



Long Range Plan

PONDERA COUNTY

2020-2025

Conrad NRCS Field Office & Browning Tribal
Service Center

I. Introduction

Vision: Improve the natural resources on private and tribal lands through focused collaboration.

Mission: Work with partner organizations and agricultural operators to identify and focus efforts to address economically feasible resource concerns with the highest need.

Purpose: Provide a framework for NRCS staff, partners, and clients to collaborate efforts to get conservation implemented by focusing on an identified resource concern in a small geographic area.

Existing and Potential Partners:

- Natural Resources Conservation Service (NRCS)
- Pondera County Conservation District (PCCD)
- Glacier County Conservation District (GCCD)
- Teton Conservation District (TCD)
- Blackfeet Natural Resources Conservation District (BNRCD)
- Montana Fish Wildlife and Parks
- U.S. Fish Wildlife Service
- Pheasants Forever
- Ducks Unlimited
- Montana Department of Natural Resources and Conservation
- Blackfeet Tribe
- Bureau of Indian Affairs (BIA) Browning
- County Commissioners Pondera and Glacier Counties
- Marias River Watershed Group
- Pondera County Canal and Reservoir Company (PCCRC)

The Long Range Plan (LRP) is designed to cover the next 5 years. However, the plan is a living document that can be changed or updated as necessary. The LRP will be reviewed by the local conservation district as needed.

II. NATURAL RESOURCES INVENTORY

Soils

Specific soils information can be obtained from two published soil surveys: The soil survey of Glacier County area and part of Pondera County (MT600) and the soil survey of Choteau-Conrad Area; Parts of Teton and Pondera Counties (MT657).

The elevation of the eastern plains' ranges from about 3,600 to 4,400 feet, of the western foothills from 4,400 feet to about 5,500 feet, and of the mountain foot slopes from 5,500 feet to over 8,000 feet.

Soils can be broken into two categories: 1. Dominantly deep, well-drained and somewhat excessively drained, undulating to very steep soils on mountain and adjacent upland. 2. Dominantly deep to shallow, well drained to excessively drained, nearly level to very steep soils on upland.

A significant percentage of soils in the area formed in glacial till or in glacial outwash materials. Some soils formed in alluvium derived from mixed sources, and other soil formed in material that weathered from limestone, mudstone, sandstone, shale, or siltstone.

Soils are highly susceptible to wind erosion. Water erosion can be a concern on cropland. However, most farming practices limit water erosion to some sheet and rill erosion and occasionally gully erosion resulting from an unusually high precipitation or snowpack run off event. Minimum tillage practices and no-till practices throughout most of the cropland allows for adequate residue levels to control excessive wind erosion. However, conventional tillage systems do exist from which wind and water erosion issues can appear. Low residue crops in a rotation have benefits but can leave soils vulnerable to wind erosion in the fall and winter.

Soil salinity/sodicity continues to be a resource concern in cropland and can be seen in some native rangeland due to the nature of soil types present. Soil salinity/sodicity was first addressed by the Bullhead Salinity Control Association and is now a priority for the MT Salinity Control Association located in Conrad, MT. Saline or sodic soils form when water moves through the soil profile, picking up salts and moving them through the ground water until they surface along lower elevations on the land scape. As the water evaporates the salts are left on the soil surface. This results in a less productive soil.

Soils with a low pH have also been found in eastern Pondera County. It is anticipated that this change in pH is due to historical crop fallow rotations combined with commercial fertilizer and herbicide use over the last 30 years.

Pondera County has pursued soil health related practices which include diversifying crop rotations, adding cover crops as a tool, and monitoring soil health through soil biology sampling and monitoring. Soil health sampling in general shows low soil health scores resulting from the Haney Soil Test when compared to range or pasture samples. Soil health scores (rating 0-99) on Range is around 19, Dryland Pasture 10, and crop-fallow rotations in the 4-6 range.

When cover crops and continuous cropping are added to the rotation soil health is around 11. The tipping point score for a crop system is a soil health/Haney Test Score of 7. Results are from a Grazing Lands Conservation Initiative (GLCI) project with on-farm field trials conducted throughout Pondera County.

Soil health and sustainability for future generations is a concern for a large percentage of the operators. Soil health concerns are specific to soil acidity, soil salinity/sodicity, field gully erosion, and wind erosion. The five principles of soil health (diversity, maintaining a living root, cover on the soil surface, reducing disturbance and integrating livestock) are being practiced in whole, or part, by producers in Pondera County. NRCS will continue to support these principles and producers' efforts to implement them.

Water

The mean annual precipitation ranges from 10-20 inches, elevation ranges from 3000 to 6000 feet, and the growing season is 60 to 110 days. The wide range in these climate factors means context is important when assessing conservation alternatives. Watersheds included are the Two Medicine Watershed, Milk River Watershed, Birch Creek Watershed and the Marias River Watershed.

Water quality is a concern for human, livestock, and wildlife consumption. Water quality monitoring by individual producers is done to track salts in the water for consumption by livestock. Surface water quality is directly affected by run-off events resulting from spring snow melt and high precipitation events typically occurring April through June. Water quality in prairie potholes can become a concern for livestock consumption in drought years during August through the fall.

Water quantity is a concern for the Pondera County Canal and Reservoir Company (PCCRC), the Blackfoot Tribe, the Blackfoot Bureau of Indian Affairs (BIA), and local producers. The Blackfoot water compact has been settled which has a direct effect on the PCCRC, local producers, and the Blackfoot Tribe. Irrigation efficiency improvement and maintaining irrigation delivery infrastructure is a crucial part of addressing water quantity and quality for all parties. These concerns lead to a need to line delivery canals, convert ditch to pipe, update or replace irrigation delivery infrastructure, and install irrigation automation systems for monitoring and management.

The headwaters of the Upper Missouri River basin originate along the Rocky Mountain Front. The watershed contains wetlands, lakes, riparian and river floodplain ecosystems. Groundwater is tapped by wells for drinking water, oil and gas drilling operations, and for limited irrigation purposes. Groundwater surfaces

as springs and feeds numerous prairie pothole type wetlands along the Rocky Mountain Front. Due to geomorphology in the county, development of wells for drinking or stock water is limited and may not be feasible in some locations. This results in the need to pipe water long distances from reliable sources such as ponds, lakes or high producing wells to areas with limited water supply.

Air and Energy

Air quality historically has not been an issue. Wind speeds can be 35-80 MPH throughout the year resulting in a very clean atmosphere. The Blackfeet ARMP has identified air quality as an area that needs further monitoring and analysis.

Energy production has been addressed by the installation of wind farms primarily in Glacier County. Additional locations for wind energy are under investigation. Solar energy production has been used on a small scale, mostly for pumping stock water and electric fences. Very few homes or farmsteads utilize solar energy.

Energy reduction resulting from the utilization of gravity fed water systems for livestock and irrigation purposes continue to be a need for agriculture producers.

Plants

Native rangeland plants, introduced forage species, and crops are grown throughout the county. Native and introduced plant health is altered because of over-grazing, grazing for extended periods of time during the growing season, and lack of stock water to distribute animals to areas of high production and low utilization. Improved management on native rangeland would require infrastructure improvements such as stock water, fencing and herding,

Typical perennial crops grown are Alfalfa or Sainfoin for seed or hay production. Annual crops are winter wheat, spring wheat, barley, peas, lentils, camelina, canola, and some flax. Producers are venturing out into alternative crops such as hemp and quinoa. Typically crop rotations are in a crop fallow type rotation utilizing hoe drills, or disk drills, to seed directly into stubble. Chemical fallow practices are utilized during the fallow period for most of the operations. Organic crop production involves a very small number of agriculture producers in the area. These operations have an increased tillage rate with no chemical application. Crop rotations would benefit from increased plant diversity, annual cropping, and improved management. The climate is the number one limiting factor in making drastic changes to the traditional crop fallow system. The second limiting factor is tradition and culture.

Animals (Livestock, Wildlife)

Livestock and wildlife coexist in the area. Grizzly Bears, Canada lynx, bald and golden eagles, migratory birds, and pollinators are among wildlife species that inhabit the area. Most livestock producers in the county run beef cow/calf pairs. Commercial and registered cattle herds are abundant with a few sheep producers. Large confinement facilities in the area also house milk cows, pigs, chickens and turkeys.

III. CONSERVATION ACTIVITY ANALYSIS

Existing Assessments

- Water Resources Survey Pondera County, June 1964
- Water Resources Survey Glacier County, September 1969
- Dupuyer Creek Riparian Assessment 1997
- Bullhead Water Quality Project 1991-1997
- Lower Birch Creek Watershed Areawide Plan, Updated 2000
- Blackfeet Nation Agriculture Resource Management Plan (ARMP) DRAFT

IV. PRIORITIZATION OF NATURAL RESOURCE PROBLEMS AND DESIRED OUTCOMES

Local Working Group established priorities in Spring of 2019. These are listed in order of priority.

Pondera County

1. Pollinator habitat and wildlife habitat: There is a need for pollinator and wildlife habitat interspersed throughout cropland and pastureland.
2. Soil health includes soil acidity and salinity.
 - Soil Acidity has been identified as a concern in eastern Pondera County as producers are seeing lower than normal Ph levels. Ph levels as low as 4.6 have been recorded. Increasing organic matter (OM) levels maybe one way to buffer the soil along with changing crop management practices.
 - Soil Salinity/Sodicity has been addressed in Pondera County for over 30 years. As farms change ownership and new operators begin farming, acres seeded to permanent vegetation are being returned to crop rotations. Education and outreach on how to manage and control saline issues continues to be an issue.
 - Implementing additional soil health management practices can be costly. Adopting new practices to diversify plant species, keep a living root in the soil year around, keep residue on the soil surface, reduce disturbance, and integrating livestock are challenges facing producers.

3. Herbicide resistance has been found throughout the county as more and more Kochia plants are tested and found to be Glyphosate resistant. Alternatives in herbicide and cropping management are needed to reduce the use of restricted use herbicides that are potentially harmful to humans or the environment. Education is an important component to changing farming traditions in the Golden Triangle.
4. Field gully erosion, water erosion, and wind erosion continues to be a problem during years of high snowpack and high spring runoff events. The biggest issues occur when a field has been fallowed the prior year instead of cropped. Education and a change in crop rotations and management practices can be used to address this concern.
5. Noxious Weeds continue to be an issue across the county as more noxious weeds are reported and larger infestations are found. Education, outreach, and coordination to feasibly address this issue continues to be a challenge.
 - Biological Control and Chemical Application are the two-primary means of control. Livestock management is a secondary means of control especially as it relates to the spread of noxious weed seeds.
6. Irrigation Efficiency is a priority for irrigators and the Pondera Canal and Reservoir Company. Improvements may include canal lining, ditch or canal delivery to buried pipe, and automation technology to monitor and manage the irrigation water. Improving irrigation system efficiency continues to be a feasible alternative for producers and irrigators.
7. Range land health continues to be a concern and includes soil health, plant health and herd health. Identified range improvements include stock water system, fencing, and management to facilitate improved grazing management. Transitioning producers to shorter grazing periods and longer rest periods will have a positive impact on range health.
 - a. Range and pastureland grazing management related to the utilization of the vegetation has been described as over grazed in areas where water is reliable and in areas along the Rocky Mountain Front that are easily accessible by livestock. The direct causes are related to water distribution and the lack of infrastructure or management. Water distribution can be improved through development of off-site stock water. However, due to the geology of the Rocky Mountain Front, water wells are not necessarily a feasible alternative. Group water developments with storage systems that can be gravity fed to multiple pastures and producers are needed in areas where drilling wells is not feasible.

- b. Fencing and stock water systems are tools to improve livestock management. Improved livestock management can lead to improved species composition, plant health, and soil health.
- 8. Irrigation waste ways cause soil erosion and result in irrigation water loss to the system that can no longer be utilized for irrigation purposes. Improvements include reducing, or eliminating, the soil erosion and practicing tail water recover before it enters the waste way.
- 9. Streambank erosion is a concern along major water courses. Continuing to improve grazing management and deep-rooted crops along the streambanks would be a start to controlling erosion. Structural practices may be used when feasible.
- 10. Wildfire is a concern for producers during dry years. Wildlife in native range, through the forest, and across cropland is a concern. Proper management of vegetation and defensible space around residences is a concern.

V. POTENTIAL TARGET IMPLEMENTATION PLANS (TIP) AND INVESTMENT PORTFOLIOS

- 1. Honeybee Pollinator and Wildlife Habitat Improvement: Convert cropland to permanent perennial vegetation to target pollinator species and provide an undisturbed nectar source throughout the growing season. Target an area of Pondera County that does not currently have registered apiaries or established pollinator habitat – the eastern part of the county that includes a 1-mile buffer around Pondera Coulee that will also provide a water source to pollinator insects. Potential partners include: Local producers, Pondera County Conservation District, Pheasants Forever, commercial beekeepers and the Xerces Society.
- 2. Ditch to Pipe: Potential projects exist between neighboring operators serviced by the Pondera County Canal and Reservoir Company to convert irrigation delivery systems ditches to pipe to reduce water losses to evaporation and seepage and may eliminate soil erosion in some locations.
- 3. Soil Acidity: The east side of Pondera County has 14 producers working with MSU Extension to monitor soil pH and identify fields showing signs of soil acidity. There are currently 7 producers with a soil pH of less than 6.0. Improved management practices that target increase organic matter levels are currently the only feasible alternative.

4. Soil Health improvements related to intensive grazing management. To implement livestock integration to improve soil health, innovative producers are interested in high intensity short duration grazing practices. Infrastructure and education are needed to accomplish improvements to cropland, pasture, and rangeland.
5. Improved soil health on cropland involving producers who are committed to implementing the principles of soil health has potential. The key components include adding diversity to the crop rotation, keeping a living root in the soil as often as possible, keeping the soil covered, reducing tillage, and integrating livestock.