2023 319 Application Form - General and Focus Watershed

General Information

Project Name: Restoration of Lower Mandeville Creek

Sponsor Name: Trout Unlimited

Registered with the Secretary of State? Y

Registered with SAM? Y

UEI # 051698132

Does your organization have liability insurance? Y

Primary Contact: Connor Parrish

Title: Project Manger

Address: 321 E. Main St.

City: Bozeman State: MT Zip Code: 59715

Phone Number: 406-223-9331

Email Address: connor.parrish@tu.org

Signature: Connor Parrish Digitally signed by Connor Parrish Date: 2022.10.07 11:30:04 -06'00'

Signatory: Warren Coyer

Title: Western Water and Habitat Project Co-Director

Address: 312 N. Higgins, Suite 200

City: Missoula State: MT Zip Code: 59801

Phone Number: 406-540-2185

Email Address: warren.colyer@tu.org

Signature: Warren Colyer Digitally signed by Warren Colyer Date: 2022.10.07 11:25:51 -06'00'

Technical and Administrative Qualifications

Trout Unlimited's Bozeman based staff Connor Parrish and Pat Byorth will lead this project with support from partners. Connor Parrish is a project manager with TU and has 11-years of experience working in the field of fisheries including 4.5 years managing aquatic restoration projects. Pat Byorth has managed wild trout fisheries and aquatic restoration in southwestern Montana for 32 years while working various positions for Montana Fish Wildlife and Parks and Trout Unlimited. Currently, Pat is TU's Montana Water Director. Jeff Dunn with WGM has 19 of experience designing and implementing aquatic restoration projects. Briana Schultz with Sundog Ecological has 16 years of experience with wetland delineation and revegetation. TU has worked with both Jeff and Briana on several projects including multiple phases of restoration on Dry Creek which were funded through DEQ's 319 program. Briana and Jeff have provided cost estimates for restoration and revegetation of Mandeville Creek which were crucial to this grant application. This project will also rely on support from Weston Solutions who was hired by the landowner to design the development/business park which Mandeville will flow through. Weston Solutions is a national environmental and infrastructure services firm serving government, industrial, and commercial clients for over 65 years. It is likely that Weston Solutions will assist with project designs as the restoration project will need to be integrated with the plans for the business park. Gallatin Watershed Council will play a critical role by helping with volunteer coordination through their "Busy Beaver" volunteer stewardship program. GWC will also provide feedback on the restoration and education components of the project.

Budget Summary: *Fields outlined in **black** on this page will auto-populate from other sections of the application form. Fields outlined in **red** on this page will not auto-populate. You must manually input the information for fields outlined in **red**.*

	319 Funding Request	Non-Federal Match	Other Funding	Total Cost
Education and Outreach Project	$ 5,000	$ 85,000	$ 0	$ 90,000
Administration	$ 12,000	$ 0	$ 0	$ 12,000
Project 1 Name	Restoration of Lower Mandeville Creek			
Project Planning	$ 30,000	$ 0	$ 0	$ 30,000
Landowner Agreements	$ 500	$ 0	$ 0	$ 500
Project Implementation	$ 109,000	$ 29,117	$ 0	$ 138,117
Project Effectiveness Monitoring	$ 6,576	$ 3,459	$ 0	$ 10,035
Total	$ 146,076	$ 32,576	$ 0	$ 178,652
Project 2 Name	N/A			
Project Planning				$ 0
Landowner Agreements				$ 0
Project Implementation Project				$ 0
Effectiveness Monitoring				$ 0
Total	$ 0	$ 0	$ 0	$ 0
Project 3 Name	N/A			
Project Planning				$ 0
Landowner Agreements				$ 0
Project Implementation Project				$ 0
Effectiveness Monitoring				$ 0
Total	$ 0	$ 0	$ 0	$ 0
Project 4 Name	N/A			
Project Planning				$ 0
Landowner Agreements				$ 0
Project Implementation Project				$ 0
Effectiveness Monitoring				$ 0
Total	$ 0	$ 0	$ 0	$ 0
Grand Total	$ 163,076	$ 117,576	$ 0	$ 280,652

Education and Outreach

Developing good projects often requires a considerable amount of time and effort up front to build relationships and trust with individual landowners and stakeholder groups. It also requires adequate training for project sponsor staff (e.g., technical training, project management, public procurement, technical writing, etc).To promote the development of future projects, DEQ is encouraging project sponsors to use up to $5,000 in 319 funding for education and outreach to develop and capitalize on critical relationships and to improve organizational capacity. DEQ also encourages applicants to incorporate on-the-ground projects into education and outreach efforts through on-site demonstrations and project tours. 319 funding may not be used to pay for food and beverages, or for honorariums and gifts.

Activity (method of delivery)	TU will work with its partners to organize 2 - 4 tours for interested stakeholders and groups within the Gallatin community.
Target Audience	General community, property developers, private landowners with creeks on their property
Goals	Provide information about the importance of streams and wetlands for water quality, late season flows, fish/wildlife habitat, and the how giving steams room can reduce downstream flood impacts. Another goal is to specifically target land developers in Gallatin County to provide them examples of how stream restoration can be compatible with development.
Effectiveness Evaluation	Effectiveness will be measured by the number of people who attend the organized tours.

Activity (method of delivery)	The project will include a walking path with educational signs and viewing platforms where the community can take themselves on self guided tours. The project will also provide opportunities for the public to enjoy and observe fish and wildlife.
Target Audience	General community, property developers, private landowners with creeks on their property
Goals	Provide information about the importance of streams and wetlands for water quality, late season flows, fish/wildlife habitat, and the how giving steams room can reduce downstream flood impacts. Another goal is to specifically target land developers in Gallatin County to provide them examples of how stream restoration can be compatible with development.
Effectiveness Evaluation	Evaluating passive education from the public through self-guided tours of the project is difficult to assess. Once completed, TU will visit the project site for couple of hours on a weekday and a couple of hours on a weekend to extrapolate a rough estimate of trail usage. We are certain this area will receive significant use by the public due to observations of public use of the nearby fishing access/nature viewing site managed by Montana FWP. Also, this piece of property was a popular walking area prior to it being closed to the public. We expect that the public will have significant interest in this area once construction is completed.

Activity (method of delivery)	This project will rely heavily on volunteer support. TU will work with partners such as the Gallatin Watershed Council, Sacajawea Audubon Society, Gallatin Conservation District, Warriors on Quiet Waters, SIMMS Fishing products, Madison Gallatin TU Chapter, and others to sign up volunteers to support this project.
Target Audience	General community, property developers, private landowners with creeks on their property
Goals	TU plans for this to be a community project where volunteers can take ownership of the restoration. Volunteers will be needed for riparian planting, construction of habitat structures, and fence installation. Before each volunteer event the groups will be given an overview of the project and how they can impact water quality in the Gallatin Watershed
Effectiveness Evaluation	Effectiveness will be measured by the number of volunteer events held and the number of people who attend each volunteer event. Additional metrics will include feet of fence constructed, number of plants and livestakes planted, and instream habitat structures installed.

319 Funding Request	Non-Federal Match	Other Funding*	Total
$ 5,000	$ 85,000		$ 90,000

Match Source	Bozeman Trax LLC.	Secured	☑
Match Source	Madison Gallatin Trout Unlimited Chapter Education Signs	Secured	☑
Match Source		Secured	☐

**Use this space to record any funding that will be used to support creation of the task deliverables, but will not be reported as match. The purpose of this information is to give application reviewers a clearer understanding of the total amount of funding required to complete a task.*

Project Administration

Project administration includes book keeping, invoicing, interim/annual/final report preparation, office supplies, rent, communications, etc. 319 funding applied to this task must not exceed 10% of the total amount of 319 funding requested, or $12,000, **whichever is lower**. Like all other tasks, payment is by reimbursement for actual expenses incurred.

319 Funding Request	Non-Federal Match	Other Funding*	Total Cost
$ 12,000	$ 0		$ 12,000

Match Source _____ Secured ☐

Match Source _____ Secured ☐

**Use this space to record any funding that will be used to support creation of the task deliverables, but will not be reported as match. The purpose of this information is to give application reviewers a clearer understanding of the total amount of funding required to complete a task.*

Project 1

Project Form

A separate Project Form ***(including providing separate attachments)*** must be submitted for each project included in your application. Use the following examples to help determine when to lump and when to split projects. For additional assistance, contact Mark Ockey at mockey@mt.gov or 406-444-5351.

Splitting Examples (fill out multiple Project Forms)

- Stream restoration work occurring on two separate streams, on parcels owned by two separate individuals
- Two projects with significantly different sets of project partners
- Two projects that address substantially different pollution sources (e.g., one project moves 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
- 3 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)

Project 1 Name Restoration of Lower Mandeville Creek

Project 1 - Problem Description

Select the watershed restoration plan (WRP) that your project will help implement.

Lower Gallatin - Greater Gallatin Watershed Council

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

Waterbody name from the 2020 List of Impaired Waters	Mandeville Creek
Probable causes of impairment to be addressed	Nitrogen and Phosphorous
Waterbody name from the 2020 List of Impaired Waters	EAST GALLATIN RIVER confluence of Rocky an Bear Creeks to MT HWY No. 411
Probable causes of impairment to be addressed	Nitrogen and Phosphorous
Name of healthy waterbody to be protected	
Description of identified threat to non-impairment status	
Name of healthy waterbody to be protected	
Description of identified threat to non-impairment status	

Detailed Problem Description

Provide a detailed description of the nonpoint source pollution problem you are attempting to address. Be sure to include the following:

- Identify the primary types of pollution
- Identify the primary sources of the pollution
- Identify the root causes of the pollution
- Describe any previous work done to address the problem (who, what, where, when)
- Describe the impacts of the problem (who, what, where)

Mandeville Creek is a spring creek that originates near the campus of Montana State University. The creek flows north through an increasingly urbanized area of Bozeman which has resulted in its alteration and relocation to meet the needs of roads, businesses, and housing developments. Along its route, Mandeville Creek is fed by stormwater runoff and irrigation return flows from Farmers Canal before its confluence with the East Gallatin River. With the current rate of development in Bozeman, it is anticipated that there will be a large increase of impervious services and population growth that will increase stormwater and urban impacts to Mandeville Creek. The lack of functional floodplain and riparian areas along most of Mandeville Creek exacerbates nutrient issues due to the absence of natural functions that absorb excess nutrients from a stream. All of these impacts have resulted in Mandeville Creek having elevated levels of nitrogen and phosphorous which has landed it on the Montana Department of Environmental Quality's list of impaired waters. The 2014 Lower Gallatin Watershed Restoration Plan (WRP) calls for an 81% reduction in total nitrogen and 65% reduction in total phosphorous from Mandeville Creek. The reach of Mandeville Creek identified in this application was specifically called out in the WRP as a priority for restoration (2014). Within the proposed project area Mandeville Creek flows through a mixture of Montana DNRC managed lands and private property that has been heavily grazed and lacks native woody riparian vegetation. Additionally, the proposed project area on lower Mandeville Creek is just 350 yards from its confluence with the East Gallatin River. This reach of the East Gallatin between Bridger Creek and Hyalite Creek was also included in the WRP and calls for a 78% reduction of total nitrogen and a 76% reduction of total phosphorous. Due to its proximity, restoration of lower Mandeville Creek would also benefit the water quality of the East Gallatin River.

The land use within the project area is going through a dramatic change as the uplands will be turned into a business park over the next few years. Bozeman Trax Partners LLC. is developing their property and the adjoining DNRC managed land though a 100-year lease agreement. However, the land adjacent to Mandeville Creek will be preserved through mandatory set backs and grazing of the riparian area will be discontinued. The proposed work area includes ~28 acres within the established 50 ft stream setback, ~1.2 miles of Mandeville Creek, and another 350 yards of a stream like section of return flow from Farm's Canal. At this location Mandeville Creek has a large grass and sedge riparian buffer however, it is lacking woody perennial vegetation that historically would have dominated the riparian area. Within the stream channel, there is a lack of habitat structures such as wood accumulations and beaver dams that would have historically been present in a stream like Mandeville Creek. Beaver dams and wood accumulations would have encouraged floodplain connection and processes that would have facilitated the natural uptake of excess nutrients. These structures also would have created dynamic habitat features which are critical for trout, amphibians, and other aquatic life. Restoring natural process to this reach of Mandeville Creek would improve water quality as well as fish and wildlife habitat.

A previous restoration project on Mandeville Creek occurred ~1-mile upstream of the project TU is proposing on lower Mandeville Creek. Beginning in 2014, 700 yards of straightened Mandeville Creek was re-meandered to create a more naturalized stream channel. This project occurred entirely on the campus of Bozeman High School and included riparian restoration. The project has created great educational opportunities for high school students, improved water quality, and you can now watch trout and other fish swimming in the restored stream channel. The final phase of this restoration project was partially funded by DEQ through a 319 grant. This was a great start to addressing Mandeville Creek's water quality and habitat deficiencies however further restoration is needed as Bozeman continues to grow. To address water quality issues TU and others need to continue to work with developers to make sure we can restore sensitive lands within our urban areas. Through projects like these we are hopeful that developers will see the presence of a stream as a positive property amenity that should be improved or preserved rather than an inconvenience and design afterthought.

Project 1 - Solution Description

Provide a detailed description of the solution you are proposing to implement to address the nonpoint source pollution problem described in the previous section. Be sure to include the following:

- Describe the range of options available for solving the problem, including a no-action alternative
- Describe the practices you intend to design and/or implement to solve the problem (what, where, when, how much or how many)
- Explain why the chosen alternative is the best alternative
- Describe any pre-project planning that has already taken place (e.g., design work, permitting consultation, Endangered Species Act consultation, wetland delineations, landowner agreements, community outreach)
- Describe the anticipated maintenance needs (what, where, who, how long)

Trout Unlimited began looking into restoring lower Mandeville Creek on DNRC managed land in early 2021. After a conversation with DNRC, TU was informed that a substantial portion of the public and private land within this reach would be developed in the coming years. TU was put in touch with the private landowner/developer (BOZEMAN TRAX PARTNERS LLC.) who was supportive of the proposed restoration work within their established stream setback. The design team had already completed a wetland delineation which they have provided to Trout Unlimited. TU has since held multiple site visits with local consultants, Gallatin Conservation District, the Gallatin Watershed Council, and the City of Bozeman's Stormwater division. All those in attendance were supportive of TU's restoration ideas and offered constructive feedback. TU also brought the restoration of lower Mandeville Creek to the newly formed Gallatin Water Collaborative who gave their support to the project. The project will occur along 1.2 miles of Mandeville Creek and 350 ft of Farmer's Canal within a ~28 acre area defined by a mandatory 50 ft water course setbacks.

Trout Unlimited is proposing the construction of approximately forty habitat structures including Post Assisted Log Structures (PALS) and Beaver Dam Analogs (BDAs). These structures will slow streamflow in Farmer's Canal and Mandeville Creek, increasing natural uptake of excess nutrients. As these streams slow and spread across their floodplains it will increase the amount of time and space where plants can uptake excess nitrogen. Similarly, slower stream flows allow sediment to settle behind habitat structures. Phosphorous binds to sediment therefore excess phosphorous will be reduced as it is stored behind habitat structures. Slowing down and backing up stream flows also encourages groundwater infiltration which will further remove excess nitrogen and phosphorous from the system. Habitat structures will be built from natural materials and designed to mimic natural wood accumulations and beaver dams that historically occupied this region. PALS and BDAs will also create scour pools, dam pools, and off channel features that will provide quality habitat for fish and wildlife. Current riparian vegetation along Mandeville Creek consists of native sedges, non-native grasses, invasive weeds, and a small amount of native woody plants. TU proposes planting native woody riparian species that will provide shade to Mandeville Creek which will help it remain cool during the summer, uptake excess nutrients, and reduce streambank erosion. Extensive treatment of weeds before and after implementation will allow plantings to grow without competition from invasive species. Mature woody vegetation will also provide quality habitat for wildlife and nesting bird species. In addition to potted plants, livestakes of willow and dogwood will be planted to reduce costs and jump start woody species throughout the project area. Additionally, Bozeman Trax Partners LLC. has a 1895 irrigation water right from Mandeville for 1.88 cfs from May 1st – September 1st. The landowner has expressed interest in leasing or donating this water to TU to be left in stream as beneficial flow. TU has a staff of water attorneys that will evaluate the potential for obtaining this water for permanent protection as in stream flow. Keeping this water instream will help address nutrient issues by diluting nutrient concentrations. More water in stream would also benefit aquatic life, riparian plants, and wildlife.

Maintenance of the proposed project would include weed treatment, additional plantings if some of the originals don't take, and adaptive management if/when beavers move into the project area. Beavers are welcome in the project area as their activities would be beneficial to nutrient reduction and habitat enhancement, however we will need to make sure they don't have any negative impacts on the surrounding development. There are several non-fatal in-place mitigation measures that can be taken to allow beaver to remain on site and coexist with their urban environment.

Mandeville Creek and Farmer's Canal receives much of the city's stormwater. Taking no action would be a missed opportunity to address water quality issues and it is unlikely that this stream reach will naturally recover anytime soon. Not taking an active role in restoring this reach of Mandeville Creek would fail to reduce nutrient impairments in an area that is likely to receive even more stormwater and associated nutrients/pollutants as Bozeman continues to grow.

Project 1 - Goals and Effectiveness Evaluation

List the specific, measurable nonpoint source goals for your project.

It is extremely difficult to calculate nutrient reduction in a system like this without extensive and expensive monitoring efforts. However, the Gallatin Local Water Quality Authority (GLWQA) and Gallatin Stream Teams have a long-term monitoring site in the proposed project area and have sampled water quality there for many years. Water quality just downstream of the confluence between Mandeville and Farmer's Canal indicate TN concentrations that vary between 0.3 and 1.7 mg/l as N with an average of approximately 0.6 mg/l as N. One of the goals of this project would be to document lower nitrogen concentrations at GLWQA's long-term monitoring site.

Unfortunately, there is not a long-term data set for phosphorous concentrations in Mandeville Creek. However, the restoration techniques included in this proposal have been specifically targeted to aid in the natural reduction of excess nutrients in Mandeville Creek and Farmer's Canal. Habitat structures will slow stream flow, allowing suspended solids from the canal/stream water to settle and also be removed via bank filtration. This reduction in suspended solids is anticipated to also reduce the transport of phosphorus which is sorbed (attached) to the suspended solids. Additionally, robust riparian areas are great at absorbing excess nitrogen and slowing stream flows during periods of runoff.

While the reduction of nitrogen and suspended solids associated phosphorus may be notable, insufficient data is currently available to make estimates about what this project could achieve.

Explain how you will determine whether the you have met the goals described above. Identify any data you intend to collect, calculations you'll make, or methods you intend to use.

TU will work with DEQ to develop methodology to estimate the nutrient reduction from the completion of the Lower Mandeville Restoration Project. Additionally, GLWQA will continue to collect water quality metrics at their established monitoring site just below the confluence of Mandeville Creek and Farmers Canal. This will hopefully enable TU to see the benefits of the restoration project on nitrogen reduction compared to previous years. The sampling effort by GLWQA is partially funded by DEQ and has an existing QAPP.

TU will use additional monitoring techniques to demonstrate that the project is encouraging processes that naturally remove excess nutrients. These monitoring techniques will include wetted width measurements before and after the installation of habitat structures and using drone imagery to estimate increased wetted surface area post implementation. TU will also take before and after photos of the locations where habitat structures are installed. These measurements will demonstrate that the project is achieving its goal of slowing down and spreading out flows and allowing for increased ground water storage. All of which are proven methods to increase natural uptake of excess nutrients. Additionally, TU will conduct plant survival estimates that will demonstrate a significant increase in native woody riparian species.

Project 1 - Location

Upstream End	Latitude	45.70085	Longitude	-111.05390
Downstream End	Latitude	45.71202	Longitude	-111.05542
Centerpoint	Latitude	45.70616	Longitude	-111.05573
Upstream End	Latitude		Longitude	
Downstream End	Latitude		Longitude	
Centerpoint	Latitude		Longitude	
Upstream End	Latitude		Longitude	
Downstream End	Latitude		Longitude	
Centerpoint	Latitude		Longitude	

List the 12-digit Hydrologic Unit Code(s) (HUCs) in which the project area is located: 100200081203 - Lower Dry Creek

☑ **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.

Other Attachments - *(These documents are not required, but may be submitted to provide more specific details about a project or to demonstrate adequate planning and preparation; please, however, be respectful of the amount of time it will take an application reviewer to find relevant information within a document and use excerpts where appropriate; do not attach WRPs, TMDLs or other large-scale planning documents)*

- ☑ Current photos of Mandeville Creek, design typicals, and examples of habitat structures
- ☑ Letters of support
- ☐
- ☐
- ☐

Project 1 - 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?
Bozeman Trax Partners LLC.	Pedestrian path, pedestrian bridge, and riparian plantings as match. They also have already completed a wetland delineation that the project will use.	☑
Montana DNRC	Permitting support and use of DNRC managed land.	☑
		☐
		☐

Project Partner	Contributions to Project	Letter of Support Attached?
Gallatin Watershed Council	Outreach and volunteer coordination. They will also play a role in reviewing project plans and provide invaluable support on educational aspects of the project. GWC has completed designs for educational signage that will be re-purposed for this project.	☑
Sacajawea Audubon Society	Outreach and volunteer support. They also would like to contribute an educational sign that will highlight how the project is important for providing habitat for bird life in our increasingly urbanized watershed.	☑
Gallatin Conservation District	Staff and board members from GCD have toured the project site. They pledge to contribute volunteer support through their education program. They also are pursuing a potential donation to the project, funding support for riparian plantings, and/or sponsoring an educational sign.	☑
Madison Gallatin Trout Unlimited Chapter	Volunteer opportunities and project support. They have pledged funding to cover the cost of two educational signs.	☑
Gallatin Local Water Quality Authority	GLWQA has a long term water quality monitoring site within the project area. Their continued monitoring will inform the utility of this project at addressing nutrient impairments. They also monitor stream temperature, stream flow, and pH that could show water quality benefits from this project.	☑

Project 1 - Budget

Use the space below to outline your project budget.

Project Planning This includes costs for surveying, engineering, permitting, procurement, construction oversight, and overall coordination of the proposed project. This does not include things like reporting, book keeping, communications, office space, or utilities, which are all covered in the Project Administration budget.

319 Funding Request	Non-Federal Match	Other Funding*	Total Cost
$ 30,000			$ 30,000

Match Source		Secured ☑
Match Source		Secured ☐
Match Source		Secured ☐
Match Source		Secured ☐

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Landowner Agreements This includes costs for developing and managing landowner agreements. The landowner agreement(s) must verify 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. 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.

319 Funding Request	Non-Federal Match	Other Funding*	Total Cost
$ 500			$ 500

Match Source		Secured ☐
Match Source		Secured ☐
Match Source		Secured ☐
Match Source		Secured ☐

**Use this space to record any funding that will be used to support creation of the task deliverables, but will not be reported as match. The purpose of this information is to give application reviewers a clearer understanding of the total amount of funding required to complete a task.*

Project Implementation This includes costs for all materials, labor, equipment, and as-built surveys associated with implementing the plans developed under the Project Planning task. If you are requesting funding for design only, leave this task blank.

319 Funding Request	Non-Federal Match	Other Funding*	Total Cost
$ 109,000	$ 29,117		$ 138,117

Match Source	Volunteer Support from TU and Partnering Organizations	Secured	☑
Match Source	Willow and other plant materials from Montana Fish Wildlife and Parks	Secured	☑
Match Source		Secured	☐
Match Source		Secured	☐

**Use this space to record any funding that will be used to support creation of the task deliverables, but will not be reported as match. The purpose of this information is to give application reviewers a clearer understanding of the total amount of funding required to complete a task.*

Project Effectiveness Monitoring This includes costs for developing and implementing a reasonable method or set of methods for evaluating and reporting on the effectiveness of the project in achieving NPS pollution goals. It includes preparation and implementation of a monitoring plan, and preparation of a monitoring report. If the project goals include reducing sediment, nitrogen and/or phosphorus, this task will also include calculation of annual load reduction estimates. Photo-point monitoring is also a standard requirement for this task. If you are requesting funding for design only, you may either leave this task blank or request funding for plan development and pre-project monitoring.

319 Funding Request	Non-Federal Match	Other Funding*	Total Cost
$ 6,576	$ 3,459		$ 10,035

Match Source	Gallatin Local Water Quality District ($890)	Secured	☑
Match Source	Volunteer Support from Gallatin Watershed Council	Secured	☑
Match Source		Secured	☐
Match Source		Secured	☐

**Use this space to record any funding that will be used to support creation of the task deliverables, but will not be reported as match. The purpose of this information is to give application reviewers a clearer understanding of the total amount of funding required to complete a task.*

Project 1 - Project Timeline

Task Description	3Q 2023	4Q 2023	1Q 2024	2Q 2024	3Q 2024	4Q 2024	1Q 2025	2Q 2025	3Q 2025	4Q 2025	1Q 2026	2Q 2026
Field Surveys	✓	✓										
Design and Permitting		✓	✓									
Riparian Plantings			✓	✓		✓	✓	✓				
Install habitat structures					✓	✓						
Fencing						✓		✓	✓			
Design educational Signs							✓					
Install educational signs										✓		
Stakeholder site tours										✓		✓
Monitoring								✓	✓	✓		✓
Project admin	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Landowner agreements	✓	✓										
Closeout grant/final report												✓

Project 1 - Bigger Picture Benefits

Environmental Justice

Explain how your project incorporates disadvantaged community populations and priorities, Tribal and community leader engagement, or socioeconomic barriers in the context of equal protection and access to a healthy environment.

The proposed project is situated upstream of the outflow of Bozeman's wastewater treatment facility. This facility was recently upgraded and is efficient at removing nutrients before discharging wastewater into the East Gallatin River. However, as Bozeman grows it is likely that it will be more difficult to efficiently treat additional wastewater and meet their discharge requirements. Projects like the one proposed in this application would reduce upstream nutrient inputs offsetting the need to upgrade the wastewater treatment facility. This reduces the finical burden on the citizens that otherwise would need to fund upgrades to the facility through tax increases. Bozeman is already one of the most expensive places to live in Montana and keeping taxes affordable is a benefit to the community. Also, the project area is open to the pubic and will provide an outdoor escape for the community without needing to be able to afford a car/gas to access natural places. Mandeville Creek runs right through the heart of Bozeman and will provide recreation, education, and wildlife viewing opportunities that are easily accessible to the entire community.

Climate Change/Resilience

How will your project improve climate change resilience for communities, native plants, wildlife, or ecosystems?

Connecting streams to floodplains, wetland creation, and expanding riparian areas have repeatedly been cited as some of the most effective ways to mitigate the effects of climate change on communities, fish, plants, and wildlife. Restored stream, wetland, and riparian ecosystems provide improved conditions for a diversity of native plant growth which in turn creates habitats for wildlife. Reconnected floodplains store flood water that will return to the stream later in the season as cool hyporheic flow helping to moderate water temperatures downstream. The riparian area created by this project will provide shade to Mandeville Creek which will keep stream temperatures cool during warm summer months. Restored streams and wetlands will provide waterfowl habitat for resident and migratory birds. The project will significantly improve habitat for fish species sensitive to changes in water quality and elevated water temperatures all the way to the East Gallatin River. The proposed project would improve surface water and groundwater quality in Mandeville Creek, the East Gallatin River, and their associated aquifers. Removing excess nutrient inputs to these streams benefit downstream communities that use this water for domestic and recreational purposes.

Impacts to Downstream Human, Plant and Animal Communities

What sort of an impact will your project have on downstream human, plant or animal communities?

Restored streams, wetlands, riparian plant communities, and instream habitat structures will facilitate the natural reduction of excess nutrients that would otherwise impact the quality of water reaching downstream human, plant or animal communities. Additionally, reconnected floodplains store flood water that will return to the stream later in the season as cool hyporheic flow helping to moderate water temperatures downstream. Increased downstream flows also helps dilute concentrations of pollutants. The riparian area created by this project will provide shade to Mandeville Creek which will keep stream temperatures cool during warm summer months. The project will significantly improve downstream conditions for fish and amphibian species sensitive to changes in water quality and elevated water temperatures. The proposed project would improve surface water and groundwater quality in Mandeville Creek, the East Gallatin River, and their associated aquifers. Removing excess nutrient inputs to these streams benefit downstream communities that use this water for domestic and recreational purposes.

Map

Fence
Bridge
Trail
Viewing Platform
BOZEMAN TRAX PARTNERS LLC
State Land
Mandeville Creek
Habitat Structure

Lower Mandeville Creek

0 0.39 0.79 Mi

2022

Lat: 45.70616 Long: -111.05573 (Center of Project)

N

Letters of Support

Mr. Mark Oakey

Watershed Protection Section
Department of Environmental Quality
P.O. Box 200901
Helena, MT 59620-0901

Re: Lower Mandeville Creek Restoration

Dear Mr. Oakey,

Bozeman Trax Partners, LLC is proud to be a partner in the proposed restoration of Mandeville Creek. Bozeman is growing at a rapid pace and this project provides an opportunity to showcase how development can help protect and enhance sensitive lands. Therefore, we strongly support Trout Unlimited's submission of the Lower Mandeville Creek Restoration to DEQ's 319 grant program. This proposal would address nutrient impairments and restore natural processes that support stream health and improved water quality. The project would restore 1.2 miles of Mandeville Creek and turn .23 miles of the Farmers Canal into a wetland. These enhancements would not only improve water quality, but it would also create quality habitat for fish and wildlife. Additionally, the location of this project makes it a great opportunity to provide educational and recreation opportunities for the community. We look forward to assisting in the restoration of Mandeville Creek and watching this section of the creek become the habitat it once was.

Thank you for considering Trout Unlimited's Lower Mandeville Creek application.


Casey Tippens (Sep 30, 2022 12:47 EDT)

Sep 30, 2022

Letter of Support Text_Mandeville Creek

Final Audit Report 2022-09-30

Created:	2022-09-26
By:	Jackson Bruff (jacksonbruff1@gmail.com)
Status:	Signed
Transaction ID:	CBJCHBCAABAAX_WvZy_if5fq57fbeFqkpa5dEkvMLbNN

"Letter of Support Text_Mandeville Creek" History

Document created by Jackson Bruff (jacksonbruff1@gmail.com)
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2022-09-30 - 4:47:11 PM GMT

DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION

Bozeman Unit Office

GREG GIANFORTE, GOVERNOR

PHONE: (406) 586-5243
FAX: (406) 587-9726

2273 BOOT HILL COURT, SUITE 110
BOZEMAN, MT 59715

September 20, 2022

Mr. Mark Oakey
Watershed Protection Section
Department of Environmental Quality
P.O. Box 200901
Helena, MT 59620-0901

Re: Lower Mandeville Creek Restoration

Dear Mr. Oakey,

DNRC – Bozeman Unit Office is proud to be a partner in the proposed restoration of Mandeville Creek. Bozeman is growing at a rapid pace and this project provides an opportunity to show how development and sensitive lands can coexist. Therefore, we strongly support Trout Unlimited's submission of the Lower Mandeville Creek Restoration to DEQ's 319 grant program. This proposal would address nutrient impairments and restore natural processes that support stream health and improved water quality. The project would restore 1.2 miles of Mandeville Creek and turn .23 miles of the Farmers Canal into a wetland. These enhancements would not only improve water quality, but it would also create quality habitat for fish and wildlife which will benefit school trust lands. Additionally, the location of this project makes it a great opportunity to provide educational and recreation opportunities for the community.

Thank you for considering Trout Unlimited's Lower Mandeville Creek application.

Sincerely,

ERIK ENEBOE
Bozeman Unit Manager
DNRC

GALLATIN WATERSHED COUNCIL

October 4, 2022

Watershed Protection Section
Montana Department of Environmental Quality
Attn: Mark Ockey
1520 E. Sixth Avenue
Helena, MT 59620

Dear Mr. Ockey,

The Gallatin Watershed Council welcomes the opportunity to provide our support for Trout Unlimited's (TU's) proposal to improve water quality in the Lower Gallatin Watershed with support from the 319 Grant Program. The Lower Mandeville Creek Restoration proposal would address nutrient impairments and restore natural processes that support stream health and improved water quality. The project would restore 1.2 miles of Mandeville Creek and turn .23 miles of the Farmers Canal into a wetland. These enhancements would not only improve water quality, but it would also create quality habitat for fish and wildlife. Additionally, the location of this project makes it a great opportunity to provide educational and recreation opportunities for the community.

GWC developed the Watershed Restoration Plan for the Lower Gallatin Watershed and currently coordinates the Gallatin Water Collaborative, a group of over 30 local stakeholders working to unify efforts to protect, restore and enhance water resources in the Lower Gallatin Watershed. Mandeville Creek is listed as impaired for nitrogen and phosphorus and projects such as this are exactly what is needed to delist Mandeville Creek. TU's project goals are in alignment with the goals and direction of our watershed's WRP and Gallatin Water Collaborative. GWC looks forward to recruiting, training and coordinating Busy Beavers volunteers to assist with project monitoring and implementation.

We value TU's experience and knowledge in watershed conservation and commend their leadership on this important project. As the Gallatin Valley continues to grow at a rapid pace, this project provides an opportunity to show how development and sensitive lands can coexist. We urge your full support.

Respectfully,

Holly Hill

Holly Hill
Executive Director
Gallatin Watershed Council

Gallatin Local Water Quality District

215 West Mendenhall Street, Suite 300 - Bozeman, MT 59715
406-582-3168 www.glwqd.org

September 29, 2022

Mr. Mark Oakey
Watershed Protection Section
Department of Environmental Quality
P.O. Box 200901
Helena, MT 59620-0901

Re: Trout Unlimited - Lower Mandeville Creek Restoration Proposal

Dear Mr. Oakey,

The Gallatin Local Water Quality District would like to express support of the proposed restoration of Mandeville Creek by Trout Unlimited.

Mandeville Creek's upper watercourse is decidedly urban - much of it inside a pipe. Sections that are daylighted run through the Bozeman Highschool and MSU campuses, taking on City of Bozeman stormwater and the outflow of the MSU duck pond upstream of the stretch proposed for restoration. I would generally describe the Bozeman community's relationship with this stream as "out of sight, out of mind".

GLWQD and Gallatin Stream Teams have a long-term monitoring site in the proposed project area and have sampled water quality there for many years. This year, Total Nitrogen and Total Phosphorus concentrations have averaged 1.22 and 0.055 mg/l, respectively.

This project not only provides an opportunity to show how development and sensitive lands can coexist in a rapidly growing area like Bozeman, but also has the potential to restore natural processes and improve water quality in a neglected urban stream. It would create quality habitat for fish and wildlife, and educational and recreation opportunities for the community at the same time.

Thank you for considering Trout Unlimited's Lower Mandeville Creek application. Please feel free to contact me for more information regarding the monitoring history at the proposed restoration site or other sites on Mandeville Creek.

Sincerely,

Torie Haraldson

Torie Haraldson
Water Quality Specialist
Gallatin Local Water Quality District

BOZEMAN MT
Stormwater Division

Mr. Mark Oakey

Watershed Protection Section
Department of Environmental Quality
P.O. Box 200901
Helena, MT 59620-0901

Re: Lower Mandeville Creek Restoration

Dear Mark,

The City of Bozeman, Stormwater Division is an enthusiastic supporter of the proposed restoration of Mandeville Creek in the North Park development. This area of Bozeman is rapidly growing and Mandeville Creek's position on the landscape is a critical and important resource for stormwater function in the community. This waterbody is impaired and considered *high-priority* as adopted in our City of Bozeman and Montana State University Stormwater Management Plan. Based on the nexus of ecological and infrastructure function, this proposal addresses nutrient impairments and the restoration of natural processes that support stream health and improved water quality.

The project will restore over a mile of Mandeville Creek and covert the last quarter mile of the Farmer's Canal into a wetland, prior to the confluence of the two water bodies. These enhancements would not only improve water quality, but it would also create quality habitat for fish and wildlife. Additionally, the location of this project makes a compelling opportunity for education and recreation in the community. Given the overall proposal and qualification of the assembled stakeholders, we strongly support the Lower Mandeville Creek Restoration 319 Grant application to MT Department of Environmental Quality by Trout Unlimited.

Thank you,

Russ Smith, PWS
Project Coordinator
Stormwater Division
City of Bozeman

GALLATIN CONSERVATION DISTRICT

Est. 1949
Conservation
Development
Self Government

Mr. Mark Oakey
Watershed Protection Section
Department of Environmental Quality
P.O. Box 200901
Helena, MT 59620-0901

9-26-2022

Re: Lower Mandeville Creek Restoration

Dear Mr. Oakey,

Gallatin Conservation District is proud to be a partner in the proposed restoration of Mandeville Creek. Bozeman is growing at a rapid pace and this project provides an opportunity to showcase how development and conservation groups can work together to help protect and enhance sensitive lands. Therefore, we strongly support Trout Unlimited's submission of the Lower Mandeville Creek Restoration to DEQ's 319 grant program. This proposal would address nutrient impairments and restore natural processes that support stream health and improved water quality. The project would restore 1.2 miles of Mandeville Creek and turn .23 miles of the Farmers Canal into a wetland. These enhancements would not only improve water quality, but it would also create quality habitat for fish and wildlife. Additionally, the location of this project makes it a great opportunity to provide educational and recreation opportunities for the community.

Thank you for considering Trout Unlimited's Lower Mandeville Creek application.

Sincerely,

Loren Blanksma

Loren Blanksma
Board Chairman
Gallatin Conservation District
120 S 5th Street, B104
Manhattan, MT 59741

PO Box 569
Manhattan, MT 59741

406-282-4350
www.gallatincd.org

Actively working to conserve, protect and restore
southwest Montana's coldwater fisheries and their watersheds since 1968.

September 19th, 2022

Mr. Mark Okey
Watershed Protection Section
Department of Environmental Quality
PO Box 200901
Helena, MT 59620-0901

Re: Lower Mandeville Creek Restoration

Dear Mr. Oakey,

Madison-Gallatin Trout Unlimited (MGTU) is proud to be a partner in the proposed restoration of Mandeville Creek. Bozeman is growing at a rapid pace and this project provides an opportunity to show how development and sensitive lands can coexist. Therefore, we strongly support Trout Unlimited's submission of the Lower Mandeville Creek Restoration to DEQ's 319 grant program. This proposal would address nutrient impairments and restore natural processes that support stream health and improved water quality. The project would restore 1.2 miles of Mandeville Creek and turn .23 miles of the Farmers Canal into a wetland. These enhancements would not only improve water quality, but it would also create quality habitat for fish and wildlife. Additionally, the location of this project makes it a great opportunity to provide educational and recreation opportunities for the community. We support this project, and we hope you will too!

Thank you for considering Trout Unlimited's Lower Mandeville Creek application.

Sincerely,

Sarah Clark

Sarah Clark, Board President
Madison-Gallatin Trout Unlimited

Sacajawea Audubon Society

PO Box 1711 • Bozeman, Montana 59771-1711
Sacajaweaaudubon.org

Mr. Mark Ockey
Watershed Protection Section
Department of Environmental Quality
P.O. Box 200901
Helena, MT 59620-0901

October 5, 2022

Re: Lower Mandeville Creek Restoration

Dear Mr. Ockey,

Sacajawea Audubon Society (SAS) is proud to be a partner in the proposed restoration of Mandeville Creek.

SAS is a non-profit grassroots membership organization, serving the northern Greater Yellowstone Ecosystem of Montana since 1967. We currently are approaching 1000 members and are a chapter affiliation of the National Audubon Society. SAS builds on an interest in birds to promote the conservation of our natural environment through enjoyment, education and action.

SAS has grown significantly over the past decade through strong leadership and an engaged membership, allowing us to expand our conservation initiatives, field trips, and social and educational opportunities.

In 2018, SAS implemented our Wetland Preservation Project (WPP) to help accomplish SAS's mission of protecting and restoring increasingly rare wetland habitats in accessible urban locations, which will allow for ongoing education and enjoyment for generations to come. Our first initiative has been to preserve and restore the 40 acres of wetland in east Bozeman, now known as the Indreland Audubon Wetland Preserve (IAWP), now under SAS ownership. That continuing project was/is simply the first undertaking of the WPP.

The proposed Mandeville Creek Restoration before you fits soundly within our goal of serving as advocates for preservation and restoration of all wetlands within the Gallatin Watershed.

Since 2016 SAS has been very concerned and involved with the Mandeville Creek property under consideration. SAS went to bat to protect the pair of nesting Bald Eagles that had nested in the large willow tree on the property for decades. As you may know, the eagles had successfully nested there for years, producing many fledglings. It is our understanding that two years ago the Bald Eagle pair died from poisoning. Fortunately the weakened young in the nest were rescued and reared. Those Bald Eagles and several other raptors have succumbed to poisoning at the site. Hopefully having the stream and wetland functions restored and more awareness brought to the site will benefit all wildlife at this location.

Bozeman is growing at a rapid pace and this project provides an opportunity to showcase how development and conservation groups can work together to help protect and enhance sensitive lands. Therefore, we strongly support Trout Unlimited's submission of the Lower Mandeville Creek Restoration to DEQ's 319-grant program. This proposal would address nutrient impairments and restore natural processes that support stream health and improved water quality. The project would restore 1.2 miles of Mandeville Creek and turn .23 miles of the Farmers Canal into a wetland. These enhancements would not only improve water quality, but it would also create quality habitat for fish and wildlife. Additionally, the location of this project makes it a great opportunity to provide educational and recreation opportunities for the community.

On behalf of the Board of Directors, thank you for considering Trout Unlimited's Lower Mandeville Creek application.

Respectfully submitted,

Christopher J. Nixon

Chris Nixon
President, Sacajawea Audubon Society
406-544-4901
pres@sacajaweaaudubon.org

SIMMS

October 5, 2022

Mr. Mark Oakey
Watershed Protection Section
Department of Environmental Quality
P.O. Box 200901
Helena, MT 59620-0901

Re: Lower Mandeville Creek Restoration

Dear Mr. Oakey,

Simms Fishing Products is proud to be a partner in the proposed restoration of Mandeville Creek. As a major employer in the Gallatin Valley, we recognize that Bozeman is growing at a rapid pace and this project provides an opportunity to show how development and sensitive lands can coexist. Therefore, we strongly support Trout Unlimited's submission of the Lower Mandeville Creek Restoration to DEQ's 319 grant program.

This proposal would address nutrient impairments and restore natural processes that support stream health and improved water quality. The project would restore 1.2 miles of Mandeville Creek and turn .23 miles of the Farmers Canal into a wetland. These enhancements would not only improve water quality, but they would also create quality habitat for fish and wildlife.

We also appreciate that the location of this project makes it a great opportunity to provide educational and recreation opportunities for our employees, their families, and the community.

Thank you for considering Trout Unlimited's Lower Mandeville Creek application.

Sincerely,

Diane Bristol

Diane Bristol
Vice President, Culture & Community

PO Box 3645 | Bozeman, Montana 59772 | 177 Garden Drive | Bozeman, Montana 59718 Telephone 406 585 3557 | E-mail info@simmsfishing.com | www.simmsfishing.com

October 6, 2022

Mark Oakey
Watershed Protection Section
Department of Environmental Quality
P.O. Box 200901
Helena, MT 59620-0901

Re: Lower Mandeville Creek Restoration

Dear Mr. Oakey,

Montana Fish, Wildlife & Parks (FWP) is proud to be a partner in the proposed restoration of Mandeville Creek. Bozeman is rapidly growing, and the proposed project provides an opportunity to show how development and sensitive lands can coexist. The project would restore 1.2 miles of Mandeville Creek and convert 0.2 miles of the Farmers Canal into a wetland. Therefore, we strongly support Trout Unlimited's submission of the Lower Mandeville Creek Restoration to DEQ's 319 grant program. The proposal would address nutrient impairments and restore natural processes that support stream integrity and improved water quality without interfering with surrounding development. The enhancements would not only improve water quality but also improve aquatic habitats, which is especially important considering the proposed restoration will also likely improve the downstream trout fishery in the East Gallatin River. Additionally, the location of this project could serve as a great educational and recreational opportunity given its proximity to Bozeman.

Thank you for considering Trout Unlimited's Lower Mandeville Creek application.

For further questions or concerns, please reach out to the following FWP personnel: Mike Duncan, Fish Biologist (phone: 406-577-7871, email: mike.duncan@mt.gov)

Sincerely,

Marina Yoshioka
Region 3 Supervisor

Supplemental Attachment 1

Photos and Typicals

Mandeville Creek Photos

Figure 1: Mandeville Creek at the downstream extent of the project area. This culvert has been removed as part of the abandonment of Redwing Road.

Figure 2: Mandeville Creek in early spring.

Figure 3: Mandeville Creek during spring. Very little woody riparian vegetation is present.

Figure 4: stakeholders tour Mandeville Creek during spring.

Examples of Habitat Structures

Figure 5: beaver dam analog. These structurers simulate beaver dams; slow down and spread-out water which improves nutrient uptake and creates fish and wildlife habitat.

Figure 6: Post assisted log structures encourage floodplain connection, create scour pools, and capture sediment. PALS can be attached to the bank or built in the center of the channel to increase habitat complexity and floodplain connection.

Habitat Structure Designs

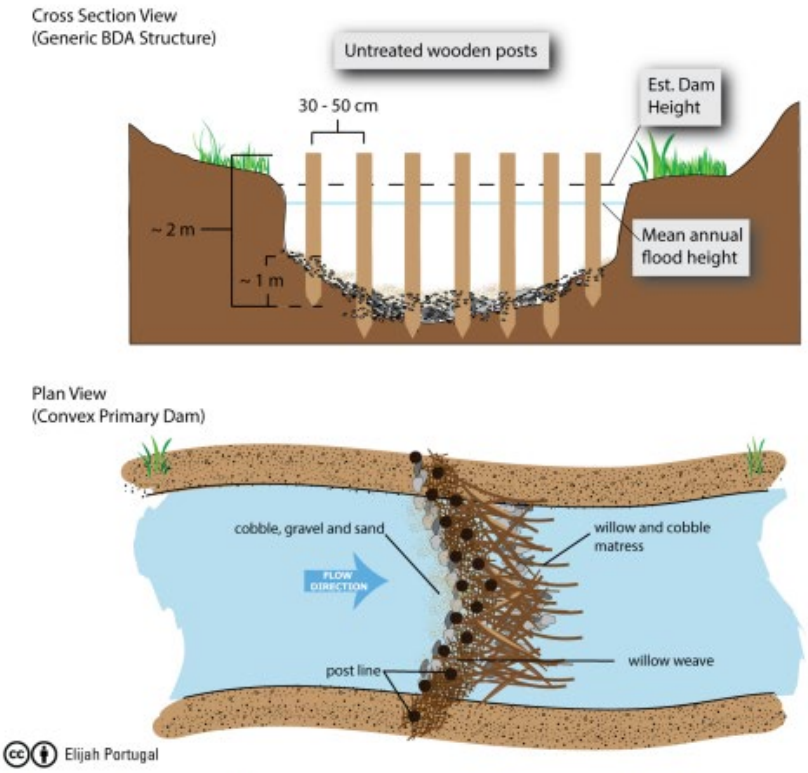

Figure 21 – Conceptual illustration of BDAs incorporating a downstream "mattress" and double post line. In practice BDAs can be built with or without posts and using a range of natural materials. Illustration credit: Elijah Portugal.

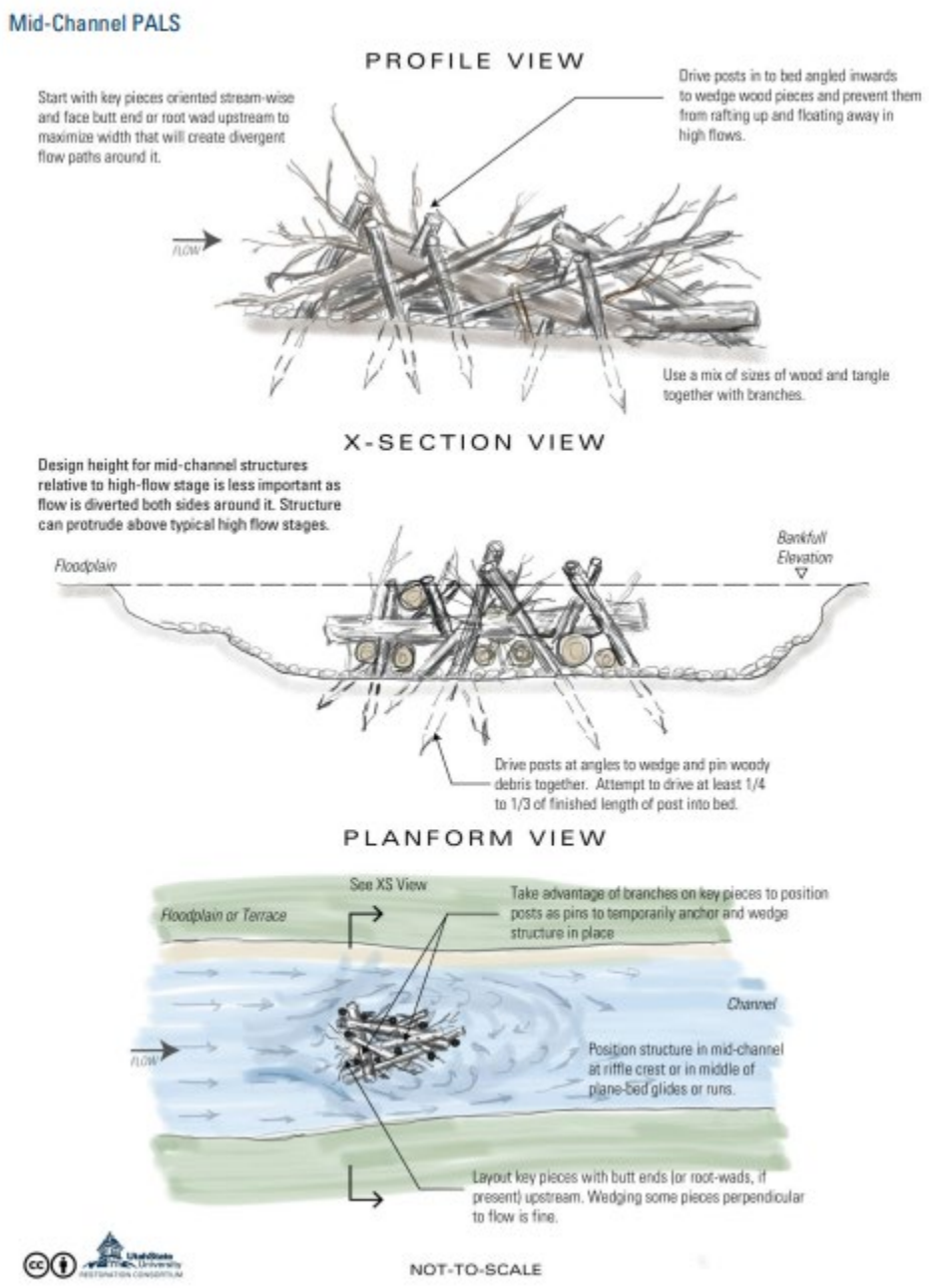

Figure 25 – Typical schematics of a mid-channel PALS.

Designs were borrowed from:

Low-tech Process Based Restoration of Riverscapes Design Manual: Wheaton J.M., Bennett S.N., Bouwes, N., Maestas J.D. and Shahverdian S.M. (Editors). 2019. Low-Tech ProcessBased Restoration of Riverscapes: Design Manual. Version 1.0. Utah State University Restoration Consortium. Logan, UT. Available at: http://lowtechpbr.restoration.usu.edu/manual