TOOLE COUNTY NRCS LONG RANGE PLAN

2020

ABSTRACT

This Long Range Plan for Toole County has been developed as a guide for directing Natural Resource priorities over the next 5 to 10 years and is intended to be dynamic and responsive to changing needs within the county.

Vermulm, Misty - NRCS, Shelby, MT

Natural Resource Conservation Service
Shelby Field Office Long Range Plan 2020-2030

Section I

Introduction:

This Long Range Plan will serve to provide guidance to Natural Resource Conservation Service (NRCS) in the Shelby field office as well as partners and producers served regarding activities that will be pursued in the realm of natural resource conservation in Toole County.

Mission

To Help People Help the Land (in Toole County)

Vision

Cooperatively work toward bettering the natural resources of Toole county and helping agriculture operators remain productive as they implement increasing standards of land stewardship.

Purpose:

This plan has been developed by the Shelby NRCS office with input from the Toole County Local Work Group – and the members of that group – as well as the Chester/Shelby NRCS Work Unit, in addition to input from Toole County landowners and operators.

Time frame:

This Long Range Plan identifies resource concerns that are imminent and considers activities to address them over the course of 5 years (2020-2025). The Long Range Plan will be reviewed annually with the Conservation District and the Local Work Group and will be updated as needed. Issues that arise may be added to the Long Range Plan as this is intended as a guiding document 2020 to 2030.

Section II

Natural Resource Inventory

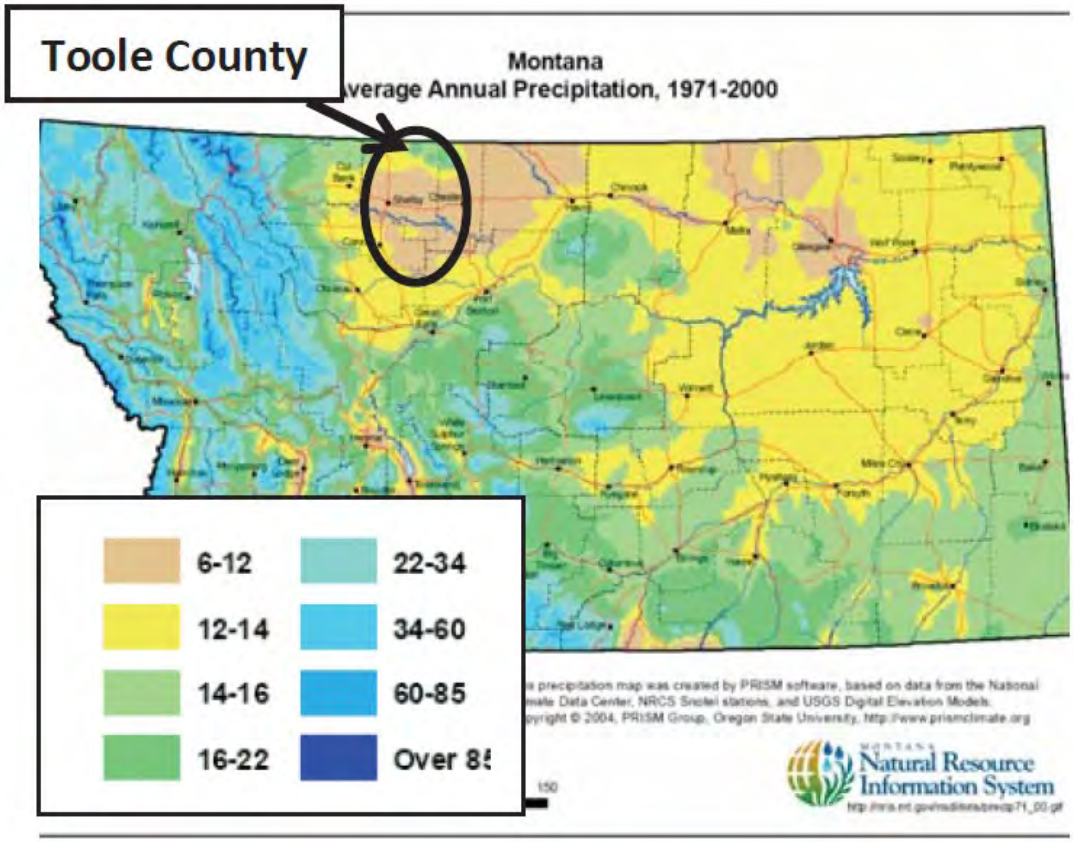
Human:

Toole county is 34th in the state in terms of land area at 1,245,182 acres. Of that land area, approximately 1 million acres are cropped and approximately 100,000 of those crop acres are in the Conservation Reserve Program (CRP). A majority of the acreage is dryland with only about 5,000 acres irrigated located mainly along the Marias River or in and around the Sweet Grass Hills along impoundment reservoirs. Approximately 88% of the land is privately owned.

Recent census data indicates a declining population in Toole County. The county population is approximately 4,900, with 3,500 of those living in urban areas (Shelby, Sunburst, Kevin, Sweetgrass). The population of Toole County is primarily white. Most agriculture operations are operated by white males (366 of the 433 farms) while 57 are operated by white females and the remaining farms are operated or co-operated by whites with other races).

Soil:
Soils are mostly silty clay loams, with pockets of coarser soils within the county. The soils generally have deep profiles but a vast majority of cropped soils in the county are considered Highly Erodible Land due to the high winds of the region. Soils with the current crop management are prone to saline seeps which greatly reduces soil quality, crop production, and diminishes water quality. The acres of saline seep soil that manifests can vary and ranges are reported from 5,000 acres to 25,000 ac. Typical organic matter for soils are around 2% in cropped fields. Elevations in the county range from 2,900 at Tiber Reservoir to 6,900 feet at West Butte. Much of the county is around 3,500 ft.

Water:
Precipitation varies widely within Toole county with a range from 8" to 18" per year, and with much of the county in the 10-12" precipitation range. Toole County ranks 13th in the state for the amount of surface water due to Lake Elwell (ie. Tiber Reservoir). This reservoir is fed by the Marias River which is officially the only designated perennial stream in Toole county. Willow Creek is an intermittent drainage that runs from north to south in the middle of Toole County and eventually flows into Tiber Reservoir. In the Sweet Grass Hills, Fred and George Creek are unofficially perennial streams. There are several other intermittent streams in Toole county as well as ephemeral streams.



Mean Average Annual Precipitation - Montana

1)

Major Water Courses in Toole County

2)

The Montana DEQ has identified Impaired Waters in Toole County and they are listed on the 303d list (see table below). The Oilmont Wetland impairment is primarily due to oil and gas drilling activities. The impairment for the Eagle Creek drainage is identified as agriculture caused, however the Eagle Creek drainage is physically located in Liberty County just east of the Toole County line.

DEQ MONTANA

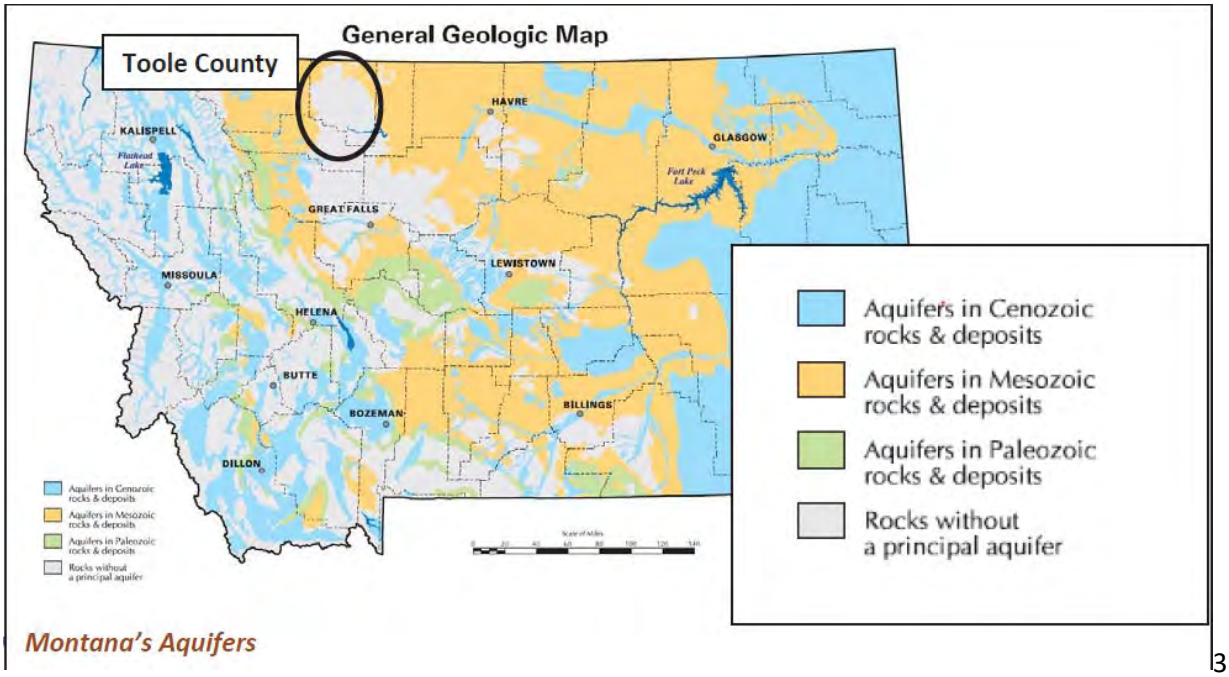
Appendix A: Impaired Waters

HUC: 10030204 Willow **Watershed:** Marias

TMDL Planning Area	ID305B	Waterbody Name/Location	Category	Size	Units	Use Class	Beneficial Use AqL	Ag	DW	Rec	Cause Name *	Source Name *
Marias - Willow	MT41P004_020	EAGLE CREEK, headwaters to mouth (Lake Elwell (Tiber Reservoir))	5	52.65	MILES	B-2	N	X	X	X	Alteration in stream-side or littoral vegetative covers Nitrogen, Total Phosphorus, Total Physical substrate habitat alterations	Agriculture Grazing in Riparian or Shoreline Zones
Marias - Willow	MT41P005_010	OILMONT WETLAND	5	21	ACRES	B-2	N	X	N	X	Alteration in stream-side or littoral vegetative covers Arsenic Flow Regime Modification	Highways, Roads, Bridges, Infrastructure (New Construction) Petroleum/natural Gas Activities

Domestic and livestock water is primarily supplied by rural water lines (Tiber, Shelby, Kevin, Ethridge, Oilmont, Galata, Dunkirk/Devon). Water wells are not viable except right along the Marias River (Shelby supply), on the Rim in the west part of the county, and in and around the Sweetgrass Hills. The Rocky

Boy Water Project is a large-scale plan to bring water to rural areas. Progress for the water project is gradually occurring. In the meantime, the City of Shelby has developed water lines and substantial wells (near the Marias River) and is further distributing water to surrounding communities (Ethridge, Cut Bank, Sunburst). Many of the rural water systems are at maximum capacity at present. The Shelby water line expansion to Sunburst will alleviate that and is currently under construction. It is to be completed by 2020.

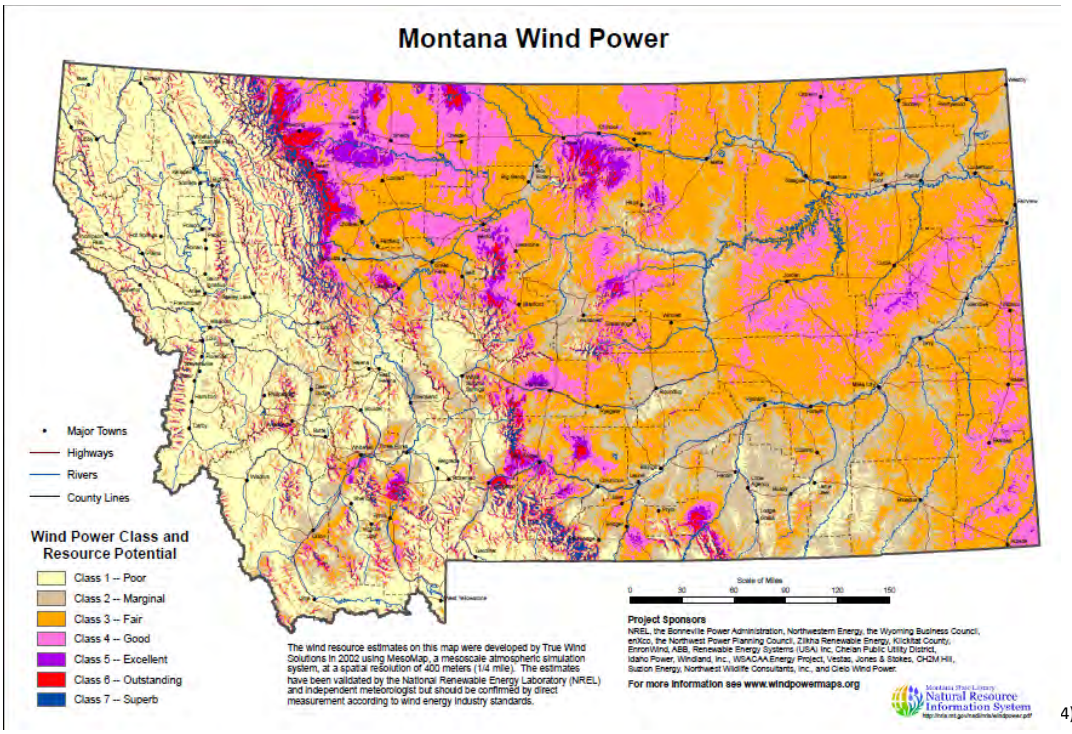


3)

Air:

In terms of air quality, there are no designated areas listed as impaired in the county. There are four Hutterite colonies with confined animal facilities in the county and approximately 4 to 6 feedlots in the county. These infrequently have odor complaints from neighbors.

There are two large wind farms with approximately 100 towers (South Ethridge and Rimrock area). These wind farms are located in areas of Toole County that are rated as excellent for wind power development.



4)

Plants:

Agriculture is the principle industry in Toole county, and crop sales make the bulk of that over livestock sales. Toole county ranks 8th in the state as far as sales of crops produced according to Mt Ag Statistics data [5]. The climate is conducive to some of the best small grain production in the nation and wheat is a mainstay crop for the county. In the last several years there has been a rise in pulse crop (peas, lentil, and chickpeas) production in Toole County. Other crops grown include canola, flax, mustard, occasional safflower, and corn, but in smaller quantities. Crop/fallow (mostly chemical fallow) is a typical rotation although re-cropping rotations are on the rise. Cropland weeds are commonly kochia, Russian thistle, cheatgrass other broadleaf annuals. There are increasing reports of chemical resistant weeds as well as difficulty with control of annual weeds due to climatic conditions (hot and dry conditions limiting chemical uptake by weeds).

The majority of the rangeland in Toole County lies in the Great Plains Mixedgrass Prairie ecosystem. The plant community of this ecosystem is composed of western wheatgrass, green needlegrass, needle and thread, and blue grama. Grasses make up a majority of the cover on these sites, yet forbs are also present with a high amount of diversity of forbs. Non-native grass species such as Kentucky bluegrass, smooth bromegrass, and crested wheatgrass are frequently found invading the native plant communities. Around the Sweet Grass Hills, the rangeland is part of the Rocky Mountain Foothills ecosystem. This ecosystem is made up of mostly fescue grasses – Rough and Idaho as well as Bluebunch Wheatgrass. Notably also there are areas of Sweetgrass , which is a plant of cultural significance to many Native Americans.

While cattle are the main livestock as of today, historically sheep grazing was more common. Sheep bedding grounds and overgrazing has some lasting effects on parts of the native plant community. The

rangeland of the Sweet Grass Hills is productive, yet management is driven more by weather patterns and calendar routines rather than the resource itself. Rangeland in other parts of the county tend to be less productive sometimes showing those effects of prior sheep grazing, lower precipitation and improper use. Stocking rates are generally appropriate but rotation and grazing management strategies are not always current and adaptive to plant needs.

Weeds along the Marias River are rampant (Perennial Pepperweed, Knapweed, Spurge, Canada Thistle). Weeds in the rest of the county are increasing in recent years, mainly along roadways (knapweed) and leafy spurge in the hills and spreading along coulees out of the Marias River.

Noxious weeds on rangeland do occur and are mainly along the Marias River. On Toole County's western edge as the Marias enters the county, the noxious weeds are dominated by Spotted Knapweed and Leafy Spurge, some Perennial Pepperweed, and Canada thistle. As the river flows east and into the lake, Leafy Spurge becomes more dominant and the Spotted Knapweed less prevalent. In addition, Leafy Spurge is known to be a problem near West Butte but a concerted strong effort in the early 1990s helped manage that infestation. While Leafy Spurge is still present and more concentrated in areas, it is not as widespread as it was. It is certainly a weed to watch and monitor. Spotted Knapweed has been seen along roadways in the north Toole County area and though it did not used to be a problem, there is potential for it to spread. It also has been found on operations in the western part of the county. While this Spotted Knapweed has the potential to spread, it also has good success of being contained and controlled when measures are implemented.

Animals:
Domestic livestock in the county consists mainly of cattle, a few sheep operations, and a few operations that raise horses. Livestock sales in Toole County rank as 36th in the state according to Mt Ag Statistics data[5)]. There are several livestock operations and several animal feeding operations which can pose risks to surface water quality when mismanaged, and such operations when close to residences can pose an air quality and odor concern.

Wildlife in the county are quite varied and include: deer, antelope, elk, moose, coyotes, fox, badgers, mountain lions, song birds, upland birds, rodents, gophers, and along the Marias River -- beaver, bobcat, turkey and grizzly bears as well. Of the wildlife in the county, Grizzly Bears are Listed Threatened by the US Fish and Wildlife Service as is the Red Knot. Other Species of Concern include: Mammals – Black-tailed Prairie Dog, Eastern Red Bat, Hoary Bat, Little Brown Myotis, Dwarf Shrew; Birds – Sprague's Pipit, Golden Eagle, Burrowing Owl, Ferruginous Hawk, Chestnut-collared Longspur, Baird's Sparrow, Mountain Plover, Peregrine Falcon, Caspian Tern, Loggerhead Shrike, Clark's Nutcracker, Long-gilled Curlew, McCown's Longspur, and Brewer's Sparrow.

The Kevin Rim is identified as Focal Area by the Montana Fish Wildlife and Parks because of a high concentration of Ferruginous Hawks, Peregrine Falcons, and a number of other raptors. Wind energy development has potential to impact their habitat.

Pinus albicaulis	Whitebark Pine	C
TOOLE		
Calidris canutus rufa	Red Knot	LT
Ursus arctos horribilis	Grizzly Bear	LT
Pinus albicaulis	Whitebark Pine	C
TREASURE		

Partners to consider and/ or involve, include:
Toole County Conservation District (TCCD)
Toole County Farm Service Agency (FSA)
Toole MSU Extension
Montana Fish Wildlife & Parks (FWP)
Pheasants Forever
Toole County Commissioners
Toole County Road & Weed Department
Montana DNRC
Montana Salinity Control Association (MSCA)
Marias River Livestock Association
Montana Rural Water Systems, Inc
Montana Aquatic Resources Services, Inc

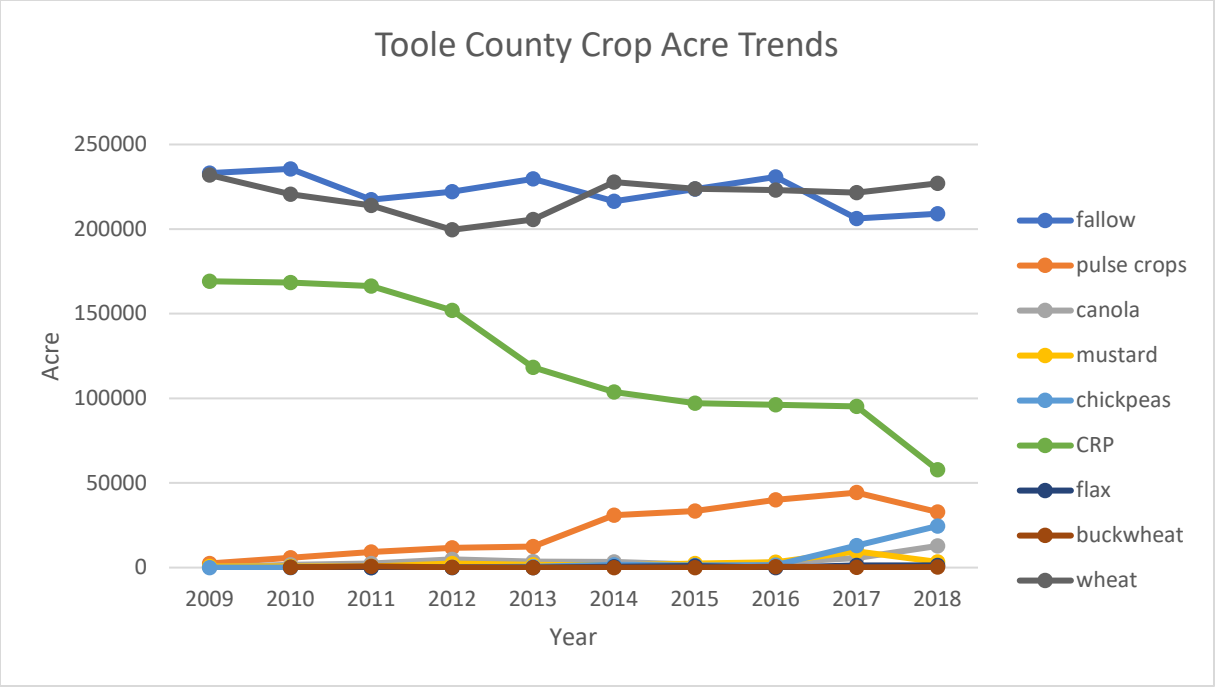
Section III

Conservation Activity to Date

Cropland:

Soil erosion on cropland is an ongoing resource concern. Historic treatment alternatives have been to manage tillage operations and to manage unsheltered distances and narrow field strips. Field windbreaks have been utilized to protect soil, but not extensively so. Managing crop stubble via a shift from summer fallow to chemical fallow has been the primary method of controlling wind erosion on cropland. Historically there has been resource degradation from oil development, seeps, and wind erosion and these continue to be issues of concern given the climatic factors and soil types of the county. Water erosion on cropland has not been a common resource issue. However, the last two winters have had unusual winter snowmelt resulting in erosion as water melts and flows into channels but is unable to infiltrate soils that remain frozen.

The transition to chemical fallow began in Toole County in approximately the 1990s. It took over 20 years to become widely adopted in Toole County and is now commonly done. In the past 5 years or so, a key change in Toole County agriculture has been the diversification in crops grown. This has been market driven as well as through promotion of soil health principles. Toole County, though still a strong producer of small grain crops, has greatly increased production of pulse crops and according to Mt Ag Statistics data[5)] is one of the top 10 counties for the state in terms of acres devoted to peas, lentils, chickpeas. Dryland mustards, flax, dryland canola are also more routinely produced on Toole cropland. Low precipitation combined with hot, dry summers and high evaporation rates perpetuate a reluctance to move away from crop/fallow. Reducing the instance of fallow would benefit a number of nagging soil health concerns in the county which include: helping reduce erosion, increasing nutrient cycling, helping reduce excess soil moisture and saline seeps, and increasing biological activity in the soil. Cash crop diversification is somewhat limited due to a short growing season and low precipitation. Cover crops can be a tool for diversifying and are particularly viable if they can serve dual purpose as a cash crop through the grazing value that they entail.



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There is a looming threat for wind erosion to become a problem even though at present it is not a resource concern. Pulse crops and other low residue crops have increased and fields are getting blocked into larger and larger fields. Management changes like these set the stage for wind erosion to become severe, especially during drought years which are inevitable. NRCS can play a part by continuing to inform producers of this potential and by educating on soil health principles. In addition, by advocating grass strips, field borders, narrower stripped fields, field windbreaks and other conservation measures – all of these help with reducing wind erosion on the cropland. Such measures next to roadways would be particularly beneficial to foster public safety. Severe wind erosion has been known to reduce visibility resulting in highway accidents and even fatalities.

Salinity has been a prominent resource concern in Toole County, in particular saline seeps developing on cropland. With Montana Salinity Control Association's efforts and FSA (Conservation Reserve Program - CRP) and NRCS (Environmental Quality Incentive Program - EQIP) programs, salinity treatment education and implementation has made great strides. Most operators have become informed and recognize perennial vegetation of recharge areas as appropriate treatment of salinity areas. In many cases, CRP or EQIP was used to treat salinity recharge areas. However, as CRP acres expire from contracts, many saline seeps appear to be 'fixed' and this has resulted in some areas being farmed again, only to have the seeps return. This presents a need to ensure land managers are continually informed about saline seep management options especially given generation changes in land managers. The former generation recognize the benefit of treating recharge area with perennial vegetation or re-cropping while the next generation does not always have that first-hand knowledge of how to address seeps. The resource issue of salinity also results in deteriorated water quality in reservoirs that were once viable livestock water sources.

Rangeland:
Noxious weeds are rampant along the Marias River. Any endeavor to control weeds would take a concerted effort crossing multiple counties and likely would have limited success due to the vast seed bank. A modified approach is to 'hold the line' and keep weeds in the river corridor and prevent them creeping up coulees and into the uplands may be more practical. Currently, weed control measures are employed by the county along roadways and right-of-ways. Future strategies may be improved with a systematic approach to inventory and record weed infestations with GPS technologies. This could help inexperienced county employees be more successful at treating outbreaks until they have developed weed identification skills of their own. Knowing which GPS locations to treat will aid with improperly spraying desired vegetation. This tactic combined with utilizing the ever-improving biological agents offers potential for successful treatments of weed outbreaks. In any case, success also hinges on widespread cooperation of landowners where the weeds occur.

Wildlife:
Pollinators are known to be in decline. Annual crop and perennial seeding diversification will help native pollinators as well as domesticated pollinators such as honey bees. Studies have shown that while small grains self-pollinate and do not fully rely on pollinators, small grain yields benefit by the presence of pollinator plantings, by providing habitat for beneficial insects. Diverse habitat also benefits wildlife and livestock with nutritional content and varying plant structure and niche habitats. An effort to increase perennial diversification holds potential for future pollinator conservation effort.

Game species populations have fluctuated over the years. There have been times when elk in the Sweet Grass Hills have been abundant, and special hunts and damage hunts have been utilized to manage that. Recent reports indicate that antelope populations are up, at least seasonally. Deer populations have also fluctuated but generally are managed at viable levels with hunting. In the last few years, Chronic Wasting Disease has been documented in deer populations in Liberty County to the East. The spread of the disease means that Toole County wildlife are also being monitored and steps are being taken to prevent further spread of this disease. Montana Fish Wildlife and Parks are leading the efforts with this issue.

Over the last five years grizzly bears, a federally threatened species, have expanded into Toole County. This expansion in their range has resulted in conflicts with livestock as far north as the south side of West Butte. MT FW&P is striving to monitor bear expansion and minimize problem bears and conflicts with bears.

In 2016, an invasive species, zebra mussels were found in Tiber Reservoir. Since that time, an aggressive approach to prevent spread was implemented and there have not been additional reports of the mussel. Prevention will be an ongoing effort as the zebra mussel has severe economic implications to water structures if it spreads. Other aquatic invasive species (for example Eurasion Water Milfoil) also have potential to spread and diligence is needed to prevent this. MT FW&P has taken the lead in this effort and local Conservation Districts and NRCS may offer support roles primarily through education and awareness.

Section IV

Natural Resource Problems and Desired Future Outcomes:

Soil Health

Diminished health of the cropland soils is widespread throughout the county. When considering the 5 soil health principles, operators in Toole County have been progressively implementing these principles in numerous ways (crop diversification, reducing tillage, retaining more residue, and increasing rotation intensities). While it is advancing, soil health remains at risk and further advancement is important for conserving this resource.

Decreased soil health manifests in many ways such as increased erosion, reduced crop yields, saline seep development, increased water runoff, reduced infiltration, below average organic matter, reduced biological activity, soil organism habitat loss or degradation, aggregate instability, increased pest and disease, soils trending toward acidity, excessive weed pressure, and excess or depressed nutrient cycling (out of balance C:N ration).

The Toole County soils of the future would have optimum health through adequate residue cover, minimal disturbance, crop diversity, less fallow acres, and proper livestock grazing use.

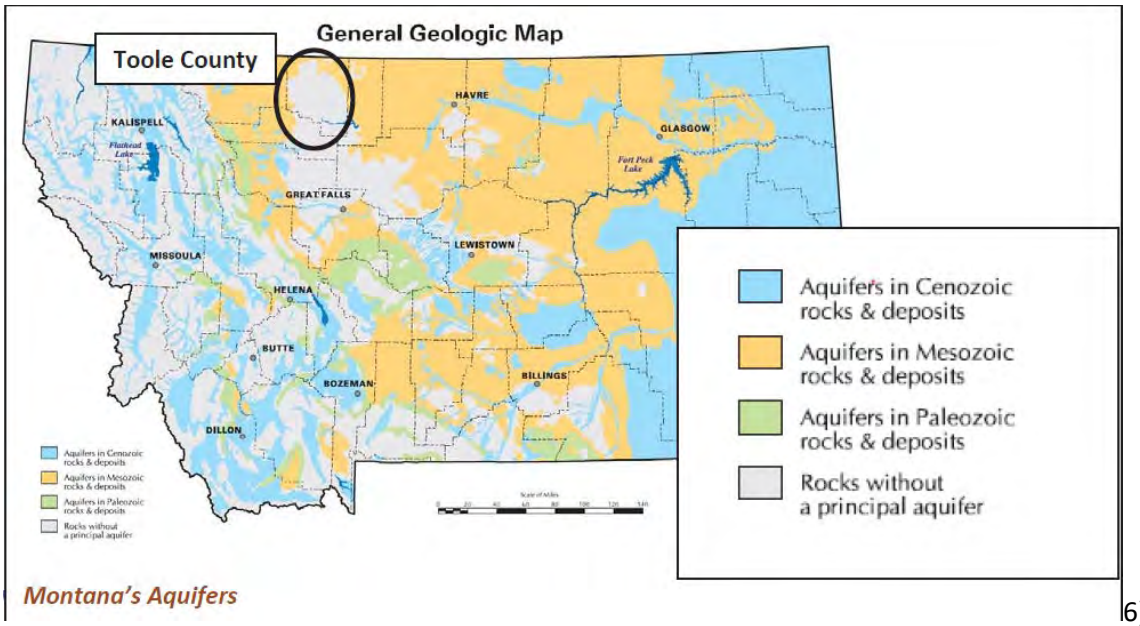
Water Quality

Reduced water quality can often be linked to soil concerns and diminished soil health as well, since soil functions as a primary filter for water. In addition, mis-managed livestock grazing and livestock manure, contribute to poor water quality. Much of the water quality concerns from salinized water are natural and are from the agronomic practices. Current agronomic practices have hurt water quality with increased salinity, turbidity, and contaminants.

Water quality can be improved with implementing soil health principles, establishing and maintaining buffers on cropland around water bodies and ensure proper grazing rates on rangeland watersheds.

Water Quantity

Toole County has limited water yielding aquifers. The Marias River in the southern portion of Toole County is a perennial flowing stream. It supplies water to the City of Shelby via a well field along the river and from these wells, water is pumped to the city. From there, pipelines have been installed to supply water west and to Cut Bank. Furthermore, pipelines are currently being installed to supply water to Sunburst and the surrounding farms/ranches. This will supplement, and in some cases, replace current water sources. Most of the rural farms are supplied with water by several different pipelines operated by local managed cooperative water districts (these include the Oilmont Water District, Galata Water District, Tiber Water, Devon Water District).



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Plant community

Excess weeds on rangeland typically stems from improper grazing use. Often this is due to lack of recovery time for the desired native grass species. Individual producers are making efforts to rotate season of use and allow for plant recovery, however there is ample opportunity to improve grazing management strategies on most livestock operations. As CRP contracts expire, these acres offer an alternative forage source in early spring which is an important time to rest native range and allow the cool season grasses to produce seed.

Weeds

Prior to 1998, extensive effort was taken to control leafy spurge on West Butte. Helicopters were used to spray difficult to access slopes. to access slopes was utilized. Leafy Spurge is still present but not nearly as prevalent and is mainly on private land drainages coming out of the Sweet Grass Hills. Weeds along the Marias River must constantly be treated as the weed seed source from upstream watersheds will continue to bring in weed seeds, despite control efforts along the Marias River in the county. Noxious weeds along road corridors and disturbed areas (gravel pits, utility line installations) are increasing in upland areas as well – Spotted Knapweed in particular. While spray crews are in place through county and state entities, these noxious weeds continue to spread.

Section V

Prioritization of Natural Resource Problems and Desired Outcomes

The Toole County Local Work Group has been meeting periodically for 20+ years. They continue to provide feedback to the NRCS regarding Toole County natural resource concerns and issues. A recent meeting in March 2019 resulted in the following concerns being prioritized in this order: soil health, ag productivity, soil erosion, wildlife, ag sustainability, grazing lands, and food and fiber production.

As the Local Work Group identified natural resource concerns, there was the sentiment that with the struggling agriculture industry, conservation would need to be economically feasible and sustainable.

The prioritized resource concerns align with the NRCS' Vision and Mission. The Toole County producers have several pioneer operators that have adopted re-cropping, crop diversity, and cover crops in the interest of soil health. These early adopters are paving the way for greater interest; even producers that historically do not participate with NRCS are inquiring about cover crops. The added benefit of enabling cover crops to become an economic enterprise will facilitate long term adoption of this practice beyond EQIP cost share assistance.

The local NRCS staff has identified natural resource priorities that align with those identified by the Local Work Group. They are ranked in order of importance and bulleted below:

1. Soil Health (Advance soil health principles)
    a. reduce erosion (ie increase cover of soils, less soil disturbance, increase living root)
    b. reduce salinity (increase living root, diversify plants)
    c. increase organic matter (ie increase living root, diversity, incorporate livestock)
    d. increase nutrient cycling/biological activity (ie increase living root, diversity, incorporate livestock grazing)
    e. reduce soil organism habitat loss or degradation (ie increase living root, diversity, incorporate livestock grazing)
    f. monitor pH levels of soils as neighboring counties find acidic soils (increase living root, rotation intensity)
    g. improve soil aggregate stability (increase living root, reduce disturbance, diversify plants, increase cover)
    h. reduce fallow acres
    i. increase field borders, field windbreaks
    j. Productive cropland
        i. diverse crops and reduced fallow
        ii. reduce crop unsheltered distances (trees, grass strips, strip fields, buffers)
        iii. buffers
        iv. diverse wildlife lands
2. Rangeland Health
    a. Reduce noxious weeds
        i. In western Toole county
        ii. Around the Sweet Grass Hills
        iii. Marias river
    b. Maintain and increase diversity of rangeland plant communities
        i. Sweet Grass Hills
        ii. Marias River breaks
        iii. Kevin Rim
        iv. Odd areas intermixed with cropland in Toole at large
    c. Productive rangeland plant communities
        i. Native range with appropriate recovery times in early spring
        ii. Water developments/cross fences

iii. Alternative grazing to relieve early spring native use (pasture, crop use)
iv.

3. Healthy waters
    a. Maintain water quality of reservoirs, streams perennial or intermittent and improve riparian health (with vegetative buffers, grazing management, stabilized banks and shorelines)
    b. Prevent spread of zebra mussels
    c. Stable stream banks and diverse corridors with minimal noxious weeds
    d. Improve and maintain water quality in surface and ground water sources
4. Healthy Wildlife populations
    a. Pollinators /beneficial insects
    b. Prevent spread of CWD in deer
    c. Reduce conflicts with grizzlies

Section VI

Targeted Implementation Plans and Investment Portfolios TIP:

In looking toward future Targeted Implementation Plans (TIP) for Toole County, the resource concerns that rise to the top -- center around soil health issues and are mainly on cropland. This concern is supported by the decisions of the Local Working Group as well as by producer interest, evidenced in program applications and technical information inquiries. Other potential TIPs to pursue revolve around improving grazing management in the Sweet Grass Hills, addressing erosion along road corridors county wide, treating noxious weeds in areas, addressing water erosion issues that had occurred in recent years, and increase efforts to reduce grizzly conflicts with livestock producers in the county. A strong concern held by the LWG was that any conservation efforts need to be economically supported by operations as agriculture struggles in recent years.

Bibliography Sources

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2) Montana State Library, Montana Geographic Information Clearinghouse, Map Gallery. "Watershed Sub basin Maps."
3) Montana Geographic Information Clearinghouse, Groundwater Maps, "General Geologic Map" http://docs.msl.mt.gov/geoinfo/WIS/pdf/gwatlas/map2a.pdf
4) Montana State Library, Montana Geographic Information Clearinghouse, Map Gallery. "Montana Wind Power".
5) Montana Agricultural Statistics 2018
6) Table derived from Crop Certification Records provided by Toole County Farm Service Agency