



Contact Information

2025 Upper Columbia Regional Project Pre-Application

* Pre-applications (SRFB & Monitoring) due March 12, 2025 (COB)

*Complete SRFB applications due in PRISM April 18, 2025 (COB)

*Complete Monitoring applications due in PRISM May 1, 2025 (COB)

*Revised SRFB proposals due in PRISM May 27, 2025 (COB)

*Final revised SRFB & Monitoring applications due in PRISM June 23, 2025 (noon)

Project Title	Beaver Creek Low Tech Restoration Project
Sponsor	Yakama Nation
Primary Contact	Ben Woodworth
E-Mail Address	woob@yakamafish-nsn.gov

Project Summary

Please provide a description or summary of the proposed project, including project goals. The goal of the project should be to solve identified problems by addressing the root causes. Then clearly state the desired future condition.

The Beaver Creek Low-Tech Restoration Project aims to restore habitat complexity and floodplain connectivity along nearly one mile of Beaver Creek. The project builds on the Beaver Creek Reach 5 Restoration Project which increased wood loading, side channel connection, and floodplain hydration.

Beaver Creek is currently impacted by channel incision, floodplain disconnection, and reduced habitat complexity, primarily due to human activities such as road and bridge construction, timber harvesting, cattle grazing, and recreational use. These disturbances have simplified the stream channel, leading to downcutting, decreased water retention, and a diminished riparian corridor.

To address these challenges, the proposed project will implement low-tech, process-based restoration techniques, including:

- Strategic Placement of Large Wood – Utilizing nearly 200 rootwad logs from the Reach 5 Project to increase flow obstruction, encourage lateral migration, and promote habitat complexity.
- Installation of Beaver Dam Analogs (BDAs) and Post-Assisted Log Structures (PALS) – These structures will mimic natural beaver dams, slowing water flow, increasing sediment retention, and reconnecting floodplain habitats. These will also provide structural stability.
- Riparian Vegetation Enhancement – Planting willow stakes, rooted water birch, and aspen in targeted

locations to improve habitat for aquatic, upland, and avian species.

- Encouragement of Beaver Colonization – Creating suitable conditions for beaver activity, allowing them to naturally sustain and expand restored habitats over time.

Project Goals & Desired Future Condition

The primary goal of this project is to address the root causes of habitat degradation by restoring natural stream processes and floodplain interactions. Specifically, the project aims to:

1. Increase Floodplain Connectivity – Improve the frequency, depth, and duration of floodplain inundation, raising the water table and enhancing riparian plant growth.
2. Enhance In-Stream Habitat Complexity – Increase pool depth and quantity, improve substrate variation, and create diverse hydraulic conditions to support fish and other aquatic species.
3. Promote Sustainable Ecosystem Function – Establish conditions that encourage long-term beaver occupation, leveraging their natural engineering to maintain and expand habitat improvements.
4. Improve Riparian Vegetation & Wildlife Habitat – Support native plant communities that provide critical habitat for aquatic, terrestrial, and avian species.

The desired future condition is a resilient, self-sustaining ecosystem where Beaver Creek maintains natural hydrologic and geomorphic processes, supports healthy riparian vegetation, and provides diverse habitat for fish, wildlife, and beaver populations. This will ensure long-term ecological benefits while reducing the need for ongoing human intervention.

What are the project objectives? Objectives support and refine biological goals, breaking them down into small steps. Objectives are specific, quantifiable actions the project will complete to achieve the stated goal. Each objective should be SMART (Specific, Measurable, Achievable, Relevant, and Time-bound).

Note: This exact question is included in the PRISM application. Example format: The project seeks to address [specify limiting factor(s)] for [limiting life stage(s)] by [specific actions proposed] to create an estimated [include specific target metrics, as described below] upon implementation in [estimated year].

To achieve the goals of the Beaver Creek Low-Tech Restoration Project, the following SMART (Specific, Measurable, Achievable, Relevant, and Time-bound) objectives have been identified:

1. Increase Floodplain Connectivity
 - Objective: Install a minimum of 75 structures consisting of both Beaver Dam Analogs (BDAs) and Post-Assisted Log Structures (PALS) at strategic locations in 2026 to enhance floodplain connectivity.
 - Measurement: Monitor persistence of structures installed and visually assess water retention and floodplain interaction.
 - Relevance: Reconnecting historical floodplains will increase habitat availability and water quantity for riparian vegetation and fish species.
2. Enhance In-Stream Habitat Complexity
 - Objective: Utilize large wood (logs with root wads) within the project reach to create deeper pools, increase hydraulic variability, increase lateral migration, and enhance fish habitat.
 - Measurement: Assess changes in pool depth, frequency, and streambed complexity through visual surveys and monitoring reporting.
 - Relevance: Increased structural complexity supports fish spawning, rearing, and refuge areas.
3. Promote Beaver Colonization and Long-Term Habitat Maintenance
 - Objective: Establish suitable conditions to attract beavers to the project area within three years by providing stable dam-building materials and floodplain connectivity.
 - Measurement: Track signs of beaver activity (e.g., dam construction, lodges, chewed wood) through monitoring efforts.
 - Relevance: Beavers play a critical role in maintaining and expanding habitat restoration efforts, reducing the need for human intervention.
4. Improve Riparian Vegetation and Wildlife Habitat
 - Objective: Plant at least 5000 native riparian trees and shrubs (willow stakes, rooted water birch, and aspen) in 2026 to increase shade, bank stability, and habitat diversity.

- Measurement: Conduct vegetation survival and growth surveys annually for five years.
- Relevance: A robust riparian buffer enhances water quality, stabilizes streambanks, and supports diverse wildlife.

These objectives break down the broader project goals into specific, quantifiable steps, ensuring that restoration efforts are measurable, achievable, and time-bound. By implementing these actions, the project will create a self-sustaining ecosystem that supports healthy hydrologic function, robust riparian vegetation, and diverse wildlife populations in Beaver Creek.

Budget Request

Values MAY be duplicative and do not have to equal TOTAL anticipated budget in pre-application.

Anticipated Request - SRFB (standard round)	0
Anticipated Request - SRFB Riparian Funding	100,000
Anticipated Request - Monitoring Grant Funding	0
Tributary Committee - Anticipated or Actual	0
Anticipated or Actual Other Funding	0
Anticipated TOTAL Budget	100,000

Project Location

Briefly describe the location of the project Beaver Creek starting at RM 7 and ending at RM 8

Latitude (decimal degrees) 48.418357

Longitude (decimal degrees) -120.040334

Project subbasin Methow

Methow Assessment Unit(s) Lower Beaver Creek

Does the proposed project span multiple assessment units? No

Reach(es) Name Beaver Creek Lower 08 and Beaver Creek Lower 09

Identify the reach(es) priority/ reach ranking. Note: If the project involves work in multiple reaches, select "Multiple" and include details in the text box that will appear below. Please reference the Prioritization Web Map: <https://prioritization.ucsrb.org/>.

Rank 3

Multiple reaches (provide details below)

Please detail the reach-ranking of the reaches below

Beaver Creek Lower 08 - Rank 3
Beaver Creek Lower 09 - Rank 3

Project Information

1. What species will the project benefit?

Steelhead

Bull Trout

2. Select the project's objectives and the associated tracking metrics

Instream Habitat (Includes Floodplain & Off-Channel Reconnection)

Riparian Habitat

Instream Habitat: Reporting Code

Total miles of instream habitat treated

Acres of channel/off-channel connected or added

Number of structures placed in channel

Riparian Habitat: Reporting Code

Total riparian miles streambank treated

4. Does this project already exist in Salmon Recovery Portal or PRISM?

No

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

No

6. What category is the project?

Restoration

Is the project eligible for Riparian Funding?

Yes

Design and Restoration Proposals

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)?

Beaver Creek Reach Assessment, Tetra Tech 2017b.

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

Cover - Wood

Off-Channel - Floodplain

Riparian - Canopy Cover

Riparian - Disturbance

Riparian - Structure

10. Which life stages will the proposed project address?

Fry

Spawning and Incubation

Summer Rearing

Winter Rearing

11. Freshwater Benefits - Describe how your project will improve survival, capacity and/or distribution for target species at the reach scale?

The Beaver Creek Low-Tech Restoration Project will build on efforts by the Yakama Nation and WDFW to enhance habitat complexity and quantity along nearly one mile of Beaver Creek.

In 2017, the Yakama Nation completed the Beaver Creek Reach Assessment, which used stream habitat surveys to quantify current habitat conditions and evaluate local factors affecting fish productivity. The assessment identified deficiencies in pool quality and quantity, large wood, side-channel habitat, and floodplain connectivity.

In 2019, the Yakama Nation partnered with WDFW to implement the Beaver Creek Reach 5 Project, which addressed these issues by removing anthropogenic barriers—such as a historic bridge approach that had blocked a large side channel—and constructing habitat features to improve mainstem, side-channel, and floodplain complexity.

Building on this work, the proposed project will utilize some of the nearly 200 rootwad logs placed during the Reach 5 Project to enhance flow obstruction and encourage lateral migration, thereby increasing substrate variation, pool depth, and pool quantity. Additionally, we will install Beaver Dam Analogs (BDAs) to create perennial habitat in pools and improve floodplain connectivity.

These efforts will significantly enhance the effectiveness of the previous project and maximize biological uplift within the project area.

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

Beaver Creek is bounded by large glacial terraces and alluvial deposits to the east and west. It has established inset floodplains of varying sizes near the current stream margins; however, these floodplains are generally narrow and support a riparian corridor less than 200 feet wide.

Human activities, such as road and bridge construction, timber harvesting, cattle grazing, and recreational campgrounds, have significantly reduced the frequency and duration of floodplain interactions with Beaver Creek. These impacts have led to increased channel simplification, which, in turn, has caused downcutting due to higher stream energy. The proposed project aims to reconnect historical floodplain habitat that has been lost due to channel incision.

Following the completion of the Beaver Creek Reach 5 Project, beavers used several large wood placements as anchor points for dams. These dams persisted for a couple of years and provided invaluable floodplain habitat. By strategically installing Beaver Dam Analogs (BDAs) and Post-Assisted Log Structures (PALS), we aim to attract beaver colonies and families to help sustain these features over the long term.

If this project is effective it should have enduring benefits to the geomorphology, riparian vegetation, and hydrology.

13. Temporal Effect - How long will it take for the project to achieve its intended response?

1-10 years

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

10-50 years

50+ years

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

The Yakama Nation will monitor the project for 5-years post construction and plan adaptive management and maintenance actions in accordance with MOU and consultation with WDFW. There is no regular maintenance planned. In many scenarios similar to this, beavers quickly recolonize stream reaches and work to maintain constructed features.

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

The Beaver Creek Low-Tech Restoration Project will be implemented by using hand crews to install posts to stabilize logs with rootwads to construct Post Assisted Log Structures and by weaving slash into posts to create Beaver Dam Analogs. Hand crews will utilize pneumatic or hydraulic post pounders and imported green slash. The benefit to using manual labor is that there will be minimal disturbance to vegetation, soils and the water.

Reconnecting Historical Floodplain Habitat – By addressing channel incision and increasing habitat complexity, the project will restore access to previously disconnected floodplains.

Encouraging Beaver Colonization – By providing stable habitat features, the project aims to attract and support beaver colonies, which will naturally maintain and enhance restoration efforts over time.

These efforts will build upon past restoration work to maximize biological uplift, improve habitat quality, and promote long-term ecosystem resilience in Beaver Creek.

17. If the project is eligible and applying for Riparian Funding, does the project have in-stream components? If so, briefly describe those components, how they support riparian plant survival and/or natural regeneration, and why they are necessary for the success of the riparian habitat elements of the project.

The project will provide significant benefits to both in-stream and riparian habitats. Its goals include enhancing in-stream hydraulic and geomorphic complexity and increasing floodplain connectivity.

Improved floodplain connectivity—through increased duration, depth, and area of inundation—will help raise the water table, creating better growing conditions for riparian plants. Additionally, we plan to install willow stakes, rooted water birch, and aspen in strategic locations. These tree species will support a diverse range of aquatic, upland, and avian species.

Furthermore, the project will encourage natural beaver activity by strategically placing Beaver Dam Analogs (BDAs) and Post-Assisted Log Structures (PALS). These structures will promote long-term habitat stability by allowing beavers to maintain and enhance the restored floodplain.

To ensure the success of these efforts, monitoring and likely adaptive management will be implemented to track project outcomes, assess habitat improvements, and make adjustments as needed to maximize ecological benefits.

Assessment Proposals

Protection Proposals

Monitoring Proposals

Project Risk and Economic Benefits

1. What is the landownership?

Washington State Department of Fish and Wildlife

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

Yes

Please explain

Washington State Department of Fish and Wildlife and the Yakama Nation have established a Memorandum of Understanding for partnering on restoration actions on lands managed by WDFW. We have initiated the MOU process, hosted a site tour with WDFW staff and have verbal support. It is anticipated that written support for the project will be obtained prior to the application deadline.

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

In accordance with the terms of the Memorandum of Understanding, the Yakama Nation will acquire a Right of Entry Permit and Temporary Use Permit for construction.

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

This project is located a significant distance from private property and this is an uncommonly used recreation location. Therefore we do not anticipate concerns from interest groups.

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

The Confederated Tribes and Bands of the Yakama Nation will be managing the project through their Upper Columbia Habitat Restoration Program. The Yakama Nation will conduct monitoring and adaptive management (as determined necessary by WDFW and the Yakama Nation) for 5 years post implementation.

6. Are other projects being proposed immediately upstream or downstream of worksite?

No

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

In this context, failure would probably be considered either; damage to property or life, or catastrophic structure failure. Due to the nature of this project, with imported slash, pilings and repositioning of local large wood, there is very little risk of failure. If beavers re-colonize the project area and maintain or create dams they will likely fortify the structures and reduce the long term risk of failure.

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

There is no public outreach planned for this project, however this will be a collaborative effort between Yakama Nation, Methow Beaver Project, and Methow Natives, which will build community organizational collaboration and relationships.

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

This project has a large 'bang for the buck' potential. This low-tech restoration project is anticipated to employ 10 people for a month to complete manual installation of wood features and BDA's. By implementing the project in this fashion, very little disturbance to the vegetation or soils will occur. We will also address the primary limiting factor for this reach by improving the floodplain and off-channel habitat connectivity for threatened Steelhead and Bull Trout.

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

The Yakama Nation anticipates hiring the Methow Beaver Project and Methow Natives as contractors on

this Project. These entities have worked together before on BDA projects throughout the region and we are looking forward to harnessing their expertise to guide this project.

Optional Section - Preparation for PRISM (SRFB applications only)

The following questions are identical to the questions RCO requires in the PRISM application for SRFB projects. If desired, sponsors can complete associated questions early and copy responses into PRISM during the "Complete Application" phase due on April 18, 2025.

*please note, this section is not applicable for Monitoring proposals

Do you want to review and/or pre-populate PRISM questions?

No

Supporting Documents

[Upper Columbia Process Guide 2025](#)

[SRFB Manual 18 \(2025\)](#)

[RCO Application Resources \(2025\)](#)

PROJECT: 25-1225 REST, BEAVER CREEK LOW TECH RESTORATION PROJECT

Sponsor: Yakama Nation Program: Salmon State Riparian Status: Application Submitted

Parties to the Agreement

PRIMARY SPONSOR

Confederated Tribes and Bands of the Yakama Nation

Address PO Box 151

City Toppenish **State** WA **Zip** 98948

Org Type Native American Tribe

Vendor # SWV0013063-00

UBI

Date Org created

Org Notes

[link to Organization profile](#)

Org data updated

SECONDARY SPONSORS

No records to display

MANAGING AGENCY

Recreation and Conservation Office

LEAD ENTITY

Upper Columbia Salmon Rcy Bd L

QUESTIONS

#1: List project partners and their role and contribution to the project.

External Systems

SPONSOR ASSIGNED INFO

Sponsor-Assigned Project Number

Sponsor-Assigned Regions

LINK AN EXISTING SRP PROJECT

Unlink

25-1225, Beaver Creek Low Tech Restoration Project, Sal

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Project Contacts

Contact Name Primary Org	Project Role	Work Phone	Work Email
<u>Amee Bahr</u> Rec. and Conserv. Office	Project Manager	(360) 867-8585	Amee.Bahr@rco.wa.gov
<u>Ben Woodworth</u> Yakama Nation	Project Contact	(509) 504-1056	woob@yakamafish-nsn.gov
<u>Ariel Edwards</u> Upper Columbia Salmon Rcy Bd L	Lead Entity Contact	(208) 540-2691	ariel.edwards@ucsr.org

Worksites & Properties

Worksite Name

#1 Beaver Creek Low Tech Restoration Project Area

Restoration	Property Name
✓	Methow Wildlife Area

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Worksite Map & Description

Worksite #1: Beaver Creek Low Tech Restoration Project Area

WORKSITE ADDRESS

Street Address

City, State, Zip Twisp WA 98856

Worksite Details

Worksite #1: Beaver Creek Low Tech Restoration Project Area

SITE ACCESS DIRECTIONS

The worksite is located on the Methow Wildlife Area managed by WDFW. There is a gate at the southern extent of a large field, which can be opened to allow access to the project area. If you access the field through the gate, please close the gate when you leave.

TARGETED ESU SPECIES

Species by ESU	Egg Present	Juvenile Present	Adult Present	Population Trend
Chinook-Upper Columbia River Spring, Methow River, Endangered		✓	✓	
Steelhead-Upper Columbia River, Methow River, Threatened	✓	✓	✓	

Reference or source used

UCSRB Prioritization Webmap

TARGETED NON-ESU SPECIES

Species by Non-ESU	Notes
Rainbow	This project will enhance habitat that is suitable for Rainbow trout
Cutthroat	This project will enhance habitat that is suitable for Cutthroat trout
Bull Trout	This project will enhance habitat that is suitable for Bull trout

Questions

#1: Give street address or road name and mile post for this worksite if available.

Upper Beaver Creek Road just south of Piper Creek/Burns Canyon. Coordinates to location are 48.413552 , -120.038489.

Project Location

RELATED PROJECTS

Projects in PRISM

PRISM Number	Project Name	Program Name	Current Status	Relationship Type	Notes
No related project selected					

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Projects not in PRISM

Project Number	Project Name	Current Status	Relationship Type	Project Funder
	Beaver Creek Reach 5	Completed	Earlier Phase	Yakama Nation through the 2008 Fish Accords with BPA

Related Project Notes

The Beaver Creek Reach 5 project was constructed in 2019. This large wood enhancement project significantly increased wood loading between rivermile 7.2 and 8.9, where the Yakama Nation used excavators to install around 50 large wood accumulations consisting of 425 logs with roots and 75 logs without roots.

Questions

#1: Project location. Describe the geographic location, water bodies or habitat types, and the location of the project in the watershed, i.e. nearshore, tributary, main-stem, off-channel, etc.

This project will take place between rivermile 7.3 and rivermile 8 of Beaver Creek, also known as Reach 5 in the 2017 Reach Assessment. Beaver Creek is a tributary to the Methow River within WRIA 48 and the Middle Methow River watershed HUC 1702000806. Several small tributaries flow into Beaver Creek, such as Frazer Creek, Storer Creek, Piper Creek, South Fork Beaver Creek, Volstead Creek, Blue Buck Creek, and Lightning Creek. The project reach features a single thread channel with a low frequency of pools and is dominated by riffle-rapid habitat units. Intermittent confined and unconfined areas occur throughout Reach 5, with multiple relic channel scars across disconnected floodplains in unconfined areas.

#2: How does this project fit within your regional recovery plan and/or local lead entity's strategy to restore or protect salmonid habitat? Cite section and page number.

This project aligns with the 2021 UCRTT Biological Strategy to Protect and Restore Salmonid Habitat Within the Upper Columbia Basin by restoring watershed and habitat function by addressing limiting factors. This project will promote properly functioning geo-fluvial processes that control habitat diversity, instream flow, and water quality. Aggradation zones in generally unconfined areas where deposition of substrate material will be targeted for implementation of a combination of PALS and BDAs. Restoration in these areas will benefit a broad range of species and populations. Importantly, actions that rectify the sources of the habitat degradation can have more benefits to biological productivity in the long run than addressing specific instream complexity needs (Bellmore et al. 2019).

This project aligns with the following short-term and long-term objectives: protect existing areas where high ecological integrity and natural ecosystem processes persist, protect and restore water quality where feasible and practical within natural constraints, increase habitat diversity in the short term by adding instream structures where appropriate, protect and restore riparian habitat along spawning and rearing streams and identify long-term opportunities for riparian habitat enhancement, protect and restore floodplain function and reconnection, off-channel habitat, and channel migration processes where appropriate and identify long-term opportunities for enhancing these conditions, and restore natural sediment delivery processes by restoring natural floodplain connectivity, riparian health, natural bank erosion, and wood recruitment.

#3: Is this project part of a larger overall project?

Yes

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#3a: How does this project fit into the sequencing of the larger project?

The Reach 5 Project introduced large wood throughout this area of Beaver Creek. Within 2 years of project implementation, beaver colonies established multiple dams associated with the installed large wood. The benefits to floodplain connectivity, vegetation recovery (from the 2014 Carlton Complex Fire) and aquatic habitat complexity were immediately apparent. The goal of the proposed project is to increase hydraulic diversity of installed large wood, to create complex aquatic habitat, lateral migration, stream bed deposition and floodplain reconnection on a broad scale. Additionally, installation of preferred plant species for beavers, will increase their residence time and site maintenance as well as improving shading and water quality benefits.

#4: Is the project on State Owned Aquatic Lands? Please contact the Washington State Department of Natural Resources to make a determination. [Aquatic Districts and Managers](#)

No

Property Details

Property: Methow Wildlife Area (Worksite #1: Beaver Creek Low Tech Restoration Project Area)

✓ Restoration

LANDOWNER

Name Washington Department of Fish and Wild
Address 1111 Washington St. SE
City Olympia
State WA Zip 98501
Type State

CONTROL & TENURE

Instrument Type Interagency Agreement
Timing Proposed
Term Length Fixed # of years
Yrs 5
Expiration Date
Note

This is a WDFW owned and maintained property. WDFW and the Yakama Nation have a Memorandum of Understanding about working on habitat restoration projects on land owned by each agency and we will be adhering to these guidelines for working on this project.

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Project Proposal

Project Description

The Beaver Creek Low-Tech Restoration Project aims to restore habitat complexity, floodplain connectivity, and riparian vegetation along nearly one mile of Beaver Creek. Beaver Creek is currently impacted by channel incision, floodplain disconnection, and reduced habitat complexity, primarily due to human activities such as road and bridge construction, timber harvesting, cattle grazing, and recreational use, as well as a history of natural fire disturbance. These disturbances have simplified the stream channel, leading to downcutting, decreased water retention, increased sediment transport, and a diminished riparian corridor.

To address these impairments, the proposed project will implement low-tech, process-based restoration techniques, including:

Large Wood - Utilizing nearly 200 rootwad logs from the Reach 5 Project to increase flow obstruction, encourage lateral migration, and promote habitat complexity.

Install Beaver Dam Analogs and Post-Assisted Log Structures - Structures will mimic natural beaver dams, slowing water flow, increasing sediment retention, and reconnecting floodplain habitats. These will also provide structural stability.

Riparian Vegetation Enhancement - Planting willow stakes, rooted water birch, and aspen in targeted locations to improve riparian habitat for aquatic, upland, and avian species.

Encourage Beaver Colonization - Creating suitable conditions for beaver activity, allowing them to naturally sustain and expand restored habitats.

Project Questions

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#1: Problem statement. What are the problems your project seeks to address? Include the source and scale of each problem. Describe the site, reach, and watershed conditions. Describe how those conditions impact salmon populations. Include current and historic factors important to understand the problems.

A history of development and resource extraction in the Beaver Creek drainage has resulted in degraded conditions for Endangered Species Act (ESA) listed salmonids including Chinook salmon (*Oncorhynchus tshawytscha*), steelhead (*Oncorhynchus mykiss*), and bull trout (*Salvelinus confluentus*), and other non-listed species. Historically, lands along the Beaver Creek drainage have seen significant agricultural use in the form of cattle grazing, and water was diverted from Beaver Creek for mining purposes and irrigation. Both of these historic factors have led to the simplification of the channel. Timber harvest and the construction of logging roads in the Beaver Creek drainage have caused heavy sediment loading, reducing the potential recruitment of large woody debris, and may be linked to channel damage and incision from flashier spring runoffs. Additionally, the 2006 Tripod Complex Fire and the 2014 Carlton Complex Fire together have significantly affected geomorphic conditions and processes in much of the drainage. The 2006 Tripod Complex Fire burned more than half of the Upper Beaver Creek watershed. The USFS BAER report documented severely impacted soil erosion, infiltration rates, and surface runoff following the fire. The 2014 Carlton Complex Fire extended over 42 percent of the Beaver Creek drainage area, with 12 percent of the area having moderate to high severity. A major rainstorm hit the region twice in the month of August following the fire, resulting in major surface erosion, transporting silt, sand, wood, gravel, cobble, and ash into Beaver Creek. With Beaver Creek already experiencing high water temperatures and fine sediment inputs, the immediate aftermath of the fires and sediment transport exacerbated these issues. When combined, these two fires burned the majority of the Beaver Creek drainage within the last 20 years. Short-term impacts to fish populations following the fires were significant. Immediate impacts included the mortality from high water temperatures, loss of vegetation cover, and resulting debris flows likely fatal to any resident fish or eggs present in the system at the time. Post-fire and flood surveys indicated significant decreases in fish abundance 2 months after the events.

Currently, the factors affecting water quality standards for Beaver Creek are high water temperatures, fine sediments from roads, past timber harvest, grazing, and recreation use. Water temperatures measured in 2012, 2015, and 2017 exceeded Washington State Department of Ecology standards for salmonids. However, collection sites for water quality were conducted near the mouth of Beaver Creek and aren't in proximity to the proposed project reach. Water temperature data collected showed temperature increases between rivermile 3.6 and rivermile 5.8, and demonstrated that temperatures from irrigation ditch returns were warmer than the temperature in the mainstem channel.

The history of natural and human disturbances occurring in the Beaver Creek drainage has led to an increasingly incised channel, disconnected floodplain, and reduced habitat complexity along the Reach 5 area of Beaver Creek. All of these factors negatively impact fish populations and habitat suitability for salmonids.

#2: Describe the limiting factors, and/or ecological concerns, and limiting life stages (by fish species) that your project expects to address.

The revised Biological Strategy (UCRTT 2017) identifies seven ecological concerns for steelhead and spring Chinook within the Beaver Creek assessment unit. In priority order, those ecological concerns are: water quantity (decreased water quantity), channel structure and form (bed and channel form), habitat quantity, riparian restoration (condition), sediment (increased sedimentation), injury and mortality, species interactions. These limiting factors apply to juvenile steelhead and spring Chinook for rearing, as well as adult steelhead for spawning. The proposed Low Tech Restoration Project expects to address the limiting factors of water quantity, channel structure and form, habitat quantity, and riparian condition.

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#3: What are the project goals? The goal of the project should be to solve identified problems by addressing the root causes. Then clearly state the desired future condition. Include which species and life stages will benefit from the outcome, and the time of year the benefits will be realized. **Example Goals and Objectives**

The primary goal of the project is to address the root causes of habitat degradation in this area by restoring natural stream processes and floodplain interactions. We intend to do this by increasing lateral migration of the stream channel across inset floodplains, activating suitable habitat for rearing and increasing hyporheic exchange and deposition behind channel spanning BDA structures, while increasing pool quantity for cover and temperature refuge. We aim to improve sources of recruitment and places of retention to aggrade the streambed and increase floodplain connectivity, while increasing general channel complexity in order to maximize water depth and fish habitat in available areas. Furthermore, we aim to bolster the riparian corridor to improve channel cover and temperature refuge. This project aims to benefit juvenile steelhead and spring Chinook rearing the most, with supplemental benefits occurring for other fish species at varying life stages, due to increased habitat suitability, refuge, and water quantity. The desired future condition is a system with naturally occurring fluvial responses in which beavers help maintain the geomorphologic processes within the system. Benefits will be realized year-round, with low flow months in summer and fall receiving the greatest habitat uplift.

#4: What are the project objectives? Objectives support and refine biological goals, breaking them down into smaller steps. Objectives are specific, quantifiable actions the project will complete to achieve the stated goal. Each objective should be SMART (Specific, Measurable, Achievable, Relevant, and Time-bound). **Example Goals and Objectives**

1. Increase Floodplain Connectivity
 - Objective: Install a minimum of 40 structures consisting of both Beaver Dam Analogs and Post-Assisted Log Structures at strategic locations in 2026 to enhance floodplain connectivity.
 - Measurement: Monitor persistence of structures installed and visually assess water retention and floodplain interaction.
 - Relevance: Reconnecting historical floodplains will increase habitat availability and water quantity for riparian vegetation and fish species.
2. Enhance In-Stream Habitat Complexity
 - Objective: Utilize large wood within the project reach to create deeper pools, increase hydraulic variability, increase lateral migration, and enhance fish habitat.
 - Measurement: Assess changes in pool depth, frequency, and streambed complexity through visual surveys and monitoring reporting.
 - Relevance: Increased structural complexity supports fish spawning, rearing, and refuge areas.
3. Improve Riparian Vegetation and Wildlife Habitat
 - Objective: Plant at least 1500 native riparian trees and shrubs (willow stakes, rooted water birch, and aspen) in 2026 to increase shade, bank stability, and habitat diversity.
 - Measurement: Conduct vegetation survival and growth surveys annually for five years post planting.
 - Relevance: A robust riparian buffer enhances water quality, stabilizes streambanks, increases shade, and supports diverse wildlife.

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#5: Scope of work and deliverables. Provide a detailed description of each project task/element. With each task/element, identify who will be responsible for each, what the deliverables will be, and the schedule for completion.

1. Construct BDAs and PALs

- Yakama Nation employees and subcontractors will install a minimum of 40 structures over 10 working days within the project reach using a hand operated hydraulic post pounder, chainsaw winch, and other hand tools. Structure type and location will depend on location in the stream, available LWD at our disposal, and other geomorphologic factors. There will be 2 crews working at a time, working sequentially from downstream towards upstream. Subcontractor supervisors and the project sponsor will oversee the installation of structures. Construction will be scheduled for lowest flows possible, either September or October of 2026 depending on schedules and subcontractor availability.

2. Plant Riparian Vegetation

- Yakama Nation employees and subcontractors will plant approximately 1500 native riparian trees and shrubs along the riparian corridor and floodplain areas within the project reach. These will consist of a mix between willow stakes, rooted water birch, and aspen. Subcontractor supervisors and the project sponsor will oversee the planting of these plants. Planting will take place after structures have been built and will be done over a period of approximately 5 working days.

3. Monitoring and Adaptive Management

- The project sponsor will provide a monitoring and adaptive management plan that states the project will be monitored and evaluated for a total of 5 years post implementation. Metrics within the monitoring plan will determine if adaptive management of the project will be necessary. The project sponsor will be responsible for conducting post implementation monitoring surveys during seasonal intervals to adhere to the monitoring and evaluation plan.

#6: What are the assumptions and physical constraints that could impact whether you achieve your objectives?

Assumptions and constraints are external conditions that are not under the direct control of the project, but directly impact the outcome of the project. These may include ecological and geomorphic factors, land use constraints, public acceptance of the project, delays, or other factors. How will you address these issues if they arise?

It is assumed that posts will effectively drive into the streambed when constructing BDAs and PALs. Certain conditions, such as an abundance of cobble material, could make this task difficult and set our timelines back. We have accounted for this by noting that structure locations are subject to change in the field if conditions are unfavorable and we cannot get posts installed. We are intentionally building flexibility into the restoration plan: large wood that was installed in 2019, BDAs, PALs will be moved and sighted to maximize project objectives.

It is also assumed that the landowner will approve of this project and all necessary permits/requirements will be obtained in order to work on WDFW property. The Yakama Nation and WDFW have a history of working together and an established MOU for implementing aquatic restoration projects on WDFW properties throughout the Upper Columbia Basin.

#7: How have lessons learned from completed projects or monitoring studies informed this project?

The Reach 5 project introduced many pieces of large wood, which the system was lacking in, but significant habitat benefit was realized when beavers created dams that were connected to installed large wood. The beavers dramatically reduced the porosity and conveyance within the Beaver Creek channel which forced water onto several the floodplains, even during baseflow. This project will emulate the habitat condition that beavers create and encourage beavers to establish long-term colonies to maintain the constructed features.

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#8: Describe the alternatives considered and why the preferred was chosen.

Alternatives to this project include utilizing heavy machinery and implementing large wood structures to facilitate lateral migration and pool scour. Alternatively, large machinery could be used to excavate some side channel passageways through the inset floodplains. We believe the best treatment in this system utilizes a process based approach and encourages natural stewardship of that habitat uplift from beavers. Our low tech process based approach offers lower immediate impact to the system when implementation takes place and facilitates the natural processes within the system to flourish. We believe this particular project has a high 'bang for the buck' potential because of the remnant wood available to aid in the goal of lateral migration and streambed aggradation. For instance, in particular locations, slight adjustments to the location or orientation of large wood coupled with a newly constructed BDAs or PALS has the potential to make significant positive change happen in the hydrology of the system, all without utilizing heavy machinery and the unavoidable disturbance that comes with the use of those machines. Furthermore, we believe riparian plantings is a treatment that would help alleviate some of the pressing concerns for the system, such as rising water temps. By building up the riparian zone and facilitating natural processes, we believe this project has the greatest benefit while minimizing construction impacts.

#9: How were stakeholders consulted in the development of this project? Identify the stakeholders, their concerns or feedback, and how those concerns were addressed.

WDFW was approached about this project and a site visit with the local area habitat biologist (Mallory Hirschler) and engineer (Kelli Snodgrass) has been conducted. Both WDFW representatives are supportive of the project. The Methow Wildlife Area has a new initiate to restore sharptail grouse to the Valley. Sharptail primarily rely on waterbirch catkins for sustenance throughout the winter. Waterbirch have been very slow to recover from the Carlton Complex Fire in 2014. Therefore WDFW has requested inclusion of waterbirch plantings to be associated with other riparian tree species preferred by beavers. The project sponsor and WDFW area habitat biologist will continue working towards implementation of this project.

#10: Does your project address or accommodate the anticipated effects of climate change?

Yes

#10a: How will your project be climate resilient given future conditions?

This project aims to produce a system of naturally occurring fluvial processes which encourage colder water, improved availability of suitable fish habitat, improved riparian habitat, increased hyporheic exchange within the stream, and larger volume of water maintained on the floodplain. These natural processes retine runoff increasing baseflow in the late season. Riparian enhancement will also improve shading of the stream reducing water temperatures.

#10b: How will your project increase habitat and species adaptability?

This project aims to create improved interactions between the main channel and adjacent floodplains, as well as improve the conditions of the riparian flora. By enhancing these two key pieces of riverine habitat we will improve habitat robustness and resiliency, in turn providing more areas that are suitable for a variety of species to inhabit.

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#11: Describe the sponsor's experience managing this type of project. Describe other projects where the sponsor has successfully used a similar approach.

The Yakama Nation's Upper Columbia Habitat Restoration Project has a robust portfolio of instream, side channel and floodplain restoration projects. However, we have not participated in low-tech restoration techniques in the past. Which is our primary impetus for partnering with the Methow Beaver Project and Methow Natives for implementation of this project. These two organizations likely have the most experience with low-tech restoration techniques in the Upper Columbia Basin. Thus far, we have completed multiple site visits with them and incorporated many of their suggestions into the restoration plan and this SRFB grant application.

#12: Will veterans (including the veterans conservation corps) be involved in the project? If yes, please describe.

No

Restoration Supplemental

#1: Is the primary activity of the project riparian planting?

No

#2: Does the project include measures to stabilize an eroding stream bank?

No

#3: Does the project include side channel reconnection or floodplain re-grading worktypes?

No

#4: Does the project include an instream structure placement worktype?

Yes

#4a: Explain why the instream structure placement is necessary and secondary to accomplish the riparian restoration.

The primary goal of the project is to address the root causes of habitat degradation in this area by restoring natural stream processes and floodplain interactions. We intend to do this by increasing lateral migration of the stream channel across inset floodplains, activating suitable habitat for rearing and increasing hyporheic exchange and deposition behind channel spanning BDA structures, while increasing pool quantity for cover and temperature refuge. Instream structure placement is necessary to create these changes.

#5: Is the primary activity of the project invasive species removal?

No

#6: Describe the steps you will take to minimize the introduction of invasive species during construction and restoration. Consider how you will use un-infested materials and clean equipment entering and leaving the project area.

All dump trucks and work vehicles will be cleaned before entering the project worksite. Slash material will be sourced from an area where no invasive species are present.

#7: Describe the long-term stewardship and maintenance obligations for the project.

The Yakama Nation has dedicated funding for completion of post-implementation monitoring. As part of the MOU with WDFW both agencies will develop a decision making support matrix for considering adaptive management actions over the next 5-years.

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Restoration Metrics

Worksite: Beaver Creek Low Tech Restoration Project Area (#1)

Miles of Stream and/or Shoreline Treated or Protected (C.0.b)	0.65
	Note: Rivermile 7.3 to rivermile 7.95
Project Identified In a Plan or Watershed Assessment (C.0.c)	Tetra Tech, 2017, Beaver Creek Reach Assessment
Priority in Recovery Plan	Addresses a priority action and occurs in a priority area. Pages 61, 67, 68, E-5, and E-6 all reference potential actions in this reach.
Type Of Monitoring (C.0.d.1)	Implementation Monitoring
Monitoring Location (C.0.d.2)	Onsite

INSTREAM HABITAT PROJECT

Total Miles Of Instream Habitat Treated (C.4.b)	0.65
-------------------------------------------------	------

Channel structure placement (C.4.d.1)

Total cost for Channel structure placement	\$64,698
--------------------------------------------	----------

Material Used For Channel Structure (C.4.d.2)	Individual Logs (Unanchored)
-----------------------------------------------	------------------------------

Miles of Stream Treated for channel structure placement (C.4.d.3)	0.65
-------------------------------------------------------------------	------

Acres Of Streambed Treated for channel structure placement (C.4.d.4)	
----------------------------------------------------------------------	--

Pools Created through channel structure placement (C.4.d.5)	40
-------------------------------------------------------------	----

Number of structures placed in channel (C.4.d.7)	40
--------------------------------------------------	----

RIPARIAN HABITAT PROJECT

Total Riparian Miles Streambank Treated (C.5.b.1)	0.65
---------------------------------------------------	------

Total Riparian Acres Treated (C.5.b.2)	5.0
----------------------------------------	-----

Planting (C.5.c.1)

Total cost for Planting	\$35,300
-------------------------	----------

Species Of Plants planted in riparian (C.5.c.2)	Aspen Rooted water birch Willow Cottonwood
-------------------------------------------------	--------------------------------------------

Acres Planted in riparian (C.5.c.3)	5.0
-------------------------------------	-----

Miles of streambank planted (C.5.c.4)	
---------------------------------------	--

Average Riparian Width	150
------------------------	-----

Site Potential Tree Height at 200 years (SPTH-200)	102 feet
----------------------------------------------------	----------

CULTURAL RESOURCES

Cultural resources

Total cost for Cultural resources	\$1
-----------------------------------	-----

Note: This is going to be handled "in-house" by Yakama Nation staff.

Acres surveyed for cultural resources	10.00
---------------------------------------	-------

PERMITS

Obtain permits

Total cost to Obtain permits	\$1
------------------------------	-----

Note: This is going to be handled by "in-house" by Yakama Nation staff.

Number of permits required for implementation of project	5
----------------------------------------------------------	---

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Overall Project Metrics

COMPLETION DATE

Projected date of completion

11/15/2026

Restoration Cost Estimates

Worksite #1: Beaver Creek Low Tech Restoration Project Area

Category	Work Type	Estimated Cost	Note
Cultural Resources	Cultural resources	\$1	This is going to be handled "in-house" by Yakama Nation staff.
Instream Habitat Project	Channel structure placement (C.4.d.1)	\$64,698	
Permits	Obtain permits	\$1	This is going to be handled by "in-house" by Yakama Nation staff.
Riparian Habitat Project	Planting (C.5.c.1)	\$35,300	
	Subtotal:	\$100,000	
	Total Estimate For Worksite:	\$100,000	

Summary

Total Estimated Costs:	\$100,000
Total Estimated Restoration Costs:	\$100,000

Cost Summary

	Estimated Cost	Project %	Admin/AA&E %
<u>Restoration Costs</u>			
Restoration	\$100,000		
SUBTOTAL	\$100,000	100.00 %	
Total Cost Estimate	\$100,000	100.00 %	

Funding Request and Match

FUNDING PROGRAM

Salmon State Riparian	\$100,000	100.000000
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SPONSOR MATCH

Questions

#1: Explain how you determined the cost estimates

I developed construction and planting cost estimates based on subcontractors rates for 10 working days of project implementation. Materials estimates were developed using current quoted prices as of April 2025.

Other Funding

OTHER FUNDING DETAILS

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Cultural Resources

Cultural Resource Areas

Worksite #1: Beaver Creek Low Tech Restoration Project Area

Area: Beaver Creek Low Tech Restoration Project APE

#1: Provide a description of the project actions at this worksite (acquisition, development and/or restoration activities that will occur as a part of this project)

In-stream structures will be built utilizing low-tech methods. These will be BDA or PAL structures and will be built by using a hand held hydraulic post pounder to drive posts into the streambed and weaving slash material in between posts. No excavation will take place in the construction of these structures.

Riparian plantings will take place at this worksite. Rooted water birch, aspen, cottonwood, and willow will be hand planted along the riparian corridor.

#2: Describe all ground disturbing activities (length, width and depth of disturbance and equipment utilized) that will take place in the Area of Potential Effect (APE). Include the location of any construction staging or access roads associated with your project that will involve ground disturbance.

No excavation will take place for this project and no large wood will be staged for this project. A wheeled dump truck will transport slash material through the field at the worksite and that slash material will be staged next to working locations. All work performed will be with hand held machines. There is no anticipated ground disturbance associated with these actions.

#3: Describe any planned ground disturbing pre-construction/restoration work. This includes geo-technical investigation, fencing, demolition, decommissioning roads, etc.

There is no planned ground disturbance pre-construction of this project.

#4: Describe the existing project area conditions. The description should include existing conditions, current and historic land uses and previous excavation/fill (if depths and extent is known, please describe).

Historic land use for the area included significant cattle grazing, irrigation, and mining. Current land use for the project location is recreation and irrigation. Previous fill includes the implementation of the Beaver Creek Reach 5 project which introduced a total of 50 large woody debris structures into the stream.

#5: Will a federal permit be required to complete the scope of work on the project areas located within this worksite?
Yes

#5a: List the agency that will be issuing the permit and the date you anticipate applying for and receiving the permit. Will the federal permit cover ALL proposed ground disturbing activities included in the project?

DAHP will be issuing the permit and I anticipate applying for and receiving the permit prior to project implementation in Fall of 2026. This permit will cover all proposed ground disturbing activities included in the project.

#6: Are you utilizing Federal Funding to complete the scope of work? This includes funds that are being shown as match or not.
No

#7: Do you have knowledge of any previous cultural resource review within the project boundaries during the past 10 years?
No

#8: Is the worksite located within an existing park, wildlife refuge, natural area preserve, or other recreation or habitat site?
No

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#9: Are there any structures over 45 years of age within this worksite? This includes structures such as buildings, tidegates, dikes, residential structures, bridges, rail grades, park infrastructure, etc.

No

Project Permits

Permits and Reviews	Issuing Organization	Applied Date	Received Date	Expiration Date	Permit #
Archaeological & Cultural Resources (EO 21-02)	DAHP				
Dredge/Fill Permit [Section 10/404 or 404]	Army Corps of Eng.				
Endangered Species Act Compliance [ESA]	US Fish & Wildlife				
Hydraulics Project Approval [HPA]	Dept of Fish & Wildlife				
Water Quality Certification [Section 401]	County/Dept of Ecy.				

Permit Questions

#1: Are you planning on using the federal permit streamlining process? [Limit 8](#)

No

We anticipate using the HIP IV programmatic for Section 7 consultation

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Attachments

Required Attachments

8 out of 8 done

Applicant Resolution/Authorizations	✓
CCA Tribal Notification	✓
Cost Estimate	✓
Landowner acknowledgement form	✓
Map: Restoration Worksite	✓
Photo	✓
RCO Fiscal Data Collection Sheet	✓
Riparian Enhancement Plan	✓

PHOTOS (JPG, GIF)

Photos (JPG, GIF)



666553 # 666554 # 666555

PROJECT DOCUMENTS AND PHOTOS

Project Documents and Photos

File Type	Attach Date	Attachment Type	Title	Person	File Name, Number Associations	Shared
	04/17/2025	Landowner acknowledgement form	Beaver Creek LTRP_PlaceholderLandownerAckForm.docx	BenW	Beaver Creek LTRP_PlaceholderLandownerAckFor... 666582	
	04/17/2025	Riparian Enhancement Plan	Beaver Creek LTRP_RiparianEnhancementPlan.docx	BenW	Beaver Creek LTRP_RiparianEnhancementPlan.docx, 666561	✓
	04/17/2025	Map: Restoration Worksite	Beaver Creek LTRP_Maps.docx	BenW	Beaver Creek LTRP_Maps.docx, 666560	✓
	04/17/2025	Application Document	Beaver Creek LTRP_ExistingConditionsPhotos.docx	BenW	Beaver Creek LTRP_ExistingConditionsPhotos.docx, 666557	✓
	04/17/2025	Photo	Ground_3.JPG	BenW	Ground_3.jpg, 666555	✓
	04/17/2025	Photo	Ground_2.JPG	BenW	Ground_2.jpg, 666554	✓
	04/17/2025	Photo	Ground_1.JPG	BenW	Ground_1.jpg, 666553	✓
	04/16/2025	Cost Estimate	Beaver Creek LTRP_CostEstimate.xlsx	BenW	Beaver Creek LTRP_CostEstimate.xlsx, 666424	✓
	04/15/2025	Application Document	Beaver-Creek-Lower-08-and-Beaver-Creek-Lower-09-Beaver-Creek	BenW	Beaver-Creek-Lower-08-and-Beaver-Creek-Lower-09-Beaver-Creek-Low-Tech-Restoration-Project.pdf, 666144	✓
	04/15/2025	CCA Tribal Notification	Beaver Creek LTRP_CCA-TribalNotice.docx	BenW	Beaver Creek LTRP_CCA-TribalNotice.docx, 666143	✓
	04/14/2025	RCO Fiscal Data Collection Sheet	Beaver Creek LTRP_FiscalDataCollectionSheet.pdf	BenW	Beaver Creek LTRP_FiscalDataCollectionSheet.pdf, 666031	
	04/14/2025	Applicant Resolution/Authorizations	RCO_YN_Template_ApplicantAuthorizator	BenW	RCO_YN_Template_ApplicantAuthoriz... 665985	✓

Application Status

Application Due Date: 06/23/2025

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Status Name	Status Date	Submitted By	Submission Notes
Application Submitted	04/17/2025	Ben Woodworth	
Preapplication	04/03/2025		

I certify that to the best of my knowledge, the information in this application is true and correct. Further, all application requirements due on the application due date have been fully completed to the best of my ability. I understand that if this application is found to be incomplete, it will be rejected by RCO. I understand that I may be required to submit additional documents before evaluation or approval of this project and I agree to provide them. (Ben Woodworth, 04/17/2025)

Date of last change: 04/17/2025

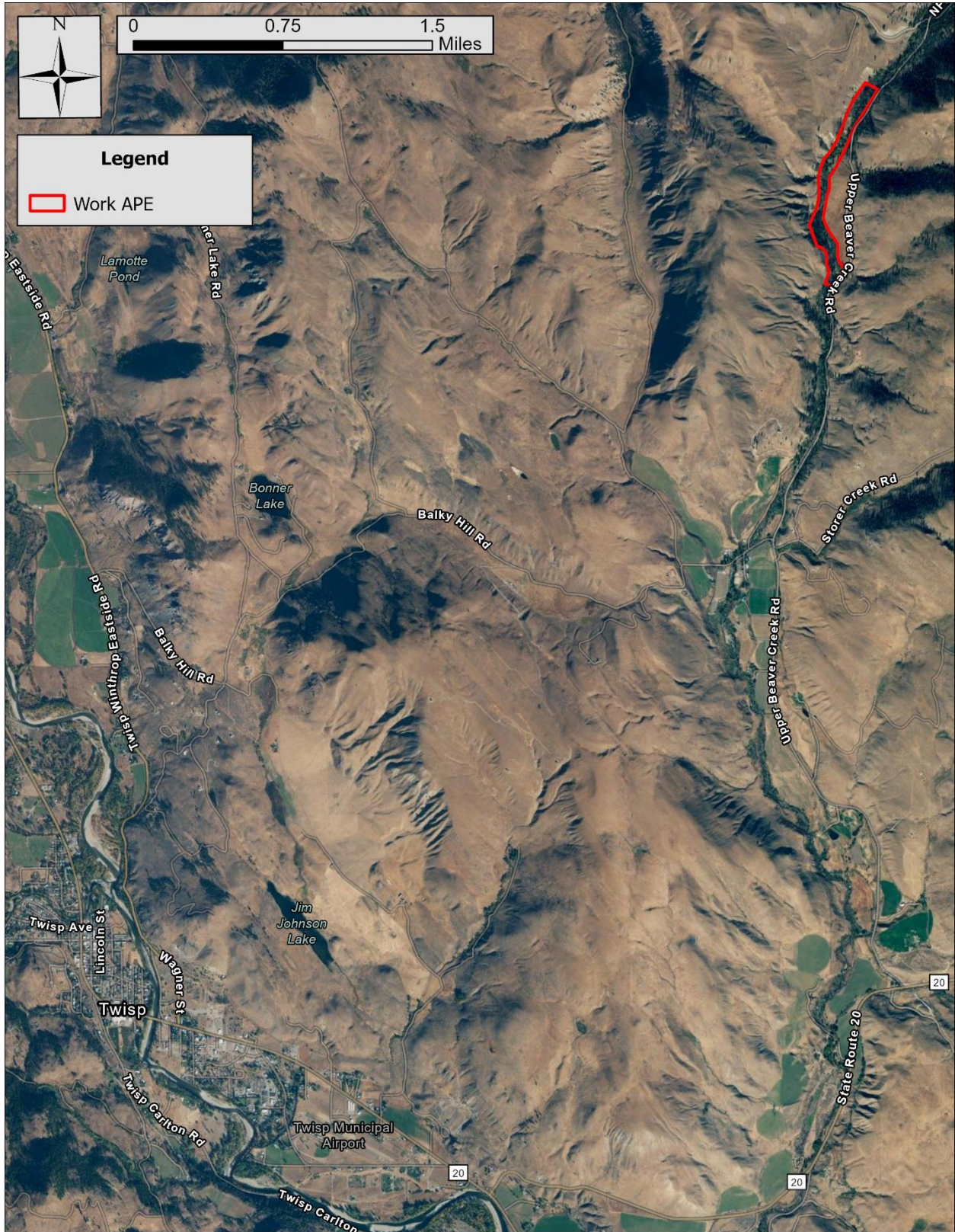
CUMULATIVE TOTALS

This sheet contains automatic calculations

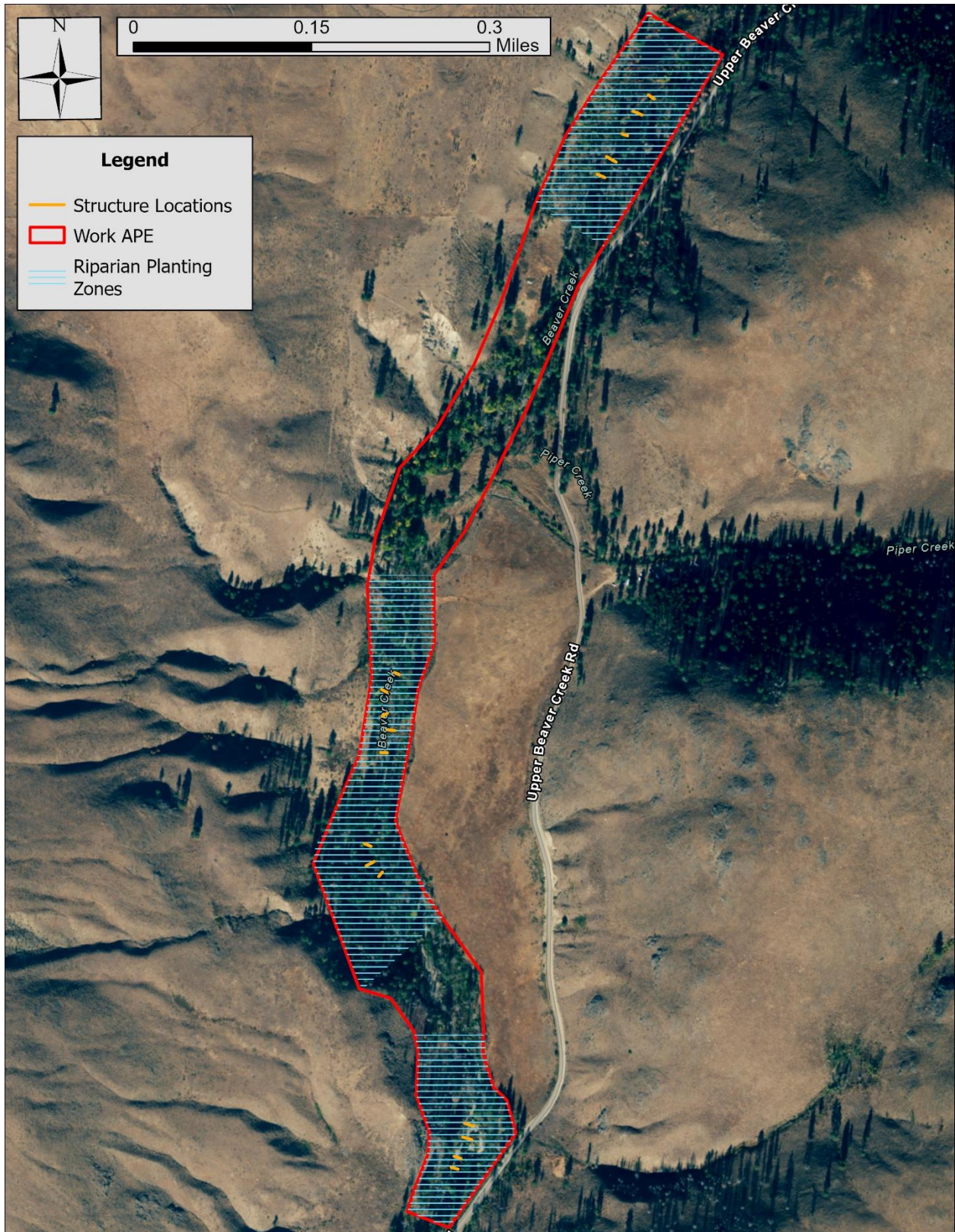
Project Name	Beaver Creek Low Tech Restoration Project
SRFB #	25-1225
Sponsor	Confederated Tribes and Bands of the Yakama Nation

	OVERALL PROJECT Cost	GRANT REQUEST Amount	PRISM MATCH Amount	MATCH NOT IN PRISM Amount	Budget Check
<u>Sheet #1 Acquisition</u>					
Property Costs	\$ -	\$ -	\$ -	\$ -	0
Incidental Costs	\$ -	\$ -	\$ -	\$ -	0
Administrative Costs	\$ -	\$ -	\$ -	\$ -	0
Indirect Costs	\$ -	\$ -	\$ -	\$ -	
STotal	\$ -	\$ -	\$ -	\$ -	0
<u>Sheet #2 Design</u>					
Design Costs	\$ -	\$ -	\$ -	\$ -	
Indirect Costs	\$ -	\$ -	\$ -	\$ -	
STotal	\$ -	\$ -	\$ -	\$ -	0
<u>Sheet #3 Restoration</u>					
Construction Costs	\$ 100,000	\$ 100,000	\$ -	\$ -	0
AA&E	\$ -	\$ -	\$ -	\$ -	0
Indirect Costs	\$ -	\$ -	\$ -	\$ -	
STotal	\$ 100,000	\$ 100,000	\$ -	\$ -	0
Totals	\$ 100,000	\$ 100,000	\$ -	\$ -	0

Area Map – Location of project compared to the town of Twisp



Worksite APE – Extent of the proposed project construction and planting









Existing Conditions Photos – April 17, 2025



Aerial photograph showing available inset floodplain, channel incision, evidence of past disturbance, and lack of mature riparian vegetation.



Aerial photograph showing another inset floodplain, channel incision, and lack of mature riparian vegetation.



Aerial photograph showing lack of mature riparian vegetation and channel incision.



Aerial photograph showing lack of mature riparian vegetation and channel incision.



Ground level photograph showing lack of mature riparian vegetation and channel incision.



Ground level photograph showing relic inset floodplain and lack of mature riparian vegetation.



Ground level photograph showing relic inset floodplain and lack of mature riparian vegetation.

Beaver Creek Low Tech Restoration Project

Draft Riparian Enhancement Plan

Existing Conditions Assessment

Overview: Riparian vegetation data were collected at 10 percent of the habitat units during field surveys in 2017 following the USFS Level II protocols. The data collected included identifying dominant and subdominant vegetation types and estimating size classes based on diameter at breast height. In addition to field data, the 2016 LiDAR dataset was used to describe riparian characteristics including canopy height and canopy cover. In general, mature riparian vegetation is limited in Beaver Creek. Vegetation management practices including grazing, road construction, timber harvesting, and fire suppression have led to significant changes in vegetation communities. Riparian vegetation in the proposed project area is conifer dominated with canopy cover approximately 53%. The 2014 Carlton Complex fire severely impacted riparian vegetation near the project area, leading to a REI metric designation of at-risk.

Target Species: The salmonid species of concern in Beaver Creek are ESA Threatened Steelhead and ESA Endangered spring Chinook. Observations of Rainbow trout, Cutthroat trout, Bull trout, and Coho salmon have also been documented.

Environmental Setting: The Beaver Creek drainage covers approximately 110 square miles on the eastern slopes of the Cascade Mountains in Okanogan County, joining the Methow River from the east about 5 miles downstream from the town of Twisp, Washington. Elevations of the Beaver Creek drainage range from approximately 1,500 feet at the confluence with the Methow River to a maximum elevation of 7,366 feet. The area is within the Columbia Cascade Ecological Province as identified by the Northwest Habitat Institute. Average annual precipitations ranges from 13.3 inches to 34.8 inches in the upper elevations of the drainage. Historical timber harvest, agricultural use, irrigation, wild fire, and mining have impacted the riparian corridor of the area.

Land Use: Currently, agriculture such as cattle grazing, irrigation, and recreation are the main uses of the area.

Soils: U.S. Department of Agriculture mapped soils as gravelly loamy sand through the majority of the project location. This type of soil is well draining but retains some moisture.

Hydrology/Water Quality: Peak flow discharges typically occur during May and June from snowmelt runoff. Peak flows have been shown to increase following fire events, often substantially, with the magnitude of increase related to the burn severity. Peak flows recede relatively quickly, returning to low-flow conditions from August to February. Beaver Creek has been documented to run dry during some years of heavy irrigation take. However, efforts in recent years to improve irrigation efficiency and other water conservation measures have been implemented in an effort to improve flow conditions. Beaver Creek is also affected by high water temperatures. It is currently listed on the 303d list for high water temps, after testing over the threshold for suitable salmonid habitat in 2012, 2015, and 2017.

Site Constraints: The primary enhancement challenges include sections of confined floodplain where planting might not be feasible and risk of natural disturbance such as wildfire.

Restoration Objectives

The goal of this riparian planting restoration plan is to enhance and restore self-sustaining riparian habitat that supports ESA Threatened Steelhead and ESA Endangered spring Chinook, among other species. Specifically, the objective is to improve juvenile steelhead rearing habitat conditions within Beaver Creek by planting native trees along the riparian corridor to reduce stream temperatures, improve recruitment for wood retention and complexity, and facilitate the presence of beavers in the area. Ideal post implementation conditions are a system that facilitates natural fluvial processes that promote riparian growth, floodplain activation, wood recruitment and retention, and stream bed aggradation.

Riparian Planting Objectives:

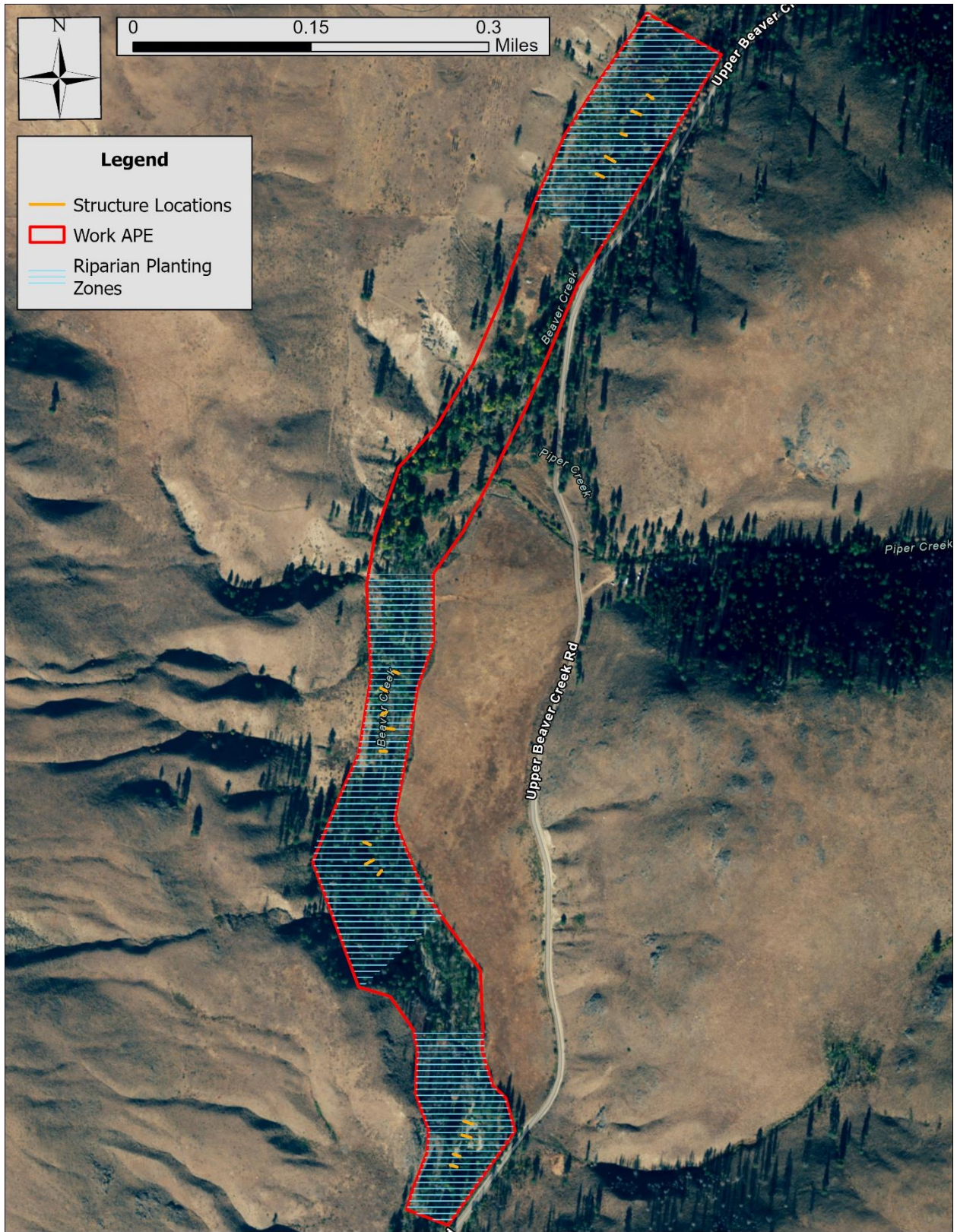
Improve Riparian Vegetation and Wildlife Habitat

- Plant at least 1500 native riparian trees and shrubs (willow stakes, rooted water birch, cottonwood, and aspen) in 2026 to increase shade, promote natural wood recruitment, and improve habitat complexity.
- Conduct vegetation survival and growth surveys annually for five years post planting.
- Implement any adaptive management actions as deemed necessary from data collected during post implementation surveys.

Facilitate Suitable Habitat for Beaver Colonization

- Plantings will take place in strategic locations to encourage beaver colonization in the area.
- Locations will be determined by habitat suitability and proximity to planned structures.
- Species planted will be those preferable to beavers and other local wildlife.

Riparian Planting Map



Site Preparation Methods

The sponsor will hire and supervise field crews to complete site preparation work. The sponsor will secure any permits and licenses needed to complete work and will ensure field crews possess necessary licenses and qualifications. No invasive species control is planned for this planting project.

Riparian Planting Methods

Plantings will take place in opportunistic locations throughout the work APE. Planting locations will be determined by the project sponsor and subcontractor supervisors.

Plant spacing will mimic the surrounding vegetation. Plants may be installed individually or in small groups. The size of plant groupings will vary, and could accommodate as few as two and as many as ten plants. Species composition of groups will also vary and will depend on the species' individual ecological requirements. All plants installed will be a riparian species and will be planted to a depth sufficient for roots to reach the water table.

Planting associated with the Beaver Creek Low Tech Restoration Project will be completed primarily using hand tools and hand-held gas powered augers. Planting holes will be excavated to at least one and a half times larger than the container root mass to assist in root growth. A watering basin will be formed around the base of each plant to help collect natural precipitation. Planting will take place during September and October, 2026.

Implementation Monitoring

The project sponsor and subcontractor supervisors will monitor planting during implementation.

Post-Implementation Maintenance

The project sponsor will be in charge of post implementation monitoring and adaptive management surveys to determine project effectiveness for 5 years post project implementation. Data collected during surveys will inform decision making framework around adaptive management strategies and recommendations. The project sponsor and subcontractor experts will determine when adaptive management is necessary.

Adaptive Management

Adaptive management strategies will be determined and agreed upon by the project sponsor and subcontractor experts based upon available post implementation monitoring surveys and data.