Yellowstone County USDA-NRCS

Long Range Plan

Updated 8/11/2021

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Hardin Work Unit (covers Hardin, Crow Agency, and Billings Field Offices)

Index:

Section I. Introduction –

Vision: Commitment to local action, achieving effective land stewardship.

Mission: Successfully collaborate on watershed or landscape-wide conservation projects in order to address resource concerns in Yellowstone County.

Plan Purpose: To provide an overview of the condition of natural resources, provide a community profile, and highlight the resource concerns for each land use in Yellowstone County. This includes about a quarter of the Crow Indian Reservation.

Entities Who Have Participated in the Development of this Plan:

- USDA-Natural Resources Conservation Service
- Yellowstone Conservation District

Estimated Timeframe Covered by this Plan: Fiscal Years 2020 through 2030.

Section II. Natural Resource Inventory:

Humans:

Land Cover and Ownership

Land use acreages are from the Montana Department of Revenue's 2017 data. Rangeland acreage estimates may include other agricultural uses.

Yellowstone County Landuse Acres	
Total County Acres	1,694,000.00
Public/Reservation Acres	392,696.00
Percent Public/Reservation Acres	23%
Private/Non-Reservation Acres	1,301,304.00
Percent Private/Non-Reservation Acres	77%
Commercial Forest Acres	87,826.30
Non-Commercial Forest Acres	5,817.30
Irrigated Acres	71,731.10
Crop/Fallow/Hay Acres	200,620.40
Rangeland Acres	934,759.70

Exhibit 2.0 – Yellowstone County Landuse Acres, MT Department of Revenue

Yellowstone County Irrigated Acres		
Irrigation Type	Acres	Percent Irrigation Type
Flood	61,856.20	86.2
Pivot	9349.4	13
Sprinkler	525.5	0.7

Exhibit 2.1 – Yellowstone County Irrigated Acres, MT Department of Revenue

Census Data

County Demographics Description (According to 2010 United States Census data estimates, and National Ag Statistics Service data ranging from 2015 to 2018; unless otherwise stated)

Yellowstone County is about 1.7 million acres in size with approximately 150,000 people in residence, making it the most populous county in Montana. About 9,600 acres of the Crow Reservation are located in Yellowstone County. The population density in Yellowstone County is about 49 people per square mile. The median income for a household in this county is $36,727, and the median household income for a family was $45,277. About 11.10% of the population lives below the poverty line. The racial makeup for Yellowstone County is about 92.78% White, 0.45% African American, 3.05% Native American, 0.54% Asian, 1.26% from other races, and 1.87% from two or more races. As of July 1, 2018, an estimated 11,927 Veterans reside in the county

According to the 2015 National Ag Statistics Service (NASS) data, the number of farms in Yellowstone County was 1,330 (a decrease from 1,407 in 2007). Average size of these farms was 1,254 acres. Development and urban sprawl have been of concern to Ag land in this county. There are numerous "hobby farms" throughout the planning area that aren't necessarily engaged in production agriculture. In addition to agriculture, retail, wholesale trade, financial, energy, transportation, and medical are the county's main economic contributors. In 2014, there were approximately 7,500 acres of sugar beets harvested in this county, and barley acreage totaled about 22,200 acres. Ownership of the agricultural lands in this county is a mix of land that is owned/operated by the farmers, or leased ground owned by non-farmers.

Farms and ranches in the county produce mainly beef cattle, sugar beets, alfalfa, soybeans, and small grains. A common cropping rotation on irrigated cropland in Yellowstone County has been malt barley, sugar beets, and corn with some spring/winter wheat or alfalfa. Residue management on irrigated cropland is often considered "conventional," (average Wind Erosion Prediction System, or WEPS, Soil Tillage Intensity Rating, or STIR, value is 224) although there has been a small number of progressive farmers who have experimented with strip-till/minimum-till sugar beets (average WEPS STIR of 103), in addition to other Soil Health practices, and have seen positive results.

The Yellowstone River crosses the full length of the Yellowstone County Planning Area, approximately 105 miles. The Yellowstone River is an excellent source of recreation, as well as being the main source of irrigation water for farmers in the valley. The Yellowstone River is entirely undammed with the exception of diversions, which can result in fluctuations in water availability. Irrigation districts and

companies include: Waco Custer, Cove Ditch, High Ditch, Italian, Old Mill, Victory Ditch, Canyon Creek, and Huntley Project. Some irrigators also pull their water directly out of the rivers.

Major Towns in the Project Area and Estimated Population, based off of 2010 US Census Data (see attached map for town locations):

- Billings (County Seat), 104,514
- Laurel, 6,781
- Huntley, 411
- Ballantine, 346 (2000 Census)
- Worden, 506 (2000 Census)
- Custer, 145 (2000 Census)

Specialty Production/Operations:

Sugar beets and malt barley crops are grown on the Yellowstone River irrigated valley. Sugar beets are marketed through Western Sugar, with local "beet dumps" located in several locations along the Yellowstone River valley, and the closest processing facility located in Billings, MT. While some malt barley may be sold on the open market and some through Busch Ag, the majority of malt barley grown in Yellowstone County is marketed through MillerCoors, with the closest receiving facility located in Huntley, Montana.

Soil

Soils Overview

The soil survey for Yellowstone County was published in 1972. Yellowstone County is dominated by gently sloping to very steep, shallow to very deep, well drained, sandy, loamy, and clayey textured soils. These soils were formed in a semi-consolidated sedimentary beds, baked sandstone, loamy textured, and formed in colluvium or residuum derived mainly from limestone or dolomite on hillslopes in mountains. Elevation ranges from 2680 feet above sea level on the Yellowstone River near Custer, MT to 4700 feet in the small portion of the Bull Mountains that is situated in the County. Topography of the county can be divided into the Bull Mountain upland, the plains, the lake basins, the zone of faulting, the terraces, and the Yellowstone River Valley.

- Soils of Shale and Sandstone Uplands
    - Bainville-Elso-McRae association: Undulating to hilly, moderately deep and shallow loams and clay loams, underlain by silt loam to silty clay loam, and deep soils that are loam throughout; on shale and sandstone uplands
    - Cushamn-Bainville association: Undulating to rolling, moderately deep loams that have a clay loam subsoil or are underlain by clay loams and silt loam; on shale uplands
    - Worland-Bainville-Travessilla association: Rolling to hilly, moderately deep and shallow fine sandy loams and loams underlain by sandy loam to clay loam; on sandstone and shale uplands
    - Bainville-Travessilla-Rock land association: Moderately steep and steep, moderately deep and shallow loams and fine sandy loams underlain by clay loam to fine sandy loam, and sandstone and shale Rock land

  - Wormser-Lavina-Razor association: Undulating to rolling, moderately deep and shallow soils that have a dominantly clay loam subsoil; on sandstone and shale uplands
  - Pierre-Lismas-Lyle association: Rolling to moderately steep, shallow to deep silty clays and clays that are underlain by clay; on clay shale uplands
  - Midway-Heldt association: Sloping to moderately steep, moderately deep and deep soils that are dominately clay loam and silty clay loam throughout; on uplands and in valleys
  - Maginnis-Absarokee association: Undulating to steep, shallow and moderately deep soils that have a dominantly clay loam subsoil; on uplands
- Soils of River Terraces, Low Alluvial Fans, and Flood Plains
  - McRae-Lohmiller-Keiser association: Gently sloping to sloping, deep loams to silty clays underlain by clay to fine sandy loam; on high terraces and fans
  - Vananda-McKenzie-Arvada association: Level to gently sloping, deep clays to loams over clay; on terraces and fans and in dry lake basins
  - Haverson association: Level to gently sloping, deep loams that are underlain by loams and silt loam; on flood plains and terraces
- Soils of High Terraces and Benches
  - Bew-Allentine association: Level to sloping, deep soils that have a clay subsoil; on terraces and fans
  - Wanetta-Keiser association: Level to steep, deep soils that have a clay loam to silty clay subsoil; on high terraces
  - Danvers association: Gently undulating to rolling, deep soils that have a silty clay and clay loam subsoil; on high benches and terraces

Yellowstone County
15 Most Common Soils

Map Unit	Soils Name	Approx. Acres	Percent of Total Soils
Ln	Lismas clay, 15 to 35 percent slopes	110,116	6.5
285F	Blacksheep, dry-Cabbart, dry-Rock outcrop, complex, 8 to 60 percent slopes	88,190	5.2
Ms	McRae-Bainville loams, 7 to 15 percent slopes	69,917	4.1
Hs	Hilly, gravelly land	68,151	4
81B	Delpoint-Cabbart loams, 2 to 8 percent slopes	60,812	3.6
182D	Cabbart-Delpoint loams, 4 to 15 percent slopes	57,219	3.4
My	MLRA 58A Midway-Shale outcrop complex, 4 to 35 percent slopes	55,460	3.3
El	Elso clay loam, 7 to 15 percent slopes	37,286	2.2
Mo	McRae loam, 4 to 7 percent slopes	32,211	1.9
Mc	Maginnis channery clay loam, 15 to 35 percent slopes	30,678	1.8
Es	Elso-Lohmiller complex, 15 to 35 percent slopes	30,174	1.8

453C	Cabbart-Bonfri loams, 2 to 8 percent slopes	29,411	1.7
Bf	Bainville-Elso-Shale outcrop complex, 7 to 25 percent slopes	28,088	1.7
Lt	Lohmiller-Elso complex, 4 to 15 percent slopes	27,806	1.6
354B	Bonfri-Cabbart loams, 0 to 4 percent slopes	27,714	1.6

Exhibit 2.3 – Yellowstone County Most Common Soils, USDA-NRCS Web Soil Survey

There are about 82,000 acres of saline, saline-sodic, or sodic soils in Yellowstone County. About 76,000 acres of soils are rated as hydric. Hydric Soil designations are one of the three essential characteristics used when determining the presence of a wetland (hydric soils, hydrophytic vegetation, and wetland hydrology). About 6,000 acres are irrigated and 15,000 acres are dry farmed.

(10) Assiniboine-Rentsac complex soils are the only soils in Yellowstone County where a designation of "Farmland of Local Importance," is assigned to the soil. Approximately 192,000 acres of soil are designated as "Farmland of Statewide Importance," and approximately 163,000 acres of soil are designated as "Prime Farmland if Irrigated."

Major Land Resource Areas

All of Yellowstone County is considered 58A, Northern Rolling Plains, Northern Part. Climactic information for this MLRA includes:

The majority of the rangeland in these areas falls within the 14-16 inch range. During an average year, 70 to 75 percent of the annual precipitation falls between April and September, which are the primary growing season months. Snowfall is not heavy in the area, averaging 28 total inches in the 14 to 16 inch MAP (Yellowstone Valley). Heavy snowfall occurs infrequently, usually late in the winter or early spring. Snow cover is typically 1 to 3 inches. The frost free (32º F.) season averages about 105 to 145 days each year in the uplands, to nearly 170 days along the Yellowstone River Valley.

Water:

Climate:

Large annual temperature variations occur in the area, information comes from the Yellowstone County Soil Survey, as well as data from the National Weather Service. The minimum and maximum temperatures range from below -30 degrees Fahrenheit (F) to above 100 degrees F respectively. Precipitation ranges from 14-16 inches throughout most of the county, with 13-14 inch ranges in the northwest and northeast corners of the county, and 16-18 inches in the southern portion of the county, closer to the foothills of the Pryor Mountain range. Billings is listed in the Zone 4b (-25°F to -20°F) USDA Winter Hardiness Zone.

Watersheds and Streams

- Yellowstone River –A tributary to the Missouri River, the Yellowstone River is the largest undammed river in the United States. The alteration of the natural hydrology of the Yellowstone River system has had a large effect on the Yellowstone River and its floodplain. Most notably, reservoirs in the Bighorn River watershed, a major tributary watershed to the Yellowstone River,

have exerted a major influence on the hydrology of the lower Yellowstone. Additionally, irrigation-related water use on the Yellowstone River mainstem and other tributaries (primarily the Clarks Fork) has also contributed to changes in flows on the river. The most pronounced hydrologic changes on the Yellowstone River have occurred below the mouth of the Bighorn River. The Bighorn Basin has seen major changes in water delivery to the Yellowstone River due primarily to the impacts of multiple reservoirs. The largest, most-downstream impact on the Bighorn River is Yellowtail Dam and Bighorn Reservoir, located about 96 valley miles upstream of the Yellowstone River confluence at Bighorn. The Yellowstone River provides the majority of irrigation water on the cropland in Yellowstone County.

  - More information regarding the Yellowstone River can be found in the Yellowstone River Cumulative Effects Assessment document that was created by the Yellowstone River Conservation District Council in December 2015.
  - A USGS gauging station is located on the Yellowstone at Billings

- Big Horn River – The Bighorn River originates in Wyoming and is about 460 miles long. It flows into Big Horn Lake, and empties out of the Yellowtail Dam, located in Big Horn County, Montana, with the river traveling in a northerly direction. The final ten miles of the Big Horn River travels between Yellowstone and Treasure Counties before emptying into the Yellowstone River.
- Pryor Creek- Has three DNRC stream gage stations; 1 located at Pryor Creek at Huntley, 1 located at Pryor Creek Golf Course, 1 on Pryor Creek at Hogan Bridge
- Clarks Fork of the Yellowstone River- a watershed from parts of Carbon County and beyond that irrigates crops in both Carbon and parts of Yellowstone County. The Clarks Fork joins the Yellowstone River right around Laurel, MT.
- Canyon Creek- There is a DNRC real time stream gage station located at Zoo Montana (T1S R25E Sec 22), where data is collected about stream flow, water temperature and summarized for any given time period.
- Arrow Creek- a drainage in central Yellowstone County that drains a large area of range land and cropland which joins the valley at Ballantine and eventually links up with the Yellowstone River closer to Pompey's Pillar.
- Fly Creek- a large watershed shared between Yellowstone and Big Horn counties. In recent years the watershed has had issues with high sulphates in the water, resulting in cattle losses. The total dissolved solids (TDS) have also been high.
- Blue Creek- in 1976 a Flood Hazard Analyses was published for Blue Creek. Blue Creek has a drainage area of about 60.5 square miles. The Blue Creek confluence with the Yellowstone River is approximately one-eighth of a mile west of the South Billings Boulevard Bridge.
- Duck Creek- in 1976 a Flood Hazard Analyses was published for Duck Creek. Duck Creek has a drainage area of roughly 31.6 square miles. The Duck Creek confluence with the Yellowstone River is approximately six miles south west of the city limits of Billings and approximately five miles northwest of the city limits of Laurel.
- Alkali Creek- in southwestern Yellowstone County, originates about 10 miles Norwest of Billings and outlets into the Yellowstone River at the Yellowstone County Fairgrounds. The watershed contains about 26,600 acres and includes a portion of Billings.

<u>Irrigated Lands, Water Rights, and Irrigation Districts</u>

Much of the information below comes from the Montana Water Resources Survey and attached Engineer's Report for Yellowstone County, which was published in 1943; as well as accounts from NRCS Field Office personnel. Due the date that the Montana Water Resources Survey was published, it is entirely possible that some of the irrigation units listed below are currently inactive.

- Irrigation Units:
    - **The Big Ditch Company -** Constructed in 1883 by Minnesota and Montana Land Improvement Company. Management of the canal was taken over by the farmers in 1900 where it was organized into "The Big Ditch Company." The water source is the Yellowstone River. The canal is designed to carry 600 cfs of water. The canal is about 40 miles long, with over 350 lateral headgates. As of the Engineer's Report completed for Yellowstone County in 1943, there were 17,486.22 acres currently being irrigated, with a maximum potential acreage of 18,303.86 acres. There are several significant irrigation structures that have been built over the years, including:
        - Allard, Nutting, and Hesper drops built in 1911,
        - Valley Creek syphon was built in 1914,
        - Schauer drop was built in 1915,
        - Nye spillway was built in 1932, and
        - The Canyon Creek syphon was built in 1917 (it is entirely possible there been repairs to these structures, as well as more structures built since the Engineer's Report in 1943).
    - **The High Line Ditch Company**
        - Construction on this canal was started in 1895, and in 1928 was incorporated into the High Line Ditch Company. This ditch diverts water from the Big Ditch SW 12-2S-23E. As of the date of the Engineer's Report, the capacity of the ditch hadn't been measured as it was considered a lateral of the Big Ditch. In 1942, there were currently 4,722.9 acres being irrigated with a maximum potential acreage of 5,102.34 acres.
    - **The Snow Ditch Company**
        - Constructed in 1907, the Snow Ditch diverts water from the Big Ditch in NENE4-1S-25E. As of 1942, the capacity of the ditch had not been measured as it was considered a lateral of the Big Ditch. There are 2,879.0 acres currently irrigated, with a maximum potential acreage of 2,906.8 ac.
    - **The Big Four Ditch Company**
        - Located about four miles south of Laurel on the south side of the Clarks Fork River. The point of diversion is located at SENW8-3S-34E (although this point of diversion may have changed slightly since the 1943 report). The present ditch was built and used in 1890. The Big Four Ditch is about four miles long and empties into Davis Creek, which is a tributary to the Clarks Fork River. In 1942, there were 504.20 acres currently irrigated, with a maximum potential acreage of 637.0 ac.
    - **The Billings Bench Water Users Association**
        - Formerly known as the Billings Land and Irrigation Company, it was incorporated in 1903. The point of diversion is about one mile south of the City of Laurel in SW15-2S-24E, and the canal travels about 63 miles to a point in 28-

3N-28E. The capacity of the main canal at the headgate is 425 cfs, and is reduced to 20 cfs at the end of the main canal. If the flow of the main canal is not reduced by use, evaporation, or seedpage to 350 cfs at the Canyon Creek Flume, any amount over 350 cfs is spilled, as the capacity of the tunnel north of Billings is 350 cfs. The Canyon Creek Flume tunnel is 1,847 ft long.

- The Association also supplies water to the Homestead Ditch Company and the Upper Lateral Ditch Company, Crawford Lateral, Algee Lateral, Sunnyside Addition, Burnstead Addition, and numerous other small users within the city of Billings and its suburban limits.

- **The Canyon Creek Ditch Company**
  - Constructed in 1883, the ditch diverts water from the Yellowstone River between sections 29 and 30-2S-24E. The canal travels about to NENE13-1S-25E, where the ditch is then known as the Canyon Creek Lateral Ditch Company. This company was organized to use the waste waters of the Canyon Creek Ditch Company. The maximum capacity of the Canyon Creek Canal is estimated at 5400 miner's inches. In 1942, there were 7,013.35 acres being irrigated under this ditch with a potential maximum acreage of 7,259.42 ac.
- **The Clarks Fork Ditch Company**
  - Also known as the Cramer Ditch, this ditch was incorporated in 1891, with the point of diversion located at SESW19-2S-24E, with water being taken from a slough nearby the Yellowstone River. Total length of the canal is about four miles. In 1942, the ditch irrigated about 609.1 acres with a maximum potential acreage of 661.0 ac.
- **The Coburn Unit**
  - Part of the Pryor Unit, which is a part of the Crow Irrigation Project on the Crow Indian Reservation, and encompasses several ditches (Pryor, Lost Creek, and Coburn Ditches). The diversion for the Coburn Unit is located in Pryor Creek at NENE2-2S-27E, and runs about three miles long. This ditch was constructed in 1901, and in 1942, irrigated about 239.2 ac with an estimated maximum potential acreage of 430.9 ac.
- **The Coulson Ditch Company**
  - Created in 1895, this ditch is located immediately southeast of Billings south of the Yellowstone River, and is appropriated at about 3500 miner's inches. This ditch joins the Lockwood Irrigation District to the north. In 1942, there were 656.14 acres being irrigated with 801.14 maximum potential acres.
- **The Cove Irrigation Company**
  - The Cove Irrigation Company was organized in 1941 to succeed the Cove Irrigation District which was organized in 1922, which had succeeded the Cove Ditch Company which was organized in 1909. The diversion is located about 12 miles west of Park City in Stillwater County. From the diversion point, the canal continues 7 miles into Yellowstone County; in total, the length of the main canal is 50 miles, with a carrying capacity of 300 cubic feet per second (cfs). The canal also delivers 3100 miner's inches of water for the Yellowstone Ditch Company.

In 1942, the canal irrigated 3,965.37 ac of cropland in Yellowstone County, with a maximum potential acreage of 5,044.46 ac.

- **The Danford Irrigation District**
  - Located between the Yellowstone and Clarks Fork Rivers in Yellowstone and Carbon Counties about eight miles southwest of Laurel. The point of diversion is located in SE13-3S-23E in Carbon County. This canal was first called the Mason Ditch Company in about 1900 and because the Danford Irrigation District in 1920. In 1942, about 606.37 ac were irrigated in Yellowstone County.
- **The Davis Ditch Company**
  - This ditch is located about one mile southeast of Laurel between the Yellowstone and Clarks Form Rivers. The diversion is located in NE21-2S-24E in Yellowstone County. The exact construction date of the ditch is unknown but was reported to be used in 1899. The Davis Ditch Company was incorporated in 1904. About 250 acres in the area were reported to be irrigable, but it is known how exactly how many acres were actually irrigated by this ditch.
- **The Grey Eagle Ditch Company**
  - Originally the Newman Ditch, this canal was built in 1898, with the Grey Eagle Ditch Company taken over the canal in 1902. In 1942, there were 1,364.3 ac being irrigated with a maximum acreage of 1,422.6 ac. The diversion is located by the Yellowstone River in NW21-1S-26E, with the canal branching in two directions about one mile down the canal. The total length of the canal is about seven miles with a capacity of about 75 cfs.
- **The Huntley Project Irrigation District**
  - A federal reclamation project, the Huntley Project was authorized in 1905 and construction was started the same year. The Huntley Irrigation District was created in 1921 and the 1928 it was given the management operation of the project under government contract. The water for the Huntley Project is taken by gravity from the Yellowstone River in the SWSE and SESW34-2N-27E. There are two tunnels with their intakes about one-quarter of mile apart through which water is diverted to the main canal. A low level dam having a total length of 324 ft is constructed across the south channel of the Yellowstone River just below the lower tunnel. There are about 117 miles of open drains and wasteways, 225 miles of closed drains and 235.45 miles of irrigation canals. The main canal is 34 miles long with a capacity of 575 cfs. In 1942, the current irrigated acres were 28,142.98 ac with 31,112.98 ac of maximum potential acres.
  - Additional structures on the canal include:
    - (2) 43 ½ foot lifts from the main canal to the high line canal. The high line canal has about 100 cfs. One lift is a hydraulic unit of 640 hp. The other is a 400 hp diesel operated unit having two pumps with the design capacity of 23 cfs.
    - There are three tunnels on the project having a total length of 2,654 ft.
- **The Italian Ditch Company**

- Located on the north side of the Yellowstone River in Stillwater and Yellowstone Counties. The point of diversion is located in E1/2 34-2S-22E in Stillwater County, with the main canal traveling about 7 ½ miles northeast to 13-2S-23E, where the ditch branches off. One lateral runs northeast about 1 ½ miles, and the other lateral runs east for 1 ½ miles and then northeast to the city of Laurel. In 1933, the Yellowstone River changed its course, rendering the original intake unusable. The Old Mill Ditch Company worked with the Italian Ditch Company to construct a new headgate in the Yellowstone River to divert water. In 1942, there were 1,588.75 ac irrigated with a maximum potential 2,036.15 ac. The canal has about 5000 miner's inches.

- **The Lockwood Irrigation District**
  - The Lockwood Irrigation District was created in 1913 and is located immediately southeast of Billings, south of the Yellowstone River. In 1942, there were 2,105.0 ac being irrigated with maximum potential irrigated acreage being 2,504.28 ac. This canal also carries water for the Coulson Ditch.
- **The Miller and McGirl Ditch Company**
  - Incorporated in 1915, The Miller and McGirl Ditch has a diversion located in the Yellowstone River in NESW7-1N-27E, and this canal is about four miles in length. In 1942, there were about 1,310.4 ac being irrigated with a maximum irrigable areage of 1,675.8 ac. At the time of the published survey in 1943 this canal was experiencing some issues with water availability and it is unknown if this issue was resolved.
- **The Old Mill Ditch Company**
  - The Old Mill Ditch Company is located on the north of the Yellowstone River in Stillwater and Yellowstone Counties. The project extends from about 1 ½ miles west of Park City to the vicinity of Laurel. Water is diverted from the Yellowstone River through the same headgates as those used by the Italian Ditch Company.
- **The Pete Cooper Flat Irrigation Company**
  - Incorporated in 1903, there is no record of the actual construction date of the canal. The total length of this ditch is about three miles, with the point of diversion located in the Yellowstone River at NESE35-1S-25E. In 1942, there were about 313.6 ac being irrigated.
- **The Suburban Ditch Company**
  - Organized in 1896, the point of diversion for this ditch is located in the Yellowstone River at NWNE25-1S-25E, with a total length of about 3 ½ miles. 5000 miner's inches were filed to be used by the ditch company.
- **The Victory Irrigation District**
  - Formerly the Big Horn Ditch Company, this canal was constructed in 1908 with 3600 miner's inches and 90 cfs appropriated for the canal. The point of diversion is located along the Big Horn River in Big Horn County at NW5-3N-34E. The Victory Irrigation District was formed in 1919. In 1942, there were 1,431.4 ac of irrigated land with a maximum potential of 1,655.4 acres. In May 2011, there was a considerable flood along the Big Horn River, which significantly

damaged the diversion and headgate for the canal. The Irrigation District worked with NRCS to complete an Emergency Water Program (EWP) project on the headgate for the canal in order to protect it from future flood events.

- **The Waco-Custer Ditch Company**
  - With the headgate located in 1-3N-31E, the Waco-Custer Ditch Company travels about 17 miles in a northeasterly direction. In 1942, there were about 3,258.32 acres being irrigated with a maximum potential irrigation acreage of 4,365.72 ac. This ditch is appropriated for about 5000 miner's inches, or 125 cfs.

- Significant Water Structures:
  - **Lake Elmo- State Park**
    - 64 acre Reservoir inside the city limits of Billings. Lake Elmo is a State Park, 123 acres in size at an elevation of 3,199 feet.

303(d) Listed Streams and TMDL Streams (status as of February 6th, 2019)-

According to the Montana DEQ, Yellowstone County is not currently in a project area with a Total Maximum Daily Load (TMDL) plan, and is not slated for TMDL development at this time. Below are the Montana DEQ Summary reports for water quality on the creeks and rivers in Yellowstone County excluding the Crow Indian Reservation:

Impairment Information			
Probable Cause	**Probable Sources**	**Associated Uses**	**TMDL Completed**
Ammonia, Total	Crop Production (Irrigated),Streambank Modifications-destabilization	Aquatic Life	No
Chlorophyll-a	Crop Production (Irrigated),Streambank Modifications-destabilization	Aquatic Life,Primary Contact Recreation	N/A
Copper	Source Unknown	Aquatic Life	No
Flow Regime Modification	Impacts from Hydrostructure Flow Regulation-modification	Aquatic Life	N/A
Iron	Source Unknown	Aquatic Life	No
Lead	Source Unknown	Aquatic Life	No
Mercury	Source Unknown	Aquatic Life	No
Nitrate-Nitrite (Nitrite plus Nitrate as N)	Crop Production (Irrigated),Streambank Modifications-destabilization	Aquatic Life	No
Nitrogen, Total	Streambank Modifications-destabilization,Crop Production (Irrigated)	Aquatic Life	No
Phosphorus, Total	Crop Production (Irrigated),Streambank Modifications-destabilization	Aquatic Life	No
Physical substrate habitat alterations	Habitat Modification - other than Hydromodification,Streambank Modifications-destabilization	Aquatic Life	N/A
Sediment	Habitat Modification - other than Hydromodification,Streambank Modifications-destabilization,Crop Production (Irrigated),Impacts from Hydrostructure Flow Regulation-modification	Aquatic Life	No
Temperature	Source Unknown,Impacts from Hydrostructure Flow Regulation-modification,Streambank Modifications-destabilization,Crop Production (Irrigated),Habitat Modification - other than Hydromodification	Aquatic Life	No

Exhibit 2.4 – 303(d) List information for Clarks Fork of the Yellowstone River, MT Department of Environmental Quality

Impairment Information			
Probable Cause	**Probable Sources**	**Associated Uses**	**TMDL Completed**
Alteration in stream-side or littoral vegetative covers	Grazing in Riparian or Shoreline Zones,Drought-related Impacts	Aquatic Life	N/A
Dissolved Oxygen	Grazing in Riparian or Shoreline Zones,Drought-related Impacts	Aquatic Life	No
Sediment	Drought-related Impacts,Agriculture	Aquatic Life	No

Exhibit 2.5 – 303(d) List information for Cottonwood Creek, MT Department of Environmental Quality

Impairment Information			
Probable Cause	**Probable Sources**	**Associated Uses**	**TMDL Completed**
Algae	Upstream Source,Agriculture,Sources Outside State Jurisdiction or Borders	Aquatic Life,Primary Contact Recreation	N/A
Flow Regime Modification	Water Diversions	Aquatic Life	N/A
Sedimentation-Siltation	Natural Sources	Aquatic Life	No

Exhibit 2.6 – 303(d) List information for Pryor Creek, MT Department of Environmental Quality

Impairment Information			
Probable Cause	**Probable Sources**	**Associated Uses**	**TMDL Completed**
Cause Unknown	Streambank Modifications-destabilization,Channelization,Crop Production (Crop Land or Dry Land),Municipal Point Source Discharges	Aquatic Life	N/A
Chlorophyll-a	Crop Production (Crop Land or Dry Land),Municipal Point Source Discharges	Aquatic Life,Primary Contact Recreation	N/A
Nitrate-Nitrite (Nitrite plus Nitrate as N)	Crop Production (Crop Land or Dry Land),Municipal Point Source Discharges	Aquatic Life	No
Oil and Grease	Pipeline Breaks	Aquatic Life,Primary Contact Recreation	No
Other anthropogenic substrate alterations	Streambank Modifications-destabilization,Channelization	Aquatic Life	N/A
Physical substrate habitat alterations	Streambank Modifications-destabilization,Channelization	Aquatic Life	N/A

Exhibit 2.7 – 303(d) List information for the Yellowstone River from the City of Laurel to the City of Billings, MT Department of Environmental Quality

Impairment Information

Probable Cause	Probable Sources	Associated Uses	TMDL Completed
Algae	Agriculture,Municipal Point Source Discharges	Aquatic Life,Primary Contact Recreation	N/A
Arsenic	Natural Sources	Drinking Water	No
Benthic Macroinvertebrates	Municipal Point Source Discharges,Agriculture	Aquatic Life	No
Dissolved Oxygen	Agriculture,Municipal Point Source Discharges	Aquatic Life	No
Eutrophication	Agriculture,Municipal Point Source Discharges	Aquatic Life	No
Oil and Grease	Pipeline Breaks	Aquatic Life,Primary Contact Recreation	No
Periphyton (Aufwuchs) Indicator Bioassessments	Municipal Point Source Discharges,Agriculture	Aquatic Life	N/A
Sediment	Municipal Point Source Discharges,Agriculture	Aquatic Life	No

Exhibit 2.8 – 303(d) List information for the Yellowstone River from the City of Billings to the Huntley Diversion Dam, MT Department of Environmental Quality

Impairment Information

Probable Cause	Probable Sources	Associated Uses	TMDL Completed
Ammonia, Un-ionized	Municipal Point Source Discharges,Industrial Point Source Discharge	Aquatic Life	No
Oil and Grease	Pipeline Breaks	Aquatic Life,Primary Contact Recreation	No
Sedimentation-Siltation	Natural Sources,Crop Production (Irrigated),Agriculture	Aquatic Life	No
Total Dissolved Solids (TDS)	Agriculture,Crop Production (Irrigated),Natural Sources	Aquatic Life	No

Exhibit 2.9 – 303(d) List information for the Yellowstone River from the Huntley Diversion Dam to the Mount of the Bighorn River, MT Department of Environmental Quality

Impairment Information

Probable Cause	Probable Sources	Associated Uses	TMDL Completed
Alteration in stream-side or littoral vegetative covers	Grazing in Riparian or Shoreline Zones,Drought-related Impacts,Channelization	Aquatic Life	N/A
Flow Regime Modification	Drought-related Impacts	Aquatic Life	N/A
Sedimentation-Siltation	Grazing in Riparian or Shoreline Zones	Aquatic Life	No

Exhibit 2.10 – 303(d) List information for Duck Creek, MT Department of Environmental Quality

Impairment Information

Probable Cause	Probable Sources	Associated Uses	TMDL Completed
Flow Regime Modification	Water Diversions	Aquatic Life	N/A

Exhibit 2.11 – 303(d) List information for Canyon Creek, MT Department of Environmental Quality

Impairment Information			
Probable Cause	**Probable Sources**	**Associated Uses**	**TMDL Completed**
Alteration in stream-side or littoral vegetative covers	Agriculture,Loss of Riparian Habitat,Dam or Impoundment	Aquatic Life	N/A
Chlorophyll-a	Dam or Impoundment,Agriculture,Loss of Riparian Habitat,Drought-related Impacts	Aquatic Life,Primary Contact Recreation	N/A
Dissolved Oxygen	Loss of Riparian Habitat,Drought-related Impacts,Dam or Impoundment	Aquatic Life	No
Nitrate-Nitrite (Nitrite plus Nitrate as N)	Agriculture	Aquatic Life	No
Nitrogen, Total	Agriculture	Aquatic Life	No

Exhibit 2.12 – 303(d) List information for Fly Creek, MT Department of Environmental Quality

Impairment Information			
Probable Cause	**Probable Sources**	**Associated Uses**	**TMDL Completed**
Other anthropogenic substrate alterations	Highways, Roads, Bridges, Infrastructure (New Construction),Crop Production (Non-Irrigated)	Aquatic Life	N/A
Salinity	Crop Production (Non-Irrigated)	Agricultural,Aquatic Life,Drinking Water	No
Selenium	Not Identified,Crop Production (Non-Irrigated)	Aquatic Life,Drinking Water	No

Exhibit 2.13 – 303(d) List information for the Spidel Waterfowl Production Area, MT Department of Environmental Quality

Impairment Information			
Probable Cause	**Probable Sources**	**Associated Uses**	**TMDL Completed**
Lead	Source Unknown	Drinking Water	No
Mercury	Source Unknown	Drinking Water	No

Exhibit 2.14 – 303(d) List information for the Bighorn River, MT Department of Environmental Quality

Geology & Groundwater (taken from the Soil Survey of Yellowstone County, 1972)

Yellowstone County is underlain by beds of shale and sandstone that are about 5000 feet thick. The shale is generally dry or yields water of poor quality, but in some areas it yields water that can be used by livestock. The most practical way to obtain water from shale is to dig shallow wells in coulees or to drill through the shale to underlying sandstone.

Sandstone yields water that is adequate in quantity and quality for both domestic and livestock use. The groundwater from sandstone does not yield enough water for large-scale irrigation, and the water is too mineral for use on the soils in Yellowstone County. The water obtained from areas where sandstone is covered by thick marine shale may be of poor quality.

The rocks that crop out in Yellowstone County date from the Quaternary to the Jurassic Periods and were deposited as long as 140 million years ago. Older, deeper rocks of the Swift, Tensleep, Amsden, and Madison Limestone Formations contain water under pressure sufficient for artesian wells.

Air & Energy:

Utility/Power Company – Areas of Coverage

Yellowstone Valley Electric Cooperative (YVEC)- Provides electric coverage to most of the Yellowstone Valley in Yellowstone County.

Northwestern Energy- Provides electric coverage to outlying areas that YVEC does not, along with the city of Billings.

Montana-Dakota Utilities – A subsidiary of MDU Resources Group, Inc. MDU provides natural gas service natural gas utility services for portions of Yellowstone County.

Oil Refineries - Three oil refineries operate in Billings and Laurel. Exxon-Mobil and Conoco-Phillips operate refineries in the Billings area, while Cenex-Harvest States runs an operation 20 miles west in Laurel.

Railroads

BNSF Railway – This railroad crosses through Yellowstone County, somewhat adjacent to Interstate 90 and a portion of Interstate 94. There is a large railyard between Laurel and Billings.

Main Highways

- Interstate 90 and I-94 cross through Yellowstone County, with both of the interstates intersecting east of Billings.
- Montana State Highway 212 crosses east/west through Crow Agency and Busby. The "Old Hardin Road" portion Montana State Highway 212 goes from Hardin to Billings and roughly parallels south along I-90 in Big Horn and Yellowstone Counties.
- There is also a network of BIA-maintained highways and roads throughout the Crow Indian Reservation.
- Montana State Highway 3 leads northwest out of Yellowstone County to meet up with Hwy 12 at Lavina.
- Montana State Highway 87 heads north from Billings to Roundup.

Coal Mines

There are no active coal mines currently in Yellowstone County.

Plants & Animals:

AFO's & CAFO's

Yellowstone County has a wide variety of small, medium, and large AFO's and CAFO's, 15 of which are permitted feeding operations. In the past 7 years, the Billings NRCS Field Office has provided assistance to 3 AFO's and CAFO's under contract and 3 under technical assistance.

Fish

The Upper Yellowstone-Pompeys Pillar drainage encompasses the majority of Yellowstone County. The main water system is the Yellowstone river and tributaries and contains over 40 aquatic species from both warm and coldwater systems.

Seasonal fluctuations along the Yellowstone river and tributaries are greatly influenced by snow pack and runoff and can vary from year to year affecting turbidity. Flows have been recorded at the USGS gage at Billings along the Yellowstone river to vary from 15,200 cfs to a high of 82,000 cfs.

Management for this stretch of the Yellowstone emphasizes a diverse number of game and nongame species. The upstream portion of this drainage has a robust population of rainbow trout, brown trout, mountain white fish, with marginal use by the Yellowstone cutthroat trout. Transitioning to a warmwater fisheries downstream the main native species found are channel catfish, sauger, and burbot. Also found in this stretch are non-native smallmouth bass, walleye, and golden eye that were added for additional sport fishing opportunities. The Yellowstone cutthroat trout and sauger are two fish species within Yellowstone County that are listed by Montana as species of concern (SOC). Other listed SOC within the county are the snapping turtle, spiny softshell, western milksnake, great plains toad, and northern leopard frog. The two species within Yellowstone County that are considered aquatic invasive species are the American bull frog and common carp.

Threatened & Endangered Species (T&E)

As of 10/23/2018, the Crow Indian Reservation has the Black-Footed Ferret listed as an endangered species. The Crow Tribe and BIA has done work recently out by Wild Horse Ridge (in between Pryor and Saint Xavier, MT in Big Horn County), in doing a release of Black-Footed Ferret. The Northern Cheyenne Reservation has done similar releases in the past fifteen years in Rosebud County but has had limited success due to Bubonic Plague killing off both the ferrets and prairie dogs. The Black-Footed Ferret is also listed as a Listed Endangered species on the County Threatened and Endangered list. The Crow Tribe and Bureau of Indian Affairs (BIA) have recently released black-footed ferrets near Wild Horse Ridge between Pryor and Saint Xavier in Big Horn County, Montana.

On the Montana Natural Heritage Program Summary:

On the Montana Natural Heritage Program Website as of February 6th, 2019, there were no Threatened or Endangered species listed for Yellowstone County, but Yellowstone County has seven mammal species as Species of Concern (SOC), including: pallid bat, townsend's big-eared bat, black-tailed prairie dog, spotted bat, eastern red bat, hoary bat, and little brown myotis. There were 26 birds listed as SOC's, including: golden eagle, great blue heron, burrowing owl, american bittern, ferruginous hawk, chestnut-collared longspur, veery, greater sage-grouse, baird's sparrow, black tern, yellow-billed cuckoo, black-billed cuckoo, bobolink, peregrine falcon, pinyon jay, cassin's finch, loggerhead shrike, red-headed woodpecker, lewis' woodpecker, Clark's nutcracker, long-billed curlew, sage thrasher, green-tailed towhee, McCown's longspur, and Brewer's sparrow.

There were five species of reptiles listed as SOC, which are: spiny softshell, snapping turtle, plains hog-nosed snake, western milksnake, and greater short-horned lizard. One amphibian was listed as SOC, the Great Plains toad. There were two fish listed as SOC: Yellowstone cutthroat trout, and sauger. One invertebrate insect species was also listed as a SOC, which was the Alberta snowfly.

Bald eagles are listed as a Special Status Species largely due to their status under the Bald and Golden Eagle Protection Act of 1940. Bald eagles are now regularly found throughout Yellowstone County, especially along the Yellowstone River corridor.

Six flowering plants were listed as SOC, including: scarlet ammannia, roundleaf water-hyssop, bractless hedge-hyssop, bush morning-glory, persistent-sepal yellowcress, and scribner's ragwort.

Section III. Conservation Activity Analysis

Please refer to the Applied Conservation Practices Map to see a visual map of Yellowstone County which shows the conservation practices that have been applied in the county from 2008 to 2018.

A summary of recent projects completed between 2008 to 2018 is as follows:

EWP Flood Recovery (2011-12)**:**

- Property Protection. Damage to a private irrigation ditch making it nonfunctional and water cannot be managed creating a potential for flooding and damage to two residences. In addition, the ditch served 55 acres of very productive hayland and 17 acres of pasture. Project was sponsored by the Yellowstone Conservation District.
- Canyon Creek Ditch Company-Irrigation canal repair and stream bank stabilization. Streambank loss reaching rip-rap. Water had removed several sections of rock threatening irrigation canal and homes. Additionally, if the river took out the canal and water could not be managed there was the potential of flooding and damage to the Laurel water treatment plant and many portions of Billings on the west end. The canal serves 6500 acres of high value irrigated crops. Project was sponsored by the Yellowstone Conservation District.
- Waco Custer Diversion-Irrigation canal repair and stream bank stabilization. Irrigation canal serves 3500 acres of high value irrigated crops estimated to be worth $1,721,047.00. Project was sponsored by the Yellowstone Conservation District.
- Huntley Project-Bank Stabilization and Property Protection. Failure of bank would cause flood waters to affect 76 homes, Yellowstone Electric Cooperative, United Methodist Church, Restaurants, and a road. Project was sponsored by Yellowstone County.

Yellowstone Region Sustainability RCPP (2017-2021)**:**

- Sponsored by Miller-Coors, Western Sugar, Montana Bureau of Mines and Geology (MBMG), Big Horn, Yellowstone and Carbon Conservation Districts. Five projects have been funded as of 2019 in Yellowstone County.

County Program Workload

Environmental Quality Incentives Program (EQIP)– 35 active contracts as of August 11th, 2021. Projects involve: Irrigation improvement, soil health, grazing systems, AFO/CAFO, dryland crop erosion control, cover crops, and conversion of expiring CRP to grazinglands.

Regional Conservation Partnership Program Environmental Quality Incentives Program (RCPP-EQIP) – 3 Active contracts as of August 11th, 2021. Projects involve irrigation improvement.

Conservation Stewardship Program (CSP) – 17 active contracts as of August 11th, 2021. Projects involve: Irrigation monitoring, cover crops, reduced tillage, nutrient management, pollinator habitat, and prescribed grazing management.

Conservation Stewardship Program Grazinglands Conservation Initiative (CSP-GCI) – 10 active CSP-GCI contracts as of August 11th, 2021. Projects involve: Ensuring adequate vegetative cover is maintained on contract acres.

Section IV. Natural Resource Problems and Desired Future Outcomes:

- **Resource Inventory – Soil Erosion:**
  - Irrigated Cropland: Both wind and water-induced erosion has been a resource concern on irrigated cropland. This issue has been caused partly from intensive tillage practices used on irrigated cropland, as well as a lack of irrigation water management. According to the Soil Tillage Intensity Rating (STIR) from the NRCS Revised Universal Soil Loss Equation (RUSLE2), conventional tillage practices with a typical Sugar Beet/Small Grain/Small Grain cropping rotation on irrigated cropland commonly have a STIR range of 120 to 200. Over the years, irrigated farmers have begun to adopt more reduced tillage methods on irrigated cropland, and have been able to keep these STIR ratings on irrigated cropland closer to a 85-120 range. Existing crop rotations and existing irrigation infrastructure have been cited as barriers to being able to lower STIR ratings on irrigated cropland.
  - Dry Cropland: With common cropping rotations on dry cropland involving a small grain and fallow, soil erosion has been an issue. No-Till cropping methods have been largely adopted on dry cropland throughout the county, although there are still some producers in parts of the county who have yet to adopt this residue management method. Common no-till STIR ratings on a winter wheat-chemical fallow rotation range from 5 to 15. Diversifying cropping rotations on dry cropland has been suggested, although challenges lie with markets to sell other crops through, as well as climactic limitations on spring-seeded crops. Recently, some farms have experimented with fall-seeded specialty crops, such as Winter Pea and Winter Canola, especially when they can maximize use of winter and early-spring precipitation that spring-seeded crops can't get.
  - Rangeland & Pastureland: Erosion issues have been found on range and pasture in fields that have experienced overgrazing, especially along water sources where livestock have congregated. Grazing management and proper stocking rates would greatly help this resource concern on this landuse.
- **Resource Inventory – Soil Quality Degradation**
  - Irrigated Cropland: Intensive tillage operations on small grains and sugar beet rotations (STIR range of 120-200), as well as a lack of irrigation water management, over the years has degraded soil quality in terms of organic matter depletion and soil compaction. Soil Condition Indexes (SCI) in a typical Small Grain, Small Grain, Sugar Beet rotation has

been less than zero. Salinity has also been an issue on some irrigated cropland fields; some of these concerns have been solved or mitigated through cropping rotations, adding perennial crops, or addition of soil amendments.

- Dry Cropland: Salinity concerns on dryland crop has occurred over the years, with some of these saline seeps continuously growing over the years. Fallow rotations, lack of crop diversity, and existing soil conditions have all contributed to salinity problems on cropland. Some of these issues have been resolved or mitigated by seeding fields or portions of fields back to a perennial crop or grass. Addition of soil amendments to dryland crop has been limited due to cost.
- Rangeland: Long term overgrazing has led to a degradation of soil on rangeland, especially with compaction and decrease of organic matter levels. Implementation of prescribed grazing, as well as structural and vegetative practices that can facilitate the implementation of prescribed grazing, have helped to stem the loss of soil quality.

- **Resource Inventory – Water Quantity & Quality**
  - Irrigated Cropland: Irrigation water in Yellowstone County can be affected by moss problems due to the clarity of the irrigation water. Moss can plug irrigation equipment, although some irrigation companies and ditches mitigate this problem by requiring the moss to be taken with the irrigation water and are subsequently removed with moss filters. Irrigation tailwater leaving crop fields can have issues with sediment and nutrient levels, which can be caused by intensive tillage practices, inefficient irrigation structures, lack of irrigation water management, and/or lack of nutrient management.
  - Dry Cropland: With a typical 12-14" precipitation range on most of the dry cropland in Yellowstone, water quantity can be a limiting factor in crop productivity. Ensuring adequate residue cover on the soil surface can be the best method for conserving soil moisture.
  - Range and Pasture: Water quantity and quality are two of the most limiting factors for grazinglands utilization, as both are needed to safely manage livestock. Land located in and adjacent to the Yellowstone River valley has the best chance for quality groundwater sources; other locations in the county can vary significantly in groundwater availability and quality. Another concern is degradation of water quality in existing springs, especially from uncontrolled livestock traffic. Developing these springs can help preserve the integrity of the spring itself and also provide good quality stockwater.
  - Headquarters: Yellowstone County has at least 200 small livestock operations with cattle, horses, and other animals. Many of these are located near waterways and deliver nutrients, organic material, and potential pathogens downstream. These livestock operations are usually not monitored by MT DEQ and don't require CAFO permits. A high percentage of such operations could be considered low management. The headquarters and barn areas are typically muddy, ponded and have surface run-off with substandard housing and wintering areas. In some cases, livestock are not excluded from waterways or wetland access. Many of these small AFO's would benefit from being moved away from the nearby water sources, as well as having off-site water sources installed in order to prevent livestock access from rivers and creeks.
- **Resource Inventory – Plants**

- Irrigated Cropland: The risk of Palmer Amaranth spreading to Montana from North Dakota or Wyoming may be a concern in the future, as it could significantly affect pulse and row crops grown in Yellowstone County. Fusarium head blight has recently become a problem on irrigated cropland and can seriously impact small grains. Fursarium can produce deoxynivaleonol (DON); levels of DON that exceed 1ppm are considered by the US Food and Drug Administration as unsuitable for human consumption; and levels exceeding 3ppm are unsuitable for livestock consumption. This disease is seen more often in areas that are growing corn (the fungal spore can travel through the wind to neighboring fields miles away). MSU Extension recommends tillage or burning of corn residues in order to prevent the formation and spread of Fusarium. Management of crop rotations are equally as important as residue management, and it is important to ensure there are also cool and warm-season broadleaves present in the cropping rotations to help prevent an excess of residue buildup on the soil surface. Increasing the diversity of crop rotations has proven to be a challenge, though, due to the availability of local venues in which to market alternative crops.
- Dry Cropland: Pest pressure from Wheatstem Sawfly, and Wild Rye have consistently been pest issues on dry cropland, especially with the historic Winter Wheat and Fallow rotations. Varieties of Winter Wheat have been developed that are solid-stemmed and are considered resistant to Sawfly but are also consistently less productive than other varieties. Cropping rotation and residue management have also been cited as other methods for preventing Sawfly from infesting Wheat Fields. Residue management typically calls for either no residue available to house Sawfly larvae, or to keep wheat stubble as high as possible (usually from using a stripper header), in order to encourage natural predators to the Sawfly to keep their damage at bay.
- Rangeland: Invasive winter annual grasses, such as Cheatgrass, Bulbous Bluegrass, and Ventenata have been problems on rangeland, and have had significant impacts on forage quality and quantity as they have replaced native perennial grasses and forbs. Prescribed Grazing, and possibly intense renovation of significantly affected pastures, are needed throughout the county. Other noxious weeds such as Sulphur Cinquefoil, Spotted Knapweed, and Leafy Spurge have been found on rangeland areas scattered through the county as well.
- Pastureland: Lack of species diversity in expiring CRP stands or old pastures that are past their lifespan do not produce the forage quality and quantity needed for livestock and wildlife demand. Of course, degraded stands are more susceptible to annual grass invasion. Re-seeding, weed management and intensive grazing are options for renovation. Irrigated pasture occurs throughout the county. More education could be done on the combination of irrigation water management and grazing management, especially on smaller acres.

- **Resource Inventory – Animal**
  - Irrigated Cropland: Declining pollinator health and reduced habitat attributed to pesticide use and weed control measures is an increasing public concern. Cash crops grown in the valley rely on pollination. There are some leaf cutter bee businesses as well as apiaries for honey production. Alternatives for seeding unusable production areas for

pollinator friendly forb mixes are often presented but not always chosen. Tail water and/or deep percolated irrigation water for ground water recharge is significant for many fish species that require cooler water, especially later in the summer season. This is sometimes a lesser recognized ecological benefit of flood irrigation. Many amphibian species utilize irrigation ditches and laterals throughout the irrigation season.

- Dry Cropland: Soil health and below ground biology have taken hold in parts of the county as a priority. Rotational diversity is important for below and above ground livestock, some grazing of cover crops is occurring as well as some seeding of perennial mixes for livestock feed and forage. Limitations with fencing and stock water do exist on many operations. Stripper header stubble can serve as better cover for ground animals, birds and insects. The same concerns exist for pollinator health and habitat as on irrigated cropland.
- Rangeland & Pasture: Inadequate feed and forage for livestock and wildlife seems to be the largest issue ie. most wide spread and most critical. Sometimes this is accelerated by inadequate livestock water. Yellowstone County does have sage grouse habitat in areas surround leks. Conserving or enhancing this habitat involves grazing rotations focusing on forb diversity, sage brush cover, riparian health and of course overall rangeland health measures. There are also big game animals like elk, mule deer, white tail deer, turkey's etc. that utilize rangeland for part or all of the year in the county. Maintaining or improving this habitat involves rangeland management, conifer encroachment treatment, and noxious weed control.
- Forestland: Habitat degradation (food, water, cover/shelter, and habitat continuity/space) come together in a mixture of forest and rangeland, which are often managed together. Forest stand improvement is valuable for wildfire preparedness and wildlife cover/shelter. There are areas in the county with thick stands of juvenile ponderosa pine and other conifers that are ripe for wildfire spread and are not serving as quality wildlife habitat in the current state. There are also areas of trees of all one age class, making the stand vulnerable to disease and pest issues, followed by wildfire risk in later years if no action is taken.
  The conifer encroachment issue is when trees, typically juniper, are moving into ecological sites that are not meant to support trees, provide predator perches for sage grouse predators and impact grass production for wildlife and livestock. In the past few years this does not seem to be high on the priority list for many of the producers we work with. These producers may also work with Forest Service or BLM to address these resource concerns.

- **Resource Inventory – Energy**
  - Equipment and Facilities: Anything from product refrigeration, animal housing, water, heating, pumps or pretty much anything requiring energy can be evaluated for its efficiency. This hasn't been high on the priority list of a lot of our participants. I think grant money is an attractive incentive to make necessary upgrades and to help offset the initial investment, which can sometimes be substantial.
  - Farming/Ranching Practices and Field Operations: Things like nitrogen fertilizer regimen, irrigation practices, tillage practices, solar pumps vs. generator can also be evaluated.

The direct energy usage can be a little harder to quantify depending on the lifecycle of the product that you want to look at. Savings can be shown in fossil fuel usage, pump efficiency, electricity cost, wear and tear on equipment and labor costs. Again, sometimes this is a lower priority to producers, unless one alternative is just flat cost prohibitive to implement and therefore a lower energy input option is what they prefer and ultimately install.

- NRCS offers energy audits through Technical Service Providers (TSPs) that do an on site visit to evaluate whatever the producer would like. As part of the evaluation are recommendations for upgrades, the estimated energy savings along with an estimated period of time the investment would take to recover the costs of the upgrade. There are a lot of online tools for energy savings calculations for consumers to compare older models to newer models of almost anything.

Section V. Prioritization of Natural Resource Problems and Desired Outcomes

Yellowstone County Local Working Group Questionnaire – New for Fiscal Year (FY) 2020, the local USDA-NRCS Field Office developed a Local Working Group Questionnaire for the Yellowstone Conservation District (YCD) to send out to local groups and ag producers prior to the FY2020 Local Working Group Meeting. The purpose of this questionnaire is to continue a locally-led process to highlight resource concerns in the area, and to provide a voice to people who may be unable or unwilling to attend a public forum. The format for the questionnaire is as follows:

Fiscal Year (FY) 2020 Yellowstone County Local Working Group Questionnaire

Name (Optional): _____

Are you one or more of the following (check all that apply):

- Rancher
- Farmer
- Private Landowner
- Nonprofit Group
- Billings Resident
- Other: _____

Please select up to three resource concerns you feel are an issue in Yellowstone County; circle the landuse these resource concerns are associated with, as well as the general geographic location in the county these may be located (Pryor Creek, Huntley Area, Yellowstone River, etc.):

- Soil Erosion (Wind, Water, Gully, Irrigation-Induced, etc.)
  - Landuse: Pasture, Rangeland, Forestland, Irrigated Cropland, Dry Cropland, Urban, Other
  - Location:
- Soil Quality Degradation (Organic Matter Depletion, Compaction, Salinity, etc.)
  - Landuse: Pasture, Rangeland, Forestland, Irrigated Cropland, Dry Cropland, Urban, Other
  - Location:
- Water Quantity (Stockwater, Irrigation Water, etc.)
  - Landuse: Pasture, Rangeland, Forestland, Irrigated Cropland, Dry Cropland, Urban, Other
  - Location:
- Water Quality (Sediment, Excess Nitrogen, Manure, etc.)
  - Landuse: Pasture, Rangeland, Forestland, Irrigated Cropland, Dry Cropland, Urban, Other
  - Location:
- Degraded Plant Condition (Weeds, Low Production, Overgrazing, etc.)
  - Landuse: Pasture, Rangeland, Forestland, Irrigated Cropland, Dry Cropland, Urban, Other
  - Location:
- Inadequate Fish & Wildlife Habitat
  - Landuse: Pasture, Rangeland, Forestland, Irrigated Cropland, Dry Cropland, Urban, Other
  - Location:
- Livestock- Inadequate Feed & Forage
  - Landuse: Pasture, Rangeland, Forestland, Irrigated Cropland, Dry Cropland, Urban, Other
  - Location:
- Livestock – Inadequate Livestock Shelter
  - Landuse: Pasture, Rangeland, Forestland, Irrigated Cropland, Dry Cropland, Urban, Other
  - Location:
- Livestock – Inadequate Livestock Water
  - Landuse: Pasture, Rangeland, Forestland, Irrigated Cropland, Dry Cropland, Urban, Other
  - Location:

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The Yellowstone Conservation District and Billings USDA-NRCS Field Office are always looking for opportunities to provide education and outreach to the public in Yellowstone County. Do you have any suggestions for future workshop/meeting topics to discuss?

Do you have any other additional concerns you would like to share with the Local Working Group (this would include any additional urban-related resource concerns)?

Would you like us to send you information regarding any future workshops, meetings, or NRCS Farm Bill Programs? If yes, please include your name, mailing address, and email address, if applicable, below, and we will add you to our mailing lists.

Name: _____

Address: _____

City, State, Zip: _____

Email: _____

This questionnaire can be returned to either Yellowstone Conservation District or to the Billings NRCS Field Office at the following addresses:

Yellowstone Conservation District
1371 Rimtop Drive
Billings, MT 59105

USDA-NRCS
1629 Avenue D, Building A, Suite 4
Billings, MT 59102

If you have any questions regarding this questionnaire, please contact:

- LaVerne Ivie, Yellowstone Conservation District Administrator, by calling: (406) 247-4420, or email: livie@mt.gov.
- Seanna Torske, USDA-NRCS Supervisory District Conservationist, by calling: (406) 629-3220, or email: seanna.torske@usda.gov.

We can also accept scanned and emailed copies of this questionnaire to either of the email addresses above. ***USDA-NRCS provides reasonable accommodations for all persons with disabilities to participate in NRCS programs and activities. If you require special accommodations to access this form, please contact the Billings NRCS Field Office at: (406) 657-6135, ext. 3.***

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Yellowstone County Local Working Group Meeting Minutes –

FY2022 LWG Meeting Minutes-

The Yellowstone County LWG meeting was held in conjunction with the Yellowstone CD Board Meeting on April 14th, 2021, at the Yellowstone County Commissioners Conference Room. The Local Work Group convened at 9:50 am, and minutes are as follows:

- Local Work Group convened at 9:50 am
    - Purpose of LWG
        - How the LWG and Montana Focused Conservation work together – fact sheets were provided by Torske
    - FY2021 Recommendations review – Fly Creek Salinity – Torske reported MBMG has been testing wells in the Fly Creek watershed and has determined the salinity is geologically influenced coming from shale formations, not from land use practices. She is working on getting Reverse Osmosis systems added to the TIP proposal for cost share purposes.
    - Review of resource concerns
      -- Fly Creek salinity
      -- Rangeland soil health
      -- Weeds
    - Recommendation for FY2022 LWG – keep the momentum going forward for the Fly Creek salinity problem. Peck made a motion to rank Fly Creek and its' resources as YCD's #1 resource concern. Second by Gabel, motion passed.
    - Discussed the possibility of workshop/informational meeting for Fly Creek landowners presented by MT Salinity Control Assoc./ YCD/ Big Horn CD

FY2021 LWG Meeting-

The Yellowstone County LWG meeting was scheduled for March 18th, 2020, but due to COVID-19, the in-person meeting was cancelled. The LWG questionnaire had been sent out earlier via Survey Monkey, and the survey responses were reviewed at the Yellowstone Conservation District's board meeting held May 12th, 2020. The majority of the feedback highlighted water quality concerns along the Fly Creek Watershed, and was recommended to make this a priority resource concern.

FY2020 LWG Meeting Minutes-

The Fiscal Year 2020 Yellowstone County Local Working Group meeting was held on Wednesday, May 15th, 2019, in Huntley, MT, and the minutes from the meeting are as follows:

Invitations and questionnaires were mailed out to about 550 landowners in Yellowstone County and the event was publicized via email by Yellowstone Conservation District and on multiple local radio stations. Seanna Torske, NRCS Supervisory District Conservationist for Hardin, Crow Agency and Billings opened the meeting at 12:20 pm following a meal sponsored by Yellowstone Conservation District. Seanna discussed the locally led conservation process and informed attendees of the importance of their input and how it would be taken into consideration to direct the work of the local NRCS office as well as where to focus Farm Bill 2018 funds and beyond. Mrs. Torske explained Montana Focused Conservation, in a larger sense but also in

terms of Yellowstone County and how a long range plan can hopefully more directly reach resource concerns that are the most urgent and also the most effective to treat. She also highlighted a tool for feedback at any time from any member of the public, the local working group questionnaire, where participants can record their recommendations of resource concerns needing completed, as well as input on workshop topics of interest. Shalaine Watson, District Conservationist for the Billings NRCS FO, presented what the local workgroup recommendation had been for FY 2019, which is plant productivity, health and vigor on rangelands. A watershed map of Yellowstone County was projected as well as provided in hard copy form for attendees to help frame areas that resource concerns are most prevalent and to provide some common terms to discuss areas of the county in relation to resource issues. The floor was then opened up to attendees to voice their opinions on resource concerns in Yellowstone County. The following are the topics that were discussed:

- *Surface water quality on Fly Creek drainage. Cattle have been lost due to poor water quality*
- *Ground water quality (no specific location). Wells going bad and becoming unsuitable for livestock.*
- *Noxious and invasive species control (Salt Cedar, Russian Olive) on the Yellowstone River*
- *Noxious and invasive species control (Poison hemlock) on Duck Creek and Blue Creek*
- *Cheatgrass and other annual winter invasive grasses on rangeland county wide*
- *Irrigation ditches and Russian Olive control there in, many ditches are surrounded by urban/suburban landowners and the complications of federal funding to assist with treatment*
- *Urban development and its general impacts on agriculture ie. Fractionated land by expanding developments, ag machinery access, urban agriculture (and how to promote that), stormwater run-off, pollution*
- *Soil erosion by wind and water on annual cropland*
- *Channel migration on the Yellowstone River*

Education ideas:

- *Yellowstone River landowners- process for rip-rap or any stream/river work. Yellowstone CD does send a flyer each year to landowners informing them of the 310 process and general awareness.*
- *Beekeeping/Pollinators- awareness and other topics of interest*
- *Noxious weeds- ID and methods for control*
- *Small acres/ horse owners' workshop- possibly at the NILE, MT Fair or MATE show*
- *Pasture and grazing management*
- *Common sense education*
- *Wireless fence for livestock used for grazing management- MT Range tour and/or local workshop in Billings*
- *High Tunnel systems/urban agriculture promotion*

- *Easement workshop for landowners and partners*

Discussion amongst attendees continued. Two options were offered for reaching a priority of resource concerns. A verbal consensus or a paper vote. The group did not want to hem in the priorities to tightly, knowing that sometimes other things pop up after the local workgroup or roadblocks may happen of not having ready, willing and able participants. A verbal consensus was reached for the following priorities:

#1 Soil Health

1 a. Plant Pest Pressure

#2 Surface Water Quality

The group chose to not discuss local ranking questions at this time.

The meeting adjourned at 2:40 pm.

Section VI. Targeted Implementation Plans and Education/Outreach Plans

Targeted Implementation Plans (TIPs) - Most of these plans are potential TIP proposals; current TIPs that have been approved by Montana USDA-NRCS State Leadership Team will be marked as funded, and more information regarding funded TIP proposals can be found here: https://www.nrcs.usda.gov/wps/portal/nrcs/mt/programs/mfc/, and clicking on "What's Available in My County?".

Irrigation Improvement (Selected for Funding in FY2019)

- **Purpose:** Assist landowners by improving application efficiency of irrigation systems on existing irrigated cropland in Big Horn and Yellowstone Counties.
- **Primary Resource Concern Addressed:** Water: Excess/Insufficient Water – Inefficient use of irrigation water
- **Location:** Irrigated Cropland in Big Horn and Yellowstone Counties. The irrigated cropland in the two-county area totals a little less than 310,000 acres in two distinct river drainages that are all part of the Yellowstone River Drainage.
- **Summary:** This project is proposed to cover six years from FY2020 to FY2025. EQIP funding will be needed for FY2020-2022, and FY2023-2025 will be used for contract implementation and monitoring. The purpose of this project will primarily help to offset the costs of installing buried drip tape irrigation and is expected to address the Irrigation Efficiency resource concern. The main practices will be (441) Irrigation System, Microirrigation, and (442) Sprinkler System, Center Pivot System, as well as some facilitating, vegetative, and management practices.
- **Goals:** Goals to accomplish through this project include: Five EQIP contracts per county, totaling ten EQIP contracts on approximately 1216 acres of irrigated cropland, resulting in an estimated $1.6 million of EQIP funding needed over the six years of this project.
- **Monitoring and Evaluation:** (587) Structure for Water Control, Flow Meter, and (449) Irrigation Water Management will either be planned or contracted for each of the projects, allowing the

participant to monitor and record their irrigation water use on the project fields. Annual Contract Status Reviews will be completed twice yearly on each funded project for the duration of the contract. The installed projects will also be utilized for Field Day tours, in order to provide outreach and education to local farmers who are also interested in improving their irrigation efficiency.

- **Partners:** Yellowstone Conservation District, Big Horn Conservation District, Montana State University Extension, Montana Bureau of Mines and Geology, and Private Landowners.

Fly Creek Water Quality Improvement

- **Purpose:** Assist livestock operators in improving the water quality of Fly Creek in Big Horn and Yellowstone Counties
- **Primary Resource Concern Addressed:** Inadequate Livestock Water
- **Location:** Fly Creek Watershed in Big Horn and Yellowstone Counties.
- **Summary:** The project is proposed to cover five years from FY 2020-2024. EQIP funding will be needed for FY 2020-2022, and FY 2023-2024 will be used for practice installment and monitoring. The purpose of this project will primarily help livestock producers to develop off site water for stock as high sulphates in Fly Creek has become a big concern in recent years. The main practices will be stockwater practices that can provide improved water quality for livestock.
- **Goals:** 2000 acres addressed.
- **Monitoring and Evaluation:** Landowners have started voluntarily monitoring TDS levels on their property, and the MT NRCS State Office has already worked with MBMG on water sampling existing wells in the Fly Creek watershed in order to determine the levels nitrates and sulfates in these existing wells. MT DEQ also has a voluntary program to record changes in water quality levels.
  Photo monitoring will be conducted of vegetative and management practices annually with landowners to educate themselves and neighbors on techniques that work in their area.
- **Partners & Alternative Funding:** Yellowstone Conservation District, Big Horn Conservation District, Montana Bureau of Mines and Geology (MBMG) and Private Landowners.

Seasonal High Tunnels

- **Purpose:** Assist producers to extend the growing season for high-value crops in an environmentally safe manner.
- **Primary Resource Concern Addressed:** Degraded Plant Condition - Undesirable plant productivity and health
- **Location:** Yellowstone County
- **Summary:** High Tunnel Systems can help to extend the growing season, improve plant quality and soil quality, reduce nutrient and pesticide transportation, improve air quality through reduced transportation inputs, and to reduce energy use by providing consumers with a local source of fresh produce. Yellowstone County has access to a considerable population that wants locally-grown produce, and this TIP would seek to provide targeted funding for these High Tunnel Systems, as well as additional engineering, vegetative, and management practices. The timeline for this project would cover four years.

- **Goals:** 20 Seasonal High Tunnel Systems contracted in Yellowstone County.
- **Monitoring and Evaluation:** Annual Contract Status Reviews will be completed on all EQIP contracts.
- **Partners & Alternative Funding:** Yellowstone Conservation District, Local Farmers Markets, MSU Extension, and Private Landowners.

Pryor Creek Stockwater

- **Purpose:** Assist ag operators in the Pryor Creek Watershed to provide sources of stockwater away from Pryor Creek.
- **Primary Resource Concern Addressed:** Surface Water Quality
- **Location:** Pryor Creek Watershed in Yellowstone and Big Horn Counties.
- **Summary:** Water quality along Pryor Creek has been a concern for years. Turbidity in the surface water, as well as uncontrolled livestock access to the creek has been problematic along the creek. This project seeks to provide sources of stockwater away from Pryor Creek, as well as fencing the creek in order to protect it from uncontrolled livestock disturbance.
- **Goals:** 3000 acres addressed within Pryor Creek Watershed.
- **Monitoring and Evaluation:** Annual contract status reviews will be completed each year, including regular field visits in order to ensure operation and maintenance tasks are being performed on installed practices.
- **Partners & Alternative Funding:** Big Horn Conservation District, Yellowstone Conservation District, and Private Landowners.

Pryor Creek Water Quality

- **Purpose:** Assist Landowners in the Pryor Creek Watershed to relocate Animal Feeding Operations (AFO) and Concentrated Animal Feeding Operations (CAFO) away from the Pryor River and its tributaries in order to improve water quality along the Pryor River.
- **Primary Resource Concern Addressed:** Water Quality Degradation – Excess Nutrients in Surface Waters
- **Location:** Big Horn and Yellowstone Counties within the Pryor Watershed.
- **Summary:** Big Horn and Yellowstone Counties have numerous small livestock operations with cattle, horses, and other animals. Many of these are located near waterways and deliver nutrients, organic material, and potential pathogens downstream. These livestock operations are usually not monitored by MT DEQ and don't require CAFO permits. A high percentage of such operations could be considered low management. Grazing occurs all year long on many of these. The headquarters and barn areas are typically muddy, ponded and have surface run-off with substandard housing and wintering areas. In some cases, livestock are not excluded from waterways or wetland access. Several of the operators are beginning farmers or limited resource operators.
- **Goals:** At least 10 AFO/CAFO's relocated from waterways. This project would cover approximately five years.
- **Monitoring and Evaluation:** Contract Status reviews will be performed twice-yearly during the contract duration, and extensive documentation will be taken before and after project

implementation, with the results being shared at a local educational workshop regarding water quality.

- **Partners & Alternative Funding:** Private Landowners, Big Horn Conservation District, Yellowstone Conservation District, Crow Tribe of Indians, Crow EPA, and MSU Extension.

Yellowstone County Ventenata Control

- **Purpose:** The purpose of this project is to assist landowners in proactively addressing control of Ventenata in Yellowstone County through proper rangeland management, education, and chemical control methods before this invasive grass becomes widespread.
- **Primary Resource Concern Addressed:** Degraded Plant Condition – Excessive Plant Pest Pressure
- **Location:** Rangeland, Pastureland, and Grazed Forest in Yellowstone County.
- **Summary:** Invasive annual grass species such as Ventenata (commonly referred to as African Wiregrass), has begun to raise concern on Montana Ranches, especially in Yellowstone County. Controlling invasive and noxious weeds has been a regular concern at Local Work Group meetings, and this project seeks to control Ventenata in Yellowstone County, as well as providing education to local ag producers and landowners on identification and control of Ventenata. The proposed timeframe for this proposal would cover five years.
- **Goals:** (315) Herbaceous Weed Treatment on at least 300 acres; and, (528) Prescribed Grazing management on at least 10,000 acres.
- **Monitoring and Evaluation:** Contract Status reviews will be performed twice-yearly during the contract duration, and on the fifth year of this project NRCS would complete an in-depth review and project report to document implementation. NRCS would also provide a report on the project at local workshops. NRCS will also set up photo point monitoring on the areas of control and will plan to use these points in order to document long-term control efficacy. The photo monitoring will also be able to be used for reports and progress reviews.
- **Partners & Alternative Funding:** Yellowstone Conservation District, Yellowstone County Weed Control District, Montana State University Extension, and Private Landowners.
    - The Yellowstone Conservation District has the ability to apply for the Montana Department of Natural Resources and Conservation (DNRC) HB 223 grant program to assist landowners and USDA-NRCS in providing outreach and education to local landowners. The Yellowstone County Weed District Coordinator has the ability to provide some of the listed approved chemicals through their chemical cost-share program for Yellowstone County residents.

Forage Quantity Improvement

- **Purpose:** Assist ag producers to seed dryland crop to permanent perennial vegetation in order to provide additional forage for their livestock.

- **Primary Resource Concern Addressed:** Inadequate livestock feed and forage, soil quality degradation-organic matter completion
- **Location:** Dryland Crop located in Yellowstone County.
- **Summary:** This project seeks to assist producers in taking dry cropland that is less than optimally productive and seeding it to a perennial forage mix that can be used for grazing livestock. (512) Forage and Biomass Planting and (550) Range Planting are the basic practices that will be contracted with this project, in additional to other facilitating practices such as (614) Watering Facility, (516) Livestock Pipeline, (533) Pumping Plant, and (382) Fence. Priority will be given to participants who are willing to implement a (528) Prescribed Grazing plan the seeded acres.
- **Goals:** 3,000 acres of cropland seeded, 3000 acres of Prescribed Grazing.
- **Monitoring and Evaluation:** Annual contract status reviews and routine field visits.
- **Partners & Alternative Funding:** SGI, Northern Plains Joint Venture partners, Private Landowners.

Expiring CRP Renovation-Conversion to Grazing (FUNDED)

- **Purpose:** Aid in the transition of expiring CRP to operational grazing systems to maintain or improve perennial vegetation.
- **Primary Resource Concern Addressed:** Inadequate livestock water, inadequate feed and forage, plant productivity and health
- **Location:** Expiring CRP acres located within Yellowstone County.
- **Summary:** This project seeks to install practices necessary to convert CRP land into a viable grazing operation. Practices may include water well (642), livestock pipeline (516), watering facility (614), pumping plant (533), Fence (382). Priority will be given to participants who are willing to implement a (528) Prescribed Grazing plan the seeded acres.
- **Goals:** Practices addressed on approximately 2000 acres.
- **Monitoring and Evaluation:** Annual contract status reviews and routine field visits.
- **Partners & Alternative Funding:** Yellowstone Conservation District, Northern Plains Joint Venture partners, Private Landowners.

Blue Creek Area RMS Grazing

- **Purpose:** Aid in facilitating prescribed grazing plans for improvement in plant productivity, health and vigor
- **Primary Resource Concern Addressed:** Inadequate livestock water, inadequate feed and forage, plant productivity and health
- **Location:** Blue Creek area watershed, includes Wyman Creek, Duck Creek, Spring Creek
- **Summary:** This project seeks to install practices necessary to facilitate sustainable grazing systems. Practices may include water well (642), livestock pipeline (516), watering facility (614), pumping plant (533), Fence (382), forage and biomass planting (512), cover crop (340). Priority will be given to participants who are willing to implement a (528) Prescribed Grazing plan the range and pasture acres.
- **Goals:** Practices addressed on approximately 5000 acres.

- **Monitoring and Evaluation:** Annual contract status reviews and routine field visits.
- **Partners & Alternative Funding:** SGI, Northern Plains Joint Venture partners, Private Landowners.

Blue Creek Area Poison Hemlock Control

- **Purpose:** To assist landowners with controlling Poison Hemlock infestations in areas within the Blue Creek drainage.
- **Primary Resource Concern Addressed:** Plant Pest Pressure
- **Location:** Blue Creek area watershed, includes Wyman Creek, Duck Creek, Spring Creek
- **Summary:** The Yellowstone County Weed Control District has an active weed control program along the Blue Creek area for hemlock. While this program has been very successful, there are still other areas nearby the Blue Creek drainage, approximately one mile additional radius that need control of these invasive weeds, and this targeted project will address this through (315) Herbaceous Weed Control. Followed up by prescribed grazing (528) on a contracted for CTA basis.
- **Goals:** Control provided on 250 acres over the course of five years.
- **Monitoring and Evaluation:** Annual contract status reviews and routine field visits.
- **Partners & Alternative Funding:** Yellowstone Weed Control District, Yellowstone Conservation District, MSU Extension Office, and Private Landowners.

Yellowstone River Russian Olive and Salt Cedar Control

- **Purpose:** To assist landowners with controlling Russian Olive and Salt Cedar infestations in areas within one mile of the Yellowstone River.
- **Primary Resource Concern Addressed:** Plant Pest Pressure
- **Location:** Yellowstone River corridor area in Yellowstone County.
- **Summary:** The Yellowstone County Weed Control District has an active weed control program along the Yellowstone River flood plain area for controlling Russian Olive and Salt Cedar. While this program has been very successful, there are still other areas nearby the Yellowstone River that need control of these invasive shrubs, and this targeted project will address this through (315) Herbaceous Weed Control, (384) Woody Residue Treatment, and (612) Tree and Shrub Establishment (as needed). For the 2020 Salt Cedar Project will hopefully begin at Road 19 North and continue on downriver for 5 or 6 miles, depending on the density and severity of the salt cedar.
- **Goals:** Control provided on 500 acres over the course of five years. Further spread of these noxious weeds should be accomplished.
- **Monitoring and Evaluation:** Annual contract status reviews and routine field visits.
- **Partners & Alternative Funding:** Yellowstone Weed Control District, Yellowstone Conservation District, MSU Extension Office, and Private Landowners.

Education and Outreach Plan-

- Education
    - Northern International Livestock Exposition (NILE) Youth Education
- Workshops
    - Easement Programs
    - Gardening Workshops
    - USDA Outreach Workshops
    - Small Acreage Landowners Workshop
- Methods of Outreach
    - Billings Gazette
    - Yellowstone County News
    - Trader's Dispatch
    - Postal Mailings
    - Emails
    - Flyers
    - Social Media
    - "The Mighty" 790 AM Radio Station

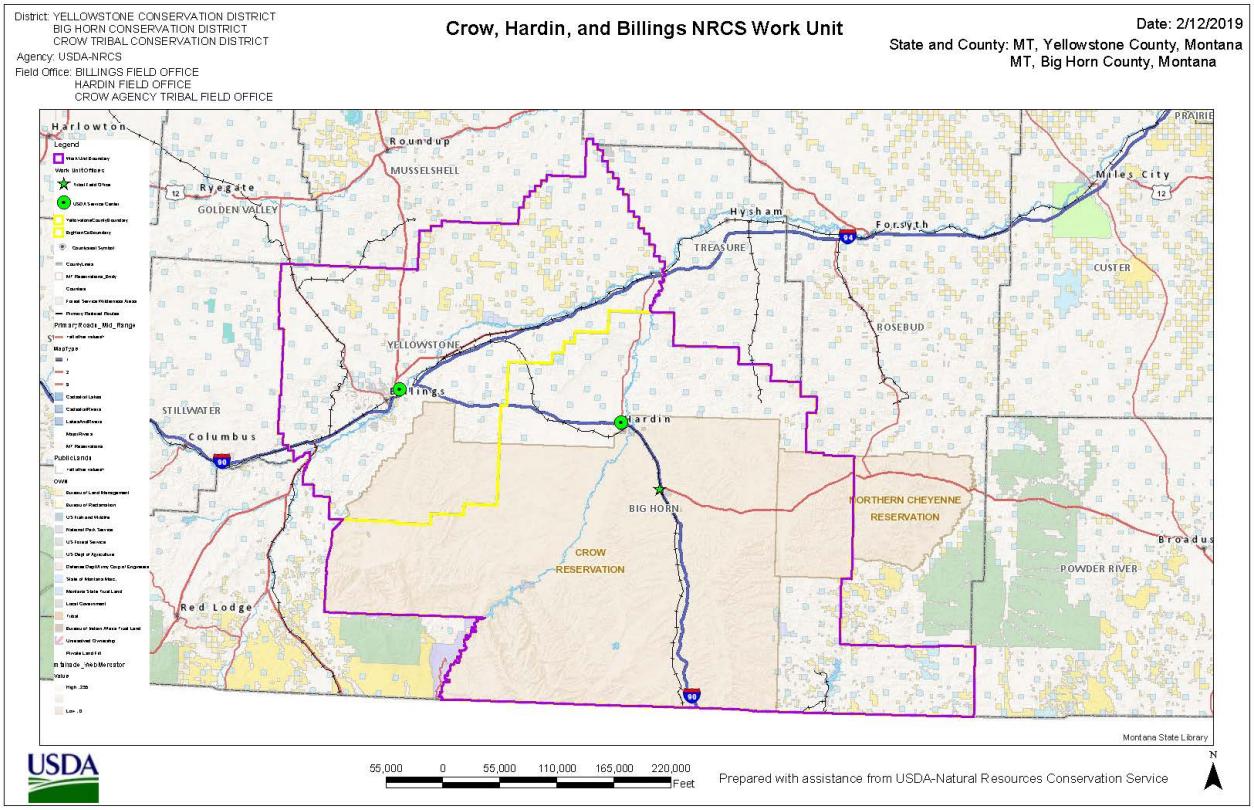
Section VII. References and Maps

References:

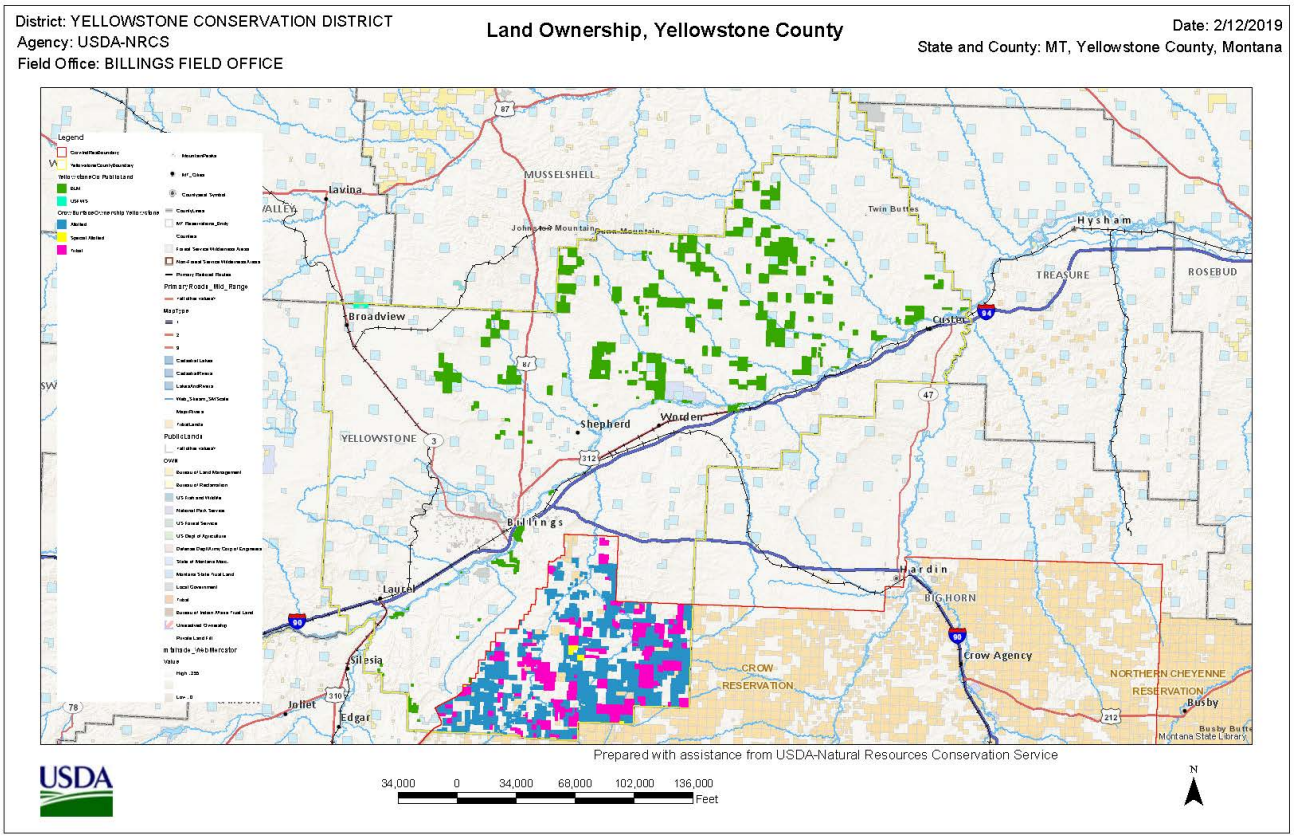
- Crow Tribe and Big Horn County Resource Assessment, December 1997.
- Soil Survey of Yellowstone County Area, Montana, March 1972.
- Rehabilitation and Improvement of Crow Irrigation Project Montana, Draft Programmatic Environmental Assessment, Oct. 2014.
- Water Resources Survey, Big Horn County, State Water Conservation Board, May 1947
- Montana Natural Heritage Program http://mtnhp.org/SpeciesOfConcern/
- US Fish & Wildlife Service https://www.fws.gov/montanafieldoffice/
- Irrigation Districts, Yellowstone County, Montana, 1943, State Engineers Office.
- Yellowstone River Cumulative Effects Analysis, Yellowstone River Conservation District Council, December 2015
- Montana Agricultural Statistics 2018
- Canyon Creek DNRC hydrology station located at Zoo Montana http://data.mbmg.mtech.edu/swamp/reports/GageReport.asp?SiteId=739250&agency=mbmg&reqby=M&
- USGS gauging station at Billings https://waterdata.usgs.gov/mt/nwis/uv/?site_no=06214500
- Flood Hazard Analyses Blue Creek and Duck Creek Prepared by USDA Soil Conservation Service October 1976.
- Watershed Work Plan Alkali Creek Watershed January 1975 USDA-SCS Portland, OR.
- US EPA Enforcement and Compliance History Online https://echo.epa.gov/facilities/facility-search/results

Maps:

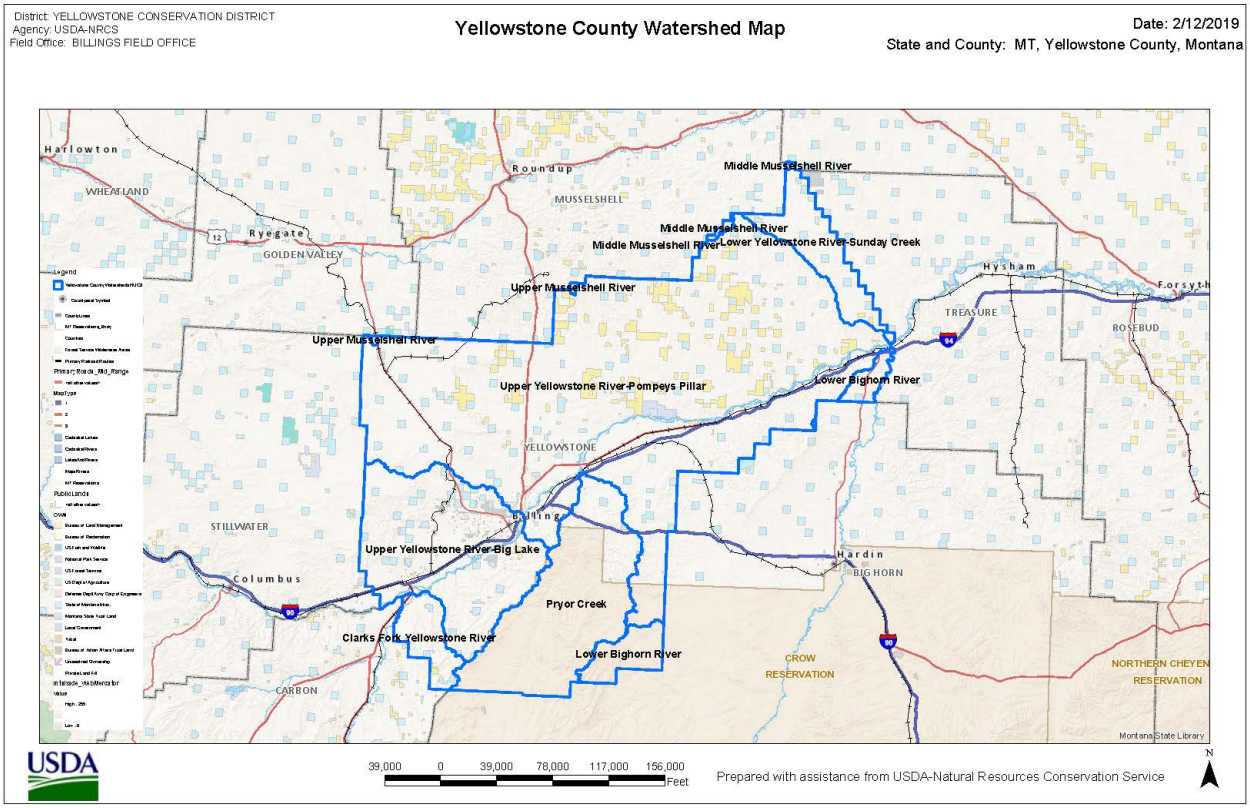
- **Exhibit 7.0 - Crow Agency, Hardin, Billings NRCS Work Unit Map**



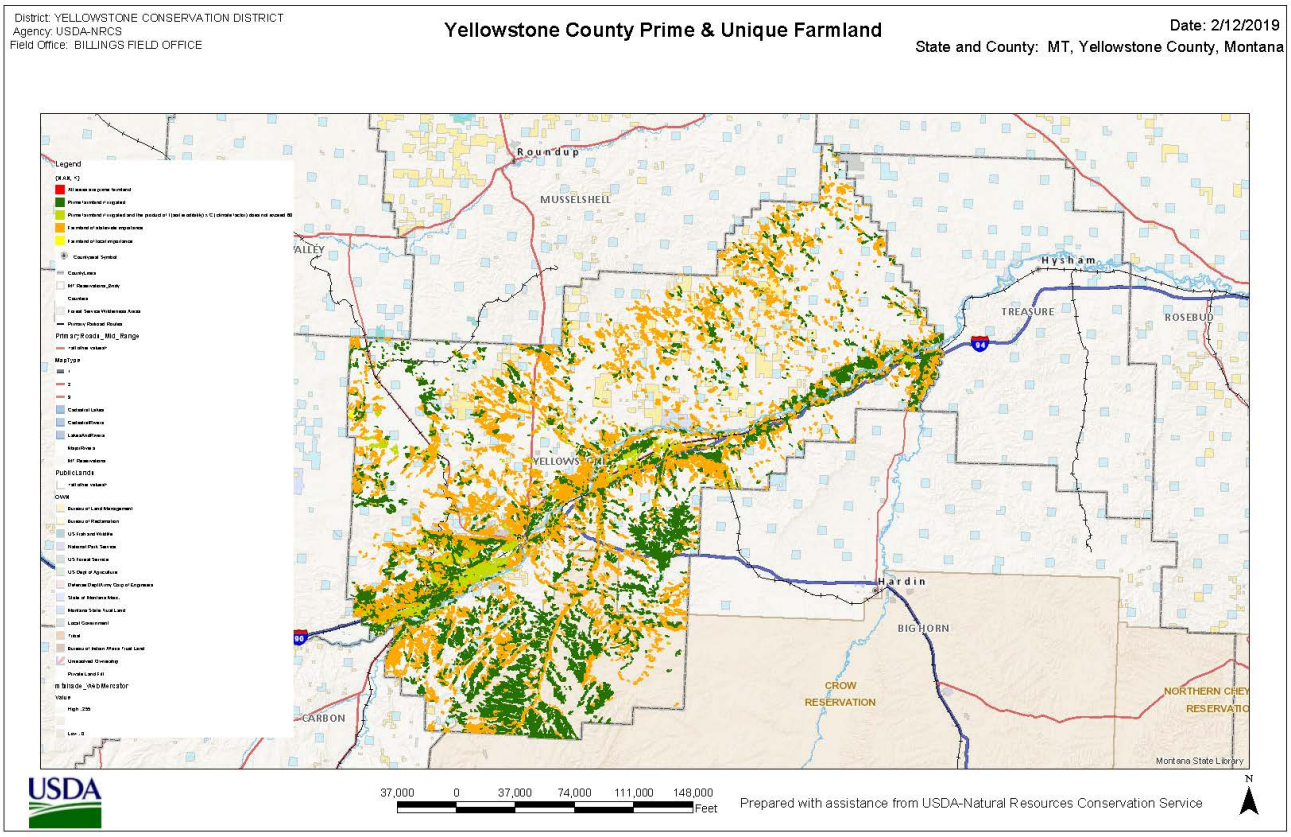
- **Exhibit 7.1 - Yellowstone County Land Ownership Map, Montana Cadastral**



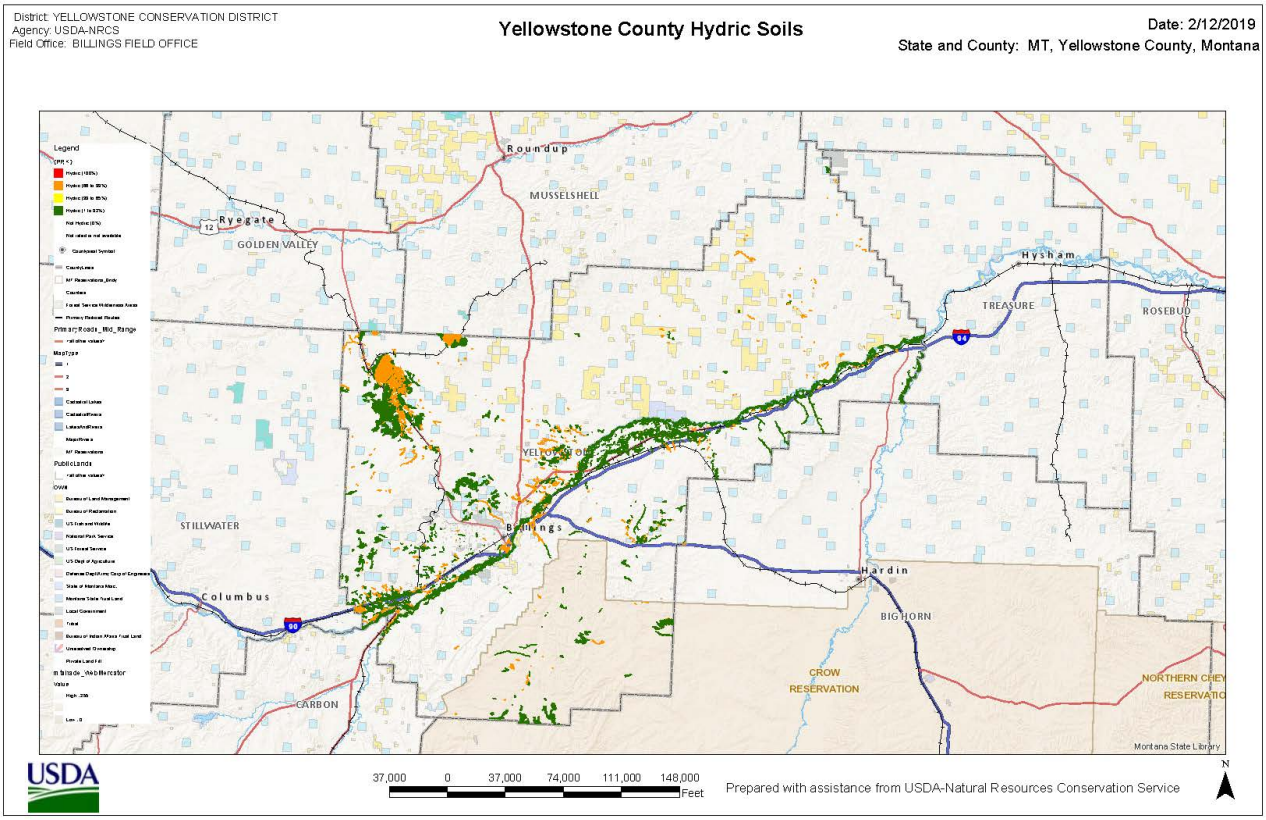
- **Exhibit 7.2 - Yellowstone County Watershed Map**



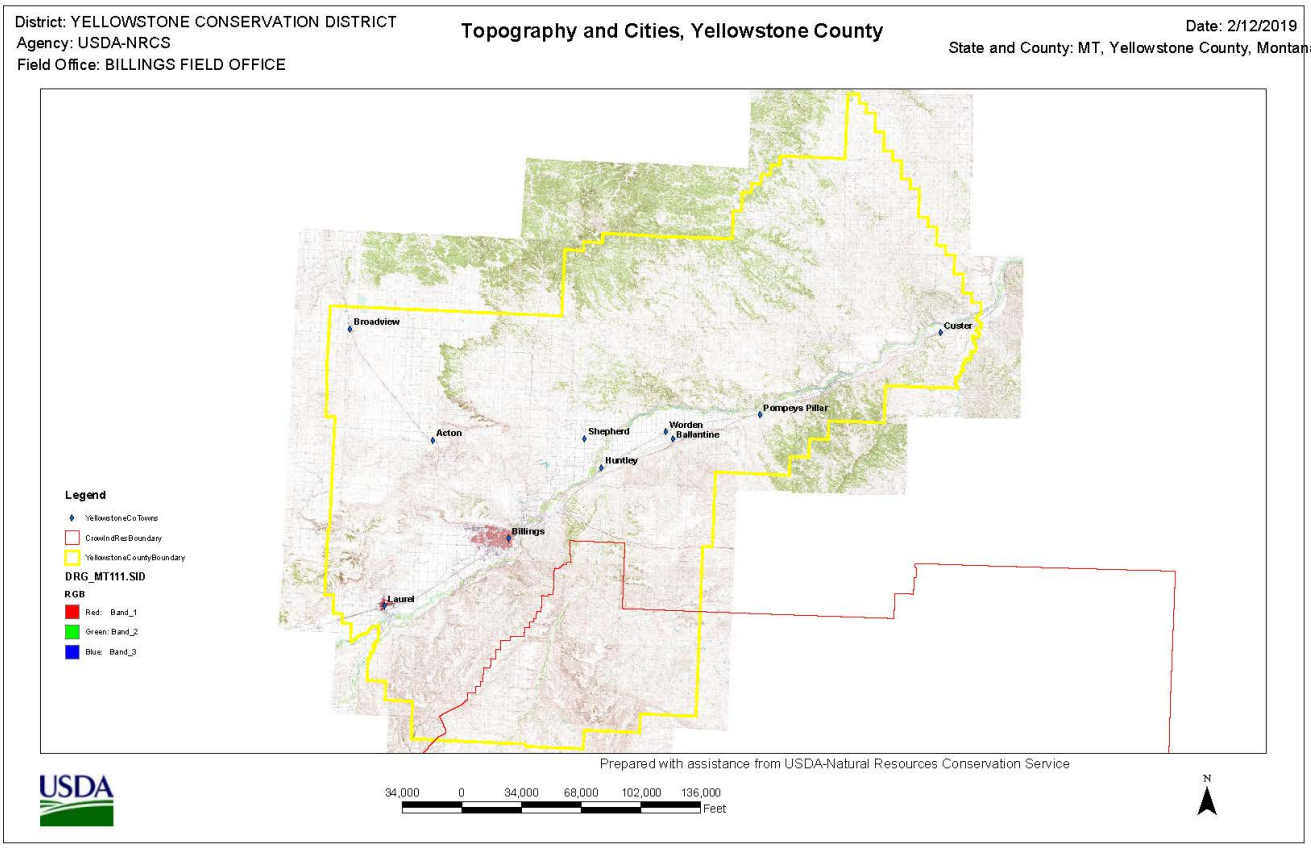
- **Exhibit 7.4 - Yellowstone County Prime and Unique Farmland, USDA-NRCS Soil Survey**



- **Exhibit 7.5 - Yellowstone County Hydric Soils Map, USDA-NRCS Soil Survey**



- **Exhibit 7.6 - Yellowstone County Topography Map**



- **Exhibit 7.7 - Precipitation Map for Yellowstone County, USDA-NRCS Soil Survey**