*Primary Contact	Christopher Clemons
*E-Mail Address	clec@yakamafish-nsn.gov
*Anticipated Request - SRFB	\$560,000.00
*Anticipated Request - Tributary Committee	\$250,000.00
*Anticipated Other Funding	\$450,000.00
*Anticipated TOTAL Budget	\$1,260,000.00
*Other Funding Source(s)	Bonneville Power Administration (BPA), (Yakama Nation Fish Accords Funding)
*Briefly describe the location of the project	This project will occur in the Upper-middle Entiat River in two separate reaches (Fox Creek, RM 27.8-28.2) & (Silver Falls, RM 30.3-31.5)
*Latitude (decimal degrees)	47.954531
*Longitude (decimal degrees)	120.534169
*Project subbasin	Entiat
*Entiat Assessment Unit(s)	Entiat River-Lake Creek
*Reach(es) Name	Upper Stillwaters
1. *In one or two sentences, what do you propose to do?	This project proposed creating perennial side channels and placing large wood structures throughout the Fox Creek and Silver Falls reaches.
2. *What species will the	Spring Chinook Steelhead Bull Trout

project benefit?

Summer Chinook

Lamprey

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

Instream Habitat (Includes Floodplain & Off-Channel Reconnection)

Instream Habitat: Reporting Code

Acres of channel/off-channel connected or added

Miles of off-channel stream created

Miles of instream habitat treated

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?

Restoration

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

Construction

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)?

Upper Stillwaters Reach Stream Corridor Assessment & Habitat Restoration Strategy

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

Cover - Wood

Flow - Scour

Off-Channel - Floodplain

Off-Channel - Side-Channels

Pool Quantity & Quality

Pools - Deep Pools

Temperature - Adult Holding

Temperature - Rearing

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

Adult Migration

Adult Non-Spawning (Bull Trout)

Natal Rearing (Bull Trout)

Subadult Rearing (Bull Trout)

Fry

Holding and Maturation

Smolt Outmigration

Summer Rearing

Winter Rearing

11. *Freshwater Benefits - To what extent will your project improve survival,

This project will enhance up to 1.6 miles of off-channel and mainstem habitat in two project areas. The project will increase the juvenile rearing and adult holding habitat through a multi-

capacity and/or distribution for target species at the project scale?

faceted restoration strategy. Currently, the two project areas have viable habitat with high intrinsic potential that is otherwise inaccessible at all flow conditions. This project aims to provide juvenile overwintering habitat and summer low flow rearing habitat as well as mainstem adult cover and holding habitat for targeted species. In many of the project areas the habitat is close to meeting targeted goals. With this restoration action those goals are more easily attained.

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

Fox Creek - Lack of large wood and the disconnection of floodplain and off-channel habitat are the primary deficiencies targeted for restoration in this reach. Infrastructure associated with the Fox Creek Campground impairs floodplain and side channel connectivity. Removal or alteration of bank armoring, culvert replacement and select grading could reconnect approximately 690 feet of side channel at low flow. Just downstream of the Fox Creek Campground, large wood enhancements could be used to enhance channel migration processes and channel complexity. These actions could help achieve off-channel habitat, large wood recruitment and log jam targets within this reach.

Silver Falls - The restoration strategy for this reach is focused on enhancing existing complex habitats through placement of large wood and side-channel enhancements. This reach is considered the most laterally active reach above Box Canyon which is situated between the two project areas. This lateral migration and the reach's depositional nature translate to geomorphic complexity in the form of bars (point and traverse), high and low flow side channels, islands and abandoned floodplain scars. These geomorphic features create complex habitat elements that could be easily enhanced to create abundant high-quality habitat within this reach. Historically, more abundant log jams would have existed and formed in such a depositional reach that would have contributed to multi-thread channel form, pool formation and more instream cover and complexity.

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?

50+ years

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

Yearly monitoring of the project's as-built survey will take place post implementation year. In addition, the project sites will be monitored during high-flow events of the Q5 or greater to assess project element changes. Yearly photo and visual inspection of the project elements will be completed and a report will accompany the annual assessments. Yearly maintenance is not anticipated any of the sites as they are meant to be self-sustaining.

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

Fox Creek Application: Three perennial side channels (referred to as the lower, middle, and upper alignments) are proposed within the Fox Creek reach. Each selected side channel alignment follows an existing floodplain scar for a portion of its length to minimize excavation quantities and riparian impacts. Sediment plugs will be removed at the lower and middle side channels to increase the low flow inundation frequency. The

Upper side channel will require more extensive earthwork to lower the bed channel elevation depth at or near groundwater. This will ensure stranding does not become an issue. Two existing undersized culverts will be replaced with more fish friendly bridges. Apex jams will be constructed at the inlet to each channel to maintain inlet depth via scour and to constrict the mainstem to encourage flow into the channel. Wood will be strategically placed throughout the channels and associated scour pools will further add complexity. An inside out method will be utilized to further reduce riparian impact and where applicable existing campground access routes will be utilized for heavy equipment. River right large woody material placement will be a combination of helicopter and on-the-ground equipment.

Perennial side channels are included in the Silver Falls project area as well. Construction methodology will be similar for these locations as well. Several of the side channels in this location are frequently wetted in their current conditions. The project will enhance connectivity with limited excavation. Additionally, in areas where large woody material jams are naturally forming, these areas will be augmented with additional wood including pilings.

1. *What is the landownership?

USDA Forest Service

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

Yes

*Please explain

The Yakama Nation Fisheries (YNF) has been working closely with the US Forest Service, Entiat District to implement projects in these two areas since 2013 after the projects and areas were identified in the 2013 Upper Stillwaters Stream Corridor Assessment and Habitat Restoration Strategy. In the project ranking prioritization process for this assessment both project areas were ranked in the top tier of projects/areas that had the highest intrinsic potential. At the time the FS asked the YNF to put this project area on hold while the current recreation plan was updated for the District. The YNF then completed work at other project areas within the Upper Stillwaters Reach in 2017 and again in 2020. The completed work coupled with this work will help to create a more seamless and contiguous habitat corridor totally nearly 5 miles. Currently this work is scheduled to be implemented in 2022 and can be found in the District's Unified Program of Work (UPOW) for 2022. The YNF has a firm commitment from the FS to allocate time and resources to implement this project.

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

There are several requirements specific to Forest Service lands that this project will need to adhere to. Since the Entiat River is listed as a candidate river for the "Wild & Scenic" designation there are specific height and visibility restrictions for structures and how they interact with existing road infrastructure. Additionally, since some of this work occurs in and around existing campgrounds and will remain as part of the campground landscape upon project completion there may be specific signage and/or exclusion fencing installed to deter damage of newly created habitat.

4. Will the project raise

Both the Fox Creek and Silver Falls Project Areas are far enough

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

up in the watershed that there are no nearby private structures. All work will occur in and around two well established campground areas where recreation is limited to campground and upland trail use. River recreation within these two areas is almost non-existent since fishing is not allowed below Entiat River Falls.

5. Who will have the responsibility to manage and maintain the project? What is the responsibility of current or future landowners?

The FS will be granting permission and access to the YNF to conduct this restoration. The YNF will obtain all necessary permits it is responsible for and work with the FS to move through the NEPA process. Outreach will be conducted by the FS through the NEPA scoping process. Additional outreach will be conducted by the YNF to notify the downstream landowners of the restoration taking place with an emphasis on helicopter-log placement during construction activities. Upon project completion an as-built survey will be completed and this will serve as the template for future monitoring of all project elements by the YNF. The YNF will utilize and ID/IQ contract for any maintenance if needed and project elements will be monitored during significant flow events.

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

The risk of failure associated with this project is "0" to none. The project has been designed to withstand a 100-year flood event. All project elements have been designed and stamped by a licensed engineer and input provided by a multi-disciplined team of restoration professionals. The structures are meant to immobile and remain at their installation locations. Additionally, the proposed side channels have been designed with enough excavation and grade to keep them flushed of sediment and debris.

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

Outreach will be conducted by the FS through their NEPA scoping process and additional outreach will be conducted by the YNF through watershed events prior to implementation. Specific outreach to support helicopter placement of large woody material will also be conducted by both parties. Notification will be given in advance to the public of any campground temporary closures. Support for this restoration as well as previous restoration efforts has been really positive throughout the watershed, especially the middle and lower watershed areas where restoration interacts directly with private infrastructure. Multiple outreach meetings over the course of the past ten years has built trust with the public, permitting agencies as well as local municipalities.

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

No, this is a restoration project located in on National Forest Lands. It may however have an indirect effect on the salmon fishery as a whole by increasing the number of salmon that are produced in this watershed which would have a direct effect on the harvestable amount of salmon for private and commercial fisheries.

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

The Cascadia Conservation District has partnered with the YNF to conduct outreach activities within this watershed and will likely assist the YNF during one or more of the seasonal outreach events.

johj@yakamafish-n...

Lower Little Bridge Cree...

Submission Date
February 24, 2021 17:58

*Project Title	Lower Little Bridge Creek Restoration Project
*Sponsor	Confederated Tribes and Bands of the Yakama Nation
*Primary Contact	Jarred Johnson
*E-Mail Address	johj@yakamafish-nsn.gov
*Anticipated Request - SRFB	100000
*Anticipated Request - Tributary Committee	100000
*Anticipated Other Funding	200000
*Anticipated TOTAL Budget	400000
*Other Funding Source(s)	The Yakama Nation will cover additional costs through the BPA Fish Accord extensions.
*Briefly describe the location of the project	The project will use a helicopter to place 175 logs throughout 1.8 miles of Little Bridge Creek to improve habitat complexity for the benefit of Columbia River Steelhead and Bull Trout.
*Latitude (decimal degrees)	48.393076
*Longitude (decimal degrees)	-120.0309772
*Project subbasin	Methow
*Methow Assessment Unit(s)	Little Bridge Creek
*Reach(es) Name	LBC1
1. *In one or two sentences, what do you propose to do?	The Project will utilize a helicopter to place 175 logs with roots throughout approximately 10,000 linear feet of Little Bridge Creek and the adjacent floodplain.
2. *What species will the project benefit?	Steelhead Bull Trout

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

Instream Habitat (Includes Floodplain & Off-Channel Reconnection)

Instream Habitat: Reporting Code

Miles of instream habitat treated

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?

Restoration

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

Construction

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)?

Upper Twisp River and Tributaries Habitat Assessment

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

Cover - Wood

Off-Channel - Floodplain

Pool Quantity & Quality

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

Fry

Summer Rearing

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

Instream habitat complexity and floodplain interaction will be increased with each log placed in the river corridor. Specific habitat units which will be affected include pool quantity and quality, gravel sorting, retention of alluvial material and increased floodplain and side channel engagement. This will result in improved spawning, rearing and migration habitat for ESA-listed Steelhead and Bull Trout.

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 elements will restore watershed processes within a nearly two mile reach of Little Bridge Creek, the largest tributary to the Twisp River. Results of the hydraulic model indicate that the imported logs will be self stabilizing during most flow events and will have dramatic effects on the geomorphology.

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?

50+ years

1. *What is the landownership?

Okanogan Wenatchee National Forest

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

Yes

*Please explain

The Methow District is supportive of this project and have included the proposed actions in the Twisp Watershed Restoration NEPA.

johj@yakamafish-n...

Mystery and War Creek ...

Submission Date
February 22, 2021 18:45

*Project Title	Mystery and War Creek Reach Aquatic Restoration Project
*Sponsor	Confederated Tribes and Bands of the Yakama Nation
*Primary Contact	Jarred Johnson
*E-Mail Address	johj@yakamafish-nsn.gov
*Anticipated Request - SRFB	350,000
*Anticipated Request - Tributary Committee	150000
*Anticipated Other Funding	200000
*Anticipated TOTAL Budget	700,000
*Other Funding Source(s)	The Yakama Nation will provide funding acquired through Bonneville Power Administration.
*Briefly describe the location of the project	The project consists of two distinct project areas on the middle and upper Twisp River. The downstream project site, War Creek Reach, is located between RM 17 and RM 18.1. The upstream project site, Mystery Reach, is located between RM 21 and RM 23.
*Latitude (decimal degrees)	48.39104
*Longitude (decimal degrees)	-120.44751
*Project subbasin	Methow
*Methow Assessment Unit(s)	Middle Twisp River
*Reach(es) Name	T7 and T6
1. *In one or two sentences, what do you propose to do?	Install 890 logs with rootwads, 70 pilings and 32 whole large trees throughout three miles of the Middle Twisp River Assessment Unit.



2. *What species will the project benefit?

Spring Chinook

Steelhead

Bull Trout

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

Instream Habitat (Includes Floodplain & Off-Channel Reconnection)

Instream Habitat: Reporting Code

Miles of instream habitat treated

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?

Restoration

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

Construction

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)?

Upper Twisp River and Tributaries Habitat Assessment

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

Cover - Wood

Pool Quantity & Quality

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

Adult Migration

Adult Non-Spawning (Bull Trout)

Natal Rearing (Bull Trout)

Subadult Rearing (Bull Trout)

Fry

Holding and Maturation

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?

This project will treat three miles of the Twisp River with 890 logs with attached rootwads and 32 locally harvested whole Spruce trees. Within the Mystery Reach, 636 logs will be placed via heavy lift helicopter into accumulations ranging from 12 to 44 logs each. Within the War Creek Reach, 264 logs with rootwads will be placed. This will dramatically increase in-stream habitat complexity with increased pool quality and quantity, improved gravel sorting, retention of alluvial material.

12. *Temporal Effect - Briefly describe how and to what extent the project would promote natural stream/watershed process

Benefits of this restoration effort will be realized immediately and persist on a long-term timescale by restoring natural riverine process. The Project reaches contain far less qualifying large wood than historically present and in the case of the

consistent with reach-scale geomorphology?

Mystery Reach, near-term large wood recruitment is also significantly diminished due to logging.

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?

50+ years

1. *What is the landownership?

United States Forest Service

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

Yes

*Please explain

The Methow District of the Okanogan-Wenatchee National Forest is the public land manager. They have been participating in project design and are completing NEPA through the Twisp Watershed Restoration Project.

eckm@yakamafish-...

Twisp Horseshoe Habitat...

Submission Date
February 19, 2021 13:23

*Project Title	Twisp Horseshoe Habitat Enhancement Project
*Sponsor	Yakama Nation
*Primary Contact	Madeleine Eckmann
*E-Mail Address	eckm@yakamafish-nsn.gov
*Anticipated Request - SRFB	200000
*Anticipated Request - Tributary Committee	100000
*Anticipated Other Funding	300000
*Anticipated TOTAL Budget	600000
*Other Funding Source(s)	Bonneville Power Association Fish Accord Funding
*Briefly describe the location of the project	RM 11.1 to RM 12.1
*Latitude (decimal degrees)	48.3653986
*Longitude (decimal degrees)	120.3160086
*Project subbasin	Methow
*Methow Assessment Unit(s)	Lower Twisp River
*Reach(es) Name	Lower Twisp River
1. *In one or two sentences, what do you propose to do?	This project is a 3,500 foot long restoration action that seeks to address the top priority ecological concerns in the Lower Twisp River Assessment unit by increasing instream structural complexity, reconnecting side channels, increasing floodplain connectivity, and by restoring habitat forming processes that will benefit salmon stocks in the long term. This primary project component will include extensive strategic placement of large wood accumulations by heavy lift helicopters and heavy tracked equipment in an area of the Twisp River with substantial

groundwater connectivity which will provide year-round rearing habitat with thermal refuge for juvenile salmonids; promote floodplain inundation; and restore hydraulic complexity for ESA listed salmonids.

2. *What species will the project benefit?

Spring Chinook

Steelhead

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

Instream Habitat (Includes Floodplain & Off-Channel Reconnection)

Instream Habitat: Reporting Code

Acres of channel/off-channel connected or added

Miles of off-channel stream created

Miles of instream habitat treated

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

Yes

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

No

6. *What category is the project?

Restoration

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

Construction

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)?

Middle Twisp River Reach Assessment

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

Cover - Wood

Off-Channel - Floodplain

Off-Channel - Side-Channels

Percent Fines/Embeddedness

Pool Quantity & Quality

Pools - Deep Pools

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

Adult Migration

Fry

Holding and Maturation

Spawning and Incubation

Summer Rearing

Winter Rearing

11. *Freshwater Benefits -

To what extent will your project improve survival, capacity and/or distribution for target species at the project scale?

The installation of nine large wood structures in the mainstem river will provide immediate benefits for rearing juveniles seeking hydraulic refuge during high flows. The installed wood structures will facilitate hydraulic complexities and encourage sediment sorting to enhance steelhead and spring Chinook spawning.

Increased scouring flows through two high-flow channels (1,500 and 300 feet in length) will encourage perennial connection in a location with substantial groundwater connectivity.

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 is located in an area of the Twisp River that was historically very wide and anabranching as can be seen in the groundwater filled oxbows present on the floodplain. Human influences including the installation of levees, agricultural/logging practices, and manual removal of instream wood have resulted in increased concentrated flow vectors in historically unconstrained reaches which has increased downcutting, and decreased wood recruitment/retention. This project will emulate and restart geomorphological processes driving wood and gravel recruitment and retention to improve spawning and rearing habitats in the Twisp River.

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?

50+ years

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

The project is designed to be self maintaining. Once construction is completed, the Yakama Nation will implement a revegetation plan. This will include live plantings of willows and cottonwoods in the constructed large wood structures and Douglas-Fir and pines on in the riparian areas that we expect will mature as the dynamicity of the site is reduced. Any plantings will be watered (as necessary) and monitored for weed control for five years following construction. In addition, the Yakama Nation will conduct intensive monitoring for project stability and vegetation for ten years following project completion. A monitoring report will be produced annually for the first five years during this timeframe.

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

Install eight large wood structures to promote sediment recruitment and pool formation. Install three large wood structures to promote split flow conditions and improve floodplain and side channel habitats.

1. *What is the landownership?

Forest Service and Private

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

Yes

*Please explain

This project is being developed in coordination with the US Forest Service and is being analyzed under the currently proposed Twisp Restoration NEPA project (expected decision,

Fall 2021). Private landowners have been involved with the project development during the six years of project development.

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

On the private lands there are Methow Conservancy easements limiting development and heavy equipment operation in the floodplain. This project is proposing to deliver the wood to each of the proposed log jams with a helicopter to minimize impacts to the riparian areas, which also helps minimize heavy equipment operation in the floodplain. Recent discussions with the Methow Conservancy have indicated support for salmon habitat restoration, and suggest we will be able to complete the project and post implementation stewardship plan without violating any of their easements.

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

The Yakama Nation has developed very positive relationships with the private landowners in the project area and downstream of the project area over the course of the last six years, after completing four different restoration projects (on privately owned land) in the two miles of river downstream of the proposed Horseshoe project area. We have continued to reach out to these private landowners regarding this proposed Horseshoe project, and received good support for the project moving forward in 2021. We will continue private landowner coordination with the project landowners and adjacent landowners, but we do not anticipate substantial issues moving forward.

Furthermore, the habitat restoration component of the Twisp River Restoration NEPA currently being assessed by the Forest Service seems well supported by the community at large.

In 2017, the Yakama Nation conducted a recreational river user assessment which included outreach to the recreation community who generally supported salmon habitat restoration. Additional outreach to recreational river users, specific to this project, is planned in the future but since we've highly considered recreational user impacts in the project design, we are confident the project will be supported by the recreational user community.

As we have in the past, we will be reaching out to Aero Methow Rescue to discuss any potential concerns they have regarding the safety of the proposed structures. However, since safety has been a prominent consideration in the development of this project, we do not expect any concerns.

5. Who will have the responsibility to manage and maintain the project? What is the responsibility of current or future landowners?

The project is designed to be self maintaining. Once construction is completed, the Yakama Nation will implement a revegetation plan. This will include live plantings of willows and cottonwoods in the constructed large wood structures and coniferous trees and shrubs in the riparian area that we expect will mature over time. Any plantings will be watered (as necessary) and monitored for weed control for five years following construction using an on-call contract managed by the Yakama Nation. In addition, the Yakama Nation will conduct intensive monitoring for project stability and vegetation for ten years following project completion. A monitoring report will be produced annually for the first five years during this timeframe. Any adaptive management or modification during this timeframe will be the responsibility of the Yakama Nation.

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

All of the large wood structures in this planset were engineered, including stability calculations, to ensure stability up to a 100-yr flood event. This 100-yr flood calculation was a conservative estimate considering climate change flow predictions. Furthermore, as the structures accrue additional wood and ballast they are likely to become more resilient over time. Ultimately, our designs are set up to use future high flow events to further improve habitat conditions in the reach by encouraging pool scour, sediment sorting, and side channel activation. These large jams (~40 to 70 feet wide) are heavily anchored with pilings, substantial alluvium ballasting, and imported slash quantities to prevent piping of the alluvium in large flow events.

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

No outreach is planned during or after implementation. However, due to the substantial outreach we have completed to date and the additional outreach we have planned prior to implementation, we are confident this project will be an excellent model for salmon habitat restoration in the community.

The three projects we have completed in the two miles of river downstream of the proposed Horseshoe project have been very well received by private landowners. In the recent years following implementation of the previous projects, many of the private landowners we have worked with have helped us advocate (to the USFS) for the implementation of this proposed project and are eager to see it implemented. Similar to these previously completed projects, we expect the Horseshoe project will continue to build support for similar salmon recovery efforts.

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

This project will help restore wild steelhead runs in the Methow, and contribute towards re-opening the recreational steelhead fishery which is a large economic boost for the local economy. In addition, the overall project will improve the scenic corridor of the river.

Construction and vegetation maintenance contractors local to the Upper Columbia are often hired through the competitive hiring process because their reduced mobilization costs allow them to submit competitive bids. This will also return some of the investment from this project back into the local economy.

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

The project engineers, Interfluve, working with the Yakama Nation have designed and implemented over a dozen restoration projects in the Methow Valley, in the last ten years. Overall, the concepts proposed in the Horseshoe project, constructing large jams to promote floodplain inundation, encourage split flow conditions and create cover habitat, is analogous to the approach taken in these previous projects. In addition to the vast array of experience from previous projects, this design team has spent nearly six years refining the shape, size and placement of these proposed large wood structures based on the observed hydrology and geomorphology at the site and within the Twisp River.