2020

ROOSEVELT COUNTY

LONG RANGE PLAN

USDA NRCS CULBERTSON FIELD OFFICE

Table of Contents

SECTION I: INTRODUCTION

VISION

Our vision for natural resource conservation in Roosevelt County is increased stewardship on all land uses.

MISSION

Our Mission: To promote environmental and economic sustainability in private land management.

PURPOSE

The Roosevelt County Long Range Plan identifies and prioritizes natural resource concerns throughout the county. Strategies will be developed, with assistance from our partners, to address these resource concerns through Targeted Implementation Plans.

PARTNERS

Those who have assisted in the development of the Long-Range Plan are:

- Local landowners, farmers and ranchers
- USDA Natural Resources Conservation Service Culbertson and Poplar Field Offices
- Roosevelt County Weed District
- USDA Farm Services Agency Roosevelt County Committee
- Montana State University Extension Service
- Roosevelt County Conservation District

TIME FRAME

The term of the Long-Range plan is five years. The plan will be reviewed annually and amended or updated as necessary.

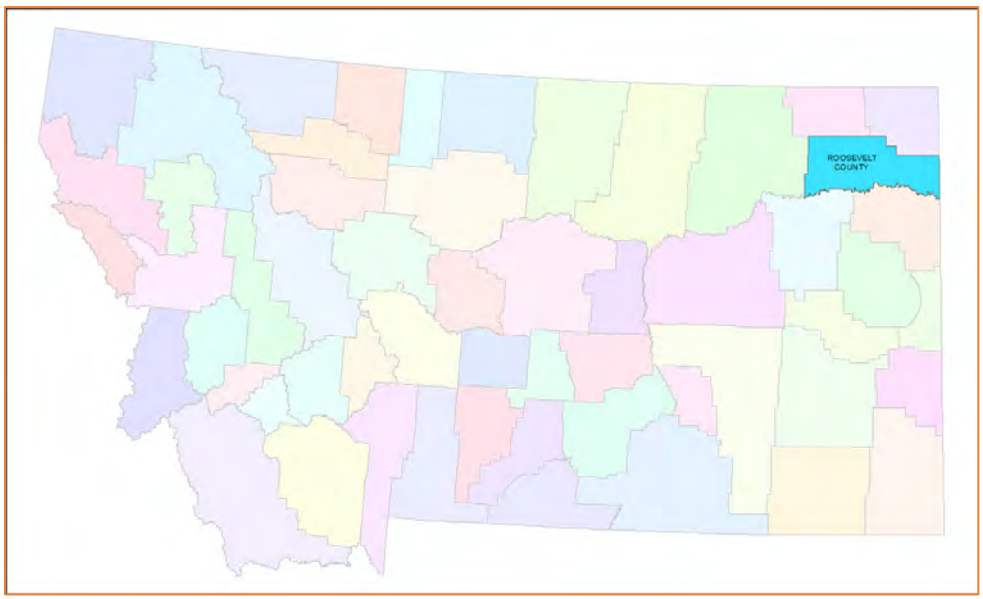


Figure 1. Roosevelt County

SECTION II NATURAL RESOURCE INVENTORY

General Information

Roosevelt County was created on February 18, 1919 from areas of Valley and Sheridan County. The name honors former President Theodore Roosevelt. The county is situated in the northeast corner of Montana south of Daniels and Sheridan Counties. Its eastern border is the North Dakota state line; it is adjacent to Valley County to the west and McCone and Richland Counties to the south. See Appendix A1. Roosevelt County covers 2,639 square miles or 1,688,960 acres. It ranks number twenty-nine in size of the fifty-six counties in Montana.

Elevation in Roosevelt County ranges from about 1,875 feet above sea level along the Missouri River to about 2,900 feet in the northwestern part of the county. Most of the county consists of upland glaciated plains. The plains are nearly level to steeply sloping. In places, the landscape is dissected by steep drainages and rough ridges of weathered shale, siltstone, and sandstone (USDA SCS, 1985).

Roosevelt County receives an average of 13.5 inches of precipitation annually. See Appendix A2. Average annual snowfall is twenty-nine inches. Relative effective precipitation can be thought of as usable rainfall, the portion of the total precipitation which becomes available for plant growth. Relative effective precipitation throughout the county is depicted in Appendix A3.

Spring is the driest season in Roosevelt County. Only about seven percent of precipitation falls between March and June. Typically, Autumn is the wettest season; about half of the precipitation occurs in the fall. There are 64.9 rainy days annually in Roosevelt County, making it one of the least rainy places in Montana.

NOAA

The National Oceanic and Atmospheric Administration (NOAA) is a science-based federal agency within the Department of Commerce with regulatory, operational, and information service responsibilities with a presence in every state and our territories. The agency's primary functions are:

- Monitoring and observing Earth systems with instruments and data collection networks.
- Understanding and describing Earth systems through research and analysis of that data.
- Assessing and predicting the changes of these systems over time.
- Engaging, advising, and informing the public and partner organizations with important information.
- Managing resources for the betterment of society, economy and environment (NOAA, 2020).

NOAA maintains National Centers for Environmental Information US Climate Reference Network monitoring stations across the nation. Stations in proximity to Roosevelt County are Montana Wolf Point 29 ENE and Montana Wolf Point 34NE, both located on the Fort Peck Reservation. These sites monitor temperature, precipitation, wind, solar radiation and other climatic attributes. NOAA's Earth System Research Laboratory maintains a SURFRAD (Surface Radiation Budget) network site to monitor solar radiation near Fort Peck, Montana.

Information about NOAA, the Climate Reference Network and SURFRAD can be accessed at https://www.ncdc.noaa.gov/crn/current-observations

People

Wolf Point, the county seat, and Poplar are the only cities in the county. Culbertson is the county's largest town; Bainville and Froid are smaller towns, shown on the map in Appendix A1. Unincorporated communities are Brockton, Blair, Bredette, Chelsea, Fort Kipp, Macon and Sprole.

The county's population was 11,059 in July of 2018, an increase of 574 since 2010. Wolf Point is home to 2,621 people; 810 live in Poplar. The population of Culbertson in 714. Residents of Brockton, Bainville and Froid number about 650 put together. A little more than half of the people in Roosevelt County live in rural areas.

About 83% of adults are high school graduates; more than 15% of residents have earned a bachelor's degree or higher. A little over 26% of the population lives in poverty in Roosevelt County, compared to the state average of 13% (US Census Bureau, 2019).

Assiniboine and Sioux Tribe

Fort Peck Reservation is home to the Assiniboine and Sioux people, two separate American Indian Nations composed of numerous bands and divisions. The Sioux divisions are Sisseton/Wahpetons, the Yanktonais, and the Teton Hunkpapa. The Assiniboine bands are the Canoe Paddler and Red Bottom. There are 12,975 members of the tribes; about 6,700 members live on the reservation. Tribal Government is headquartered in Poplar, Montana.

Fort Peck Reservation encompasses 2.1 million acres, an area approximately 100 miles long by 40 miles wide. It covers areas of Daniels, Valley, Roosevelt, and Sheridan Counties as shown in Figure 2. Approximately two-thirds of Roosevelt County lies within The Fort Peck Reservation.

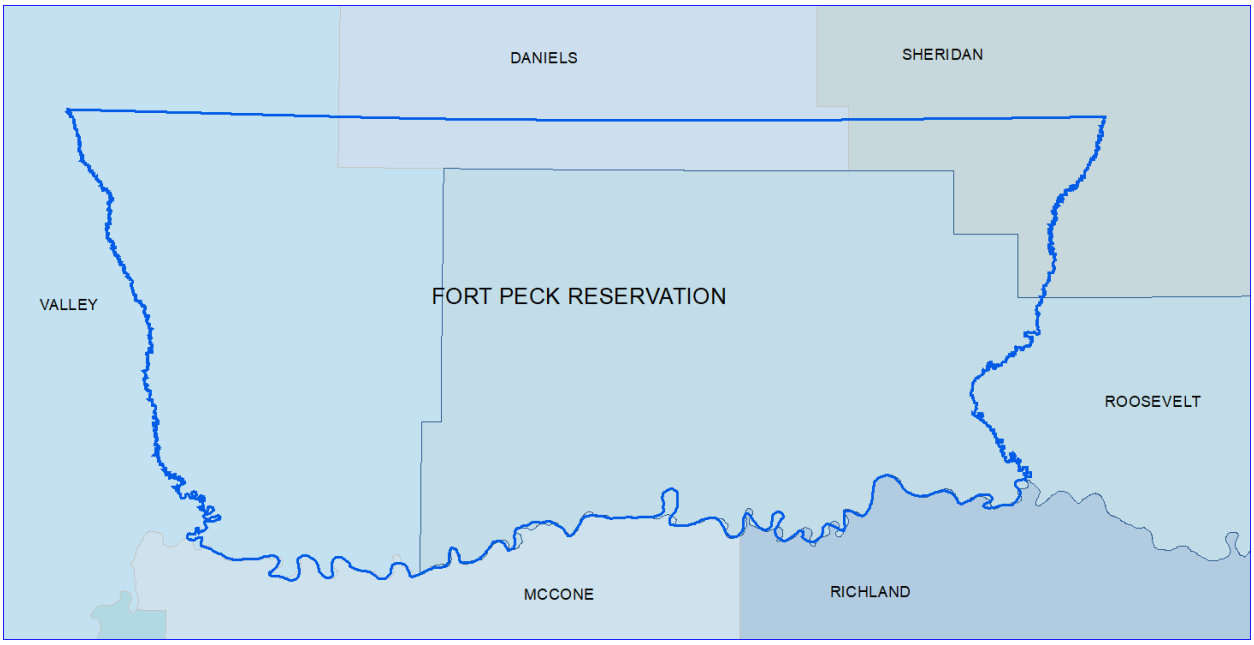


Figure 2. Fort Peck Reservation

Approximately 378,000 acres of Reservation land are owned by the Tribes, and 548,000 acres are allotted to individual tribal members. Over half of the land on the reservation is owned by persons or entities who do not belong to the Tribes (Fort Peck Tribes, 2013).

Bison remain important to historic and current culture; the Tribes are working to bring bison back to the reservation. With assistance from the NRCS Poplar Field Office, the Tribes have developed rangeland conservation plans for five very large rangeland grazing units on over twenty-six thousand acres. The Tribe owns and manages two bison herds; one is a commercial herd and the other a cultural herd of purebred stock. The foundation stock for the cultural herd was imported from Yellowstone Park.

USDA NRCS Tribal Conservationist Paul Finnicum reports that there have been observations of several species of ground-nesting birds on the bison range, "that have not been seen here for over one hundred years." (Finnicum, 2019) He attributes their return to the habitat improvement resulting from the patch-grazing habits of bison, which leave a mosaic of tall, mid and short-stature grasses across the landscape. This provides more types of better nesting and brood-rearing habitat for the birds.

See Appendix B1, NRCS Success Story for information about The NRCS Field Office and Tribal members collaborative efforts to promote conservation on the Reservation.

Little Shell Tribe of Chippewa Indians of Montana

The members of the Little Shell Tribe of Chippewa Indian of Montana are without Tribal lands or a reservation. The approximately 5,400 members of the Tribe live in various communities in Montana; Tribal Offices are in Great Falls, Montana (Little Shell Chippewa Tribe, 2020).

Turtle Mountain Allotments

The Turtle Mountain Band belongs to the Chippewa Nation of Native Americans. Prior to 1863, the Band claimed lands totaling almost 20 million acres in eastern North Dakota. The Old Crossing Treaty resulted in the loss of nearly all of the Band's land (TMCHC, 2020).

Today, the main part of the Turtle Mountain Reservation is located in Rolette County, North Dakota. encompassing an area of 6 miles by 12 miles. It covers 72 square miles (46,000 acres). Another 26,175 acres of trust land is located in Rolette County, North Dakota, around the Turtle Mountain Reservation. Total acres in Rolette County are 72,255 acres. Another 6,698 acres of trust land is managed by the Trenton Indian Service Area and the remaining land, totaling 67,852 acres is individually owned public domain allotments located Montana, North Dakota, and South Dakota. The total area of the Turtle Mountain Reservation is 146,805 acres (229.4 square miles) (TMCHC, 2020).

Agriculture

The Froid Research Farm

The Froid Research Farm is located seven miles north of Culbertson on Montana Highway 16. It is owned by the Roosevelt and Sheridan County Conservation Districts and operated by the Agricultural Resources

Service Northern Plains Agricultural Research Laboratory out of Sidney, Montana. Ongoing research into agronomic practices and crop rotations, both short and long term, is being conducted on the farm.

The "experiment farm" was established in 1936 as part of the Soil Conservation Service (then Soil Erosion Service) efforts in setting up demonstration areas across the country to showcase soil and water conservation practices during the drought of the 1930s. The Froid Demonstration Area encompassed 32,000 acres in a 50 square mile area around the present-day farm. The following conservation practices were noted in a February 1940 report written by H.D. Hurd, Project Manager:

- 7,146 acres under contour cultivation
- 10,213 acres of strip cropping
- 5,184 acres seeded to grass
- 10,004 acres of residue management
- 74 miles of field shrub plantings
- 41 miles of windbreak plantings
- 5,185 acres of grazing management
- 52 acre-feet of stock water reservoirs.

Four years after the projects were initiated 19,960 acres were being treated by various conservation practices under cooperative agreements with 68 farmers (USDA SCS, 1940).

Agronomic research continues at the Froid Research Farm on 80 acres as well as an additional adjacent 17 acres leased by USDA-ARS. Cover crops, carbon sequestration, and aluminum toxicity are a few of the current issues being studied. Demonstration work includes subsurface drip irrigation, variety trials and using stripper headers in tandem with no-till seeding for enhanced conservation.

Agriculture Statistics

The National Agricultural Statistic Service (NASS) *Census of Agriculture* data discloses that there are 501 farms in Roosevelt County. The Census definition of a farm is any place from which $1,000 or more of agricultural products were produced and sold, or normally would have been sold, during the census year. The term is used to include all crop and livestock operations.

Land in farms encompasses a little over 1.3 million acres; total cropland is 757,316 acres. The average farm is 2,610 acres in size. Figure 3 shows number of farms producing the top fourteen crops in the county in 2017 and the acres (times one thousand) harvested.

The Census provides the following statistics for agriculture in the county in 2017:

- 67 farms are at least partly irrigated
- 24,263 acres are dedicated to irrigated crop production.
- 159 farms raise cattle
- Cattle inventory was 27,228 head in 2017
- 7 farms raise sheep, 2017 sales were 598 head
- 323 farms were involved in crop production on 483,365 acres (USDA NASS, 2019).

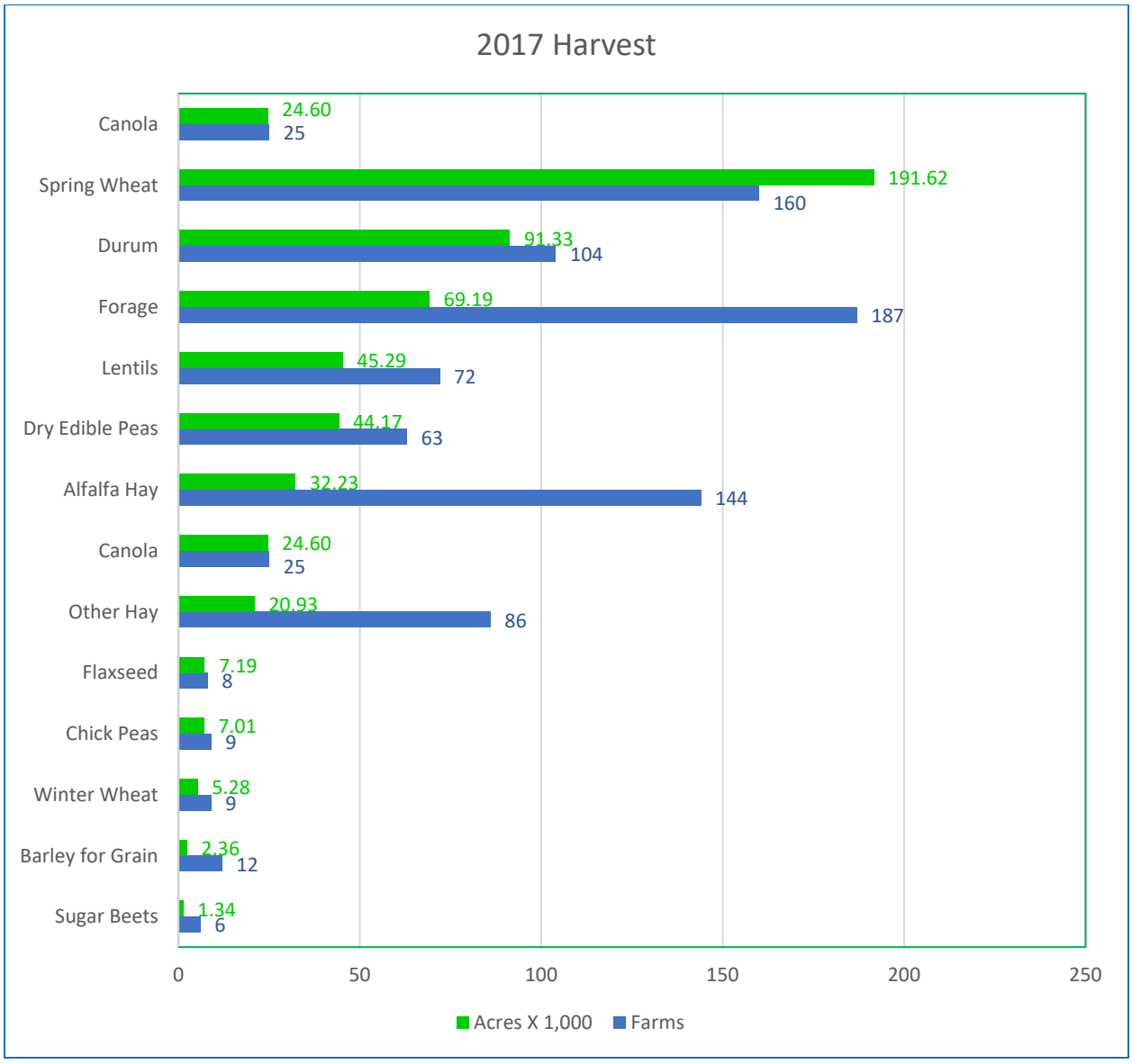


Figure 3. 2017 Harvest, Roosevelt County.

There are 931 agricultural producers in Roosevelt County. The number is split nearly in half between those whose primary occupation is farming or ranching and those who have other occupations. Sixty-six percent of producers are male.

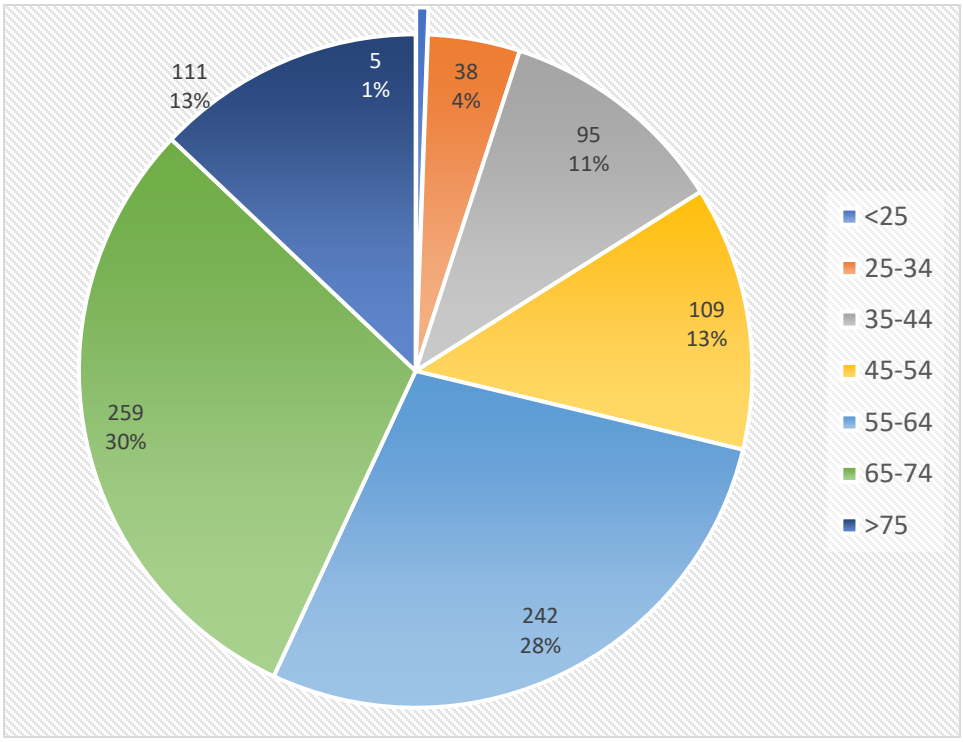


Figure 4. Age Ranges of Roosevelt County Producers

Figure 4 shows the age categories of producers in the county. The first number in each data label is the actual number of producers in each age group followed by the age group percent of total. Seventy-one percent of producers in the county are age 55 or older.

Young farmers are those who are age 35 or younger. Only 16% of the farmers in the county fit this description. County-wide, 35 farms' primary producers are young farmers. Beginning farmers or ranchers are those who have been in the business for ten years or fewer. Beginning farmers are the primary producers on 103 (roughly 21%) of the farms in the County (USDA NASS, 2019).

Table 1 Conservation Practices in Roosevelt County, 2012 and 2017.

	Farms 2017	Farms 2012	Acres 2017	Acres 2012	Difference
Total Harvested Acres			483,656	473,401	10,255 acres
Conservation Easements	4	28	910	16,660	-15,750 acres
Cover Crops	9	18	2,644	6,694	-4,050 acres
No-Till	169	150	445,742	252,070	193,672 acres
Reduced Till	97	96	114,467	164,460	-49,993 acres
Intensive Tillage	37	96	35,966	91,928	-55,962 acres

(USDA NASS, 2019)

Table 1 shows that total harvested cropland increased significantly from 2012 to 2017; it also indicates that many Roosevelt County farmers are moving away from intensive tillage practices and utilizing no-till strategies.

Landcover/Land Use

The Montana Natural Heritage(MTNHP) Land Cover Report for Roosevelt County lists eight landcover types in the county. The report indicates that over half of the county landscape has been converted to cultivated cropland. A little more than one third of the land is native grassland. Landcover types are shown in Figure 5. Data labels list the number of acres in each and the percent of the land in the county that each ecological system covers. Landcover type descriptions follow.

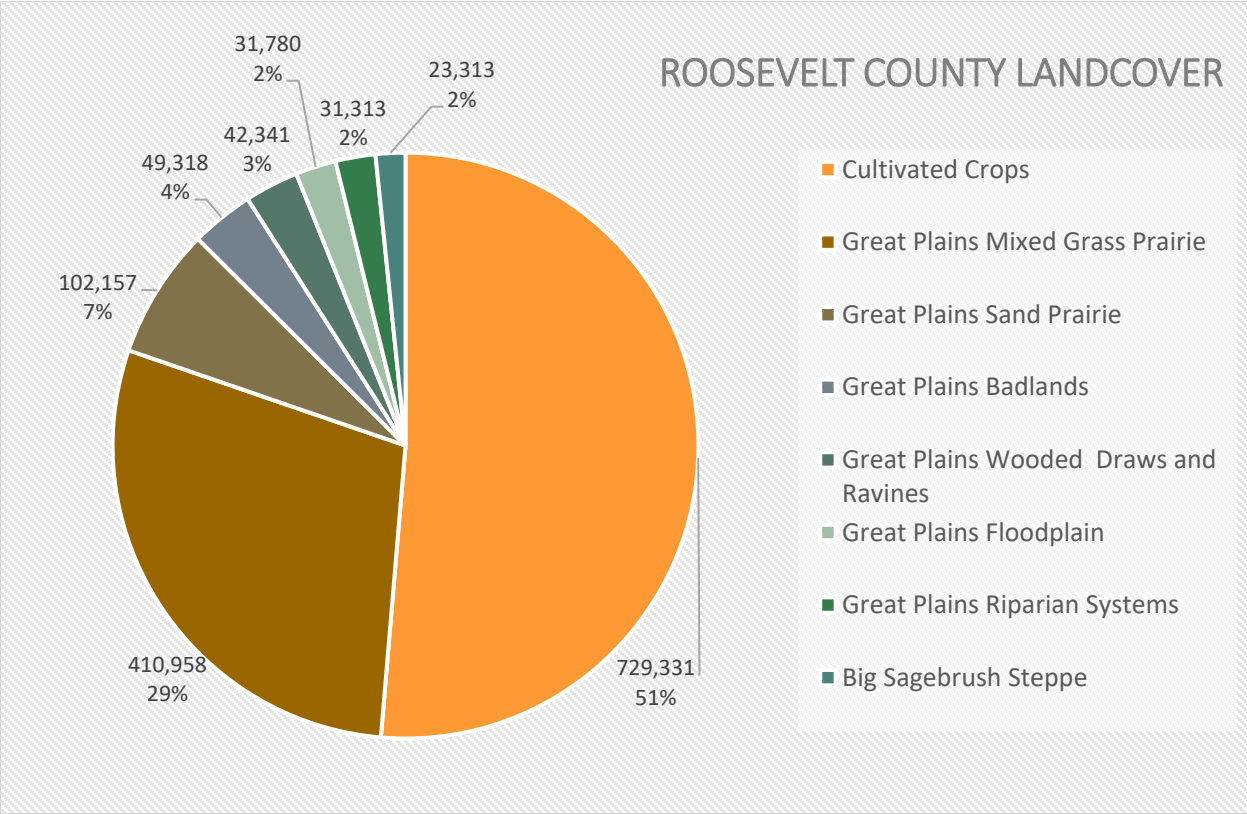


Figure 5. Landcover Types in Roosevelt County

Great Plains Mixedgrass Prairie ecosystem covers much of the eastern two-thirds of Montana. Soils are primarily fine and medium-textured. Grasses typically comprise the greatest canopy cover, and western wheatgrass (*Pascopyrum smithii*) is usually dominant. Other species include thickspike wheatgrass (*Elymus lanceolatus*), green needlegrass (*Nassella viridula*), blue grama (*Bouteloua gracilis*), and needle and thread (*Hesperostipa comata*). Forb diversity is typically high. In areas where sagebrush steppe borders the mixed grass prairie, common plant associations include Wyoming big sagebrush (*Artemisia tridentata ssp. Wyomingensis*)—western wheatgrass. Fire and grazing are the primary drivers of this system. Drought can also impact it, in general favoring the shortgrass component at the expense of the mid-height grasses. With intensive grazing, cool season exotics such as Kentucky bluegrass (*Poa pratensis*), smooth brome (*Bromus inermis*), and field brome (*Bromus arvense*) increase in dominance (MNHP, 2019).

Great Plains Sand Prairie is considered a unique ecological system due to coarse-textured soils with exposed caprock sandstone formations occurring across the landscape. Native plant communities are dominated by needle and thread with little bluestem (*Schizachyrium scoparium*) and threadleaf sedge

(*Carex filifolia*) on the finer textured soils. Rhizomatous warm season grasses prairie sandreed (*Calimovilfa longifolia*), sand bluestem (*Andropogon hallii*) and big bluestem (*Andropogon gerardii*) occur intermittently on coarser soils (MNHP, 2019).

Great Plains Badlands are areas containing highly eroded, rugged and often colorful landforms with sparse vegetation. Badlands areas provide habitat for mule deer and other wildlife but support only intermittent grazing (MNHP, 2019).

Wooded Draws and Ravines occur on steeper slopes or in canyon bottoms where deep loamy soils and higher moisture levels support Rocky Mountain juniper (*Juniperous scopulorum*) and deciduous trees such as green ash (*Fraxinus pennsylvanicus*) and chokecherry (*Prunus virginiana*). Although they are relatively few and scattered, wooded draws are valuable habitat for many species of birds, small mammals and mule deer (MNHP, 2019).

Areas of the **Great Plains Riparian System** occur along the Missouri and Poplar Rivers, and intermittently along all major drainages. Plains cottonwood (*Populus deltoides*) and narrowleaf cottonwood (*Populus angustifolia*) dominate areas of higher soil water content or higher water tables; an understory of willow (*Salix spp*) is common. While riparian areas cover only around two percent of the land in the county, they are considered important for hay production as well as wildlife cover and habitat (MNHP, 2019).

Great Plains Floodplains occur along the Missouri and Poplar Rivers and its larger tributaries. Narrowleaf cottonwood and Plains cottonwood are the dominant component. In relatively undisturbed stands, willow, redosier dogwood (*Cornus sericea*) and common chokecherry form a thick, multi-layered shrub understory, with a mixture of cool and warm season grasses below. Box elder (*Acer negundo*) and green ash form a tree understory in mid-seral and late-seral stands. Many areas are now degraded to the point where relict cottonwood stands with little regeneration are the only remaining natural component. The understory vegetation is dominated by non-native pasture grasses, legumes and other introduced forbs, or by western snowberry (*Symphoricarpos occidentalis*) and rose (*Rosa* spp.) shrub community.

Big Sagebrush Steppe occurs throughout much of central and eastern Montana. The system is characterized by soils that are typically deep and non-saline and dominated by perennial grasses and forbs with a shrub cover of less than ten percent. Wyoming big sagebrush is the most common shrub component. Sagebrush typically increases in the system following heavy grazing and fire suppression.

Appendix A4 is a landcover map of the county. Many other landcover types appear in this more sophisticated depiction. The scale of the map makes it difficult to discern small areas of certain types of landcover such as Great Plains Open Freshwater Depressional Wetlands, however, the map shows extent of cropland and introduced vegetation throughout the county, and the landcover types on the uncultivated lands.

Land Ownership

Public land ownership in Roosevelt County is small compared to many other counties in eastern Montana. Less than two percent of the land in the county is administered by a State or Federal entity, as shown in Table 2. Appendix A5 shows the extent of the Fort Peck Reservation in Roosevelt County as well as the locations of public land parcels.

Table 2. Land Ownership in Roosevelt County

LAND OWNERSHIP	ACRES	LAND IN ROOSEVELT COUNTY
Bureau of Land Management	11,032.19	0.6%
Montana DNRC	20,896.66	1.23%
US Fish & Wildlife Service	2,120.66	0.12%
Fort Peck Reservation	1,114,085.20	65.96%
Private Land	550,655.38	32.6%

Land under the control of the US Fish & Wildlife Service (see Township 30N, Range 55 East on the map) is the Medicine Lake National Wildlife Refuge Complex, discussed further in Plants and Animals.

SOILS

LRR & MLRAS

Land Resource Regions (LRR) are large geographic areas that are characterized by a pattern of soils, climate, water resources and land uses. Major Land Resource Areas (MLRAs) are subregions of the Land Resource Regions and comprise smaller, homogeneous areas. MLRA's represent landscape-level areas with distinct physiography, geology, climate, water, soils, biological resources and land uses. These features are incorporated into the distinctions between ecological sites.

Roosevelt County lies within the LRR F, Northern Great Plains Spring Wheat Region, shown in Figures 6, 7 and 8 in lilac. The LRR is in the Missouri Plateau, Glaciated, Section of the Great Plains Province of the Interior Plains. Most of the county is MLRA 53A, Northern Dark Brown Glaciated Plains. A small area in the southwest corner is MLRA 52, Brown Glaciated Plains and another small area in the southeast corner is MLRA 54, Rolling Soft Shale Plain.

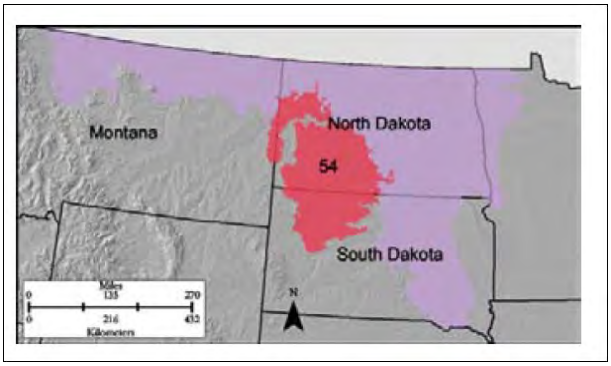


Figure 6. Land Resource Region F, MLRA 54 (NRCS, 2006).

MLRA 54, Rolling Soft Shale Plain is shown in Figure 6 in red. This MLRA is dominantly unglaciated, but the eastern and northern edges have been glaciated. The area is on an old, moderately dissected, rolling plain with some local badlands, buttes, and isolated hills. Terraces are adjacent to broad flood plains along most of the major drainages (NRCS, 2006).

MLRA 53A, Figure 7, is covered by glacial till plains. Glacial features, such as kettle holes, kames, and moraines, are common throughout the plains. Some alluvial deposits are along the Missouri River and its major tributaries. Unconsolidated sand and gravel deposits are on high and low terraces along the Missouri River and on low terraces along the other rivers in the area (NRCS, 2006).

Kettle holes are hollows created when blocks of glacial ice were covered by outwash, then eventually melted, leaving a depression. Kames are hills or hummocks composed of stratified sand and gravel laid down by glacial meltwater and moraines are accumulations of earth and stones carried and finally deposited by a glacier.

Figure 7. LRR F, MLRA 53A (NRCS, 2006).

Most of MLRA 52 is covered by glacial till plains. See Figure 8 to the right. Some glacial lacustrine deposits occur, and shale may be exposed on some uplands in the west. Alluvial deposits are extensive along the Milk River but occur in narrow and discontinuous strips along other streams and rivers. Low terraces occur along the major rivers, and some alluvial fans occur at the western boundary of the area and around the Sweetgrass Hills, just outside the northern boundary (NRCS, 2006).

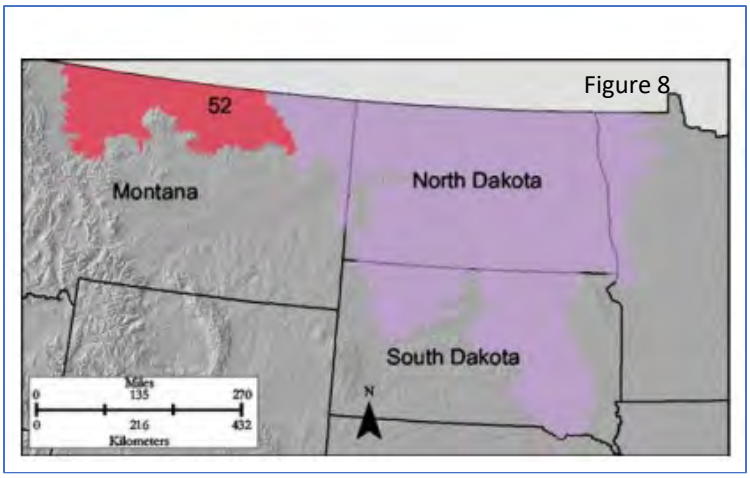


Figure 8. LRR F, MLRA 52 (NRCS, 2006).

Figure 9 shows the locations and extent of the Major Land Resource Areas.

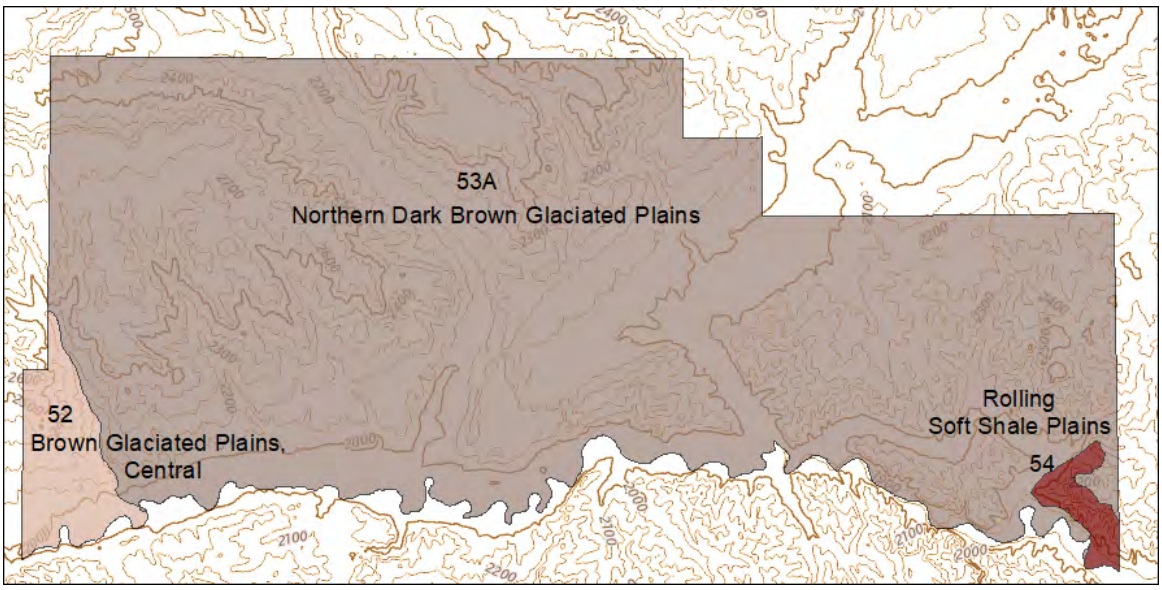


Figure 9. Locations and Extent of Major Land Resource Areas in Roosevelt County.

Geology

In recent geologic history, a sheet of glacial ice of the pre-Wisconsin age covered most of the county, extending south beyond the Missouri River. The ice sheet, estimated to have been over one thousand feet thick, left a layer of till (accumulations of unsorted, unstratified mixtures of clay, silt, sand, gravel, and boulders) on the landscape. Some of the material transported by the glacier is thought to have come from as far away as Hudson Bay. Throughout most of the area, the layer of glacial till is now about twenty to twenty-five feet thick.

Since the retreat of the glacier, erosion has removed some of the glacial till and exposed underlying sandstone and shale. All the rocks exposed are of sedimentary origin and range in age from the Cretaceous period to the Recent. During the Cretaceous age, thick sequences of marine sediment were deposited as stratified shale, siltstone and sandstone. These rocks now make up the Hell Creek Formation.

Following a short period of erosion, deposition of lignite-bearing clay, silt and sandstone of nonmarine origin took place during Tertiary time. This sequence of rocks makes up the Fort Union Formation. Capping the highland areas is a relatively thin, highly stratified and sorted sand and gravel deposit of alluvial origin known as the Flaxville Gravel. Surficial deposits of glacial origin cover most of the bedrock in other areas. Unconsolidated alluvial deposits of gravel, sand, silt and clay of Recent age lie along the drainageways of the area (USDA SCS, 1985)

Geologic formations underlying Roosevelt County are shown in Appendix A6. A formation in this context is a rock unit that that has a distinctive appearance compared to surrounding layers and is of enough thickness and extension to be plotted on a map. Formations often contain a variety of related or interlayered rock types and are sometimes divided into smaller units called members. Below are brief descriptions of the formations, members and other geologic elements shown on the map.

> **Khc. Hell Creek Formation**. Light gray bentonitic clay stone that alternates with gray to brown sandstone interbedded with carbonaceous shale found on fluvial and flood plains under the Fort

Union Formation and above the Fox Hills Formation. Thickness is as much as 1,100 feet. The Hell Creek Formation was laid down by streams on a coastal plain along the edge of the Western Interior Seaway at the end of the Cretaceous period. It is known for an incredible variety of dinosaur, fish, plant, amphibian and other fossils.

Kfh. Fox Hills Formation. Yellowish orange to gray, fine- to medium-grained, non-calcareous sandstone in the upper part, and interbedded sandstone, siltstone, and black shale with calcareous concretion zone in the lower part. Marginal marine. Thickness is 98 to 148 feet.

Kb. Bearpaw Formation. Dark gray shale with several zones of calcareous concretions, a basal zone of ferruginous concretions, and numerous thin bentonite beds. Marine. The Bearpaw Formation can be up to 984 feet thick.

Qac. Alluvium and colluvium (Holocene And Pleistocene epochs). Brown to gray, poorly stratified clay, silt, and sand deposited by sheet-wash on slopes. Color and texture of colluvium reflect parent sediment. Thickness as much as 35 feet but generally less than 15 feet.

Qal. Alluvium. Sedimentary. Gravel, sand, silt, and clay deposits of stream and river channels, and floodplains.

Qg. Quaternary gravel.

Qgi. Glacial ice contact deposits; kames, kame terraces and eskers (long ridges of gravel and other sediment, typically having a winding course, deposited by meltwater from a retreating glacier or ice sheet). Pleistocene Age.

Tft. Tullock Member of the Fort Union Formation is yellowish-gray, fine- to medium-grained, sandstone interbedded with brownish-gray or purplish-gray claystones, dark-gray carbonaceous shale, and thin lenticular (shaped like lentils, convex on both sides) coal beds. Its origin is the Paleocene era; the member is about 200 feet thick. The Tullock member was formed in broad alluvial systems consisting of dominant flood plains with swamps and few stream channels. Numerous vertebrate fossils are found throughout the Tullock Member.

Tfle. Lebo Member of Fort Union Formation. Dark gray carbonaceous shale, bentonitic claystone, sandstone, and coal. Alluvial plain. Thickness can be as much as 607 feet.

Tfsb. Sentinel Butte Member of the Fort Union Formation. Dark gray shale with interbedded lignite and gray sandstone. Non-marine. Thickness can be up to 656 feet.

Tf. Flaxville Formation. The Flaxville Formation is likely a deposit of the ancestral Missouri River when it flowed northeast in a broad valley towards Canada. It is composed of sand, silt, clay, volcanic ash and gravel. Abundant fossils from the Pliocene age including bones from hipparion, procamelus and mastodon (see Figures 10, 11 and 12) are found in the Flaxville Formation.

Figure 10. Hipparion

Figure 11. Procamelus

Figure 12. Mastodon

Soil Associations

Soil associations are made up of adjacent soils that occur as areas large enough to be shown individually on the soil map but are shown as one unit because the time and effort of delineating them separately cannot be justified. A soil association is a landscape that has distinctive proportions and patterns of soils. It usually consists of one or more major soils and at least one minor soil and is named for the major soil(s). Soils in one association may occur in another, but in a different pattern.

The Roosevelt and Daniels Soil Survey has grouped soil associations into four general landscapes with characteristic soil associations.

Soils on Flood Plains

This group makes up about ten percent of the survey area. The soils formed in alluvium. They are used mainly for dryland crops, irrigated hay and rangeland.

- **Havrelon-Trembles-Lohler**: Deep, nearly level, well drained and moderately well drained moist soils subject to flooding. This soil association is found along the tributaries of the Missouri River.
- **Havrelon-Trembles-Lohler, protected**: Deep, nearly level, well drained and moderately well drained moist soils. They are found mostly on the Missouri River floodplain and are protected from flooding by the Fort Peck Dam.
- **Harlem-Havre-Glendive, protected**: Deep, nearly level, well drained dry soils protected from flooding. These soils also occur in the Missouri River floodplain and are protected by the Fort Peck Dam.
- **Lallie-Nobe-Lohler**: Deep, nearly level, very poorly drained and moderately well drained soils subject to flooding. These soils are found mainly along tributaries to the Missouri River.

Soils on Moderately Steep to Steep Uplands, Terraces and Outwash Plains.

This group covers about twenty-three percent of the survey area. The soils formed in glacial till, outwash, consolidated shale and weakly consolidated sedimentary beds. The group is mainly used as rangeland but is also a source of sand and gravel. The main limitation of this group for most uses is slope.

- **Cabert-Camba-Rock Outcrop**: Shallow and moderately deep; moderately steep to steep and rock outcrops. This association is found in the southeastern part of the county in the uplands. Rock outcrop is geologically eroded, soft, multicolored sedimentary beds.

- **Zahill-Tinsley-Wabek**: This association is found mostly in the western part of the county. Deep, well to excessively drained, moderately steep to steep soils occur in the uplands, on terraces and on outwash plains.
- **Zahill-Cabba-Cambert**: Shallow to deep, well drained moderately steep to steep soils. This association is found on uplands in the central and eastern parts of the county.
- **Hillon-Tinsley-Thebo**: Moderately deep to deep, well to excessively drained soils. Moderately steep to steep soils on uplands and terraces in the southwestern part of the county.

Soils on Nearly Level to Strongly Sloping uplands, Fans and Terraces

This group makes up about sixty-seven percent of the survey area. Soils formed in glacial till, alluvium, outwash and eolian (wind-deposited) material. The soils are used mainly for dryland crops and grazing. Some are used for hay land as well as wildlife habitat.

- **Farland-Cherry-Farnuf:** Deep, well drained, gently to moderately sloping soils found on terraces and foot slopes. They occur throughout the county except for the southwest.
- **Turner-Beaverton-Tally:** Found on fans and terraces and on foot slopes in the northwest part of the county, these are deep, well drained, nearly level to strongly sloping droughty soils.
- **Williams-Zahill-Farnuf:** Deep, well drained, nearly level to moderately sloping moist soils on uplands and fans. Found throughout the county except in the northwest.
- **Telstad-Hillon-Evanston:** Deep, well drained, gently to moderately sloping dry soils that occur on uplands and fans in the southwestern part of the county (USDA SCS, 1985).

HEL Soils

Soils are designated as highly erodible (HEL) based on their susceptibility to movement caused by the actions wind or water. In the Soil Survey of Roosevelt and Daniels Counties, 25 of the 78 Soil Map Units are designated Non-HEL; the other 53 Soil Map Units are highly susceptible to wind erosion. Six soils are highly erodible and another 25 are potentially highly erodible by water.

Prime Farmland, Farmland of Statewide Importance and Prime Farmland If Irrigated Soils

Prime Farmland

Prime farmland is a designation assigned by U.S. Department of Agriculture defining land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is also available for these land uses. Roosevelt County has no soils designated as Prime Farmland.

Farmland of Statewide Importance Soils

These are soils that have been determined to be of significance for production of food, feed, fiber, forage, and oilseed crops. These soils have an adequate and dependable water supply from precipitation or irrigation, favorable temperature and growing season, acceptable acidity or alkalinity, acceptable salt and sodium content, and few or no rocks. They are permeable to water and air, are not excessively erodible or saturated with water for a long period of time, and either do not flood frequently or are protected from flooding. They are available for farming, but could currently be cropland, pastureland, rangeland, forestland, or other land.

The five soils shown in Table 3 add up to over 78% of the acres of soils determined to be Farmland of Statewide Importance in the soil survey area.

Table 3. Farmland of Statewide Importance Soils

Soil Map Unit	Map Unit Name	Acres	Percent of Soils of Statewide Importance
69	Williams Loam 2 to 8% Slope	94,526	31.5
14	Dooley Sandy Loam 2 to 4% Slope	71,441	23.8
18	Farnuf Loam 2 to 8 % Slope	44,183	14.7
16	Farland Silt Loam 2 to 8% Slope	13,338	4.45
47	Tally Sandy Loam 2 to 8% Slope	13,254	4.42

Prime Farmland if Irrigated Soils

Prime Farmland if Irrigated are soils with the best combination of physical and chemical characteristics for agriculture such as the soil quality and adequate growing season necessary to produce high yields of crops suited to the region but occur in areas of limited rainfall. Only three soils in the survey area fit the criteria for Prime Farmland If Irrigated (Table 4).

Table 4. Prime Farmland if Irrigated Soils.

Soil Map Unit	Map Unit Name	Acres	Percent of Prime if Irrigated Soils
22	Grail Silty Clay Loam 0 to 4% slope	2,838	8.76
7	Bowbells Silt Loam 0 to 2 % slope	1,2540	38.72
68	Williams Loam 0 to 2% slope	1,7004	52.51

Prime if Irrigated and the Product of the Erodibility Index Multiplied by Climate Factor Does Not Exceed 60

These soils would have all the characteristics of the previous designation if their environment does not lend to excessive erosion. Seven soils are designated Prime if Irrigated and I * C does not exceed 60. The three soils that add up to nearly 79% of all the soils in this category are shown in Table 5.

*Table 5. Prime if Irrigated and I*C Does Not Exceed 60.*

Soil Map Unit	Map Unit Name		Acres	Percent of Prime If Irrigated & I*C< 60
27	Havrelon Silt Loam, Protected	0 to 2% Slopes	17,936	29.19
29	Havrelon Trembles Complex	0 to 2 % Slopes	17,477	28.44
28	Havrelon Trembles Complex, Protected	0 to 2 % Slopes	12,706	20.68

See Appendix A7 for the locations and extent of these soils.

Hydric Soils

Hydric soils are characterized by frequent, prolonged saturation and low oxygen content, which lead to anaerobic chemical environments where reduced iron is present. This definition includes soils that developed under anaerobic conditions in the upper part but no longer experience these conditions due to hydrologic alteration such as those that have been artificially drained or are protected by ditches or levees. The Roosevelt-Daniels Soil Survey Area has thirty-five soils that can, under the right circumstances, become hydric soils. These soils occur on 76,420 acres. Nine soil map units comprise over 93% of all hydric soils in the survey area. The remaining 26 are each less than 1% of all the total. The acres of each of the nine major hydric soils, the relative amount of each and the landform on which they most commonly occur are shown in Table 6.

Table 6. Roosevelt-Daniels Soil Survey Hydric Soils

Map Unit	Map Unit Name	Acres	Percent of all Hydric Soils	Landform
34	Lallie silty clay, saline, 0 to 2 percent slopes	19,390.5	25.37	Oxbows
60	Typic Fluvaquents, 0 to 2 percent slopes	18,639	24.39	Flood Plains
20	Fluvaquents, saline, 0 to 2 percent slopes	11,542.5	15.1	Flood Plains
19	Fluvaquents, ponded, 0 to 1 percent slopes	6,380.2	8.35	Flood Plains
70	Vida-Zahill loams, 2 to 8 percent slopes	4,799	6.28	Moraines
39	McKenzie clay loam, 0 to 2 percent slopes	4,665.5	6.11	Depressions
40	Nishon clay loam, 0 to 2 percent slopes	2,942.2	3.85	Depressions
69	Williams-Vida loams, 2 to 8 percent slopes	1,544.3	2.02	Moraines
71	Zahill-Vida loams, 4 to 15 percent slopes	1,484.6	1.94	Moraines

WATER

Hydrography

The Hydrologic Unit Code (HUC) is a numbering system for watersheds developed by the U.S. Geological Survey (USGS) to provide a common coding system for State and Federal agencies. The entire county has been mapped with three levels of hydrological unit codes: 8-digit codes for large watersheds known as sub-regions, 10-digit codes for watersheds, and 12-digit codes for the smaller sub-watersheds.

Portions of the West Fork Poplar, Poplar, Big Muddy, Charlie-Little Muddy and Prairie Elk-Wolf sub-regions occur in Roosevelt County. These are shown in Figure 13 as polygons with thick black boundaries. Watersheds are bordered and labeled in brown, and sub-watersheds are shown as colored polygons without labels.

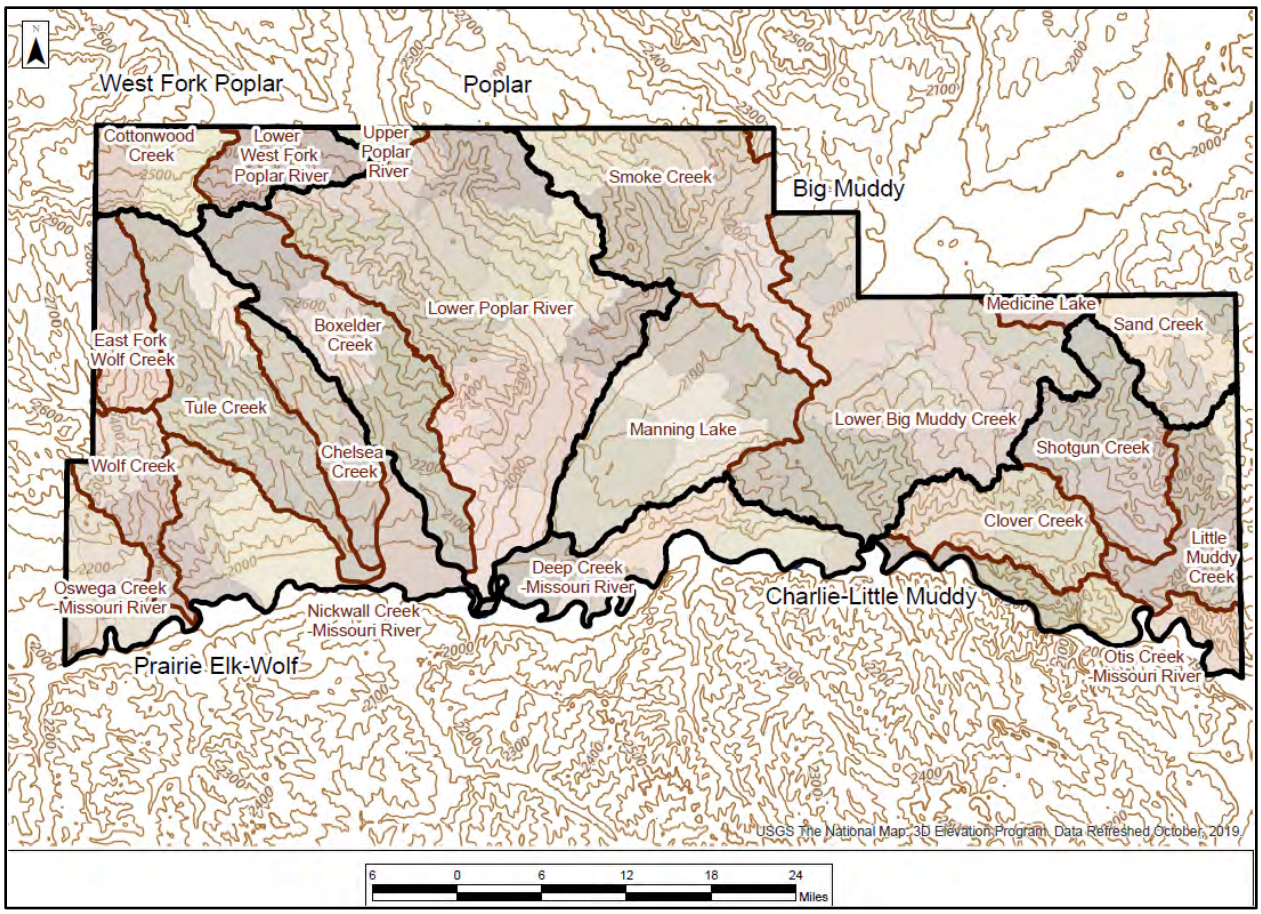


Figure 13. Hydrologic Sub-Regions, Watersheds and Sub-Watersheds in Roosevelt County.

Major streams are shown in Figure 14. Waters in all sub-regions eventually end up in the Missouri River. All but a few of the major streams flow mostly south to join the Missouri River directly. Lake Creek flows east into Manning Lake, shown as a very small blue polygon at the end of the line. Sheep Creek (upper left) flows into Homestead Lake, which has outlets into Big Muddy Creek. Sand Creek (far upper left) flows north, joining another Lake Creek in Sheridan County. This Lake Creek flows into Homestead Lake as well.

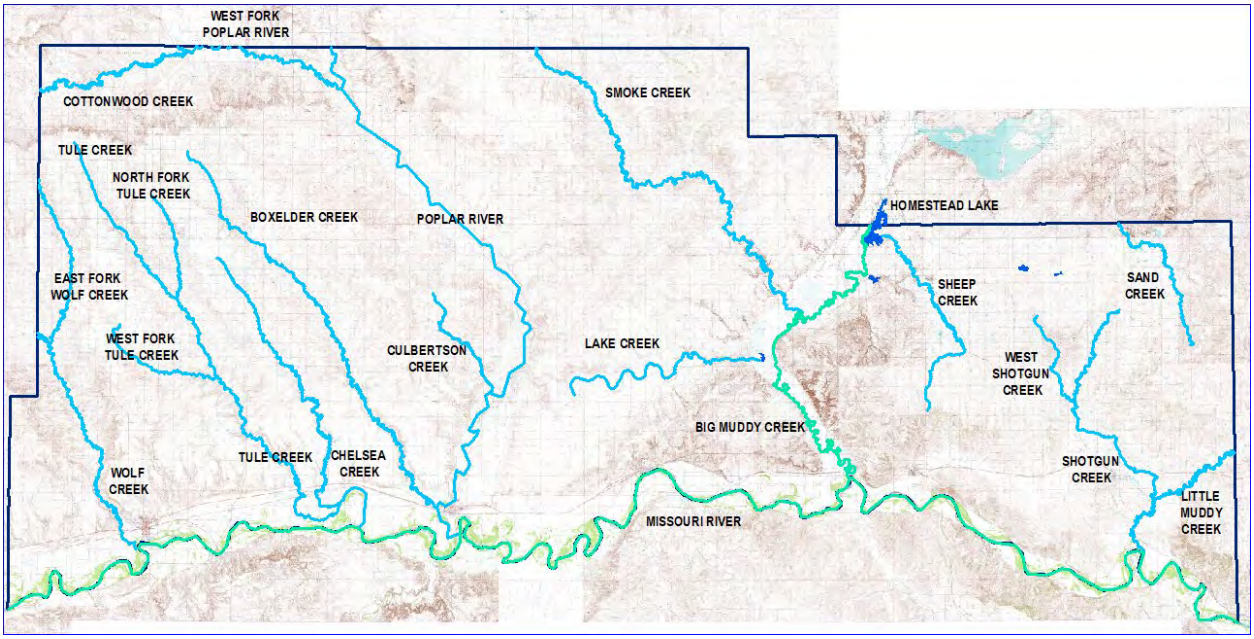


Figure 14. Major Streams, Roosevelt County.

Stream Flow

The United States Geological Survey Wyoming-Montana Water Science Center in cooperation with U.S. Army Corps of Engineers maintains three stream gauges in Roosevelt County as part of the Groundwater and Streamflow Information Program Network of Federal Priority Stream gauges (FPS). One stream gauge is on the Poplar River near Poplar, Montana. Another is near the mouth of Big Muddy Creek near Culbertson, Montana (USGS, 2019). Streamflow and average annual discharge are shown in Figures 15 through 18.

Culbertson, Montana is in Roosevelt County, but the Culbertson stream gage station on the Missouri River is listed for Richland County in the USGS National Water Information System Web Interface. At this location, flow is partly regulated by Fort Peck Reservoir on the Missouri River and other reservoirs on tributaries. Average flow from 2007 to 2018 was 9,756 cfs. The highest peak streamflow, 104,000 cfs, was recorded in June of 2011. Lowest peak stream flow of 8,620 cfs was recorded in April of 2009 (USGS, 2019). Annual peak streamflow and average annual discharge at this station are illustrated in Figures 19 and 20.

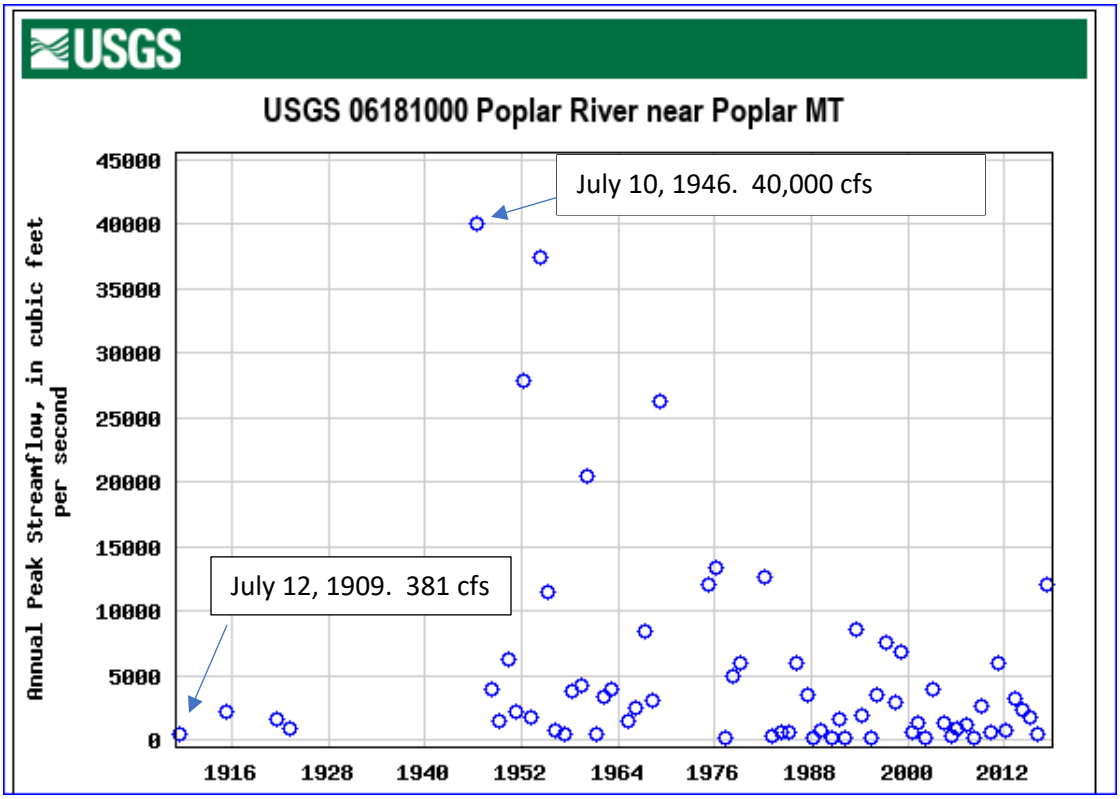


Figure 15. Annual Peak Streamflow, Poplar River Near Poplar, Montana.

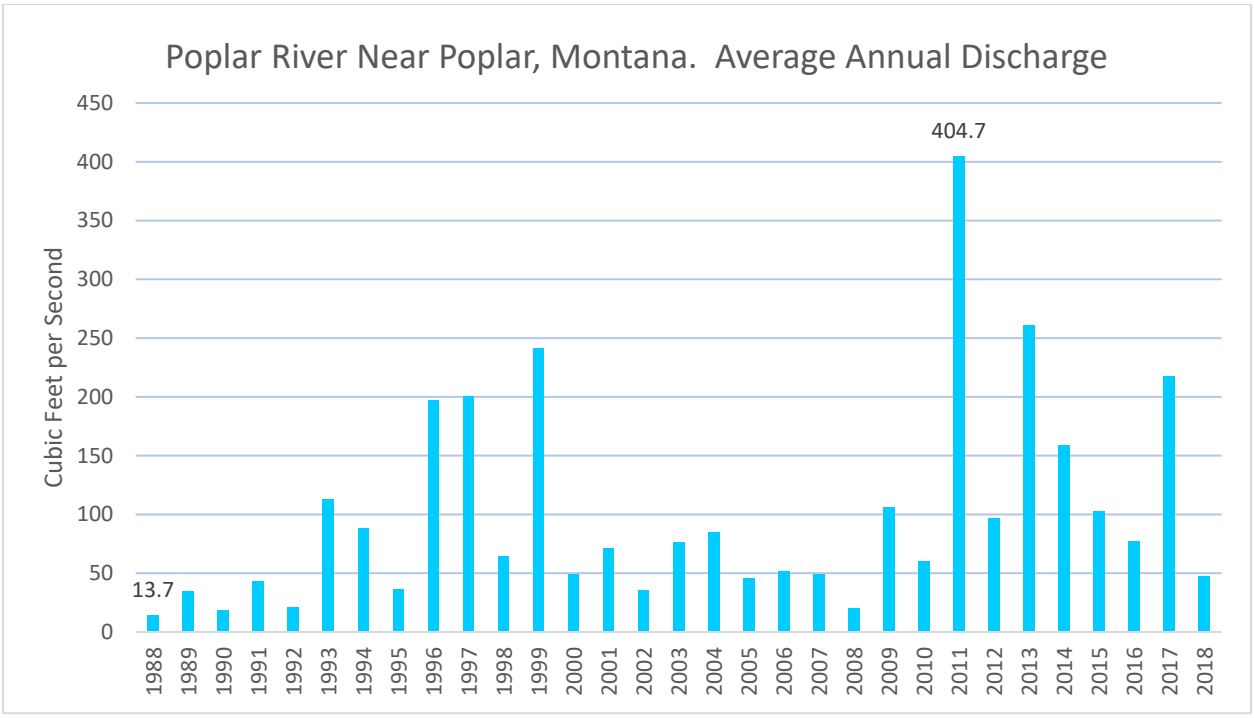


Figure 16. Average Annual Discharge, Poplar River Near Poplar, Montana.

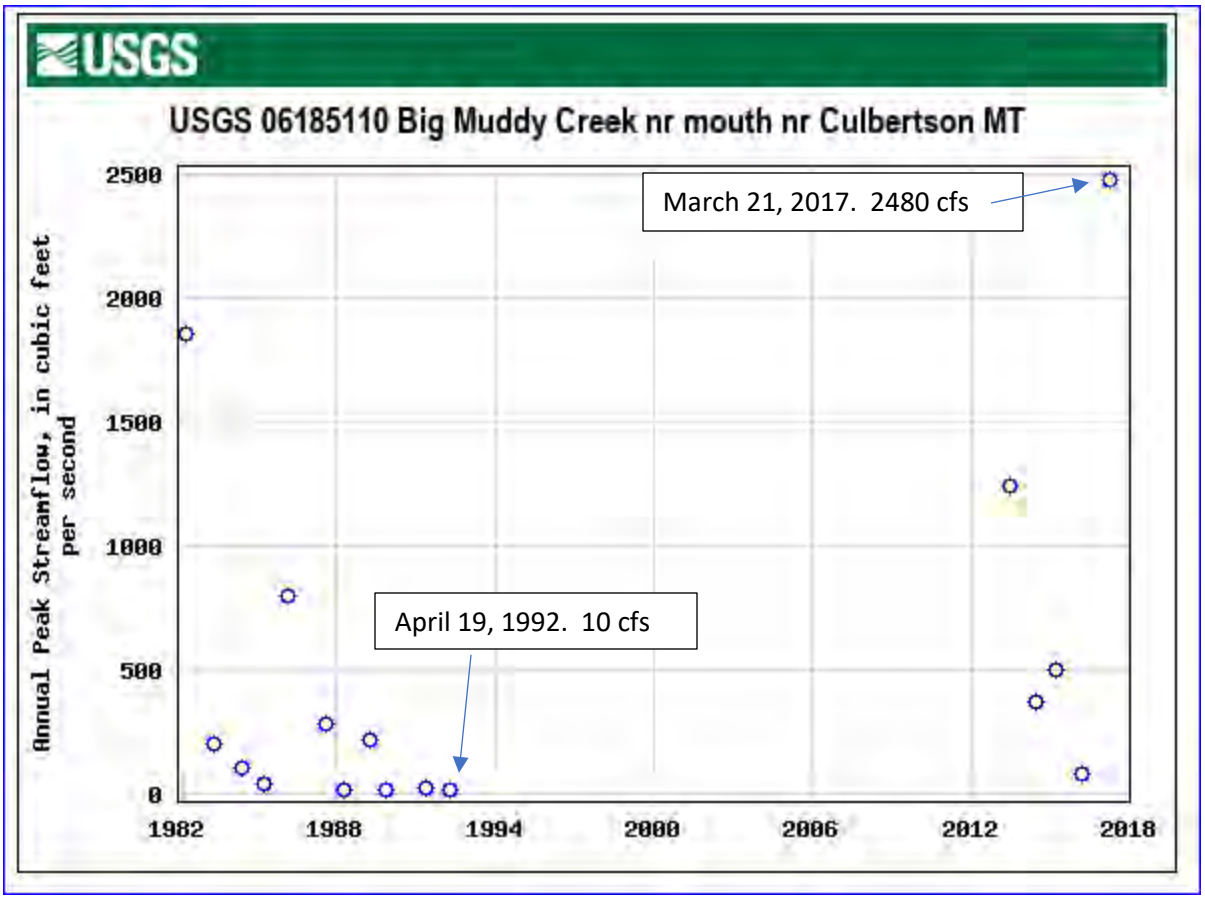


Figure 17. Annual Peak Streamflow, Big Muddy Creek.

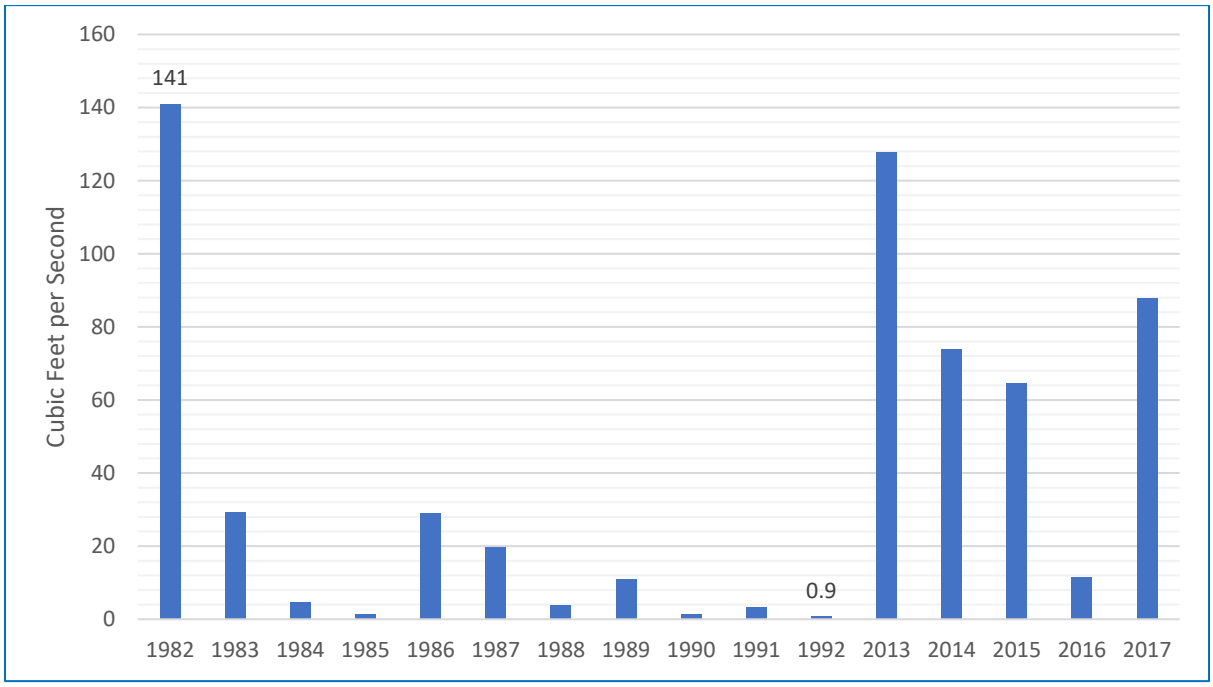


Figure 18. Average Annual Discharge, Big Muddy Creek.

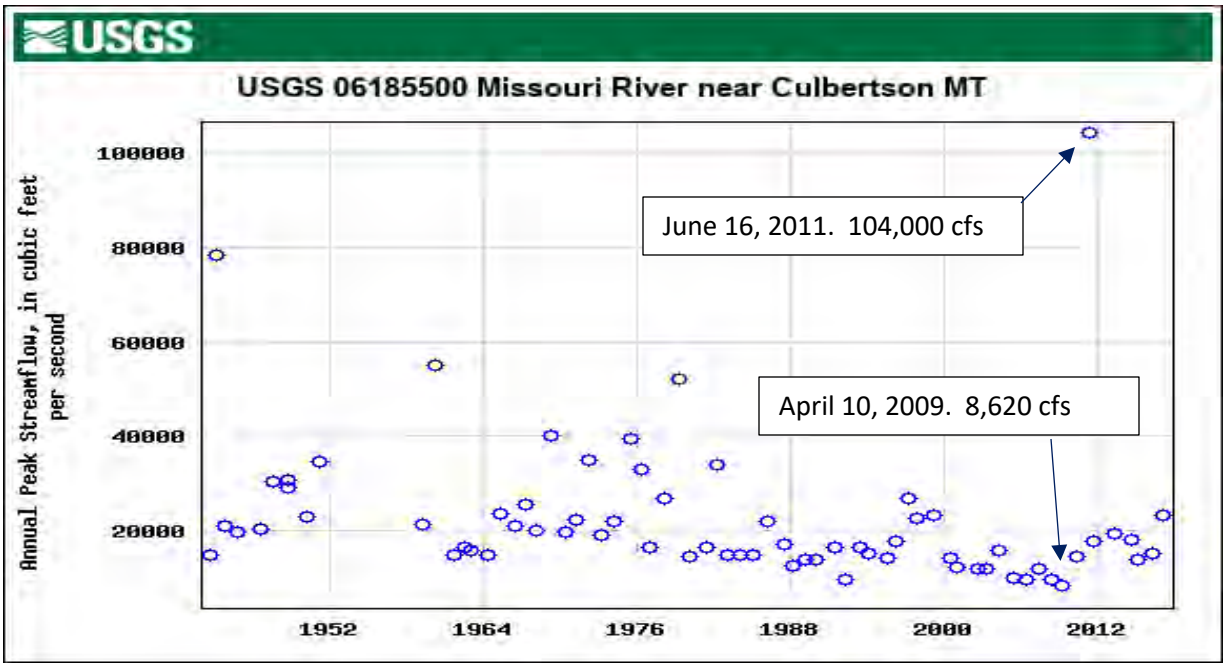


Figure 19. Annual Peak Streamflow at the Culbertson station.

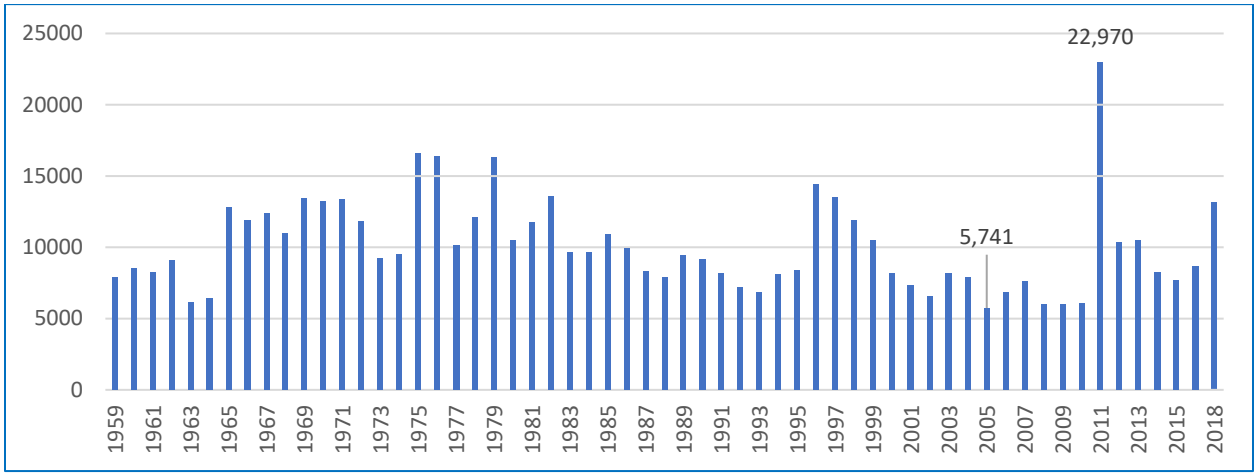


Figure 20. Average Annual Discharge at the Missouri River near Culbertson, 1959 through 2018.

Surface Water Quality

Montana Department of Environmental Quality's Clean Water Information Act, *2018 Water Quality Information* list of impaired waterbodies includes two reaches of the Missouri River, part of Big Muddy Creek and Homestead Lake in Roosevelt County.

Water Quality Category 1: *Waters for which all applicable beneficial uses have been assessed and all uses are determined to be fully supported.*

- Homestead Lake

Water Quality Category 5: *Waters where one or more applicable beneficial uses are impaired or threatened, and a TMDL is required to address the factors causing the impairment or threat.*

- The Missouri River from the Milk River to the Poplar River.

Impacts to the beneficial use primary contact recreation have not been assessed.

The beneficial use aquatic life is not fully supported in this stream reach due to:

Alteration in stream covers probably caused by loss of riparian habitat

Flow regime modification and temperature probably due to hydrostructure flow regulation or modification.

- The Missouri River from the Poplar River to the North Dakota border.

Impacts to the beneficial use primary contact recreation have not been assessed.
The reach does not fully support aquatic life. Probable causes are flow regime modification and temperature. Probable sources are dams or impoundments and impacts from hydrostructure flow regulation and modification.

- Big Muddy Creek from the Fort Peck Reservation boundary to the Missouri River.

This reach does not fully support aquatic life. Grazing in the riparian or shoreline zones and agriculture are the probable sources of alteration in stream-side or littoral vegetation cover, total nitrogen, total phosphorus, sedimentation and siltation. Impacts from hydrostructure flow regulation or modification is probably another source of alteration of stream side or littoral vegetation covers (Montana DEQ, 2019).

Groundwater

MBMG Groundwater Information Center provides the following data on wells in Roosevelt County.

- There are 3,909 wells in the county
- The deepest well is 2,012 feet deep
- The shallowest well is one foot deep
- The oldest well on record was drilled in January 1906

Table 7 shows the number of wells in sequential ranges of depth and the number of wells drawing from each groundwater sources. MBMG gives no correlation between well depth and water source (MBMG, 2020).

Table 7. Depth Ranges and Groundwater Sources of Wells in Roosevelt County

Depth (Feet)	Number of Wells		Source	Number of Wells
0-99	2,599		Fort Union Formation	400
100-199	850		Quaternary Alluvium	364
200-299	250		Hell Creek Formation	143
300-399	98		Glacial Outwash	98
400-499	47		Flaxville Gravel	82
500-599	29		Glacial Drift	62
600-699	4		Glacial Till	35
700-799	8		Fox Hills-Hell Creek Aquifer	33
800-899	5		Fox Hills Formation or Sandstone	30
>1000	2		Sand and Gravel	30
			Wiota Gravel	17
			Terrace Deposits	16
			Charles Formation	11
			Madison Group	7
			Judith River	7
			Other	19

The same source gives information on the uses of Roosevelt County wells. Note that the number of wells may differ from the county total as there may be more than one reported use for each well.

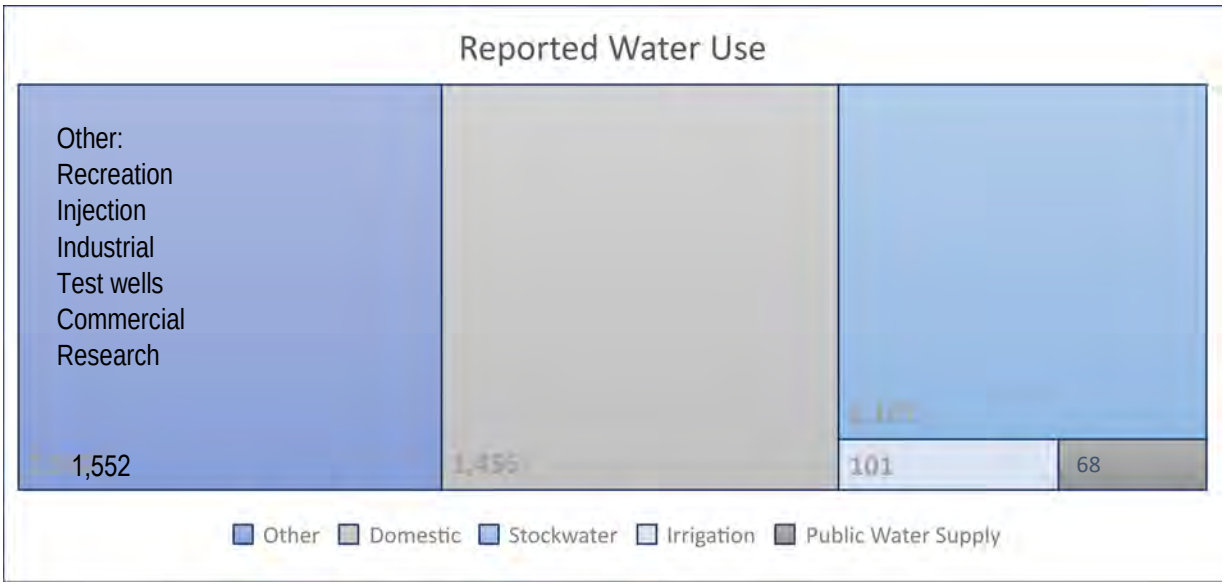


Figure 21. Reported Use of Roosevelt County Ground Water Wells.

MBMG maintains seven monitoring wells in Roosevelt County as part of the Statewide Monitoring Network. Water level and water quality data are collected to determine normal water levels, changes in water levels relative to climatic conditions, responses of water levels to development and long-term water quality trends (MBMG, 2020). Information on the locations of the monitoring wells, the sources, hydrographs of static water levels and other information can be obtained from MBMG Water information Center at

http://mbmggwic.mtech.edu/sqlserver/v11/data/dataProject.asp?MTCounty=ROOSEVELT&project=GWAAMON&datatype=swl&

AIR AND ENERGY

Air Quality

Montana Department of Environmental Quality Air Quality Bureau maintains 21 air quality monitoring stations throughout the state. Closest to Roosevelt County is the station in Sidney, Montana. Ambient temperature, wind speed and direction and pollutants including NO, NO2, NOX, ozone and particulate matter are monitored, and health effects are given for current local air quality. The Sidney Station generally reports "good" conditions where visibility is over 13 miles and no health effects are attributed to air quality, (MT DEQ, 2019).

Utilities

Two electric co-operatives provide most of the electricity to Roosevelt County homes and businesses. Sheridan Electric Co-Op serves areas of Daniels, Roosevelt and Valley Counties. The co-op serves 1,925 members on 2,011 miles of line. Norval Electric Co-op was created in 2008 as the result of a merger of Northern Electric in Opheim and Valley Electric in Glasgow. It provides power to 1,836 members in Daniels, Valley and Roosevelt Counties with 2,836 miles of line.

Petroleum Development

Roosevelt County yields 11.47 percent of all oil produced in Montana, making it the third largest oil-producing county in the state. There are 234 active oil wells in the county (ShaleXP, 2019).

Oil extraction is measured in barrels, or BBL. One barrel equals approximately 42 U.S. gallons. Gas is measured in MFC, or thousand cubic feet. Figure 21 shows oil and gas production from 1986 to 2018. Note that oil more than tripled from 2010 to 2013 when oil production peaked at a little more than 4.3 million barrels and gas topped out at around 3.2 million MFC. Although petroleum industry production has tapered off somewhat from the recent boom, it continues to be a very significant factor in the county's economy.

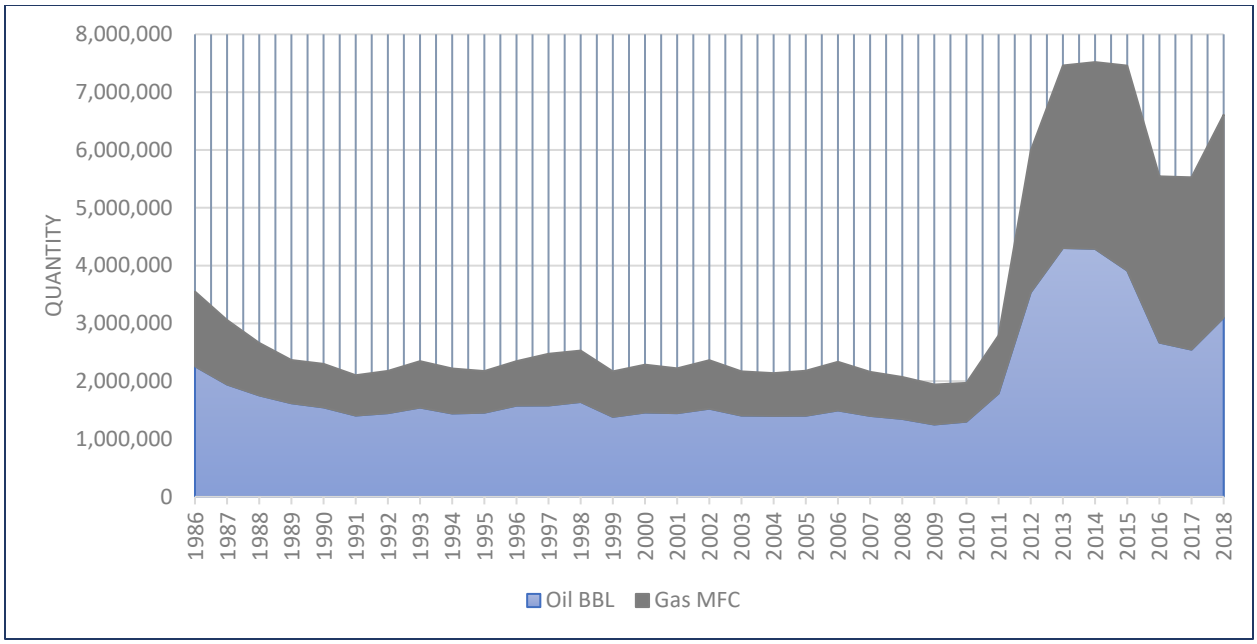


Figure 22. Roosevelt County Petroleum Production.

PLANTS AND ANIMALS

Wetlands

Wetlands are areas where water covers the soil or is at or near the surface of the soil all year or for periods of time during the year, including during the growing season. The water creates conditions that favor the growth of specially adapted plants and the development of characteristic wetland soils.

Many species of birds and mammals rely on wetlands for food, water and shelter, especially during migration and breeding. Wetlands function as sponges, retaining water on the landscape through periods of drought, and as a source of recharge for aquifers. They capture sediment often containing fertilizer or chemicals before it reaches surface water and they absorb rain and snowmelt, reducing the risk of downstream flooding (EPA, 2019).

Small wetland areas and riparian zones are common in Roosevelt County. These occur along ephemeral streams, as ponds installed for livestock water, and in depressions left on the landscape by the glaciers. Larger, contiguous wetland and riparian areas occur along the Poplar River and perennial streams and around larger water bodies. Figure 15 is a wetlands map of the mouth of Big Muddy Creek on the Missouri River. The wetland types represented in the image include those most frequently occurring in the areas of the county that have been mapped. Lakes do not appear in on the map in Figure 15; there are six lakes and eight large reservoirs in the county.

Wetland types descriptions:

- Freshwater emergent wetlands may be persistent or ephemeral. They are dominated by erect, rooted, water-loving plants.
- Freshwater ponds are natural or man-made waterbodies less than 20 acres in size.
- Lakes are waterbodies greater than 20 acres in size.

- Riparian emergent wetlands are characterized by herbaceous marshes, fens, swales or wet meadows.
- Riparian forested wetlands are dominated by trees; soils are saturated or flooded for at least part of the growing season.
- Riparian scrub-shrub include areas dominated by woody vegetation less than twenty feet tall. The species include true shrubs, young trees, and trees or shrubs that are small or stunted because of environmental conditions.
- Riverine systems include all wetlands and deep-water habitats that are within natural and artificial channels. They contain either continuous or intermittently flowing water.

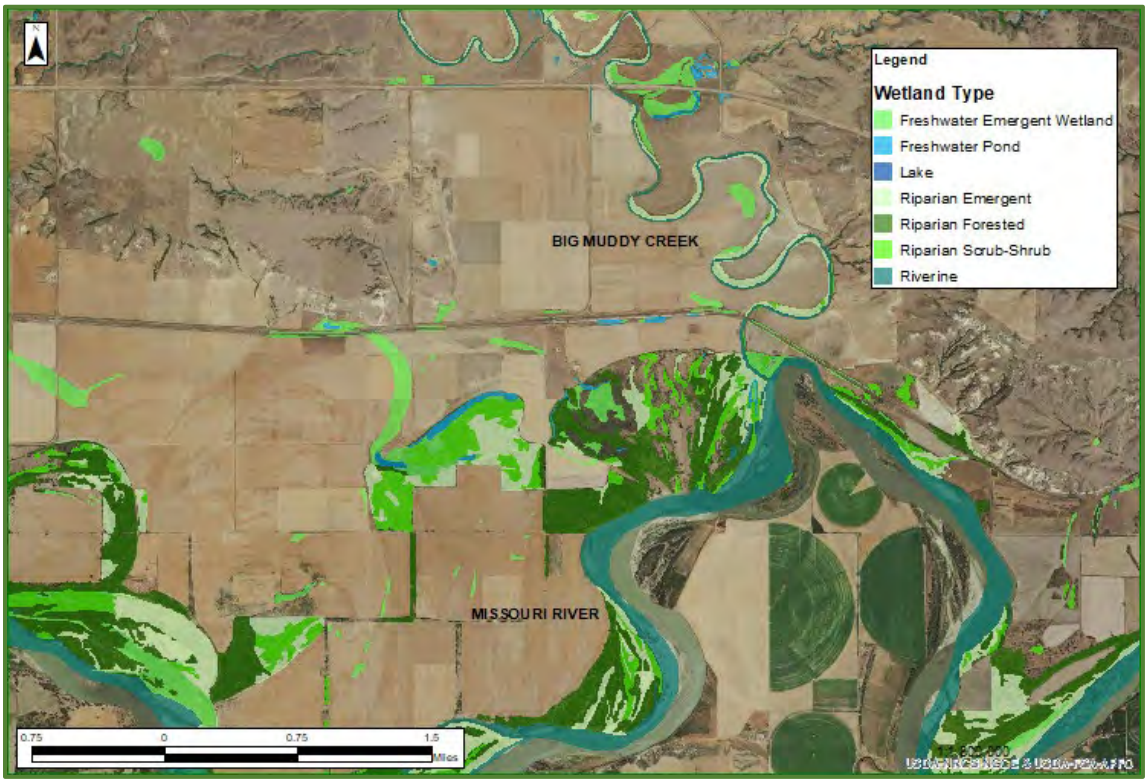


Figure 15. Wetland and Riparian Areas at the Confluence of Big Muddy Creek and the Missouri River.

Montana's State Wildlife Action Plan (SWAP) identifies all streams, rivers, floorplans and riparian, and wetland community types across the state as "Community Types of Greatest Conservation Need". The plan defines this as meaning there is a clear obligation to use resources to implement conservation actions that provide direct benefit to these community types. The plan also provides lists of SOCs (Species of Concern) associated with each community type (Ziegler, 2020). Figure 16 shows the SWAP Tier I Focal Areas throughout the state. The Lower Missouri Tier I Aquatic Focal Area occurs across the southern boundary of Roosevelt County.

Associated Community Types of Greatest Conservation Need (CTGCN) in the Lower Missouri Focal Area are Mixed Systems, Prairie River Systems and Prairie Stream Systems.

Associated Species of Greatest Conservation Need (SGCN) are:

- Blue Sucker *(Cycleptus elongatus)*
- Iowa Darter *(Etheostoma exile)*
- Northern Redbelly Dace *(Chrosomus eos)*
- Paddlefish *(Polyodon spathula)*
- Shortnose Gar *(Lepisosteus platostomus)*
- Sicklefin Chub *(Macrhybopsis meeki)*
- Northern Redbelly x Finescale Dace *(Phoxinus eos x P. neogaeus))*
- Pallid Sturgeon *(Scaphirhynchus albus)*
- Pearl Dace *(Margariscus margarita)*
- Sauger *(Sander canadensis)*
- Sturgeon Chub *(Macrhybopsis gelida)* (MT FWP, 2015)

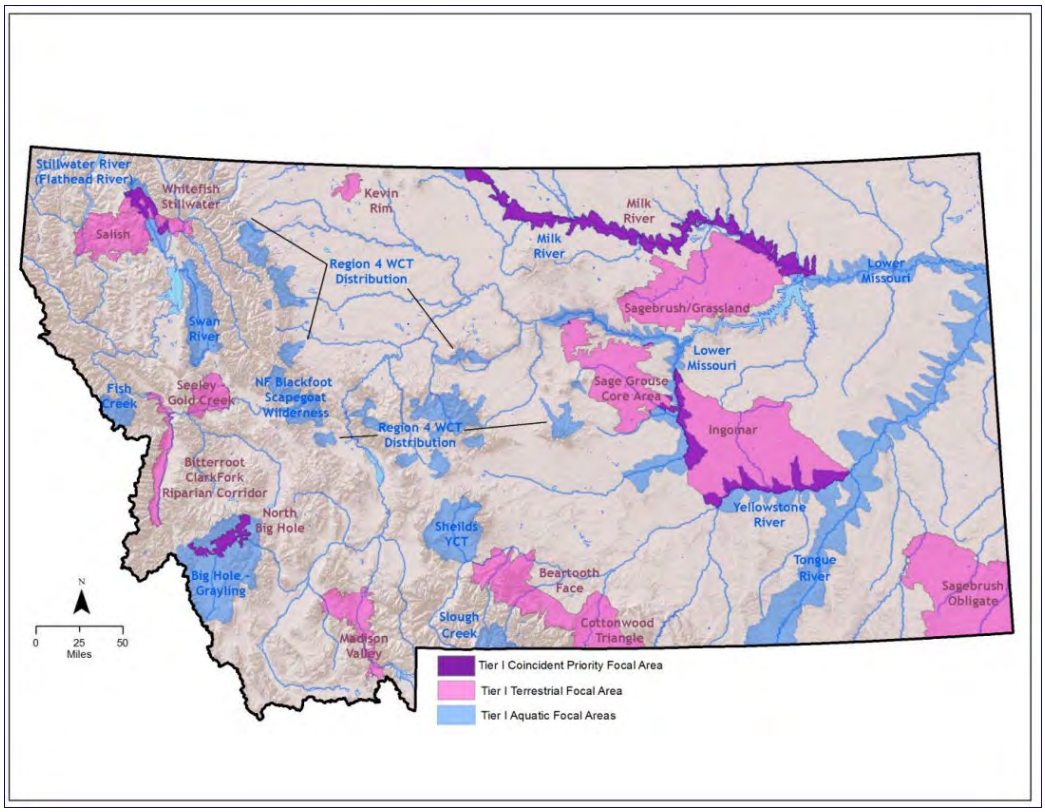


Figure 16. Montana SWAP Tier 1 Focal Areas.

Medicine Lake National Wildlife Refuge

The National Wildlife Refuge System was founded by President Theodore Roosevelt in 1903 to protect wildlife habitat. Medicine Lake National Wildlife Refuge Complex was established in 1935 to provide stopover and breeding habitat for migratory birds. Units of the Refuge are located across northeastern Montana, with one isolated unit, Lamesteer NWR, far to the south near Wibaux. The Complex consist of 31,702 acres in two tracts. The North Tract includes Medicine Lake National Wildlife Refuge (NWR) and

seventeen smaller units. Johnson Lake Waterfowl Production area and Homestead Lake are part of the Medicine Lake NWR Complex. These are pictured in Appendix A8.

Medicine Lake NWR has been designated a Globally Important Bird Area in the United State by the American Bird Conservancy. For information about the 283 species of birds as well as the many other species of wildlife that rely on the complex, visit U.S. Fish & Wildlife Service Medicine Lake webpage at https://www.fws.gov/refuge/Medicine_Lake/wildlife_and_habitat/wildlife.html

Plant Species of Concern

MTNHP Field Guide describes plant Species of Concern as, "Native taxa that are at-risk due to declining population trends, threats to their habitats, restricted distribution, and/or other factors". The MTNHP Species of Concern Report last updated on September 25, 2018 lists four plant species of concern in Roosevelt County (MNHP, 2019), shown in Table 8.

Table 8. Plant Species of Concern, Roosevelt County.

Species Subgroup	Scientific Name	Common Name	Habitat
Flowering Plant	*Mentzelia nuda*	Bractless blazingstar	Open areas (sandy or gravelly soils)
Flowering Plant	*Viburnum lentago*	Nannyberry	Riparian forest
Flowering Plant	*Cyperus schweinitzii*	Schweinitz's Flatsedge	Sandy sites
Bryophytes	*Physcomitrium hookeri*	Hooker's Physcomitrium Moss	Wet soils

Animal Species of Concern

Forty-nine species of birds, reptiles, mammals and fish and one dragonfly are listed by MTNHP as Animal Species of Concern. See Appendix B2.

The United States Department of the Interior Fish & Wildlife Service has determined that there are six species of native animals designated as listed endangered or listed threatened under the Endangered Species Act in Roosevelt County (USFWS, 2019).

Piping Plover (*Charadrius melodus*)—Listed Threatened, Designated Critical Habitat

Figure 17. Piping Plover

Piping Plover populations are declining due to habitat loss caused by alterations to river systems. These small shorebirds are distinguished by a single black band around their necks and very short yellow-to-orange bills with black tips.

Piping Plovers nest on shorelines and islands of alkali lakes in North Dakota and Montana and on sandbar islands and reservoirs shorelines along the Missouri Rivers. Dam construction, water diversion and water withdrawals change river flow and drastically reduce the amount of available nesting habitat. Human activity

has increased predation which decreases nest success and chick survival (USFWS, 2019). According to U.S. Fish & Wildlife Service, "A significant portion of the threatened Great Plains population of piping plover breeds in the (Medicine Lake National Wildlife) Refuge. A network of closed alkali lake basins in the northeast part of the Refuge typically supports 85% of Montana's breeding plover population and five to ten percent of the entire Great Plains population" (USFWS, 2020).

Northern Long-Eared Bat (*Myotis septentrionalis*)—Threatened.

Figure 18. Northern Long-Eared Bat

In Montana this species in known to occupy specific habitat within a limited range along the Missouri and Yellowstone river drainages near the North Dakota border, as shown in Figure 19 These small, light brown bats are most often found hibernating in abandoned mines in the river breaks in Richland County. In the summer they roost in riparian forested areas dominated by cottonwood trees. They emerge to feed at dusk using echolocation to hunt moths, flies, leaf hoppers and beetles.

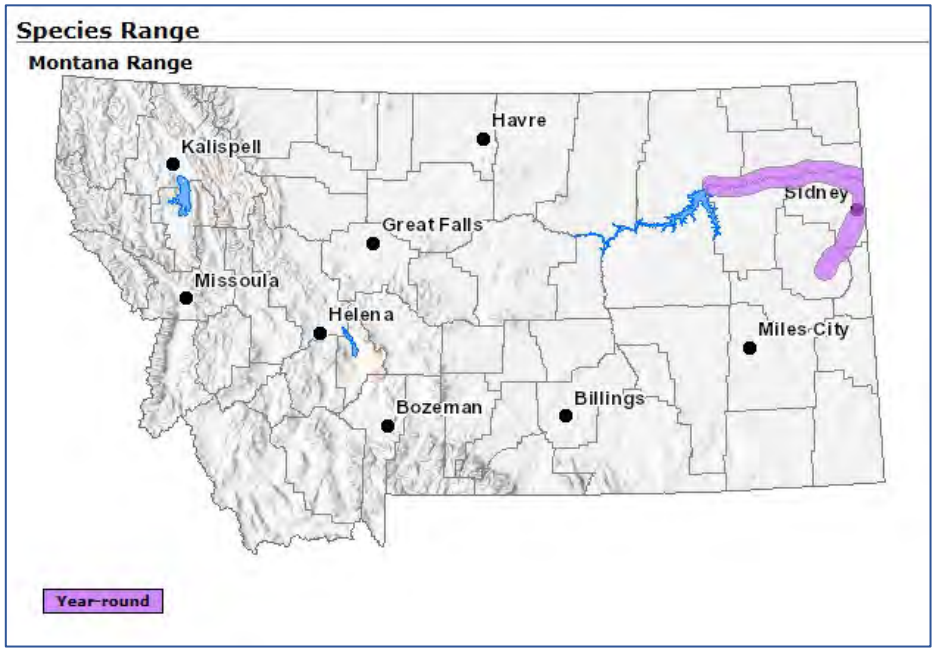


Figure 23. Northern Myotis Range in Montana (MNHP, 2019).

Long-eared bat populations in other areas of the country have suffered tremendous losses due to white nose syndrome. Regional extinction has occurred in some locations. White-nose syndrome is caused by a fungus, *Pseudogymnoascus destructans.* It attacks the bare skin of bats while they're hibernating. As it grows it causes changes in bats' behavior, causing them to become active during hibernation, using up the stored fat that they need to survive the winter. White-nose syndrome continues to spread rapidly across the United States and Canada, mostly through bat-to-bat contact. According to the White-Nose Syndrome Response Team, there were no reported occurrences of the disease in long-eared bats in Montana as of August 2019 (WNS Response Team, 2019).

Pallid Sturgeon (*Scaphirhynchus albus*)--Listed Endangered

Figure 24. Pallid Sturgeon

Pallid Sturgeon are bottom dwelling, slow growing fish that feed primarily on small fish and immature aquatic insects. Adults have a flattened snout, long slender tail and are armored with lengthwise rows of bony plates instead of scales. Pallid Sturgeon can grow up to six feet long and weigh up to 80 pounds. The species is adapted to living close to the bottom of large, silty rivers; their preferred habitat has a diversity of depths and velocities formed by braided channels, sand bars, sand flats and gravel bars.

The Pallid Sturgeon is one of the rarest fishes in North America; only about 200 adults remain in the upper Missouri River. It was federally listed as endangered in 1990 due to population decline caused by human alterations of the environment: impoundments, channelization and altered river hydrography, turbidity and temperature (USFWS, 2019). The Pallid Sturgeon is currently listed as "S1" in Montana due to extremely limited or rapidly declining population numbers, range or habitat, making it highly vulnerable to global extinction or extirpation in Montana (MNHP, 2019).

Any NRCS undertaking that impacts the Missouri or Yellowstone River below the ordinary high-water mark will require a consultation with USFWS and the Corp of Engineers (Ellenburg, 2019).

Figure 25. Whooping Crane

Whooping Crane *(Grus americana)* –Endangered
Whooping cranes are the world's rarest crane and the tallest birds in North America. Adult height is about five feet, wingspan can be up to seven- and one-half feet. Average adult weight is about fifteen pounds. Once found throughout North America, the last wild flock of whooping cranes had been reduced to fewer than 20 birds by the 1940's due to habitat loss and hunting. Intensive conservation efforts and international cooperation between Canada and the United States rescued the species from extinction, but they remain extremely rare.

Habitat loss remains one of the biggest threats facing wild whooping cranes. Collisions with wind turbines and power lines are an ongoing threat. Whooping crane utilize migratory habitat in eastern Montana including Medicine Lake NWR (USFWS, 2020) but do not breed in the state (Audubon, 2019).

Least Tern (*Sternula antillarum*)—Endangered
Least tern are North America's smallest tern. These little shorebirds are easily recognized by their yellow bills and legs. Although the species is widespread and common in places, the interior population been classified as threatened, endangered or as a species of concern for most states because of loss of habitat. The interior population declined by about 88% between 1966 and 2015; Interior least tern have been federally listed as endangered since 1985. NRCS Montana State Biologist Pilar Ziegler states, "The interior population of the least tern is listed as endangered everywhere it occurs" (Ziegler, 2019).

Figure 22. Least Tern

Least tern often nest in colonies; nesting sites are shallow scrapes on open ground near lake shores, on sandbars or along the riverside. Unfortunately, prime nesting habitat is often used by humans for recreation or residential development. Additionally, alterations to stream flows caused by dams, reservoirs, water diversion and other changes to river systems have eliminated most historic least tern nesting habitat. Wide channels dotted with sandbars, which are preferred by least terns, have been replaced by narrow, armor-banked rivers with highly altered flows. Fluctuating water levels from reservoir releases often destroy nesting sites (MT FWP, 2019). The Montana Interior Least Tern Management Plan provides more information on the species and efforts to conserve its habitat in Montana at https://www.usbr.gov/gp/mtao/loweryellowstone/EA/Final%20EA/Support/FWP%202006%20Montana%20Interior%20Least%20Tern%20Management%20Plan.pdf.

Figure 23. Red Knot

Red Knot (*Calidris canutus rufa*)—Threatened. The red knot is a medium-sized bulky sandpiper that exhibits distinctive reddish plumage during the breeding season. These birds migrate between their arctic tundra breeding grounds and marine winter habitat as far south as Tierra del Fuego. They commonly use stopover sites in the Northern Great Plains. Most observations in Montana occur in May; these have been rare.

Red knots are a global species; there are three subspecies in North America, and they all appear to be in decline. According to the US Fish & Wildlife Service, red knot's depend on suitable habitat, food and weather conditions at sites across the Western Hemisphere. They must be able to find favorable conditions at stopover sites within narrow seasonal windows as they migrate. (The Cornell Lab, 2020). Human development is one cause of the species' decline. Climate change is known to be another as it affects the arctic tundra ecosystem, the quality and availability of coastal habitats and the invertebrate food resources throughout the birds' range (USFWS, 2020).

Grassland Birds

Six species of grassland birds are Montana Species of Concern in Roosevelt County: Baird's sparrow, McCown's Sparrow, chestnut-collared longspur, Sprague's pipit, Brewer's sparrow and the long-billed curlew (MNHP, 2019).

Vickery, et al. (2000) explain the recent decline of grassland nesting bird, probable causes of their decline and in *Grassland Birds: An Overview of Threats and Recommended Management Strategies*. "During the past quarter century, grassland birds have experienced steeper, more consistent, and more widespread population declines than any other avian guild in North America. While some grassland species are Neotropical migrants, most are short-distance migrants that winter primarily in the southern U.S. and northern Mexico. The winter ecology of most grassland birds is poorly known; winter survivorship could be a critically important factor in the long-term declines that some species have experienced.

Shortgrass prairies evolved under intense grazing by prairie dogs and bison. Consequently, the shortgrass prairie bird fauna evolved to select a variety of different site characteristics, created within landscapes receiving grazing pressure ranging from light to severe. Unfortunately, current range management practices strive to graze rangelands uniformly. These practices remove or inhibit heterogeneous grazing impacts across landscapes, and do not favor the specific habitat requirements of many species.

For example, Mountain Plovers require heavily grazed sites for breeding, but Lark Buntings prefer denser vegetation. Thus, moderate grazing everywhere is unlikely to result in suitable habitat for either species. In many locales, insufficient grazing has led to the invasion of grasslands by shrubs and forbs. Rather than opposing grazing as a management tool in all grasslands, conservation groups should encourage grazing that imitates natural conditions as closely as possible" (Vickery, 2000).

Table 2. Roosevelt County Grassland Birds Species of Concern

Baird's Sparrow *Centronyx bairdii*  *@Terry Sohl*	• Prefers to nest in native prairie; requires a relatively complex plant structure including areas of light to no grazing. Feeds on seeds, insects and spiders. • Migrates from winter habitat in Mexico to the grasslands of the northern plains in Montana, North Dakota and Canada. • Loss of native prairie habitat due to agricultural conversion and loss of winter habitat due to overgrazing are thought to be causes of population decline (MNHP, 2019).
McCown's Longspur *Rhynchophanes mccownii* 	• Prefers semi-arid shortgrass steppe, open with sparse vegetation. • Migrates in large flocks between breeding ground in the Canadian Prairie Provinces and northwestern Great Plains and wintering grounds in the southwestern US and northern Mexico. • Decreasing range-wide abundance can be attributed to conversion of short-grass prairie to agriculture and urban development (MNHP, 2019).

Sprague's Pipit *Anthus spragueii* 	• Do not nest in cropland and are uncommon or absent in non-native grasslands. They tolerate some grazing of this habitat but do not nest where it is overgrazed. Prefer scattered shrubs and relatively little bare ground. • Summer diet is mostly insects and other arthropods, with some seeds. Little is known about the winter ecology and diet of Sprague's Pipit. • Breeds in the north-central United States in Minnesota, Montana, North Dakota and South Dakota as well as south-central Canada. Wintering occurs in the southern US. • Conversion from prairie to cropland and pasture along with excessive grazing are identified as the cause of this species' decline. (MNHP, 2019)
Brewer's Sparrow *Spizella breweri* 	• Prefers shrub-steppe habitat dominated by sagebrush. • Builds nests six to eight inches above the ground in big sagebrush. • The primary threat to Brewer's Sparrow breeding populations is fragmentation and loss of sagebrush shrubland and shrub-steppe habitats. (MNHP, 2019)

Chestnut Collared Longspur *Calcarius ornatus*  *Photo by USFS Mountain Prairie/Flcikr*	• Prefers open, sparse vegetation in native pastures with short-to-medium grasses that have been recently disturbed (grazed, mowed or burned). • Summer diet includes insects, especially grasshoppers, caterpillars and spiders, and seeds. In the winter it eats seeds from grain, sunflowers and grasses. • Winter habitat is the grasslands of the southwestern U.S. and north-central Mexico. Breeding grounds are grasslands in Montana and North Dakota and southern Canada. • Conversion of native prairie to agriculture and urban development has eliminated the Chestnut-collared Longspur from much of its historical breeding range (MNHP, 2019).
Long Billed Curlew *Numenius americanus* 	• Breeds in areas with sparse, short grasses, including shortgrass and mixed-grass prairies and agricultural fields. • Outside of the breeding season it is found in wetlands, tidal estuaries, mudflats and beaches. • Degradation or loss of grassland breeding habitat to agricultural and residential development is the greatest threat to the Long-billed Curlew. Additionally, other human disturbances such as off-road vehicle travel and agricultural practices such as chaining or dragging to remove sagebrush can destroy nests if done in the spring (MNHP, 2019).

Noxious Weeds

Leafy spurge is considered the 'worst' noxious weed in Roosevelt County (Peterson, 2020). It is most prevalent east of Big Muddy Creek. Spotted knapweed is a problem in areas disturbed by road construction. According to Roosevelt County Weed District Coordinator Clay Peterson, spotted knapweed is considered a priority noxious weed; new infestations are treated aggressively, and treated sites are monitored to prevent re-occurrence.

Canada thistle is a problem throughout eastern Montana. In Roosevelt County, Canada thistle occurs in creek bottoms, in the uplands, along roadways and in tame pasture including lands enrolled in the Conservation Reserve Program (CRP). Outbreaks in crop fields have become a resource concern with the increase in pulse crops in wheat rotations.

The Weed District promotes the use of insect biological control of leafy spurge and Canada thistle. An insectary south of Bainville, Montana has recently increased to sufficient size to allow collection of leafy spurge beetles (species not given) which helps the Weed District to realize its goal of applying more leafy spurge biocontrol every year. Canada thistle biocontrol includes releases of gall stem flies and stem boring weevils mostly to meet criteria for specific Conservation Stewardship Program (CSP, CStwP) activities. Successful control seems to be tied to the presence of an unspecified rust which can attack the plants through injuries caused by other agents (Peterson, 2020).

Montana Noxious Weed List is included in Appendix B3.

Aquatic Invasive Species

Montana FWP's list of invasive species does not include noxious weeds. Only one species from the FWP list is shown to be a threat to Roosevelt County. Eurasian watermilfoil (*Myriophyllum spicatum*), Figure 32, is an invasive aquatic plant native to Europe, Asia, and northern Africa. It was likely introduced to North America as contaminant in ships' ballast or through the aquarium industry. It is now one of the most widely distributed invasive aquatic plants on the continent (OFAH/MNRF, 2020).

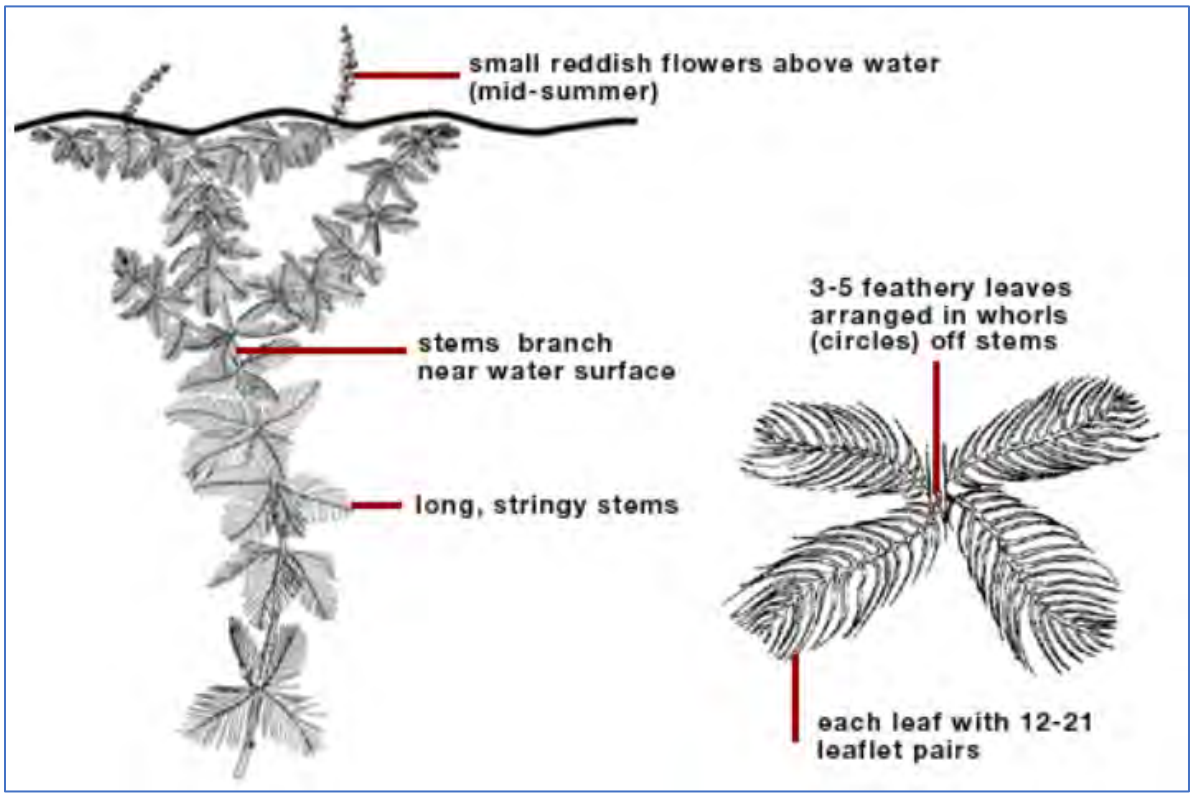


Figure 26. Eurasian Watermilfoil. Image courtesy of Seagrant@unm.edu.

The species spreads in the water by seed, by root crown buds and by fragmentation; even the smallest detached piece of the plant can quickly grow into a new plant. Eurasian watermilfoil spreads overland via transport on boats, motors, trailers, fishing nets, and other gear. It grows thick mats in waters less than 15 feet deep but can grow in water to 25 feet deep or more. Once established, it can quickly take over shallow lakes and rivers, which can prevent boating, fishing, hunting, and swimming. Eurasian watermilfoil is known to inhabit the water of the Missouri River from Fort Peck Reservoir to the North Dakota border (Montana FWP, 2020).

For information on Aquatic Invasive Species and other invasive species exclusive of Montana noxious weeds, visit FWP at http://fwp.mt.gov/fishAndWildlife/species/ais/speciesId/default.html.

SECTION III CONSERVATION ACTIVITY ANALYSIS

Farm Bill Programs

CTA

Conservation Technical Assistance (CTA) is the help provided by NRCS or other agencies under the technical supervision of NRCS, to address natural resources concerns on private land. CTA provides land users with conservation technology and the delivery system needed to realize their conservation goals. The most commonly applied CTA practices in Roosevelt County from 2008 through 2018 have been:

- Integrated Pest Management
- Nutrient Management
- Residue and Tillage Management, No Till
- Residue Management, Seasonal
- Livestock Pipeline
- Fence
- Conservation Crop Rotation
- Residue and Tillage Management, Reduced Till
- Upland Wildlife Habitat Management
- Prescribed Grazing
- Livestock Watering Facility
- Livestock Water Well

CRP

The Conservation Reserve Program (CRP) is a soil conservation program administered by the Farm Service Agency (FSA). In exchange for a yearly rental payment, producers agree to remove environmentally sensitive land from crop production and plant species that will improve the environment. The long-term goal of the program is to re-establish valuable land cover to improve water quality, prevent soil erosion, and restore habitat for wildlife. In addition to the rental agreement, many Daniels County land managers have elected to apply conservation practices under CRP to further benefit natural resources on their former crop fields. Conservation Cover, Forage and Biomass Planting, Integrated Pest Management, Access Control and Range Planting were the most commonly applied practices in CRP conservation plans assisted by the Roosevelt Field Office. These were applied on nearly 21,000 acres.

EQIP

The Environmental Quality Incentives Program (EQIP) is a voluntary conservation program that helps producers promote agricultural and environmental quality as compatible goals. Through EQIP, producers receive financial and technical assistance to implement structural and management conservation practices that optimize environmental benefits on working agricultural land. The most

common EQIP conservation practices applied through the Culbertson and Poplar Service Centers are shown in Table 10.

Table 3. Most Common Roosevelt County EQIP Practices, 2008 through 2018

Practice	Applied	Measure
Livestock Water Well	12	Units
Pumping Plant	12	Units
Livestock Water Pipeline	128,641	Feet
Livestock Water Tank	52	Units
Prescribed Grazing	179,451	Acres
Fence	1,010,619	Feet
Residue Management	4,486	Acres
Nutrient Management	16,064	Acres
Integrated Pest Management	4,912	Acres
Salinity Management	4,486	Acres
Cover Crops	2,534	Acres

CSP & CStwP

The Conservation Stewardship Programs, CSP (2008) and CStwP (2017), help producers advance their existing conservation plan and improve their business operations. In Roosevelt County, rangeland enhancements intended to reduce nutrient loading in ground and surface water were applied to over 195 thousand acres between 2008 and 2018 through these programs. Monitoring livestock forage quality, mitigating livestock access to sensitive areas and other grazing management activities have been applied to over 151,000 acres. On cropland, enhancements that reduce nutrient loss and off-target herbicide application were common components of conservation plans, as were activities that improve habitat for wildlife, pollinators and beneficial insects.

SECTION IV NATURAL RESOURCE PROBLEMS AND DESIRED FUTURE OUTCOMES

Based upon feedback from an ongoing effort to survey the operators of Roosevelt County, the following is a summation of general resource concerns (concerns listed most prevalent to least). The returned surveys provide a cross-section of Roosevelt county covering nine watersheds.

Cropland

- Crop Rotations, continuous cover, and weed control tied for the top priority.
- Saline seeps, the need to convert to no-till, residue management, and irrigation water management all tied for the second priority.

Rangeland

- Inadequate water for livestock is the top priority.
- The need for more fencing and the need for more rangeland monitoring tied for the second priority.
- Integrated pest management was determined to be the third resource priority.
- Intensive grazing was determined to be the fourth most important resource priority.

Wildlife

In order of importance, the conservation activities and resource concerns for wildlife are:

- Tree Planting
- Grass Plantings
- Pollinators
- Food Plots for wildlife

Desired Future Outcome

The overall desire is to see these resource concerns addressed in a timely fashion that results in protection and enhancement while achieving an economic return.

SECTION V PRIORITIZATION OF NATURAL RESOURCE PROBLEMS AND DESIRED OUTCOMES

The Roosevelt County Long Range Plan represents a dynamic resource conservation strategy. Long Range Planning is the new model for conservation delivery across Montana, but it must be recognized that the NRCS Field Offices have many other responsibilities such as the Nation Resource Inventory (NRI), conservation compliance, emergency programs, et cetera, which must be accomplished concurrently. The resource concerns below are listed in priority order with the knowledge this Long-Range Plan will change over time as resource concerns in target areas are addressed, and as other resource concerns are identified, and as other issues continue to influence conservation in Roosevelt county.

The Roosevelt County Local Working Group met in 2019 to discuss and prioritize natural resource concerns. Considering the results of the meeting, requests for assistance with resource conservation in the county, and trends in resource use and agriculture, the Field Office has selected the following resource concerns in order of priority:

Transition of expiring Conservation Reserve Program acres to other appropriate uses

a. Land Use Planning

b. Fencing and Water Development

c. Crop Rotations, Buffer Strips, Nutrient and Pest Management

d. Increased Livestock Density

e. Grazing Management

f. Field Renovation

g. Soil Health (cover crops, bale grazing and salinity control)

Shelterbelt Restoration/Renovation

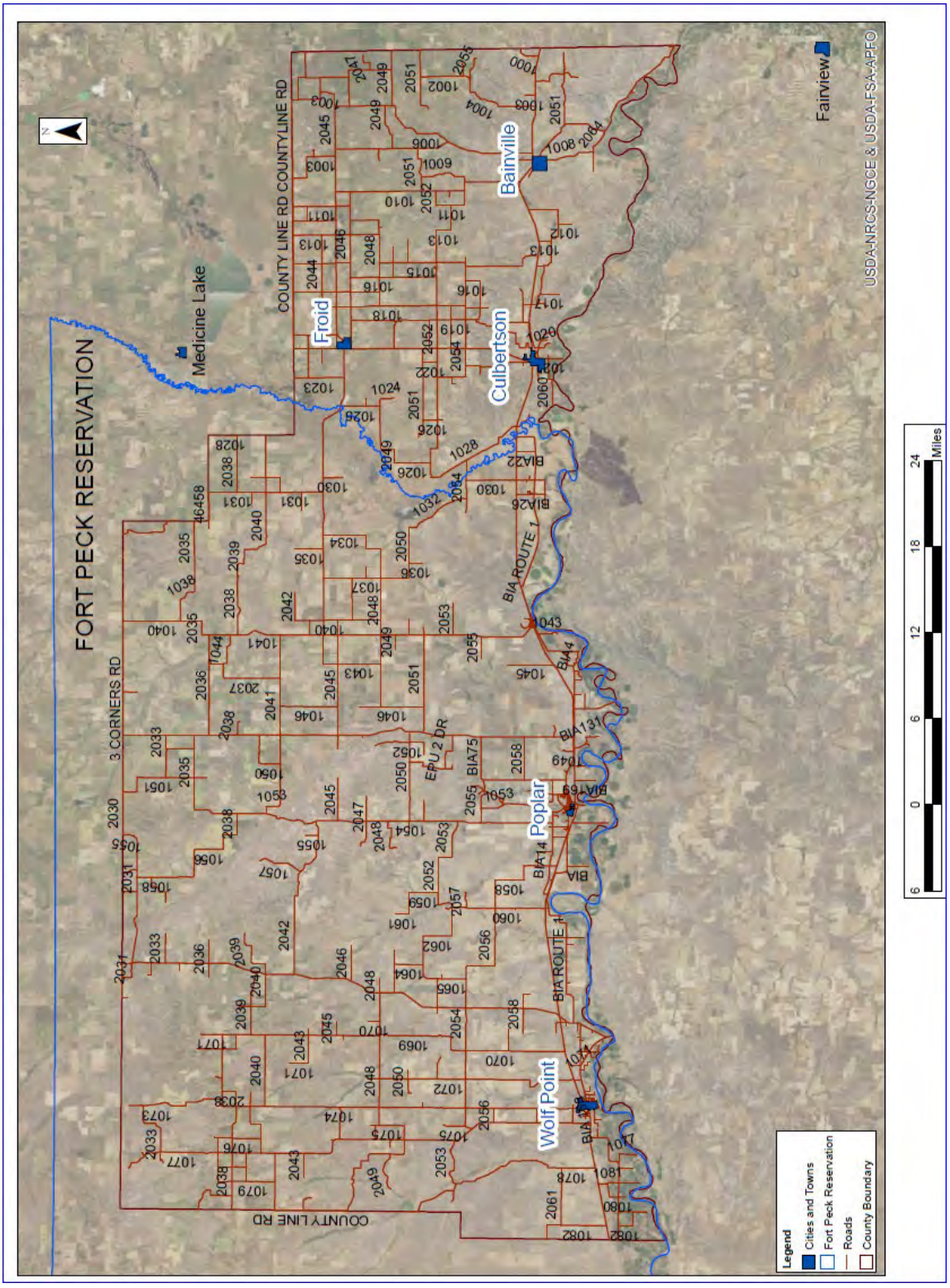
a. Tree Education

b. Maintenance

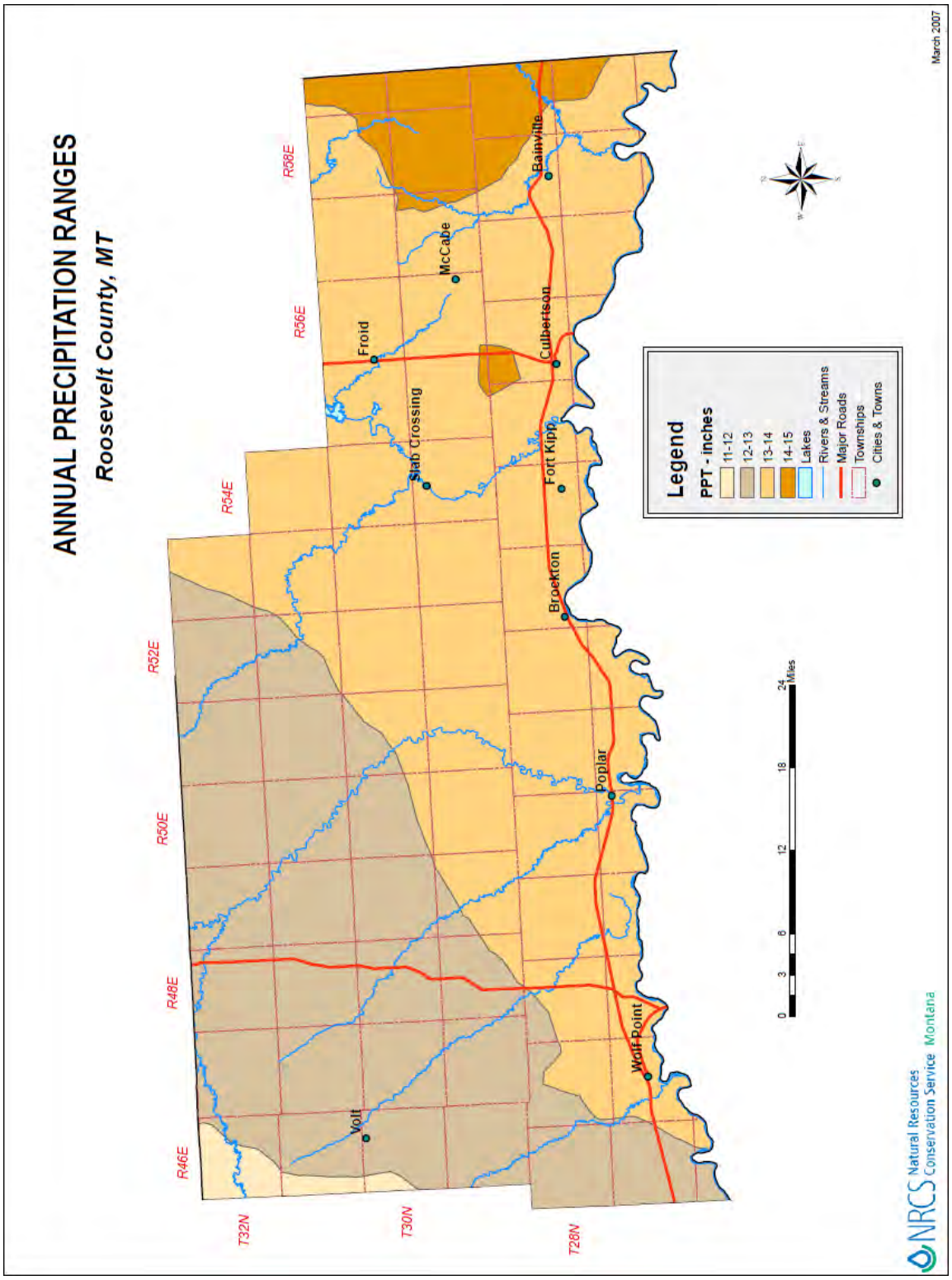
c. Assistance

APPENDIX A

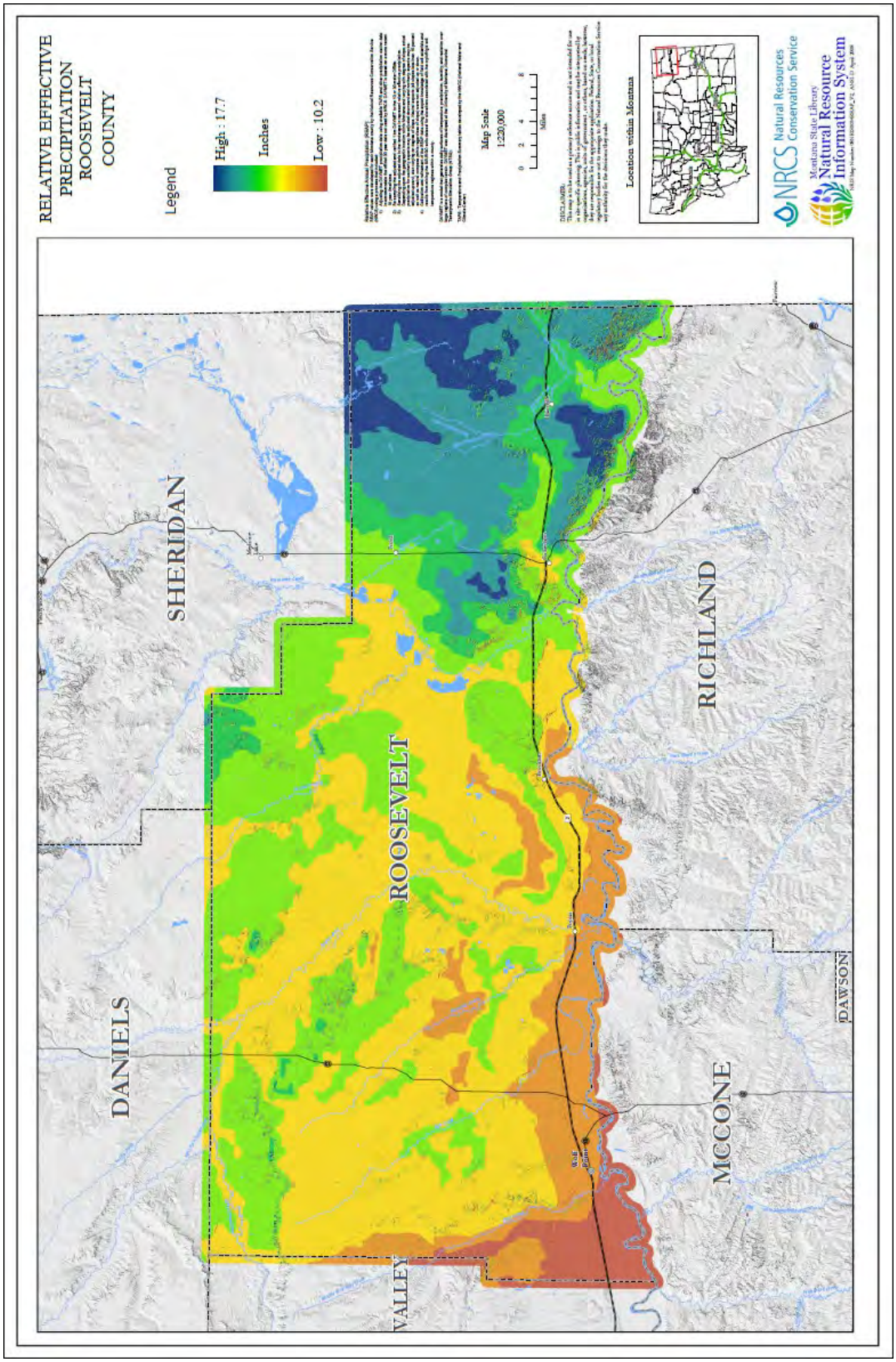
A1 Roosevelt County



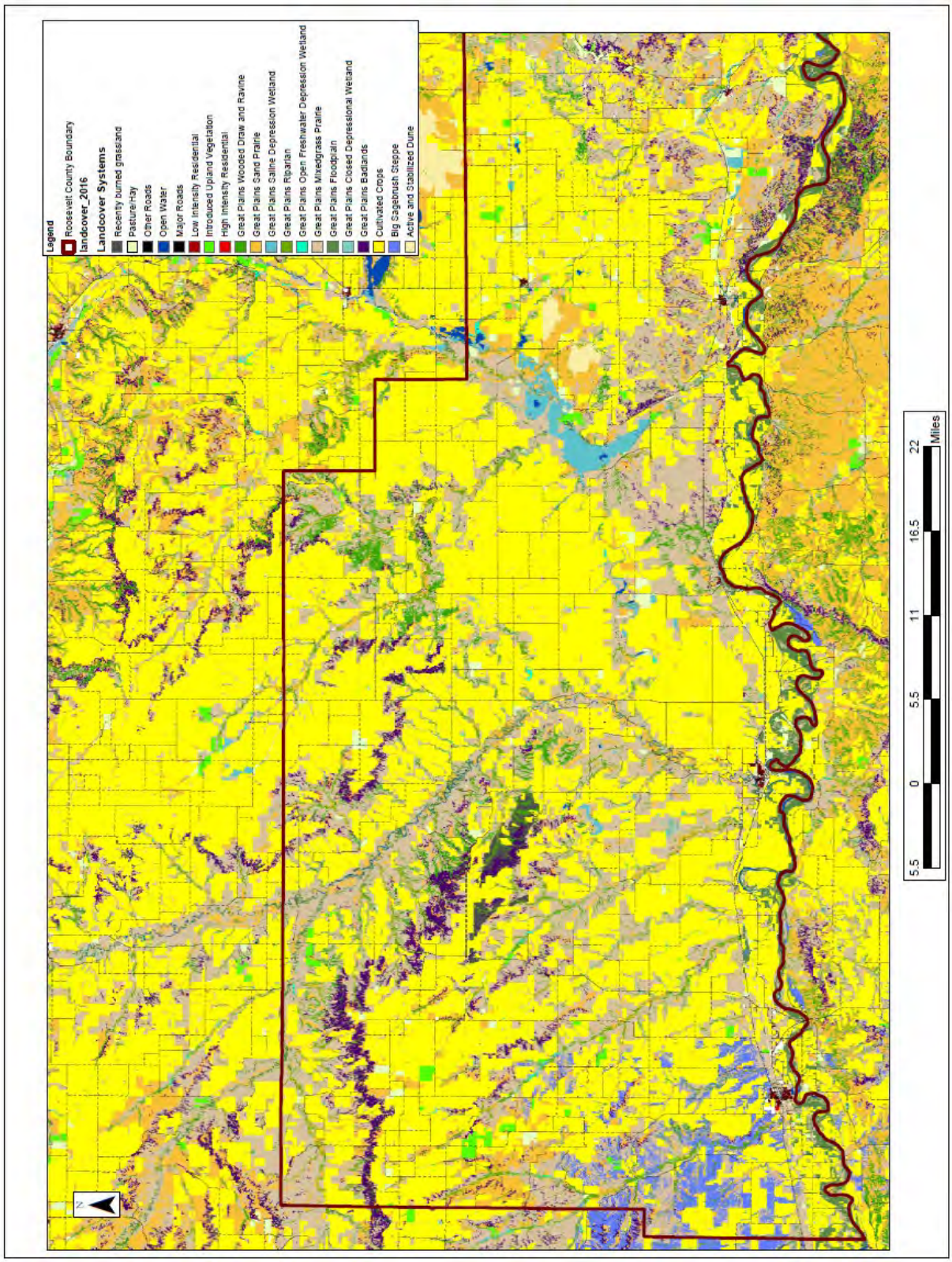
A2 Annual Precipitation Ranges



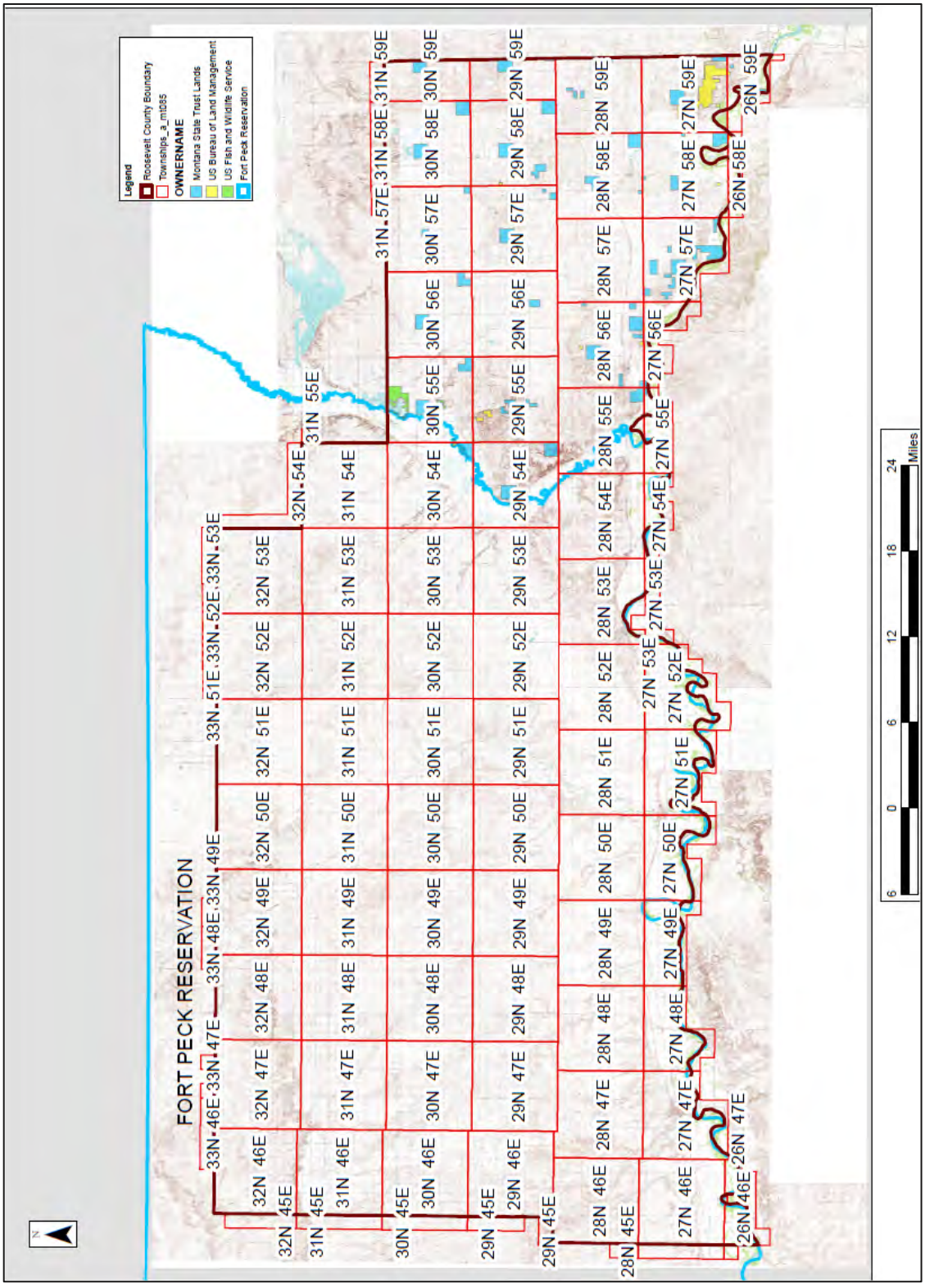
A3 Relative Effective Precipitation (REAP)



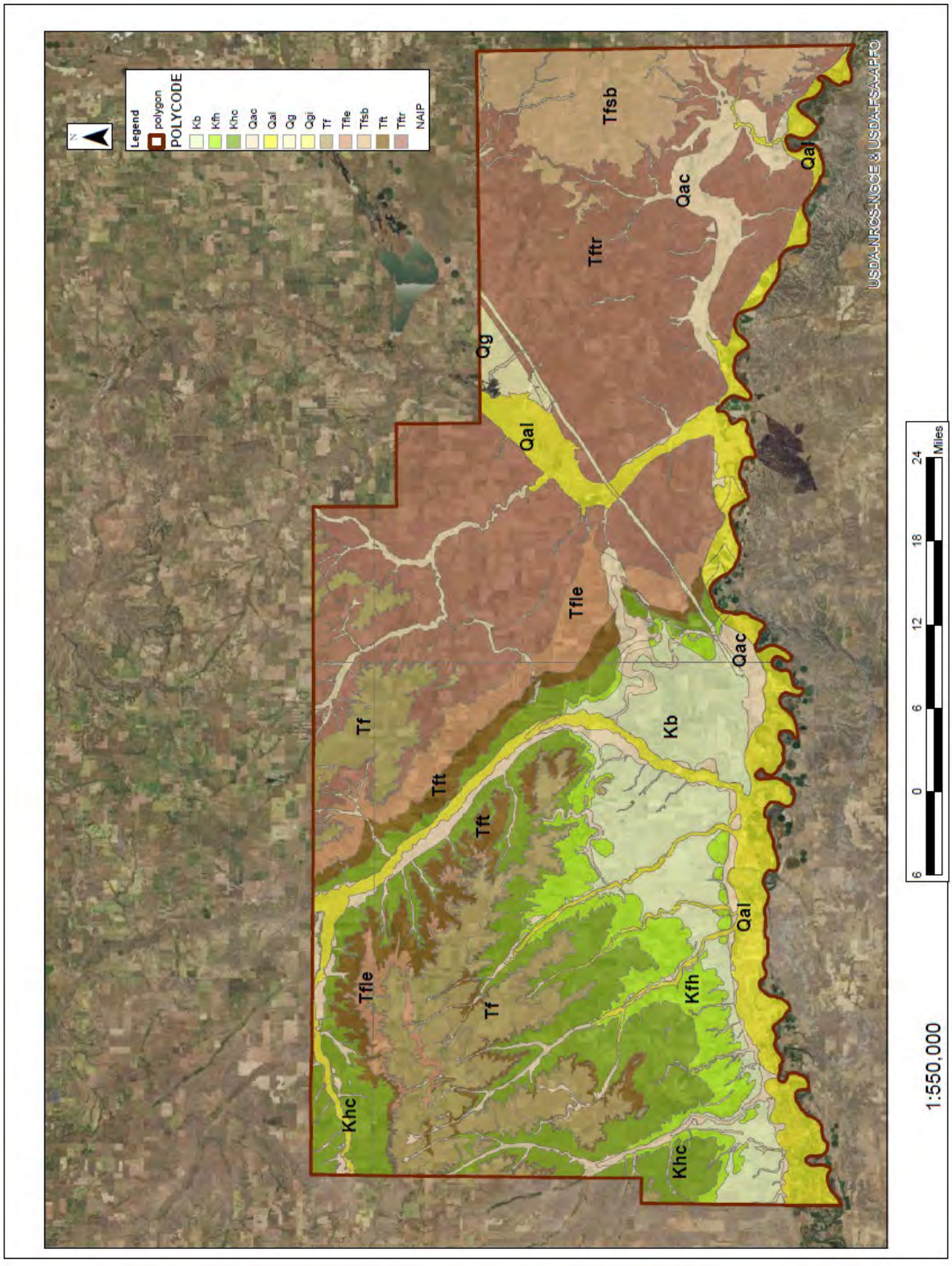
A4 Landcover



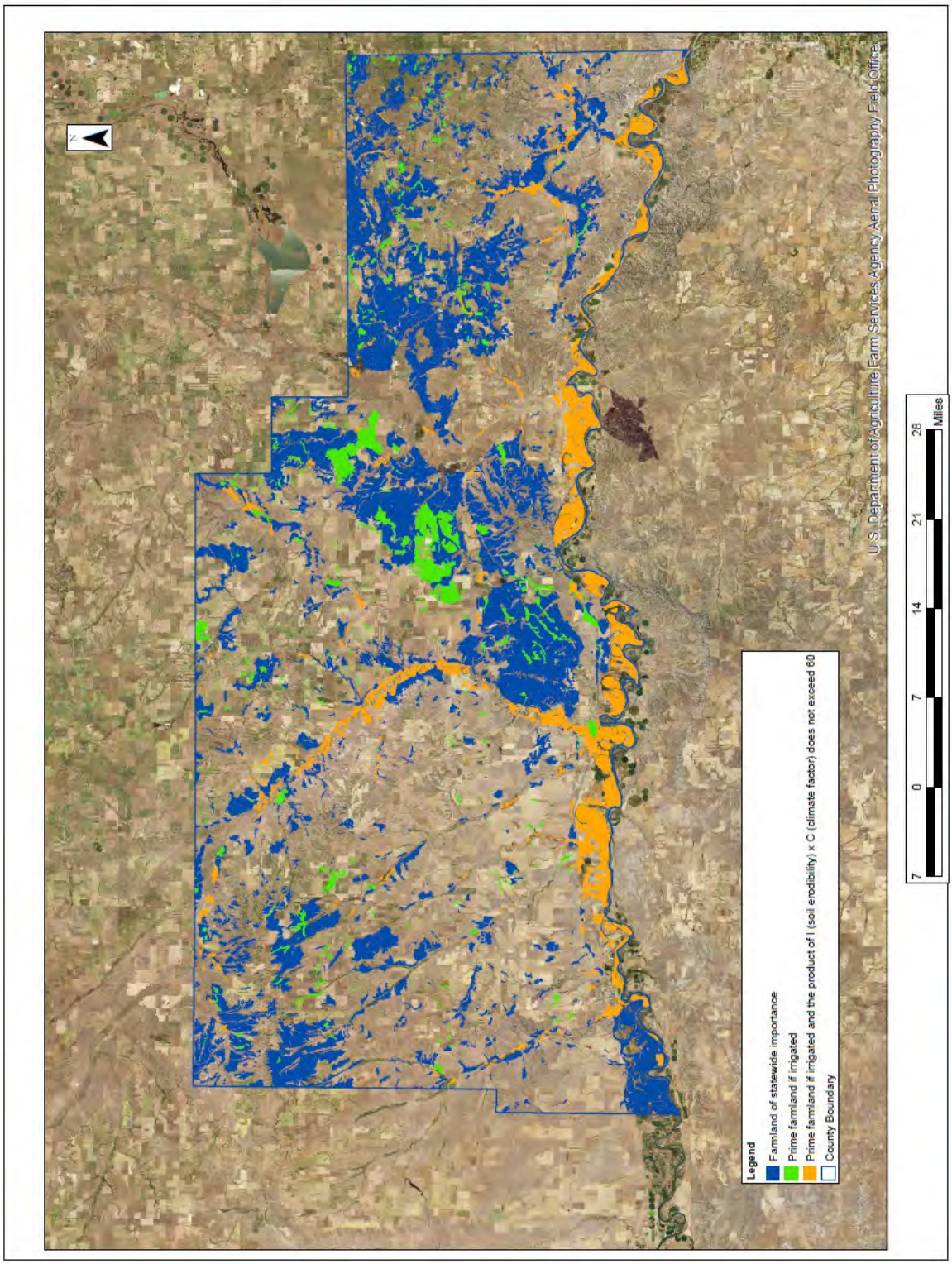
A5 Land Ownership



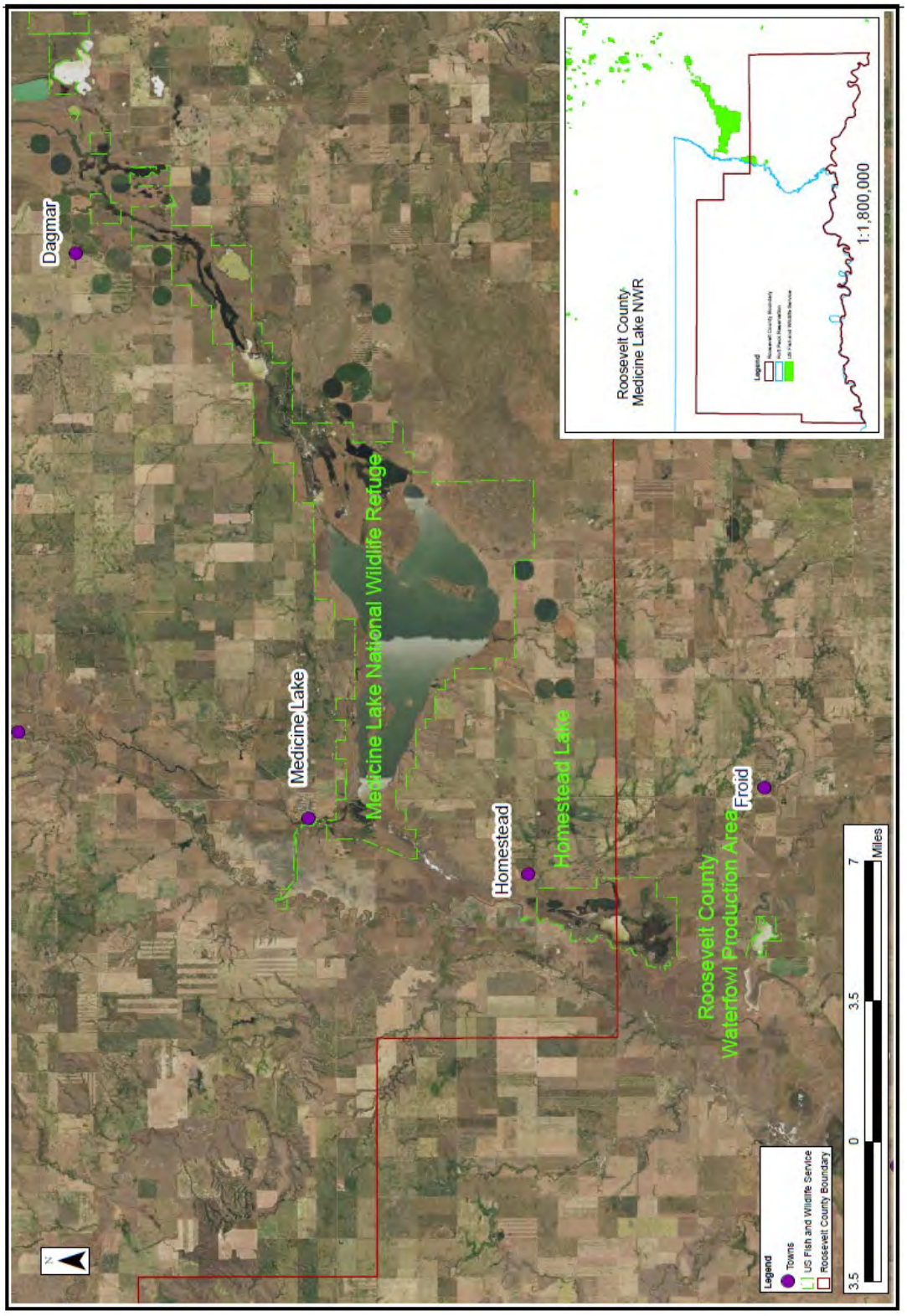
A6 Geology


Legend
polygon
POLYCODE
Kb
Kfh
Khc
Qac
Qal
Qg
Qgi
Tf
Tfle
Tfsb
Tft
Tftr
NAIP
N
Tfsb
Qac
Qal
Tftr
Qg
Qal
Tfle
Qac
Tf
Kb
Tft
Tft
Qal
Tfle
Kfh
Tf
Khc
Khc
USDA-NRCS-NCGE & USDA-FSA-APFO
6
0
6
12
18
24
Miles
1:550,000

A7 Farmland


U.S. Department of Agriculture, Farm Services Agency Aerial Photography Field Office
Legend
Farmland of statewide importance
Prime farmland if irrigated
Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
County Boundary
7
0
7
14
21
28
Miles

A8 Medicine Lake NWR Areas



APPENDIX B

BI NRCS Success Story

NRCS Success in Working with the Fort Peck Tribes and Members in Rangeland Conservation.
Paul Finnicum, NRCS Tribal Conservationist

With the assistance of the NRCS, the Fort Peck Tribes were one of the first Tribal governments to adopt an Agricultural Resource Management Plan (ARMP) which spelled out how the Tribes and its members wanted their natural resources to be taken care of. As a result of the adoption of the ARMP in 2014, the Tribes have developed a new land use policy, drought management plan, cultural resource review policy, and a programmatic Environmental Assessment tool, relying on NRCS standards and specifications to demonstrate how the land should be cared for meeting NEPA compliance. In 2014, the Tribes contributed $300,000 to start implementing the provisions of their ARMP on their native rangelands, specifically their 94 range units comprising over 320,000 acres. In 2015, the decided to apply for federal cost share assistance through the Environmental Quality Incentive Program (EQIP).

Since 2015, utilizing EQIP funding, the NRCS has accomplished the following working with the Tribes and its members:

- EQIP contracts on 20 Range Units with 18 different operators.
- Obligated $4,032,441.50 dollars through EQIP, including $655,000 for fiscal year 2019.
- Installed over 305 miles of wildlife friendly fence to facilitate management practices.
- Developed Prescribed Grazing Plans with a minimum of four pastures on 20 range units comprised of 75,140 acres.
- Performing range monitoring on all range units, including exclusions and photo plots on all 94 units totaling 320,000 acres.
- Controlled noxious weeds on over 100 acres.

The Tribes have employed nearly 130 Tribal members to install the wildlife friendly fence since 2014.

The Fort Peck Tribes also have established their own cost share program for range improvements. The Tribes dedicate $3.00 per AUM from range fees for conservation called the Range Improvement Fund. In the past 5 years, utilizing NRCS conservation planning, standards and specifications, they have installed 62 miles of wildlife friendly fence on 20 range units made up of 12,776 acres with prescribed grazing plans containing a minimum of four pastures, including monitoring and numerous water developments.

Totals with NRCS Conservation Planning and Financial Assistance:

- Wildlife friendly fence to facilitate management, 367 miles.
- Prescribed Grazing Plans with minimum of 4 pastures on 40 Range Units totaling 87,916 acres.
- Rangeland Monitoring for utilization and distribution utilizing exclusions and photo plots on 320,000 acres.
- Noxious Weed Control on 100 acres.

Expanded the Tribal Buffalo herd from 44 animals on 2,500 acres to nearly 500 head on nearly 26,000 acres.

B2 Animal Species of Concern, Roosevelt County

Species	Common Name	Scientific Name	Habitat
Mammals	Townsend's Big-eared Bat	*Corynorhinus townsendii*	Caves in forested habitats
	Eastern Red Bat	*Lasiurus borealis*	Riparian forest
	Hoary Bat	*Lasiurus cinereus*	Riparian& forest
	Little Brown Myotis	*Myotis lucifugus*	Generalist
	Northern Myotis	*Myotis septentrionalis*	Riparian & mixed forest
Birds	LeConte's Sparrow	*Ammospiza leconteii*	Prairie wetland
	Nelson's Sparrow	*Ammospiza nelsoni*	Prairie wetland
	Sprague's Pipit	*Anthus spragueii*	Grasslands
	Golden Eagle	*Aquila chrysaetos*	Grasslands
	Great Blue Heron	*Ardea herodias*	Riparian forest
	Burrowing Owl	*Athene cunicularia*	Grasslands
	American Bittern	*Botaurus lentiginosus*	Wetlands
	Ferruginous Hawk	*Buteo regalis*	Sagebrush grassland
	Chestnut-collared Longspur	*Calcarius ornatus*	Grasslands
	Veery	*Catharus fuscescens*	Riparian forest
	Baird's Sparrow	*Centronyx bairdii*	Grasslands
	Piping Plover	*Charadrius melodus*	Prairie lakes & river shorelines
	Black Tern	*Chlidonias niger*	Wetlands
	Sedge Wren	*Cistothorus platensis*	Prairie wetland
	Black-billed Cuckoo	*Coccyzus erythropthalmus*	Riparian forest
	Yellow Rail	*Coturnicops noveboracensis*	Wetlands
	Bobolink	*Dolichonyx oryzivorus*	Moist grasslands
	Whooping Crane	*Grus americana*	Wetlands
	Loggerhead Shrike	*Lanius ludovicianus*	Shrubland
	Franklin's Gull	*Leucophaeus pipixcan*	Wetlands
	Red-headed Woodpecker	*Melanerpes erythrocephalus*	Riparian forest
	Long-billed Curlew	*Numenius americanus*	Grasslands
	Black-crowned Night-Heron	*Nycticorax nycticorax*	Wetlands
	American White Pelican	*Pelecanus erythrorhynchos*	Lakes, ponds, reservoirs
	White-faced Ibis	*Plegadis chihi*	Wetlands
	McCown's Longspur	*Rhynchophanes mccownii*	Grasslands
	Brewer's Sparrow	*Spizella breweri*	Sagebrush
	Forster's Tern	*Sterna forsteri*	Wetlands
	Common Tern	*Sterna hirundo*	Large rivers, lakes
	Least Tern	*Sternula antillarum*	Large prairie rivers
Reptiles	Snapping Turtle	*Chelydra serpentina*	Prairie rivers & streams
	Plains Hog-nosed Snake	*Heterodon nasicus*	Friable soils
	Smooth Greensnake	*Opheodrys vernalis*	Wetlands
	Greater Short-horned Lizard	*Phrynosoma hernandesi*	Sandy / gravelly soils

Fish	Northern Redbelly Dace	*Chrosomus eos*	Small prairie rivers
	Blue Sucker	*Cycleptus elongatus*	Large prairie rivers
	Iowa Darter	*Etheostoma exile*	Small prairie rivers
	Shortnose Gar	*Lepisosteus platostomus*	Large prairie rivers
	Sturgeon Chub	*Macrhybopsis gelida*	Large prairie rivers
	Sicklefin Chub	*Macrhybopsis meeki*	Large prairie rivers
	Northern Pearl Dace	*Margariscus nachtriebi*	Small prairie streams
	Paddlefish	*Polyodon spathula*	Large prairie rivers
	Sauger	*Sander canadensis*	Large prairie rivers
	Pallid Sturgeon	*Scaphirhynchus albus*	Large prairie rivers
Insects	Brimstone Clubtail Dragonfly	*Stylurus intricatus*	Large prairie rivers

(MNHP, 2019)

B3 Montana Noxious Weed List

Effective: June 21, 2019

PRIORITY 1A These weeds are not present or have a very limited presence in Montana. Management criteria will require eradication if detected, education, and prevention:

(a) Yellow starthistle (*Centaurea solstitialis*)
(b) Dyer's woad *(Isatis tinctoria*)
(c) Common reed *(Phragmites australis ssp. australis)*

PRIORITY 1B These weeds have limited presence in Montana. Management criteria will require eradication or containment and education:

(a) Knotweed complex (*Polygonum cuspidatum, P. sachalinense, P. × bohemicum, Fallopia japonica, F. sachalinensis, F. × bohemica, Reynoutria japonica, R. sachalinensis, and R.× bohemica*)

(b) Purple loosestrife (*Lythrum salicaria*)
(c) Rush skeletonweed (*Chondrilla juncea*)
(d) Scotch broom (*Cytisus scoparius*)
(e) Blueweed (*Echium vulgare*)

PRIORITY 2A These weeds are common in isolated areas of Montana. Management criteria will require eradication or containment where less abundant. Management shall be prioritized by local weed districts:

(a) Tansy ragwort (*Senecio jacobaea, Jacobaea vulgaris*)
(b) Meadow hawkweed complex (*Hieracium caespitosum, H. praealturm, H. floridundum, and Pilosella caespitosa*)
(c) Orange hawkweed (*Hieracium aurantiacum, Pilosella aurantiaca*)
(d) Tall buttercup (*Ranunculus acris*)
(e) Perennial pepperweed (*Lepidium latifolium*)
(f) Yellowflag iris (*Iris pseudacorus*)
(g) Eurasian watermilfoil (*Myriophyllum spicatum, Myriophyllum spicatum x Myriophyllum sibiricum***)**
(h) Flowering rush (*Butomus umbellatus*)
(i) Common buckthorn *(Rhamnus cathartica L.)*
(j) Ventenata *(Ventenata dubia)*

PRIORITY 2B These weeds are abundant in Montana and widespread in many counties. Management criteria will require eradication or containment where less abundant. Management shall be prioritized by local weed districts:

(a) Canada thistle (*Cirsium arvense*)
(b) Field bindweed (*Convolvulus arvensis*)
(c) Leafy spurge (*Euphorbia esula*)
(d) Whitetop (*Cardaria draba, Lepidium draba*)
(e) Russian knapweed (*Acroptilon repens, Rhaponticum repens*)
(f) Spotted knapweed (*Centaurea stoebe, C.maculosa*)
(g) Diffuse knapweed (*Centaurea diffusa*)
(h) Dalmatian toadflax (*Linaria dalmatica*)
(i) St. Johnswort (*Hypericum perforatum*)
(j) Sulfur cinquefoil (*Potentilla recta*)
(k) Common tansy (*Tanacetum vulgare*)
(l) Oxeye daisy (*Leucanthemum vulgare*)
(m) Houndstongue (*Cynoglossum officinale*)
(n) Yellow toadflax (*Linaria vulgaris*)
(o) Saltcedar (*Tamarix spp*.)

(p) Curlyleaf pondweed (*Potamogeton crispus*)
(q) Hoary alyssum (*Berteroa incana*)

PRIORITY 3 Regulated Plants: (NOT MONTANA LISTED NOXIOUS WEEDS)
These regulated plants have the potential to have significant negative impacts. The plant may not be intentionally spread or sold other than as a contaminant in agricultural products. The state recommends research, education and prevention to minimize the spread of the regulated plant.

(a) Cheatgrass (*Bromus tectorum*)
(b) Hydrilla (*Hydrilla verticillata*)
(c) Russian olive (*Elaeagnus angustifolia*)
(d) Brazilian waterweed (*Egeria densa*)
(e) Parrot feather watermilfoil (*Myriophyllum aquaticum* or *M. brasili*
(f) Medusahead (*Taeniatherum caput-medusae*)

APPENDIX C

C1 Local Working Group Meeting

July 19, 2019

Local Working Group Meeting Notes

Attendees:

Gina Snyder -RCCD Chair, Buzz Mattelin -RCCD Supervisor, Janet Wilson -NRCS, Tom Beck

NRCS, Jeff Chilson - MSU Extension Agent, Andy Johnsrud -NRCS; DC, Pat Wilson - Producer, Ken Plourde - FW&P, Dean Harmon Producer, Heather Brower- Pheasants Forever; Farm Bill Biologist, Tifney Kempton - RCCD Administrator.

Agenda:

1:00-1:15 Intro

1:15-2:00 Identify, Categorize resource concerns 2:00-2: 10 Break

2:10-2:20 Prioritize Resource

2:20-2:40 Group Exercise

2:40-2:55 Location Prioritization

2:55- 3:10 Wrap up

Andy Johnsrud, DC for Daniels County NRCS, gave an overview of the Targeted Implementation Plan, what it is and how it works. Andy handed out three pieces of paper and the attendees were to write one resource problem that they were concerned with. Andy had these categories hanging on the wall, Soil, Plants, Water, Animals and Humans. The attendees then put their concerns under the category which their resource problem fell under. Under Soil the concerns were:

- Saline Seep,
- Waterway Erosion,
- Soil Sustainability,
- Soil Health,
- Soil Acidity
- CRP Acres staying in grass, grazing hay, poor soil.

Under Plants the concerns were:

- Increase plant diversity /CRP,
- Grazing Management Education,
- Precision Ag,
- Yields data,
- Weed Control,
- Herbicide resistant weeds awareness/education,
- Diversity in chemical use for weed management,
- Crop Rotation.

Concerns under Animals:

- Pallid Sturgeon at Fort Peck and the flow change
- Mule deer habitat
- Oil patch pressure
    - more people
    - fragmentation

Under the Humans resource concerns

- Family Farm Transitions to next generation
- Ag Consumer Trend/Sustainability
- Field to market Education.

The Top 3 Resource Problems are:

- CRP Transition to appropriate land use.
- AG Consumer Trends, Sustainability, Field to Market, Education.
- Shelter Belt Renovation

Some ideas on what it's going to take to make changes happen.

CRP Transition:

- Land Use Planning
- Fence and Water Development
- Cropland, Buffer Strips
- Mob Grazing
- Field Renovation
- Grazing Plan/Management, Education
- Bale Grazing on CRP/Diversity

Shelter Belt Renovation:

- Tree Education
- Assistance
- Maintenance

We need to talk at the board meeting to address, what would it take to get these problems taken care of.

BIBLIOGRAPHY

Audubon. (2019, 4 18). *Whooping Crane*. Retrieved from Audubon: Guide to North American Birds: http://.audubon.org/field-guide/bird/whooping-crane

Audubon. (2019, 11 4). *Least Tern*. Retrieved from Guide to North American Birds: https://www.audubon.org/field-guide/bird/least-tern

EPA. (2019, may 24). *Wetlands Factsheet Series*. Retrieved from Functions: https://www.epa.gov/wetlands/how-do-wetlands-function-and-why-are-they-valuable

Finnicum, P. (2019, October 9). Personal Conversation.

Fort Peck Tribes. (2013). Retrieved from Fort Peck Reservation Demographic and Economic Information: http://lmi.mt.gov/Portals/193/Publications/LMI-Pubs/LocalAreaProfiles/Reservation%20Profiles/RF16-FortPeck.pdf

Little Shell Chippewa Tribe. (2020, march 27). *About*. Retrieved from Little Shell Chippewa Tribe: http://www.montanalittleshelltribe.org/culture.html

MBMG. (2020, January 10). *Overview of Roosevelt County*. Retrieved from Ground Water Information Center: http://mbmggwic.mtech.edu/sqlserver/v11/reports/CountyStatistics.asp?MTCounty=ROOSEVELT

MNHP. (2019, December 5). *Animal Species of Concern.* Retrieved from Montana Natural Heritage Program: http://fieldguide.mt.gov/speciesDetail.aspx?elcode=AFCAA02010

MNHP. (2019, October 7). *Field Guide Ecological Systems*. Retrieved from Montana Field Guides: http://fieldguide.mt.gov/displayES_LCLU.aspx

MNHP. (2019, 11 5). *Plant Species of Concern*. Retrieved from Montana Natural Heritage Program: http://mtnhp.org/SpeciesOfConcern/?AorP=p

Montana DEQ. (2019, November 13). *Montana Clean Water Act Information Center*. Retrieved from Montana Clean Water Act Data Search: http://svc.mt.gov/deq/dst/#/app/cwaic

Montana FWP. (2020, January 21). *Plants/Eurasian Water Milfoil*. Retrieved from Fish & Wildlife Aquatic Invasive Species: http://fwp.mt.gov/fishAndWildlife/species/ais/speciesId/plants.html?id=eurasianWatermilfoil#eurasianWatermilfoil

MT DEQ. (2019, 6 15). *Current Air Qulity*. Retrieved from Today's Air Quality: http://svc.mt.gov/deq.todaysair/

MT FWP. (2019, 7 31). *Least Tern*. Retrieved from Species Conservation and Management: http://fwp.mt.gov/fishAndWildlife/management/leastTern/

MT NHP. (2019, November 4). *Piping Plover Charadrius melodus*. Retrieved from Montana Field Guides: http://fieldguide.mt.gov/speciesDetail.aspx?elcode=ABNNB03070

NOAA. (2020). *New Priorities for the 21st Century.* Retrieved Januray 10, 2020, from Monitoring and observing Earth systems with instruments and data collection networks.

NRCS. (2006). *Land Resource Regions and Major Land Resource Areas of the United States, the Caribbean and the Pacific Basin.* U.S.Department of Agriculture Handbook 296.

NRCS. (2015). *Threatened and Endangered Species, Piping Plover.* USDA NRCS.

OFAH/MNRF. (2020, January 21). *Eurasian Water-Milfoil*. Retrieved from Ontairio's Invading Species Awareness Program: http://www.invadingspecies.com/eurasian-water-milfoil/

Peterson, C. (2020, January 21).

ShaleXP. (2019, October 2). *Oil & Gas Activity For Montana*. Retrieved from Richland County MT Oil & Gas Summary: https://www.shalexp.com/montana/roosevelt-county

The Cornell Lab. (2020, January 17). *Lark Bunting*. Retrieved from All About Birds: https://www.allaboutbirds.org/guide/Lark_Bunting/lifehistory

TMCHC. (2020, March 17). *The Turtle Mountains*. Retrieved from CHIPPEWAHERTIAGE.COM: http://www.chippewaheritage.com/turtle-mountains.html

US Census Bureau. (2019, November 5). *US Census Quickfacts*. Retrieved from https://www.census.gov/quickfacts/fact/table/US/PST045218

USDA NASS. (2019, November 5). *AgCensus 2017*. Retrieved from United States Department of Agriculture National Agricultural Statistics Service: https://www.nass.usda.gov/Publications/AgCensus/2017/

USDA SCS. (1940). *Information Concerning Froid Soil and Moisture Conservation Area.* USDA Soil Conservation Service.

USDA SCS. (1985). *Soil Survey of Roosevelt and Daniels Counties, Montana.* USDA SCS. Retrieved from https://www.nrcs.usda.gov/Internet/FSE_MANUSCRIPTS/montana/roosevelt_danielsMT1985/rsvtMT1985.pdf

USFWS. (2019). *Endangered, Threatened, Poposed and CAdidate Species. Mountana Counites. Endangered Species Act.*

USFWS. (2019, July 15). *Piping Plover.* Retrieved from Endangered Spieces/Birds: https://www.fws.gov/mountain-prairie/es/pipingPlover.php

USFWS. (2020, January 10). Retrieved from The Rufa Red Knot: https://www.audubon.org/field-guide/bird/red-knot

USFWS. (2020, January 17). *Wildlife*. Retrieved from Medicisne Lake National Wlidlife Refuge/Montana: https://www.fws.gov/refuge/Medicine_Lake/wildlife_and_habitat/wildlife.html#Birds

USGS. (2019, November 01). *National Water Information System: Web Interface*. Retrieved from USGS Water Resources:

https://waterdata.usgs.gov/mt/nwis/current/?type=flow&group_key=county_cd&search_site_no_station_nm=Richland&site_no_name_select=station_nm

Vickery, P. D. (2000). Grassland Birds: An Overview of Threats and Recommended Management Strategies. *USDA Forest Service Proceedings RMRS-P-16*, 74.

Ziegler, P. (2019, December 02).