



Contact Information

2024 Upper Columbia Regional Project Pre-Application

* Pre-applications due March 11, 2024 (COB)

*Complete applications due in PRISM April 19, 2024 (COB)

*Revised proposals due in PRISM May 24, 2024 (COB)

*Final revised applications due in PRISM June 24, 2024 (noon)

Project Title	Pole Creek Fish Passage Restoration
Sponsor	Cascade Fisheries
Primary Contact	Aaron Rosenblum
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Budget Request

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

Anticipated Request - SRFB (standard round) 165,000

Anticipated Request - Tributary Committee 150,000

Anticipated Other Funding 900,000

Anticipated TOTAL Budget 1,215,000

Other Funding Source(s)

BPA: \$350,000

USFWS: \$250,000

USFS: \$ 300,000

Project Location

Briefly describe the location of the project Pole Creek RM 0.3

Latitude (decimal degrees) 47.871095

Longitude (decimal degrees) -120.721892

Project subbasin Wenatchee

Wenatchee Assessment Unit(s) Big Meadow Creek

Does the proposed project span multiple assessment units? No

Reach(es) Name Pole Creek 01

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/>. Unranked (not a priority or missing data)

Project Information

1. 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].

Cascade Fisheries (CF) will work with project partners including the Wenatchee River Ranger District (WRRD), USFWS, and BPA to correct one (1) fish passage barrier improving access to 1.05 miles of cold-water habitat for Endangered Species Act (ESA) listed fish species, especially steelhead and bull trout. Project benefits will be realized immediately upon implementation of the project in the summer of 2025.

2. What species will the project benefit? Spring Chinook Steelhead Bull Trout Coho

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

Fish Passage: Reporting Code Miles of stream made accessible

Number of fish passage blockages / impediments / barriers impeding passage

Number of road-crossings

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)?

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

23-1261 was submitted into last years SRFB round. That proposal was requesting restoration funding for 6 fish passage barriers. This proposal is focused solely on Pole Creek

6. What category is the project?

If applicable, what is the secondary project category?

Is the project eligible for Riparian Funding?

Design and Restoration Proposals

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

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)?

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

10. Which life stages will the proposed project address?

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

The goal of this project is to improve connectivity to cold, clean and complex Chiwawa river tributary habitat to benefit ESA species, especially steelhead and bull trout. Specifically, we will correct one (1) fish passage barrier improving access to 1.05 miles of stream habitat. The project activities are located in Pole Creek, a tributary to Big Meadow Creek which flows into the lower Chiwawa River.

Anthropogenic fish passage barriers limit aquatic organisms' access to quality upstream habitat. The culvert barrier identified for correction in this proposal has been surveyed and identified as a fish passage barrier based on WA Department of Fish and Wildlife (WDFW) protocols. Based on this protocol, the existing Pole Creek culvert is a complete 0% passable barrier. Based on the EDT method, this culvert is a 100% barrier for age class 0 - 2 steelhead during every month of the year, and is a 74% barrier to adult migrating steelhead. The replacement of this barrier would result in improved access to a total of 1.05 miles of cold and clean upstream habitat.

This project occurs within a Major Spawning area for spring Chinook and steelhead. The project addresses the limiting factor of fish passage in the Chiwawa River Assessment Unit and provides additional benefits to other limiting factors. The project is in the Big Meadow Creek AU, which is a Tier 1 restoration priority for steelhead. The Adult Migration life stage for steelhead is listed as a Medium priority lifestage to

address in this AU. The adjacent Lower Chiwawa AU is noted 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.

This project occurs within the Wenatchee River Core Area of the Mid-Columbia Recovery Unit for Bull Trout. Reduced connectivity of bull trout habitat is identified as a primary threat for the Wenatchee River Core Area in the Mid-Columbia Recovery Unit Implementation Plan (RUIP) for Bull Trout (USFWS, 2015). This project implements action 1.2.5 "Connect FMO and spawning and rearing habitat" identified for the Wenatchee Core Area in the Mid-Columbia RUIP to address the primary threat listed above.

When this project was originally proposed, this barrier scored a total prioritization of 99.2, putting it around the 70th percentile of barriers in the region.

Pole Creek provides a cold-water input and refugia for ESA listed species during the warm summer months. Water temperatures are projected to continually warm over the coming decades. The NorWest Steam Temperature Model (2017) shows summer water temperatures in the Upper Wenatchee River and Lower Chiwawa River ranging from 14.3°C to 19.5°C in 2040 and 15.5°C to 20.8°C in 2080 (under scenario A1B). ESA species will require cold water refugia to escape these near lethal temperatures. Per The Recovery Plan for the Coterminous United States Population of Bull Trout (USFWS, 2015), "Water temperature above 15 degrees Celsius is believed to especially limit juvenile bull trout distribution." The same NorWest model projects colder, tolerable summer water temperatures in the future for Pole Creek: 12.47°C in 2040 and 13.37°C in 2080. Correcting the proposed barrier will provide unrestricted access to this essential cold water refugia may be critical to ensuring the persistence of the Chiwawa River steelhead and bull trout population in the future.

The project will be climate resilient by designing and installing a fish passage structure that will pass flood flows, and associated stream bed substrate and wood, that may become more frequent and intense in the future. Predicted future changes to stream hydrology are incorporated into the new structure's design. The existing undersized culvert in this proposal is currently plugged and at risk of washing out during flood events, resulting in erosion, and damaging downstream habitat.

This project will increase ESA-listed species' adaptability to climate change in the Chiwawa Watershed by providing unrestricted access to 1.05 miles of upstream habitat. Enhanced access to, and movement within, colder tributary systems will become even more important for salmonids as water temperatures continue to rise in the future. Norwest stream temperature models (2017) suggest that the portions of Pole Creek made accessible through this project will be 2-4 degrees Celsius colder than the lower Chiwawa River and 6-8 degrees colder than the upper Wenatchee River in 2080. Additionally, this project will restore natural processes that will help create and maintain habitat features in the future.

Resident Pole Creek *O. mykiss* will provide genetic contributions and diversity to upper Wenatchee steelhead once upstream connectivity is restored. *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 2022 study found that upstream movement once a barrier is corrected is also important. Knoth et al. (2022), found increased genetic diversity and a larger effective population size of fish sampled upstream of a barrier correction. 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). In a continuation of the data collected by Courter et al., Temple et al. (data presented

2021) found that greater than 70% of the steelhead population in the Yakama basin had at least one resident parent. This trend was consistent over several years of data collection. These studies show that correcting migration barriers can promote gene flow between sub populations, increase genetic diversity, and promote the potential expression of multiple life history forms, all of which should buffer against extinction risk. Therefore, correcting this barrier and improving the connectivity of headwaters to the ocean can improve the VSP parameter Diversity for ESA-listed steelhead in the Wenatchee Basin.

Once restored through activities identified in this proposal, Pole Creek will 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. Small tributaries 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. Pole Creek is almost entirely owned by the USFS, with the exception of a couple of private parcels on Pole Ridge, and is protected from major development. Therefore, quality rearing habitat can be projected to persist into the future.

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?

The replacement of the undersized and partially plugged culvert in this proposal will improve the function of natural watershed processes. This undersized culvert is partially plugged and is restricting the flow of water, wood, and streambed substrate, and the associated flow of nutrients, in addition to fish movement. The replacement bottomless arch culvert with stream simulation channel 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 Pole Creek.

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

Less than or equal to 1 year

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 will not require regular maintenance. Once the project is complete the culvert and overlaying road will be infrastructure owned by the US Forest Service. Any unforeseen maintenance will be their responsibility.

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

The new bottomless pipe arch that will be installed to correct the fish passage barrier is being 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 methodologies provide the best design approach to ensure long term fish passage for all species and life stages, as well as allowing for natural watershed processes to occur.

Assessment Proposals

Protection Proposals

Monitoring Proposals

Project Risk and Economic Benefits

1. What is the landownership?

Forest Service

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

Yes

Please explain

The forest service has provided a letter of support and is providing \$300,000 towards implementation of the project. We have a master agreement with the FS in place to cover project activities.

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 FS requires an extensive review process, which we are in the middle of currently. Their review ensures that the project meets their design standards.

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

No concerns are anticipated. There are a small group of landowners with summer cabins in the upper Pole Creek watershed. Those that have been contacted so far have been supportive of the project.

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

Cascade Fisheries will manage the project through implementation. The FS will take ownership of the culvert and road following implementation and will be responsible for future maintenance.

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

Yes

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

The is minimal risk of failure with this project. Our design standards include factors of safety to mitigate risk.

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

Extensive outreach will be conducted prior to project implementation. Pole Creek road will be closed during implementation. All road closures will require public announcements, posts on websites, and ample signage. This will create an excellent opportunity to share the meaningful work with the public.

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

This project will support a portion of 3 FTEs and 1 PTE at Cascade Fisheries, 1 self-employed project engineer, 1 construction crews consisting of 3 heavy machinery operators, 1 dump truck driver, and 2 laborers each, 1 sawyer, 1 truck driver, and an unknown number of employees at metal fabrication outfits.

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

USFS – The USFS provides technical review of project designs. They also will provide Section 401/404 compliance through the RGP-8. Cascade Fisheries has been working with the USFS to implement fish passage restoration projects for several years. On Minnow Creek, two culvert barriers were removed in 2020, and the third was replaced with a 60' span bridge in the summer of 2021 (funded in part by USFWS). In 2023 we worked with the USFS to replace a culvert on Big Meadow Creek and two culverts on Goose Creek. Through these projects, we have developed working relationships with district staff and the forest engineers. We have also learned the in's and out's of the process of working on USFS land. The groundwork is now in place to continue strengthening this relationship and smoothly implement restoration projects on USFS lands. The FS is providing \$300,000 for implementation.

Bonneville Power Administration: BPA is funding (in-part) the design of the fish passage structure identified in this proposal. BPA provides technical review of project designs. BPA will act as the lead federal agency for ESA compliance through their HIP programmatic. BPA is providing \$350,000 for implementation.

US Fish and Wildlife: USFWS is providing design review and biological benefit review of the project. USFWS is providing cultural resource surveys in house and is acting as the lead federal agency for the Section 106 Consultation. USFWS is providing \$250,000 for implementation.

HCP Tributary Committees: Funding (in-part) the design through the 60% level of the fish passage structure on Pole Creek.

Optional Section - Preparation for PRISM

The following questions are identical to the questions RCO requires in the PRISM application. If desired, sponsors can complete associated questions early and copy responses into PRISM during the "Complete Application" phase due on April 19, 2024.

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

No

Supporting Documents

[Upper Columbia Process Guide 2024](#)

[SRFB Manual 18 \(2024\)](#)

[RCO Application Resources \(2024\)](#)