2021

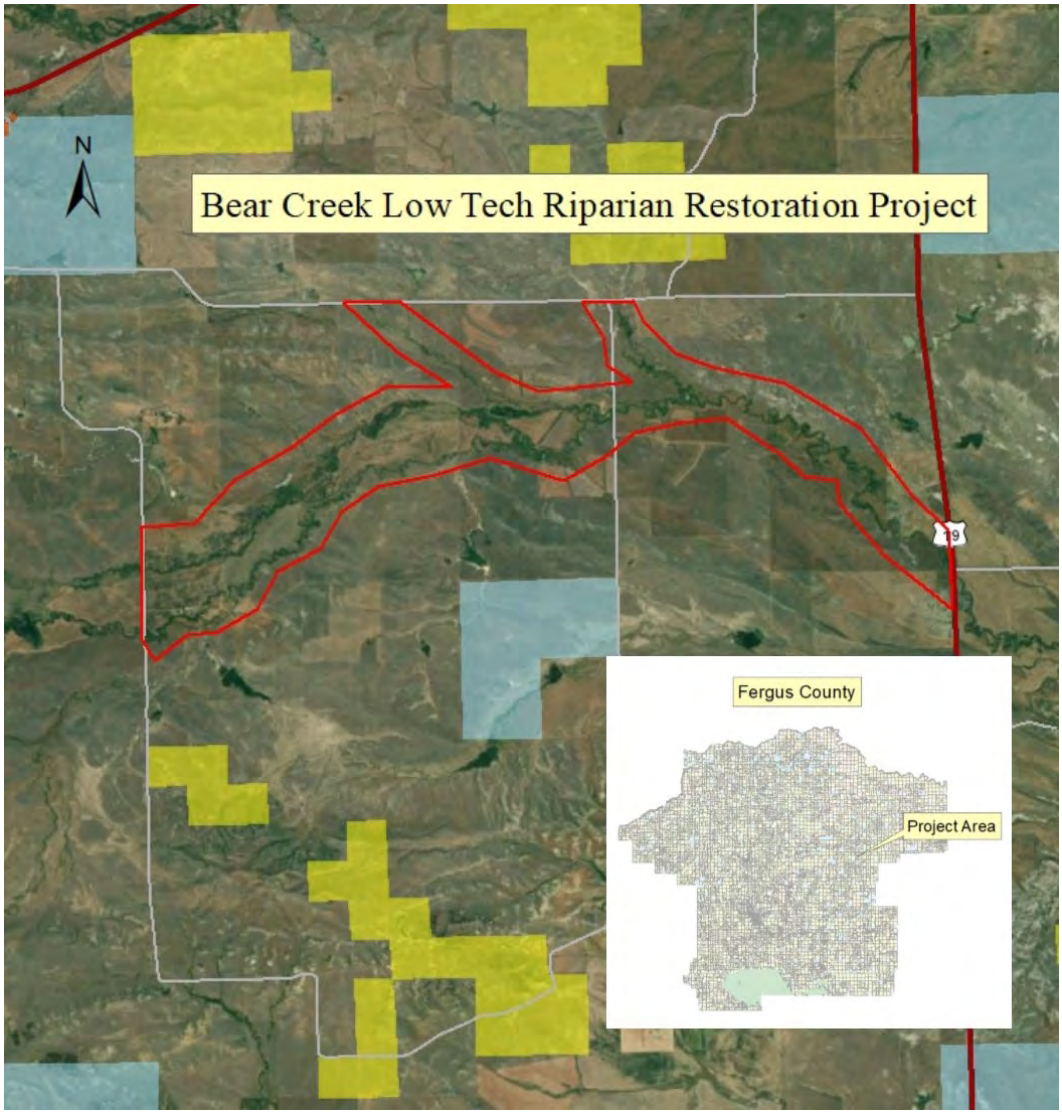
Bear Creek Low-Tech Riparian Restoration Project

2021 MFC FERGUS COUNTY TAGETED IMPLEMENTATION PLAN

MICHAEL LUCAS – NRCS - WINNETT, MT

Goal Statement

The goal of this project is to assist private landowners at the head of Bear Creek and within the identified map boundary with the restoration of degraded riparian vegetation and to restore hydrology using low tech riparian restoration methods as set forth in the Low-Tech Processed-Based Restoration of Riverscapes: Design Manual (Utah State University Restoration Consortium). This TIP addresses Degraded Plant Condition - Inadequate Structure and Composition in riparian areas. This is a resource concern that has been identified in the Fergus County Long Range Plan.



Background

Central Montana is home to many small intermittent and ephemeral streams that have seen degradation from historic agricultural practices. A history of over grazing has led to loss of woody vegetation and downcutting. Removal of riparian vegetation and trampling by livestock has contributed to changes in hydrology. Furthermore, removal of beavers as ecosystem engineers has reduced the

ability for these streams to repair and restore their natural functions. Historically, beavers were present in both mountain and prairie streams and played an important role in maintaining a streams ability to access the flood plain. Woody structures created by beaver allow water to spread and slow discharge, raise water tables and improve a sites ability to grow woody riparian vegetation. The combination of beaver removal and loss of vegetation through unmanaged grazing has resulted in entrenched streams that experience flashy runoff events. These flashy runoff events further compound erosion and entrenchment of these streams. Bear Creek is an example of this described degradation and shows a lack of woody vegetation and entrenchment. Relic woody species along the creek indicate that the stream has the potential to grow them again.

It has been found that low-tech riparian restoration methods, that incorporate small woody structures, mimic beaver activity and are effective at slowing runoff. Over time, these structures allow stream channels to reconnect with historic floodplains. These methods include Beaver Dam Analogs (BDAs) and Post Assisted Log Structures (PALs). These techniques have been proven to be a low-cost alternative to more intensive and ground disturbing bank restructuring methods that might include excavation, dirt work and extensive engineering inputs.

Example of beaver dam analog

In Central and Eastern Montana, riparian areas provide brood rearing habitat for sage grouse. Sage grouse is a local species of concern and this project area occurs with sage grouse core habitat area.

The Natural Resources Conservation Service (NRCS), in collaboration with the Local Working Group has identified riparian areas and their degraded plant condition, structure and composition as a top resource concern in Fergus County. Landowners in the project area are invested in seeing restoration of degrade riparian areas and regeneration of willows and other woody species along Bear Creek. This Targeted Implementation Plan (TIP) was developed in response to the recognition of the need to restore and improve the resiliency of our riparian areas for habitat, water quality, flood control and improved forage production. This TIP's goal is to restore hydrologic function and wildlife habitat within the project boundary.

Problem Statement

Many small streams in Central and Eastern Montana including Bear Creek are experiencing some level of degradation due to historic overuse by livestock. The result has been degraded plant condition, structure and composition, loss of woody vegetation, entrenchment and general reductions in habitat quality for sage grouse and other species. "Green zones" are mesic and riparian areas that hold moisture during late summer. These green zones are important brood rearing habitat for sage grouse. Entrenchment of prairie streams has created a disconnect with the stream channel and flood plain and has led to a reduction in green zones and riparian woody vegetation. The "Green Period" is the duration of which moisture holding soils maintain greener and more palatable vegetation. This Green Period is also reduced with this disconnect of the floodplain, further decreasing forage and habitat quality. Loss of stabilizing riparian vegetation has in turn, created unstable banks and unnaturally high erosion of banks and stream beds. This has affected overall hydrology and water quality in terms of sediment loading. Loss of woody species regeneration and woody debris into these streams through beaver activity increases flashy runoff events that further compound entrenchment of these prairie streams.

Bear Creek is a prime example of a stream described above. Historic overuse along the creek has removed woody vegetation and decreased bank stability. It is intrenched along most of this stretch. Currently, producers along this stretch have increased management of livestock in the riparian areas and exclude cattle from the creek in most years. Management goals of these producers has been habitat driven rather than livestock driven so moving forward, livestock use on this stretch will be managed to restore woody species.

The primary resource concern for this Targeted Implementation Plan is Degraded Plant Condition - Inadequate Structure and Composition. This stretch of stream is lacking proper woody riparian vegetation, including willows. This resource concern has been identified in the Fergus County Long Range Plan.

The secondary resource concerns related to degraded riparian areas are sediment in surface waters and inadequate habitat for fish and wildlife - terrestrial wildlife habitat for sage grouse brood rearing habitat. These resource concerns have also been identified in the Fergus County Long Range Plan.

Goal and Objectives

This project will enhance degraded plant structure and composition along 33,000 ft of Bear Creek and improve riparian function within the TIP boundary. This project will address privately owned lands within area of work. Goals of this NRCS project will be in conjunction with landowner concerns and objectives and are the following:

1. Restore woody vegetation along the headwaters of Bear Creek and tributaries.
   a. Complete 1000 feet of low-tech riparian restoration practices including BDAs and PALs over an estimated 3-year period, leveraging partnership contributions, along with NRCS funding.

2. Increase “green zone” for sage grouse brood rearing habitat by reconnecting stream channels with flood plain.

a. Develop upland wildlife management plans for each program participant with consideration for sage grouse habitat needs.

3. Reduce flood risks downstream by improving riparian function and delaying runoff.

a. Apply BDAs and PALS to slow runoff through in-stream wood accumulation allow for access to floodplain.

4. Incorporate photo monitoring plan to determine effects on woody regeneration, riparian health and wildlife habitat.

a. Landowners provide vegetation photo monitoring data.

b. Partnerships that include FWP to monitor aquatic species impacts.

Alternatives

Alternative 1: No action will result in a failure to address the identified resource concerns leaving riparian areas in degraded condition. Degraded plant condition, structure and composition and Riparian health will continue to be poor and there will be no change in flashy flooding events downstream and within TIP boundary.

Alternative 2: (Preferred) Implement a small suite of practices to address the identified resource concerns. Restoration and management of rare or declining habitats (643) will be the primary practices employed to address degraded plant condition, structure and composition, terrestrial habitat for sage grouse, sediment in surface waters. Upland Wildlife Management (645) will be a supporting practice, used to ensure woody regeneration and sage grouse habitat requirements are being met. Vegetation photo monitoring will be used under this practice to evaluate success.

Alternatives will be analyzed in compliance with the National Environmental Policy Act (NEPA). All practices chosen for implementation will be evaluated regarding NEPA requirements. Special consideration will be given for practices effecting species of concern, such as grassland songbirds or Sage Grouse, in order to meet all federal regulations and NRCS policy requirements. Any cultural resources present will be identified and avoided during planning and implementation of practices involving federal action.

Proposed Solutions and Actions

The solution to addressing identified resource concerns is by taking a comprehensive approach, which engages private landowners, leverages partnerships, and utilizes a productive suite of practices to address the resource concerns to achieve desirable results. This approach gives us the most potential of achieving a positive, measurable outcome. We will utilize the habitat work that has been and will done by two landowners at the headwaters of Bear Creek to address degraded plant structure and composition as well as sage grouse brood habitat. With the help of our listed partners, NRCS will

continue outreach efforts to generate further interest and awareness of the program and hopefully move downstream in future TIPs. We will also take advantage of individuals who have previously expressed interest in completing work on their properties. Specific actions will depend on the treatment recommendation by technical experts, based on the field conditions, which will be outlined in the conservation plan and site-specific management plan.

These practices will include:

Restoration and management of rare or declining habitats (643) Scenario #52 will be used to install PALs and BDAs in stream to create instream structure and eventually reconnect flood plain and stream channel. This should eventually create habitat for riparian woody vegetation and increase "green zone". Individual structures will be from 10-12 ft each on this small stream. Individuals will likely install 10 of these structures per year over three years.

Upland Wildlife Habitat Management (645) will be used to ensure habitat needs for sage grouse are being met through vegetation monitoring. NRCS will not be providing cost assistance with these applications through this TIP. This is an opportunity for landowners and identified partners to provide their contributions to the implementation of this project.

The following Table A provides specific targeted acreages for individual practices implemented over a 3-year period, as previously defined by the Fergus County Long Range Plan:

Table A. NRCS Deliverable Goals

Activity	2021	2022	2023	total
Restoration and management of rare or declining habitats	720ft	0ft	280ft	1,000 feet
Upland Wildlife Habitat Management (individual contribution)				

With these practices included, NRCS would be maximizing what the landowners within this TIP boundary can implement based on individual's labor constraints (10 structures per year for three years). This treatment in coordination with individual's contribution to vegetation monitoring through Upland Wildlife Habitat Management, will address the primary resource concern of brood rearing habitat for sage grouse within the entire TIP boundary. The project includes 33,000 feet of Bear Creek and over the span of three years, around 80 structures will be installed. Some of these should persist over several years and some will need to be replaced annually as flood events wash them out. While more structures are often better when using these low-tech restoration techniques, labor constraints are limiting and 80 structures will provide measurable impacts on portions of this 33,000 feet.

Installation of BDAs during 2019 workshop on Bear Creek.

Partnerships

Partners to this project, identified at this time include:

- USDA-Natural Resources Conservation Service (technical and financial assistance)
- Utah State University Restoration Consortium (planning and design TA during 2019 workshop)
- Montana Fish Wildlife and Parks (aquatic species monitoring)
- Fergus County Conservation District (310 permits)
- US Army Corps of Engineers (404 permits)

This project follows on the heels of a Low-Tech Riparian Restoration Workshop that was held on the properties within the project boundary in August of 2019. Utah State assisted with technical assistance in demonstrating application of BDAs and PALs. Landowners involved have expressed interest in continuing implementation of these structures in Bear Creek. Appropriate permits were issued by Fergus Conservation District and US Army Corps of Engineers. Montana Fish Wildlife and Parks has tentatively agreed to contribute monitoring of aquatic wildlife to determine impacts to prairie fish species.

Implementation

This project will occur over a three-year period, beginning in 2021. This TIP is for three years and will request funding for only years 1 and 3. Contracts will be three-years. It is estimated that landowners will be able to install 10 structures (10-12 linear feet each) every year for three years. Conservation planning has been done, and will continue to be done, by the NRCS field office staff, along with cooperating partners. Partner planning will be utilized, providing that recommendations meet NRCS standards and specifications. Implementation of these structures will occur during low flows in summer. Impacts to fish and invertebrates will be monitored by FWP fisheries biologists before, during and after structures are installed.

Participants will be selected from applications submitted during the open sign up period. There are currently two adjacent producers who have verbally agreed to pursue applications in the first year of funding for this project. This project will have a sign-up period and it will be in the first year of the project. NRCS outreach, referrals from partners, and producer word of mouth is expected generate interest for applications in subsequent years of funding.

NRCS Estimated Budget

Contributions	2021	2022	2023	total
EQIP FA	$19,800	$0	$7,700	$27,500.00

Activity	2021	2022	2023	Total activity	Cost share	Total Cost
Restoration and management of rare or declining habitats	720ft	0ft	280ft	1,000 ft	$27.50/ft	$27,500.00
Upland Wildlife Habitat Management (individual contribution)	0	0	0	0	0	0

Progress Evaluation and Monitoring

The effectiveness and extent of completed practices will be evaluated annually by NRCS and partners. Inventories will be completed before and after each treatment to document improvements including riparian condition, habitat value, wildlife mitigation measures, photo documentation, and producer expenditure documentation. Each project will be overseen by field office staff with certifications being made upon completion, contingent on practices meeting NRCS standards and specifications. Progress will be recorded in Conservation Desktop, or other appropriate databases. Monitoring will be conducted periodically to ensure outcome longevity and address any unforeseen complications that may arise due to natural disturbances. Applicants have agreed to continue vegetation monitoring after contracts have been completed.

Outcomes

The outcomes of this TIP are outlined below. Again, this is a low-cost method of restoration that over time, should help to reconnect the stream with the historic floodplain. It should increase woody establishment by increasing soil moisture adjacent the stream and raise the water table. This should provide beneficial impacts to sage grouse brood rearing habitat and reduce flood risk and flashy runoff events downstream.

1. Restore woody vegetation along the headwaters of Bear Creek and tributaries.

    a. Complete 1000 feet of low-tech riparian restoration practices including BDAs and PALs over an estimated 3-year period, leveraging partnership contributions, along with NRCS funding.

2. Increase "green zone" for sage grouse brood rearing habitat by reconnecting stream channels with flood plain.

    a. Develop upland wildlife management plans for each program participant with consideration for sage grouse habitat needs.

3. Reduce flood risks downstream by improving riparian function and delaying runoff.

    a. Apply BDAs and PALS to slow runoff through in-stream wood

    accumulation allow for access to floodplain.

4. Incorporate photo monitoring plan to determine effects on woody regeneration, riparian

    health and wildlife habitat.

    a. Landowners provide vegetation photo monitoring data.

    b. Partnerships that include FWP to monitor aquatic species impacts.

Ranking

These additional ranking questions will allow the field office to further prioritize the pool of applications to ensure the proposed projects are meeting the project's stated objectives:

1. Are the acres proposed for treatment within the stream channel of Bear Creek?
2. Are the acres proposed for treatment with the stream channel of a primary tributary of Bear Creek?
3. Will the landowner implement vegetation monitoring for woody regeneration within riparian areas?
4. Does the landowner currently or do they agree to change grazing season of use on riparian pastures?
5. Are there currently remnant woody species present on site or is there evidence of past woody establishment on the site proposed for treatment?