2024 Nonpoint Source Application - On-the-Ground Projects

General Information

Project Name: Canyon Creek Stream Restoration and Monitoring

Applicant Name: Trout Unlimited, Ashley Brubaker

Is your organization registered with the Montana Secretary of State? Y

Explanation: Each applicant must be registered with the Montana Secretary of State to do business in the state of Montana. Registration with the Secretary of State may be completed via the following website: https://sosmt.gov/business/

Is your organization registered with the federal System for Award Management (SAM)? Y

Explanation: Each applicant is required to register with SAM. To register or check your organization's status, go to https://sam.gov/content/home. If you get an "Unsupported Browser" error, copy, and paste the link into a Google Chrome browser window.

Your organization's Unique Entity Identifier number (UEI #): 051698132

Explanation: Each applicant is required to have a current UEI number. The UEI number replaces the old DUNS number. If your organization had a DUNS number, you should have received a notification from the federal government indicating that your DUNS number has been changed to a UEI number. If you did not receive this notification, or if you never had a DUNS number, you will need to go to the federal government's System for Award Management (SAM - https://sam.gov/content/home) to obtain your UEI number. DEQ recommends starting this process early as it is very time-consuming, requires providing documentation-sometimes with follow-up requests for additional information, and can take up to 2 months to complete. If you need assistance, you may contact the federal help desk at 866-606-8220 Monday-Friday 8:00 a.m. through 8:00 p.m. EST.

Does your organization have adequate liability insurance for the risks associated with your project? Y

Explanation: Each applicant must have or obtain liability insurance coverage meeting the requirements stated in the Draft Sample Contract and/or requirements negotiated based on the appropriate level of risk associated with the project.

Primary Contact	Ashley Brubaker	Title	Upper Yellowstone/Shields Project Manager
Address	321 E Main St. Ste 411	City	Bozeman
State	MT	Zip Code	59715
Phone Number	(303)915-9282	Email	ashley.brubaker@tu.org
Signature	Ashley Brubaker	Digitally signed by Ashley Brubaker Date: 2024.04.04 10:33:30 -06'00'	

Explanation: This is the person who DEQ would routinely contact to discuss project progress, billing, etc.

Signatory	Casey Hackathorn	Title	Montana State Director
Address	312 N Higgins Ave Ste 200	City	Missoula
State	MT	Zip Code	59802
Phone Number	(406) 546-5680	Email	casey.hackathorn@tu.org
Signature		Digitally signed by Casey Hackathorn Date: 2024.04.05 09:32:31 -06'00'	

Explanation: This is the person who can legally sign contracts and other binding documents on behalf of the applicant (e.g., a board chair)

Note: The primary contact and the signatory must both sign the application. Signatures must be either signed electronically, or wet-signed, scanned and emailed.

Describe the technical and administrative skills your organization will use to effectively and efficiently complete your proposed project(s).

Trout Unlimited (TU) is a nationwide coldwater conservation organization that has been working to restore streams and protect fisheries since the 1950s. TU's Montana staff includes 10 project managers working across western Montana to implement on-the-ground stream restoration projects, plus other staffers with expertise in policy, water law, instream flow and water rights, grant administration and accounting. TU has a proven track record through projects including the Rattlesnake Dam removal, Ninemile Creek restoration, Phase I and II of Dry Creek Restoration, and the Reese Creek instream flow project. TU's Upper Yellowstone and Shields River Project Manager will leverage this organizational expertise, plus her 10-plus years working in stream restoration and fisheries research to achieve project objectives and improve stream function in the Canyon Creek Restoration and Monitoring project.

Budget Form

Please fill out the On-the-Ground Project Budget Template (Excel file). Cells highlighted in yellow may be edited to fit the needs of your particular project. DEQ uses a template to construct nonpoint source grant contracts. The Budget Template contains tasks and typical deliverables that match up with the grant contract template. Please see the Example Contract and Scope of Work Template for a more detailed look at typical task requirements and deliverables.

Project Form

A separate Project Form (including providing separate attachments) must be submitted for each project included in your application. ¦ǎŜ ǘKŜ ŦƨƫƨǿƛƴƐ ŜÈŀ ƳǀƫŜǎ ǘƨ KŜƫǇ ŘŜǘŜƦƳƛƴŜ ǿKŜƴ ǘƨ lump and when to split projects.

Splitting Examples (fill out multiple Project Forms)

- Stream restoration work occurring on two separate streams..
- Two projects with significantly different sets of project partners.
- Two projects that address substantially different pollution sources (e.g., one project move a corral off of a streambank, and another removes mine tailings, with both projects being on the same property).

Lumping Examples

- Contiguous stream restoration work spanning multiple land parcels.
- Three projects that address similar sources of pollution on a single land parcel (e.g., moving a corral off a stream, implementing a grazing management plan, and relocating a manure storage facility out of the floodplain, all on the same ranch)

Required Attachments

- [x] Letter of support from the author of the DEQ-accepted Watershed Restoration Plan or EPA-approved Tribal Nonpoint Source Management Plan.
- [x] Letter of support from EACH landowner, lessee, or land manager associated with the proposed project area.
- [x] Budget Table (see attached Microsoft Excel Template).
- [x] Project Form
- [x] **Detailed Project site map(s)** Attach a map or set of maps showing the location and size of proposed activity. The map scale must be between 1:1,000 and 1:12,500. The map(s) must have an aerial photo background (e.g., USDA NAIP photography, Google Earth imagery, etc.). The map(s) must show the latitude, longitude, site name, and landowner for the activity site. The map(s) should also identify waterbodies affected by the pollution that the activity is designed to address.

Optional Attachments

Attach additional items and information that could help reviewers better understand your project. Information could describe public health risks, opportunities to leverage other funding sources, etc. However, application reviewers may have limited time available, and excessively long, optional attachments might not get reviewed. Do not attach copies of TMDL documents, TMDL implementation evaluations, Watershed Restoration Plans, Tribal Nonpoint Source Plans, or large comprehensive studies. The following attachments may be included.

- [x] Project Design Plans/Drawings
- [ ] Preliminary Engineering Reports / Site Evaluations
- [ ] Landowner Agreements / Construction Permits / Floodplain Permits
- [x] Site photos
- [x] Additional Letters of Support
- [ ] Other:
- [ ] Other:
- [ ] Other:

Project Name

Canyon Creek Restoration and Monitoring

PROJECT AREA: Use the tools below to provide as detailed a description of the project area as possible.

List the counties in which the project will be located.

Park County

List the 12-digit Hydrologic Unit Codes (HUCs), sometimes referred to as Sixth Code HUCs, in which the project will take place. If you need assistance in determining the HUCs, please contact DEQ.

Canyon Creek (100700030501)

In addition to providing your own project site map, please go to the following website and follow the instructions to add your project location to the map.

https://gis.mtdeq.us/portal/apps/storymaps/stories/42f4a668285c4ef6aa94b1623f10df57

Connection to a Previous or Ongoing Project

Is this project tied to a previous or ongoing project? If so, please describe the connection.

This project is part of an ongoing watershed-wide restoration effort led by the Park County Water Initiative, and was ranked as a high priority project the group's project identification and prioritization effort. Additionally, the landowners are working with Trout Unlimited on a similar restoration project in Brackett Creek, one tributary to the north of Canyon Creek. These two projects, along with additional future restoration work on the 505 Ventures Ranch, will combine to improve overall watershed health and resiliency in the Shields Watershed.

Project Purpose

Select the watershed restoration plan or tribal nonpoint source plan that your project will help implement (please type in if missing from list).

Shields River - Shields River Watershed Group

N — Letter of support from author entity attached? *(If no, explain why below.)*

The Shields Valley Watershed Group and the Park County Conservation District (CD) support this project, but personal schedules and the coordination required to obtain a letter of support make it impossible to submit a letter with this application. A letter from the Shields Valley Watershed Group will be submitted between April 10th-19th.

A letter of support from coordinators of the newly established Park County Water Initiative, a group formed in close collaboration with the Shields Valley Watershed Group, Upper Yellowstone Watershed Group, and the Park County CD, is attached.

IMPAIRMENT LISTINGS: Unless addressing healthy watersheds (see below), all projects must address probable causes of impairment on a waterbody identified in the 2020 List of Impaired Waters.

Waterbody name from the 2020 List of Impaired Waters	Shields River (Cottonwood Creek to mouth)
Probable causes of impairment to be addressed	Sedimentation/Siltation, Streambank Modifications/destabilization
Waterbody name from the 2020 List of Impaired Waters	
Probable causes of impairment to be addressed	

HEALTHY WATERSHEDS: While the majority of the project funding is dedicated to addressing known impairments, a limited amount of funding can be used to protect non-impaired waters (healthy waters) from becoming impaired.

Name of healthy waterbody to be protected	Canyon Creek
Description of identified threat to non-impairment status	Sediment from hillslope and streambank erosion, lack of riparian vegetation and floodplain connectivity limiting water storage and sediment filtration and deposition on floodplain
Name of healthy waterbody to be protected	
Description of identified threat to non-impairment status	

Project Partners

Identify each of the project partners and describe their contribution to the project. Include landowners, land managers, project designers, funders, and your own organization. Indicate whether each partner, other than your organization, has provided a letter of support. (*Note: each landowner must provide a letter of support.*)

Landowner	Contributions to Project	Letter of Support Attached?
Greg and Anne Avis	Providing access to project and materials, overall coordination and support.	☑
		☐
		☐
		☐

Project Partner	Contributions to Project	Letter of Support Attached?
USGS	Will design and conduct the pre- and post-monitoring to evaluate the effectiveness of the project. Will synthesize and analyze monitoring data and assist in completing a post-project report. We integrate all monitoring data to regional Conservation Efforts Database for Yellowstone cutthroat trout.	☑
Montana Fish, Wildlife & Parks	Will assist with project related monitoring including fish surveys and genetic analyses.	☐
Custer Gallatin National Forest	Will serve an advisory role.	☐
Park County Water Initiative	Has listed this project as a high priority in the Shields basin, will continue to connect partner organizations/agencies to support the project.	☑
Amanda McAllister (Ranch Manager)	Will provide time and labor to support the project.	☐

Project Coordination and Planning Task

This task would include completion of all applicable planning tasks from the list below, as well as coordination and oversight of the efforts of all project partners.

Identify the status of the following project planning tasks, where applicable.

	Completed?	Copy Attached?	To Be Completed Pre-Contract (Oct 2024)?	To Be Completed as Contract Deliverable?
*Draft Project Designs	☐	☐	☐	☑
*Final Project Designs	☐	☐	☐	☑
Consultation With Potential Regulators	☐	☐	☐	☑
Necessary Permits	☐	☐	☐	☑
Cultural Resources Inventory *(may be relevant)*	☐	☐	☐	☑
Other:	☐	☐	☐	☐
Other:	☐	☐	☐	☐
Other:	☐	☐	☐	☐

***See Call for Applications Section 5.1 for minimum design standards.*

Describe any additional project planning that *will have been completed prior* to execution of a contract (October 2024).

A monitoring study design will be developed prior to the 2024 field season to direct preconstruction monitoring activities. The inputs used in the monitoring design will be clearly documented to allow for transparency of planning and decision making.

Describe any additional project planning and coordination that will need to be completed after the execution of a contract (October 2024).

Trout Unlimited will coordinate with USGS and MT FWP on additional fish surveys, and Yellowstone cutthroat trout genetics collection and analysis in the fall of 2024.
The entirety of planning and coordination surrounding dam removal/replacement will occur after October 2024. This will entail coordinating with FWP and the landowner to determine the most appropriate project design, and hiring an engineer and design development.

Landowner Agreement Task

DEQ includes the following language in every nonpoint source contract involving on-the-ground activities:

Contractor shall submit signed landowner agreement(s) verifying that Contractor and DEQ staff may access the project site, at reasonable times and with prior notification, for the purposes of project planning, implementation, and post-implementation monitoring. The agreement(s) must ensure appropriate operation and maintenance of all structures, vegetation, and management measures for the life of the project (typically 10 years). If grazing will be allowed within the project area, the agreement(s) must include a sustainable management plan for livestock grazing, designed to protect and enhance riparian function. If a signed landowner agreement does not meet the above-stated minimum requirements, Contractor shall negotiate an amended agreement with the landowner that ensures appropriate operation and maintenance of all structures, vegetation, management measures, and includes a sustainable management plan for any livestock grazing for the life of the project (typically 10 years).

Identify the status of the following landowner agreement tasks, where applicable.

	Completed?	Copy Attached?	To Be Completed Pre-Contract (Aug 2024)?	To Be Completed as Contract Deliverable?
Draft Landowner Agreement(s)	☐	☐	☐	☑
Final Landowner Agreement(s)	☐	☐	☐	☑
Grazing Management Plan	☐	☐	☐	☑
Other:	☐	☐	☐	☐
Other:	☐	☐	☐	☐

Project Effectiveness Monitoring Task

If you will be conducting any on-the-ground implementation work, you will be required to complete the monitoring activities described in the task language below, as applicable. Describe below how you plan to determine the effectiveness of your project.

If you are applying for nonpoint source grant funding for project design only, and not for project implementation, you may either skip this task, or describe below which parts of this task you intend to complete:

One objective of this project is to develop and implement an intensive monitoring plan to assess effectiveness of stream restoration tactics and inform future restoration work in the Shields River watershed and beyond. Study design and monitoring objectives will be determined in spring 2024, and will be aligned with ongoing low-tech process based restoration (LTPBR) across the state of Montana. Water quality monitoring will include conducting a bank erosion hazard index (BEHI) before project implementation and, in a determined time-frame, post-implementation to estimate the sediment load reductions achieved.. Wetland and riparian delineation surveys and photo point monitoring will also be conducted pre- and post- project implementation.

Example Task Language

Contractor shall, in consultation with the DEQ Project Manager, develop a reasonable method or set of methods for evaluating and reporting on the effectiveness of the project in addressing water quality issues. Contractor shall complete a monitoring plan to guide monitoring activities. Contractor shall complete the following monitoring activities:

- *Estimate the sediment load reductions (tons/year) achieved through implementation of the proposed restoration activities and management practices.*
- *Estimate the nitrogen load reductions (pounds/year) achieved through implementation of the proposed restoration activities and management practices.*
- *Estimate the phosphorus load reductions (pounds/year) achieved through implementation of the proposed restoration activities and management practices.*
- *For projects designed to address pollution from pollutants other than nitrogen, phosphorus and sediment, evaluate and report on the effectiveness of the project in addressing water quality issues.*
- *Contractor shall collect data, as directed by the DEQ Project Manager, to be used in estimating sediment, nitrogen, and phosphorus load reductions achieved through implementation of restoration activities and management practices designed to address these pollutants.*
- *Use the following measures to evaluate the sustainability of restoration activities and management practices:*
    - *[Vegetation mortality rate.]*
    - *Pre- and post-construction photo point monitoring consistent with the "Oregon Watershed Enhancement Board Guide to Photo Monitoring" methodologies, or a similar published photo point monitoring method accepted by DEQ. The U.S. Forest Service provides additional photo point monitoring guidance in the "United Stated Forest Service Photo Point Monitoring Handbook".*
    - *[Riparian survey.]*
    - *[Other.]*

Please describe any additional monitoring you intend to do as part of the project.

One objective of this project is to develop and implement an intensive monitoring plan to assess effectiveness of stream restoration tactics and inform future restoration work in the Shields River watershed and beyond. TU will work with FWP and researchers from USGS to develop an intensive monitoring plan to determine short- and long-term outcomes of this restoration project. Through this collaboration we will take advantage of existing protocols (e.g. Wheaton et al. 2019*) to 1) clearly establish objectives; 2) design robust monitoring to meet those objectives based on existing funding opportunities; 3) analyze data to evaluate project effectiveness; and 4) input all information and data into regional conservation efforts databases (e.g. YCT Conservation Efforts Database). We also recognize the need to integrate monitoring efforts, protocols, and results with existing working groups (e.g. Montana Beaver Working Group, Utah State Riverscape Consortium, etc.) where shared information on effectiveness can help inform and direct future restoration actions. Specific objectives of the monitoring research include:

1. Evaluate how LTPBR projects affect riverscape health.
2. Assess species-specific responses to LTPBR projects.
3. Integrate project and monitoring results in relevant regional databases, which collectively can help understand how riverscape and species responses vary by approach, magnitude of project, and landscape.

The specifics of the monitoring plan are under development, but the monitoring strategy will employ a before-after-control-impact (BACI) design that provides robust opportunities for detecting changes in floodplain connectivity, quality of fish habitat (e.g., spawning habitat, pool depth, etc.), YCT responses to restoration, and identifying factors limiting riverscape health. In addition, continuous surveys of historic and current beaver dam activity will be conducted to clearly quantify restoration potential.

*Full citations included in attached Project Summary document

Project Implementation Task

Provide a detailed description of the solution you are proposing to implement to address a nonpoint source pollution problem. Describe the practices you intend to design and/or implement to solve the problem (what, where, when, how much or how many). Describe the anticipated maintenance needs (what, where, who, how long). Refer to the minimum design standards in the Call for Applications. ***Please fill out this section to the best of your ability, even if you are only seeking funding for project design.***

TU will work collaboratively with FWP, USGS, the landowner, and other partner organizations to use LTPBR techniques in conjunction with removing or replacing the cement dam to reduce bank erosion, increase floodplain connectivity and improve fish habitat in Canyon Creek. Preliminary designs have not been completed, but the project will consist mostly of channel-spanning beaver dam analogs (BDAs) and post assisted log structures (PALs), bank-attached PALs will also be used where appropriate. No beaver activity was observed in the project reach in 2022, but beaver activity was present in summer 2023. The designs will compliment current beaver activity to increase the rate of stream recovery and follow existing LTPBR protocols for restoration (Wheaton et al. 2019*). BDAs and PALs will be designed for several functions including trapping sediment to aggrade the stream, slowing and backing up water to improve floodplain connection, and pushing water into side-channels and off-channel habitat. Implementation will be completed by TU staff, partner agencies and organizations, and volunteers and will begin in fall 2025.

Materials for structures will be sourced on site, and junipers will be removed from the adjacent hillsides to use in structures and improve upland sagebrush habitat. The timeline for outcomes will depend on the high flows in the years following implementation. Higher flows with greater sediment load will lead to more rapid channel aggradation and side channel activation. The PALs and BDAs are not meant to be a “one-and-done” type of implementation; project partners will monitor the effectiveness of these structures and adapt, building further structures if necessary.

The cement dam contains two undersized perched culverts which are both currently blocked. This is causing the creek to cut a new channel to the left (north) of the existing channel, leading to increased bank erosion. Removing or replacing the dam will decrease further channel degradation and bank erosion. The decision to remove or retrofit the dam will be made after Yellowstone cutthroat trout genetic analysis is complete. If the structure has been isolating unhybridized YCT upstream, it will be replaced with an intentional fish barrier. If the dam does not appear to be impacting YCT genetics, it will be removed, and grade control structures will be designed to prevent a headcut from forming and further degrading the channel. The design process will begin in fall 2024 and implementation will take place in 2026.

*Full citation in attached project summary document.

Education, Outreach and Training Task

To get good projects on the ground, trained staff and board members and educated, enthusiastic landowners are required. To promote the development of future projects, DEQ encourages project sponsors to use up to $5,000 of funding to support training and conduct education and outreach. Example training topics might include: project management, public procurement, technical writing, GIS, water quality monitoring, web design, public speaking, human resource management, photo journalism, UAV (drone) piloting, financial management, and restoration techniques. Education and outreach activities might include targeted landowner outreach, conducting project site tours for local landowners, tabling at community events, holding a watershed festival, providing stipends and travel reimbursements for speakers and participants to attend a nonpoint source pollution prevention workshop, or generating articles for social media. The primary requirement for training and outreach is clearly explaining how the activity will support efforts to address nonpoint source pollution. Funding may not be used to pay for food and beverages, or for honorariums and gifts.

Describe the education and outreach activities you will complete to promote or facilitate future efforts to reduce nonpoint source pollution.

One of the objectives of this project is to increase community engagement and awareness of stream restoration projects. The Shields Valley Watershed Group and the Park County Water Initiative will be primary partners in communicating information about this project and organizing site tours. The TU project manager will work with TU's Mountain West Communications Director to engage local media and share project outcomes through TU social media including Instagram, newsletters, and blog posts. Local TU chapters including the Madison-Gallatin chapter in Bozeman and the Joe Brooks chapter in Livingston will also help share project results through their newsletters and social media, and through presentations at chapter meetings. TU will also work with the Shields Valley Watershed Group, the Upper Yellowstone Watershed Group and the local TU chapter in Livingston to recruit volunteers from Park County to assist with restoration activities.

Results of the monitoring study will be disseminated to the research, conservation and management community through a combination of professional presentations (e.g., American Fisheries Society, Montana Beaver Working Group, Utah State Riverscape Consortium, YCT Multistate Work Group, other TU project managers) and publications.

Identify the specific target audience.

The target audience of education and outreach about this project include local community members, landowners, restoration practitioners, and fisheries professionals.

Describe how the proposed training and/or outreach will increase local capacity and interest for addressing nonpoint source pollution.

Outreach to the local community, watershed group, and landowners will be designed to increase understanding of and interest in stream restoration as a means to decrease nonpoint source pollution, and increase watershed resiliency. Outreach may include discussions of topics such as cost and potential funding sources, stream restoration on working lands, other benefits of stream restoration (e.g. improved fish and wildlife habitat, increased shade to the stream and along banks), and will create open and honest conversations about the benefits and pain-points of restoration.

Outreach to restoration practitioner and fisheries professionals is intended to inform and improve restoration techniques often used to decrease nonpoint source pollution. The monitoring study will be part of a growing body of knowledge aimed at increasing the efficacy of LTPBR and improving the longevity of projects that decrease nonpoint source pollution.

Identify the goals of the education and outreach and describe how you will evaluate the effectiveness of the proposed activities.

Education and outreach goals include increased understanding of methods, costs, benefits, outcomes, and partnerships involved in nonpoint source pollution reduction and stream restoration. This will be accomplished through volunteer work days, site visits, and presentations to and conversations with local community groups. This is a part of an ongoing effort to increase awareness of and desire for restoration projects, and effectiveness of this outreach will be measured by the number of people reached.

Project Administration Task

Please use the task description below as a guide when calculating your budget for project administration. DEQ typically includes these requirements in every nonpoint source grant contract, with only minor variation. Funding applied to Project Administration must not exceed 10% of the total amount of funding requested, or $12,000, whichever is lower.

Example Task Language

Contractor shall oversee and be accountable for the completion of all tasks. Contractor shall maintain regular contact with the DEQ project manager. Contractor shall prepare and submit Mid-Year, Interim, Annual, and Final Reports and Attachment B Billing Statements according to the format and schedule described below.

Report Format

- *Contractor shall submit each Attachment B Billing Statement, Mid-Year Report, Interim Report, Annual Report, and Final Report using the most current reporting guidance and templates provided by the DEQ project manager.*
- *Contractor shall ensure each Mid-Year, Interim, Annual, and Final Report contains adequate documentation to justify accompanying reimbursement requests and match reporting, to the satisfaction of the DEQ project manager.*
- *Contractor shall ensure that the Final Report is a standalone document describing all contract activities and containing copies of all contract deliverables (even if the deliverables were previously submitted).*

Reporting Schedule

- *Mid-Year Reports: Due June 1st of each year the Contract is in effect.*
- *Annual Reports: Due December 1st of each year the Contract is in effect.*
- *Interim Reports: Due whenever reimbursement is requested outside of the normal Mid-Year, Annual and Final reporting periods while the Contract is in effect.*
- *Draft Final Report: Contractor shall submit a complete draft Final Report for DEQ review and comment at least 15 days prior to the contract expiration date.*
- *Final Report: Contractor shall submit a Final Report, addressing DEQ comments on the draft Final Report, on or before the Contract expiration date.*
- *Attachment B Billing Statements: Contractor shall submit an Attachment B Billing Statement with each Mid-Year, Interim, Annual, or Final Report submitted to DEQ while the Contract is in effect. To maintain cash flow, Contractor may submit interim Attachment B Billing Statements as frequently as monthly during the term of the Contract. However, each interim Attachment B Billing Statement must be accompanied by an Interim Report.*
- *Exception to the Reporting Schedule: The Final Report and associated Attachment B Billing Statement will replace the last required Mid-Year or Annual Report.*

Project Timeline

	4Q 2024	1Q 2025	2Q 2025	3Q 2025	4Q 2025	1Q 2026	2Q 2026	3Q 2026	4Q 2026	1Q 2027	2Q 2027	3Q 2027
Project Coordination and Planning Task	✔	✔	✔	✔	✔	✔						
Landowner Agreement Task		✔										
Project Effectiveness Monitoring Task	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Project Implementation Task				✔	✔			✔	✔			
Education, Outreach and Training Task				✔	✔	✔		✔	✔			✔
Project Administration Task			✔		✔		✔					

Environmental Justice

Environmental justice can be defined as: The fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. This goal will be achieved when everyone enjoys:

- The same degree of protection from environmental and health hazards, and
- Equal access to the decision-making process to have a healthy environment in which to live, learn, and work

DEQ is committed to carrying out the nonpoint source pollution reduction projects in an environmentally just manner. We encourage applicants to apply the principles of environmental justice in their development and implementation of nonpoint source pollution prevention projects. Below are a few examples of how applicants might apply these principles. DEQ will award additional points in the scoring form for projects that address environmental justice.

- Project planning included consultation with Tribal Nations
- Project will benefit socially or economically disadvantaged communities
- Project will occur in a community that has not previously received nonpoint source pollution reduction grant funding
- Project will address nonpoint source pollution in a community that has been disproportionately burdened by impacts from legacy pollution (e.g., SuperFund sites, legacy mine waste, etc)

Please use this section to highlight connections your project may have to addressing environmental justice. .

The Shields Valley is a rural valley in Montana composed largely of working lands, the closest community center to the project location is Clyde Park, population 286 (2020 Census). Healthy streams are an important part of healthy rural communities, and decreasing the sediment load in Canyon Creek will benefit downstream users. Additionally, using this project to inform and educate the community about the benefits of stream restoration could have a larger ripple effect throughout the valley.

BUDGET

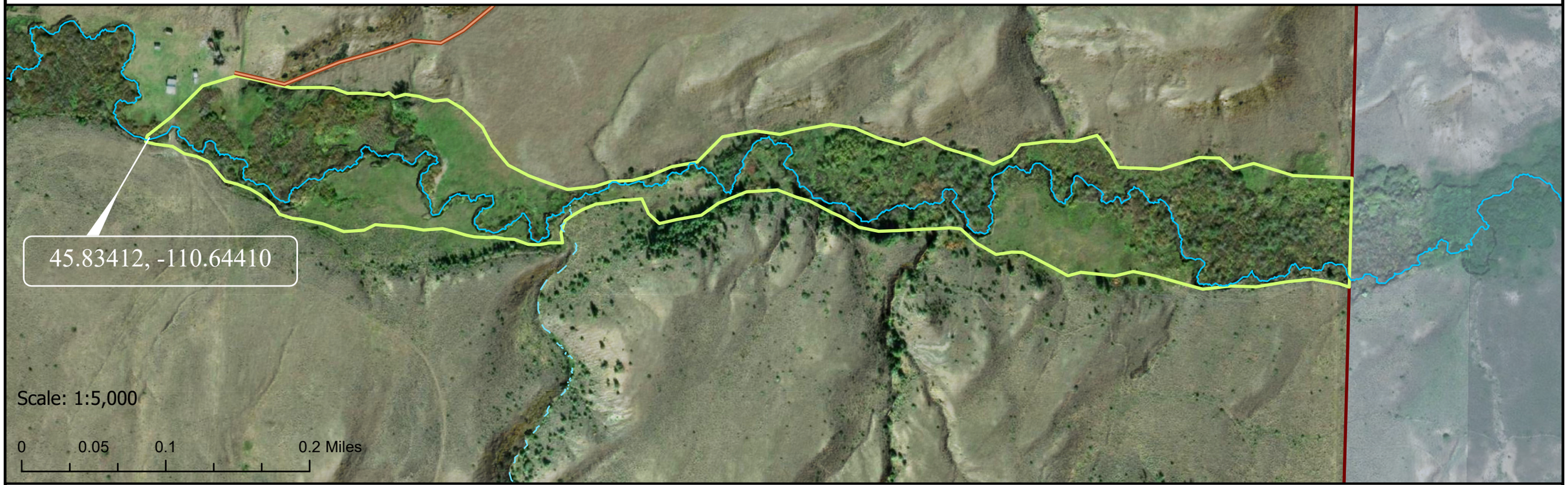
2024 Nonpoint Source Pollution Reduction Application - On-the-Ground Project Budget Template

Project Title:	Canyon Creek Restoration and Monitoring							
Instructions	**Tasks and Potential Deliverables**	**319 Funding Request***	**Non-Federal Match****	**Other Funding*****	**Match Source**	**Match Secured? (Y/N)**	**Total Project Cost**	**Additional Information********
This task includes completion of all planning tasks and coordination and oversight of the efforts of all project partners. Provide a detailed budget and add a row if needed.	**Project Planning**							
	Preliminary site investigation data and site maps			$ 5,000.00			$ 5,000.00	
	Required Permits	$ 2,000.00					$ 2,000.00	
	Draft Project Designs		$ 3,450.00	$ 10,000.00	Jackson Hole One Fly Stre	N	$ 13,450.00	
	Final Project Designs	$ 5,000.00		$ 34,500.00			$ 39,500.00	
	Wetland Delineation		$ 5,750.00		Jackson Hole One Fly Stre	N	$ 5,750.00	
							$ -	
	Total	$ 7,000.00	$ 9,200.00	$ 49,500.00			$ 65,700.00	
This task includes costs for developing and managing landowner agreements and developing grazing management plans as applicable. Provide a detailed budget and add a row if needed.	**Landowner Agreements**							
	Draft Landowner Agreement						$ -	
	Final Landowner Agreement						$ -	
	Grazing Management Plan	$ 2,000.00					$ 2,000.00	
							$ -	
							$ -	
	Total	$ 2,000.00	$ -	$ -			$ 2,000.00	
This task includes costs for developing and implementing a monitoring plan to evaluate effectiveness to reduce nonpoint source pollution. See example contract template or application instructions for required monitoring activities. Provide a detailed budget and add a row if needed.	**Effectiveness Monitoring**							
	Draft Monitoring Plan			$ 5,000.00			$ 5,000.00	
	Final Monitoring Plan		$ 5,750.00	$ 5,000.00	Jackson Hole One Fly Stre	N	$ 10,750.00	
	Written Summary of all Monitoring Activities			$ 5,000.00			$ 5,000.00	
	On-the-Ground Monitoring Activities	$ 35,000.00					$ 35,000.00	This funding will cover one year of USGS field crew monitoring with fish sampling, two years
							$ -	
							$ -	
	Total	$ 35,000.00	$ 5,750.00	$ 15,000.00			$ 55,750.00	
This tasks includes all costs for implementation of the plans developed in the Project Planning task. If you are requesting funding for design only, leave this task blank. Provide a detailed budget and add a row if needed.	**Project Implementation**							
	Materials	$ 75,000.00	$ 10,000.00	$ 20,000.00	In-kind materials	N	$ 105,000.00	Costs are for combined LTPBR and dam removal implementation, cost for LTPBR materials is
	Labor	$ 90,000.00	$ 11,500.00	$ 15,750.00	Jackson Hole One Fly Stre	N	$ 117,250.00	Combined cost for LTPBR and dam removal.
	Equipment costs	$ 10,000.00		$ 1,600.00			$ 11,600.00	Combined cost for LTPBR and dam removal.
	Construction oversight	$ 15,000.00					$ 15,000.00	Combined cost for LTPBR and dam removal.
	Photo documentation						$ -	
	Dam removal/replacement As-built surveys	$ 5,000.00					$ 5,000.00	Combined cost for LTPBR and dam removal.
							$ -	
							$ -	
							$ -	
							$ -	
	Total	$ 195,000.00	$ 21,500.00	$ 37,350.00			$ 253,850.00	
This task includes costs to develop and improve organizational capacity and to incorporate education and outreach into on-the ground projects. Provide a detailed budget and add a row if needed.	**Education and Outreach**							
	Volunteer Coordination	$ 1,000.00					$ 1,000.00	
	Event/Tour Planning	$ 1,000.00					$ 1,000.00	
	Outreach/Publication materials			$ 5,000.00			$ 5,000.00	
							$ -	
							$ -	
	Total	$ 2,000.00	$ -	$ 5,000.00			$ 7,000.00	
319 Funding applied to Project Administration must not exceed 10% of the total amount of 319 funding requested, or $12,000, whichever is lower. Project includes normal business expenses and reporting requirements.	**Administration**							
	Mid/Annual/Interim Reports and Billing Statements	$ 6,000.00					$ 6,000.00	
	Draft/Final Report and Billing Statements	$ 6,000.00					$ 6,000.00	
	Communication with DEQ						$ -	
							$ -	
	Overhead						$ -	
	Total	$ 12,000.00	$ -	$ -			$ 12,000.00	
		319 Funding Request*	**Non-Federal Match****	**Other Funding*****			**Total Project Cost**	
	Grand Totals	$ 253,000.00	$ 36,450.00	$ 106,850.00			**$ 396,300.00**	

*319 Request - Must not exceed $300,000
**Non-Federal Match - Can include in-kind materials.
***Other Funding -Use this space for funding that will be used to support creation of task deliverables, but will not be reported as match.
****Additional Information - Use to justify cost if needed. (Hourly rates, rental costs, etc.)

MAPS/ DESIGNS

Canyon Creek Restoration and Monitoring

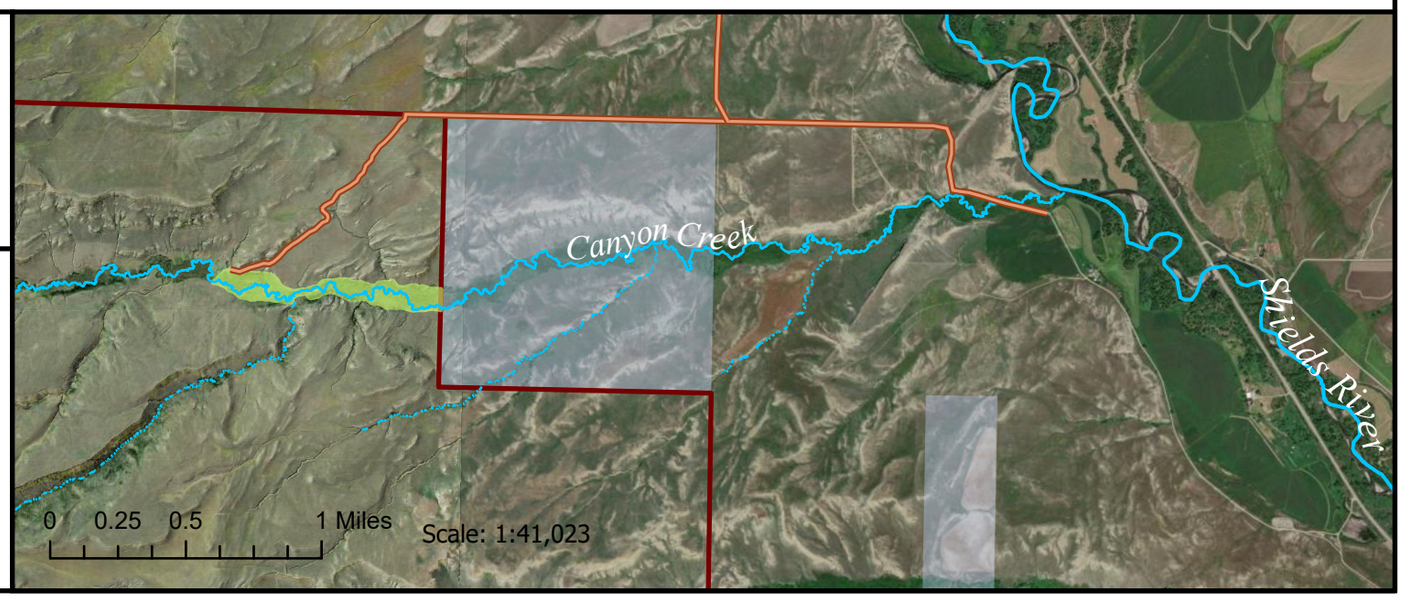


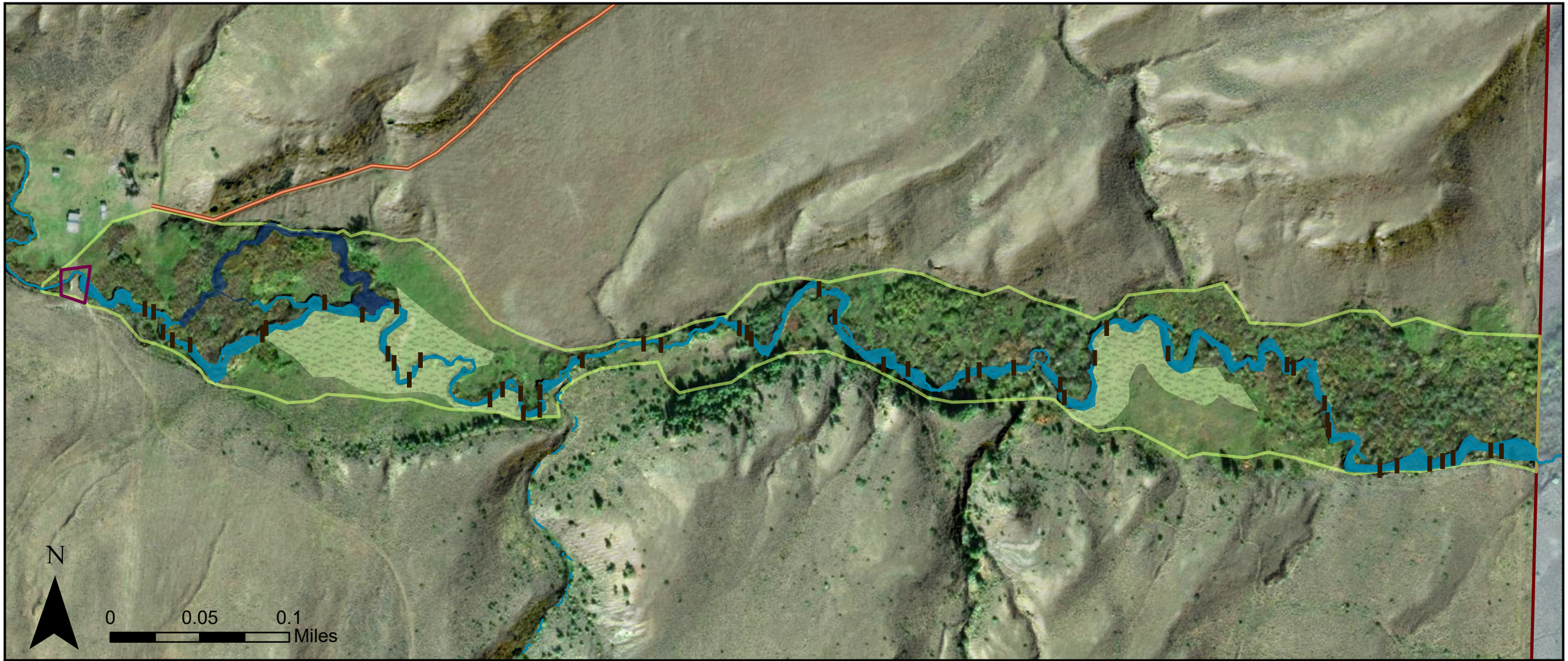
Canyon Creek Project Coordinates
Upstream: 45.83412, -110.64410
Downstream: 45.83291, -110.62673
Confluence with Shields River: 45.83944, -110.57925

- Project Area
- 505 Ventures Ranch Boundary
- State Lands
- Site Access

TROUT UNLIMITED

N





- Project Area
- Potential Structure Locations
- Activate Side Channel
- Revegetate Riparian Buffer
- Remove Dam
- Intermittant Stream
- Canyon Creek
- 505 Ventures Ranch Boundary
- State Lands
- Site Access Road

Canyon Creek Restoration and Monitoring

Example Project Designs

505 Ventures Ranch

TROUT UNLIMITED

LETTERS OF SUPPORT

Montana Department of Environmental Quality
319 Nonpoint Source Project Program
1520 E. Sixth Avenue
P.O. Box 200901
Helena, MT 59620

March 29, 2024

To 319 Nonpoint Source Project Program,

I am writing in support of Trout Unlimited's Canyon Creek Restoration and Monitoring project application for 319 funding. This project will decrease bank erosion, improve fish habitat, and improve the overall resiliency of the stream using minimally disruptive methods. Our family has supported Trout Unlimited for over 10 years and has partnered with them to maintain instream flows through water leases in Canyon, Brackett, and Bangtail Creeks. We have had many conversations about our shared goals to improve fish habitat and watershed resiliency and are pleased to partner with them on a stream restoration and habitat improvement project on our ranch. We enthusiastically support this project to decrease sediment input to the stream from eroding banks and to increase native riparian vegetation. The completed project will provide long-lasting improvements to wild and native trout habitat and will reduce non-point source pollution in the Shields River basin. We thank you for considering this project for funding.

Sincerely,

Greg Avis

MONTANA FRESHWATER PARTNERS

April 3rd, 2024

Montana Department of Environmental Quality
319 Nonpoint Source Project Program
1520 E. Sixth Avenue
P.O. Box 200901
Helena, MT 59620

Montana DEQ Staff,

I am writing on behalf of the Park County Water Initiative and Montana Freshwater Partners to voice my support for Trout Unlimited's application for funding for the Canyon Creek Restoration and Monitoring Project. Canyon Creek is one of the many tributaries to the Shields River that has become incised and disconnected from its floodplain, leading to a degraded riparian zone and excessive bank erosion. Trout Unlimited's proposal to use Low Tech Process Based Restoration methods to reverse this degradation coupled with removing the cement dam will provide watershed benefits beyond the immediate project location through reducing fine sediment input and transport to the Shields River, improving aquatic organism passage, increasing water storage on the landscape during high flows, and increasing stream shading.

Over the past two years, Montana Freshwater Partners has led an effort to identify and prioritize potential stream restoration projects in the Upper Yellowstone and Shields Watersheds. This effort led to the formation of the Park Co. Water Initiative, a group working closely with the Shields Valley Watershed Group, the Upper Yellowstone Watershed Group, and the Park County Conservation District to promote collaboration and on-the-ground action around stream and watershed restoration in Park County, Montana. The Canyon Creek Restoration and Monitoring project ranked in the highest priority category due to its potential to positively impact water quality, riparian health, native Yellowstone cutthroat trout, flood and drought resiliency, instream habitat, and aquatic organism passage.

Through increased collaboration, the Park Co. Watershed group aims increase the number of on-the-ground stream and watershed restoration projects in Park County, and to build momentum around and community involvement in these projects. The work being implemented by Trout Unlimited, Montana Freshwater Partners, and others in the group is foundational to this effort.

Sincerely,

Leah Swartz
Project Manager
Montana Freshwater Partners

Robert K Al-Chokhachy, PhD
Research Fisheries Biologist
US Geological Survey
Northern Rocky Mountain Science Center
Bozeman, MT
PH: 406-994-7842
Email: ral-chokhachy@usgs.gov

April 2, 2024

Montana DEQ-

I am writing a letter of support of Ashley Brubaker's (Trout Unlimited) restoration project for Canyon Creek in the Shields River Basin. Historic land use practices have led to riparian degradation, reductions in floodplain connectivity, and sediment contributions from streambank and hillslope erosion, which are compromising the riverscape health and ecosystem services of these habitats and downstream water quality in the Shields River. In addition, the existing fish barrier from a concrete dam structure has blocked fish passage, thus constraining the ability of fishes, including native Yellowstone cutthroat trout, to access cold water habitats in the summer and diverse life-history forms through access to the Shields River. Both Canyon Creek and the Shields River serve as important sources of water for downstream water users and aquatic biota highlighting the need for restoration actions to address habitat limitations.

The restoration actions proposed through this project have the capacity to reduce nonpoint source sediment contributions to Canyon Creek, thus improving habitat for fishes within Canyon Creek and downstream habitats for multiple end users (e.g., fish, wildlife, humans). Furthermore, by reconnecting the stream channel in Canyon Creek to the adjacent floodplains, this project has the capacity to increase water storage and promote groundwater connections that can increase late season streamflows and the resilience of these habitats to drought. In addition to habitat and water storage, this project will eliminate the barrier to fish movement and afford fish populations access to a diversity of habitats. Finally, the proposed monitoring efforts are critical not only for understanding the effectiveness of this project, but in demonstrating how riverscape restoration can reduce nonpoint source sediment and improve water quality with cascading benefits.

Across Montana, the TU staff has an excellent reputation for completing on-the-ground restoration projects and I have no doubt that this project will help improve water quality in the Shields River. I am happy to answer any additional questions.

Thank you.

Robert Al-Chokhachy

OTHER ATTACHMENTS

Canyon Creek Restoration and Monitoring Project Description

Background

Canyon Creek is a tributary of the Shields River with its headwaters at approximately 7,000 ft elevation in the Custer Gallatin National Forest in Park County, Montana. Canyon Creek's historic condition was likely heavily affected by beaver, whose impoundments would have created and maintained a high water table, a many threaded stream channel, and a valley wide riparian area (Figure 1). Through historic land use practices, an abandoned cement dam, and beaver removal, natural stream function has been disrupted and the stream has incised, increasing erosion, elevating nonpoint source sediment pollution, and degrading habitat for native Yellowstone cutthroat trout (YCT). Trout Unlimited (TU), USGS, and Montana Fish, Wildlife & Parks (FWP), are proposing a project to restore Canyon Creek to a state similar to historic conditions through removing the dam and using low-tech process-based restoration (LTPBR) techniques to aggrade the channel, reconnect the floodplain, decrease bank erosion, restore a valley-wide riparian zone, and increase habitat diversity for native YCT. On-the-ground and aerial imagery observations suggest that beaver have moved in and out of this reach of Canyon Creek over the last two decades. In 2022, no beaver were present in the project reach, but in 2023 several new beaver dams had been built in the stream. However, in incised streams where high flows do not access the floodplain, beaver dam persistence is often low, and the positive effects of beavers on the system are limited (Ritter et al. 2023). This project will decrease bank erosion, reconnect the floodplain, restore a wide riparian zone, and improve habitat for beavers to maintain healthy stream conditions far into the future.

Figure 1. An example of what the historic conditions may have looked like in Canyon Creek (Wheaton et al, 2019).

The proposed project reach is located on the 505 Ventures Ranch approximately 4.5 miles upstream from the confluence with the Shields River. The Shields River Watershed Restoration Plan (WRP) identified Canyon Creek as fourth in sediment intensity from Hillslope erosion and identified riparian buffers as one of the most effective measures of decreasing sediment delivery to streams. Additional WRP-identified BMPs to reduce sediment from bank erosion that this project will implement include revegetating denuded riparian zones with suitable native species, restoring floodplain connection, and improving woody vegetation density. The landowners lease their property for cattle grazing at a low density; development of a grazing management plan will identify and implement grazing BMPs, such as creating off-channel water sources and placing salt and minerals in upland areas.

Project Description

At the upstream extent of the project reach, an old cement dam with two small, plugged culverts associated with an historic homestead is a primary cause of stream degradation through the project reach. Fish passage is impeded as the structure contains two metal culverts, one of which has been blocked with sediment for years and is buried on its upstream end, while the other has more recently been blocked by beavers, despite clearing efforts. The sediment deposition above the dam and the firehose effect created by the small culvert diameter (Figure 1A) has elevated erosion rates directly downstream of the dam, causing the stream to incise for nearly 1 mile downstream, limiting floodplain connectivity, riparian vegetation, channel complexity, and adding fine sediment to the sediment-impaired Shields River. Additionally, the recent beaver activity blocking the remaining culvert is forcing the stream to find a new path. The stream is beginning to migrate to the left (north) of the channel, spilling over a low spot in the cement dam and cutting a new channel through grass and fine sediment (Figure 1B,). With little deep-rooted vegetation in this immediate area, this will lead to further channel instability and erosion.

Figure 2. A) Looking upstream at the dam in 2022 before beavers blocked the second culvert. Erosion underneath the cement structure is evident. B) In 2023 beavers blocked the culvert and the stream began forming a new channel to the north of the existing channel and culvert.

The dam is unquestioningly degrading the stream and impeding fish passage, but the solution is more nuanced than simply removing it. Range wide, hybridization with rainbow trout is one of the primary threats to YCT; due to the presence of both species in the Shields Watershed, identifying and protecting unhybridized YCT populations is a high priority. If the dam has been impeding fish passage to the point that it has protected an upstream unhybridized YCT population, removing the dam and restoring fish passage could be detrimental to YCT. In the late summer and

fall 2024 TU will work with USGS field crews to collect genetic samples from YCT throughout Canyon Creek. FWP will analyze the samples and the local fisheries biologist and native fish biologist will determine if dam removal to allow unrestricted passage is appropriate, or if the dam should be replaced with a deliberate fish barrier. If dam removal is deemed appropriate, the concrete structure will be removed and disposed of, and grade control structures will be installed in the stream to prevent a headcut forming in the channel due to the elevation gradient upstream and downstream of the dam. If the dam is protecting upstream unhybridized YCT, the dam will be removed and replaced with an intentional fish barrier that will prevent upstream fish passage but will not continue to degrade the channel. TU is currently working with the Custer Gallatin National Forest on a fish barrier project on a tributary to the Yellowstone River in Park County. This experience will be utilized when hiring a design engineer and managing the dam removal project. The project site will be revegetated with native riparian species post-construction.

In addition to the dam, historic land use practices and beaver trapping/removal have contributed to channel degradation. While the stream and associated riparian vegetation likely historically occupied the entire valley bottom – and still do in places, riparian vegetation is limited to a thin strip along the streambanks in a large portion of this reach, where shallow-rooted grasses are the primary vegetation beyond the riparian strip. Despite the channel incision, beaver activity in the last 10-15 years has kept parts of the floodplain active, and although incised, the section of stream immediately below the dam has a healthy and wide riparian area (Figure 3). This existing woody vegetation can provide important structural elements for beaver activities that will reconnect the active channel to this floodplain and promote greater water storage and diverse instream habitats for YCT. In this portion of the project reach, where the riparian zone is wide, but the single thread channel is incised, TU will use BDAs and PALs to push water into abandoned side channels, spreading channels across the valley bottom and decreasing erosive power of spring floods. Further downstream, where the channel is more heavily incised and the riparian zone is limited to the immediate channel banks, LTPBR methods will be used to aggrade the channel to a point where spring floods can overtop the banks and natural beaver dams can persist long-term. A riparian buffer will be established along channel margins lacking deep-rooted native vegetation once favorable hydrology for plant growth has been established. An example of what the project plans may look like, including potential LTPBR structure locations and revegetation areas is included as an attachment.

Figure 3. Google Earth imagery from 2021 showing a wide riparian zone directly below the dam, and a narrow riparian zone further downstream.

Low-tech process-based restoration is the chosen method to restore the processes that will maintain a healthy functioning stream system appropriate to this ecological setting. The headwaters of Canyon Creek are characterized by a forested, narrow valley bottom channel, where large wood inputs in the form of a single tree may provide necessary instream structure. However, the identified project reach is characterized by a wide valley bottom within sagebrush uplands, where large wood would not have been a natural frequent input. The natural structure in this portion of Canyon Creek was likely driven by beaver activity and small wood in the form of alders and willows. This project intends to use strategic BDAs and PALs to make the stream more hospitable to beaver and allow the current population to thrive and expand.

This one-mile project location was identified as highest restoration priority on Canyon Creek through the 505 Ventures Ranch, but opportunities for habitat enhancement and floodplain reconnection exist throughout the ranch and on adjacent public land and downstream private land. This project represents an important opportunity to build collaborative relationships between state, federal, and private landowners, and will serve as a springboard for similar stream restoration and nonpoint source pollution reduction efforts and conservation opportunities for Yellowstone cutthroat trout.

Monitoring

This project has been selected for intensive monitoring to identify the effectiveness of LTPBR techniques and to improve understanding of potential management solutions and strategies to enhance riverscape health. TU has been working with the USGS, USFS, and FWP to identify upcoming LTPBR restoration projects for intensive monitoring to increase knowledge of the effectiveness of different restoration approaches across the landscape. The Canyon Creek restoration project has been identified as a high priority project for collaborative implementation of intensive stream restoration monitoring. The relative ease with which LTPBR projects can be conducted makes it possible to rapidly and cost effectively implement many projects across a watershed, but their effectiveness is often unclear (Roni et al. 2019; Bilby et al. 2023). This research aims to identify feasible short-term (e.g., floodplain connectivity) and long-term (e.g., changes in riparian vegetation, fish population responses) objectives that can iteratively provide feedback on restoration actions and inform future project design.

This monitoring approach will take advantage of existing protocols (e.g., Wheaton et al. 2019) to (1) clearly establish objectives; (2) design robust monitoring to meet those objectives based on existing funding opportunities; (3) analyze data to evaluate project effectiveness; and (4) input all information and data into regional conservation efforts databases (e.g., Yellowstone Cutthroat Trout Conservation Efforts Database). Despite existing protocols (as mentioned), we also see the need to integrate monitoring efforts, protocols, and results with existing working groups (e.g., Montana Beaver Working Group, Utah State Riverscape Consortium, etc.) where shared information on effectiveness can help inform and direct future restoration actions. Our specific objectives are:

(1) Evaluate how LTPBR projects affect riverscape health.

(2) Assess species-specific responses to LTPBR projects.

(3) Integrate projects and monitoring results in relevant regional databases, which collectively can help understand how riverscape and species responses vary by approach (BDAs, beaver reintroductions, structure additions, etc.), magnitude of project, and landscape.

Timeline

This project is in the early planning stages, more field reconnaissance is necessary to determine specific designs. The monitoring study is likewise in development, methods will be determined prior to the 2024 field season. Due to the presence of YCT, most in-stream field work (e.g. fish surveys, structure construction) will be conducted in late July – October. Work such as a beaver dam census and general site recon may be conducted earlier. An estimated project timeline is shown in table 1.

Table 1. Estimated project timeline. This is not meant to be an all-encompassing list of activities, rather a general idea of the project pace and timing.

2024	Q1	
	Q2	• Plan Monitoring Study • Field reconnaissance (weather and roads permitting)
	Q3	• Year 1 pre-construction monitoring • Fish surveys and genetics collection • Field reconnaissance • Grazing management plan coordination
	Q4	• Year 1 pre-construction monitoring • Fish surveys and genetics collection • Field reconnaissance including wetland delineation • LTPBR designs • YCT genetics analysis by FWP
2025	Q1	• LTPBR designs and permitting • Determine dam removal procedure • Begin hiring process for dam removal engineer
	Q2	• Begin dam removal designs
	Q3	• Year 2 pre-construction monitoring • Source on-site materials for LTPBR structures • Dam removal site visits and surveys
	Q4	• LTPBR implementation • Dam removal designs
2026	Q1	• Dam removal final designs • Dam removal permitting
	Q2	• Riparian buffer plantings
	Q3	• Year 1 post-construction monitoring • Dam removal construction • LTPBR adaptive management
	Q4	• Dam removal construction
2027	Q1	• Dam removal revegetation and riparian buffer plantings
	Q2	
	Q3	• Year 2 post-construction monitoring
	Q4	
2028 and beyond		• Continue post- construction monitoring to meet study objectives • Adaptive management as necessary

References

Bilby, R.E., K.P. Currrens, K. Fresh, D.B. Booth, R.R. Fuerstenberg, G.L. Luchetti. 2023. Why Aren't Salmon Responding to Habitat Restoration in the Pacific Northwest? *Fisheries* 49: 16-27, https://doi.org/10.1002/fsh.10991.

Ritter, T., M. McGree, D. Schmetterling, C. Gower, V. Boccadori. 2023. Beavers and Their Role in Riparian Restoration in Montana [White Paper]. Montana Fish, Wildlife & Parks.

Roni, P., Hall, J.E., Drenner, S.M. and Arterburn, D., 2019. Monitoring the effectiveness of floodplain habitat restoration: A review of methods and recommendations for future monitoring. *Wiley Interdisciplinary Reviews: Water*, *6*(4), p.e1355.

Wheaton J.M., Bennett S.N., Bouwes, N., Maestas J.D. and Shahverdian S.M. (Editors). 2019. Low-Tech Process-Based Restoration of Riverscapes: Design Manual. Version 1.0. Utah State University Restoration Consortium. Logan, UT. 286 pp. DOI: 10.13140/RG.2.2.19590.63049/2.

Canyon Creek Restoration and Monitoring Additional Photos

Eroding banks along Canyon Creek lacking adequate riparian buffer.

Looking downstream at the dam with the culvert blocked by beaver activity.

View of the valley bottom with a narrow riparian zone confined to the stream banks.