# Mille Lacs County Local Water Management Plan

November, 2018 – October, 2027

MILLE LACS COUNTY EST. 1857

# Contents

# Executive Summary

## Purpose

The purpose of the Mille Lacs County Water Plan is to outline a plan for the utilization of sound hydrologic management principles to address water resource concerns on a watershed unit and groundwater system context throughout Mille Lacs County.

## Priority Concerns

Priority concerns, as defined in Minnesota Statute § 103B.305, refers to the issues, resources, sub watersheds, or demographic areas identified as a priority by a water planning authority. The concerns identified for this plan update as priorities within Mille Lacs County include:

1. Cumulative negative impacts of improper land management and continued development within the Rum River watershed.
2. Impaired or degraded waters in the Upper Rum River and West Branch of the Rum River intermediate watersheds.
3. Adverse impacts to water quality, infiltration, and flow, caused by land use conversion or development.
4. Adverse impacts of detrimental surface and sub-surface water management practices on existing and future development.
5. Lack of information and understanding regarding the quality and quantity of groundwater, and the resultant impact on land management decisions.

## Goals & Actions

The water planning process identified several goals and actions for implementation to address the five priority concerns. These goals, and the projected cost of implementing the associated actions, are summarized below:

| GOAL | COST |
|---|---|
| Goal 1: Protect clean, healthy, wetlands, lakes, and streams. | $1,364,000 |
| Goal 2. Manage the impact of existing land use practices, land use conversion, and/or land development to protect and restore surface water quality within the Rum River. | $2,588,000 |
| Goal 3: Reduce or prevent flooding on existing and planned public and private infrastructure and production lands. | $3,608,000 |
| Goal 4: Restore streams that are not meeting Minnesota clean water standards. | $4,166,000 |
| Goal 5: Increase local information about quality and quantity of groundwater. | $2,362,000 |
| Goal 6: Plan for local resiliency to withstand and respond to changing climate conditions. | $3,026,000 |
| Goal 7: Organize active citizens to address water resource issues. | $108,000 |
| **TOTAL:** | $17,222,000 |

Figure 1: Goal Summary Table

### Consistency with Other Plans

A summary and analysis of these local plans and controls was completed in the priority concern identification process. Subsequent review of the goals and objectives in these plans reveals some commonalities. These plans and controls call for appropriate and sustainable development in light of existing aquatic resources, including groundwater, surface water, stormwater, and floodplains. In particular, these plans stress the importance of protecting the Rum River corridor, and enhancing sustainable recreational use of the area.

The goals and objectives identified in this document are largely consistent with, and will address, a number of the concerns articulated by other local plans and controls.

## Assessment of Priority Concerns

The priority concerns that follow have been developed through execution of an extensive public input process, documented in the Mille Lacs County Priority Concerns Scoping Document. This document has been included as an appendix of this plan.

### Priority Concern 1 & 3

Cumulative negative impacts of improper land management and continued development within the Rum River watershed.

Adverse impacts to water quality, infiltration, and flow, caused by land use conversion or development.

#### Analysis

Conversion of land currently covered by perennial vegetation (such as pasture and forest), into residential, commercial or intensively-tilled agriculture land use patterns, has the ability to detrimentally impact both water quality and quantity. While regulations have been established to limit some land use conversion, such as impervious surface limitations in sensitive shoreland areas, there are few regulations to limit other types of land use conversion, such as forest conversion. With expansive forests and continued development pressure in shoreland areas it is anticipated that Mille Lacs County may experience considerable land use conversion over the span of this plan.

##### *Forestland Conversion*

One area of concern is the conversion of forestland, through forestry, agriculture, or other intensive land use patterns that would necessitate significant loss of forest land cover. Forests provide many water quality benefits, such as soil stabilization, capture and infiltration, and maintenance of water temperature. Mature trees can filter and release anywhere from 250 to 400 gallons of water per day back into the atmosphere, while intercepting approximately 1,000 gallons of water per year. Forests also hold vast quantities of drinking water; more than one-half of the drinking water in the United States originates in forests. Furthermore, healthy forests contribute to a reduction in the intensity and frequency of flood events, an increasingly prevalent threat with changing precipitation patterns.

With the multitude of benefits provided by forests it is readily apparent that the correlation between forested areas of Mille Lacs County and water quality is no coincidence. Therefore, it is safe to assume that land use conversions eliminating expansive areas of forest cover will have both a local and downstream negative effect on water quality and quantity. This is of utmost importance for residents, both within and outside of Mille Lacs County; the U.S. Forest Service estimates that more than 60,000

consumers depend on drinking water from surface waters in the Rum River watershed. In fact, the Rum River watershed was the second-highest ranked watershed in Minnesota for forest protection efforts, as a result of both development pressure and importance for drinking water supply, according to the United States Forest Service.

While land conversion is a primary issue of concern, the continued advancement of Emerald Ash Borer (EAB), along with other tree pests such as pine beetles, is an increasing concern. While the closest infestation area identified by the Minnesota Department of Agriculture is currently in the Twin Cities metro, transportation of firewood presents a pathway for continued infestation. While EAB is not yet identified within the planning area, the assessment of EAB readiness and the promotion of plant diversity is essential.

Furthermore, the continued advancement of invasive species such as buckthorn is another issue of concern as it relates to forested lands in Mille Lacs County. These species out-compete native plants, degrade habitat, and threatens the future of forests and other natural habitats. These species lack natural controls that curb their growth, and therefore spread rapidly without control. The control of these species is important to protect for the future of forest lands, and retain the variety of plant species that make for a healthy forest.

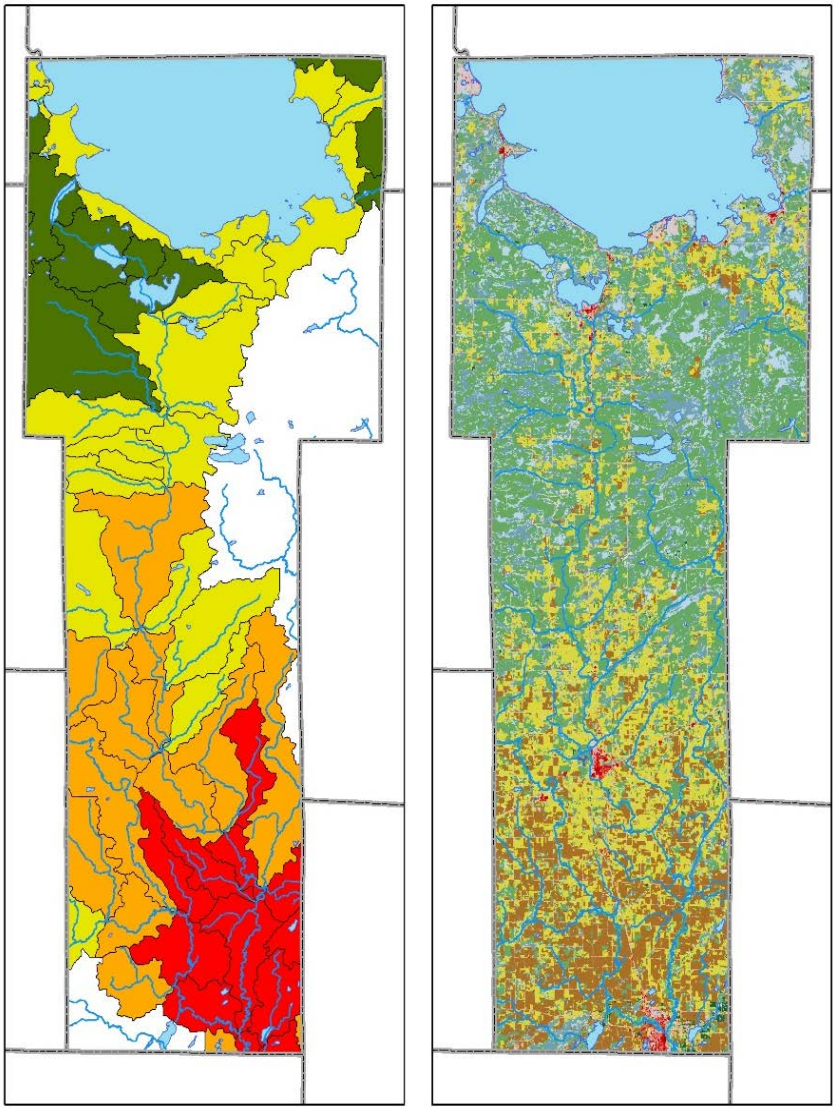


Figure 1: Correlation between Forestation and Water Quality

### *Subsurface Sewage Treatment Systems*

A second area of concern is the siting and operation of subsurface sewage treatment systems (SSTS). STSS are prevalent in Mille Lacs County, a necessity in a community with a high volume of rural development, and can be operated in a manner which presents little to no negative impact upon water quality. However, both poor design and poor management can result in systems that fail to protect water resources.

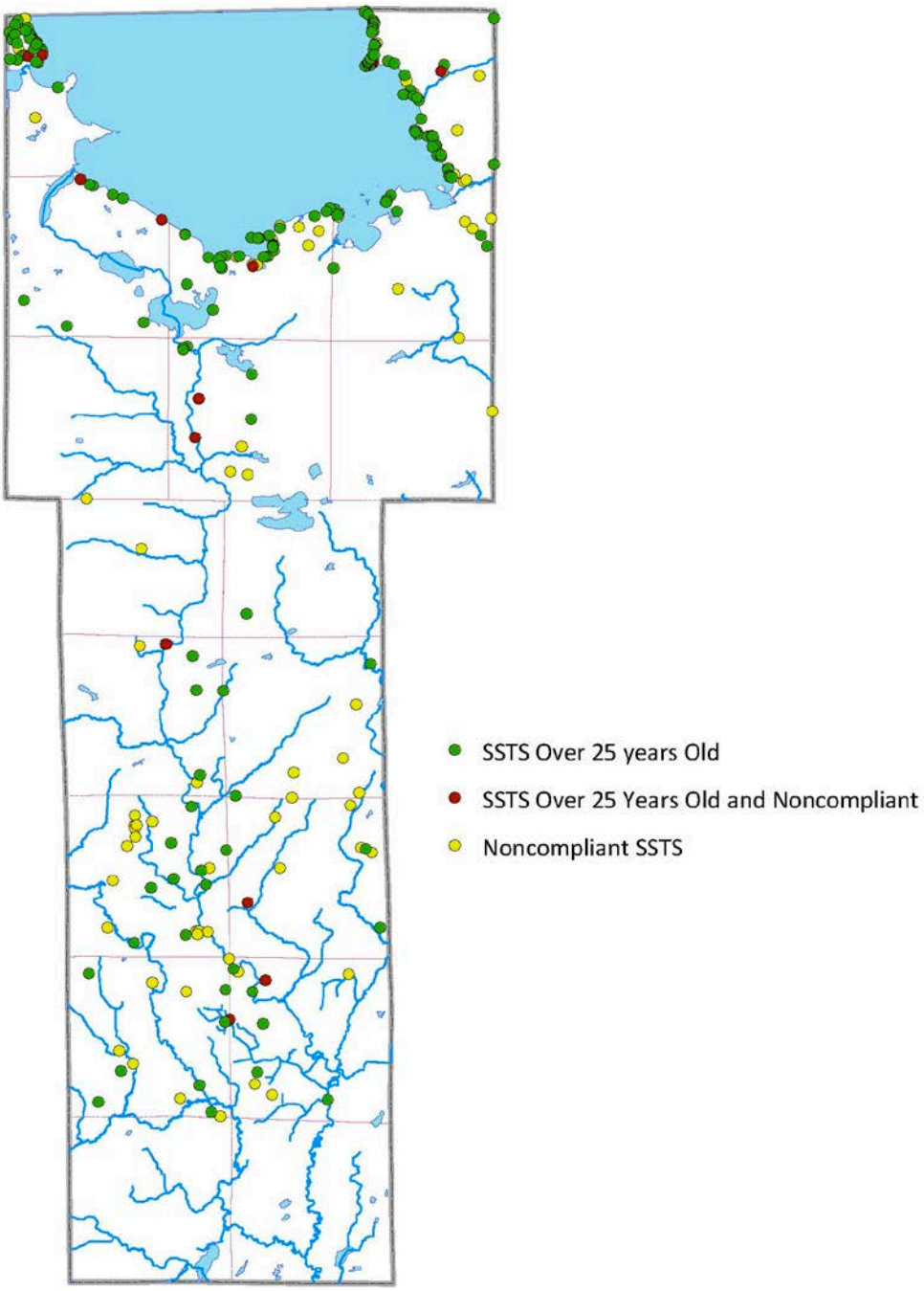



Figure 2: Noncompliant and Aging SSTS

Improperly functioning or failing SSTS can contribute to the contamination of both ground and surface water. Wastewater entering these waterbodies without proper treatment can contain a variety of contaminants, including nitrates, bacteria, and viruses. Evidence has shown a direct correlation between the number of failing SSTS and the prevalence of impaired waters, specifically, waters impaired by the presence of fecal coliform.

| Total SSTS[1]: | 4083 | |
|---|---|---|
| SSTS Within Shoreland: | 1299 | 31.81% |
| SSTS Within NWI Wetlands: | 55 | 1.35% |
| SSTS Within Flood Zone A or AE: | 239 | 5.85% |
| SSTS Over 25 Years Old: | 180 | 4.41% |
| SSTS With Post-Construction Compliance Inspections: | 1356 | 33.21% |
| Noncompliant SSTS: | 96 | 2.35% |

1. Excludes Greenbush and Princeton Townships.

Figure 3: SSTS Inventory Results

### *Feedlots and Manure Management*

Similar risks are present with feedlots and livestock operations of all sizes that do not have adequate methods for the treatment and dispersal of manure. Many feedlots in operation continue to utilize old technology, such as unlined manure storage pits, that have been shown to present a great risk of groundwater contamination. Furthermore, outdoor lots and other animal operations without proper manure management infrastructure and practices, have been identified as points for surface runoff of manure, which can affect nearby surface waters and wetlands.

The location of livestock operations within Mille Lacs County, which exhibits a higher density of feedlots in the six southern-most townships, correlates with the location of identified surface water quality impairments. The Rum River Watershed Restoration and Protection Strategies document, which lists these impairments, does identify livestock as a potential contributing factor for the impairment of some streams. However, additional testing is necessary to conclusively determine the source of the impairments. Regardless, the potential for water quality impacts from feedlots is noteworthy, and worth addressing. Furthermore, the implementation of low-cost best management practices such as the adoption of managed grazing, the limitation of stream access, and the utilization of confined and stabilized crossings, can provide for operational needs while keeping water clean.

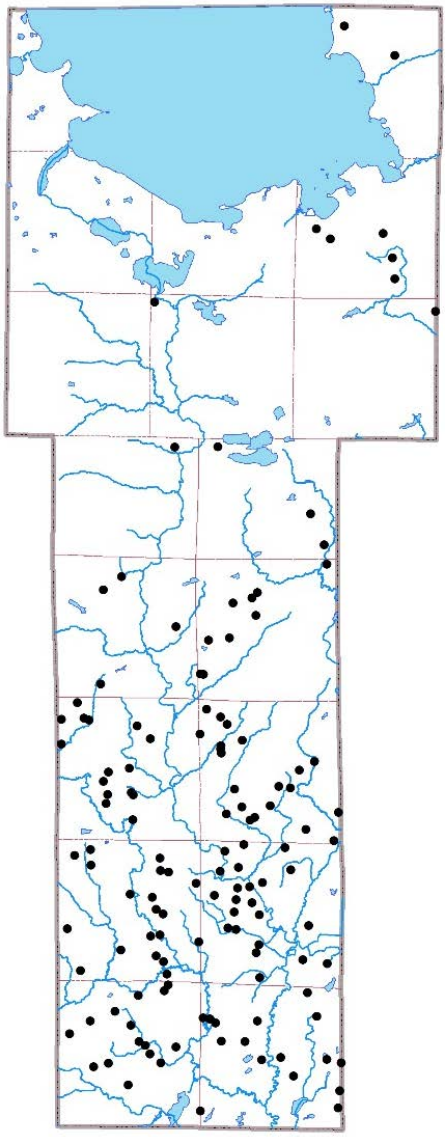


Figure 4: Feedlots

### *Shoreland Development*

A third area of concern is continued development pressure in shoreland and riparian areas, on both Mille Lacs Lake and the Rum River. A shift has taken place in the development pattern for these areas, from small weekend getaways to permanent residences. This shift has resulted in two outcomes of note, the development of previously undesirable lots (those that are under-sized, partially inundated by areas of seasonal saturation, etc.), and redevelopment of existing structures. In the former, desire to utilize conventional development procedures on these sub-standard lots has resulted in an increasing impact to sensitive natural features. In the latter, desire to expand has led to increasing amounts of impervious surface coverage, which has been shown to increase water temperatures and flood risk, and decrease infiltration and water quality.

A related concern in riparian areas (those situated adjacent to bodies of water) is the lack of natural vegetative buffers. Conservation buffers have a multitude of benefits, including slowing runoff, trapping sediment, and enhancing filtration. Properly installed (adequately sized and vegetated accordingly) and designed buffers have the capacity to remove up to 50% of the nutrients and pesticides entering our waters, and more than 75% of sediment. These buffers also provide a wildlife habitat benefit, for both aquatic and terrestrial wildlife.

While recent buffer legislation has established minimal requirements for buffers along both public waters and public ditch systems, many waterbodies

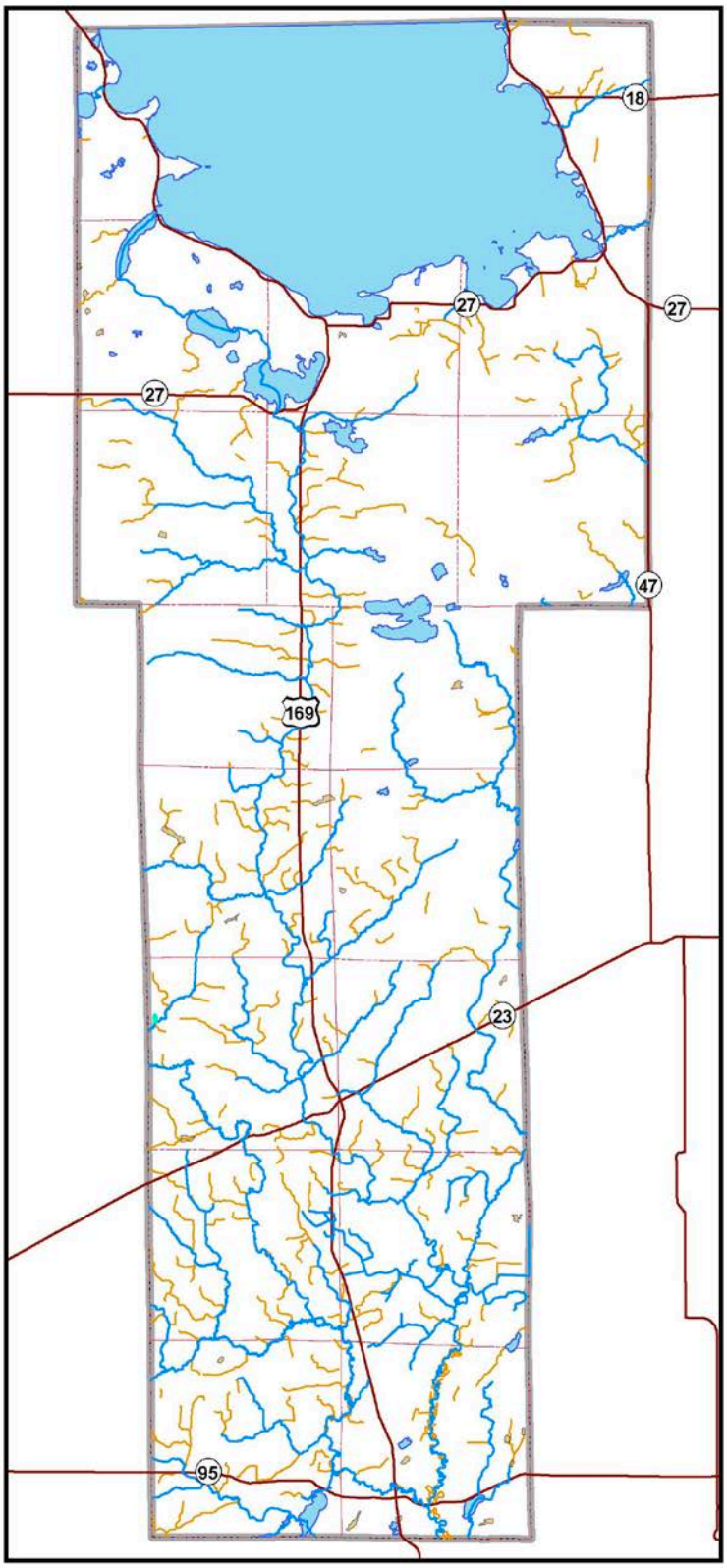



Figure 5: Other Waters

that have potential to provide water quality benefits remain without buffers. There are additional waterbodies that are not required to have buffers, which would show improvement if buffers were installed.

Furthermore, the buffer requirements established by recent legislation are minimal standards for achieving buffer benefits, particularly the one rod buffers established on county (public) ditch systems. Water quality can be improved by expansion of buffers. Studies show that a larger buffer, up to 150 feet, provide a return on investment in the form of clean water as it relates to capturing sediment. In a similar fashion, a buffer up to 125 feet will continue to provide a return on investment for the removal of phosphorous and nitrogen. However, University of Minnesota research suggests that the most effective buffer is 1,000 feet. While it is unlikely regulation will be used to require buffers of this size, voluntary initiative by local landowners to install and maintain larger buffers, or implement alternative practices, will continue to provide sizeable water quality benefits.

## Priority Concern 2

Impaired or degraded waters in the Upper Rum River and West Branch of the Rum River intermediate watersheds.

### Analysis

The MPCA initiated the Rum River watershed assessment process in 2013, embarking on a comprehensive assessment of biology and chemistry to provide a comprehensive watershed health assessment. This assessment process culminated in a Watershed Restoration and Protection Strategy Report, known simply as a WRAPS. This report identified multiple impaired waters, including Bogus Brook, Cedar Creek, Estes Brook, Malone Creek, West Branch Rum River, Tibbetts Brook, Vondell Brook, and Washburn Brook.

| | Water Chemistry | | | | | |
|---|---|---|---|---|---|---|
| | Dissolved Oxygen | Elevated Nutrients | Total Suspended Solids | Deposited Sediment | Lack of Physical Habitat | Altered Hydrology |
| Bogus Brook | N | Y | N | N | N | N |
| Cedar Creek | Y | N | N | N | N | N |
| Estes Brook | N | Y | N | N | N | Y |
| Malone Creek | Y | N | N | N | N | N |
| West Branch Rum River | N | Y | N | N | N | Y |
| Tibbetts Brook | N | N | N | N | Y | Y |
| Vondell Brook | N | Y | N | N | Y | Y |
| Washburn Brook | N | N | N | N | Y | Y |

Figure 6: Impairment Table

The nature of these impairments varies. Flow alteration, such as stream channelization, wetland drainage, and agricultural tile drainage, is an identified stressor effecting Estes brook, Tibbetts brook, West Branch Rum River, Vondell Brook (County Ditch 11), and Washburn Brook (Judicial Ditch 3). These changes in landscape vegetation and drainage can increase how fast rainfall runoff reaches stream channels, creating a stronger pulse of flow, followed later by decreased base flow levels.

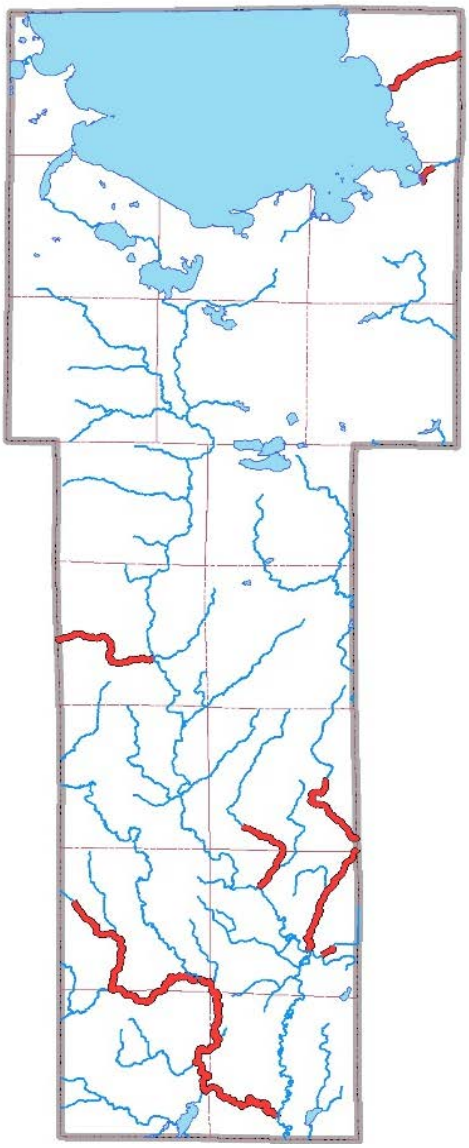


Figure 7: Surface Water Impairments

Elevated phosphorus is causing problems in the West branch Rum River, Estes Brook, and Vondell Brook. Aquatic life in Tibbetts, Vondell, and Washburn Brooks, are suffering from lack of physical habitat. Changes in land use, such as the partial or complete channelization of the water body, can alter natural streambed structure, vegetative growth and streambank stability.

Trend data from 1953 through 2010 was analyzed through this assessment process, and identified multiple trends of note. The total suspended solids, TP, ammonia, and biological oxygen demand decreased (improved) over this period. It is assumed that these decreases were likely due to the upgrade of wastewater treatment facilities. However, there were significant increases to nitrates/nitrites and chloride, likely as a result of road salt runoff.

The WRAPS, Stressor Identification Report, and TMDL Report include likely candidates that may be contributing to these impairments.

## Priority Concern 4

Adverse impacts of detrimental surface and sub-surface water management practices on existing and future development.

### Analysis

The management of surface and sub-surface water is an important consideration for land development and land management. Surface and sub-surface water management practices commonly include drainage networks such as open-water and sub-surface (i.e. drain tile) agricultural drainage systems and urban stormwater systems. The implementation of these, and other similar practices, can result in the loss of natural surface storage areas, such as wetlands and floodplains. While some environmental regulations aim to prohibit or restrict actions that would otherwise have a detrimental effect on development, there is little to coerce individuals or organizations to utilize best management practices that would provide for effective or efficient water management. Furthermore, there are typically restrictions, financial or otherwise, that would prohibit one from doing so.

As a result, these existing water management practices have been found to take a toll on existing development, and prohibit development on lands that were once considered developable. The effects may be the result of the practice alone, but also appear to be amplified as a result of the increased occurrence of severe weather events, particularly increased precipitation over shorter time periods.

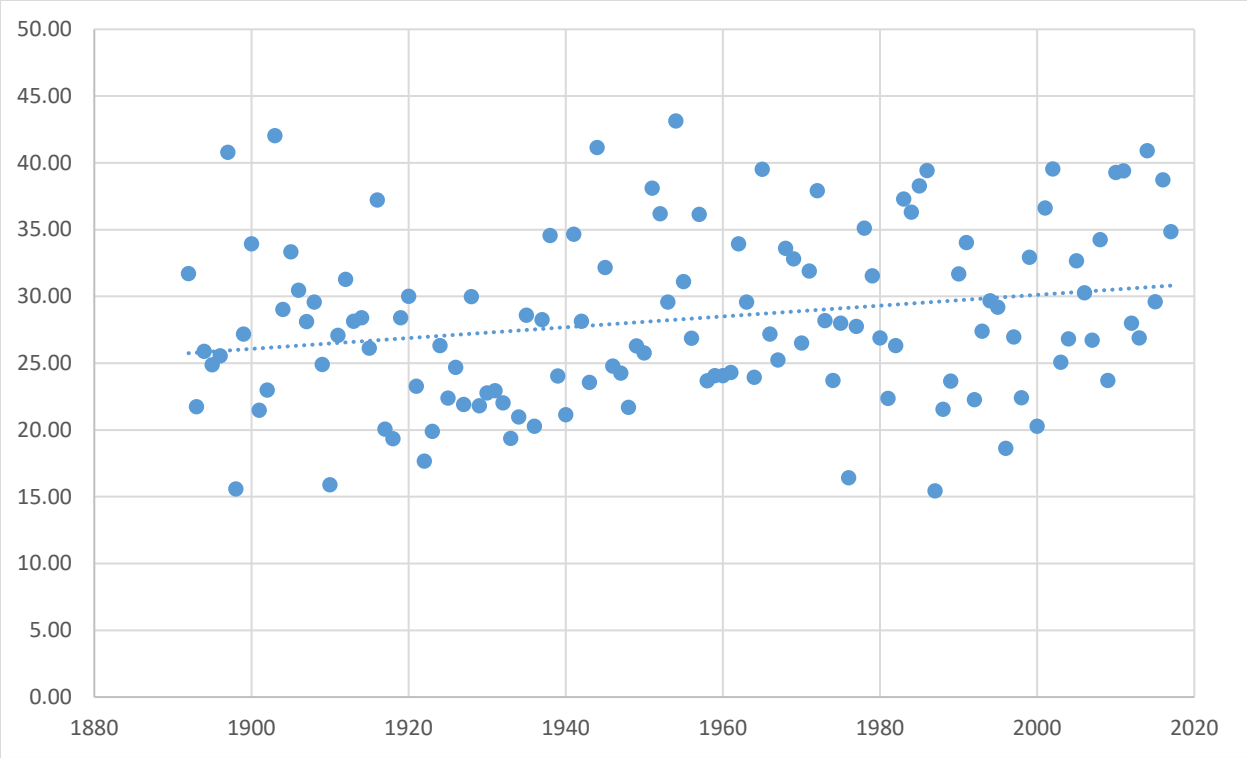



Figure 6: Mille Lacs County Average Annual Precipitation (Minnesota Climatology Office)

The increasing precipitation has a compounding effect when coupled with surface and sub-surface drainage, which have been shown to increase peak stream flows. Receiving streams are sensitive to peak discharge, and discharge duration. This leads to an increase in flooding potential and elements of channel degradation, such as streambank erosion, limiting natural stream channel activity.

The adverse impacts of detrimental surface and sub-surface water management practices on existing and future development has in turn jeopardized residences, agricultural operations, land values, and water quality; important considerations for the citizens of Mille Lacs County. These issues are typically associated with excess water. The details vary based on local geography, but accumulation of excess water in locations without outlets or expedited flow beyond that which natural or man-made systems are able to accommodate are common.

## Priority Concern 5

Lack of information and understanding regarding the quality and quantity of groundwater, and the resulting impact on land management decisions.

### Analysis

Groundwater is one of the most precious resources in Mille Lacs County. While surface water is prevalent, being present in wetlands, streams, and other waterbodies county-wide, adequate groundwater resources are sometimes difficult to obtain. This is an issue of concern as groundwater provides drinking water to all Mille Lacs County residents, and provides support for agricultural operations in the southern part of the county. Groundwater has also become an increasingly important consideration for the location of commercial and industrial development. However, information and

understanding regarding groundwater is not available at a level which would support inclusion in the execution of land use decisions.

While detailed information is unavailable, there is some information available that illustrates the magnitude of the concern. The importance of groundwater is evidenced by the wide-ranging regulation of activities with the potential to impact groundwater resources. The Minnesota Department of Natural Resources regulates availability and ecological impacts. The Minnesota Department of Agriculture regulates agricultural pesticide and fertilizer contamination. The Minnesota Pollution Control Agency regulated industrial contamination, and the Minnesota Department of Health regulates the drinking water supply.

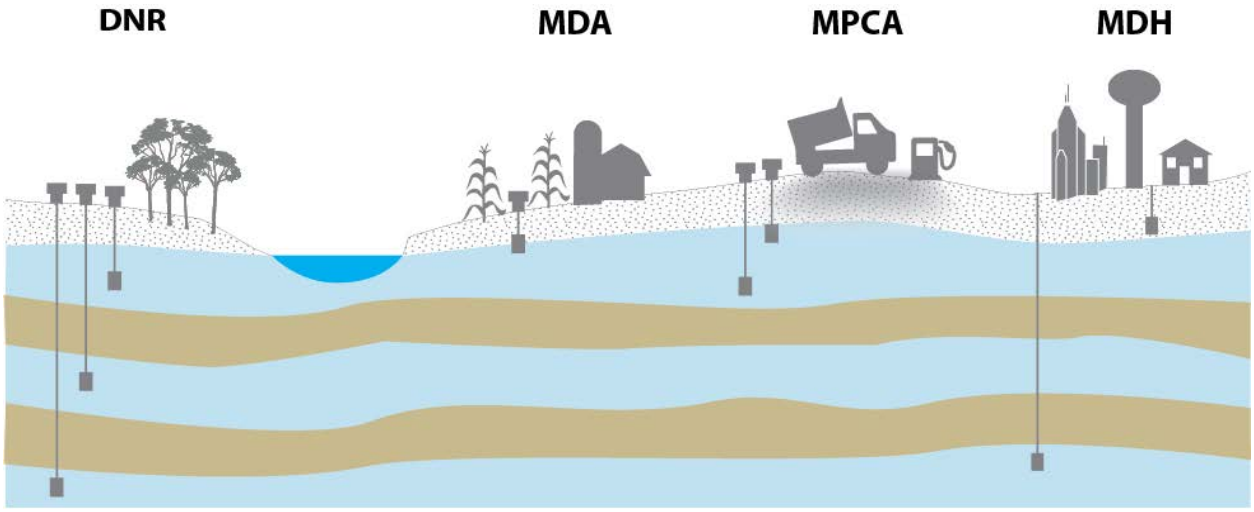



Figure 7: Groundwater Regulation (*www.dnr.state.mn.us/waters/groundwater_section/index.html*)

While it is clear that groundwater is an important resource, local information on the availability of groundwater or the susceptibility of groundwater to pollutants in Mille Lacs County is lacking; however, basic information of statewide geology provides some insight. The occurrence of groundwater is related to underlying geologic conditions that dictate the properties of available aquifers. In order to gain a more thorough understanding of groundwater aquifers, the state of Minnesota has been mapped in six groundwater provinces that generally indicate the location and availability of groundwater.

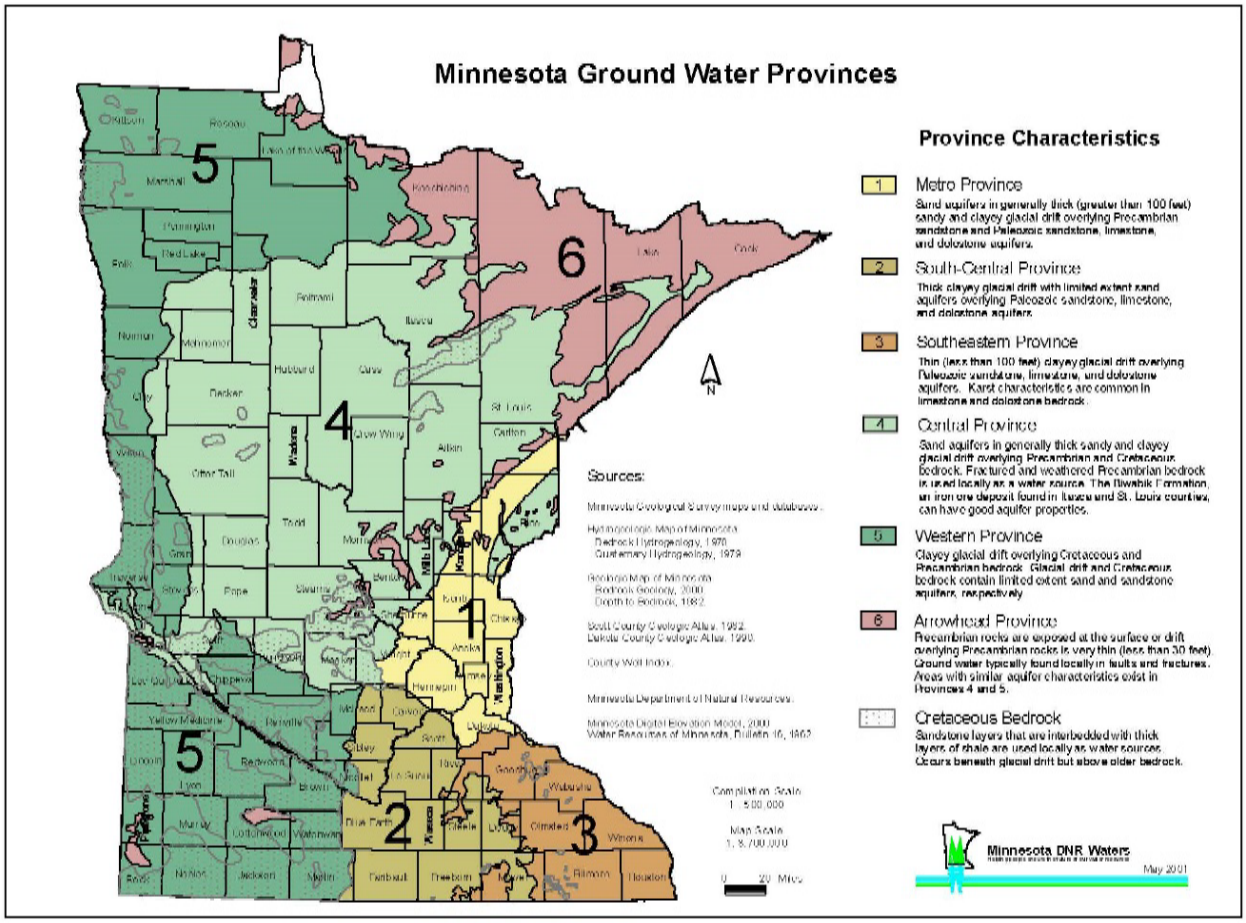



Figure 8: Groundwater Provinces (Minnesota Department of Natural Resources)

Mille Lacs County has been mapped in Provinces 1 and 4, which are characterized by buried sand aquifers and extensive surficial sand plains. Province 1 is underlain by sedimentary bedrock that has good aquifer properties, but in Province 4 the glacial sediments are thick, sand and gravel aquifers are common, and the deeper fractured bedrock is rarely used as an aquifer. However, in some areas within Province 4, the lack of this sand aquifer necessitates the utilization of the bedrock aquifer, which rarely provides adequate quantities.

The nature of sand aquifers in Provinces 1 and 4 makes them both susceptible to contamination, and while contamination has been documented in both, the extent and severity of any existing contamination is not well known. Contaminants of concern typically include nitrate, which is a documented concern throughout much of the state.

Locally, nitrate has been identified as a concern in these sand aquifers, particularly the sometimes-shallow aquifers of Province 4. This is evidenced by the presence of elevated nitrate levels in drinking water wells across Mille Lacs County.

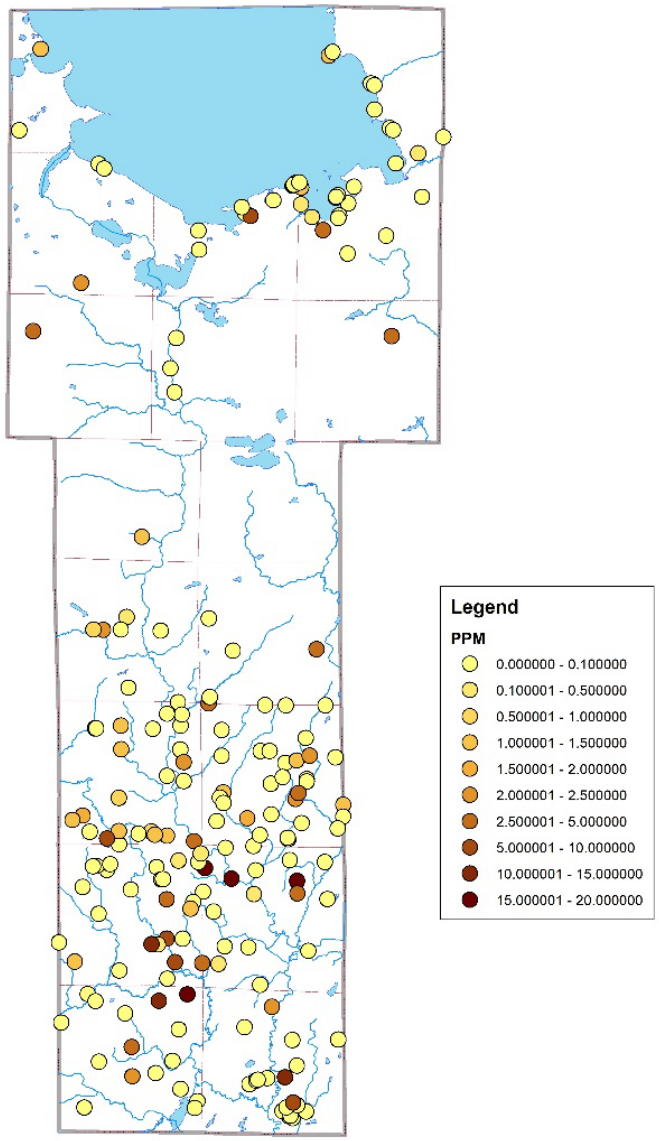



Figure 9: Mille Lacs Soil & Water Conservation District Nitrate Sampling Results

While this information is useful, the state-wide nature of the currently-available geology and hydrogeology information makes it difficult to parse data at a level needed to support local land use decisions. Land use decision-makers need maps, databases, and other information at a local scale to incorporate groundwater concerns into local land use decisions, as well as environmental planning and protection efforts. The utilization of such information by similar local government units, and the continued pursuit of this information state-wide, evidences the utility and importance of groundwater data.

# Goals & Objectives

The measurable goals and objectives below have been identified in an attempt to address the five priority concerns.

## Surface Water Quality

Priority concerns one (1), three (3), and four (4) involve issues of surface water quality. The first concern, cumulative negative impacts of improper land management and continued development within the Rum River watershed, is directly correlated to water quality in the sense that improper land management and continued development both have the potential to negatively impact surface water quality. In part, due to lack of treatment (i.e. untreated water entering surface waters) and the potential for increasing runoff (e.g. the loss of treatment areas and increasing impervious surfaces). The third concern, adverse impacts to water quality, infiltration, and flow, caused by land use conversion or development, directly conveys the concerns presented by residents relating to decreasing surface water quality.

Goal 1. Protect clean, healthy, wetlands, lakes and streams.

Objective A: Identify waters most susceptible to land use change and/or development impacts.

Objective B: Identify and implement tools, programs, and opportunities to enable and incentivize citizens to protect privately-owned and managed land.

Objective C: Protect, and continue to improve, the water quality of Mille Lacs Lake.

Goal 2. Manage the impact of existing land use practices, land use conversion, and/or land development to protect and restore surface water quality.

Objective A: Reduce sediment and pollutants reaching receiving waters.

Objective B: Manage the impacts of forestland conversion on water quality.

Objective C: Reduce sedimentation and pollutant loading to surface waters through stormwater management planning and effective best management practices.

## Surface Water Quantity

Priority concerns one (1), three (3), and four (4) all involve issues of surface water quantity, in particular, detrimental effect that increasing quantities of surface water has on communities and landscapes that are not equipped to handle these flows. The first concern, cumulative negative impacts of improper land management and continued development within the Rum River watershed, is directly correlated to water quantity in the sense that improper land management and continued development both have the potential to increase runoff entering surface waters. The third concern, adverse impacts to water quality, infiltration, and flow, caused by land use conversion or development, illustrates the concerns voiced by residents regarding the diminished ability of natural landscape features to buffer surface waters from the effects of extreme precipitation events. The fourth concern, adverse impacts of detrimental surface and sub-surface water management practices on existing and future development, specifically identifies both the lack of surface and sub-surface water management practices to handle increasing quantities of surface water, and the role that surface and sub-surface water management practices plays in adding to increasing quantities.

Goal 3. Reduce or prevent flooding on existing and planned public and private infrastructure and production lands.

Objective A: Assess and evaluate public and private infrastructure to determine current flood resiliency.

Objective B: Increase flood resiliency.

Objective C: Manage public and private drainage infrastructure for multiple benefits, including the provision of adequate capacity, reduction of downstream peak flows and flooding, and protection or improvement of water quality and wildlife habitat.

Objective D: Further the protection and management of public and private forestland.

### Impaired Waters

There are lakes and streams within the Rum River watershed that are considered impaired because they do not meet the requirements for their designated uses (e.g. swimmable, drinkable, fishable, and consumable). Priority concerns one (1) and two (2) represent the concerns that correlate with this issue. The first concern, cumulative negative impacts of improper land management and continued development within the Rum River watershed, deals with the role of land management and development in exacerbating this issue. The second priority concern, impaired or degraded waters in the Upper Rum River and West Branch of the Rum River intermediate watersheds, is a direct result of findings presented on these impaired waters.

Goal 4. Restore streams that are not meeting Minnesota clean water standards.

Objective A: Restore streams with biological impairments to meet state standards.

Objective B: Restore streams (Bogus Brook, Estes Brook, and the West Branch of the Rum River) with bacteria impairments to meet state standards.

Objective C: Halt the trend of increasing of nitrite/nitrate and chloride levels in the Rum River.

Objective D: Implement strategic stream sampling to answer questions about the sources of pollutants on impaired streams identified in the Rum River Watershed Restoration and Protection Strategies document.

Objective E: Make data available to citizens in easy to understand formats.

### Groundwater

Groundwater is an important resource, with a wide range of individuals impacted by issues such as groundwater quality (primarily for drinking water use) and groundwater quantity (involving the long-term recharge of groundwater aquifers and the provision of consistent volumes and quantities). The importance of this issue was not lost on those involved with development of the priority concerns, who identified the lack of information and understanding regarding the quality and quantity of groundwater, and the resulting impact on land management decisions as the fifth (5) priority concern. Furthermore, the development focus of priority concern one (1) has an inherent groundwater component, as development relies on groundwater, and development can limit or negatively impact groundwater recharge.

Goal 5. Increase local information about quality and quantity of groundwater.

Objective A: Complete a geologic atlas for Mille Lacs County.

Objective B: Assess groundwater quality.

Objective C: Plan for the availability of clean groundwater for residential, agricultural and commercial use.

Objective D: Reduce groundwater pollutant loading through stormwater management planning and effective best management practices.

### Amplified Weather Events

Minnesota's climate is changing rapidly and has been hypothesized to continue doing so in the foreseeable future. Temperatures are increasing, especially at night and in the winter, and larger, more frequent extreme precipitation events are occurring. As a result, Minnesota's wildlife, plants, waters, historic resources, infrastructure, and available outdoor recreation activities are being impacted by the resulting amplification of extreme weather events, and the increasing frequency thereof.

The third (3) and fourth (4) priority concerns address a range of development and land management decisions that have a negative effect on the landscape's ability to mitigate and manage these amplified events. The fifth priority concern correlates with another type of amplified weather event (i.e drought), which has yet to be experienced locally, but is a weather event of concern with groundwater implications.

Goal 6. Plan for local resiliency to withstand and respond to changing conditions.

Objective A: Determine the scope of change observed locally

Objective B: Implement, and incentivize landowners to implement, practices to further adaptation to the changing conditions.

### Outreach & Civic Engagement

An item of great importance, that spans the spectrum of issues identified in all five priority concerns, is the need for outreach and civic participation. This is important to facilitate the type of informed and constructive dialogue between citizens and public administrators that is paramount when seeking affective implementation of actions in the public interest.

Goal 7. Organize active citizens to address water resource issues.

Objective A: Individuals will understand their role in affecting surface and groundwater quality and quantity.

Objective B: Land use decision-makers will understand their role in affecting surface and groundwater quality and quantity.

## Implementation Program

The pages that follow include the proposed implementation program to address the goals and objectives outlined above. This includes actions, estimated cost, timeline, responsible local government unit (LGU), and benefiting hydrologic units for each goal and objective.

| CATEGORY | GOALS | OBJECTIVES | ACTIONS | COST | TIMELINE | RESPONSIBLE LGU | HYDROLOGIC UNITS |
|---|---|---|---|---|---|---|---|
| Surface Water Quality | Goal 1: Protect clean, healthy, wetlands, lakes, and streams. | Objective A. Identify waters most susceptible to land use change and/or development impacts. | i. Identify individuals, land managers, and decision-makers that are impacted by the issue. Ask those impacted to help prioritize vulnerabilities and identify their role in the solution. | $26,000 | 2019 - 2023 | Mille Lacs SWCD & Mille Lacs County | Rum River 8HUC (07010207)<br>Snake River 8HUC (07030003)<br>Battle Brook 11HUC (07010203070) |
| | | | ii. Conduct a land use conversion risk analysis utilizing pertinent information such as land ownership, Sustainable Forest Incentive Act (SFIA) enrollment, Private Conservation Easement, forest coverage and composition, and land use regulation. | $8,000 | 2019 - 2023 | Mille Lacs County | |
| | | | iii. Sample streams in areas identified as most susceptible to land use change to collect baseline water quality data. | $8,000 | Ongoing | Mille Lacs SWCD & MPCA | |
| | | Objective B. Identify and implement tools, programs and opportunities to enable and incentivize citizens to protect privately owned and managed land. | i. Identify individuals, land managers and decision-makers that are impacted by the issue. Ask those impacted to help identify their role in the solution. | $26,000 | 2019 - 2023 | Mille Lacs SWCD & Mille Lacs County | |
| | | | ii. Promote and implement locally identified solutions, such as: voluntary easements, tax incentives, cost-share programs, etc. | $500,000 | 2023 - 2028 | Mille Lacs SWCD, Mille Lacs County, & DNR | |
| | | Objective C. Protect, and continue to improve, the water quality of Mille Lacs Lake. | i. Identify individuals, land managers and decision-makers that are impacted by the issue. Ask those impacted to help identify their role in the solution. | $26,000 | 2019 - 2021 | Mille Lacs SWCD & Mille Lacs County | Mille Lacs Lake 10HUC (0701020701) |
| | | | ii. Promote and implement locally identified solutions. | $500,000 | Ongoing | Mille Lacs SWCD & DNR | |
| | | | iii. Evaluate the presence and impact of aquatic invasive species (AIS) in Mille Lacs Lake and connected waters. | $10,000 | Ongoing | Mille Lacs County & DNR | |
| | | | iv. Implement measures to increase resident and visitor involvement in the prevention of the spread of AIS. | $260,000 | 2019 - 2021 | Mille Lacs County | |

| CATEGORY | GOALS | OBJECTIVES | ACTIONS | COST | TIMELINE | RESPONSIBLE LGU | HYDROLOGIC UNITS |
|---|---|---|---|---|---|---|---|
| Surface Water Quality (continued) | Goal 2. Manage the impact of existing land use practices, land use conversion, and/or land development to protect and restore surface water quality. | Objective A. Reduce sediment and pollutants reaching receiving waters. | i. Identify individuals, land managers and decision-makers that are impacted by the issue. Ask those impacted to identify their role in the solution. | $26,000 | 2019 - 2023 | Mille Lacs County & Mille Lacs SWCD | Rum River 8HUC (07010207)<br>Snake River 8HUC (07030003)<br>Battle Brook 11HUC (07010203070) |
| | | | ii. Promote and implement locally identified solutions, such as: voluntary best manage practices, landscape restorations, local ordinances, enforcement, etc. | $500,000 | Ongoing | Mille Lacs SWCD & Mille Lacs County | |
| | | | iii. Promote and assist with the implementation of locally identified agricultural conservation BMP solutions, such as: conservation tillage, conservation drainage, water & sediment control basins, managed grazing, nutrient management and other voluntary conservation practices. | $500,000 | Ongoing | Mille Lacs SWCD, NRCS, & MDA | |
| | | Objective B. Manage the impacts of forestland conversion on water quality. | i. Ask public and private sector individuals, land managers and decision-makers that are impacted by the issue to identify their role in the solution. | $2,000 | 2019 - 2023 | Mille Lacs SWCD & Mille Lacs County | Rum River 8HUC (07010207)<br>Snake River 8HUC (07030003)<br>Battle Brook 11HUC (07010203070) |
| | | | ii. Support the completion of a watershed-wide forest stewardship plan for the Rum River and Snake River watersheds. | $10,000 | 2019 - 2021 | Mille Lacs SWCD & Mille Lacs County | |
| | | | iii. Support privately-owned working forestland protection and management, including practices such as: sustainable forestry tax incentives, privately owned easements, etc. | $500,000 | Ongoing | Mille Lacs SWCD & Mille Lacs County | |
| | | | iv. Encourage and support terrestrial invasive species and pest management efforts, including pests such as emerald ash borer, and invasive species such as buckthorn and non-native bush honeysuckles. | $500,000 | 2024 - 2029 | Mille Lacs SWCD, DNR, NRCS, & MDA | |
| | | | v. Promote active forest management efforts to ensure the continuation of productive forest land into the future, addressing species diversity that provides multiple benefits for water, wildlife, and resiliency against the stressors of a changing climate. | $100,000 | 2024 - 2029 | Mille Lacs SWCD, Mille Lacs County, & DNR | |

| CATEGORY | GOALS | OBJECTIVES | ACTIONS | COST | TIMELINE | RESPONSIBLE LGU | HYDROLOGIC UNITS |
|---|---|---|---|---|---|---|---|
| Surface Water Quality (continued) | Goal 2. Manage the impact of existing land use practices, land use conversion, and/or land development to protect and restore surface water quality. (continued) | Objective C. Reduce sedimentation and pollutant loading to surface waters through stormwater management planning and effective best management practices. | i. Support the development of municipal stormwater management plans that identify and rank water quality improvement projects for communities discharging to Mille Lacs Lake and the Rum River. | $200,000 | 2023 - 2028 | Mille Lacs SWCD, Mille Lacs County, & Municipalities | Rum River 8HUC (07010207)<br>Mille Lacs Lake 10HUC (0701020701) |
| | | | ii. Promote and implement locally identified solutions, such as: detention ponds, infiltration basins, porous pavement, parking lot oil/grease separators, etc. | $250,000 | Ongoing | Mille Lacs SWCD, Mille Lacs County, & Municipalities | |

| CATEGORY | GOALS | OBJECTIVES | ACTIONS | COST | TIMELINE | RESPONSIBLE LGU | HYDROLOGIC UNITS |
|---|---|---|---|---|---|---|---|
| Surface Water Quantity | Goal 3. Reduce or prevent flooding on existing and planned public and private infrastructure and production lands. | Objective A. Assess and evaluate public and private infrastructure to determine current flood resiliency. | i. Identify individuals, land managers and decision-makers that are impacted by the issue. Ask those impacted to help prioritize vulnerabilities and identify their role in the solution. | $26,000 | 2019 - 2021 | Mille Lacs SWCD & Mille Lacs County | Rum River 8HUC (07010207)<br>Snake River 8HUC (07030003)<br>Battle Brook 11HUC (07010203070) |
| | | | ii. Inventory public roads susceptible to flooding and analyze why the roads are susceptible, including completion of a comprehensive culvert and stream crossing inventory. | $50,000 | | Mille Lacs SWCD & Mille Lacs County | |
| | | | iii. Inventory private infrastructure (homes/businesses etc.) vulnerable to flooding. | $10,000 | | Mille Lacs SWCD & Mille Lacs County | |
| | | | iv. Inventory agricultural production land vulnerable to flooding. | $10,000 | | Mille Lacs County & Mille Lacs SWCD | |
| | | | v. Identify sources and storage areas of pollutants that are vulnerable to flooding (fertilizer, fuel, etc.). | $10,000 | | Mille Lacs County & Mille Lacs SWCD | |
| | | | vi. Determine threshold vulnerabilities for municipal waste water treatment facilities. | $10,000 | | Municipalities & MPCA | |
| | | | vii. Determine threshold vulnerabilities for existing and planned public and private infrastructure and production lands. | $10,000 | | Mille Lacs County & Mille Lacs SWCD | |
| | | | viii. Strategically install flow monitoring equipment in streams to gather data on stream flow conditions at a sub-watershed level. | $50,000 | 2020 - 2023 | MPCA, DNR, & Mille Lacs SWCD | |
| | | | ix. Utilize hydrologic modeling, incorporating flow data, to provide a higher level of accuracy for flood resiliency planning. | $50,000 | | MPCA, DNR, & Mille Lacs SWCD | |

| CATEGORY | GOALS | OBJECTIVES | ACTIONS | COST | TIMELINE | RESPONSIBLE LGU | HYDROLOGIC UNITS |
|---|---|---|---|---|---|---|---|
| Surface Water Quantity (continued) | Goal 3. Reduce or prevent flooding on existing and planned public and private infrastructure and production lands. (continued) | Objective A. Assess and evaluate public and private infrastructure to determine current flood resiliency. (continued) | x. Identify existing landscape features that currently provide temporary water retention during peak flow periods of high rainfall events. | $10,000 | 2024 - 2028 | Mille Lacs SWCD | Rum River 8HUC (07010207)<br>Snake River 8HUC (07030003)<br>Battle Brook 11HUC (07010203070) |
| | | | xi. Identify landscape areas where temporary water retention could be restored or artificially created. | $10,000 | | Mille Lacs SWCD | |
| | | | xii. Conduct a land use conversion risk analysis utilizing pertinent information such as land ownership, Sustainable Forest Incentive Act (SFIA) enrollment, forest coverage and composition, residential or commercial development, land use regulation, etc. | $8,000 | | Mille Lacs County & Mille Lacs SWCD | |
| | | Objective B: Increase flood resiliency. | i. Ask public and private sector individuals, land managers and decision-makers that are impacted by the issue to identify their role in the solution. | $2,000 | 2024 - 2028 | Mille Lacs SWCD & Mille Lacs County | Rum River 8HUC (07010207)<br>Snake River 8HUC (07030003)<br>Battle Brook 11HUC (07010203070) |
| | | | ii. Promote practices that restore or rehabilitate the natural hydrologic functions of groundwater infiltration, surface water sediment and pollutant filtration, water storage and evapotranspiration to create a more flood-resilient landscape. Practices such as wetland restoration, water and sediment control basins, raingardens, etc. | $500,000 | Ongoing | Mille Lacs SWCD & Mille Lacs County | |
| | | | iii. Identify best management practices for new, or retrofit existing development, to protect public and private infrastructure and production land during heavy rainfall events. | $500,000 | | Mille Lacs County, Mille Lacs SWCD, & Municipalities | |
| | | | iv. Encourage community stormwater management planning to strategically balance drainage needs with temporary water retention during peak flow periods in high rainfall events. | $200,000 | | Municipalities & Mille Lacs SWCD | |
| | | | v. Plan for the protection of rural residential and commercial development from flooding and incorporate designed runoff storage within development projects. | $2,000 | | Mille Lacs County & Municipalities | |
| | | | vi. Incorporate best management practices in the design of public road projects that will strategically manage water flow and catch sediment. | $10,000 | | Mille Lacs County, Mille Lacs SWCD, Townships, Municipalities, & MNDOT | |

| CATEGORY | GOALS | OBJECTIVES | ACTIONS | COST | TIMELINE | RESPONSIBLE LGU | HYDROLOGIC UNITS |
|---|---|---|---|---|---|---|---|
| Surface Water Quantity (continued) | Goal 3. Reduce or prevent flooding on existing and planned public and private infrastructure and production lands. (continued) | Objective B: Increase flood resiliency. (continued) | vii. Explore participation in the National Flood Insurance Program's (NFIP) Community Rating System (CRS). | $10,000 | 2019 - 2020 | Mille Lacs County | Rum River 8HUC (07010207)<br>Snake River 8HUC (07030003)<br>Battle Brook 11HUC (07010203070) |
| | | | viii. Promote and implement other locally identified solutions. | $200,000 | | Mille Lacs SWCD, Mille Lacs County, Municipalities, & Townships | |
| | | Objective C. Manage public and private drainage infrastructure for multiple benefits, including the provision of adequate capacity, reduction of downstream peak flows and flooding, and protection or improvement of water quality and wildlife habitat. | i. Identify individuals, land managers and decision-makers that are impacted by the issue. Ask those impacted to help define the scope of the issue and identify their role in the solution. | $26,000 | 2019 - 2023 | Mille Lacs County, Mille Lacs SWCD, NRCS, Sherburne County, & Isanti County | Rum River 8HUC (07010207)<br>Snake River 8HUC (07030003)<br>Battle Brook 11HUC (07010203070) |
| | | | ii. Facilitate discussion of conservation drainage best management practices on public drainage systems managed in accordance with Minnesota Statute 103E. | $2,000 | | Mille Lacs County & Mille Lacs SWCD | |
| | | | iii. Encourage the implementation of agricultural conservation drainage best management practices to strategically balance production needs with temporary water retention during peak flow periods in high rainfall events. | $200,000 | | Mille Lacs SWCD & NRCS | |
| | | | iv. Promote and implement locally identified solutions such as, buffers, sediment and water quality BMPs around tile intakes, etc. | $200,000 | | Mille Lacs County & Mille Lacs SWCD | |

| CATEGORY | GOALS | OBJECTIVES | ACTIONS | COST | TIMELINE | RESPONSIBLE LGU | HYDROLOGIC UNITS |
|---|---|---|---|---|---|---|---|
| Surface Water Quantity (continued) | Goal 3. Reduce or prevent flooding on existing and planned public and private infrastructure and production lands. (continued) | Objective D. Increase the protection and management of public and private forestland. | i. Ask public and private sector individuals, land managers and decision-makers that are impacted by the issue to identify their role in the solution. | $2,000 | 2019 - 2020 | Mille Lacs SWCD & Mille Lacs County | Rum River 8HUC (07010207)<br>Snake River 8HUC (07030003)<br>Battle Brook 11HUC (07010203070) |
| | | | ii. Support privately-owned working forestland protection and management, including practices such as, sustainable forestry tax incentives, privately owned easements, etc. | $500,000 | Ongoing | Mille Lacs SWCD, Mille Lacs County, & DNR | |
| | | | iii. Encourage and support terrestrial invasive species and pest management efforts, including pests such as emerald ash borer, and invasive species such as buckthorn and non-native bush honeysuckles. | $500,000 | | Mille Lacs SWCD, Mille Lacs County, & DNR | |
| | | | iv. Promote active forest management efforts to ensure the continuation of productive forest land into the future, addressing species diversity that provides multiple benefits for water, wildlife, and resiliency against the stressors of a changing climate. | $500,000 | Ongoing | Mille Lacs SWCD, Mille Lacs County, & DNR | |

| CATEGORY | GOALS | OBJECTIVES | ACTIONS | COST | TIMELINE | RESPONSIBLE LGU | HYDROLOGIC UNITS |
|---|---|---|---|---|---|---|---|
| Impaired Waters | Goal 4. Restore streams that are not meeting Minnesota clean water standards. | Objective A. Restore streams with biological impairments to meet state standards. | i. Identify individuals, land managers and decision-makers that are impacted by the issue. Ask those impacted to identify their role in the solution. | $26,000 | 2024 - 2028 | Mille Lacs SWCD, Mille Lacs County, & MPCA | <u>Upper Rum River 10HUC (0701020702):</u><br>Tibbets Brook 12HUC (070102070205)<br>Vondell Brook 12HUC (070102070207)<br>Washburn Brook 12HUC (070102070209)<br><br><u>West Branch Rum River 10HUC (0701020703):</u><br>West Branch Rum River 12HUC (070102070303)<br>Estes Brook 12HUC (070102070304) |
| | | | ii. Implement best management practices on Vondell Brook (County Ditch 11) to address: agricultural and residential runoff leading to elevated phosphorus levels, misaligned stream crossings causing bank failures, localized cattle grazing affecting the stream channel and impacting habitat, channelization and flow alteration, and the potential impact of nitrogen levels and its contribution to the impairment. | $500,000 | | Mille Lacs SWCD, Mille Lacs County, & MPCA | |
| | | | iii. Implement best management practices on Washburn Brook (Jurisdictional Ditch 3) to address altered hydrology and lack of suitable habitat, and the potential impact of low dissolved oxygen levels and eutrophication. | $500,000 | | Mille Lacs SWCD, Mille Lacs County, & MPCA | |
| | | | iv. Implement best management practices on Estes Brook to address: pasture management and limit livestock access, excess phosphorus and nitrogen, and altered hydrology and geomorphic condition. | $500,000 | | Mille Lacs SWCD, Mille Lacs County, & MPCA | |
| | | | v. Work with individuals and land managers, including those in the headwaters area of Benton County, to implement best management practices on the West Branch of the Rum River to address altered hydrology related to agricultural production, stream channelization, and eutrophication caused by elevated phosphorus. | $500,000 | | Mille Lacs SWCD, Mille Lacs County, & MPCA | |
| | | | vi. Work with individuals and land managers, including those in the headwaters area of Benton and Morrison Counties, to implement best management practices on Tibbets Brook to address flow alteration and substrate habitat. | $500,000 | Ongoing | Mille Lacs SWCD, Mille Lacs County, & MPCA | |
| | | Objective B. Restore streams (Bogus Brook, Estes Brook, and the West Branch of the Rum River) with bacteria impairments to meet state standards. | i. Identify individuals, land managers and decision-makers that are impacted by the issue. Ask those impacted to identify their role in the solution. | $26,000 | 2019 - 2024 | Mille Lacs SWCD, Mille Lacs County, & MPCA | <u>Upper Rum 10HUC (0701020702):</u><br>Bogus Brook 12HUC (070102070208)<br><br><u>West Branch Rum River 10HUC (0701020703):</u><br>West Branch Rum River 12HUC (070102070303)<br>Estes Brook 12HUC (070102070304) |
| | | | ii. Implement best management practices such as livestock confinement areas, grazing management, controlled stream access, and manure management to address the hypothesized origin of these bacteria impairments, livestock. | $500,000 | | Mille Lacs SWCD, Mille Lacs County, & MPCA | |
| | | | iii. Identify the potential for contributing sources, such as subsurface sewage treatment systems and other types of agricultural runoff. | $10,000 | | Mille Lacs SWCD, Mille Lacs County, & MPCA | |

| CATEGORY | GOALS | OBJECTIVES | ACTIONS | COST | TIMELINE | RESPONSIBLE LGU | HYDROLOGIC UNITS |
|---|---|---|---|---|---|---|---|
| Impaired Waters (continued) | Goal 4. Restore streams that are not meeting Minnesota clean water standards. (continued) | Objective C. Halt the trend of increasing of nitrite/nitrate and chloride levels in the Rum River. | i. Identify individuals, land managers and decision-makers that are impacted by the issue. Ask those impacted to identify their role in the solution. | $26,000 | 2024 - 2028 | Mille Lacs SWCD, Mille Lacs County, & MPCA | Rum River 8HUC (07010207) |
| | | | ii. Promote and implement best management practices identified to address nitrite and nitrate levels, including sources such as fertilizer, manure, and subsurface sewage treatment systems. | $500,000 | | Mille Lacs SWCD, Mille Lacs County, & MPCA | |
| | | | iii. Promote and implement best management practices identified to address chloride levels, including sources such as roadways and parking lots. | $500,000 | Ongoing | Mille Lacs SWCD, Mille Lacs County, & MPCA | |
| | | Objective D. Implement strategic stream sampling to answer questions about the sources of pollutants on impaired streams identified in the Rum River Watershed Restoration and Protection Strategies document. | i. Sample sections of streams to target sources of pollutants. | $26,000 | 2019 - 2024 | Mille Lacs SWCD, Mille Lacs County, & MPCA | <u>Rum River 8HUC (07010207):</u><br>Mille Lacs Lake 12HUC (070102070107)<br>Shakopee Lake 12HUC (070102070201)<br>Lake Onamia 12HUC (070102070201)<br><br>Cedar Creek 12HUC (070102070102)<br>Malone Creek 12HUC (070102070103)<br>Bradbury Brook 12HUC (070102070203)<br>Tibbetts Brook 12HUC (070102070205)<br>Chase Brook 12HUC (070102070206)<br>Vondell Brook 12HUC (070102070207)<br>Bogus Brook 12HUC (070102070208)<br>Estes Brook 12HUC (070102070304)<br>West Branch Rum River 12HUC (070102070303) |
| | | | ii. Sample lakes and streams to identify water quality trends. | $26,000 | 2019 - 2024 | Mille Lacs SWCD, Mille Lacs County, & MPCA | |
| | | Objective E. Make data available to citizens in easy to understand formats. | i. Identify individuals, land managers and decision-makers that need to understand the data. Work with those impacted to identify what makes sense to them in their role, and disseminate data in the identified format(s). | $26,000 | Ongoing | Mille Lacs SWCD, Mille Lacs County, & MPCA | Rum River 8HUC (07010207) |

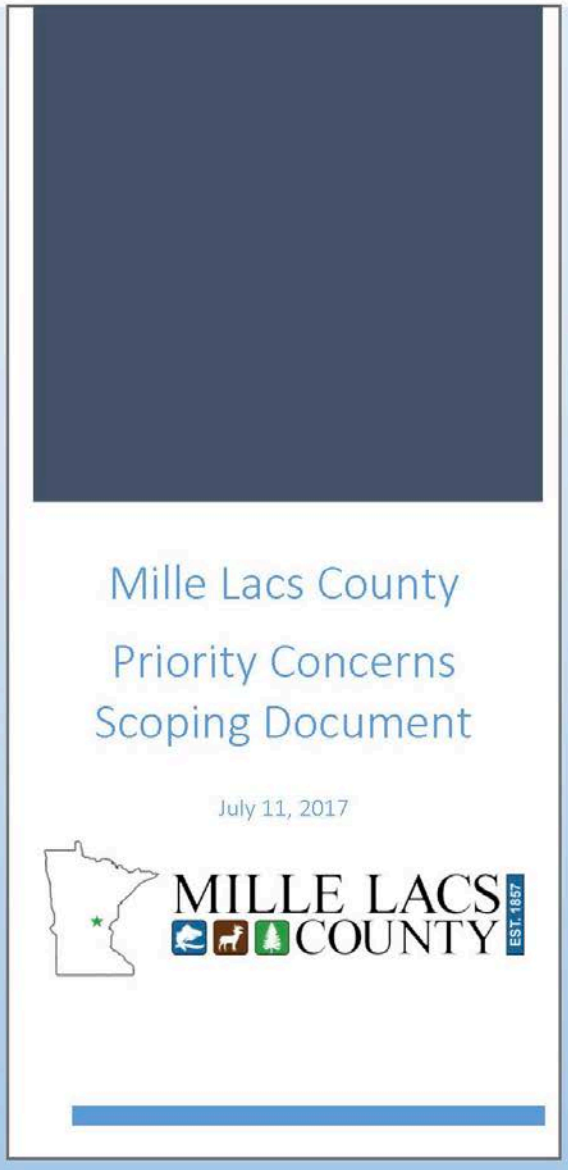
| CATEGORY | GOALS | OBJECTIVES | ACTIONS | COST | TIMELINE | RESPONSIBLE LGU | HYDROLOGIC UNITS |
|---|---|---|---|---|---|---|---|
| Groundwater | Goal 5. Increase local information about quality and quantity of groundwater. | Objective A. Complete a County Geologic Atlas for Mille Lacs County. | i. Assist with the completion of a geologic atlas, acquiring data on geology and groundwater resources, including the availability and pollution susceptibility of groundwater. | $26,000 | 2019 - 2025 | Mille Lacs County, Mille Lacs SWCD, & Minnesota Geological Survey | Groundwater Aquifers County-Wide |
| | | | ii. Ensure that pertinent geologic atlas data is available for use by individuals, land managers, and decision-makers that are impacted. | $10,000 | 2025 (if available) | Mille Lacs County & Mille Lacs SWCD | |
| | | Objective B. Assess groundwater quality. | i. Request a comprehensive assessment of information identified by and/or available to state agencies. | $2,000 | 2019 - 2020 | Mille Lacs SWCD, Mille Lacs County, MDH, & MDA | |
| | | | ii. Find out what parameters, substances, chemicals or chemical elements are being tested and treated for in private, public or municipal wells; and what is known to be present. | $2,000 | | Mille Lacs SWCD, Mille Lacs County, MDH, & MDA | |
| | | | iii. Comprehensively map nitrate presence in private drinking water wells. This will serve as an indicator of well vulnerability to other chemical and pollutants. | $10,000 | Ongoing | Mille Lacs SWCD, Mille Lacs County, MDH, & MDA | |
| | | | iv. Test wells for chemicals or chemical elements identified as a local concern. | $26,000 | 2023 -2028 | Mille Lacs SWCD, Mille Lacs County, MDH, MPCA, & MDA | |
| | | Objective C. Plan for the availability of clean groundwater for residential, agricultural and commercial use. | i. Identify individuals, land managers and decision-makers that are impacted by the issue. Ask those impacted to help prioritize vulnerabilities and identify their role in the solution. | $26,000 | 2019 - 2024 | Mille Lacs County & Mille Lacs SWCD | |
| | | | ii. Plan for future potential groundwater use needs considering long-term land use goals. | $10,000 | | Mille Lacs County, Mille Lacs SWCD, & State Agencies | |
| | | | iii. Ensure proper siting and management of subsurface sewage treatment systems. | $50,000 | Ongoing | Mille Lacs SWCD, Mille Lacs County, & MPCA | |

| CATEGORY | GOALS | OBJECTIVES | ACTIONS | COST | TIMELINE | RESPONSIBLE LGU | HYDROLOGIC UNITS |
|---|---|---|---|---|---|---|---|
| Groundwater (continued) | Goal 5. Increase local information about quality and quantity of groundwater. (continued) | Objective C. Plan for the availability of clean groundwater for residential, agricultural and commercial use. (continued) | iv. Explore funding opportunities for the upgrade of non-compliant SSTS that are failing to meet the current grant funding criteria (i.e. Imminent Public Health Threat). | $500,000 | Ongoing | Mille Lacs County & State Agencies | Groundwater Aquifers County-Wide |
| | | | v. Promote best management practices that filter and subsequently infiltrate clean water to recharge the groundwater supply. | $500,000 | Ongoing | Mille Lacs SWCD, Mille Lacs County, & MPCA | |
| | | | vi. Implement locally identified solutions such as effective SSTS and unused well sealing to protect groundwater quality, and infiltration basins, wetland restoration and forested cover to recharge groundwater. | $500,000 | | Mille Lacs SWCD & Mille Lacs County | |
| | | Objective D. Reduce groundwater pollutant loading through stormwater management planning and effective best management practices. | i. Support the development of municipal stormwater management plans that identify and rank ground water quality protection projects for local communities. | $200,000 | 2023 - 2028 | Mille Lacs SWCD | |
| | | | ii. Implement locally identified solutions that will reduce pollutants before they reach infiltration areas, such as parking lot oil/grease separators ahead of infiltration basins, and porous pavement in overflow parking areas. | $500,000 | Ongoing | Mille Lacs SWCD & Mille Lacs County | |

| CATEGORY | GOALS | OBJECTIVES | ACTIONS | COST | TIMELINE | RESPONSIBLE LGU | HYDROLOGIC UNITS |
|---|---|---|---|---|---|---|---|
| Amplified Weather Events | Goal 6. Plan for local resiliency to withstand and respond to changing conditions. | Objective A. Determine the scope of change observed locally. | i. Identify individuals, land managers and decision-makers that are impacted by the issue. Ask those impacted to help prioritize vulnerabilities and identify their role in the solution. | $26,000 | 2019 - 2021 | Mille Lacs SWCD & Mille Lacs County | All Hydrologic Units in Mille Lacs County |
| | | Objective B. Implement, and incentivize landowners to implement, practices to adapt to the changing conditions. | i. Implement locally identified solutions to promote private forest management efforts, reacting to changing insect and disease threats or changing seasonal and hydrologic conditions. | $500,000 | 2024 - 2028 | Mille Lacs SWCD & Mille Lacs County | |
| | | | ii. Implement locally identified solutions to promote implementation of measures to improve soil health in an effort to alleviate conditions of drought stress and increase surface water infiltration. | $500,000 | | Mille Lacs County, Mille Lacs SWCD, & DNR | |
| | | | iii. Implement locally identified solutions to promote measures such as cover crops and buffers to reduce surface water runoff in response to amplified precipitation events and suppress weed pressure during extended growing seasons. | $500,000 | | Mille Lacs SWCD & NRCS | |
| | | | iv. Implement locally identified solutions such as buffers to protect production lands and infrastructure from the erosive hydrologic forces of water as a result of flood events. | $500,000 | | Mille Lacs SWCD & NRCS | |
| | | | v. Implement locally identified solutions to promote the capture and reuse of rainwater in an effort to reduce flooding and alleviate the affects of drought conditions. | $500,000 | | Mille Lacs SWCD, Mille Lacs County | |
| | | | vi. Implement locally identified solutions to promote the use of renewable energy. | $500,000 | | Mille Lacs SWCD & MPCA | |

| CATEGORY | GOALS | OBJECTIVES | ACTIONS | COST | TIMELINE | RESPONSIBLE LGU | HYDROLOGIC UNITS |
|---|---|---|---|---|---|---|---|
| Outreach & Civic Engagement | Goal 7. Organize active citizens to address water resource issues. | Objective A. Individuals will understand their role in affecting surface and groundwater quality and quantity. | i. Communicate with individuals about how land use practices impact water resources. | $26,000 | Ongoing | Mille Lacs SWCD & Mille Lacs County | All Hydrologic Units in Mille Lacs County |
| | | | ii. Identify individuals/groups that are impacted by the issue. | $2,000 | | Mille Lacs SWCD & Mille Lacs County | |
| | | | iii. Participate regularly with those impacted to identify their role in the solution. | $26,000 | | Mille Lacs SWCD & Mille Lacs County | |
| | | Objective B. Land use decision-makers will understand their role in affecting surface and groundwater quality and quantity. | i. Ensure land-use decision-makers are aware of the impacts land use activities might have on water as part of making decisions. | $26,000 | | Mille Lacs SWCD & Mille Lacs County | |
| | | | ii. Identify land use decision-makers that are impacted by the issue. | $2,000 | | Mille Lacs SWCD & Mille Lacs County | |
| | | | iii. Participate regularly with those impacted to identify their role in the solution. | $26,000 | | Mille Lacs SWCD & Mille Lacs County | |

# Appendix



Mille Lacs County

Priority Concerns
Scoping Document

July 11, 2017

MILLE LACS COUNTY EST. 1857

# Contents

# 1. Introduction

## 1.1 County Primer

### General Information

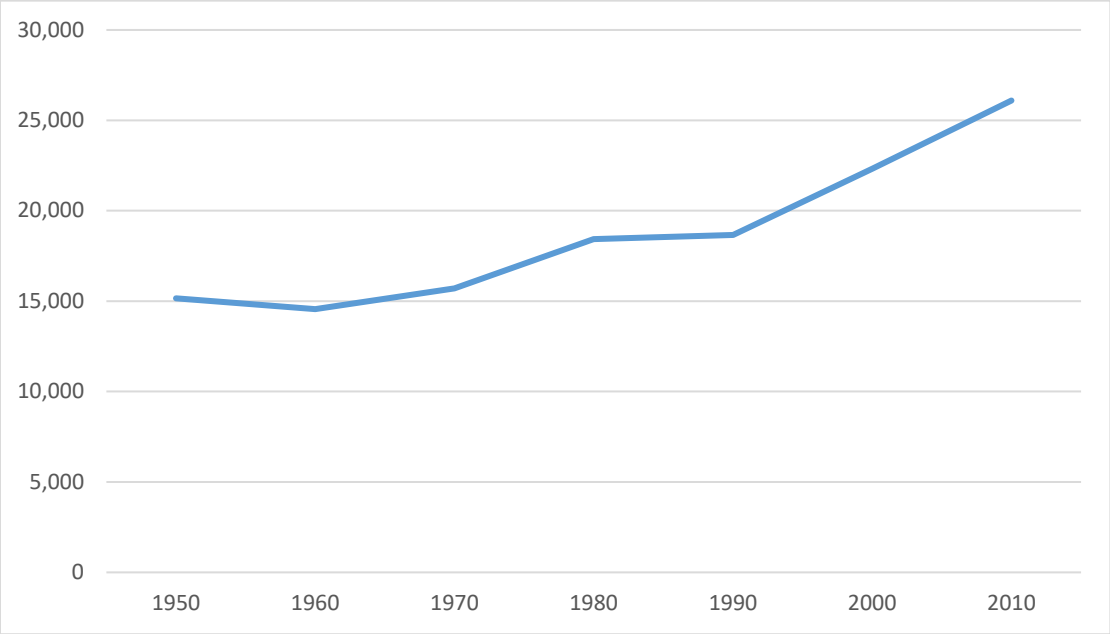
Mille Lacs County is located in east central Minnesota, approximately 70 miles north of the Twin Cities. The county is approximately 682 square miles in area and has a population of 26,097 (2010 census). The county seat is located in the City of Milaca, situated near the intersection of State Highway 23 and U.S. Highway 169. The county is home to Mille Lacs Lake and the headwaters of the Rum River, flowing through Ogechie, Shakopee, and Onamia lakes before making its way through the county and ultimately to the Mississippi River.

Figure 1.1: Mille Lacs County


### Demographics

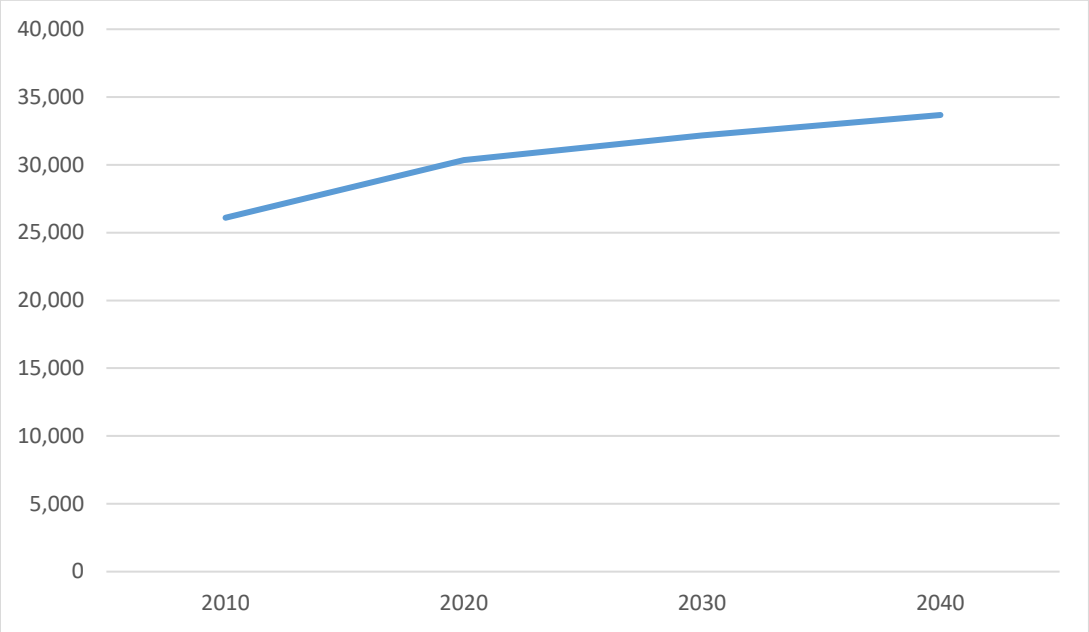
Mille Lacs County is a growing rural county. Historical census data shows a steady population increase over the past 50 years; the Minnesota State Demographic Center projects a continuation in this trend. While growth was steady from 1960 to 1990, the rate greatly increased between 1990 and 2010, as illustrated in Figure 1.2. Overall, from 1960 to 2010 the average annual growth rate was nearly 1.2% per year. Projections for the years between 2010 and 2040 estimate a slower rate of 0.88% per year.

Figure 1.2: Population Growth 1950 to 2010




*Source: United States Census Bureau*

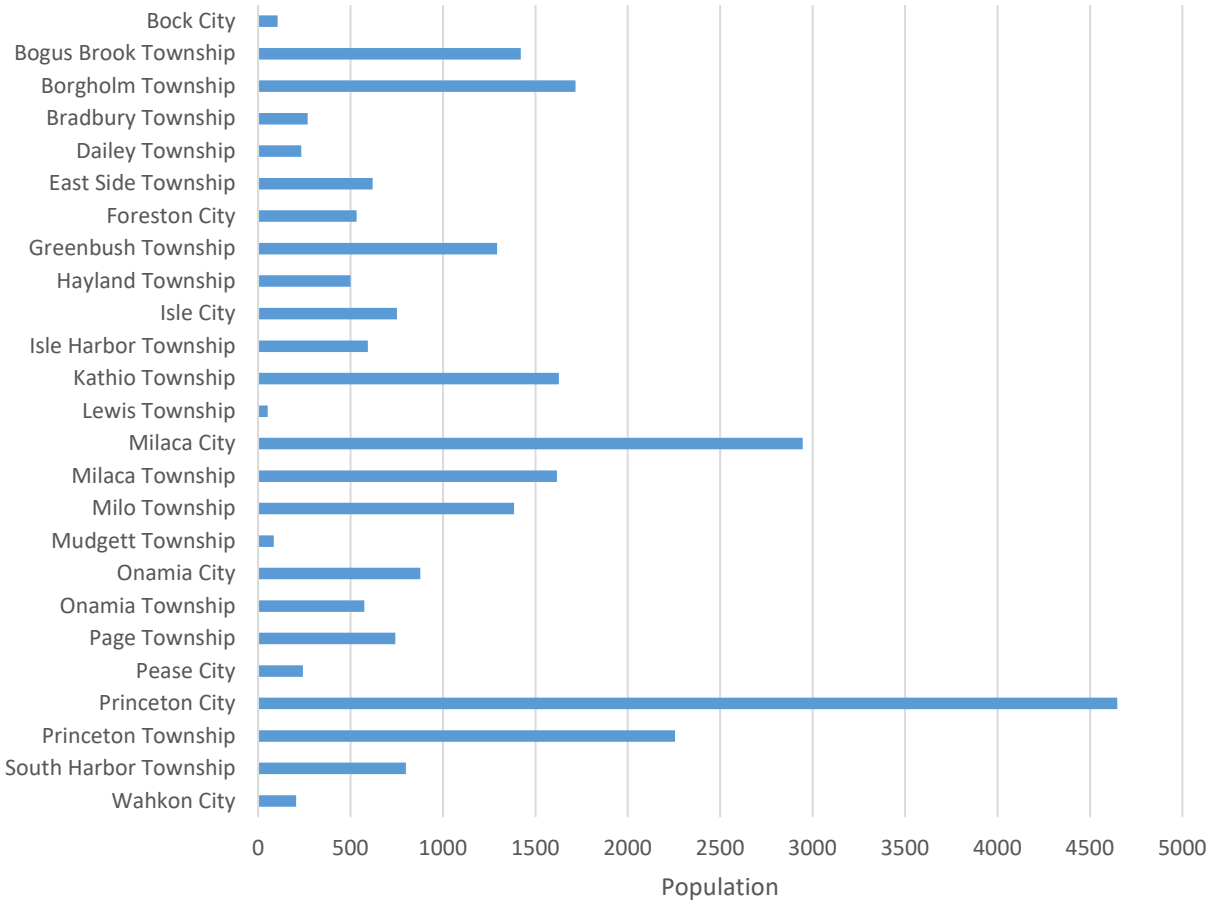
Figure 1.3: Population Growth Projections 2010 to 2040




*Source: Minnesota State Demographic Center*

The latest census data shows that 15,787 of Mille Lacs County's 26,097 residents, or approximately 60%, live in the unincorporated areas of the County's 17 townships. The remaining 10,310 residents live within one of Mille Lacs County's eight incorporated municipalities. The largest population center in the county is the City of Princeton, which is home to 18% of Mille Lacs county's residents.

Figure 1.4: Population by Geographic Area

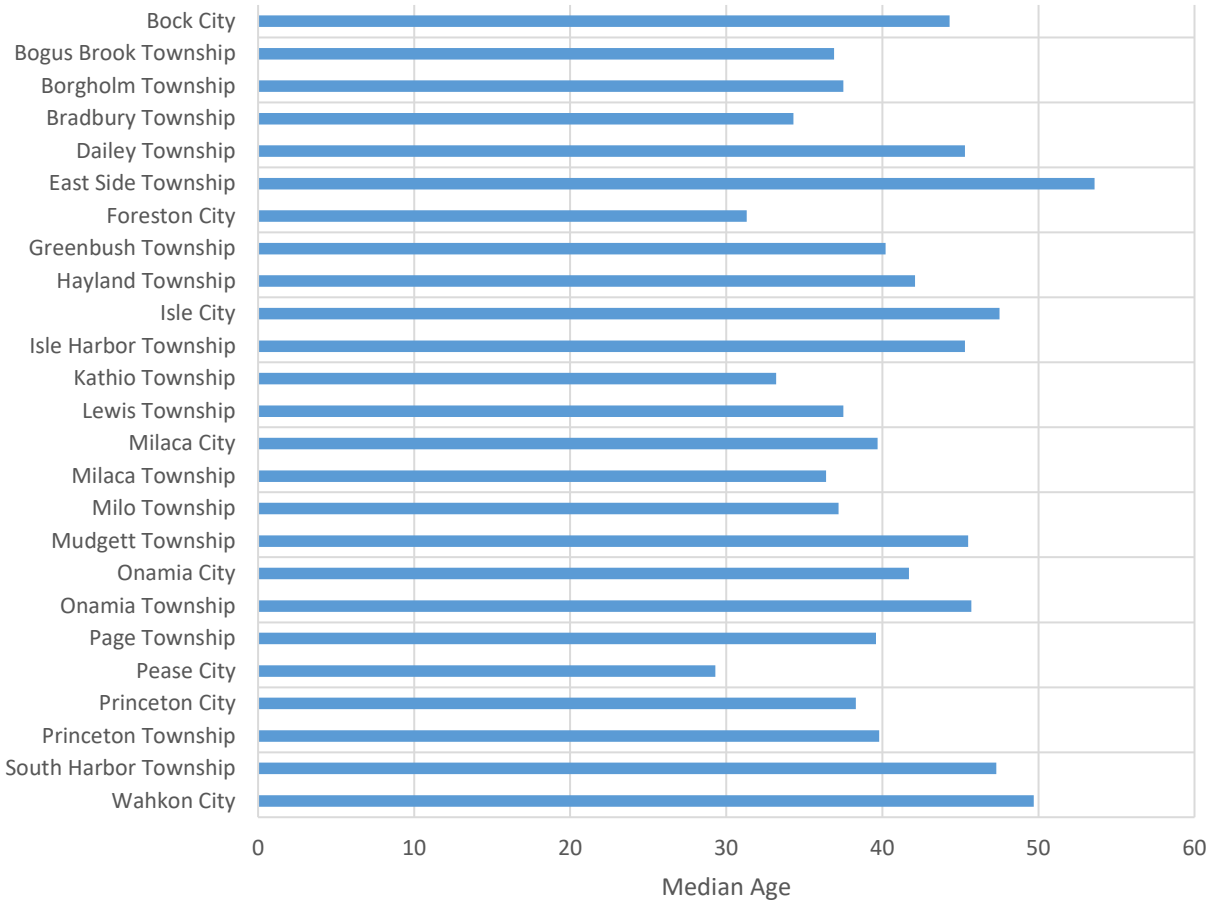



*Source: United States Census Bureau*

The population within Mille Lacs County is, on average, older than the rest of Minnesota and the nation as a whole. Median age within the county is nearly 41 years of age, while median age in Minnesota and the rest of the nation is closer to 37 years of age.

While there is a minor difference in the median age between the cities and townships, the largest age gap is evident in an examination of various geographic regions within the county. The cities and townships surrounding Mille Lacs Lake are significantly older than the rest of the county, with the four townships and two cities situated on the lake having an average median age of 46.1 years old. In comparison, the average median age in the remainder of the county is only 39 years old.

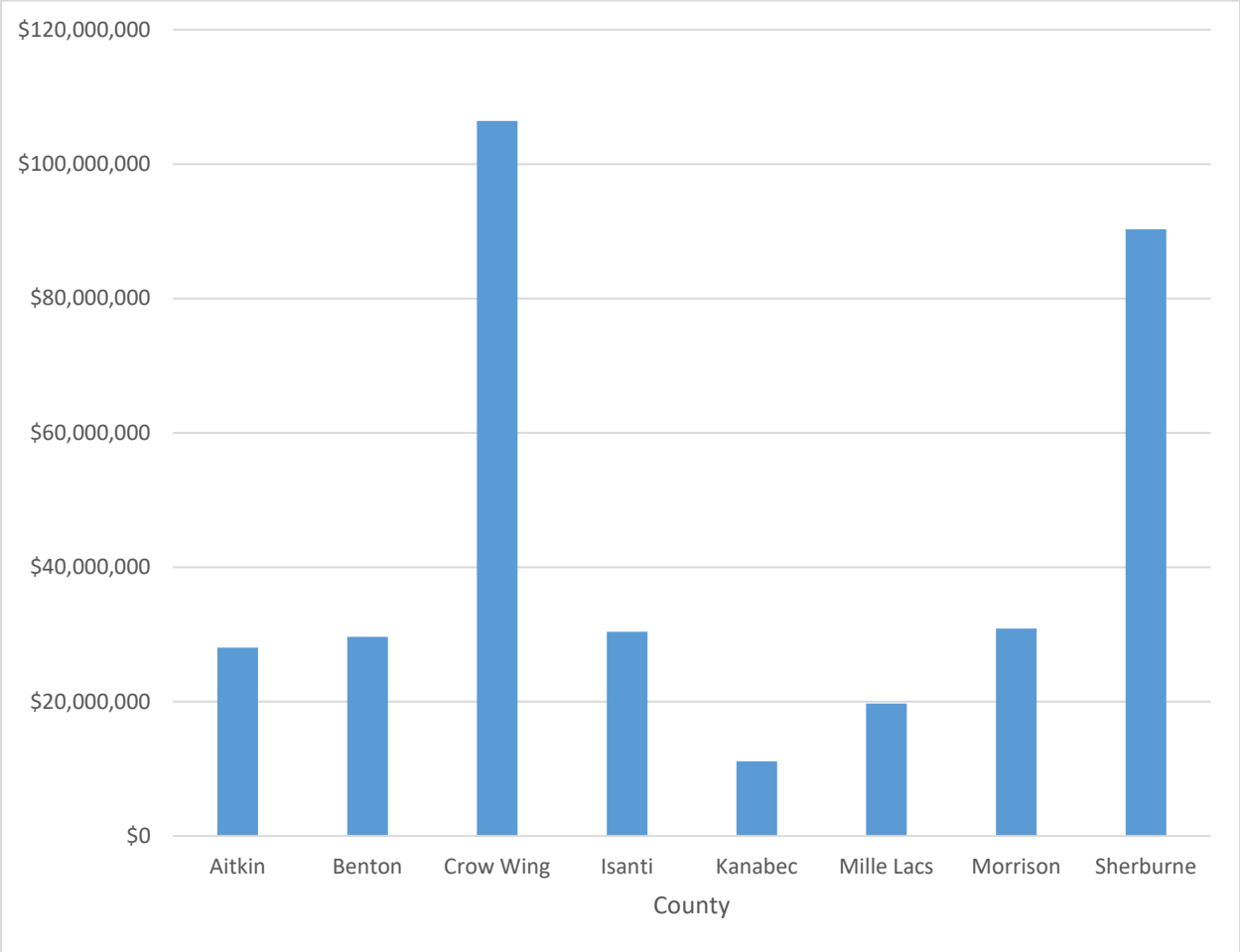
Figure 1.5: Median Age by Geographic Area




*Source: United States Census Bureau*

Mille Lacs County is surrounded by seven counties: Aitkin, Benton, Crow Wing, Isanti, Kanabec, Morrison, and Sherburne. In comparison to these neighboring counties, Mille Lacs County ranks relatively low in total tax capacity, with only Kanabec County ranking lower.

Figure 1.6: 2015 Certified Adjusted Net Tax Capacity




*Source: Minnesota Department of Revenue*

### *Land Cover Data*

Although agricultural land use is focused in the county's southern tier, it is still the largest single land cover category based on 2011 United States Geological Survey (USGS) national land cover data. Just under one-third of the county (32.77%) was classified as cultivated crops in 2011, while mixed forests (24%) and wetlands (16%) comprised the next largest categories.

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## Map 1.7: Land Cover

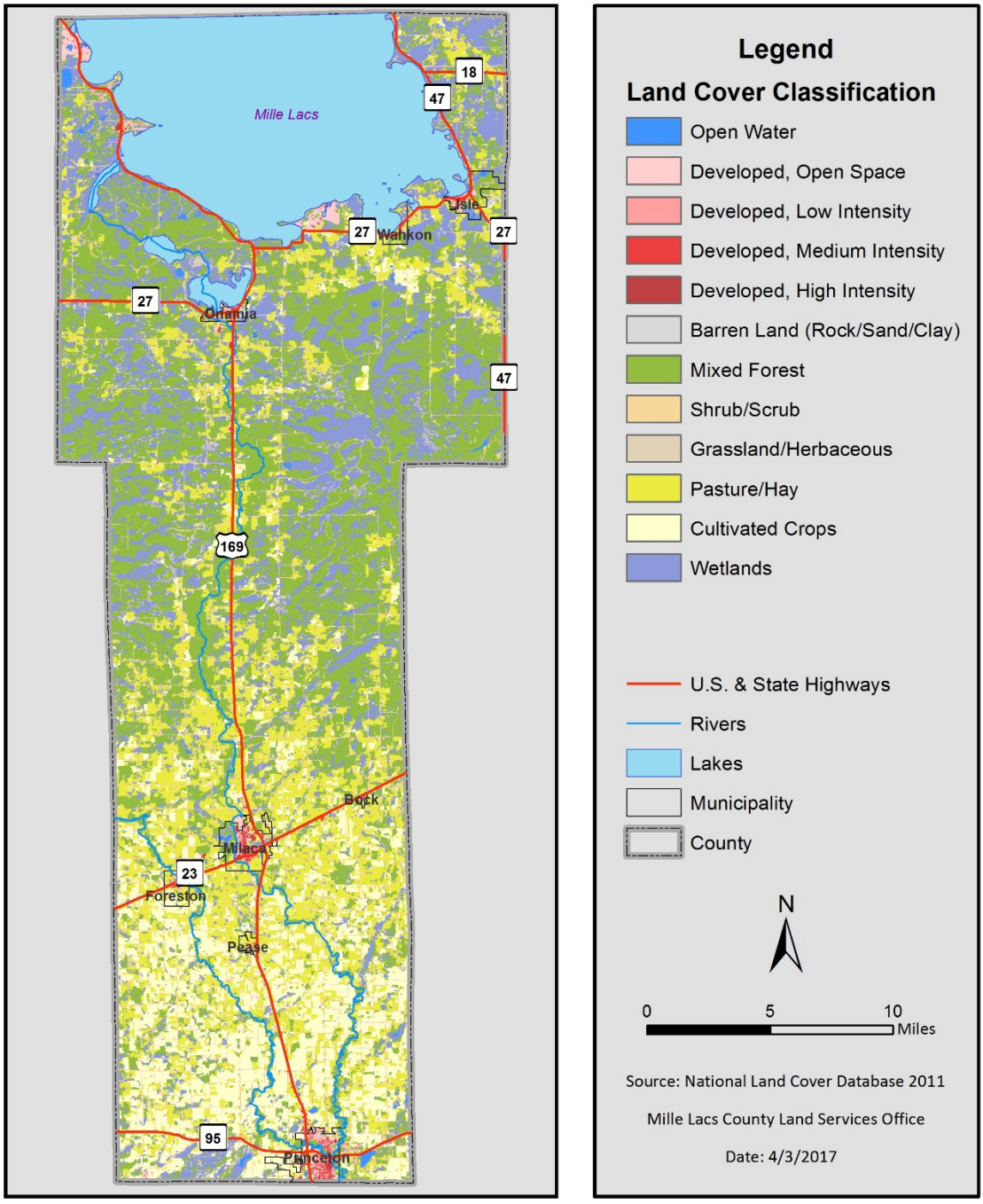
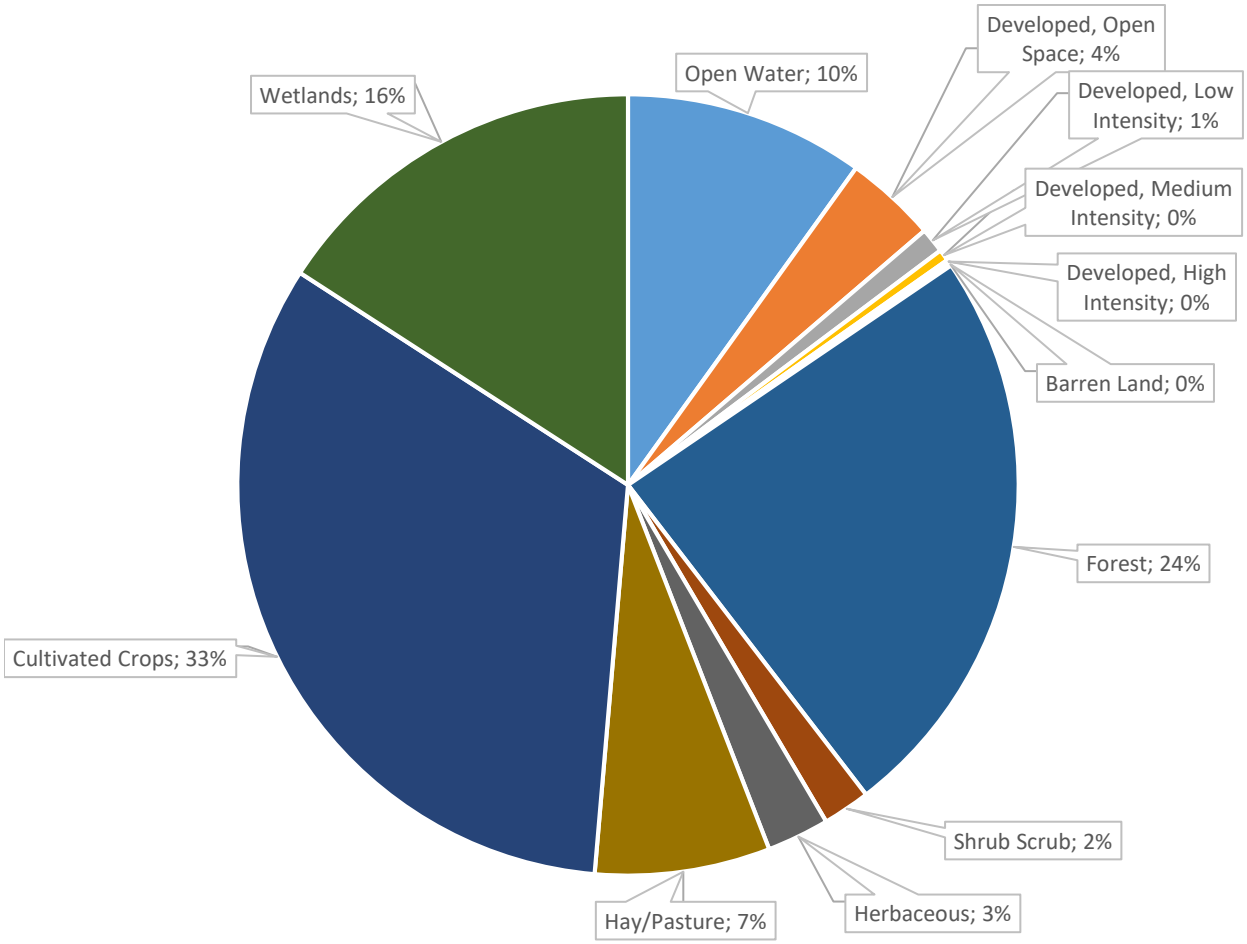


Figure 1.8: Percentage of Land Area by Land Cover




## Land Use

Mille Lacs County is located in east central Minnesota, straddling the Rum River. The various natural features in the county have played a significant role in the county's development patterns and land use.

The southern tier of Mille Lacs County is characterized by sprawling urban development and intensive agriculture. The City of Princeton is located within this tier, in both Mille Lacs and Sherburne counties. This tier has experienced significant growth, partially in response to the growing number of commuters choosing to live on the fringe of the Twin Cities metropolitan area. Agriculture, while still a significant land use within this tier, has continued to decline in response to development pressure after reaching its peak in the early twentieth century.

The middle tier of the county is a transitionary area, bridging the gap between agricultural land use in the southern tier, and forestland and shoreland development in the northern tier. Agriculture and rural development maintain a presence in this tier; however, it is not near the extent realized in the southern tier. This tier has significant gravel deposits, and is home to the majority of the county's gravel pits. Moving north, within the middle tier, large forest stands and

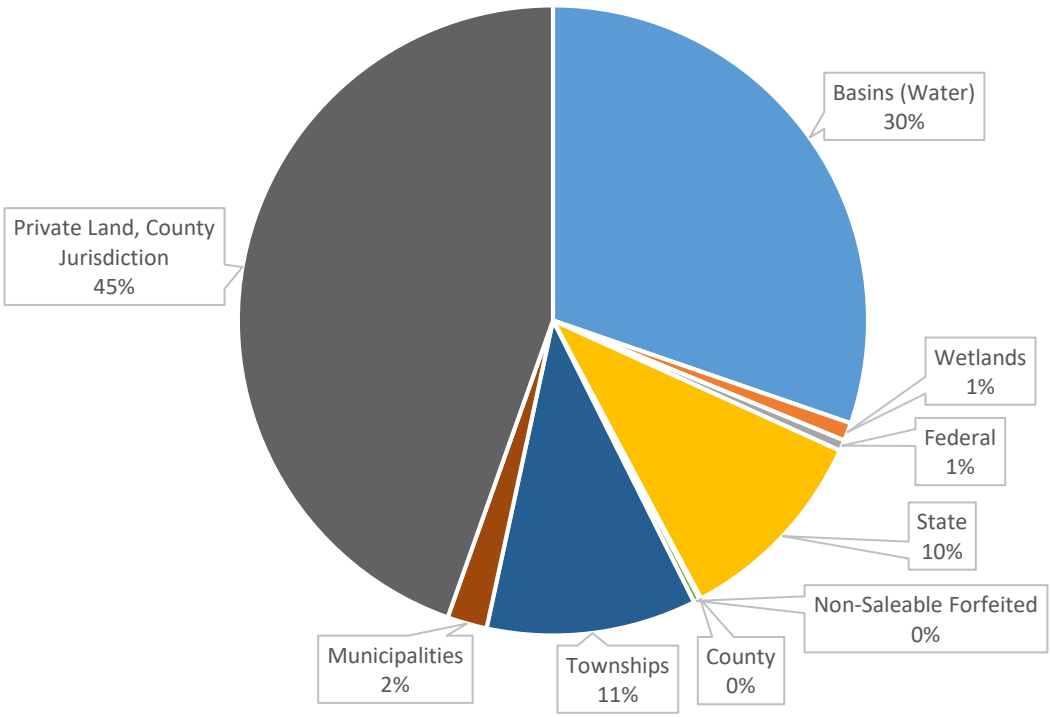
vast wetlands are more prevalent. This area is home to the Rum River State Forest, the Mille Lacs Wildlife Management Area, and various other lands designated for public use.

The northern tier is dominated by Mille Lacs Lake and resorts, RV parks, and family cabins that have been constructed in the area. Most parcels located around and adjacent to Mille Lacs Lake were platted for development in the early 1920s, and do not meet the shoreland standards established in the 1980s. While family cabins have historically been seasonal residences for many, the cabins and developments have slowly seen a shift towards year-round occupation by retiring baby boomers.

The land use trends exhibited in the first decade of the 21st century have continued, albeit at a highly reduced pace. Agriculture has continued to diminish, particularly in the northern tier of the county, while grasslands and forest continue to make way for new residential developments. While the area surrounding Mille Lacs Lake has historically been heavily developed, increased activity has led to the development of marginal properties that were once considered not worthy of development.

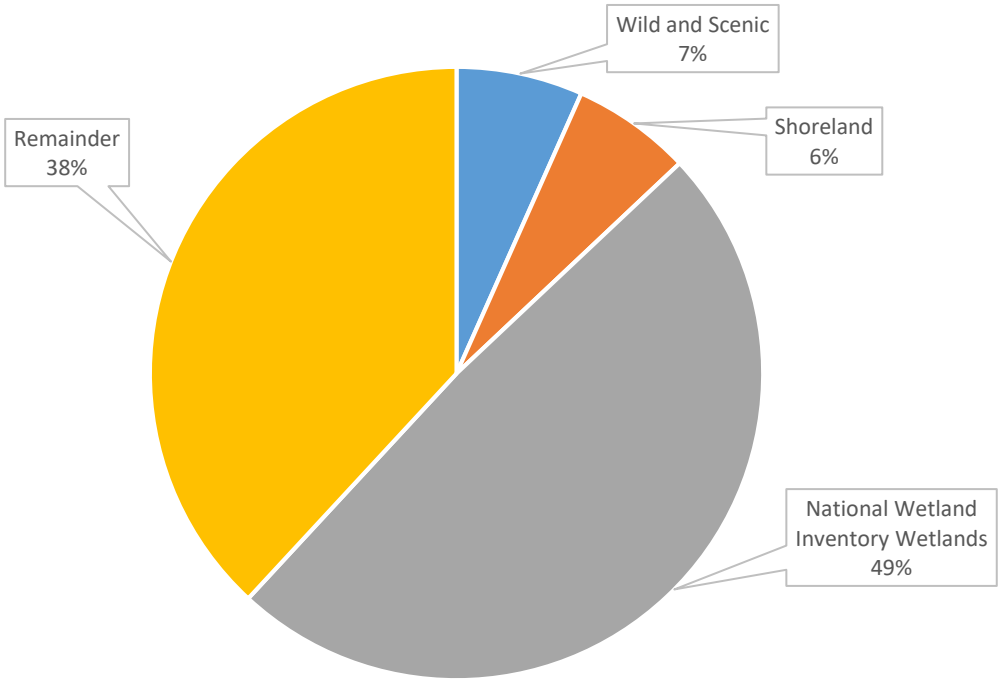
Development in Mille Lacs County is constrained by a number of factors: environmental resources, the amount of land under government ownership, and restrictions imposed by a variety of regulations. The chart below shows that 45% of the land in Mille Lacs County is privately owned and subject to county development regulations.

Figure 1.9: Percentage of Land Area by Type



Of the 45% of privately-owned lands subject to the county's development regulations, only 38% are free from additional regulatory restrictions, such the Wetland Conservation Act and Shoreland or Wild and Scenic River regulations. This is approximately 115 out of the 682 square miles that comprise the county. These lands may be further constrained by access to transportation routes.

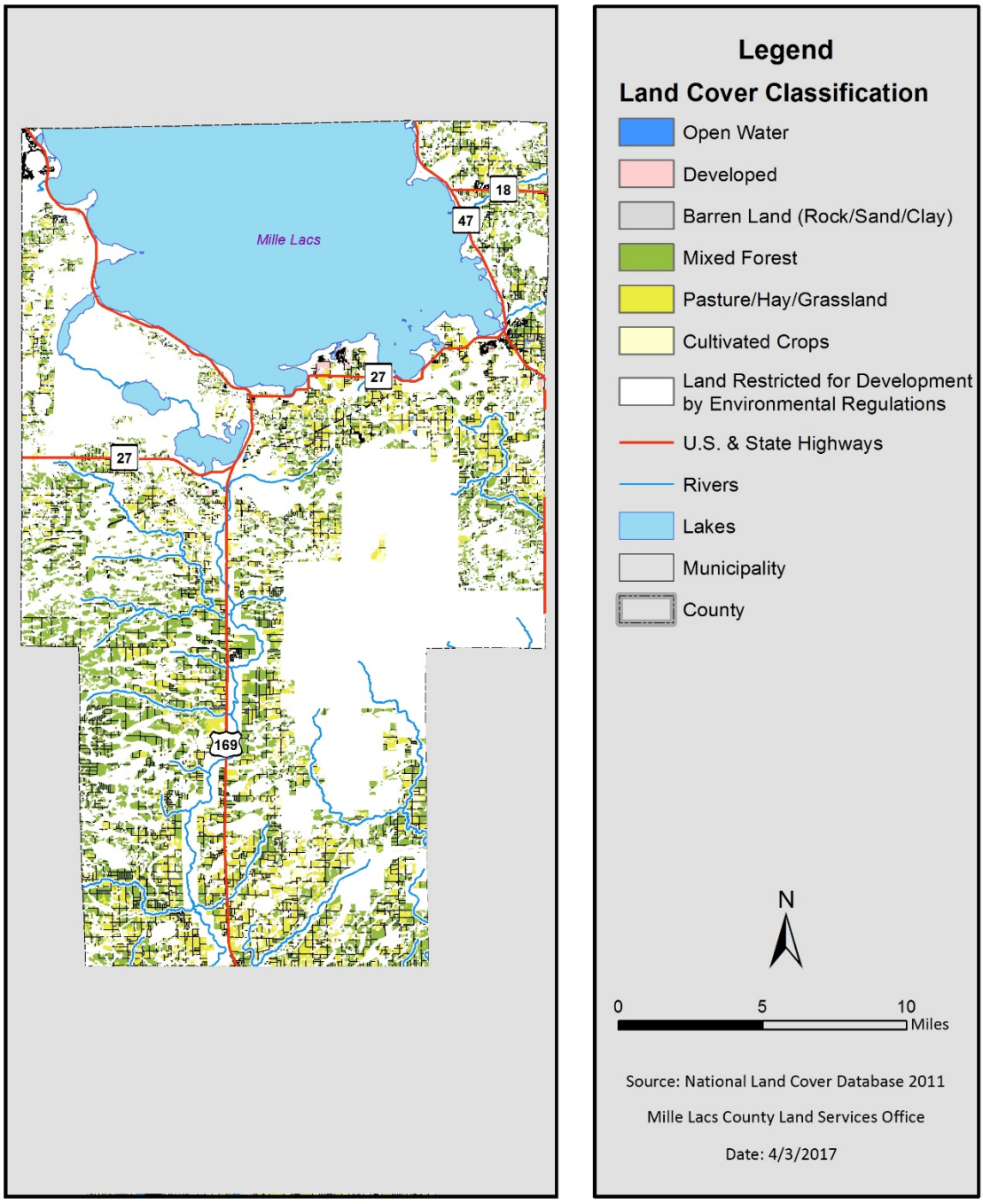
Figure 1.10: Private Land, Subject to County Zoning and Additional Environmental Regulations




While the compilation of this data provides information for the analysis of county-wide development potential, it does not account for the conversion of forest habitat in the northern and middle tiers of the county. To further analyze susceptibility to forest conversion, an assortment of existing land cover and government ownership data, along with areas of environmental protection overlays, were compiled to create a map showing forested areas that could possibly be susceptible to conversion. The result of this analysis is shown in Map 1.11.

MILLE LACS COUNTY

## Map 1.11: Northern & Middle Tier Development Analysis



### *Watersheds*

Mille Lacs County is covered by four major watersheds. The majority of Mille Lacs County is encompassed by the Rum River Watershed, covering approximately 83% of the county's total surface area. The Snake River Watershed covers a sizeable portion of northeast Mille Lacs County, while the Mississippi-Sartell and Mississippi-St. Cloud watersheds cover small portions of western Mille Lacs County.

Historically the Rum River Watershed, stretching from the northern end of Mille Lacs Lake to the Mississippi River in Anoka, has been subject to a number of projects intended to address water quality. This watershed has been evaluated by the Minnesota Pollution Control Agency (MPCA) for the development of a Watershed Restoration and Protection Strategy Report (WRAPS). The WRAPS includes water quality assessment, watershed analysis, civic engagement, planning, implementation, and measurement of results in a 10-year cycle that addresses both restoration and protection. Waters within the watershed that don't meet state standards are listed as impaired, and Total Maximum Daily Load (TMDL) studies are performed.

The Mississippi-St. Cloud and Snake River Watersheds have also been evaluated by the MPCA through the WRAPS and TMDL process. The Mississippi-Sartell watershed is currently being re-evaluated.

Map 1.12 depicts the major watersheds in Mille Lacs County. The Rum River watershed flows south from Mille Lacs Lake through Princeton on its way to the Mississippi River in Anoka. The Mississippi-Sartell and Mississippi-St. Cloud Watersheds flow southwest toward their confluence with the Mississippi River in Sartell and St. Cloud, respectively. In contrast, the Snake River Watershed flows in a southeasterly direction, ultimately emptying into the St. Croix River near Pine City.

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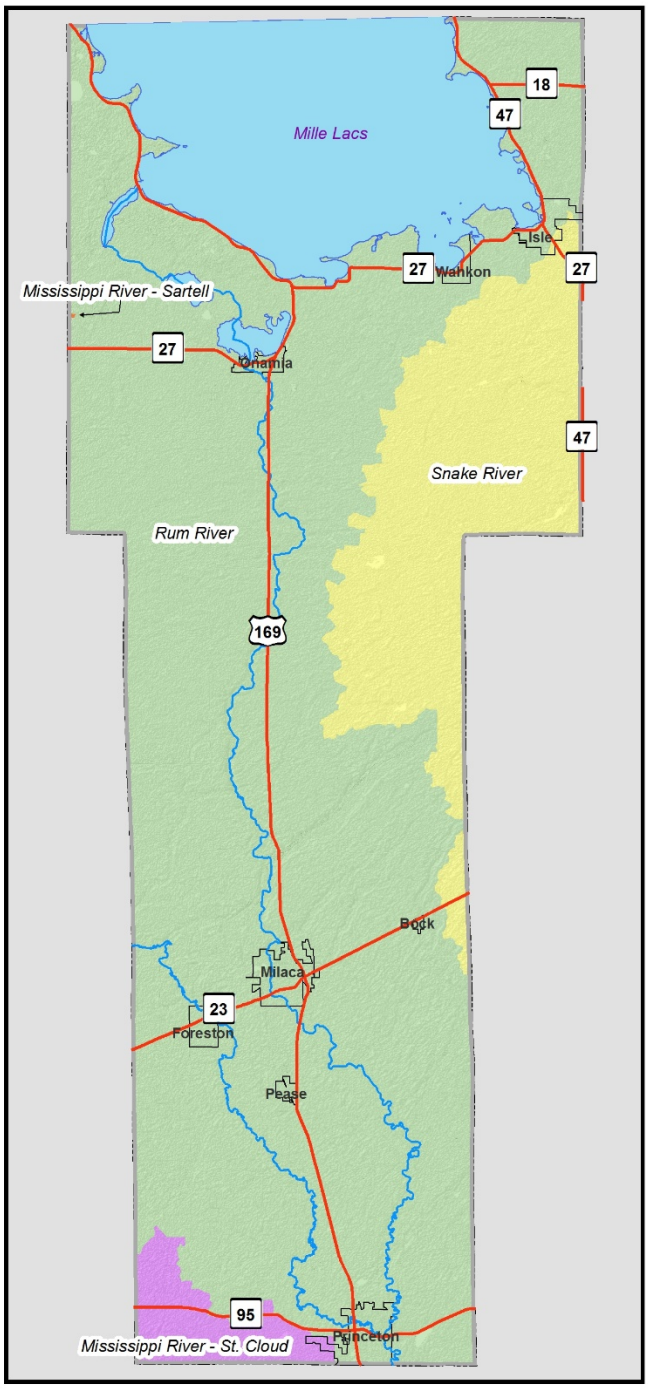
## Map 1.12: Major Watersheds




**Legend**

**Major Watersheds**

- Mississippi River - Sartell
- Mississippi River - St. Cloud
- Rum River
- Snake River

- U.S. & State Highways
- Rivers
- Lakes
- Municipality
- County

N

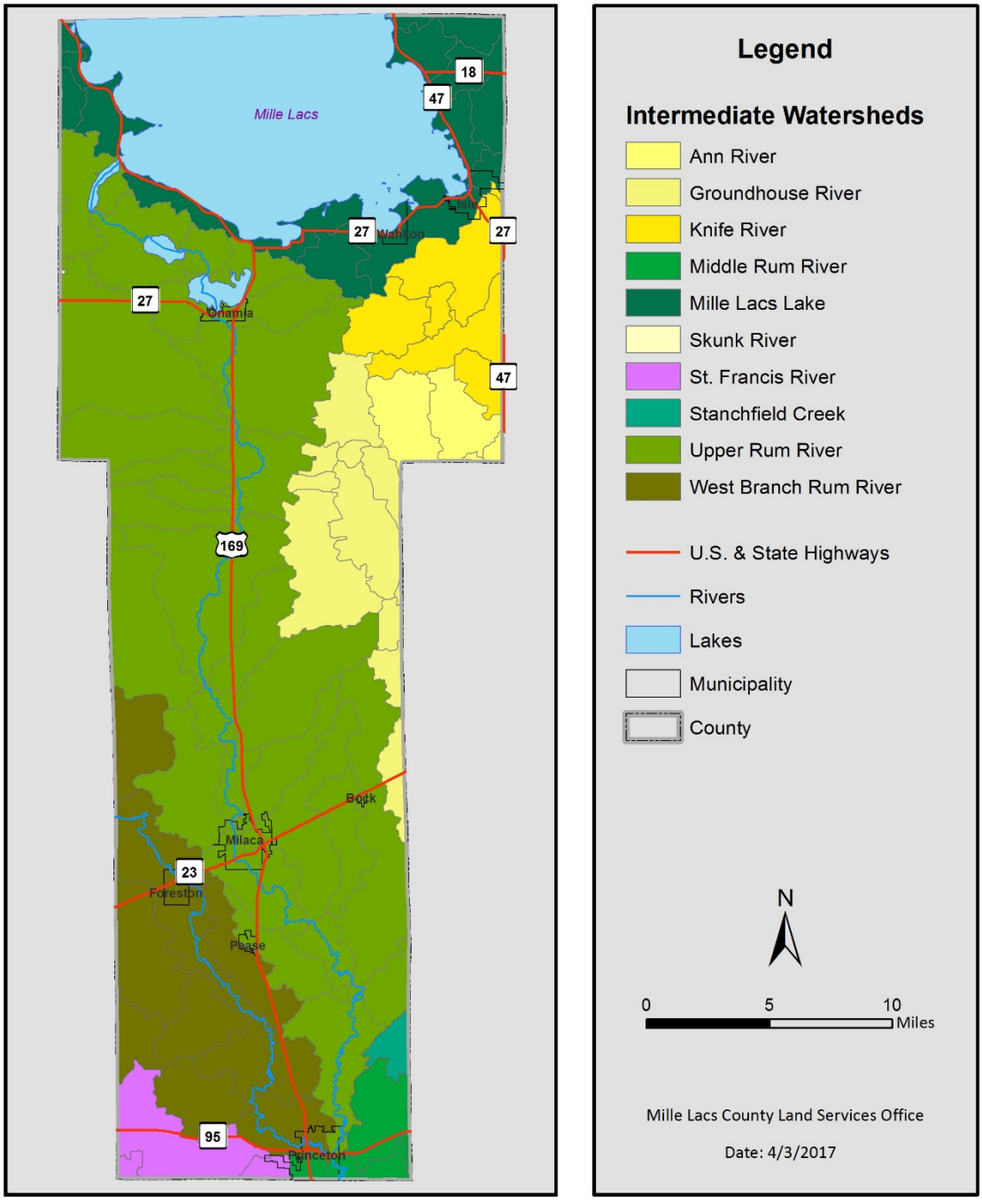
0 5 10 Miles

Mille Lacs County Land Services Office

Date: 4/3/2017

MILLE LACS COUNTY EST. 1857

## Map 1.13: Intermediate Watersheds



## 1.2 Plan Information

### Water Planning Authority and Responsibility

The Mille Lacs Soil & Water Conservation District (SWCD) is responsible for coordinating the preparation of the comprehensive water management plan, in conjunction with the Mille Lacs County Land Services Office (LSO). The SWCD has had this role since 1989.

### Current and Historical Water Planning Efforts in Mille Lacs County

Water management planning in Mille Lacs County began in the fall of 1989, when the Mille Lacs County Board voted to begin the process of creating a comprehensive water management plan.

The first comprehensive water management plan was adopted in 1992, with subsequent updates in 1995 and 2006. The current plan, adopted in 2006, expired on December 31, 2016. However, on May 3, 2016 the Mille Lacs County Board authorized the submittal of an extension request to the Minnesota Board of Water and Soil Resources. On July 29, 2016 this extension request was approved, extending the deadline for adoption of a new plan until December 31, 2018. This extension was necessary to extend the planning period to incorporate data from the recently completed Rum River Watershed Restoration and Protection Strategy (WRAPS) into the plan.

This Comprehensive Water Management Plan will be the fourth water management plan prepared for Mille Lacs County.

# 2. Priority Concerns

Priority concerns, as defined in Minnesota Statute § 103B.305, refers to the issues, resources, sub watersheds, or demographic areas identified as a priority by a water planning authority. The concerns identified for this plan update as priorities within Mille Lacs County include:

6. Cumulative negative impacts of improper land management and continued development within the Rum River watershed.
7. Impaired or degraded waters in the Upper Rum River and West Branch of the Rum River intermediate watersheds.
8. Adverse impacts to water quality, infiltration, and flow, caused by land use conversion or development.
9. Adverse impacts of detrimental surface and sub-surface water management practices on existing and future development.
10. Lack of information and understanding regarding the quality and quantity of groundwater, and the resultant impact on land management decisions.

# 3. Priority Concern Identification Process

The priority concern identification process in Mille Lacs County began in January, 2016. The Local Water Management Plan Advisory Committee began the process by identifying local groups that may be interested in contributing and commenting on water management needs and priorities. Community events where public input could be obtained were also identified.

Following this meeting, the SWCD and LSO staff implemented a coordinated effort to educate and facilitate discussion with local citizens regarding water management efforts in Mille Lacs County.

## 3.1 Public & Internal Forums

Throughout the priority concern development process a number of public and internal forums, both individual and recurring, were held to identify priority concerns.

**A. Local Water Management Plan Advisory Committee**

a. Dates Held: Meetings held quarterly, 2016 – 2017.
b. Summary: The Local Water Management Plan Advisory Committee (WMAC) meets quarterly to discuss water planning in Mille Lacs County. The WMAC consists of local citizens, officials, and employees of local government units.

**B. Local Water Management Plan Advisory Subcommittee**

a. Dates Held: Meetings held monthly, 2016 – 2017.
b. Summary: The Local Water Management Plan Advisory Subcommittee, comprised of the Land Services Director, Environmental Resources Manager, and Soil and Water Conservation District Administrator, met monthly to coordinate the water planning process and development of priority concerns.

**C. Princeton Rotary**

a. Date Held: March 16, 2016.
b. Summary: Information was presented to residents and business owners regarding the Water Plan update; input on the two-question survey was obtained.

**D. Mille Lacs County Township Association Meeting**

a. Date Held: April 26, 2016
b. Summary: Information was presented to elected Township officials and County Board members regarding the Water Plan update, One Watershed One Plan, and implementation of the Buffer Law; input on the two-question survey was obtained.

**E. Princeton Township Community Meeting**

a. Date Held: June 30, 2016.
b. Summary: This meeting was facilitated to disseminate information on the pending WRAPS and to identify priority concerns. Notice of this meeting was provided via direct mail to landowners within the Estes Brook and West Branch of the Rum River watersheds. 32 members of the public attended the meeting and provided input.

**F. Page Township Community Meeting**

a. Date Held: July 26, 2016.
b. Summary: This meeting was facilitated to disseminate information on the pending WRAPS and identify priority concerns. Notice of this meeting was provided via direct mail to landowners within the Tibbets Brook watershed. 19 members of the public attended the meeting and provided input.

**G. Borgholm Township Community Meeting**

a. Date Held: September 21, 2016.
b. Summary: This meeting was facilitated to disseminate information on the pending WRAPS and identify priority concerns. Notice of this meeting was provided via direct mail to landowners within the Bogus Brook, Vondell Brook, and Washburn Brook watersheds. 39 members of the public attended the meeting and provided input.

**H. Mille Lacs Lake Water Management Group Meeting**

a. Date Held: November 21, 2016.
b. Summary: Information was presented to the Mille Lacs Lake Watershed Management Group at their November meeting regarding the Rum River WRAPS and the Water Plan update; input on the two question survey was obtained.

## 3.2 Public Information Meeting

The following is a summary of the public information meeting held on December 8, 2016:

Four residents attended; introductions were made.

Mr. Weinerman discussed the water plan update and the purpose of the meeting. He noted that the information provided tonight would help the planning process by forming the primary concerns, goals and objectives of the plan. The plan is important because it allows the county and SWCD to obtain funding for water quality protection and improvements.

There was discussion regarding the presence of beavers in Page Township and the impact their activities are having in regards to lands now inundated with water. A landowner indicated that he can no longer access 40 acres. His property taxes are increasing, but because the beavers are on a neighbor's property, he cannot have them removed.

It was noted that the water used to flow south, and it now flows east as a result of the animal activity.

Other concerns expressed:

- Ensure that no additional regulations are added and that landowners can still maintain their ditches
- Reduce regulatory burdens
- Analyze how change in ownership and the resulting lack of maintenance may impact water flow and/or inundation on adjacent properties
- Impact on road side ditches from ATV use, especially when those ditches are part of the larger drainage system
- Grant landowners the ability to complete maintenance on county ditches to keep them flowing

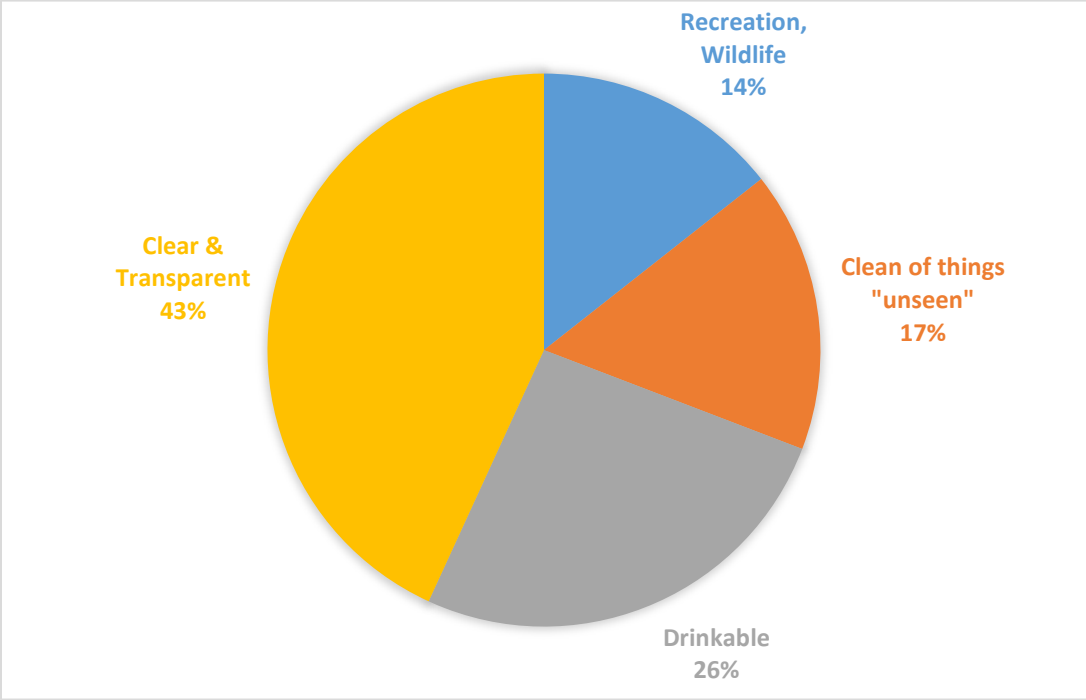
There was discussion regarding the impaired streams noted in the WRAPS, and the need for additional sampling to better identify where the source of the impairments might be.

## 3.3 Issues Identified by Stakeholders

During each of the internal and public forums listed above, staff facilitated the completion of a two-question survey. This survey asked for feedback from stakeholders regarding two important issues: "What does clean water look like to you?" and "What concerns do you have about ground and surface water?"

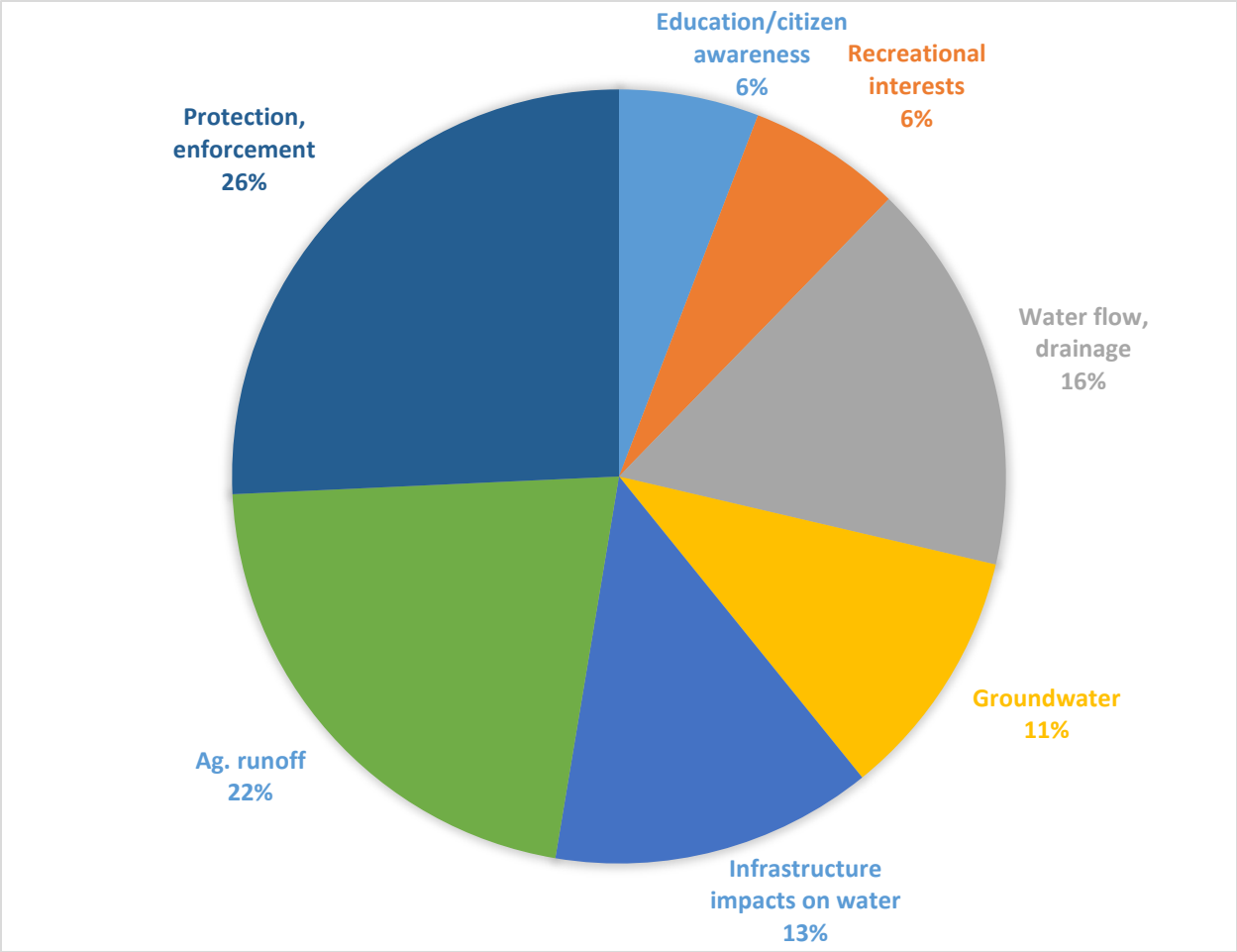
The full list of responses to the first question, from all 143 respondents, has been included as Appendix A. These results have been categorized and summarized in Figure 3.1.

Figure 3.1: Resident-Defined Indicators of Clean Water




The full list of issues and concerns identified by 171 stakeholders in response to the second question have also been included as Appendix A. These issues have been categorized and summarized in Figure 3.2.

Figure 3.2: Resident-Defined Ground and Surface Water Concerns




# 4. Priority Concern Selection Process

## 4.1 Priority Concern Selection

The Mille Lacs County Water Management Plan Advisory Subcommittee facilitated the selection of priority concerns. This process began by preparing an exhaustive list of concerns articulated by citizens in the priority concern identification process. Additionally, a list of concerns identified by other local government units and state agencies was compiled and included.

Once the list of individual concerns had been created, SWCD staff reviewed and aggregated these concerns into larger representative categories of concern for review. Following the receipt of additional input on these concerns, the Water Management Plan Advisory Committee developed some generalized concerns for further review at their January 2017 meeting. These generalized concerns included protecting existing clean water, restoring impaired waters, developing localized assessments of development impacts, and addressing the adverse impacts of “improper” surface flows. The subcommittee utilized this input and synthesized these general concerns into four priority concerns for further assessment.

These four priority concerns were brought to the Water Management Plan Advisory Committee on April 11. Recommendations were made by the Committee, resulting in minor changes to each of the four priority concerns. Following committee review, the priority concerns were presented to the Board of the Mille Lacs Soil and Water Conservation District. While the District Board felt the concerns were valid, they articulated a desire to include an issue of priority concern, identified by the stakeholders, that they felt wasn't adequately addressed in the four original concerns. The subcommittee subsequently brought a fifth concern for consideration to the committee on July 11.

### 4.2 Reconciling Differences

The SWCD and LSO staff collected and reviewed a plethora of relevant local plans and controls. The documents collected for review include:

- City of Milaca Comprehensive Plan
- City of Princeton Comprehensive Plan
- Mille Lacs County Comprehensive Plan
- Mille Lacs County Development Ordinance
- Mille Lacs County Local Water Resource Management Plan (2006)
- Mille Lacs County Subsurface Sewage Treatment Systems Ordinance
- Rum River Watershed Restoration and Protection Strategy (WRAPS)
- Snake River Watershed Restoration and Protection Strategy (WRAPS)

A summary and analysis of these local plans and controls is provided in Appendix C. Review of the goals and objectives reveals some commonalities. These plans and controls call for appropriate and sustainable development in light of existing aquatic resources, including groundwater, surface water, stormwater, and floodplains. In particular, these plans stress the importance of protecting the Rum River corridor, and enhancing sustainable recreational use of the area.

The priority concerns in this document are largely consistent with, and will address, a number of the larger concerns articulated by local plans and controls.

## 5. Priority Concerns Not Addressed by the Plan

Throughout the priority concern development process there was consistency between the recommendations received and priority concerns selected. Many of the water quality issues and concerns articulated by residents have been incorporated into the priority concerns selected.

There were many suggestions received during the priority concern development process that were not concerns, but were actually goals or objectives. This input will be retained and referenced during development of the water plan goals and objectives. However, all priority concerns articulated in the planning process were incorporated into this document.

# Appendix A: Written Comments

| What does clean water look like to you? | As a Mille Lacs County property owner, what concerns do you have about ground and surface water in Mille Lacs County? |
|---|---|
| Clear, clean, and tasteless | What are the conditions of the aquifers in our area? |
| Clear, not clouded, bodies of water with plants growing at its edge | Mosquito Control - Can we treat our own ponds on our property to discourage mosquito growth? Or does it have to be professionally done? re: Princeton Riverside Park west bank of Rum River - can the city remove the tree and brush growth along the banks where kids swim? (It's well overgrown). Or is that illegal? |
| Drinkable, clear water in lakes (swimming). No wastewater discharge into rivers, etc. | Chemical runoff into storm sewer system. Development of rain water gardens (financial aid to develop rain water gardens) |
| Safe to be able to swim in river, low bacteria counts, pesticide & chemical free | Control of septic systems to keep wells safe and protect groundwater. Create guidelines for appropriate water conservation. |
| Clean water to me would be a free-flowing water supply that is clear, moving, and used as a source of entertainment for the public | I want to know that clean water is not just something we have right now but is able to be sustainable for years to come. |
| Drinkable | No concerns |
| Chemical-free and abundant drinking water. Lakes that are free of invasive species. | I worry about pesticides. I also worry about depleting our resources. |
| Creek - clear, taste good; well - safe to use/feels comfortable to drink | I hope we are not abusing our water availability or dirtying our water. |
| Crystal clear - I can "see to the bottom" | Phosphorus contamination. Role of agriculture in water issues. Nitrate contamination. |
| Water safe for organisms to live in (free of toxins [low ppm] and excess nutrients (P, K, N). Water safe for people to drink (via typical water treatment process) | Pollution of groundwater (well water) and depletion of aquifers |
| Clean, odorless | I am not a property owner in Mille Lacs but I think a big concern is surface water and invasive species and runoff of product from agriculture operations. |
| Healthy at all levels: fish, animals, people, organisms | Agricultural runoff |
| Clean from beginning to end | Wastewater management |

| What does clean water look like to you? | As a Mille Lacs County property owner, what concerns do you have about ground and surface water in Mille Lacs County? |
|---|---|
| Water that I can drink directly from the stream | Not a MLC land owner. Issues I see are Ag nitrate runoff and pollution to streams and wells |
| Able to drink safely | Chemical ag runoff in the soil/water |
| Clean, odorless | Well contamination. Insect proliferation (i.e. mosquitoes). Drainage mechanisms |
| Safe for drinking | Education for residents and children about how to take care of our rivers and lakes |
| How do you know without testing for nitrates & other levels? May be clear but contain impurities | What are we doing to promote recreation which bring people to our area to spend money? |
| Clear | Water on roads |
| Water free of ground erosion & animal waste | Runoff from city snow removal including large amount of salt |
| Free of cloudy sediment and chemicals | Farm chemicals entering water supply |
| Nice and pure and no films on it | As long as we keep it moving and no standing around |
| You can see through it with no dirt or sediment | Runoff from sewage treatment plant |
| No sediment floating in water so you can see at least 12" | Keep it clean to protect runoff into our lakes and streams |
| Clean | Road salt and toxic chemicals from farms (runoff) |
| Refreshing and taste good | It’s hard to say because of all the wetland we have in Mille Lacs County and State-owned land (DNR) |
| Clean and fresh - no smell | None |
| Mille Lacs Lake - cleanest I've ever seen it this spring | Many of the laws written in the higher population counties also are forced on our lower population county with fewer resources. Makes it very hard to meet standards with limited resources. |
| Obviously, clear optically plus absence of visible contaminants (supportive of high oxygen-tension requiring fish species) [however, visual appearance often deceiving (clarity)] | Agricultural chemical runoff increasing rural residential development; Agricultural demands on aquifers, especially in agricultural development areas. Winter fishing contaminants (i.e. materials/objects left in water). Highway salt runoff. |
| Clear attractive water; safe to drink | Watch cattle yards' runoff and insecticides from runoff |
| Crystal clear, little to no algae, no dead fish or animals, no litter | Safe chemical makeup, void of animal and bird waste |
| Generally clear & clean | |
| Clear & free of debris | Chemicals being placed where not supposed to be |

| What does clean water look like to you? | As a Mille Lacs County property owner, what concerns do you have about ground and surface water in Mille Lacs County? |
|---|---|
| Water without color or particles | My concerns are with water quality and clarity. I do believe we are going in the right direction. |
| Clear, no smell, not cloudy, not stagnant | I have concerns about the new buffer zone on county ditches. If land owners are charged for maintenance then why are they not maintained by county? |
| When the water is clear with no silt in it | Some of the large farms located by wetlands and streams |
| Clear water that does not have a film on the surface | Chemical runoff from fields. Nitrates |
| Clear and does not stink and tastes good | Not enough watershed where it should be |
| Clear, tasteless, odorless, low in nitrates and bacteria | What can be done about people traveling through the area throwing garbage in streams and such? Are cities' sewer systems up to code? |
| Clear, odorless, non-tasting | Storm water retention and treatment before it gets to public waters |
| Clear & pure | Farm chemicals in wells |
| Water that is clear and not full of algae or sewer run off and does not smell | Fertilizer around the lakes and streams. Farm fertilizer and golf course fertilizer runoff. I think this is a big problem. |
| Clean. No contaminant | What it is running through before it gets to our waterways |
| Clean for swimming and 0 sediment | Property is unsellable; value gone down. Not buildable |
| Clear | Runoff, road runoff, city street pipes in river, pump houses |
| | Dog park, tires, batteries, leaking gas main, gas main 1' underground, 100' tall trees on top of gas mains |
| Clear | I won't fish the W. Rum River |
| Something I would drink | Not enough samples of Estes Brook |
| Clean & tastes good | I don't think it's that bad |
| Slower running water by having control streams to hold back water, with GPS control structures could be maintained to control big volumes of water | Too much residential development in high water table locations. Too much ag. runoff |

| What does clean water look like to you? | As a Mille Lacs County property owner, what concerns do you have about ground and surface water in Mille Lacs County? |
|---|---|
| No slimy algae on it? "Clean" water has a different look in a pond, river, or lake in each area | Nitrates in ground water. Bacteria in surface water - farmer's cattle in water. Concerns on Estes Brook just east of the town of Estes Brook - blockages of water flow near the Cedar Road culvert. |
| Something you can drink | Farm runoff |
| Nothing floating in it, not cloudy, very clear | Being able to shower & drink; smell |
| Clean | To build sediment basins where needed will be costly. Costs should not be landowner's responsibility. Water has been declared public - public should bear costs. |
| Clean | A good drainage and hold area for water |
| Nice clear liquid | Concerns about rain runoff from planted fields |
| Clear 4 feet down | Drinking water quality |
| Clear, no sedimentation. When contained doesn't produce slime or growth. Has no taste or color. | Safety of my family and future generations. Past family lost due to illness not present in previous generations. Ability to farm, drink, eat vegetation/animal production being safe |
| Clear, looks like wildlife can thrive in it. Free of algae. | Concerned that eventually it would not support wildlife. Keep up the good work! |
| Free of or low in sediments & excess nutrients | I want to be able to continue to drink my own groundwater and fish in the river |
| Something that you can drink and have recreation in | It's easier to prevent than correct a problem |
| Clean enough to drink. After this meeting, having good bugs in it | Mille Lacs County & State of MN must continue to have good environment for good water |
| Nitrate free. Bacteria free. | Fertilizer pollution |
| Clear | To keep it healthy and oxygenated. Great work you are all doing. |
| Clear | Can I drink it? |
| Let sit for three days and look for sediment | Taste |
| The kind you can drink or swim in | [Help] Too much water on property. The Greenbush Township said they couldn't help. Found out they are 80 years old or older. |
| Pure, flowing, natural. Able to swim & drink safely | The county ditches are failing, possibly harboring E.coli from cattle, slowly leaking into the watersheds |
| Should be totally safe to drink and use as recreation source, contamination free | E.coli, mercury, any contamination |

| What does clean water look like to you? | As a Mille Lacs County property owner, what concerns do you have about ground and surface water in Mille Lacs County? |
|---|---|
| Flowing, swimmable river with blue or rustic color | Contamination of drinking water |
| Where you can see no floaties in it | Lower phosphorus & ammonia levels |
| Clear. Free of debris pollutants | The SWG build up on our property, seeping out of the ground right next to Estes Brook. E.coli. Major soil erosion. |
| To see bottom of river or streams | Taking river frontage away - Tibbets to Rum [erosion] |
| Clean enough for anything to drink without getting sick | Doesn't become polluted by runoff of chemicals, either agriculture or county |
| Clean enough for cattle to drink | Stays clean enough for livestock to consume |
| Clear, without remnants of toxic habitat that interferes with the growth of healthy habitat | Contaminated water! |
| Potable water | Unnatural contamination |
| Free of algae and full of life | Contaminated water getting into our well/drinking water |
| It don't have a clear color | The runoff of dirt |
| So you can look to the bottom of small lake | Keep it good |
| Visibly somewhat clear. Abundant with fish and wildlife. Safe for swimming. | Chlorides due to road salt. Farm runoff. Erosion (loss of land). Beaver dams near residential homes |
| To swim in: clear, no bugs, no debris. To drink: necessary filtration, purification. | Round-Up, chemical runoff from highways and agriculture, manure banks |
| Something that doesn't harm the wildlife and humans | Remove the chemicals that are used on roads |
| It looks clean, no garbage floating, and seeing wildlife on it | Live in Morrison County |
| Clear and optimally, drinkable | Since learning about the impaired portion of Tibbets Brook, you have my full support as a landowner on Tibbets in promoting and encouraging corrections that will improve water quality, fish, and wildlife habitat |
| Doesn't have any sediment in it | Keep the beaver |
| Creek is somewhat muddy but seems normal through the year. I want uncontaminated well water | Concern that someone can rent or own acreage and dumps chemicals. Our creek dries up occasionally so wouldn't that destroy fish and bug populations? |

| What does clean water look like to you? | As a Mille Lacs County property owner, what concerns do you have about ground and surface water in Mille Lacs County? |
|---|---|
| Free of agricultural, industrial, and residential chemicals. Free of sediment. Supports appropriate wildlife. | Adequate wetlands for water retention. Farm runoff - needs proper buffering. Road right-of-ways - no treatment, only shoots water out. Public access to recreation (safe access, water). Inadequate flow due to excessive drainage and a lack of storage and appropriate impoundments. Shoreland habitat - too much mowing and poor plant types |
| Any body of water that can sustain life | Are we affected by blockages in river? What can we do to help? |
| Water that is free of contaminants, including naturally occurring substances, fertilizers, pesticides, and roadways and their treatments | Surface water contamination is my primary concern. Buffer zones between any settled, disturbed, or industrial development. Lakes and Rivers (and tributaries) are important |
| Lack of algae, invasive plant growth, etc. Water without excessive runoff, nutrients, etc. | Slowing stormwater to allow for better infiltration and reduced erosion |
| | Highly variable flow. Pro-Beaver |
| Has NO industrial chemicals in it. Has life appropriate to its place | Soil erosion. Excessive regulation; government land grabs |
| Crystal clear, nothing floating or making it cloudy | Keep it safe and free of diseases |
| Safe drinking, safe for all, safe for future generations. Safe for aquatic species. Water clarity | E.coli is too high. Fishing poor. Water clarity is gone |
| | Is it safe to drink? |
| Sparkling sunshine | Keep field fertilizer out of streams |
| Water safe enough for drinking | Mainly chemical runoff |
| Not dark and no algae blooms | What effect I have on water leaving my land and people around me |

| What does clean water look like to you? | As a Mille Lacs County property owner, what concerns do you have about ground and surface water in Mille Lacs County? |
|---|---|
| No red flags on algal/adverse chemical standards | Lack of consistency in enforcement of runoff, pollution, stream channel alteration. Sampling points (location & frequency). Very difficult to get long term management strategies |
| Clear | Proper drainage, flow. Cost to landowner - who all is affected |
| Water that's safe to drink | The effects it has on my well/drinking water. I've had bacteria in my well since the recent flood |
| Clear of smells & sediment | |
| Clear - no algae | Chemicals used. Onsite sewer systems in compliance |
| Natural marine life and vegetation | Whether or not it’s safe to drink and swim in |
| Drinking water | Field chemicals |
| Clear/odor free | Drinking water quality |
| Clear, no sediment or algae | Groundwater doesn't get polluted for wells. Surface water doesn't grow contamination |
| Clear | I think we have bigger problems than this in the state and country. Such as too much gov. in our farming business |
| Safe for swimming & fishing | |
| Free from chemicals & bacteria. Healthy for humans & wildlife | Poor septic systems draining into streams |
| Pure, no smells | More tests |
| Chemical free water | Keeping it chemical free |
| Water that is not contaminated. Clear | We want to know if we are contributing water contamination |
| Clear | Ditching in bog. Tiling in excess |
| Clear water | |
| Clear | To watch the amount of runoff from the cities/town |
| Clean, cold, refreshing, safe | Runoff, wetland clearing, habitat |
| No green algae or E.coli. Looks clean | Bacteria from runoff |

| What does clean water look like to you? | As a Mille Lacs County property owner, what concerns do you have about ground and surface water in Mille Lacs County? |
|---|---|
| Water that I can drink and also water that fish and wildlife live in | Keep it from polluting Lake Mille Lacs and other lakes |
| Drinkable, swimmable, fishable. That means free of nitrates, pesticides, heavy metals, and ecology intact without compromises by development | Water is not, but should be regularly tested for pollutants such as pesticides, heavy metals, and arsenic, plastics, and degradation products. Expensive, but essential for health in long-term |
| It is clear in appearance | I do not live in Mille Lacs County but like Aitkin County and know it's a very important concern |
| Clear with slight flow | Too much natural phosphorus in wetlands |
| Clear, good fish, healthy fish, zooplankton, and drinkable | Erosion on shorelands, weather-related runoff like road salt |
| Clear & transparent | Remain drinkable and clean |
| What that is free of algae and stagnant looking scum on the surface. Also free of invasives both seen and unseen | The availability of clean, quality drinking water with a growing population and land use changes, the loss of wetlands and high-quality systems due to ag. runoff and land-use changes |
| Swimmable, fishable. Relatively free of sediment, mats of blue-green algae, and algal blooms | Ag. runoff on NE corner of Mille Lacs Lake. Protection - BMPS and programs are no good if no implementation or enforcement |
| Healthy environment - fish, wildlife, vegetation | Need to keep it healthy - to support the local way of life |
| | Too much surface water |
| Well-filtered. Free of debris and bacteria | Too much and increasing surface water |
| | Too much water - beaver dams [map] |
| Clean but some odor | Way too much water, I can’t get around to cut hay or haul wood. Way too wet! |
| | Too much ground water |
| | There is too much ground water. Trees are uprooting. |
| Crystal clear | Trees dying - drainage ditches plugged up |

| What does clean water look like to you? | As a Mille Lacs County property owner, what concerns do you have about ground and surface water in Mille Lacs County? |
|---|---|
| Clear - free of debris (man-made) | Increasing wet soggy ground making it impossible to access parts of our property. Getting worse by the year and due partly to beaver dams in neighboring county. |
| | Way too much ground water. Trees are falling with roots |
| My drinking water at home | I would like to get rid of excess water on the land that doesn't seem to benefit anyone |
| Water that is not discolored or scummy looking | Runoff from fields with chemicals applied. Runoff from cities such as parking lots |
| Get rid of the mound sewer systems - just a big cost for a sand filter. I can't see much benefit | We need most of it to grow crops! Only excess water needs to get gone. Go back to 1950 the current tile never did drain the swamps - and at current over production on crops which lowers value for corn and beans, we cannot afford much! |
| Well water should be drinkable. Lakes and streams should be swimmable | |
| Needs to be tested to determine its cleanliness. Does a 16.5' buffer clean water half as much as a 50' buffer? Clean means potable (drinking water) | How can we tile and drain for farming purposes - still retain wetlands and have clean water? |
| Clean, clear - no debris (non-nature) | High phosphate levels with flooding |

# Appendix B: Agency Comments

**Minnesota Board of Water and Soil Resources**

- Consider high level state priorities, keys to implementation, and criteria for evaluating proposed activities as outlined in the State NPFP.
- Utilize Snake and Rum River WRAPS data to determine planning strategies. Proceed with One Water One Plan framework in mind.
- Include the drainage authority as a stakeholder in planning, as well as include projects and activities consistent with multipurpose drainage criteria in MS 103E.015, Subd.1.
- Vigilance required to protect Mille Lacs County moderate to highly susceptibile ground water resources. Seal wells and fix septic systems to minimize routes for contamination.
- Forest/lakes northern tier - protect from unplanned development. Ag mid tier - work the land in a way to reduce runoff & maintain soil health. Residential/commercial south tier - expected to grow so effective development planning should minimize degradation of surface water.
- Land use management is key to protecting water quality. Encourage and incentivize sustainable development in such a way that minimizes detrimental impacts to water quality.

**Minnesota Department of Natural Resources**

- Evaluate county goals and actions in the context of a "whole system" approach considering hydrology, biology, connectivity, geomorphology and water quality.
- Groundwater resources are not unlimited and could face depletion in some areas if current trends continue - promote groundwater conservation.
- Support buffers that exceed the 50' requirement.
- Stream and lake bank stabilization/restoration: DNR's underlying philosophy regarding stream management is that streams are self-forming and self-maintaining systems. When they are artificially manipulated there can be negative impacts to channel stability.
- Utilize assessment data relating to special natural resource features (plant communities, rare species, special features) when completing long-range watershed planning efforts.
- Get the "prevent" message out.

**Minnesota Department of Health**

- Assist public water suppliers with well head protection activities.
- Maintain proper setbacks between wells and contaminant sources.
- Inventory where unused, unsealed wells may be located. Develop a cost share program to seal unused, unsealed wells.
- List public water suppliers in the water plan.
- Consider well head protection areas and private well setbacks from contaminant sources.
- Consider developing a water quality data base for private wells similar to the County Well Index (for depth/size). To show distribution of water quality problems, characterize aquifers of concern, identify factors contributing to water quality problems.

**Anoka Conservation District**

- Multi-county (watershed wide) coordination: While local issues may differ, overall goals should be complimentary and efforts coordinated. Coordinated efforts will be less costly, more effective, and more likely to receive outside funding support.
- Communicate continuously with other water planners during the plan development.
- Consider the One Watershed One Plan approach. Financial assistance may be available.
- Mille Lacs County generally has a high water table which is susceptible to contamination: adopt strong septic system regulations - recent septic system ordinance changes by the county weakened groundwater protections; provide financial & technical resources for repair or replacement of septic systems; train road salt applicators on methods of most effective de-icing; provide de-icing equipment on snow plows that reduces salt use while maintaining safe roads.
- Implement storm water retrofits in cities draining to the river, riparian habitat improvement/connectivity, and agricultural practices that reduce runoff along Rum River and tributaries.
- Establish water quality monitoring program to detect problems and trends.
- Land use conversion especially in the river corridor have a dramatic impact on water quality and the scenic nature of the river. Identify lands most important to protect. Promote programs that incentivize conservation on these lands or provide long term protection.

**Morrison Soil and Water Conservation District**

- Collaboration of watershed efforts.
- Eastern Morrison County (Rum River Watershed)

**The Nature Conservancy**

- Interested in participating in the planning process.
- Promote a watershed management approach and use to develop a targeted restoration and protection strategy that prioritizes action.
- Snake Watershed = identified as area of aquatic value and terrestrial biodiversity significance in several conservation assessments. Rum = exceptional resource value as outstanding fishery, wild rice production for cultural and ecological significance, and more important than any other watershed in MN to the Twin Cities.
- Promote natural buffers to prevent runoff.
- Protect, maintain, and expand priority natural areas for watershed health.
- Identify priority areas for water quality and quantity protection. Support innovative methods such as conservation easements.
- Utilize conservation easements as a means to protect water quality.

# Appendix C: Review of Local & Regional Plans and Official Controls

**City of Milaca Comprehensive Plan (2007)**

- Identified Problems:
  - Growth constraints created by the presence of the Rum River and its floodplain.
  - Surface water drainage; localized flooding; Rum River floodplain flooding.
  - Land Use Objectives:
    - Objective 3 – Perimeter and Regional Growth
      - Protect or restore sensitive or unique natural resources such as floodplains, steep slopes, major wooded areas, major vistas, streams, wetlands, water quality, shorelines and riverbanks through regulation and/or city investment.
      - Sustainable growth, preserving open space, farmland, natural beauty and critical environmental areas.
    - Objective 6 – Riverfront
      - Plan for appropriate land use development to take advantage of river views.
      - Protect the aesthetic and natural qualities of the Rum River corridor.
    - Objective 8 – Environmental Resources
      - Protect the function and integrity of streams, floodplains, and wetlands during site plan and subdivision review processes. Coordinate protection efforts with Mille Lacs County and U.S. Army Corps of Engineers.
  - Park Plan
    - Objective 1 – New Parks
      - Coordinate locations for new parks with long-range plans for major stormwater detention and retention facilities in mind.
    - Objective 6 – Ecology and Environment
      - Identify, preserve, and enhance existing valuable natural areas such as wetlands or major wooded areas, and provide for appropriate public use. Set an example of good land stewardship.
      - Minimize and mitigate erosion at Milaca Park Reserve through maintenance, signage, and policing.
      - Manage and maintain natural drainageways in parks.

**City of Princeton Comprehensive Plan (2009)**

- Goal 8: Support local and regional plans to improve surface water quality and reduce the impact of unwise land use patterns.
- Parks and Recreation Policies:
  - Preserve, protect, and enhance the Rum River and adjacent lands for year-around recreational activities and for the scenic vistas it provides.
  - Encourage joint use of park and open space for recreation, preservation of natural and visual amenities, drainage, and water storage.

**Mille Lacs County Comprehensive Plan (2013)**

- Goal: To balance human development with the natural environment, while protecting the county's water, forest energy, and other natural resources.
    - Preserve and protect the water supply and water quality in the county.
        - Support AIS control.
        - Protect drinking water from contamination and depletion.
        - Preserve surface water from pollution, runoff, and other sources of contamination.
- Goal: To promote development with an eye to minimizing regulations; preserving private property rights, water, and other natural resources; and maintaining our quality of life in accordance with all applicable ordinances, laws, rules, and regulations.
    - Consider water quality and quantity when making land use decisions.

**Mille Lacs County Development Ordinance (2015)**

- Article Three: Overlay Districts
    - Establishes regulations for preservation and management of delineated floodplains in accordance with NFIP regulations and Minnesota Statutes § 6120.
    - Provides for the protection of sensitive Wild, Scenic, and Recreational river segments in accordance with Minnesota Statutes § 6105.
    - Regulates shoreland development in accordance with Minnesota Statutes § 6120.
- Article Five: Land Use
    - Includes regulations and setbacks for animal husbandry and feedlots.
- Article Seven: Subdivisions
    - Provides for the preservation of natural features, control of excess erosion, and minimization of alterations in floodplains and shoreland districts.
    - Encourages the use of conservation subdivisions

**Mille Lacs County Local Water Resource Management Plan (2006)**

- Priority Concern 1: Cumulative Effects of Development on Surface and Groundwater
    - Encourage development patterns that protect, enhance, maintain, or restore surface and groundwater quality.
    - Improve stormwater runoff quality throughout the county.
    - Maintain or improve groundwater quality throughout the county.
- Priority Concern 2: Development of TMDLs for Impaired Waters
    - Assess the ability of water resources in Mille Lacs County to meet their designated uses.
    - Work with land managers, land owners, and operators in Mille Lacs County, regardless of land use to encourage best management practices.

**Mille Lacs County Subsurface Sewage Treatment Systems Ordinance (2015)**

- Intent:
    - To protect lakes, rivers, streams, wetlands, and groundwater in Mille Lacs County essential to the promotion of public health, safety, welfare, and socioeconomic growth and development of the county in perpetuity.

- To regulate proper SSTS construction, reconstruction, repair, and maintenance; to prevent the entry and migration of contaminants, thereby protecting the degradation of surface water and groundwater quality.

**Rum River Watershed Restoration and Protection Strategy (WRAPS) Plan (2016)**

- The area near Mille Lacs Lake is healthy, but sensitive fisheries and associated macroinvertebrate communities can be negatively impacted by increased runoff and pollutants; therefore, it is important to focus on protection in this area of the watershed.
- The Rum River is important to the public for fishing and recreation, and subject to land use change and increased drainage. Protecting the Rum River corridor should be a priority.

**Snake River Watershed Restoration and Protection Strategy (WRAPS) Plan (2014)**

- While the northern half of the watershed was found to be in good condition, it is important to implement protective measures to maintain that healthy status.
- Water quality in the southern half of the watershed is worse; cattle access to the streams and lakes in this area of the watershed is an issue of concern, increasing phosphorous levels and degrading water quality.