Updated Sibley County Comprehensive Local Water Plan 2013 – 2023

County Road 6 - September 2010

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ACKNOWLEDGEMENTS

A special thank you is extended to the following individuals who were involved in the preparation and development of this document.

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Sibley SWCD will be responsible for the administration/coordination of the Sibley County Comprehensive Water Plan.

The Sibley County Comprehensive Water Plan will be effective from 2013 to 2023.

A special thank you is extended to the following individuals who were involved in the update of this document.

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Sibley SWCD will be responsible for the administration/coordination of the Sibley County Comprehensive Water Plan.

The update to The Sibley County Comprehensive Water Plan will be effective from 2019 to 2023.

ACRONYMS

BC	Buffalo Creek (Crow River Watershed)
B/S	Bevens Silver Creek
BWSR	Board of Water and Soil Resources
BMP	Best Management Practices
CB	Sibley County Board of Commissioners
CREP	Conservation Reserve Enhancement Program
CRP	Conservation Reserve Program
CWF	Clean Water Fund
CWP	Clean Water Partnership
DA	Sibley County Ditch Authority
DNR	Minnesota Department of Natural Resources
DWSMA	Drinking Water Supply Management Area
EPA	Environmental Protection Agency
EQIP	Environmental Quality Incentive Program
FSA	Farm Service Agency
GIS	Geographical Information Services
HIC	High Island Creek
HICWD	High Island Creek Watershed District
IBI	Index of Biological Integrity
IWM	Intensive Watershed Monitoring
JPB	Joint Powers Board
MDA	Minnesota Department of Agriculture
MDH	Minnesota Department of Health
MM	Middle Minnesota
MPCA	Minnesota Pollution Control Agency
NPDES	National Pollutant Discharge Elimination System
NRGB	Natural Resources Block Grant
NRCS	Natural Resource Conservation Service
PH	Sibley County Public Health
PAZ	Sibley County Property Assessing and Zoning
RIM	Reinvest in Minnesota
RR	Rush River
SWCD	Soil and Water Conservation District
TMDL	Total Maximum Daily Load
TC	Tri-County Solid Waste
USDA	United States Department of Agriculture
USGS	United States Geological Survey
WCA	Wetland Conservation Act
WRAC	Water Resources Advisory Committee
WS	Watersheds

Executive Summary

Introduction

Sibley County is located in south central Minnesota approximately 50 miles southwest of the Twin Cities. The City of Gaylord is the County Seat. Sibley County is in the first ring of counties outside the Seven County Metropolitan Area. Sibley County's population is estimated to rise only 3.1% by 2035 (see Table 1). The eastern townships of Sibley County will see the most growth and as one moves west, in the county, the rural population will decline see Figure 2.

Figure 1 Sibley County

Surrounding counties include; McLeod County to the north, Carver County to the northeast, Scott County and Le Sueur County across the Minnesota River to the east, Nicollet County to the south and Renville County to the west.

Table 1 Sibley County Census (From State Demographers Office)

Census	2000	2006	2010	Projected 2035
Townships	7122	6889	6616	6670
Cities	8234	8417	8610	9180
Total	15356	15306	15226	15850

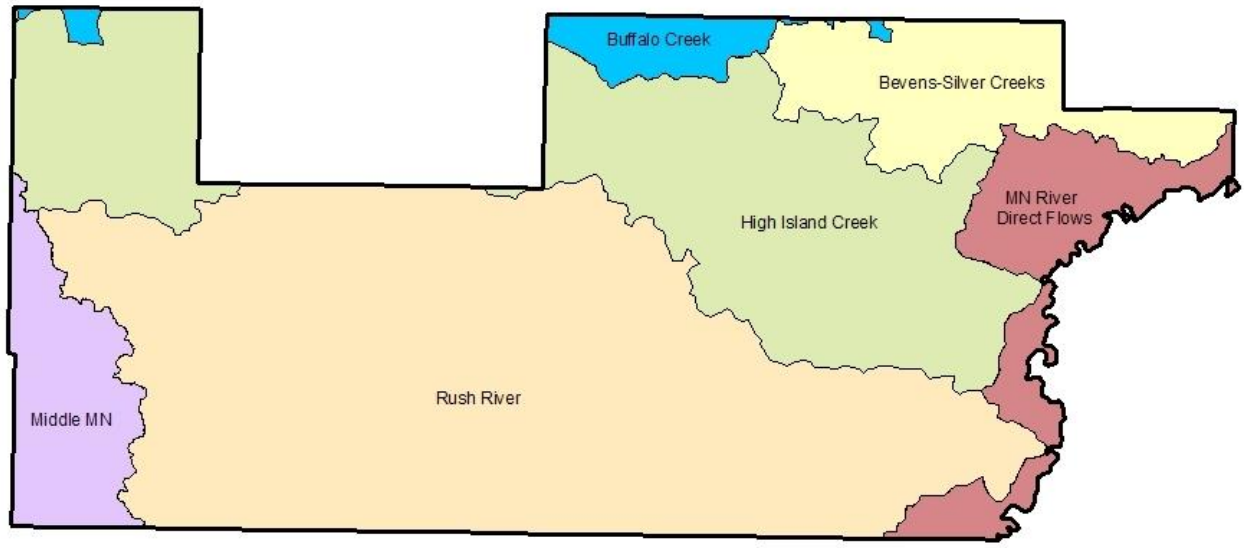
Figure 2 Townships and Cities

The Lower Minnesota River Watershed encompasses the largest part of the county (91%). The High Island Creek, the Rush River and the Bevens Silver Creek Watersheds along with the direct flow areas make up the Lower Minnesota River Watershed. (See Figure 3)

The Middle Minnesota River Watershed lies on the western edge of Sibley County. It flows to the south and is 6% of the area. The watershed contains Eight Mile Creek and a portion of Little Rock Creek.

The Buffalo Creek which flows in and out of the county on the northern edge contains 3% of the land area of the county. It flows to the South Fork Crow River Watershed which flows into the Mississippi River.

Figure 3 Sibley County Major Watersheds



Agriculture is the dominant land use in Sibley County and will continue to be dominant in the future. Corn, soybeans, sugar beets, sweet corn and peas make up the majority of crops that are produced in Sibley County. Animal agriculture has declined in Sibley County since 2000 when the last water plan was updated. Large operations make up most of the animal agriculture in Sibley County today.

Background of Water Plan Process

The Sibley County Board of Commissioners passed a resolution on June 6, 1988 to apply for a grant to develop the County Comprehensive Water Management Plan and on July 16, 1988 appointed the first Water Resources Advisory Committee (WRAC). The first plan was approved by the Board of Soil and Water Resources in November 1990 and adopted by the Sibley County Commissioners on December 11, 1990. The first revision began with a resolution to update the Comprehensive Water Plan on October 25, 1994. The first revision was adopted by the Sibley County Board of Commissioners on July 9, 1996. The second revision of the County Water Plan began with a resolution to update on February 8, 2000. This revision was adopted by the Sibley County Board of Commissioners on February 12, 2002. The Sibley County Board of Commissioners passed a resolution to update the current Sibley County Comprehensive Water Plan on June 22, 2010. Because of time restraints in 2011 the Sibley County Board of Commissioners requested a two year extension to the current water plan. This extension was granted by BWSR. The current Water Plan will now end on December 31, 2013. This will be the third revision and the fourth generation of the Comprehensive Water Plan.

Sibley County Environmental Services administered the Plan from the inception until the end of 1999. At that time the Sibley County Board of Commissioners asked Sibley SWCD to administer the Plan. Sibley SWCD continues to administer the Sibley County Comprehensive Local Water Plan at this time.

Plan Purpose

The purpose of the Local Water Management Plan is to protect the water resources in the county from point and nonpoint sources of pollution. The water plan meets the requirements set forth in Minnesota Statutes 103B.301 - .335. Subdivision 4 of Minnesota Statutes 103B.311 requires water plans to have the following:

1. The plan must cover the entire county.
2. The plan must address problems in the context of watershed units and groundwater systems.
3. The plan must be based upon principles of sound hydrologic management of water, effective environmental protection and efficient management.
4. The plan must be consistent with local water management plans prepared by counties and watershed management organizations wholly or partially within a single watershed unit or groundwater system.
5. The plan must cover a five or ten year period. Sibley County has decided that its plan will be for 10 years with review and amendment to the plan as necessary in five years.

Past Accomplishments

Sibley SWCD, Sibley County and its partners (listing is found at the end of this section) have worked on a significant number of the objectives contained in the 2002-2011 Sibley County Comprehensive Local Water Plan. Many existing and ongoing programs were built or enhanced as a result of implementing the water plan. Following are a few of the accomplishments (2012-2107) from Sibley SWCD; NRCS; High Island Creek Watershed Clean Water Partnership; and Rush River Watershed Clean Water Partnership:

- 17 Water & Sediment Basins
- 11 Grade Stabilization Structures
- 175.4 acres of CREP
- 114 acres of RIM/WRP
- 62 Alternative Tile Inlets
- 35 acres of Filter Strips
- 7700 acres of CRP
- 4 Streambank Stabilizations
- 725 feet of Grass Waterways
- 272 Septic System Permits

- 64 Low Interest Loans to Replace Septic Systems
- Annual Educational Booth at the Sibley County Fair
- Develop, update and maintain the educational page on SWCD website
- Develop, update and maintain a Facebook site
- Educational Booths at the Breakfast events at Arlington and Winthrop each year

Well Sealing Program

From 2002 through 2010, 448 wells were drilled by landowners and 467 unused or abandoned wells were sealed. Water Planning secured a $10,000.00 grant in 2002 that sealed 27 wells at 50% cost share. Sibley SWCD funds the sealing of unused wells at 50% of the cost of sealing, up to $400 per well, if cost-share funding is available. Sibley SWCD has used State Cost Share funds to seal 99 wells since the program began in 2005.

Septic System Program

The Property Assessing & Zoning Office administers planning and zoning, floodplain, shoreland and septic systems. The office has a manager and a technician. The Zoning Office contracts with a private contractor to do its septic system inspections.

Planning and Zoning updated the county's septic system ordinance in 2009. The updated ordinance is more restrictive than state law in certain areas. The ordinance states that systems must also comply with MPCA Rule 7080. In 2004 Sibley County required all septic systems to be compliant when the property is sold. The Sibley County Septic System inspector averaged 3-4 compliance inspections per year before the rule was enforced and 35-40 compliance inspections per year after the rule was enforced.

From the time the current water plan was adopted through 2012, 790 permits for septic systems were issued. Two hundred two (202) low interest loans have been used to finance upgrades to non-compliant systems. These loans have come from Clean Water Partnership money, Federal 319 money and the Ag BMP revolving loan fund from the Minnesota Department of Agriculture. The septic system loan program is run through the Water Planning office which is part of Sibley SWCD.

Feedlot Program

Sibley County no longer administers the feedlot program. MPCA now takes care of administering all aspects of the feedlot program.

The number of registered feedlots continues to decline in Sibley County as producers retire or decide to get out of animal agriculture. The number of registered feedlots in 2012 was 447. The largest group of producers is in the 10 - 299 animal units with 390 permits. Forty seven (47) producers have feedlot permits for 300 - 999 animal units. Sibley County has 75,729.227 animal units registered. Sibley County has 10 feedlots with greater than 1,000 animal units that are registered by MPCA.

Ditch Authority

The Sibley County Board of Commissioners, which acts as the Ditch Authority, has 550 miles of ditch and 150 miles of tile under its authority with 25 miles of ditch requiring a one rod buffer. In 2009 the Sibley County Commissioners began the process of Redetermination of Benefits on all county ditches. This ongoing program and is addressed in the Priority Concerns of the new water plan. This program will have two benefits. All landowners will now be assessed for damages and benefits and all county ditches will have a one rod buffer. The High Island Creek Watershed District has 94.84 miles of one rod buffer. The one rod buffer is on all waterways under their control. (See figure 3 for the location of the High Island Creek Watershed.)

Tri-County Solid Waste

Tri-County Solid Waste is a Joint Powers Board between Sibley, Nicollet and Le Sueur Counties that was organized in 1987. The three counties decided to use this approach to solid waste management rather than have separate programs in each county. The solid waste officer works out of the Nicollet County and splits his time between the three counties.

Tri-County Solid Waste implemented the Ag Bag Disposal program which is offered to farm operators twice a year. This program still sees continued strong demand and has been very successful. They have partnered with Townships to clean up ravines along town roads. Another program that has been quite successful is the Message in a Bottle where the county has placed receptacles to recycle aluminum cans and plastic bottles at the fairgrounds, county and city parks. Tri-County Solid Waste also offers a once a year Household Hazardous Waste pickup. This program rotates among the seven cities in Sibley County. See Table 2 for drop-off site locations for residents to use during the year. They continue the public education program with youth teaching them about recycling and water preservation.

Table 2 Sibley County Recycling Drop-Off Sites

City	Location	Time
Arlington	Main St. & 4th Ave.	2nd and 4th Saturdays 8 a.m. – 11 a.m.
Gaylord	South of Main St. on 5th St.	1st and 3rd Saturday 8:00 a.m. – 11:00 a.m.
Gibbon	545 East Mill Rd	24 hours/7 days a week
Green Isle	191 Railroad St	24 hours/7 days a week
New Auburn	By City Hall	1st & 3rd Wednesdays 2:30 p.m. – 5:30 p.m.
Winthrop	By City Fire Garage	2nd & 4th Saturday 8:00 a.m. – 11:00 a.m.
Faxon Township	29076 Scenic Byway Road	24 hours/7 days a week

Total Maximum Daily Load (TMDL)

Water bodies that fail to meet one or more water quality standards are considered impaired and are subject for inclusion on Minnesota's Impaired Waters list. See Appendix B for the list of impaired waters in Sibley County. The Federal Clean Water Act requires a Total Maximum Daily Load be developed for identified impairments. A TMDL is defined as the maximum amount of a pollutant that a water body can receive and still meet water quality standards. A TMDL also identifies the process needed to gather data, stake holder input and technical expertise to identify the source of pollution. The last part of the TMDL process implements a plan to reduce pollution.

Sibley SWCD and Sibley County have participated in and coordinated water quality studies and implementation projects in the Rush River, High Island Creek, Buffalo Creek, Bevens Creek, Silver Creek, Eight Mile Creek and Little Rock Creek Watersheds. The studies have found that rivers and creeks have reaches that are impaired for nitrogen; phosphorus; sediment; and fecal coliform.

The TMDL Implementation Projects that were taking place in Sibley County ended June 30, 2011 except on the Buffalo Creek. These projects have had varied success with better results toward the end rather than when they started. It seems that it took stakeholders a long time to be convinced that cooperating would help clean up the problems. The Buffalo Creek Implementation project ended June 30, 2013. The Rush River Implementation Project for Fecal

Coliform is in effect between 2009 and 2014 and the High Island Creek TMDL Project for Fecal Coliform is in effect between 2011 and 2015. Both the Rush River and the High Island Creek Implementation Projects for Fecal Coliform have been completed.

The Rush River/High Island Creek TMDL for Low Dissolved Oxygen Implementation Project was started in 2015 focusing on buffer strips, inlet alternatives and cover crops. The project has been successful in getting project participation and will be ending in 2019.

TMDL Studies for fecal coliform impairments to Bevens-Silver Creeks, High Island Creek, Buffalo Creek and the Rush River have been drafted or completed. Sibley County will seek to implement recommendations from these studies with a focus on feedlot sources and non-compliant septic systems.

At this time work had begun on an IBI/Turbidity TMDL in both the High Island Creek and Rush River Watersheds. But with lack of funding and intensive water quality studies coming the TMDL will not be completed as soon as planned.

MPCA have done intensified water quality studies in the Middle Minnesota River Watershed in 2013 and the Lower Minnesota River Watershed in 2014. The partners have done monitoring and assessment. Together they have identified biological stressors in the watersheds and created plans for protection, restoration and implementation. Assessment and stressor ID reports have been completed for the lower MN and are available here:
(https://www.pca.state.mn.us/sites/default/files/wq-ws3-07020012b.pdf;
https://www.pca.state.mn.us/sites/default/files/wq-ws5-07020012c.pdf;
https://www.pca.state.mn.us/sites/default/files/wq-ws5-07020012d.pdf).

Information for the Minnesota River – Mankato Watershed is found here:
https://www.pca.state.mn.us/water/watersheds/minnesota-river-mankato. The assessment report is available and the stressor ID report will be available shortly.

When the WRAPS reports for the Lower MN and the Minnesota River – Mankato are finalized later this those reports can be used to identify priority areas and implementation strategies for restoration and protection.

Partners

The following is a partial list of partnerships that provided assistance, staff time or funding.

Sibley County
Sibley Soil and Water Conservation District
City of Arlington

City of Gaylord
City of Gibbon
City of Green Isle
City of Henderson
City of New Auburn
City of Winthrop
Buffalo Creek Watershed District
High Island Creek Watershed District
Brown-Nicollet-Cottonwood Water Quality Board
Board of Water and Soil Resources
Minnesota Pollution Control Agency
Environmental Protection Agency
Natural Resources Conservation Service
Pheasants Forever
Farm Service Agency
Ducks Unlimited
Minnesota Pork Producers
Minnesota Corn Growers
Minnesota Soybean Growers
Minnesota State University Mankato
Minnesota Department of Natural Resources
Minnesota Extension Service
Minnesota Department of Health
Minnesota Department of Agriculture
U. S. Fish and Wildlife
Conservation Partners of America

Summary of Priority Concerns

The priority concerns of Sibley County water resources have been expressed by residents, water plan committee members and agency input. All comments and descriptions of the concerns have been documented in the Priority Concern Scoping Document located in Appendix C of this plan.

To accomplish the goals that have been put into this Comprehensive Water Plan, Sibley SWCD/Sibley County will need to coordinate activities with agencies and water management organizations. Education will also be a vital component of the Comprehensive Water Plan. Information in the form of handouts, meetings and demonstrations will be used to educate landowners about the county's water priorities. Before the end of the fifth year of this water plan, the plan will be revisited to update concerns that have come to light since the plan was approved.

The cost estimates to complete the Actions are outlined in the implementation schedule are based on available funding (see pages 17-27). The estimates are based on County funding, in-kind contributions, grants, private contributions and other outside sources needed to complete an Action. Sibley County recognizes that implementation and cost estimates can change throughout the plan and they are intended to illustrate the magnitude of water planning efforts. Financial resources are limited and some priority actions described in the plan may require staff and funding beyond current capabilities.

The process to identify the priority concerns began with a survey that county residents could respond to. The WRAC committee then met and identified the concerns that should be pursued in the new water plan. The priority concerns are:

Drinking Water Quality

Wellhead Protection Plans address many of the concerns the public have with protecting groundwater. Not all cities have Wellhead Protection Plans or Drinking Water Supply Management Areas to protect drinking water. The WRAC also feels there is a continued need to properly de-commission abandoned or unused wells throughout the county. The goal of the Comprehensive Local Water Plan is to maintain or improve the groundwater resource in Sibley County.

Water Quantity

The public and the WRAC are quite concerned about the speed that water is leaving the land. How can this process be slowed? The goal of this concern is to keep the water on the land longer through the use of effective best management practices and improved management.

Nutrient, Manure and Human Waste

This priority concern was identified by the public and the WRAC to assist farmers and landowners in reducing phosphorus, nitrogen and other nutrients in the surface and ground water. The overall goal is to supply farmers with nutrient information on their cropland regarding application rates, residues, awareness of sensitive areas, and overlapping of nutrient applications.

This concern will also address the issue of septic system compliance in Sibley County. The goal of this concern is to improve surface and groundwater quality by addressing septic system compliance in Sibley County. Primarily individual septic systems and cluster housing developments will be the focus of this concern.

Soil Erosion

This plan will also address the issues with erosion and sediment control on agricultural and rural lands. In recent years farming practices have progressed rapidly in the way of implementing conservation practices while still achieving high yields. However, changes to land use and additional conservation practices may be necessary for agricultural land to continue to be profitable and sustainable. Reaching that sustainability through BMP promotion and implementation is needed. The goal of this concern is to reduce soil erosion from rural lands of Sibley County.

Plan Administration

This priority concern was added to the plan after the Priority Concerns Scoping Document was approved. The WRAC felt that for the Comprehensive Local Water Plan to be successful there was a need to have staff available to continually administer it.

Estimated Costs

Priority Concern 1: Drinking Water Quality	**Overall**	**County**
Goal 1: Protect and improve the quality of groundwater for the citizens of Sibley County.	$ 187,500	$ 69,750
Goal 2: Protect and improve the quality of surface waters.	$ 2,377,150	$ 1,596,000
Goal 3: Conduct water quality studies.	$ 697,400	$ 392,000
Goal 4: Administration of MN Statute 103F.48 the Minnesota Buffer Law.	$ 1,651457	$ 570,000
Sub-Total:	**$ 4,913,507**	**$ 2,627,750**

Priority Concern 2: Water Quantity		
Goal 5: Encourage the preservation and restoration of wetlands.	$ 532,000	$ 392,000
Goal 6: Conduct water quantity studies.	$ 6,671,300	$ 2,607,500
Sub-Total:	**$ 7,203,300**	**$ 2,999,500**

Priority Concern 3: Nutrient, Manure and Human Waste		
Goal 7: Reduce the amount of phosphorus and nitrogen that is entering the water.	$ 11,811,000	$ 764,500
Sub-Total:	**$ 11,811,000**	**$ 764,500**

Priority Concern 4: Soil Erosion

Goal 8: Reduce erosion and sediment loading of surface waters.	$ 7,055,490	$ 1,203,000
Sub-Total:	**$ 7,055,490**	**$ 1,203,000**

Priority Concern 5: Plan Administration

Goal 9: Provide for effective plan administration and coordination.	$ 295,000	$ 295,000
Goal 10: Review and update the Water Plan.	$ 37,500	$ 37,500
Goal 11: Use of Geographic Information Systems data.	$ 840,000	$ 840,000
Goal 12: Pursue grant funding opportunities	$ 15,500	$ 15,500
Sub-Total:	**$ 1,188,000**	**$ 1,188,000**
Grand Total:	**$ 34,936,697**	**$ 8,782,750**

Priority Concerns Assessment

The five priority concerns that will be addressed in the 2012 Local Water Management Plan are drinking water quality, water quantity, nutrient, manure and human waste and soil erosion. The following provides a brief assessment of each priority concern.

Drinking Water Quality

The Minnesota Department of Health is the state agency responsible for making efforts to protect our groundwater (drinking water). Efforts like the Wellhead Protection Program (WHP) are designed to help protect a public drinking water supply. In order to protect a supply of water that is constantly recharging, a geographic area must first be delineated to determine where your source water is coming from. This area is known as the Drinking Water Supply Management Area and follows parcel boundaries, roads, and geographic landmarks which allow the general public to visualize the recharge zone. The actual groundwater recharge boundary is known as the Wellhead Protection Area (WHPA). Potential hazards that could negatively affect the quality of the groundwater within the WHPA are then identified in the wellhead protection plan. Some examples of these hazards are, leaking storage tanks, industrial waste, feedlots, holding tanks above and below ground, agricultural chemical applications, non-compliant floor drains, etc. It is the duty of the public drinking water supplier to address these issues and take measures to protect the groundwater resource.

It is in the best interest of any municipality to take steps to protect the WHPA. Implementing BMPs in the recharge area now can greatly reduce the risk of the water supply being contaminated in the future. A variety of BMPs can be implemented in the WHPAs such as; CRP, RIM Wellhead program, reduced nutrient application on agricultural fields, cover crops, etc.

In rural areas, most landowners depend on their own drinking water supply system. Typically wells are drilled into aquifers that provide a rural resident with drinking water. Sibley SWCD has a cost share program to seal abandoned wells. When new wells are constructed landowners must seal existing unused wells on the property.

The County's drinking water quality has not shown much of a trend towards degradation or improvement. The deep clay soils on the county have kept contaminants from reaching drinking water aquifers. In the past, and presently, Sibley County has had an aggressive well sealing program to keep drinking water free of chemicals and other contaminants.

The aquifers that county residents use for drinking water get some of their recharge from surface water. Sibley County has many water bodies on the Clean Water Act Section 303(d) list of impaired waters (see Appendix B). These water bodies have been identified to have a pollutant source which can limit a stream or lake's designated use. Designated uses for a stream or lake include recreation/fishing, irrigation, swimming or industrial uses. When a pollutant inhibits the use of one or more of these designations, the stream/lake goes on the impaired waters list. Once a stream/lake is on the impaired waters list, the State of Minnesota is required to conduct a Total Maximum Daily Load study. The TMDL addresses the source(s) of the pollutant and determines how much of that pollutant a given water body can receive and still be able to meet water quality standards. The TMDL drives the Implementation Plan for a given impairment. The TMDL Implementation Plan set goals and objectives for actions that must be taken on the land in order to reach the calculated reductions laid out in the TMDL.

Water quality on most of the lakes in Sibley County has degraded from what it once was. Citizen associations and other interested individuals are working to clean up these water bodies. But, the process to restore these lakes to their designated use is lengthy and expensive. See Appendix A for a map of Sibley County lakes.

Water Quantity

Disposing of excess water is a problem facing all of Sibley County. To farm as efficiently as possible the landowners in the western part of the county, where the land is flat, want to get rid of their water as fast as possible. As you move east across the county the terrain becomes hilly and the landowners are complaining about the amount and speed of the water. The residents of eastern Sibley County are concerned about excessive streambank and gully erosion that is now occurring.

The Middle and Lower Minnesota Watersheds will be doing intensive watershed monitoring during the early years of the next Comprehensive Local Water Management Plan. When the monitoring is finished TMDLs will be developed to deal with the impairments found in our

water. The Comprehensive Local Water Management Plan, through its partners, will need to work with landowners educating and helping them install practices that retain water at its source for longer period of time.

The trend seems to be more water and it comes at a faster pace. When it does rain the storms seem to be less frequent but more intense which creates flows that are flashier.

Nutrient, Manure and Human Waste

Land application of waste or over application of fertilizers, pesticides, manure, etc. are potential sources of non-point source pollution to groundwater as well as surface water. Enforcing the day to day operations of application practices is difficult, thus technical assistance and education are essential components that help protect the environment. To protect water quality and meet state rules, runoff pollutants must be reduced to safe levels before entering streams, rivers and lakes. Proper manure application can not only benefit the environment, it can also save landowners money by applying recommended amounts of manure in place of buying commercial fertilizers.

Elements such as nitrogen, phosphorous and potassium are generally the main ingredients of fertilizers. Nitrogen is water soluble and is able to move through the water table freely and phosphorous is able to attach to soil particles. When they are applied in excess of plant needs, nutrients can wash into aquatic ecosystems where they can cause excessive plant growth, which reduces swimming and boating opportunities, creates a foul taste and odor in drinking water, leads to increased algae blooms and kills fish.

In agricultural settings the MPCA regulates the application and setbacks for a variety of land-applied nutrients. The setbacks provide a buffer between areas that are more susceptible to contaminants than others. If these setbacks are practiced, farmers have the opportunity to land apply nutrients to their fields with limited negative effects on surrounding water quality sensitive features.

Residences that live within a municipality generally have water and waste water treatment available to them. Rural residences, on the other hand, need to rely on individual treatment systems to treat their wastewater locally. Subsurface Sewage Treatment Systems (SSTS) treat wastewater so that harmful pollutants such as excessive phosphorous, nitrates and fecal coliform do not reach our ground and surface water. Failing septic systems can cause fecal coliform to enter our streams and drinking water.

Currently Sibley County is following the MN Rule 7080 requirements. Also, Sibley County Environmental Services Office requires landowners to conduct compliance inspections of their existing SSTS when a bedroom is added to a home. Another method of upgrading septic

systems is implementing a Point of Sale requirement in the County. Any home with a septic system must be inspected and, if needed, corrective actions taken prior to the sale of the home/property.

Point of Sale and Sibley County's low interest loan program have had a positive effect for residents to take corrective action on failing septic systems. The trend seems to be that a few home owners will upgrade their septic system every year but most upgrades are coming from Point of Sale.

Soil Erosion

This plan will focus on reducing the effects of erosion in urban and rural areas.
The causes of erosion in urban /residential areas will be covered in this section along with possible remediation practices. Erosion control is a priority concern in Sibley County because of the negative impacts they can have on our streams and wetlands. Once soil particles become mobile, phosphorus and other elements also move. While phosphorus and other elements are key features in a healthy and fertile soil profile, in excess they pose a hazard to streams and wetlands. In urban settings the majority of erosion comes from construction site activity, vegetation removal, impacts on bluff land and increases in runoff volume. The increase of impervious surfaces leads to the increase of volume and rate of storm water runoff unless otherwise treated.

Pre-settlement vegetation of Sibley County was made up of prairies, wetlands and shallow marshes and forested areas throughout river bottoms and hillsides. In the late 1800's agriculture started to dominate large portions of the landscape. Perennial vegetation has the ability to hold soil in place and absorb storm water during rain events. Once removed, erosion and the amount of rain runoff increase immensely. This obviously affects the rate at which erosion occurs on the landscape as well as increasing the rate and flow at which rain water flows to rivers or lakes. Increasing the runoff rate causes gullies and streambank erosion. It is important to keep rain water and soil in place. Sibley County's agricultural background has been and will continue to be an economic stronghold, but conservation practices will have to be implemented in order to achieve sustainable yields and water quality standards in the future. Varieties of BMP's are available to help control erosion of agriculture land and are actively being promoted at Sibley SWCD.

Most farmers have assessed their tillage practices from years past and are now using practices that lower or minimize erosion. Many are seeing the value of filter strips, buffer strips and tillage practices designed to leave more crop residue on the surface. In the last few years there seems to be some farmers returning to moldboard plowing when the crop rotation is corn on corn. A few reasons why they are returning to the plow are excessive residue, university trials that show improved yields, management style and soil type.

Plan Administration

Funding, promotion and education will be key components of the Comprehensive Local Water Plan. To make this generation of the water plan successful, staffing will need to be kept at a level at or higher than present. If staffing would achieve a level higher than present, educational efforts and promotion of best management practices would be increased. More time could be spent by technicians to get practices in places that would do the most good for the environment. County staff would also enhance their job capabilities through the use of GIS technology.

Goals, Objectives and Implementation

This section establishes the Sibley County's Water Plan Goals, Objectives, and Actions. The Water Plan will cover a span of 10 years (2013-2023). The Water Resources Advisory Committee will take another look at this plan at its midpoint and decide if priorities have changed or additional priorities need to be added. A five-year amended plan will be done at this time.

The Goals, Objectives, and Action Steps that are identified in this section were developed with input from the public, various State and local governmental units/agencies, and the Water Resources Advisory Committee.

Each Action has been assigned specific implementation information, including the Focus Area, stakeholders involved, timeframe and an estimated cost to implement the activity. Collectively the Actions lay the foundation for achieving success with the Plan's Goals and Objectives.

Estimated Cost: This category divides the estimated costs of completing the Action Step into two columns: Overall and County. The Overall column provides an estimate of the total estimated cost among all stakeholders (i.e., grants, cost-share, County match, etc.) to implement the Action. The County column represents the estimated cost incurred either directly or indirectly by Sibley County to implement an Action; this includes costs incurred by Sibley SWCD. **The estimated costs associated with this plan are total costs not on a year by year basis.**

Priority Concern 1: Drinking Water Quality

Goal 1: Protect and improve the quality of groundwater for the citizens of Sibley County.

Objective 1: Encourage the public to protect public and private wells from contamination.

Action Item	Action	Focus Area	Responsible Agencies Lead agency	Timeframe	Estimated Cost	
					Overall	County
1	Assist the cities of Gibbon, Henderson, New Auburn and Winthrop as they create or update their Wellhead Protection Plans.	Cities	Cities, MDH SWCD	2013-2023	$73,500	$1750
2	Continue to encourage and provide financial assistance to landowners to seal abandoned or unused wells using established ranking criteria. Seal 10 wells per year if funding is available.	County wide	SWCD, BWSR	2013-2023	$96,000	$50,000
3	Offer well water tests to rural homeowners to monitor the groundwater for the presence of nitrate, arsenic and bacteria every three years.	County wide	SWCD, PH, MDH	2014, 2017, 2020	$18,000	$18,000

Goal 2: Protect and improve the quality of surface waters.

Objective 2: Work with rural and urban landowners to continue to improve surface water quality.

Action Item	Action	Focus Area	Responsible Agencies Lead Agency	Timeframe	Estimated Cost	
					Overall	County
4	Continue to offer best management practices and incentives to landowners for the implementation of water quality related BMPs such as structures, buffer strips, conservation tillage, terraces, inlet alternatives, contour farming. Offer incentives to a minimum of 10 projects annually. See High Island, Faxon and Silver Lake Watershed Targeting Maps in Appendix C Pages 44 – 46.	County wide	WS, NRCS, SWCD, BWSR, MPCA	2013-2023	$745,000	$120,000
5	Continue to offer best management practices and incentives to landowners for the implementation of water quality related BMPs such as cover crops. Target 1,000 acre/year.	Western 2/3 of County	WS, NRCS, SWCD, BWSR, MPCA	2019-2023	$50,000	$50,000
6	Continue to offer best management practices and incentives to landowners for the implementation of water quality related BMPs Such as rain gardens. Target 6 rain gardens.	Arlington Gaylord Green Isle Henderson New Auburn	WS, NRCS, SWCD, BWSR, MPCA	2019-2023	$200,000	$200,000
7	Encourage the use of Solid Waste Programs such as discouraging burn barrels and burying solid waste through education, brochures and media.	County wide	TC	2013-2023	$79,900	$79,900
8	Agricultural bag pickup program. Container drop-off and pickup for large consumers of plastics such as plastic silage bags and bale wrap, etc. Or the five-bag pickup program for small producers of plastic materials.	County wide	TC	2018-2023	$7500	0
9	Continue to offer the yearly recycling of tires, appliances and electrical products pickup program.	County wide	TC	2012-2023	$216,100	$216,100
10	Clean-up 1 township dump site annually.	County wide	TC/PAZ	2013-2023	$175,000	$175,000

Action Item	Action	Focus Area	Responsible Agencies Lead Agency	Timeframe	Estimated Cost	
					Overall	County
11	Provide the public with a yearly hazardous waste pickup program.	County wide	TC	2013-2023	$600,000	$600,000
12	Target 10 acres annually of highly erodible land for enrollment in conservation easement programs.	Eastern 1/3 of County	NRCS, SWCD WS	2013-2023	$30,000	$18,000
13	Conduct site evaluations and provide technical assistance to interested landowners that want to install water quality related BMPs. Such as water and sediment basins, waterways, filter strips, structures and terraces. Look to implement 5 projects each year with priority given to projects located in areas with an approved TMDL.	County wide	SWCD, NRCS	2013-2023	$273,650	$125,000

Goal 3: Conduct water quality studies.

Objective 3: Work with MPCA, watershed districts, lake associations, neighboring counties and other state and federal organizations to address water quality issues.

Action Item	Action	Focus Area	Responsible Agencies Lead Agency	Timeframe	Estimated Cost	
					Overall	County
14	Work with partners to continue water quality monitoring efforts. Target 25 samples per year for each of the 2 monitoring sites. Annually review data to prioritize BMPs.	HIC	WS, SWCD, MPCA	2013-2023	$339,000	$267,000
15	Cooperatively work with partners to coordinate the preparation and implementation of TMDL and WRAPS studies and plans. Beginning in 2013 with the Middle Minnesota River Watershed and in 2014 with the Lower Minnesota Watershed.	HIC, RR, MM, B/S	WS, SWCD, MPCA	2013-2018	$98,400	$75,000

Action Item	Action	Focus Area	Responsible Agencies Lead Agency	Timeframe	Estimated Cost	
					Overall	County
16	Continue to have the DNR monitor groundwater test wells.	County wide	DNR, WS, SWCD	2013-2023	$10,000	0
17	Investigation and sampling have been finished and WRAPS reports are now available for the Middle Minnesota River Watershed the Lower Minnesota Watershed. Continue to partner in the watershed approach, WRAPS, 1W1P to identify and address all water quality problems.	County wide	MPCA, WS, DA SWCD	2013-2023	$250,000	$50,000

Goal 4: Administration of MN Statute 103F.48 the Minnesota Buffer Law.

Objective 4: Utilize the statute to administer the buffer rule for public waters and public ditches.

Action Item	Action	Focus Area	Responsible Agencies Lead Agency	Timeframe	Estimated Cost	
					Overall	County
18	Work with landowners to get them into compliance with the buffer law. Installation of a 16.5 foot buffer along county ditches and 50 foot buffer along public waters pursuant to MN Statute MN 103F.48. Any landowner deemed noncompliant must be turned over to the county for enforcement.	County wide	SWCD	2018-2023	$1,626,457	0
19	Work with noncompliant landowners to bring and keep all buffers in compliance.	County wide	DA, SWCD	2018-2023	$25,000	$570,000

Priority Concern 2: Water Quantity

Goal 5: Encourage the preservation and restoration of wetlands.

Objective 5: Utilize partners to restore wetlands and offer incentives to install best management practices.

Action Item	Action	Focus Area	Responsible Agencies Lead Agency	Timeframe	Estimated Cost	
					Overall	County
20	Work with partners to prioritize and promote the preservation and restoration of wetlands especially in areas that consistently drowned out. Target 100 or more acres annually to be restored if funding is available.	Western 2/3 of County	WS, SWCD, NRCS, BWSR, MPCA	2013-2023	$252,000	$112,000
21	Continue to have Sibley SWCD administer the Minnesota Wetland Conservation Act.	County wide	SWCD	2013-2023	$260,000	$260,000
22	Work with the County Drainage Authority on abandoning or relocating public drainage systems in conjunction with wetland restorations.	Western 2/3 of County	DA, SWCD, NRCS	2013-2023	$20,000	$20,000

Goal 6: Conduct water quantity studies.

Objective 6: Collect useful water quantity data on the lakes, streams, rivers and wetlands within the county.

Action Item	Action	Focus Area	Responsible Agencies Lead Agency	Timeframe	Estimated Cost	
					Overall	County
23	In conjunction with water quality monitoring efforts continue to study water quantity. Continue to sample a minimum of 25 times per year at each established sampling site. Annually review data to prioritize BMPs.	HIC	WS, SWCD, MPCA	2013-2023	$39,000	$10,000
24	Use TMDL and WRAPS studies to follow the impacts and trends of water quantity. The Middle Minnesota River Watershed in 2013 and the Lower Minnesota River Watershed in 2014.	Lower MN Middle MN	WS, SWCD, 3MPCA	2013-2023	$102,300	$85,000
25	Work with partners to study what effects water quantity has with flooding. Study land areas susceptible to increased erosion due to increased water quantity and/or precipitation intensity. Annually review sampling data and look for trends that are emerging.	Eastern 1/3 of County	WS, SWCD, MPCA	2013-2023	$20,000	$2,500
26	Continue the local rain gauge monitoring program and increase the number of volunteer rain gauge readers that report to the State Climatology Office. Target a minimum of 7 additional readers.	County wide	SWCD	2013-2023	$10,000	$10,000
27	Continue to work on Re-determination of Benefits of the County's public drainage system. Phase 2 of System 1 – Middle Branch Rush River in 2013 and Phase 3 of System 1 – Middle Branch Rush River in 2015, with future phases yet to be determined in 2019.	County wide	DA	2013-2023	$6,500,000	$2,500,000

Priority Concern 3: Nutrient, Manure and Human Waste

Goal 7: Reduce the amount of phosphorus and nitrogen that is entering the water.

Objective 7: Work toward all producers using approved nutrient and manure management plans.

Action Item	Action	Focus Area	Responsible Agencies Lead Agency	Timeframe	Estimated Cost	
					Overall	County
28	Partner with lake groups to reduce the amount of sediment, phosphorus and nitrogen that is coming into their lakes. Promote the installation of BMPs, including but not limited to terraces, grassed waterways, buffer strips, conservation tillage and shoreline restorations as money is available. Implement 3 projects annually.	High Island Lake, Lake Titloe, Clear Lake Silver Lake	WS, SWCD, NRCS	2013-2023	$400,000	$7,500
29	Partner with landowners to establish projects in the Watershed to show the benefits of proper nutrient management. Target impaired sub watersheds.	Lower MN	DA, WS, SWCD, NRCS	2013-2023	$33,000	$33,000
30	Assist feedlot operators when they renew their permit every four years.	County wide	MPCA	2013-2023	$600,000	0
31	Provide educational and technical assistance, as available, to agricultural landowners and producers for proper manure and nutrient management. Host an educational seminar or demonstration every third year on proper manure and nutrient management.	County wide	WS, SWCD, NRCS	2015, 2018, 2021	$10,000	$9,000
32	Utilize TMDL and WRAPS results to monitor the progress of phosphorus and nitrogen loading. Use available data from the TMDL and WRAPS to prioritize sub watersheds for BMP implementation and pursue implementation grants.	Lower MN Middle MN	WS, SWCD, MPCA	2013-2023	$380,000	$280,000

Objective 8: Continue to encourage home owners to install compliant septic systems.

Action Item	Action	Focus Area	Responsible Agencies **Lead Agency**	Timeframe	Estimated Cost	
					Overall	County
33	Continue to have the Cities of Arlington, Gaylord, Gibbon, Green Isle, Henderson, New Auburn and Winthrop monitor and manage wastewater discharge.	Cities	Cities, MPCA	2013-2023	$9,632,000	0
34	Continue to work toward 100% compliance of individual septic systems by offering low interest loans to eligible home owners. Target 20 loans per year.	County wide	SWCD, WS, MPCA	2013-2023	$3,000,000	$150,000
35	Continue to have county staff provide compliance and inspection services as part of the County's SSTS Program. Sibley County contracts SSTS compliance and inspection services with a private entity.	County wide	PAZ, MPCA	2013-2023	$300,000	$280,000
36	Provide educational assistance for SSTS maintenance.	County wide	WS, PAZ, SWCD, MPCA	2013-2023	$3,000	$2,500
37	Every third year (2015, 2018 and 2021) host a refresher for homeowners to learn the value of proper SSTS maintenance.	County wide	WS, PAZ, SWCD, MPCA	2013-2023	$3,000	$2,500
38	Provide SSTS Low Income Grants to qualifying landowners.	County wide	SWCD, PAZ Auditor	2018-2023	$150,000	0

Priority Concern 4: Soil Erosion

Goal 8: Reduce erosion and sediment loading of surface waters.

Objective 9: Install BMPs that reduce erosion or sediment loading.

Action Item	Action	Focus Area	Responsible Agencies Lead Agency	Timeframe	Cost	
					Overall	County
39	Promote effective BMPs, but not limited to water and sediment basins, terraces, waterways, buffers, contour farming, cover crops, rain gardens, conservation tillage and streambank restorations to landowners based on pollution reductions, cost benefits and project feasibility to reduce erosion and sediment loading to surface waters. Implement 7 projects per year, if funding is available.	HIC, RR, BC, B/S	SWCD, WS, NRCS, BWSR, MPCA	2013-2023	$774,000	$117,000
40	Work with partners to identify highly erodible land and promote the use best management practices such as enrolling in conservation easement programs. Target 150 acres annually.	Eastern 1/3 of County	SWCD, WS, NRCS	2013-2023	$500,000	$17,000
41	Continue to maintain the County's public drainage system ensuring that State Drainage Law (M.S. Chapter 103E) and other applicable regulations are followed.	County Drainage System	DA, CB, MPCA	2013-2023	$750,000	$750,000
42	Target and educate conservation drainage ideas and how that would affect soil erosion and associated nutrients. (Bio-reactors, controlled drainage and open intake alternatives).	Lower MN Middle MN	WS, DA, SWCD, NRCS	2013-2023	$10,000	$10,000
43	Provide financial assistance, when available, for the installation of conservation drainage BMPs. Target bio-reactors, controlled drainage and open intake alternatives that have measurable results.	Lower MN Middle MN	WS, SWCD, NRCS	2013-2023	$309,000	$309,000

Action Item	Action	Focus Area	Responsible Agencies Lead Agency	Timeframe	Cost	
					Overall	County
44	Work with Cities of Arlington, Gaylord, Gibbon, Green Isle Henderson, New Auburn and Winthrop to promote effective storm water management.	Cities	Cities, SWCD, MPCA	2013-2023	$4,712,490	0

Priority Concern 5: Plan Administration

Goal 9: Provide for effective plan administration and coordination.

Objective 10: Maintain adequate staffing, utilize the Water Resources Advisory Committee and Joint Powers Boards.

Action Item	Action	Focus Area	Responsible Agencies Lead Agency	Timeframe	Cost	
					Overall	County
45	Maintain the position of Water Planner at or above present levels to coordinate and lead water planning efforts in Sibley County as well as provide for required reporting as necessary.	County wide	CB SWCD	2013-2023	$280,000	$280,000
46	Continue to support and participate in the watershed planning efforts that effect land use in Sibley County.	County wide	CB, SWCD, WS	2013-2023	$15,000	$15,000

Goal 10: Review and update the Water Plan.

Objective 11: Provide for an annual review and mid-term revision of the plan.

47	Continue to conduct semi-annual meetings of the Water Resources Advisory Committee to identify emerging issues. Annually review the Water Plan.	County wide	SWCD, CB	2013-2023	$13,000	$13,000
48	Update the goals, objectives and actions section of the Water Plan prior to the end of the plan's fifth year (2018).	County wide	SWCD, WRAC	2018	$6,500	$6,500
49	Revise the Comprehensive Local Water Plan prior to the plan expiring in 2023.	County wide	SWCD, WRAC	2022-2023	$18,000	$18,000

Goal 11: Use of Geographic Information Systems data.

Objective 12: Utilize GIS data to enhance work of county departments.

Action Item	**Action**	**Focus Area**	**Responsible Agencies** ***Lead Agency***	**Timeframe**	**Cost**	
					Overall	**County**
50	Invest in geographic information to support the work of county departments. Continue to support updated imagery, DEM, hydro conditioned DEM, lidar, updated parcel information and Connect explorer.	County wide	CB	2013-2023	$810,000	$810,000
51	Provide training to staff for the use of GIS.	County wide	CB	2013-2023	$30,000	$30,000

Goal 12: Pursue grant funding opportunities.

Objective 13: Seek out funding to implement identified plan activities.

Action Item	Action	Focus Area	Responsible Agencies ***Lead Agency***	Timeframe	Cost	
					Overall	County
52	Based on prioritization, work with partners to secure Clean Water, Legacy, Lessard Sams, 319 TMDL grant funds and other funding opportunities to implement water plan activities. Priority given to projects depicted on the High Island, Faxon and Silver Lake Watershed Targeting Maps in Appendix C Pages 44 – 46.	County wide	SWCD, WS	2013-2023	$8,000	$8,000

Objective 14: Investigate funding opportunities to keep the water plan a fully funded position.

Action Item	Action	Focus Area	Responsible Agencies ***Lead Agency***	Timeframe	Cost	
					Overall	County
53	Work to secure funding to supplement the water plan budget and fund the water plan coordinator position.	County wide	SWCD, WS	2013-2023	$7,500	$7,500

Ongoing Programs

Sibley County is dedicated to preserving our resources while providing a sound economy and educational opportunities for its citizens.

While the County staff cannot regulate the cities, there is a cooperative working relationship and will continue to work with the city staffs as opportunities arise. Cities continue to educate and enforce best management practices in storm water control, erosion control during construction and offer incentives to their citizens to practice enhancement and preservation of their natural resources.

Staff will continue to work with the County's cities and businesses to support innovative techniques, water quality conservation and improvement options and to assist them in BMPs, education and implementation. Staff will continue to work with all the public water suppliers in the county to further efforts to protect water quality and reduce potential impacts to drinking water sources that may be attributable to land uses.

Sibley County's youth are important. County staff will continue to join the staffs of surrounding counties, cities, agencies, and organizations to present and participate in educational opportunities throughout the county on a yearly basis.

Sibley SWCD staff continues to administer the Minnesota Wetland Conservation Act Rules and Regulations. Staff and other partners may also assist landowners to preserve and restore wetlands through education and/or grants.

Property Assessing & Zoning Office staff now provide administration for zoning, SSTS, and solid waste ordinances. Staff answers questions and enforces the regulations in zoning and shoreland areas, storm water and erosion control methods. Tri-County Solid Waste, a joint powers agreement with Sibley, Nicollet and Le Sueur Counties, staff answers all questions about solid waste issues.

County Ditch administration is now administered through the Auditor's office. Ditch staff answers questions regarding ditch right of way, repairs, cleanout and buffers.

The Minnesota Buffer Law (MN Statute 103F.48) was passed in 2015 and amended in 2016. On November 1, 2017 MN Statute 103F.48 required all public waters to maintain a 50 foot buffer and on November 1, 2018 the same statute required all public ditches to have a 16.5 foot buffer. Sibley County pasted a resolution stating the county would enforce the statute and not pass enforcement on to the state. The statute requires Sibley SWCD to work with landowners to help them reach compliance. And the statute also requires the landowners not achieving compliance be referred to the Sibley County Auditor for enforcement action. Sibley County has decided to take no action on Other Waters in the county at this time. Other Waters are identified as all water bodies in Sibley County not identified by the DNR as public waters or public ditches. See Appendix C for a map of Other Waters.

Rural landowners will continue to receive education and low interest loan opportunities, as money is available, to replace non-compliant septic systems. County and partner staff will provide opportunities for the citizens to access county, state and federal funds to assist in farming practices through such programs as RIM, CREP and grants from CWP, CWF funds, foundations and other groups. These programs help achieve the goals within set rules and regulations while at

the same time providing information that preserves and improves the natural resources in Sibley County and downstream from us.

In addition to implementing the County's Water Plan, the County also accomplishes numerous water plan initiatives through implementing the following County programs.

A. County Feedlot Program – Sibley County has a county feedlot program, administered through the Minnesota Pollution Control Agency (MPCA). This means the county works with producers on registration, permitting, inspections, education, and complaint follow-up.

B. Subsurface Sewage Treatment System (Program SSTS) – Sibley County enforces MN Rules Chapter 7080-7083 through the Sibley County SSTS Ordinance. This Ordinance helps ensure that septic systems are designed and maintained properly, and includes a compliance inspection when property is transferred.

C. Shoreland Management Program – Sibley County assists the Minnesota Department of Natural Resources (DNR) with administering the Shoreland Management Act. This Act regulates land use development within 1,000 feet of a lake and 300 feet of a river and its designated floodplain.

D. Wetland Conservation Act Program (WCA) – Sibley SWCD assists the Minnesota Board of Water and Soil Resources (BWSR) with administering the Minnesota Wetland Conservation Act of 1991. The goals of the Act are to maintain a "no-net-loss of wetlands", minimize any impacts on wetlands, and to replace any lost wetland acres affected by development.

Water Plan Administration

This section contains information on administering the Water Plan, including plan coordination, implementation, schedule, role of the County in implementation, role of other agencies in implementation, recommended changes to State programs, intergovernmental conflicts/resolution process, major plan amendment procedure, minor plan amendment procedure and general information.

Plan Coordination

Managing Sibley County's water resources involves cooperation with many local, State and Federal agencies, as well as private citizens and special interest groups. For any water plan

activity to be successful, a well-coordinated effort is needed. Sibley County is committed to working with each of these entities to ensure proper management of its water resources. Throughout the Water Plan, County departments, local government units, special interest groups, and State and Federal agencies is listed pertaining to specific water planning topics. It is hoped that the valuable cooperation that has been established in the past years will continue and be enhanced through proper implementation of this Water Plan.

Implementation Program

Sibley County will ensure coordination and implementation of its Comprehensive Local Water Plan through its established Water Resources Advisory Committee. The Advisory Committee meets semi-annually to review progress, identify emerging problems, and discuss opportunities. The Coordinator will administer the implementation portion of the Plan, coordinate the Water Resources Advisory Committee activities, write grant proposals, prepare annual work plans and reports, and other activities as needed.

Implementation Schedule

Coordination of Water Plan activities will commence with the County Board adoption of the Comprehensive Local Water Plan. These activities will be conducted throughout the planning period identified as 2013 – 2023. Before the end of the fifth year of this plan, the goals, objectives and implementation section of this plan will be updated.

Water Plan Funds

The Water Plan's Goals, Objectives and Action Steps are a reflection of the water resource concerns in the County. Implementation will be based on current needs, funding and availability of staff. Consideration will be given to changes in State initiatives and regulations.

The annual work plan will be a detailed strategy of measurable criteria for actions to be carried out. The County realizes that completion of all Goals and Objectives requires staff and funds beyond the County's budget. It is also understood that State funding cannot provide the funding for all Goals and Objectives, therefore total stakeholder cooperation will be required. The County, through various sources, will pursue outside funding opportunities as they become available.

To properly fund the implementation of the Water Plan and related activities, Sibley County will rely on a combination of the following types and sources of funding:

A. Natural Resource Block Grant Funds, including but not limited to:

- Local Water Management Program

  The Comprehensive Local Water Management Program is a voluntary program that requires counties to use local task forces to develop and implement water plans based on their priorities.

- DNR Shoreland Management Program

  The State Shoreland Management Program was established to promote the wise development of shorelands in order to preserve and enhance the quality of surface waters, preserve the economic values of shorelands, and ensure the wise use of water and related resources.

- MPCA Subsurface Sewage Treatment Systems (SSTS)

  Based on 1997 changes to Minnesota Statutes, all counties are required to pass ordinances regulating Individual Sewage Treatment Systems countywide. In return, Sibley County receives money annually to implement the SSTS Program.

- Wetland Conservation Act (WCA) Implementation

  The purpose of the Wetland Conservation Act (WCA) is to maintain and protect Minnesota's wetlands and the benefits they provide. The Board of Water and Soil Resources requires that under this grant program, a county must agree to transfer a minimum of $5,000 to the Soil and Water Conservation District for the implementation of Wetland Conservation Act activities or greater amount as agreed upon by the county and the Soil and Water Conservation District. This transfer must occur within 30 days of receipt of Natural Resources Block Grant funds.

- SSTS Low Income Grant Program

  The grant helps low income landowners install compliant subsurface sewage treatment systems. To be eligible the homeowner must meet low income guidelines for adjusted gross income.

B. State, Local, and Federal Grants – numerous grant funds and programs are made available to implement local water plan or related initiatives, including but not limited to Minnesota's Clean Water Fund.

C. Local Governmental Unit (LGU) Funds/In-Kind – Some water planning initiatives will require funds spent by the various LGUs involved. This will include cities, townships, and watershed districts, along with Sibley County. Numerous grant programs count the time spent by LGU representatives as an In-Kind expense.

D. Staff – Sibley SWCD and County will continue to maintain a trained staff to properly implement the various Water Plan initiatives. This expense is normally considered as a cash contribution towards implementing various State and Federal Grant Programs.

E. Landowner Expenses – Although many Water Plan Action Steps can be completed at no cost to landowners, some projects may require landowners to contribute a portion of the overall costs.

F. Stakeholder Participation – The various stakeholders involved with implementing the Water Plan will also contribute funds and staffing, as available.

Recommended State Cooperation

In order to implement the goals and objectives set forth in the Sibley County Comprehensive Local Water Plan, continued cooperation between the County and various State agencies is necessary. In an effort to increase coordination in this effort, the County makes the following recommendations:

- Counties should continue to be notified of State agency program changes and the availability of funding; and

- Data collected by State agencies should be readily shared with the County and other water plan stakeholders to avoid duplicative efforts; and

- State agencies should continue to provide local and/or regional staff to assist local officials with agency programs; and

- State agencies should provide greater flexibility to counties in setting annual work plan priorities. Priorities should be based upon current needs, funding, availability of staff and changes in State initiatives and regulations.

Consistency with Other Plans

Plans from contiguous counties, city, township, watershed districts and wellhead protection were considered in the development of the 2013 – 2023 Comprehensive Local Water Plan.

Recommendation of Amendments to Other Plans

The WRAC does not believe that other plans need amendment at this time. Plan amendments for the 2013-2023 Comprehensive Local Water Plan will be addressed during yearly meetings with committee members and suggestions or alterations will be noted.

In the event of an intergovernmental conflict, the Sibley County Board of Commissioners shall request the Water Resources Advisory Committee to intervene and informally negotiate a resolution of the conflict. If the Task Force does not resolve the conflict, the County shall petition the Board of Water and Soil Resources (BWSR) for a contested case hearing.

Water Plan Amendment Procedure

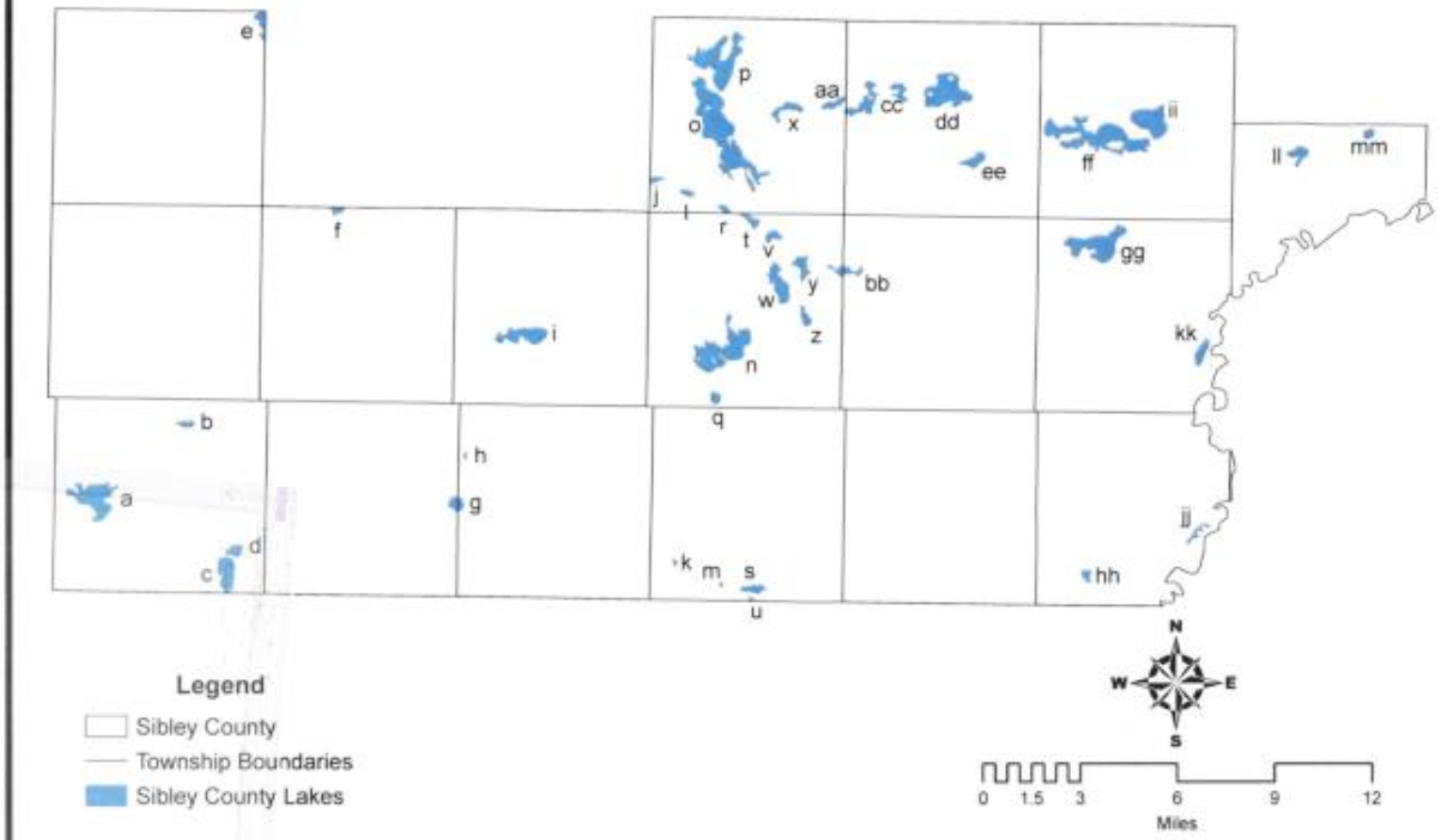
The Sibley County Comprehensive Local Water Plan will extend into 2023. If the County needs to revise the Plan for any reason prior to a new Plan being developed, the County will need to follow Minnesota Statute 103B.314, Subdivision 6. Copies of the proposed amendments to the water plan and a date for the public hearing will need to be sent to BWSR, local governmental units and State agencies for review. After the public hearing, BWSR must approve the amendments.

Appendix A

Sibley County Lakes

Sibley County Lakes

a. Swan Lake
b. Grundmeyer Pothole
c. Clear Lake
d. Mud Lake
e. Round Grove Lake
f. Ward Lake
g. Sand Lake
h. Mud Lake
i. Indian lake
j. Mud Lake
k. Unnamed
l. Hahn Lake
m. Unnamed
n. Lake Titlow
o. High Island Lake
p. Schilling Lake
q. Mud Lake
r. Mud Lake
s. Plaman Lake
t. Kirby Lake
u. Rice lake
v. Duff Lake
w. Altnow Lake
x. Fadden Lake
y. Wieman Lake
z. Beatty's Lake
aa. Mud Lake
bb. Unnamed
cc. Severance Lake
dd. Curran Lake
ee. Schauer Lake
ff. Mud Lake
gg. Silver Lake
hh. Reinhardt
ii. Washington Lake
jj. Buck's Lake
kk. Unnamed
ll. Kerry Lake
mm. Unnamed



Appendix B

2018 Draft List of Impaired Waters

2018 Draft of the Clean Water Act Section 303d List of Impaired Waters of Sibley County

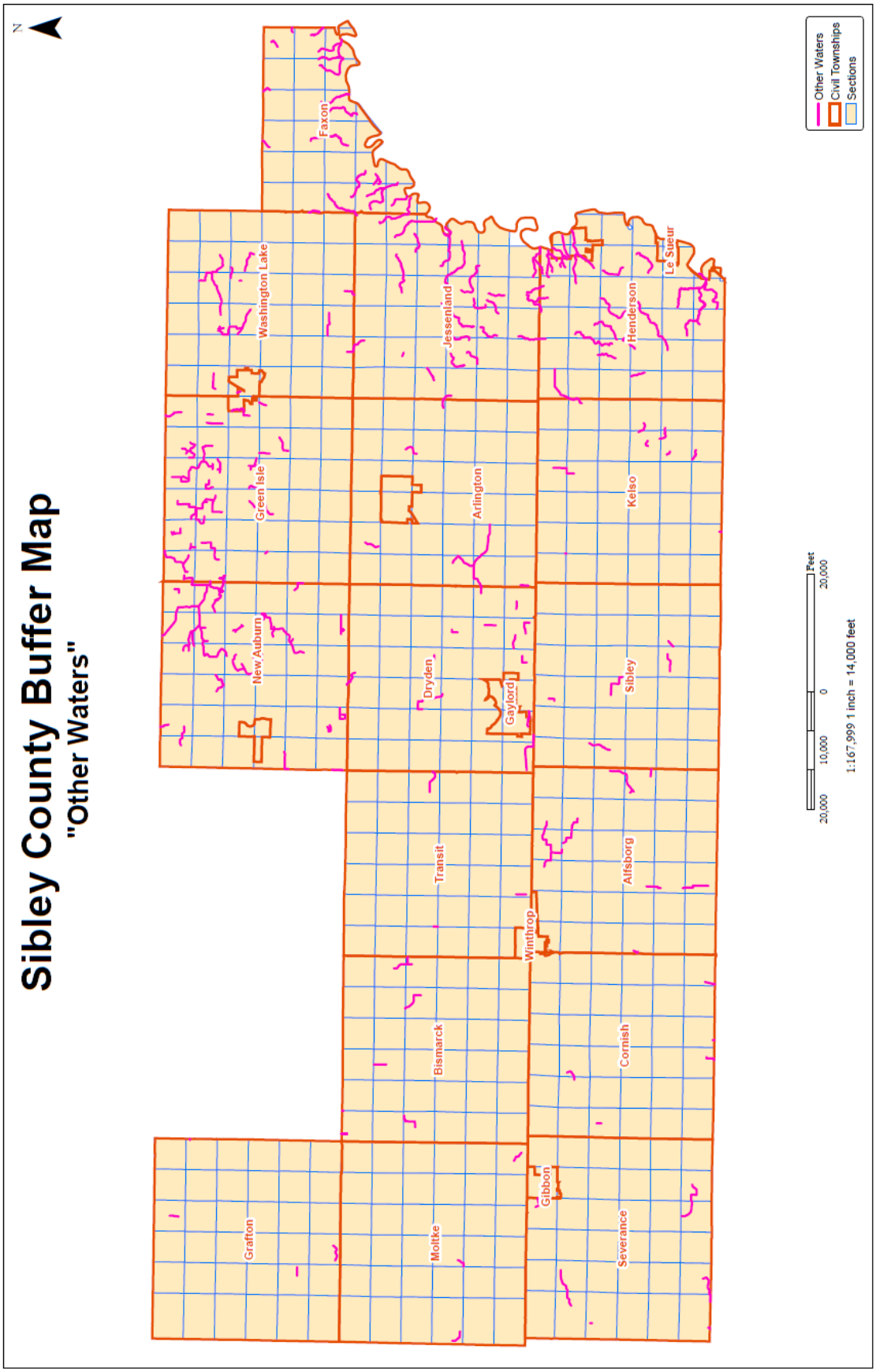
Reach	Reach Description	Affected Use	Impairment Parameter	Year Approved TMDL
Bevens Creek	Headwaters (Washington Lk 72-0017-00) to 154th St	Aquatic Life	Aquatic macroinvertebrate bioassessments	
Bevens Creek	Headwaters (Washington Lk 72-0017-00) to 154th St	Aquatic Life	Nutrient/eutrophication biological indicators	
Bevens Creek	Headwaters (Washington Lk 72-0017-00) to 154th St	Aquatic Recreation	Fecal Coliform	2007
Buffalo Creek	276th St /Co Rd 65 to High Island Cr	Aquatic Life	Aquatic macroinvertebrate bioassessments	
Buffalo Creek	276th St /Co Rd 65 to High Island Cr	Aquatic Life	Fishes bioassessments	
Buffalo Creek	276th St /Co Rd 65 to High Island Cr	Aquatic Life	Turbidity	
Buffalo Creek	276th St /Co Rd 65 to High Island Cr	Aquatic Recreation	Fecal Coliform	2009
Clear	Lake or Reservoir	Aquatic Recreation	Nutrient/eutrophication biological indicators	
County Ditch 13	Unnamed ditch to JD 1	Aquatic Life	Aquatic macroinvertebrate bioassessments	
County Ditch 18	CD 40 to Titlow Lk	Aquatic Recreation	Escherichia coli	
County Ditch 18	Headwaters to CD 40	Aquatic Life	Fishes bioassessments	
County Ditch 42	Headwaters to T113 R29W S31, south line	Aquatic Life	Aquatic macroinvertebrate bioassessments	
County Ditch 44	Headwaters to M Br Rush R	Aquatic Life	Aquatic macroinvertebrate bioassessments	
County Ditch 44	Headwaters to M Br Rush R	Aquatic Life	Fishes bioassessments	
County Ditch 49	Unnamed ditch to CD 22	Aquatic Life	Aquatic macroinvertebrate bioassessments	
County Ditch 49	Unnamed ditch to CD 22	Aquatic Life	Fishes bioassessments	
County Ditch 50	Co Rd 62 to Rush R	Aquatic Life	Aquatic macroinvertebrate bioassessments	
County Ditch 56	Headwaters to Unnamed ditch	Aquatic Life	Aquatic macroinvertebrate bioassessments	
High Island Creek	-94.0936 44.6181 to Minnesota R	Aquatic Life	Aquatic macroinvertebrate bioassessments	
High Island Creek	-94.0936 44.6181 to Minnesota R	Aquatic Life	Fishes bioassessments	
High Island Creek	-94.0936 44.6181 to Minnesota R	Aquatic Life	Turbidity	
High Island Creek	-94.0936 44.6181 to Minnesota R	Aquatic Recreation	Fecal Coliform	
High Island Creek	-94.2538 44.6574 to Unnamed cr	Aquatic Life	Aquatic macroinvertebrate bioassessments	

Reach	Reach Description	Affected Use	Impairment Parameter	Year Approved TMDL
High Island Creek	-94.2538 44.6574 to Unnamed cr	Aquatic Life	Fishes bioassessments	
High Island Ditch 2	Unnamed cr to High Island Cr	Aquatic Life	Turbidity	
High Island Ditch 2	Unnamed cr to High Island Cr	Aquatic Recreation	Fecal Coliform	
Judicial Ditch 1	CD 4A to CD 13	Aquatic Life	Aquatic macroinvertebrate bioassessments	2009
Judicial Ditch 11	CD 10 to JD 24	Aquatic Life	Aquatic macroinvertebrate bioassessments	
Judicial Ditch 11	CD 10 to JD 24	Aquatic Life	Fishes bioassessments	2009
Judicial Ditch 12	Headwaters to High Island Creek	Aquatic Life	Fishes bioassessments	
Rush River	M Br Rush R to S Br Rush R	Aquatic Life	Aquatic macroinvertebrate bioassessments	
Rush River	M Br Rush R to S Br Rush R	Aquatic Life	Fishes bioassessments	
Rush River	M Br Rush R to S Br Rush R	Aquatic Life	Turbidity	
Rush River	S Br Rush R to Minnesota R	Aquatic Consumption	Mercury in fish tissue	
Rush River	S Br Rush R to Minnesota R	Aquatic Life	Fishes bioassessments	
Rush River	S Br Rush R to Minnesota R	Aquatic Life	Turbidity	
Rush River	S Br Rush R to Minnesota R	Aquatic Recreation	Fecal Coliform	
Rush River, Middle Branch (County Ditch 23 and 24)	Unnamed ditch to T112 R30W S13, east line	Aquatic Life	Aquatic macroinvertebrate bioassessments	
Rush River, Middle Branch (County Ditch 23 and 24)	Unnamed ditch to T112 R30W S13, east line	Aquatic Life	Fishes bioassessments	2009
Rush River, North Branch (County Ditch 55)	Titlow Lk to T113 R28W S35, south line	Aquatic Life	Aquatic macroinvertebrate bioassessments	
Rush River, North Branch (County Ditch 55)	Titlow Lk to T113 R28W S35, south line	Aquatic Life	Fishes bioassessments	
Rush River, North Branch (County Ditch 55)	Unnamed ditch to T112 R27W S17, east line	Limited Resource Value	Escherichia coli	
Rush River, North Branch (Judicial Ditch 18)	Headwaters to Titlow Lk	Aquatic Life	Aquatic macroinvertebrate bioassessments	
Rush River, North Branch (Judicial Ditch 18)	Headwaters to Titlow Lk	Aquatic Life	Fishes bioassessments	
Rush River, North Branch (Judicial Ditch 18)	Headwaters to Titlow Lk	Aquatic Recreation	Escherichia coli	
Rush River, South Branch	-94.0478 44.4761 to Rush R	Aquatic Life	Aquatic macroinvertebrate bioassessments	
Rush River, South Branch	-94.0478 44.4761 to Rush R	Aquatic Life	Fishes bioassessments	

Reach	Reach Description	Affected Use	Impairment Parameter	Year Approved TMDL
Rush River, South Branch	Unnamed ditch to -94.0478 44.4761	Aquatic Life	Aquatic macroinvertebrate bioassessments	
Rush River, South Branch	Unnamed ditch to -94.0478 44.4761	Aquatic Life	Fishes bioassessments	
Silver	Lake or Reservoir	Aquatic Recreation	Nutrient/eutrophication biological indicators	
Titlow	Lake or Reservoir	Aquatic Recreation	Nutrient/eutrophication biological indicators	
Unnamed creek	Unnamed cr to Minnesota R	Aquatic Life	Aquatic macroinvertebrate bioassessments	2009
Unnamed creek	Unnamed cr to Minnesota R	Aquatic Life	Fishes bioassessments	
Unnamed ditch	Headwaters to Titlow Lk	Aquatic Recreation	Escherichia coli	
Unnamed ditch	Unnamed ditch to Unnamed ditch	Aquatic Life	Aquatic macroinvertebrate bioassessments	

Appendix C

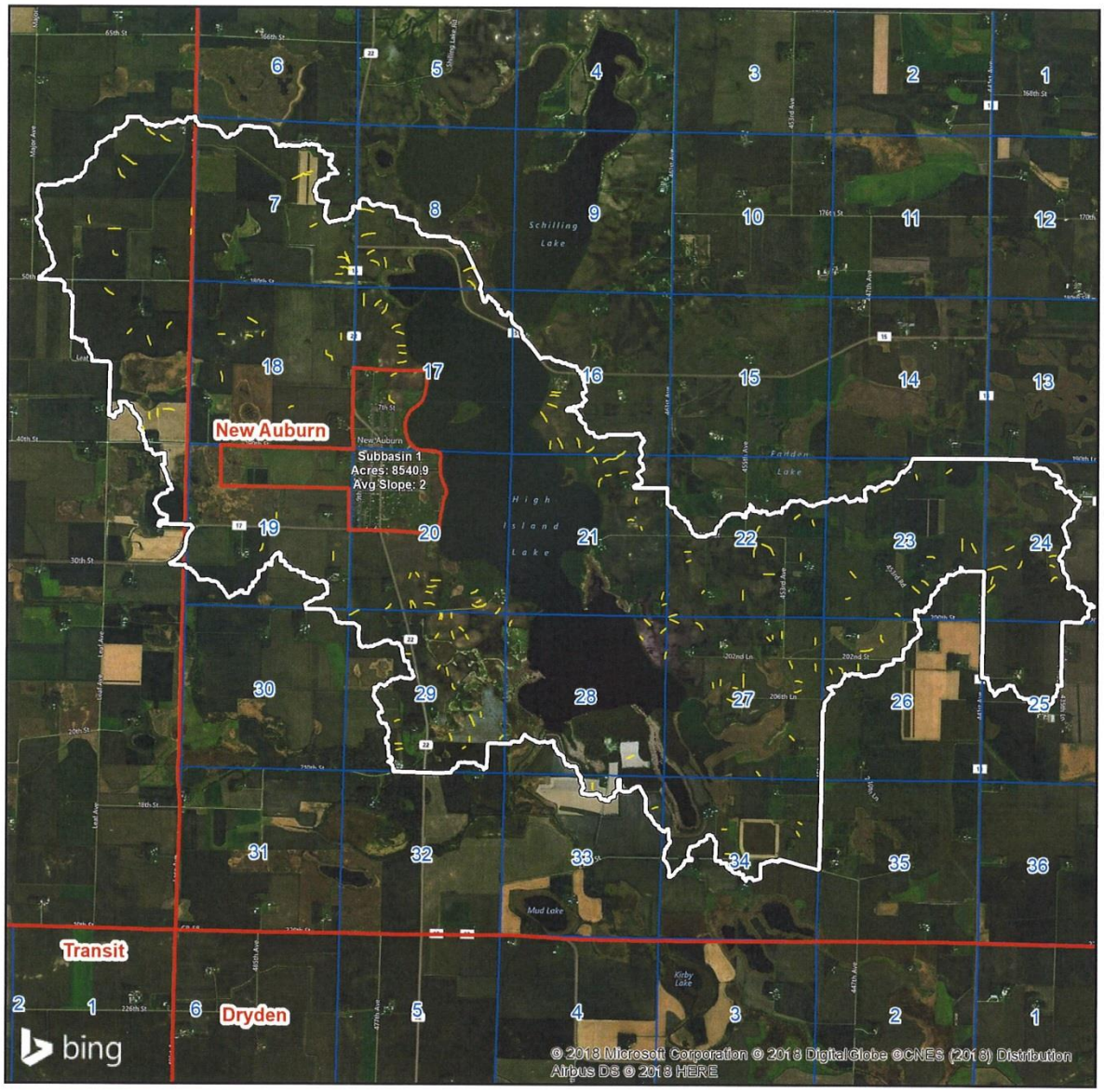
MAPS


Sibley County Buffer Map
"Other Waters"
N
Other Waters
Civil Townships
Sections
Faxon
Washington Lake
Jessenland
Henderson
Le Sueur
Green Isle
Arlington
Kelso
New Auburn
Dryden
Gaylord
Sibley
Transit
Alfsborg
Winthrop
Bismarck
Cornish
Grafton
Moltke
Gibbon
Severance
Feet
20,000
10,000
0
20,000
1:167,999 1 inch = 14,000 feet

High Island Lake Watershed Water Plan Targeting Map

New Auburn Township
Sibley County, MN
By: J. Buckentin
DistrictTechnician

Date: 10/18/2018



Potential Field Erosion
High_Island_Lake_Watershed2
Civil Townships
Sections

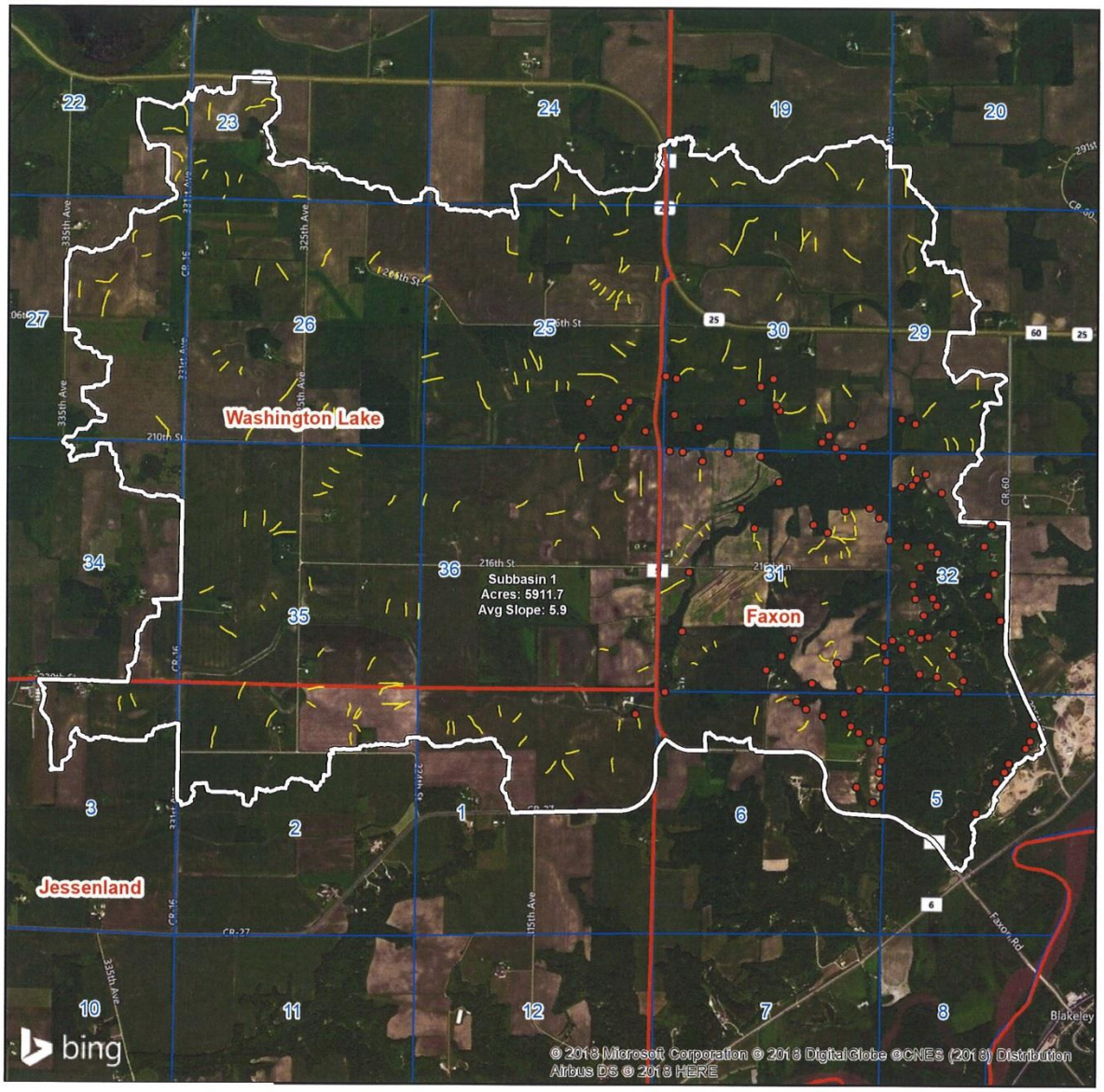
1:54,000
1 inch equals 4,500 feet
Feet
4,500 2,250 0 4,500

Maps are for graphical purposes only. They do not represent a legal survey.

Faxon Road Watershed
Water Plan Targeting Map

Washington Lake,
Faxon & Jessenland Townships
Sibley County, MN
By: J. Buckentin
DistrictTechnician

Date: 10/17/2018



Ravine Pour Points
Potential Field Erosion
Faxon Road Watershed
Civil Townships
Sections

1:36,000
1 inch equals 3,000 feet

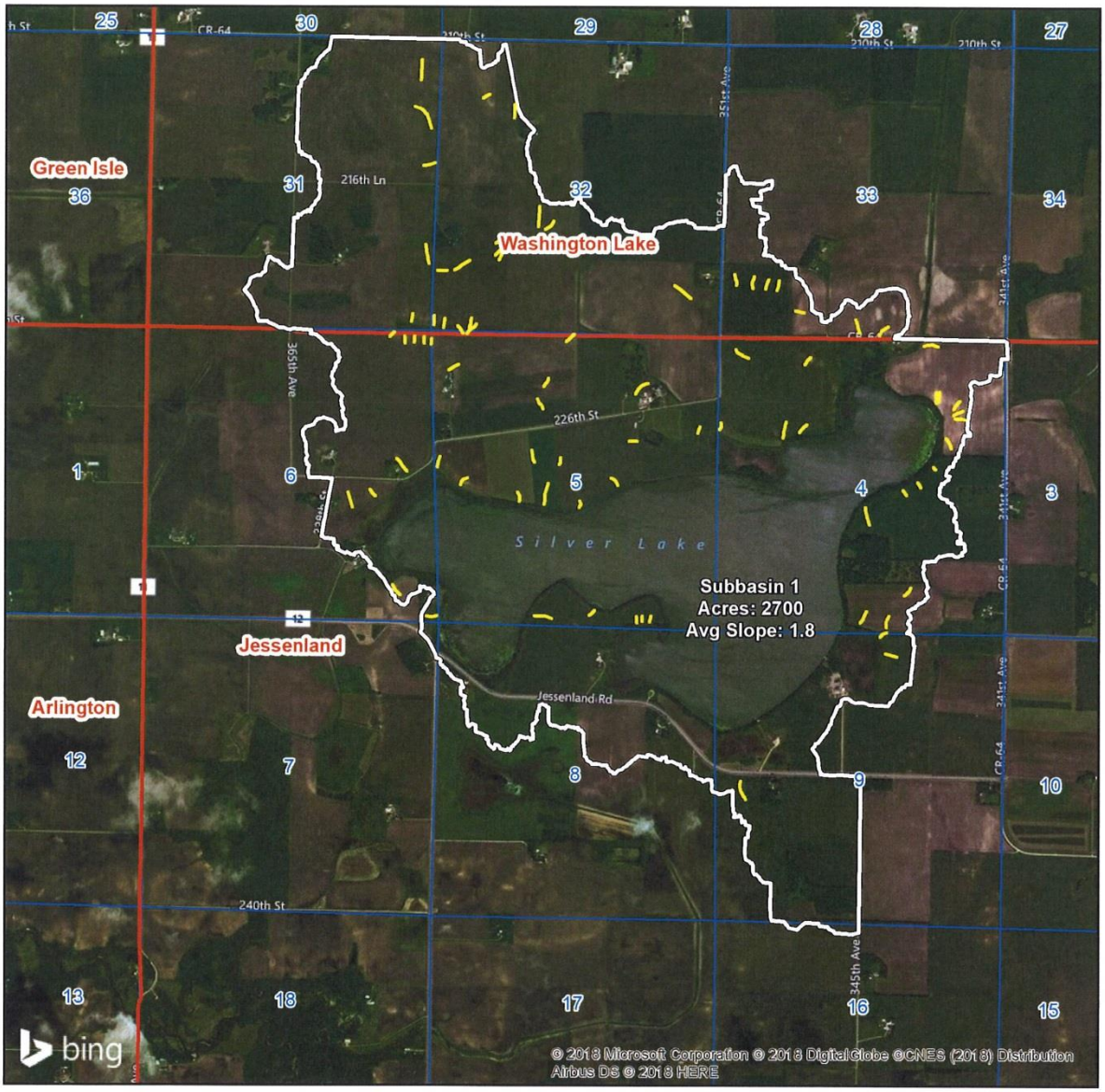
3,000 1,500 0 3,000 Feet

Maps are for graphical purposes only. They do not represent a legal survey.

Silver Lake Watershed
Water Plan Targeting Map

Washington Lake &
Jessenland Townships
Sibley County, MN
By: J. Buckentin
DistrictTechnician

Date: 10/17/2018



Potential Field Erosion
Silver_Lake_Watershed
Civil Townships
Sections

1:30,000
1 inch equals 2,500 feet

2,500 1,250 0 2,500 Feet

Maps are for graphical purposes only. They do not represent a legal survey.

Appendix D

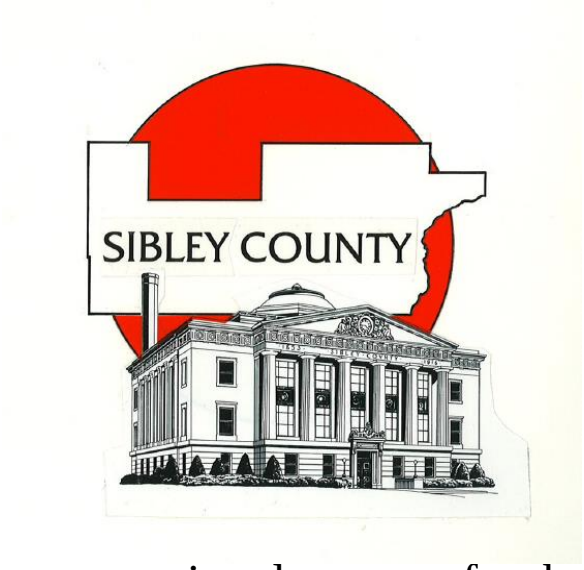
Priority Concerns Scoping Document

Sibley County

Fourth Generation

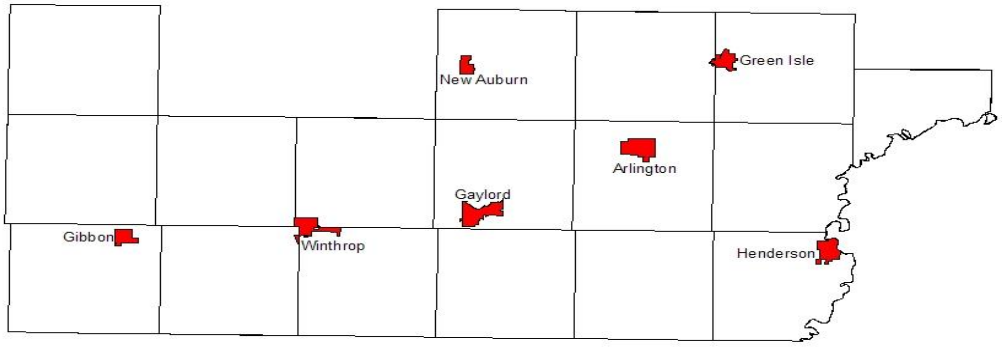
Local Water Management Plan Update

Priority Concerns Scoping Document



The priority concerns scoping document for the Sibley County Local Water Management Plan was developed in accordance with the Comprehensive Local Management Act, MN Statutes103B.304 – 103B.355. This document identifies the priority concerns developed by the Sibley County Water Resources Advisory Committee. The concerns identified will be the focus of water resources planning and management in Sibley County for 2012 – 2021.

March 4, 2011


New Auburn
Green Isle
Arlington
Gaylord
Gibbon
Winthrop
Henderson

Sibley Soil and Water Conservation District
111 6th St.
P. O. Box 161
Gaylord, MN 55334
www.sibleyswcd.org

Sibley County
400 Court Ave
Gaylord, MN 55334
www.co.sibley.mn.us/

Sibley County Water Resources Advisory Committee

Harold Pettis	Gibbon	County Commissioner
Joy Cohrs	New Auburn Township	County Commissioner
Vernon Ruschmeyer	Moltke Township	Farmer
Steve Geib	Arlington	Well Driller
Steve Skelley	Jessenland Township	Rural Resident
Dave Evans	Henderson Township	Farmer
Dee Czech	Arlington	MN River Alliance
Darvin Scherer	Green Isle Township	Farmer
Verne Schlueter	Dryden Township	High Island Creek Watershed Board
Thomas Pfarr	Arlington Township	SWCD Board
Jon Forst	Moltke Township	Planning & Zoning Board
Kevin Pioske	Kelso Township	SWCD Technician
Loren Evenson	Severance Township	SWCD Manager
Ronald Otto	Dryden Township	Water Planner
Jeff Majeski	Winthrop	Sibley County Environmental Services
Laura Reid	Gaylord	Sibley County Public Health
Tim Dolan	Alfsborg Township	MN Extension Service

I. Introduction

Sibley County is located in south central Minnesota approximately 50 miles southwest of the Twin Cities. Sibley County is in the first ring of counties outside the Seven County Metropolitan Area. Sibley County had a population of 15,356 people in the 2000 U.S. Census. The current population is 15,370 and is estimated to be 15,860 in 2035. The population figures in the following tables are from the Minnesota State Demographer.

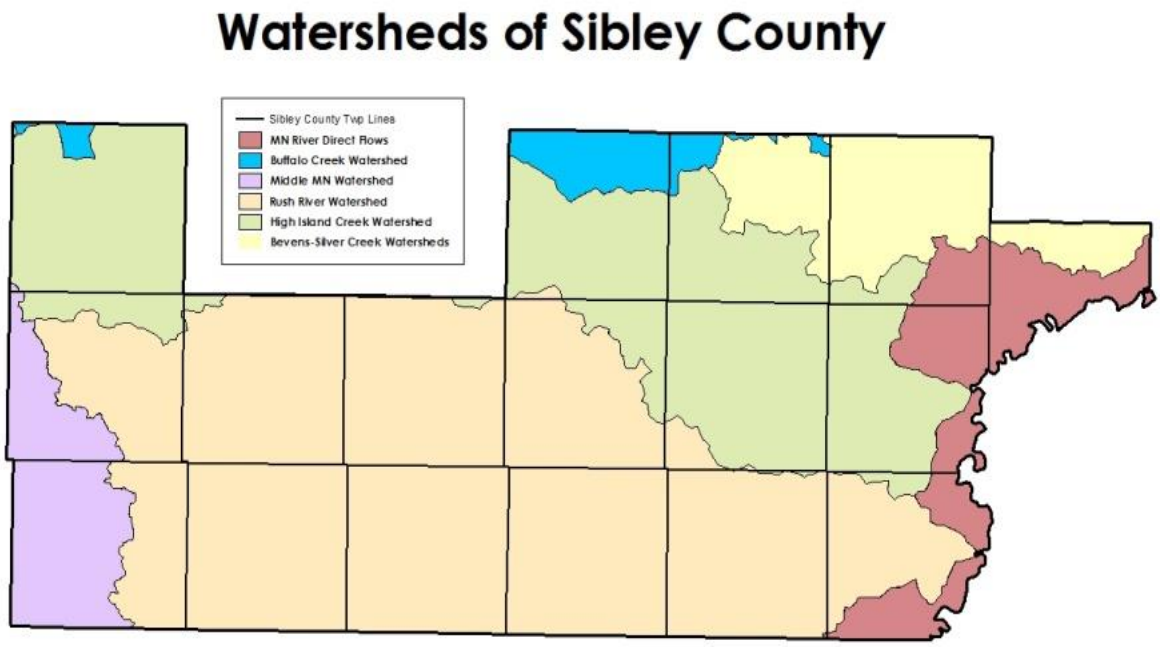
Table 1. Population - Cities

Arlington	2124
Gaylord	2301
Gibbon	785
Green Isle	465
Henderson	971
New Auburn	525
Winthrop	1354

Table 2. Population - Townships

Alfsborg	348
Arlington	540
Bismarck	338
Cornish	226
Dryden	242
Faxon	671
Grafton	240
Green Isle	486
Henderson	747
Jessenland	469
Kelso	332
Moltke	303
New Auburn	466
Severance	312
Sibley	339
Transit	304
Washington Lake	480

The majority of Sibley County is in the Lower Minnesota River Watershed (91%). Six percent flows to the Middle Minnesota River Watershed and 3% flows to the South Fork of the Crow River which flows to the Mississippi River.



Agriculture is the dominant land use in Sibley County and will continue to be dominant in the future. Corn, soybeans, sugar beets, sweet corn and peas make up the majority of crops that are produced in Sibley County. Animal agriculture has declined in Sibley County since 2000 when the last water plan updated. Large operations make up most of the animal agriculture in Sibley County today. Data in the following table is from Minnesota Land Management Information Center.

Table 3. Land Use – Sibley County

Description	Acreage	Percent of Total
Urban and rural development	9096	2.4
Cultivated land	323,867	84.3
Hay/pasture/grassland	16,098	4.2
Brushland	369	0.1
Forested	24,777	6.5
Water	4,968	1.3
Bog/marsh/fen	4801	1.2
Mining	162	0.0
Total	384,138	100.0

Sibley Soil and Water Conservation District manages the Water Plan for Sibley County. The Sibley County Board asked Sibley SWCD to take over management in January 2000. This will be the fourth generation of the Sibley County Comprehensive Water Plan. The first plan was adopted in 1990, revised and adopted in 1996, and revised and adopted in 2002.

II. List of Priority Concerns

The following concerns were indentified through reviewing citizen surveys, water resource committee members and recommendations from state agencies.

1. Drinking Water Quality – including nitrate-nitrogen and coliform bacteria in wells, abandoned wells and wellhead protection of public water supplies.
2. Water Quantity – including addressing concerns of urban storm water, agricultural drainage and high or low flows in rivers and streams.
3. Nutrient, Manure and Human Waste – including application of agricultural fertilizer and chemicals, application of lawn and garden fertilizer and chemicals, backflow of chemicals into wells in chemical mixing operations, manure runoff from fields and feedlots, over application of manure, failing or non conforming septic systems and pollutant limits exceeded by city wastewater plants.
4. Soil Erosion – from agricultural land, urban areas, construction sites, ravines, stream banks and shoreland.

III. Identification of Priority Concerns

The following outlines the process that was used to gather input for updating the Sibley County Comprehensive Water Plan.

June 22, 2010: Sibley County Board of Commissioners passed a resolution to update the Sibley County Comprehensive Water Plan.

July 7, 2010: The Sibley County Water Resources Advisory Committee met to discuss the process to update the county water plan. At this meeting it was decided to use a survey to gather input from residents of the county. Survey questions and content was discussed and approved.

July 8, 2010: Notice to update water plan and Priority Concerns Input form was mailed to contiguous counties.

July 9, 2010: Notice to update water plan and Priority Concerns Input form was mailed to Sibley County Environmental Services. A kiosk was set up in the USDA office to give the public the opportunity to fill out the survey.

July 13, 2010: Meeting with Sibley Soil and Water Conservation District board and employees to discuss the update process and how public input was going to be gathered. The SWCD Board then discussed concerns and needs that they felt should be included in an updated water plan.

July 15, 2010: A copy of the survey was put on the Sibley County and Sibley SWCD web sites.

July 15 & 22, 2010: Notice of intent to update The Sibley County Comprehensive Water Plan published in the Arlington Enterprise.

July 23, 2010: Notice to update and Priority Concerns Input form were mailed to the 17 townships and 7 cities in Sibley County. Surveys were also included in this mailing for the public to fill out and return. The surveys were also mailed to civic organizations, farm organizations and sporting organizations. There were a total of 450 surveys mailed.

July 26, 2010: Notice of update and Priority Concerns Input form mailed to watershed organizations that are part of Sibley County.

July 28, 2010: Notice of update and Priority Concerns Input form was mailed to state agencies.

August 4-8, 2010: A kiosk was set up in the SWCD booth at the Sibley County Fair to give the public the opportunity to fill out the survey.

September 15, 2010: Deadline to have Priority Concerns Input and surveys returned to SWCD office.

September 29, 2010: Meeting to discuss surveys returned. This meeting was cancelled because of the early harvest.

November 17, 2010: The Sibley County Water Resources Advisory Committee met to discuss the Priority Concerns Input and survey results.

January 20, 2011: The Sibley County Water Resources Advisory Committee met to approve the Priority Concerns Scoping Document.

A. Survey

The survey below was sent to all city councils in the county, all township board members and civic organizations. Each was asked to distribute the survey to anyone who was at their meeting. A kiosk was also setup in the SWCD entryway for citizens to fill out the survey and surveys were also available at the SWCD booth at the County Fair. There were 450 surveys printed and distributed with 152 responses. The number of responses from each watershed is shown on the top of the survey. Question 1 numbers reflect the "1 – most important" response in each category. Question 2 numbers are the times each issue was checked. Appendix A contains a complete inventory of responses to Question 1. A copy of the survey with results follows:

YOUR INPUT IS IMPORTANT!
1. WHAT IS HAPPENING TO YOUR WATER?
PLEASE FILL OUT AND RETURN

Sibley County
Citizens Survey of Water Resource Management Issues

Township or city where you live (or own land) _____

Watershed where you live (or own land) _67__Rush River _49__ High Island Creek

_6___ Buffalo Creek (CROW) _8___ Bevels/Silver Creek __2__ Eight Mile/Little Rock Creek

Source of your drinking water: _63__ Private well _45__ City/municipal water supply

1. Rank from 1 to 9 the issues that impact water in Sibley County (1=most important).

___42___ Water quantity

___24___ Soil erosion and runoff

___15___ Livestock waste

___21___ Human sewage

___8____ Solid waste

___24___ Pesticide and fertilizer use

___68___ Drinking water quality

___9____ Protection of sensitive areas

___10___ Fuels and hazardous materials storage and transportation

_____ Other

2. Under each issue, check those items that are priorities to you.

ISSUE: Water quantity

___51___ Urban stormwater
__102___ Agricultural drainage
___40___ Extremely high or low flows in rivers and streams

ISSUE: Soil erosion

73 From agricultural lands
23 From urban areas
21 From construction sites
67 From ravines, stream banks and shoreland

ISSUE: Livestock waste

85 Runoff from feedlots
71 Runoff from fields that received manure application
47 Over application of manure
36 Dead animal disposal

ISSUE: Human sewage

91 Failing or non-conforming septic systems
51 Pollutant limits exceeded by city wastewater plants
57 Poor operation and maintenance of septic systems by homeowners

ISSUE: Solid Waste

71 Poor recycling practices by homeowners and businesses
66 Improper disposal of household hazardous waste
41 Lack of rural garbage pickup
22 Backyard burn barrels that release dioxin into the air

ISSUE: Pesticide and fertilizer use

53 Over application of agricultural chemicals
24 Fall application of anhydrous ammonia
65 Over application of lawn and garden chemicals
35 Backflow of chemicals into wells used for agricultural chemical mixing operations
52 Atrazine and other pesticides in surface water and ground water

ISSUE: Drinking water quality

52 Nitrate-nitrogen in wells over the drinking water standard of 10 parts/million
57 Coliform bacteria in wells that make the water unsafe for drinking
42 Abandoned wells that funnel contaminants into the aquifer
41 Need for testing of private wells for contamination
55 Need for preventing contamination of public water supplies (city and other public wells)
39 Arsenic in wells

ISSUE: Protection of sensitive areas

73 Loss of wetlands which store and filter water
52 Development or damage in shoreland, floodplain or riparian (streamside) areas
32 Destruction of unique and rare plant and animal communities
37 Need to use natural resource information in land use decision making
27 Wellhead protection areas

ISSUE: Fuels and hazardous materials storage and transportation

67 Presence of old underground storage tanks
30 Lack of automatic nozzles and overfill protection on farm fuel barrels
50 Need for knowledge of groundwater pathways in the event of a spill
50 Need for secondary containment for tanks storing fuel and hazardous materials

B. Additional Comments

We need better enforcement of landowners who violate codes currently on the books.

Concerned over excess flooding resulting from drain tile and poor planning of excess water flowing into the Rush River.

Big Time County spraying roadway ditches. Poison/Poison.

Minnesota should be selling drinking water, not poisoning it with chemicals. 8 ounce bottle $1.00.

South of Henderson on #93 hog feedlot on bottom land. I don't care how long it has been there, it needs to be addressed.

It all comes down to money issues. Sibley County has and is presently doing (tiling, drain ditches).

Farmers using what they want to produce more corn and beans (no end to this so save your time and effort).

I'm not very concerned about groundwater quality as most source water is from confined aquifer.

I am much more concerned about surface waters – both reduction in number and runoff quantity and quality. Urban and Ag sources.

Livestock waste – excess government interference.

Human waste – excess regulation.

Solid waste – loss of backyard burn barrels as a good alternative to landfill pollution.

Protection of sensitive areas – loss of landowner rights.

Fuels and hazardous materials storage and transportation – need for common sense.

All important.

All other categories are of equal value.

Water Quality – urban storm water – concerned about the cost – constantly raising.

Water Quantity – except in spring when there is too much.

C. Minnesota State Agency Input (Appendix A contains the written responses from State Agencies)

1. **Thomas Fischer** from the **Minnesota Board of Water and Soil Resources** identified the following issues;

- Erosion and Sediment Control; Nutrient Management on Agricultural Land
- Drainage System Maintenance and Repair
- Conservation Buffers
- Maintain, Enhance and Increase Wetlands within the County

2. **Becky Balk** from the **Minnesota Department of Agriculture** had the following comment:

- Invite local farm and commodity groups to participate in the comprehensive local water plan process.

3. **Rebecca Flood** from the **Minnesota Pollution Control Agency** identified the following issues:

- Impaired Waters/Total Maximum Daily Loads (TMDLs)
- Agricultural Drainage Management
- Increase Coordination with other Counties in the Lower Minnesota Watershed in preparation for the MPCA Watershed Study scheduled to begin in 2014
- Update LWM Plan with data and recommendations from recent studies and projects in the County

4. **Cathy Fouchi** from the **Minnesota Department of Natural Resources** identified the following issues:

- Minnesota River Watershed
    - Hold water on the landscape
    - Creation of buffers on ditches, streams and rivers
    - Fish passage
    - River and stream channel restoration
    - Agricultural best management practices

D. No input was received from contiguous counties, watershed organizations or from cities within the county.

IV. Priority Concerns Selection

Priority concerns were selected by the Sibley County Water Resources Advisory Committee after discussing and examining the survey results and the concerns that were submitted.

It is impossible to address all the concerns that were submitted. The committee decided on four concerns that are broad enough to cover most of the comments that were submitted. Staff will write goals that should be focused on when funds and time are available.

V. Priority Concerns Not Addressed by the Water Plan

Staff limitations and declining budgets make it necessary to look at a limited number of concerns for implementation of the next water plan. Additional concerns that were submitted, but not included in the Priority Concerns Scoping Document, were felt to be part of an ongoing program through other sources or were given a lower priority because of funding. Issues that will not be addressed will be watched to see if there importance becomes a higher priority.

Staffs from SWCD, Sibley County, and the Watershed TMDL Projects continue to address water concerns in Sibley County in a proactive manner. Following are some of the on-going programs.

- Watershed coordinator and technician continue to focus on Best Management Practices that address pollutants, erosion and sediment control through Total Maximum Daily Load impairments that have been approved by the state.
- Soil and Water staff continues to provide information on available programs, making applications and assisting with solutions to water and wind quality problems.
- Environmental Services office personnel issue zoning permits that can address compliance with water quality issues.
- The Solid Waste officer works with Tri-County Solid Waste to offer semi-annual AgBag pickup and annual hazardous waste and tire recycling collections.

- The Feedlot Officer continues to focus on feedlot issues and advise landowners which Best Management Practices to install to improve water quality from their farms and feedlots.

Appendix A:

Survey Results

WATER PLAN SURVEY

Question 1 =
Number of times each ranking number was scored.
Question 2 =
Number of times each issue was marked.

Question 1	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Water Quantity	42	27	8	6	10	12	6	6	20
Soil Erosion & Runoff	24	24	15	23	15	5	16	12	2
Livestock Waste	15	17	22	21	15	24	4	10	9
Human Sewage	21	28	21	15	19	5	7	11	10
Solid Waste	8	4	15	18	26	22	22	15	3
Pesticide & Fertilizer Use	24	18	23	16	13	19	9	7	3
Drinking Water Quality	68	13	6	12	8	8	14	7	6
Protection of Sensitive Areas	9	10	9	8	15	13	22	31	16
Fuels and Hazardous Materials Storage & Transportation	10	5	7	4	7	11	16	22	56

Question 2

	Issue 1	**Issue 2**	**Issue 3**	**Issue 4**	**Issue 5**	**Issue 6**
Water Quantity	51	102	40			
Soil Erosion	73	23	21	67		
Livestock Waste	85	71	47	36		
Human Sewage	95	51	57			
Solid Waste	71	66	41	22		
Pesticide and Fertilizer Use	53	24	65	35	52	
Drinking Water Quality	52	57	42	41	55	39
Protection of Sensitive Areas	73	52	32	37	27	
Fuels and Hazardous Materials Storage & Transportation	67	30	50	50		

Appendix B:

State Agency Written Comments

Minnesota Board of Water and Soil Resources

Priority Concern 1: Erosion and Sediment Control; Nutrient Management on Agricultural Land

Regarding this concern please answer the following:

Why is it important the plan focus on this concern (include or cite relevant data)?

Erosion and sedimentation from agricultural runoff and stream banks are major sources of pollutants to surface waters. Approximately 85% of Sibley County is cultivated land. To provide for the long-term productive capacity of the county's soil resource base, these agricultural soils need to be protected from erosion.

Agricultural runoff is also a significant source of nutrient loading to surface and ground waters. Commercial fertilizers, as well as animal waste (manure) from livestock and hog producers, are utilized for crop production on agricultural land. Proper application of commercial fertilizer and animal waste is critical in reducing loss to receiving waters. Preventing soil loss due to erosion reduces sediment and attached phosphorus from entering receiving waters, which helps improve water quality.

The MN Pollution Control Agency has recently updated its Impaired Waters list, which includes specific reaches of surface waters in Sibley County. These waters are impaired due to various pollutants, including turbidity and fecal coliform. Implementation of agricultural Best Management Practices (BMPs) is needed to protect and keep the productive soils in place by reducing soil erosion, to provide for proper utilization of chemical fertilizers and animal waste, and to retain precipitation on the land that aids in the control of floodwaters. These will lead to improved quality of the water resources.

What actions are needed?

1. The installation of agricultural BMPs: structural and land use change.
2. Continue and accelerate SWCD technical assistance to landowners for planning and implementing.
3. Actively promote and market conservation program opportunities to land owners and users.
4. Continued participation with watershed management projects and groups, regional groups and state/federal agencies.
5. Promote and demonstrate conservation tillage methods that are cost effective and environmentally friendly.

What resources may be available to accomplish the actions?

1. Federal conservation programs available through FSA and NRCS (CRP, WRP, EQIP, etc.)
2. Federal conservation/implementation programs through MPCA (Clean Water Partnership, 319 Grant).
3. Minnesota's Clean Water Fund grant program.
4. State conservation programs available through the SWCD.
5. Technical assistance available through the SWCD, Technical Service Area and NRCS
6. Local water management program opportunities.
7. State Revolving Loan funds through MN Dept. of Agriculture.
8. Information available from MPCA and MECA on regulations and BMP techniques.

What area(s) of the county is high priority?

Countywide on all agricultural lands with possible emphasis on Impaired Waters identified in the county**.**

Priority Concern 2: Drainage System Maintenance and Repair

Regarding this concern please answer the following:

Why is it important the plan focus on this concern (include or cite relevant data)?

A local water management plan is a plan addressing surface water, groundwater, water quality and water quantity; it is a comprehensive plan. The public drainage system is a major component of Sibley County's water resources and deserves significant attention in this local water management plan update.

Agricultural drainage in Sibley County consists of over 567 miles of open ditch (County and Judicial), many that flow to the top of ravines and empty into the Minnesota River. In addition, private drainage of agricultural lands adds hundreds of miles of underground tile that tie in to the County/Judicial system. Properly maintained drainage systems support the productive capability and erosion protection of soils that require drainage for agricultural use. Drainage systems that require repair can make use of technologies that can aid in flood water control and water quality improvements as well as address the drainage needs of agriculture.

What actions are needed?

1. Establish a GIS-based county-wide public drainage ditch systems inventory (history, location, condition, etc.) to be used to compliment management efforts and use as a tool for current and future water resource management efforts.

2. Select and assess two drainage systems to learn more about the water quality of each system.
3. Overview the economic benefits and concerns of the two systems.
4. Identify areas of these systems that are overloaded and research the creation of water storage areas.
5. Manage these systems at the watershed scale when repairs, maintenance or improvement of the system are being considered. Identify areas of concern and potential solutions that aim at pollutant trapping, water storage and reduced maintenance.
6. Seek out information from other drainage authorities regarding management of their drainage systems.
7. Establish a schedule of repair and maintenance for the systems.
8. Make use of technologies that aid in floodwater and water quality improvements in the design and implementation of public drainage system repair and maintenance.
9. Identify and develop additional financing mechanisms for system management.
10. Provide information and assistance to private drainage systems operators to include the technologies used on public drainage systems.

What resources may be available to accomplish the actions?

1. Future NRGB or Clean Water Fund Grant program funding may help to fund actions.
2. Long term set-aside programs such as RIM, WRP, and CRP can be used when funds are available to increase storage.
3. High Island Creek Watershed Project, Rush River Watershed Project or Three Rivers Resource Conservation and Development may be organizations to work with to obtain funding.
4. Utilize local ditch authority funding mechanism.
5. University of Minnesota Agricultural Engineering Department.
6. University of Minnesota Research and Outreach Center, Waseca, MN.
7. Minnesota Department of Agriculture, contact Mark Dittrich.

What area(s) of the county is high priority?

Countywide

Priority Concern 3: Conservation Buffers

Regarding this concern please answer the following:

Why is it important the plan focus on this concern (include or cite relevant data)?

Vegetative buffers that separate agricultural cropland from water resources are a last line of defense from surface water runoff and associated contaminants. These buffers should be a

minimum of thirty-three (33) feet wide and extend at least outside of any flood plain area to provide maximum protection. Buffers wider than 33 feet will provide enhanced water quality and wildlife benefits.

What actions are needed?

1. Conduct an inventory to determine and prioritize buffer area needs.
2. Increased landowner education on the use and value of buffers.
3. Voluntary and/or incentive based land retirement for riparian buffers next to ditches, rivers and streams.
4. Enforcement of buffers required on public drainage systems.

What resources may be available to accomplish the actions?

1. Iowa State University's "Stewards of Our Streams" project.
2. GIS information for identifying potential buffer sites
3. Utilize local ditch funding mechanism.
4. Watershed district and watershed funding opportunities.
5. Federal and State conservation program funding opportunities.

What area(s) of the county is high priority?

Countywide for all actions with a possible emphasis on the Impaired Waters identified in the county.

Priority Concern 4: Maintain, Enhance and Increase Wetlands within the County

Regarding this concern please answer the following:

Why is it important the plan focus on this concern (include or cite relevant data)?

Wetlands have a wide range of functions: controlling erosion, purifying water by recycling nutrients, filtering pollutants and reducing siltation; augmenting water flow; controlling floods; sustaining biodiversity and providing habitat for plants and animals; recharging groundwater, and storing carbon. Retaining water on the landscape in the watershed by wetland creation and restoration will help address the concerns of erosion control as well as water quality and quantity.

Incorporating enhancement and preservation of wetlands is identified as important in the Minnesota River Basin Plan and the Lower Minnesota Rive Dissolved Oxygen Implementation Plan. This priority concern has been addressed in other counties through the development of a comprehensive wetland protection and management plan and the adoption of county wetland ordinance that strives to replace any wetland functions and values lost as a result of wetland impacts and the Wetland Conservation Act.

What actions are needed?

1. Continue educational efforts on the function and value of wetlands.
2. Conduct a drained wetland inventory and identify high priority areas for wetland restoration and enhancement.
3. Inventory remaining wetlands, prioritize wetlands based on function and values and identify areas for preservation.
4. Determine protection level for targeted areas through local ordinance development and voluntary conservation programs.
5. Promote and market wetland preservation and restoration programs, such as RIM, WRP, CREP, WAPs and Wetland Banking Programs when available.

What resources may be available to accomplish the actions?

1. Wetland Inventory Handbook-June 1991, available thru BWSR/DNR.
2. The MN Wetland Conservation Act Rules.
3. Examples of Comprehensive Wetland Management and Protection Plans.
4. Examples of an ordinance to protect wetlands.
5. Utilize local ditch authority funding mechanism.
6. Watershed district and watershed project funding opportunities.
7. Federal and State conservation program funding opportunities.

What area(s) of the county is high priority?

Countywide for all actions with a possible emphasis of wetland restorations in the upper reaches of drainage system watersheds.

Minnesota Department of Agriculture

The Minnesota Department of Agriculture (MDA) would like to encourage the County to invite local farm and commodity groups (MN Farmers Union, MN Farm Bureau, etc.) to participate in the comprehensive local water plan process. These local groups can bring valuable experience, knowledge and partnership which can result in a plan that is supported, valued, and achievable. The MDA has a directory of these organizations entitled, *Directory of Producer Associations and Ag Organizations*, located on our website at http://www2.mda.state.mn.us/webapp/producers/default.jsp

You may also want to check MDA's Conservation Funding Guide which is a "one-stop" resource for information about agricultural and natural resource conservation practices and payments. The guide provides quick access to overviews of more than 50 soil conservation, water quality, feedlot management, wildlife habitat and other practices, with side-by-side payment comparisons. The guide will help users find practices that match their land management goals. The guide is on MDA's website at https://www.mda.state.mn.us/protecting/conservation/Conservation%20Funding%20Guide.aspx

Minnesota Pollution Control Agency

The Minnesota Pollution Control Agency (MPCA) is pleased to provide priority concerns for consideration in Sibley County's Local Water management (LWM) planning efforts. We trust these priority concerns will be helpful with developing the forthcoming Priority Concerns Scoping Document (PCSD) and LWM Plan.

Priority Concern 1. Impaired Waters/Total Maximum Daily Loads (TMDLs)
The federal Clean Water Act requires states to adopt water quality standards to protect the nation's waters. These standards define how much of a pollutant can be in a surface and /or groundwater while still allowing it to meet its designated uses, such as drinking water, fishing, swimming, irrigation or industrial purposes. Many of Minnesota's water resources do not currently meet their designated uses because of pollution problems from a combination of point and nonpoint sources.

Addressing impaired waters in LWM Plans is voluntary. However, the MPCA strongly encourages counties to consider how their LWM Plans address impaired waters, as identified on the "TMDL List of Impaired Waters in Minnesota" available on MPCA's Web site at: http://www.pca.state.mn.us/index.php/water/water-types-and-programs/minnesotas-impaaired-waters-and-tmdls/assessment-and-listing/303d-list-of-impaired-waters.html

It is suggested that the LWM Plan:

- identify the priority the County places on addressing impaired water, and how the County plans to participate in the development of total maximum daily load (TMDL) pollutant allocations and implementation of TMDLs for impaired waters;
- include a list of impaired waters, pollutants causing the impairments and types of impairment(s) (see table below);
- address the commitment of the County to submit any data it collects to MPCA for use in identifying impaired waters for a more comprehensive assessment of waters in the County; and
- describe actions and timing the County intends to take to reduce the pollutant(s) causing the impairment, including those actions that are part of an approved implementation plan for TMDLS.

Regional TMDL reports for mercury have received approval from the U. S. Environmental Protection Agency. Therefore, waters listed as impaired for a pollutant/stressor other than mercury and PCBs in the table below are recommended to be addressed in the LWM Plan.

The 2010 list of impaired waters in the County can be found at: http://www.pca.state.mn.us/index.php/water/water-types-and-programs/minnesotas-impaired-waters-andtmdls/assessment-and-listing/303d-list-of-impaired-waters.html.

Areas of the County that should be considered priority waters are the impaired water bodies and reaches of impaired water bodies on the Clean Water Act 303 [d] TMDL List. We believe the County should consider impaired waters as a top priority for discussion in the LWM Plan.

Environmental Data Access System
The water quality section of MPCA's Environmental Data Access System allows visitors to find and download data from surface water monitoring sites located throughout the state. Where available, conditions of lakes, rivers or streams that have been assessed can be viewed. We encourage the county to visit this site for water quality monitoring data which may be useful with LWM planning efforts: http://www.pca.state.mn.us/index.php/water/water-monitoring-and-reporting/water-quality--and-pollutants/environmental-data-access-water-quality-data.html

Priority Concern 2. Agricultural Drainage Management
The MPCA recognizes the importance of agricultural drainage for maintaining crop production in the County. However, agricultural drainage can have unintended consequences on the hydrology and water quality of Sibley County lakes and rivers. Public and private drainage systems provide a direct conduit for transport of pollutants such as nutrients, pesticides and herbicides to water bodies degrading their recreational, aesthetic and functional value. In addition, drainage short-circuits the landscape's water storage potential resulting in flashier river systems with higher peak flows. The higher flows result in bank and channel erosion as the streams adjust to the increased energy and force. The down cutting and widening of the channel limits stream access to the natural floodplain reducing sediment deposition and increasing sediment transport. Artificial drainage might also play a role in flooding concerns in the eastern part of the county.

Several practices can be prescribed to mitigate the effects of agricultural drainage including wetland restorations, controlled drainage structures and vegetated filter strips. The MPCA recommends that the County develop a comprehensive Drainage Management Plan (DMP) that addresses present and future drainage needs as well as methods to mitigate the unintended consequences as described above. To ensure the DMP is maintained and utilized, the MPCA recommends it be incorporated into the LWM Plan and that it include explicit language that the County drainage authority consults the plan with any petition to improve a public drainage system and consider options for mitigating increases in flow volumes. A concerted effort by local decision makers, local and state agencies and landowners will be necessary to ensure sufficient drainage for crop production while maintaining and improving the County's water quality. Financial resources for development of a comprehensive DMP could include but not limited to grants from the Clean Water Fund, Legislative Citizen Commission on Minnesota Resources (LCCMR) and Section 319 of the U. S. Clean Water Act. Technical assistance for development of the LWM Plan could be sought from the state Drainage Management and/or an advisory group of local and state agency staff, local decision makers and landowners.

High priority areas would include impaired water bodies and reaches of impaired water bodies on the Clean Water Act 303 [d] TMDL List, though any area with high resource value waters should be considered.

Priority Concern 3. Increase Coordination with other Counties in the Lower Minnesota Watershed in Preparation for the MPCA Watershed Study Scheduled to begin in 2014
The Lower Minnesota Watershed is scheduled for an MPCA led Intensive Watershed Monitoring and Assessment Process beginning in 2014. This Watershed approach will ultimately lead to a

more comprehensive list of impaired and non-impaired waters in the Lower Minnesota Watershed. This list will be used to develop TMDLs as well as restoration and protection strategies. The development of strategies will rely greatly on County participation and counties will likely be asked to provide priority areas to target restoration and protection activities. Targeted priorities will be an important step toward receiving funding for implementation activities. Communication and coordination between counties located in the Lower Minnesota Watershed will be essential to develop a comprehensive and effective implementation plan.

Recommended Actions

- Work with counties to identify and develop stakeholder groups throughout watershed and at appropriate sub-watershed scale. Develop framework and communication strategy for addressing multiple impairments in preparation of watershed TMDL approach.

- Work with MPCA staff to develop understanding of bio impairment/stressor identification work and how they relate to critical area identification.

- Utilize the Minnesota Department of Agriculture's terrain analysis tools to identify existing and potential critical areas.

- Communicate with county water planners. Possibly develop Lower Minnesota Priority Areas document.

- Communicate and coordinate across counties, agencies and organizations to define watershed goals. Find common interests and work toward them in the context of water quality goals.

Financial resources for coordination and communication between counties could include but not be limited to grants from the Clean Water Partnership Program, LCCMR and Section 319 of the U. S. Clean Water Act. Technical assistance could be sought from an advisory group of local and state agency staff, local decision makers and landowners.

High priority areas of the County are the Lower Minnesota Watershed.

Priority Concern 4. Update LWM Plan with Data and Recommendations from Recent Studies and Projects in the County.

Several studies and projects have been completed in Sibley County since the last LWM Plan. These include, but are not limited to diagnostic and implementation projects on the Rush River and High Island Creek watersheds, a fecal coliform TMDL study for the Rush River and High Island Creek and the Rush River Hydrologic Study. A great deal of information has been collected over the course of these projects including priority sub-watersheds and best management practices with the best chance for successful implementation. The value of the information could be maximized if it is incorporated in the LWM plan.

We recommend reviewing projects completed in Sibley County within the last decade and update LWM Plan priorities accordingly.

Resources available to help with these actions include final reports for the diagnostic and implementation projects, the TMDL study and the Rush River Hydrologic Study. These reports detail recommendations for implementation practices.

High priority areas include the Rush River and High Island Creek watersheds which have been studied extensively since the last LWM Plan. Therefore, these watersheds have the most new information to incorporate into the LWM Plan.

Minnesota Department of Natural Resources

Southern Region
Proposed Local Water Planning Priority Issues
Minnesota, Des Moines, Missouri, Crow, and Mississippi River Watersheds

The **Minnesota, Des Moines and Missouri Watersheds** share some common problems and therefore have similar issues. Water resources are inter-related, to each other and to the watersheds from which they flow. While the condition and quality of our water resources is found within lakes, streams and rivers and groundwater, it is how we manage land, not only the riparian regions and lakeshores, but also upland areas in communities and rural areas, that determines the quality of our water.

MINNESOTA RIVER WATERSHED

The **Minnesota River** stretches 335 miles from the western border to its confluence with the Mississippi River. It drains 16, 770 square mile area and includes parts of 37 counties. It flows through some of the richest agricultural land in Minnesota. Approximately 92 percent of land within the watershed is agricultural.

The condition of the Minnesota River reflects the ways that the largely agricultural production land which surrounds the river has been managed. Programs and policies supportive of drainage of wetlands, farming of marginal areas, removal of buffers, and construction of dams and levees has impacted the Minnesota River for many years.

Minnesota River Watershed Priority Issues:

Holding Water on the Landscape—Hydrograph Restoration

Improved water quality in the Minnesota River requires a change in thinking about water. Rather than viewing water as a liability that must be sent off the land and downstream as quickly as possible, it must be regarded as a valuable resource and retained. This is true in both urban and rural areas.

The best way to manage water on the land is through wetland restoration. Drainage has changed the hydrology of the watershed. More than 90% of the original wetlands in the Minnesota River watershed have been drained or filled. Restoration of wetlands and changes in land use practices and drainage policies can work in concert to provide a way of keeping the water in place, reducing peak run off events, recharging groundwater aquifers, slowing the movement of surface water, trapping nutrients and sediment and providing habitat. Incorporation of road retention structures, including downsizing bridges and culverts; rock inlets; and restoration of small ponds and dams can also help to stabilize the hydrograph and mitigate drainage impacts.

Promotion of retention structures and conservation of water precipitated from the atmosphere in the area where it falls as much as practicable provide additional stability to the hydrograph. Construction of water retarding structures that are not barriers to fish movement, wetland and drained lakebed restorations, reclamation of natural flood plains contribute to this goal.

Creation of Buffers on Ditches, Streams and Rivers

Artificial drainage systems provide a network for moving water across the Minnesota River landscape. These systems, in addition to the many natural streams and tributaries that flow across the watershed, are capable of carrying not only a vast amount of water but also pollutants great distances and at faster rates than would have occurred in natural conditions. Rainwater and snow melt moving through the system increase potential for bank erosion and flooding. Water quality is degraded and impacts to plants and animals may occur.

The settling and cultivation of the land within the Minnesota River watershed has resulted in a significant amount of habitat being lost. Many of the green corridors that served as pathways for the movement of species of plants and wildlife have been lost as well. The riparian corridors that remain contain trees and native vegetation that help to stabilize stream banks and shade water, regulating light and temperature. Riparian areas also capture and retain surface water runoff from upland areas, holding back some of the nutrients and soils that might otherwise flow into the Minnesota River.

Natural vegetation planted along ditches at sufficient widths, from 33-66 feet; contribute to effective reduction of non-point source pollution. Un-mowed vegetation in erodible and sloped areas and drainage-ways help filter sheet-flow runoff of water-borne fertilizers and pesticides before they can enter surface or groundwater. The Conservation Reserve Program and the Conservation Reserve Enhancement Program both encourage and help farmers to plant natural vegetation on environmentally sensitive cropland. "Farm the Best, Buffer the Rest" has been a campaign slogan associated with the very successful Minnesota River CREP Program.

Fish Passage

The amount of river and stream fish habitat, and the viability and productivity of fisheries are impacted by the construction of fish barriers. While fish barriers are sometimes intentionally created to restrict re-introduction of exotic species, in many other cases, the construction of dams and culverts has restricted or prevented natural migration and fish movement. Elimination of unintentional fish barriers within the Minnesota River watershed can increase species diversity and habitat by restoring fish access to larger portions of their natural range.

Fish need to be able to move to various habitats at various stages in their life cycle. Fish species migrate up and down stream. An unobstructed path along the river is important to fish and other organisms. Dams can trap fish keeping them away from the habitat they require. Naturally occurring obstacles in streams and rivers may on the other hand provide excellent habitat for fish. Removal of downed trees and snags may be counterproductive to many different fish and aquatic organisms.

Stabilizing flows through the use of dams may result in conditions favorable to exotic species and elimination of native fish species or native fish that area less resilient. Impounding and/or altering hydrology may also result in a change in species composition.

River and Stream Channel Restoration

Healthy rivers have distinct shapes and patterns. They have bends and curves and they range from deep pools to shallow riffles. These variations provide diverse habitats. Straightening channels limits species that can live there.

Flow restoration of rivers and streams done in an environmentally friendly manner is important to relieve flooding pressure on upstream lands. This should be done as part of a comprehensive approach to flood damage reduction, which also emphasizes storage of water on the land. Instead of straightening streams and ditches, natural systems can be left to meander and straightened streams can be returned to more natural restored conditions.

Opportunities for recreational use of water resources may be lost through development decisions that change the path of rivers and streams. Construction of dams and barriers which alter the course of streams and rivers may alter the habitat value and access to natural systems. Restoration provides recreationists with many new fishing sites, birding, hunting and viewing areas.

Agricultural Best Management Practices

What takes place on the land affects the water. In natural systems, pollution from vegetation decay, soil erosion, and animal wastes is small enough that it can be absorbed into the landscape and water is not harmed. When many people change the land to meet their needs, the natural systems can no longer function well. Agricultural activities and urban runoff have become major non-point source contributors to pollution within rivers and streams. Land use practices and application of chemicals contribute directly to the degradation of water resources.

Best Management Practices (BMPs) can help reduce these pollution problems and preserve water quality. Filter strips and erosion control measures are commonly implemented practices that reduce impacts. Other practices that are frequently employed in agricultural areas are: excluding livestock from streams, rivers and lakes; using conservation tillage practices and erosion control techniques; limiting fertilizer and pesticide use; and managing animal feedlots correctly. There are many State and Federal programs that assist landowners in protecting water resources