

**Garfield County Targeted Implementation Plan 2022:**  
**Increasing Stock Density & Changing Animal Behavior**  
**to Address Degraded Plant Condition**

**Background**

The Garfield County Conservation District (GCCD) and Local Work Group (LWG) have identified 'Degraded Plant Condition' as a primary resource concern within Garfield County, Montana. The Long Range Plan (LRP) indicates that this resource concern is tied to historic grazing practices, specifically low stock density and season-long grazing. In order to address this concern, managed grazing is needed to increase stock density (stock density = animal weight/acre), to provide adequate post-grazing recovery periods, to reduce bare ground, and to facilitate a change in animal behavior (see LRP – Section IV).

Most of the native range pastures in Garfield County are grazed with low stock density (LSD), some for 90 days or longer. This LSD and a long grazing period results in animals returning to graze the most palatable and nutritious plants repeatedly.

Repeated grazing of these desirable plants without opportunity for recovery weakens the plants and leads to a reduction in root reserves (USDA-NRCS, 2016). This reduces the desirable species' ability to compete for nutrients, water and sunlight with the less desirable and less productive plants, such as increasers, invasive species and noxious weeds. Plants stressed by repeated grazing exhibit significantly less resilience to environmental pressures such as drought. Over time repeated grazing of desirable plants without adequate recovery shifts plant community composition to a state where the sites are dominated by non-desirable species. This shift significantly reduces ecological function of the rangeland. Ground cover may become inadequate to armor the soil surface, water infiltration slows, thus increasing runoff and evaporation, soil water holding capacity is reduced, and nutrient cycling slows among many other negative impacts.



*Figure 1. Overflow site*

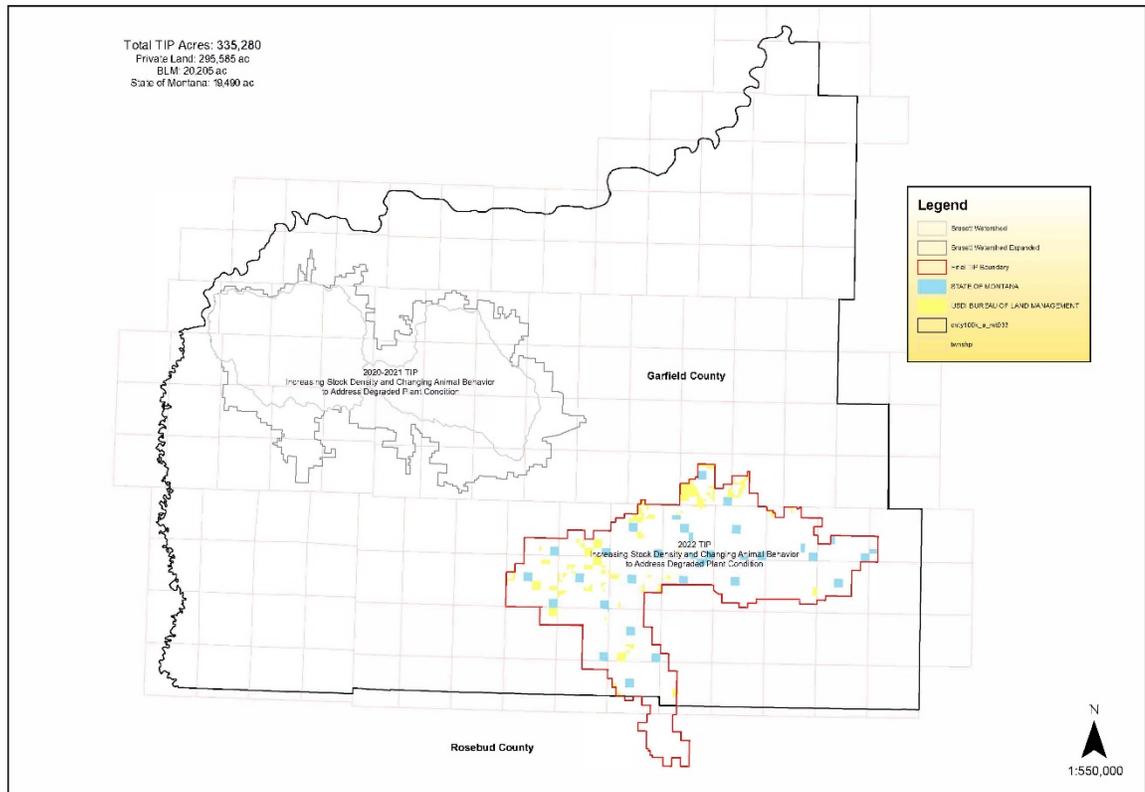
Mesic areas are preferred sites by livestock due to additional moisture that prolongs forage nutritional quality into the drier periods of the grazing season. Animals tend to graze these mesic areas, areas of easy access, and areas around water sources, the hardest and repeatedly. These areas show the

greatest degradation. Healthy mesic areas are of critical importance to wildlife, especially sage grouse, as well as to the integrity of the landscape and biomass production on the rangeland.

A significant factor preventing change is the cost of infrastructure necessary to change animal behavior. Splitting a pasture and/or combining herds in order to increase stock density and change animal behavior usually requires developing additional or larger water sites and cross fencing.

Interesting, pertinent, and on-the-ground educational/demonstrational opportunities are also needed. Field tours, workshops, and rancher-to-rancher gatherings are all options being considered.

Although the issue of degraded plant condition from LSD and animal behavior is widespread in the county, this Targeted Implementation Plan (TIP) will be focused in the Fifth Code Watershed 10040106040 and portions of 10040106040 in the Little Dry watershed in the Cohagen area. This decision is based on interest as measured by EQIP applications and attendance at county LWG meeting on January 7, 2021 (Figure 2). The TIP boundaries have been expanded to include entire land units by producer to allow for planning on entire grazing units. There are thirty-one operators within the TIP area.



**Total acres – 321,172**  
**Private land - 282,757 acres**  
**BLM – 19,565 acres State Land – 18,850 acres**

Figure 2. Target Area map for TIP participation (2019).

### ***Purpose and Need***

The goal of this TIP is to improve plant condition on native range paddocks. This plan is timely, as many of the plant communities on degraded rangeland have transitioned from higher state plant communities (Figure 3, Box 2) to lower state plant communities (Figure 3, Boxes 3 & 4). Therefore, it is critical to address this resource concern now before plant communities transition beyond the critical threshold where significant inputs will be needed to improve the range due to the exhaustion of basic ecological function of the sites. (Figure 3).

Plant communities are dynamic and transitions in composition occur along a gradient that is not linear. In the diagram below, smaller boxes within a larger box indicate that these communities will normally shift among themselves with slight variations in precipitation and other disturbances. Moving outside the larger grey box indicates the community has crossed a threshold (heavier line) and will require intensive treatment to return to community 1 or 2. Dotted lines indicate a need for higher inputs (seeding, temporary fence, temporary water, high stock density (HSD) and additional time for successful plant community transition. (Figure 3)

**Plant Communities and Transitional Pathways (diagram)**

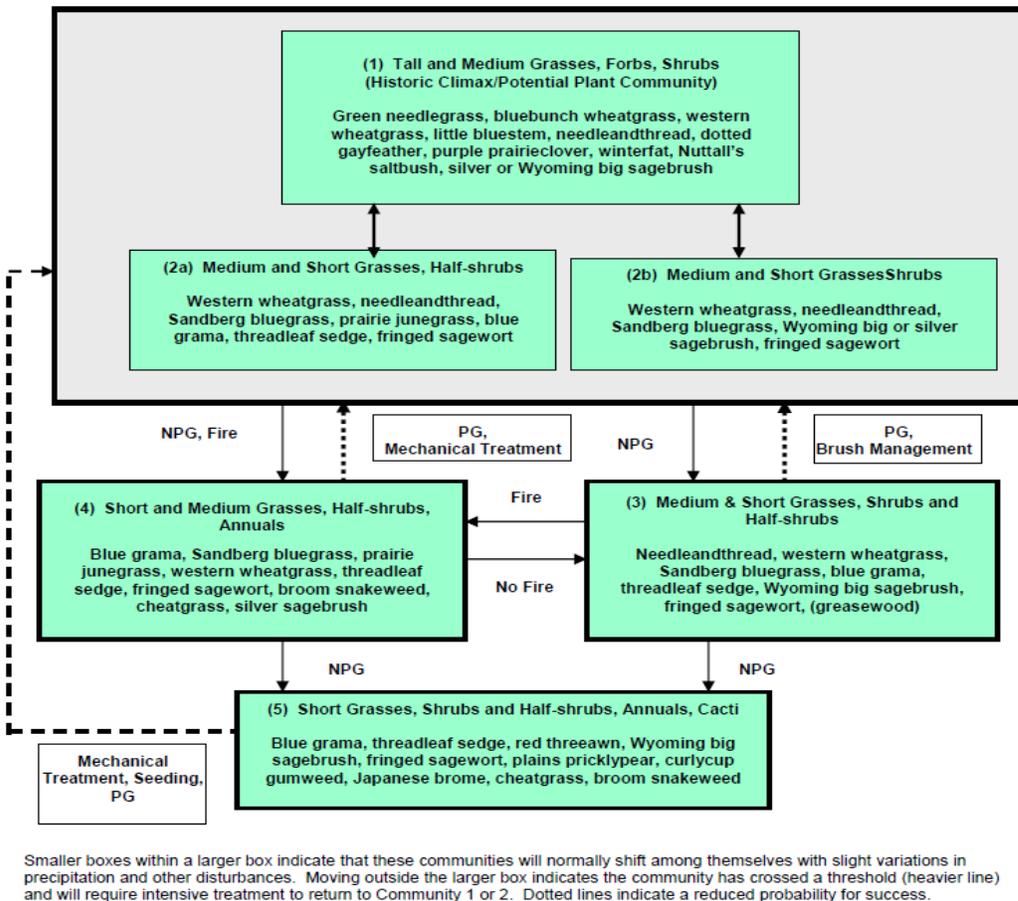


Figure 3. Example of Ecological Site Description (NRCS Field Office Technical Guide, Section II)

**Goals and Objectives (Desired Future Outcome)**

The desired outcome for the TIP is a higher plant community state on the rangeland in the project areas indicated by increased plant diversity, increased desirable plant species, less bare ground, fewer weeds, and higher functioning hydrologic, nutrient and carbon cycles.

**Objective 1** – Provide at least three educational opportunities on new concepts and application of grazing management that can reverse the downward trend of plant communities on rangeland. For example, on-farm tours that demonstrate the advantages of, uses for, and materials available for electric power fences.

**Objective 2** – Within the next 5 years, implement prescribed grazing including modifying stock densities and animal behavior on pastures, totaling 44,000 acres, and involving at least 22 participants. The long-term outcomes will be improved plant communities and a reduction in bare ground.

**Objective 3** – Increase stock density to change animal behavior that will result in the reduction of patch grazing and increase the overall harvest efficiency by a projected 20%. Patch grazing will be delineated on maps at the beginning and end of the contract. The increase in harvest efficiency and an improved plant community will result in improved sustainability and economic stability.



Figure 4 – Patch Grazing

#### **Proposed Alternatives and Actions**

**Alternative 1:** is prescribed grazing through increased stock density, accomplished by decreasing pasture size and/or increasing herd size (preferably both). Facilitating practices will include livestock water development and fences.

**Alternative 2:** is prescribed grazing through increased stock density, accomplished by decreasing pasture size and/or increasing herd size (preferably both). Facilitating practices will include livestock water development, fences, beaver dam analogs, and seeding cropland to grass for grazing. Partners have expressed interest in beaver dam analogs and seeding cropland to grass for grazing.

**Alternative 3:** is no action.

Our **selected alternative** is prescribed grazing through increased stock density, accomplished by decreasing pasture size and/or increasing herd size (preferably both). Range inventories will be conducted to determine appropriate stocking rates. Facilitating practices will include livestock water development and fences. The proposed alternative will not only benefit plant communities by reducing grazing periods, increasing rest and recovery periods, and allowing for a change in season of use, but it will also result in what is known as the herd effect, or changes in animal behavior related to animal selectivity while foraging (Savory, 1999). As stock density increases, grazing animals change from spot grazing and repeated grazing of preferred plants following regrowth, to more uniform grazing and utilization of all forage plants found within a pasture (Undersander et al., 2002). Consequently, these animals no longer over-utilize certain desirable plants and can even be used to target areas that require intensive grazing (Launchbaugh, 2006). The result of these behavioral changes along with adequate plant rest and recovery can result in significant improvements to plant communities and reduction in bare ground as well as increasing overall forage production (USDA-NRCS, 2016).

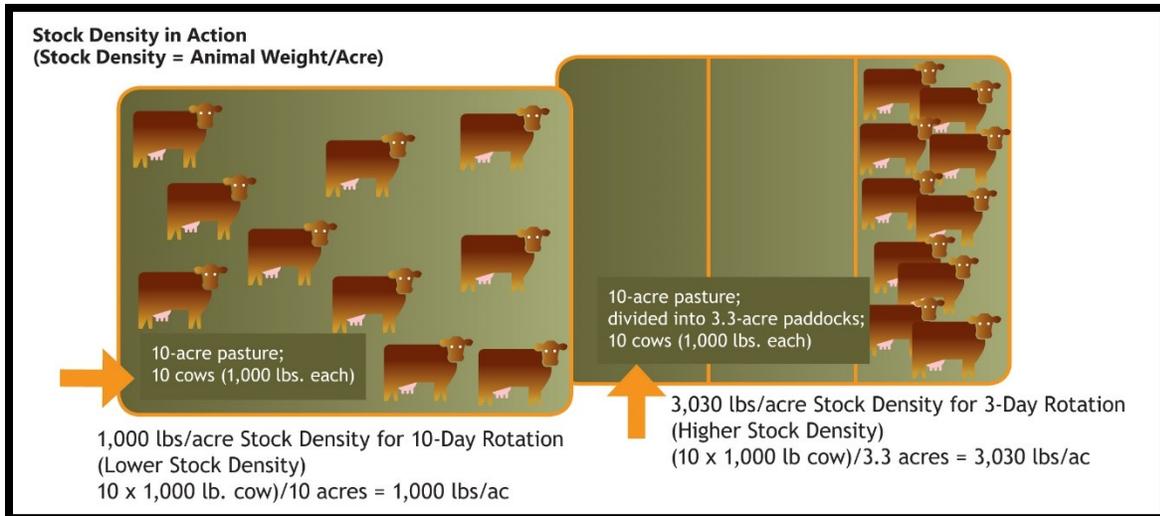


Figure 5 – Stock Density in Action

The proposed alternative may need to be facilitated through additional practices, including strategic water developments and cross-fencing, which allow for existing large grazing units to be split into smaller grazing units and then managed more intensely. These practices are included in the TIP.

The proposed alternative and practices represent a significant departure from ‘whole ranch planning,’ with a focus on ‘summer’ season-long use grazing units only. Focused Conservation will have a greater impact by reducing costs per participant and allowing for a larger number of individuals to participate. Our experience in the past has been that producers aren’t always ready for ‘whole ranch planning,’ but are receptive to starting with one grazing unit, then carrying those concepts and successes to the rest of the ranch.

Transfer of knowledge will be facilitated through education and the planning process (i.e. development of a grazing plan). This is supported by previous Field Office experience. It has been observed that EQIP participants, after dividing their grazing units, are often impressed by how much easier it is to move the livestock through the smaller units. Participants have also stated they observe better grazing utilization with the higher stock densities in the smaller pastures.

### **Selected Conservation Practices**

- 528 – Prescribed Grazing
- 382 – Fence
- 649 – Structures for Wildlife (fence markers, escape ramps)
- Livestock Water Practices –
  - 642 – water well
  - 533 – pumping plant
  - 533 – pump test
  - 516 – livestock water pipelines
  - 614 – livestock watering facility

## ***Partnerships***

### **Potential partners to be contacted –**

Garfield County Conservation District: education and outreach, financial assistance with temporary fences and water development, and technical assistance for monitoring.

Northern Great Plains Joint Venture; Northern Grasslands Restoration Incentives Program (N-GRIP). Financial assistance with facilitating practices (especially temporary livestock water development, fences) and seeding cropland back to grass (especially cropland within the summer pasture boundaries).

Bird Conservancy of the Rockies: workshops, financial assistance for infrastructure, especially temporary fence.

American Bird Conservancy: workshops, financial assistance for infrastructure, especially temporary fence.

World Wildlife Fund: technical and financial assistance for ranchers in the Northern Great Plains region to conserve intact grasslands and create habitat through the Sustainable Ranching Initiative (SRI) and Ranch Systems and Viability Planning (RSVP).

Bureau of Land Management: technical and financial assistance on adjacent federal land.

Department of State Lands: technical and financial assistance on adjacent state land.

Winnett ACES (Agricultural Community Enhancement and Sustainability): financial and technical assistance thru their Conservations Assistance program (depending on the location of TIP).

## ***Implementation***

- Applications will be accepted during each of the first two years. Contract length will be up to five years. Implementation of infrastructure year one and two.
- Grazing management years two through four or three through five.
- An indication of ready and able participants is based on LWG participation, new and existing EQIP applications, and survey results.
- Marketing and Outreach: There are thirty-one operators in the TIP area. All thirty-one have been called or attempted to call to explain the focused planning effort and gauge interest. Of the thirty-one in the TIP area, twenty-four (77%) submitted an application, requested an application or expressed interest. Marketing and outreach will continue with a mailing to all the operators who have not applied by this fall. We will also send a letter to the local ag bank loan officers, outlining our TIP and other assistance opportunities.
- Operation & Maintenance: our goal is to write conservation plans for ten producers in the first year. We will have time to work with each producer to study grazing patterns, utilization levels, and existing plant communities.

### Cost Estimate Breakdown for Average Sized EQIP Contract

Practice	Cost Per Unit	Unit	Extent	Cost per Practice
Fence – Barbed/Smooth Wire	2	Feet	10,000	20,000
Fence; Power	1.39	Feet	2,000	2,780
Pumping Plant: Well pump test	149.8	Hours	10	1,498
Pumping Plant: Electric with pressure tank	1772.43	Hp	1	1,773
Water Well: Typical Well, 100-600 ft depth	29.57	Feet	450	13,307
Watering Facility: 2000 gallons stocktank	1.41	Gallons	2,000	2,820
Livestock Pipeline: Frost free buried	1.35	Feet	10,700	14,445
Prescribed Grazing: Range standard (3 years)	3.2	Acres	1,000	3,200
Prescribed Grazing: Pasture standard (3 years)	5.64	Acres	500	2,820
Total	n/a	n/a	n/a	\$62,643

There are Historically Underserved funding scenarios available for all the above-mentioned practices for qualified applicants. Information about the definitions of Historically Underserved categories, qualification criteria and The Financially Limited Farmer/Rancher self-determination tool are available from the NRCS at

[https://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/people/outreach/slbfr/?cid=nrcsdev11\\_001040](https://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/people/outreach/slbfr/?cid=nrcsdev11_001040)

The current field office staff (3 full-time) with the assistance of the Area Range Specialist has the experience needed to complete range inventory on 36,000 acres. Two staff members are currently designing livestock water systems and have sufficient job approval authority. All staff have fence design experience and job approval authority. Assistance will be needed from the Area Engineering staff to design and approve pump tests.

Fiscal Year	Contracts (no.)	Acres Treated (total)	Average Expected Cost per Contract	Total
2022	12	24000	\$ 63,000	\$ 756,000
2023	10	20000	\$ 63,000	\$ 630,000
Totals	22	44,000	\$ 63,000	\$ 1,386,000

### Progress Assessment and Evaluation

- Baseline data that will be collected at the beginning and end of the contract include bare ground, water infiltration rates, and benchmark grazing patterns (areas of severe grazing and areas of under grazing).
- Annual point-intercept counts along 100-foot transects recording plant hits by species and paying particular attention to bare ground and evaluation of where the plant communities are within the State Transition Models (STMs).
- Photos along the 100-foot transect, taken annually.
- Evaluation of success will be based on the reduction in bare ground which equates to increased solar receptors (leaves) and forage production, improved economics, and improved plant condition.

- Grazing patterns will also be mapped at the end of the contract to evaluate changes in animal grazing behavior.

Outcomes will be documented and reported to the Local Work Group and Partners (FOIA compliant). With public awareness of outcomes being a goal, we envision having a tour for the public.

### ***Application Prioritization***

The current Montana NRCS Targeted Implementation Plan (TIP) Application Screening Tool will be used in its entirety to prioritize applications.

### ***Ranking***

1. Based on the existing grazing system, how many consecutive grazing days or total days without adequate recovery, are livestock in the grazing unit during the growing season (April 15-October 15)?
  - a. 61 to 90 days
  - b. 46 to 60 days
  - c. Less than 45 days
2. How many grazing units will your summer grazing unit be split into? (April 15-October 15).  
Choose only one:
  - a. 5 or more grazing units will be grazed by one herd
  - b. 4 grazing units will be grazed by one herd
  - c. 3 grazing units will be grazed by one herd
  - d. 2 grazing units will be grazed by one herd
  - e. Not applicable – no summer grazing units split
3. How many years is 528, Prescribed Grazing, included in the application (which will include all aspects of 528)?
  - a. 528 for 3 years
  - b. 528 for 2 years
  - c. 528 for 1 year
  - d. 528 not included in application
4. How will your stock density change with the implementation of the facilitating practices and compared to your current grazing system dates? (This will be the highest stock density during any of the grazing season and based on your grazing plan.)
  - a. Stock density will increase 6x or more
  - b. Stock density will increase 5x
  - c. Stock density will increase 4x
  - d. Stock density will increase 3x
  - e. Stock density will increase 2x
  - f. Not applicable – no stock density increase
5. Will electric fence be included in the application? Must be permanent fence to receive points.
  - a. Electric fence will be contracted

- b. Electric fence will not be contracted
- 6. Will mesic areas be targeted for treatment through practice 528, prescribed grazing?
  - a. Mesic areas will be targeted for treatment through 528
  - b. Mesic areas will not be targeted for treatment through 528

## **References**

Garfield County Long Range Plan (LRP). 2019.

Launchbaugh, K. (2006). *Targeted Grazing*. Cottrell Printing, Centennial, CO.

Savory, A. (1999). *Holistic Management: A New Framework for Decision-Making* (2<sup>nd</sup> ed.). Washington, D.C.: Island Press.

Undersander, D., Albert, B., Cosgrove, D., Johnson, D., and Peterson, P. (2002). *Pastures for profit: A guide to rotational grazing*. Madison, WI.: Cooperative Extension Publishing.

USDA-NRCS (2016). *Grazing Management and Soil Health*.

USDA-NRCS Field Office Technical Guide, *MT 643B Beaver Dam Analogues-JS1, April 2019*