Land & Water Resource Management Plan

2018-2028

ST. CROIX COUNTY COMMUNITY DEVELOPMENT DEPARTMENT

COMMUNITY DEVELOPMENT COMMITTEE

LWRMP ADVISORY COMMITTEE

APPROVED 10/2/2018 BY THE ST. CROIX COUNTY BOARD OF SUPERVISORS

LWRMP Advisory Committee:

Jill Berke, St. Croix County Board & Town of Troy

Andrew Ciurro, Wisconsin Department of Natural Resources

Charlotte Croes, Wisconsin Farmer's Union

Don Demulling, Cedar Lake

Dave Drewiske, Kinnickinnic River Land Trust

Kim Dupre, Save Emerald Waters

Dan Hansen, St. Croix County Board

Dick Hesselink, FSA Committee Chair

Gayle House, Squaw Lake

Greg Kerr, Kerr Agronomics, Inc.

Cindy Koperski, Wisconsin Department of Natural Resources

Jeff Lueck, Kinni AG Service

Buck Malick, St. Croix County Sportsman's Alliance

Matt Molbach, Wisconsin Department of Natural Resources

Andrew Norman, West Wisconsin Land Trust

Mike Reiter, St. Croix County Sportsman's Alliance

Linda Rutherford, Friends of Perch Lake

Kasey Seibert, Wisconsin Department of Natural Resources

Alex Smith, Wisconsin Department of Natural Resources

Caitlin Smith, United States Fish and Wildlife Service

Tom Spaniol, Town of St. Joseph & Bass Lake Rehabilitation District

Ryan Sterry, University of Wisconsin Extension

Chris Willger, Wisconsin Department of Natural Resources

Dan Zerr, University of Wisconsin Extension

Tom Zwald, Dairy Farmer

Keith Zygowicz, USDA -- Natural Resources Conservation Service

Community Development Department

Ellen Denzer, Director

Resource Management Division

Kyle Kulow, Conservation & Land Use Specialist

Steve Olson, Conservation & Land Use Specialist

Liz Usborne, Project Technician

Rick Ingli, Conservation & Land Use Technician

Aleisha Miller, Environmental Educator

Planning & Land Information Division

Brett Budrow, Planning & Land Information Administrator

Tammy Wittmer, Conservation Planner

Joseph Ayers, GIS Analyst

Maps: St. Croix County Community Development

Plan writing and project facilitation: Harmony Environmental

List of Tables

List of Figures

List of Appendices

St. Croix County

Land & Water Resource Management Plan

PLAN SUMMARY

The St. Croix County Land and Water Resource Management Plan was developed to guide the Community Development Department in its efforts to conserve natural resources while supporting sustainable economic and recreational use of these resources.

COMMUNITY DEVELOPMENT DEPARTMENT MISSION

Serve the public and guide communities by balancing the use and protection of natural resources with the needs of the public to enhance the quality of life for current and future generations.

Goals established in the plan will help to guide Community Development Department initiatives through the year 2028. They will also provide the basis for funding those initiatives from various private, local, state, and federal sources. The plan is organized into five sections.

Introduction

Describes the plan development process and requirements, related plans and ordinances, and activities of the St. Croix County Community Department with emphasis on the Resource Management Division whose primary focus is on implementation of the Land and Water Resource Management Plan.

Resource Assessment

Provides information about soils, topography, groundwater, surface water, shorelands, wetlands, woodlands, prairies, native species, agricultural land, and population.

Plan Goals, Objectives, and Activities

Provides a detailed implementation strategy for each of five major plan goals. For each goal and objectives activities are identified and an educational strategy is outlined.

Plan Implementation

Discusses how various departments and agencies will work together to implement the plan. Potential funding sources are listed. A 2018 Work Plan is included in an appendix to the plan.

Monitoring and Evaluation

Discusses methods for monitoring water quality and habitat and methods to inventory sources of pollution. It also describes how plan accomplishments will be tracked.

Public participation

An advisory committee assisted with plan development. The advisory committee met three times to review plan goals and to update the implementation strategy. A St. Croix County staff working group assisted with updating resource and work planning information.

The two groups reviewed and provided comments on drafts of the plan document. A public hearing was held on July 25, 2018 at the St. Croix County Government Center in Hudson.

Assessment of water quality, soil erosion, and other nonpoint sources of water pollution

Surface water resources

Lakes, ponds, rivers, streams, and intermittent waterways make up the surface waters of St. Croix County. There are also many artificial drainage ways where the natural water flow has been altered by human activity. Sediment, nutrients, and other pollutants are carried in runoff water from watersheds that drain to these surface water features. The county is well-drained with relatively fewer lakes and ponds than counties to its north.

The surface waters of St. Croix County occupy four HUC8s (Hydrologic Unit Codes). The St. Croix River HUC8 covers the western two-thirds of the county. The Rush-Vermillion Rivers, Chippewa River, and Red Cedar River HUC8s cover the remaining third of the county. These last three mentioned are part of the Mississippi River Basin. In each of these hydrologic units, there are numerous intermittent streams or dry washes and other surface drainage features that carry water only during spring runoff or extreme storm events.

The lakes, rivers, and wetlands of the county are impacted by land use practices in the watersheds that drain to them. Most of the pollutants that enter surface water resources are carried in runoff from many diffuse, or nonpoint, sources. The major pollutants of concern are sediment carried from areas with bare soil such as crop fields and construction sites, and phosphorus attached to soil particles or dissolved in runoff water from fertilized fields and lawns and livestock operations.

Development impacts

The 2017 population estimate for St. Croix County was 87,828.[1] A little less than 50% of these people live in incorporated areas. St. Croix County is part of the Minneapolis-St. Paul Metropolitan Statistical Area (MSA) that had a total of 3,968,806 people in 2010. Population growth and development patterns in St. Croix County are heavily influenced by its proximity to the Twin Cities metro area.

The county's population has more than doubled since 1980. The county had the fastest growth rate in the state of Wisconsin in the mid-2000s, and growth rates remained in the top seven of Wisconsin's 72 counties in 2017. Much of the county's population and historical growth in population (1970 to 2010) is concentrated in the western portions of the county closest to the Twin Cities, and higher growth is anticipated to continue in this area. Land divisions in St. Croix County were highest in 2000 and 2005, fell dramatically from 2005 to 2007, and have remained at relatively low levels through 2017.

The Stillwater Bridge/St. Croix River Crossing which opened in 2017 creates uncertainty for St. Croix County. The report *Community and Economic Impacts of the St. Croix River* Crossing: *A St. Croix*

[1] Demographic Services. Wisconsin Department of Administration.

County Perspective provides information on how the crossing may affect future population growth and economic development along the Highway 64 Corridor and within greater St. Croix County. Based on projections in this study, St. County is estimated to add between 19,000 and 31,000 residents over a 25-year period (2015-2040) with highest rates of growth closest to the Twin Cities along the Highway 64 Corridor.

Rapid population growth and concurrent residential, commercial, and industrial development can lead to negative environmental impacts. Surface water and groundwater can become polluted. Wildlife habitat, quality farmland, and open space are lost to development. Recreation waters can be degraded and recreational lands can be lost or negatively impacted by increased use and development.

Urbanization and other human activities disrupt the natural course of water as it moves across a watershed. Removing vegetation and constructing impervious surfaces such as roads, parking lots, driveways, sidewalks, and rooftops greatly increases the amount and rate of stormwater runoff. As a result, water levels fluctuate more in streams. With less infiltration, there is decreased base flow and greater runoff during and after storms. These changes may bring flooding, increased water temperatures, decreased oxygen levels, greater channel erosion, and increased sedimentation. As stormwater runoff crosses the urbanized landscape; it picks up fertilizers, pesticides, debris, salt, oil, grease, other toxic substances, and sediments and carries them to surface waters.

Agricultural trends

Over the past three decades, the western part of St. Croix County experienced a reduction in the amount of agricultural land. The eastern half of the county is predominantly rural, and agriculture continues to be an important part of the economy and society. Despite the loss of farmland, the total number of farms in the county has not significantly changed. In the last three decades, St. Croix County has been part of a nationwide trend of larger farms. There has been a decrease in the number of dairy farms, an increase in acres of corn and soybeans, a decrease in acres of hay, an increase in the number of horses, and a recent increase in direct market and organic farming. State and national agricultural policies, purchasing habits, agricultural practices, international trade, and commodity prices have been the major reasons why St. Croix County has seen changes in the types of agriculture.[2]

There have also been significant declines in acres enrolled in the Conservation Reserve Program in St. Croix County beginning around 2007. The Conservation Reserve Program requires conservation cover for contract terms of 10-15 years. By reducing water runoff and sedimentation, CRP protects ground-water and helps improve the condition of lakes, rivers, ponds, and streams.[3]

The 2017 transect survey estimates a countywide average soil loss of 2.7 tons per acre per year. There were lower average soil losses estimated in the period from 2009-2017 (2.6 tons/acre/year) as compared with the period from 2001 to 2008 (2.9 tons/acre/year). Highest rates of erosion were found in the Big Marine Lake St. Croix River, South Fork of the Hay River, Trimbelle River, and Willow River watersheds.

The following towns are part of Farmland Preservation zoning: Baldwin, Cylon, Erin Prairie, Pleasant Valley, Rush River, Somerset, Stanton, and Star Prairie. There are currently two agricultural enterprise

[2] St. Croix County Agriculture and Farmland Preservation Plan. 2012.

[3] http://www.fsa.usda.gov/Internet/FSA_File/crpfactsheet0213.pdf

areas in St. Croix County: 1) the Squaw Lake watershed in the Town of Star Prairie, and 2) areas in the Town of Rush River.[4]

The county had 680 acres in farmland preservation agreements and 721 acres in Agricultural Enterprise Areas for the tax year 2017. Landowners received tax credits for 25,783 acres in farmland preservation/exclusive agriculture zoning.

Groundwater resources

Groundwater supplies the majority of potable water to the residents of St. Croix County. The Prairie du Chien Group is the uppermost, saturated bedrock in much of the county and is used extensively for private residential water supplies. Much of the county is a recharge area for this shallow aquifer. The depth to groundwater below the surface of the land is generally less under topographically low areas and greater in areas of higher elevation.

Groundwater can be adversely affected when contaminants are released into the aquifer or spilled upon the ground. Some factors influencing the susceptibility of an aquifer to pollution are depth to groundwater and bedrock, type of bedrock, sub-surface permeability, and the ability of the soil to attenuate or lessen the impact of pollutants. Closed depressions, especially those associated with Karst topography in St. Croix County, are extremely sensitive land features because of their close association with the groundwater. The pollutants released into or near these closed depressions are almost certain to reach groundwater.

SUMMARY OF WORK PLAN

The following goals were developed to address concerns identified in the planning process:

Plan Goals

1. ***Protect and improve groundwater quality and quantity to supply clean water for consumption and other uses and recharging surface waters and wetlands.***
2. ***Protect and enhance surface waters and wetlands to preserve and restore their water quality, ecological functions, and recreational and scenic values.***
3. ***Protect and restore fish and wildlife habitats while enhancing water quality, recreational opportunities, and natural beauty.***
4. ***Preserve agricultural land and improve soil health for crop and livestock production, scenic values, and wildlife habitat.***
5. ***Develop and connect with active environmental stewards and future leaders to support and carry out the above goals.***

The 2018 Annual Work Plan is found in Appendix B. The work plan identifies planned activities with benchmarks and performance measures. It also includes staff hours and expected costs (including for cost sharing).

Water quality objectives in consultation with DNR

The Department of Natural Resources emphasizes development of reports and implementation plans for Total Maximum Daily Load (TMDL) projects. A TMDL is a plan to reduce the amount of specific pollutants reaching an impaired lake or stream to the extent that water quality standards will be met.

[4] https://www.sccwi.gov/413/Farmland-Preservation-Program (accessed December 2017)

TMDL reports and/or implementation plans have been completed for several of St. Croix County's impaired waters including Lake St. Croix, Squaw Lake, Cedar Lake, Lake Mallalieu and the Willow River, and the Red Cedar River. This plan adopts the goals and objectives of the TMDL plans and in lake management plans for Outstanding Resource Waters.

Agricultural Performance standards

The Agricultural Performance Standards will be addressed through implementation of the Agricultural Performance Standards strategy outlined in Appendix A.

Progress tracking

Progress tracking involves both water quality monitoring and evaluation of progress toward meeting the goals of the land and water resource management plan.

Water quality and habitat monitoring

Recommendations related to improving water quality data for the land and water resource management plan are stated below.

- *The Department of Natural Resources should invest resources in monitoring lakes, rivers, and groundwater in St. Croix County.*
- *The Department of Natural Resources and St. Croix County should support efforts of lake groups and other organizations to pursue funding for lake and river management projects.*
- *The Department of Natural Resources and St. Croix County should encourage and support self-help monitoring programs.*

State and federal agencies that emphasize fish and wildlife habitat restoration and protection have many ongoing efforts to monitor habitats and species. The Resource Management Division (RMD) of Community Development does not intend to carry out habitat monitoring activities for the implementation of this plan. Instead it will support habitat restoration efforts and utilize monitoring data from other sources.

Plan evaluation

Plan evaluation assesses whether the objectives and activities of the plan are being accomplished. Performance measures are listed for plan activities in the 2018 Annual Work Plan (Appendix B). Measures of plan success include resource monitoring, practice completion, assistance provided, compliance with standards, and educational activities completed. The RMD will report progress against evaluation criteria in the work plan each year.

Chapter 1. Introduction

Wisconsin Chapter 92 and Chapter ATCP 50.12 require counties to develop a Land and Water Resource Management Plan. The St. Croix County Land and Water Resource Management Plan was developed to guide the St. Croix County Community Development Department in its efforts to conserve natural resources while supporting sustainable economic and recreational use of these resources.

COMMUNITY DEVELOPMENT DEPARTMENT MISSION

Serve the public and guide communities by balancing the use and protection of natural resources with the needs of the public to enhance the quality of life for current and future generations.

Goals established in the plan will help to guide the Community Development Department Resource Management Division's initiatives through the year 2028. They will also provide the basis for funding those initiatives from various private, local, state, and federal sources.

The 2018 Annual Work Plan is found in Appendix B. The work plan identifies planned activities with benchmarks and performance measures. It also includes staff hours and expected costs (including for cost sharing).

PLAN DEVELOPMENT PROCESS

The focus of the plan update was to review implementation strategies including the strategy to implement the NR151 Agricultural Performance Standards. Two groups assisted with plan development. An advisory committee representing natural resource agencies, farmers, businesses, conservation organizations, and local government, met three times to review plan goals and update the implementation strategy. A St. Croix County staff working group assisted with updating resource and work planning information. Both groups reviewed and provided comments on drafts of the plan document.

Advisory Committee Meeting Dates:

- January 23, 2018
- February 13, 2018
- March 6, 2018

Staff Meeting Date:

- January 16, 2018

The plan was not intended to contain an exhaustive inventory of natural resources in St. Croix County. Instead, it drew upon existing inventory information from previously prepared documents. Resource information contained in the 2008 Land and Water Resource Management was updated as needed.

PLAN REQUIREMENTS

This land and water resource management plan was developed to meet the requirements of the County Land and Water Resource Management Planning Program. ATCP 50.12 codifies specific standards for the approval of the Land and Water Resources Management Plans with most recent revisions in 2014.

In NR151 the Department of Natural Resources (DNR) established agricultural and non-agricultural performance standards and prohibitions to reduce runoff and protect water quality. In ATCP 50, the Department of Agriculture, Trade and Consumer Protection (DATCP) identified conservation practices that farmers must follow to meet the DNR standards. These standards require counties to consult with DNR and identify how they will assist landowners to achieve compliance with performance standards and prohibitions. Appendix A contains the Agricultural Performance Standards Implementation Strategy for St. Croix County.

As a requirement of the land and water resource management planning program, the County Land and Water Conservation Committee must make a reasonable effort to notify landowners and land users if soil erosion rate determinations are made, and provide an opportunity for these individuals to comment. The Community Development Committee serves as the St. Croix County Land Conservation Committee. Erosion rates for individual fields were not assessed in the preparation of this plan. Landowners were notified of the St. Croix County Land and Water Resource Management Plan contents in the notice for the public hearing. Landowners may receive individual determinations involving conditions on their property through a) conservation plans, b) compliance status reports and c) compliance status letters authorized under the NR151 implementation strategy, and notices issued under NR151.09 or NR151.095.

A public hearing was held for the St. Croix County Land and Water Resource Management Plan on July 25, 2018. Comments on the draft plan were read into the public record and incorporated into the final plan. The plan was brought before the St. Croix County Board of Supervisors at the September 2018 meeting. The land and water resource management plan must be submitted to the Department of Agriculture, Trade, and Consumer Protection and the Department of Natural Resources for review. was submitted to the Wisconsin Land and Water Conservation Board in August 2018.

- Public Hearing Date: July 25, 2018
- County Board Approval Date: September 4, 2018

PERFORMANCE STANDARDS & PROHIBITIONS

County land and water resource management plans are the local mechanism to implement the NR151 runoff standards. Through Wisconsin Act 27, the Wisconsin Legislature amended state statutes to allow county land conservation committees to develop implementation strategies for addressing local water quality priorities related to controlling erosion, sedimentation, and nonpoint source water pollution.

The soil and water conservation standards for the St. Croix County Farmland Preservation Program and other county programs reflect the NR151 Agricultural Performance Standards.

Updates to the land division, zoning, animal waste, and shoreland ordinances also consider the NR151 standards. In addition, several county-developed standards are part of the implementation strategy of this plan.

RELATED PLANS

St. Croix County Groundwater Quality Protection Study Group

The study group met 19 times throughout 2017 to address the following goal: *To provide the St. Croix County Board with sound, science-based recommendations for policies that protect the quality of groundwater supply that our County residents rely upon for personal household use and consumption.* After reviewing considerable information gained through a series of presentations, the group developed core recommendations (summarized for brevity here):

- Explore options for regulation of livestock operations.
- Increase the number of acres in nutrient management plans (NMPs).
- Revise county land use policy and zoning ordinances related to well design, well construction standards, zoning districts, lot sizes, establishing groundwater recharge zones, and higher standards for common POWTs and shared wells to protect groundwater resources.
- Develop a county protocol for urgent response to actual or potential water resource pollution events that threaten human health, the environment, or natural resources.
- Develop a scientifically sound drinking water well testing program to create baseline data to measure drinking water quality over time.
- Identify and map environmentally sensitive areas and conduits to groundwater to improve siting of POWTS, wells, spreading, etc.
- Develop a plan with cost estimates for constructing a groundwater inset model to determine the source of nitrate issues and distinguish between non-agricultural or agricultural sources of pollutants.
- Establish active water quality committee to ensure that the protection of ground and surface water continues to be a priority issue actively addressed by the county.

Community Development Department staff developed a report with estimates of staff time and cost estimates to implement the Ground and Surface Water Quality Study Group core recommendations (Appendix D). This report also outlines steps to implement the recommendations. These steps were considered in the actions for this Land and Water Resource Management Plan update.

Farmland Preservation Plan

The St. Croix County Board adopted the St. Croix County Agriculture and Farmland Preservation Plan in 2012. It was written to be both the agricultural element of St. Croix County's Comprehensive Plan and St. Croix County's Farmland Preservation Plan.[5]

AGRICULTURE VISION

In the year 2035, the farms and agricultural enterprises operate efficiently and effectively, and the farmers are good stewards of the land, preserving it for future generations. St. Croix's agricultural sector is particularly important to its residents. The County works to maintain farming as an occupation for families and as an active land use. The County recognizes that agricultural land is not undeveloped land waiting for other uses, but is a valuable and productive resource that supports a healthy agricultural industry. The County's agricultural industry includes farms of all types and sizes supported by a variety of economic and land use techniques

[5] St. Croix County Comprehensive Plan Agriculture & Farmland Preservation. 2012.

Agriculture Goals

Goal 1: Preserve farmland to maintain and grow St. Croix County's agricultural industry and to enhance the rural landscape.

Goal 2: Promote agricultural development to support St. Croix County producers, businesses, and communities.

Goal 3: Guide or manage development patterns that will preserve farmland and promote agricultural development.

Goal 4: Conserve availability and quality of natural resources for agriculture.

Policies related to Farmland Preservation Plan Requirements:

The county will establish a farmland preservation area consistent with the Chapter 91, Wisconsin Statutes and the Farmland Preservation program. The farmland preservation area will be countywide, consisting of all parcels with a LESA composite score of 118 or above that are eligible to be included based on Chapter 91 standards (Figure 1). In implementing the plan, the farmland preservation area will be land that is eligible and recommended for farmland preservation zoning or Agricultural Enterprise Areas (AEA).

The delineation of the farmland preservation zoning districts to implement the plan shall be developed cooperatively between the county and towns that are willing to adopt it.

The county will support local landowner petitions to establish AEAs.

The county will support and encourage 3-party agreements to preserve farmland that include multiple partners such as land-trust, government, and land owner.

An income tax credit is available for agricultural properties that are zoned farmland preservation/exclusive agriculture and/or if a landowner signs a long-term farmland preservation agreement and is in an Agricultural Enterprise Area. Whether under zoning or an agreement, the land owner's acreage must follow a soil conservation plan or meet state soil and water conservation requirements. In order for landowners to participate in the program, their county must adopt an agricultural or farmland preservation plan and a farmland preservation/exclusive agriculture zoning ordinance which is certified by the State of Wisconsin Department of Agriculture, Trade and Consumer Protection.

The following towns are part of FPP zoning: Baldwin, Cylon, Erin Prairie, Pleasant Valley, Rush River, Somerset, Stanton, and Star Prairie. There are currently two agricultural enterprise areas in St. Croix County: 1) the Squaw Lake watershed in the Town of Star Prairie, and 2) areas in the Town of Rush River.[6]

The county had 680 acres in farmland preservation agreements and 721 acres in Agricultural Enterprise Areas for the tax year 2017. Landowners received tax credits for 25,783 acres in farmland preservation/exclusive agriculture zoning. For the 2017 tax year, credits averaged $261 for 797 parcels in St. Croix County. This was equivalent to $1,404 for 148 participants.

[6] https://www.sccwi.gov/413/Farmland-Preservation-Program (accessed December 2017)

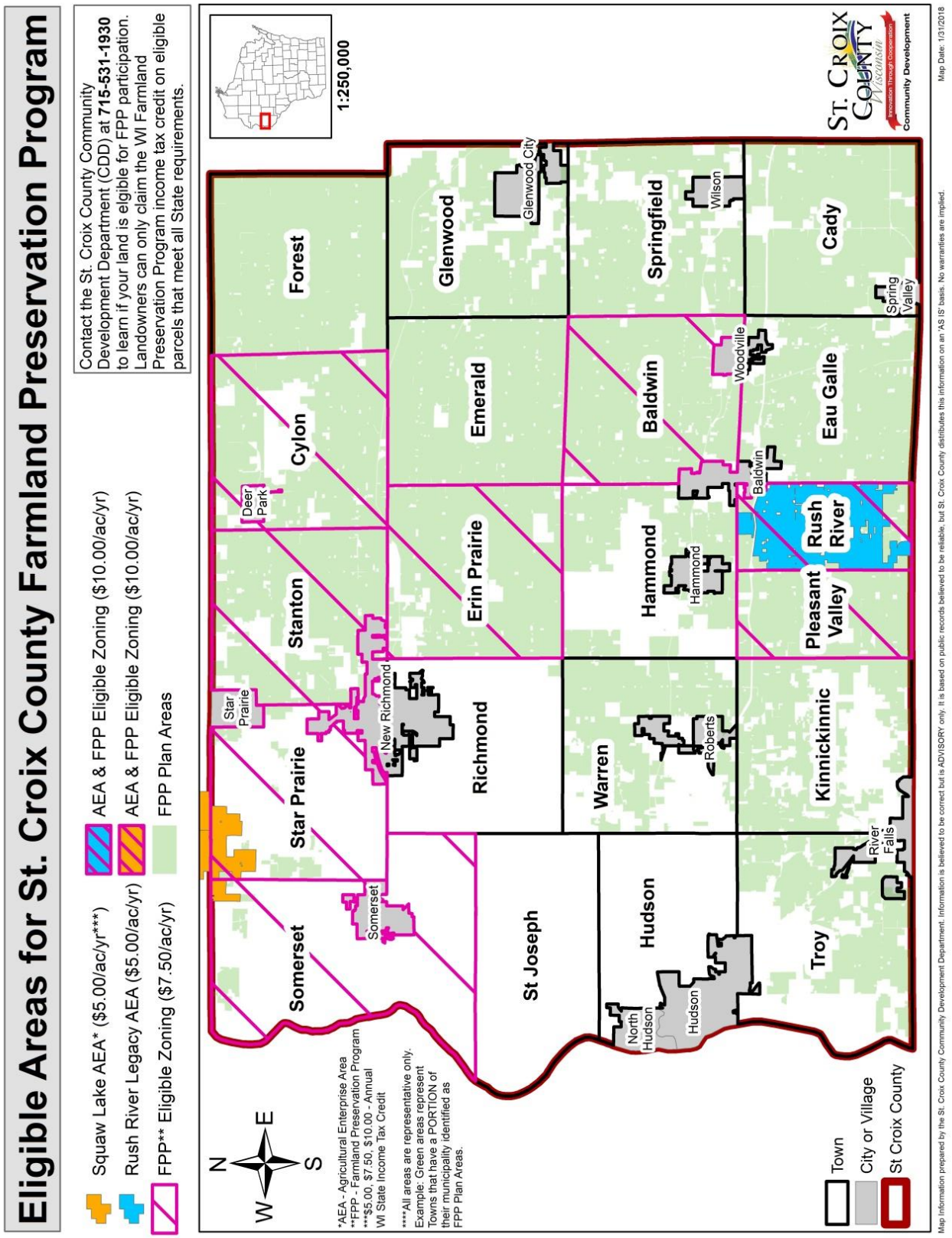


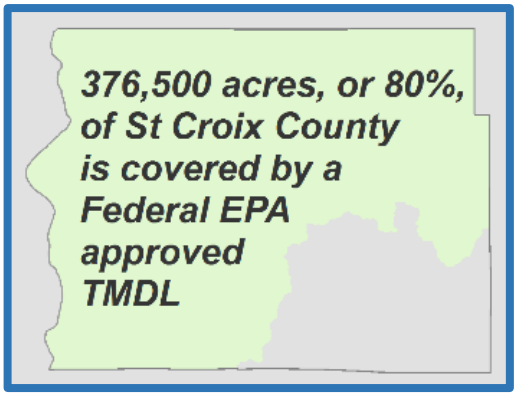
Figure 1. St. Croix County Farmland Preservation Areas

Land Use Planning

The St. Croix County Board approved a comprehensive plan in November 2012. The purpose of the comprehensive plan is to create a comprehensive set of informational resources and a policy framework to assist the county and local units of government in managing development. The plan explores the physical and economic conditions of the county, identifies important development issues affecting the county, and articulates a countywide development policy to assist local and county governments in building their capacity to deal with development issues. The plan document is divided into two or more parts for each required element. Volume 1 contains the vision, goals, objectives and policies for each element with required minimum background data. Volume 2 contains all of the extensive population, demographics, policy, and data analysis required for each element.[7]

Total Maximum Daily Load Reports & Implementation Plans

The U.S. Clean Water Act requires that states develop Total Maximum Daily Loads (TMDLs) for those water bodies deemed impaired, meaning they are not meeting water quality standards. Once a TMDL is established, an implementation plan needs to be developed to address the water quality impairment issues facing the water body of concern. The plan is developed to describe the management measures and regulatory approaches necessary to address the pollutant load issues affecting the water body, the parties responsible for such management measures, the costs and sources of funds for these measures, methods to get participation from stakeholders, a timeline for implementation, ways to measure success, and also any adaptive management techniques employed as the plan moves forward.[8] TMDL reports and plans prepared for St. Croix County waters are detailed in the *Watershed Water Quality Conditions* section of this Land and Water Resource Management Plan.



St. Croix Scenic Riverway Plans

In October 2001 the National Park Service (NPS), St Croix National Scenic Riverway, completed a *Cooperative Management Plan* which covers the 52 mile St. Croix River segment that runs from St. Croix Falls, WI / Taylors Falls, MN to the confluence with the Mississippi. This six-year planning effort was completed in cooperation with the Minnesota and Wisconsin Departments of Natural Resources. The *Watershed Stewardship Initiative* is an implementation strategy for the plan intended to raise awareness among watershed residents and riverway communities about shared stewardship of the riverway and its watershed.

The National Park Service prepared a *Foundation Document for the St. Croix National Scenic Riverway* in 2017. The document provides guidance for planning and management decisions. The core components of the foundation document include a brief description of the park as well as the park's purpose, significance, fundamental resources and values, and interpretive themes. It also includes

[7] The St. Croix County 2012-2035 Comprehensive Plan is found here: https://www.sccwi.gov/369/Comprehensive-Plan-Project

[8] Red Cedar River Water Quality Partnership. A Water Quality Strategy for the Land and Waters of the Red Cedar River Basin. July 2015.

special mandates and administrative commitments, an assessment of planning and data needs that identifies planning issues, planning products to be developed, and the associated studies and data required for park planning.

Priority Watershed Plans

St. Croix County administered the St. Croix Lakes Cluster Priority Watershed Project and participated in the Kinnickinnic Priority Watershed Project and S. Fork of the Hay River Priority Watershed Project in the past. State funding is no longer available for watershed projects. The watershed plans reported the results of water resources appraisals and pollution source inventories, included a strategy for protecting water resources, and provided financial assistance to reduce pollutant sources in the watershed.

Basin Water Quality Management Plans

The Department of Natural Resources prepared basin water quality management plans. Two river basins cross St. Croix County borders, and two plans address these basins. The *State of the St. Croix Basin* was completed in March 2002 and the *State of the Lower Chippewa River Basin* was completed in 2001. The basin plans were used as references in the preparation of previous plans.

ST. CROIX COUNTY ORDINANCES[9]

Comprehensive Zoning –Chapter 17

Chapter 17 of St. Croix County's Land Use and Development Code of Ordinances regulates zoning. Land disturbance restrictions, stormwater management, and erosion and sediment control plans and standards are part of the ordinance. It describes the conditions for Ag-1 Agricultural District, Ag-2 Agricultural District, Rural Residential District, and other zoning districts.

St. Croix County began a 2-year process of updating its zoning ordinance in June 2017. The goals of this process are to make the ordinance consistent with current state laws and legal standards, to establish districts and regulations that fit the varied needs of towns across the county, and to make it easier for all users to understand and apply the ordinance. Most of the towns have completed comprehensive plans that describe local preferences for how land will be used. Seventeen of the county's 21 towns are under county zoning, while three have independent town zoning (Hudson, Troy, Forest) and one is unzoned (Cady).[10] All cities and villages in the county have a general zoning ordinance.

Shoreland

Shoreland zoning provisions apply to land 1) Within 1,000 feet of the Ordinary High Water Mark (OHWM) of navigable lakes, ponds or flowages, and 2) Within three hundred (300) feet of the ordinary high-water mark of navigable rivers or streams, or to the landward side of the floodplain boundary. The county shoreland zoning ordinance provisions were revised to meet NR 115 Wisconsin Administrative Code revisions in 2014 and 2016.

[9] St. Croix County Ordinances are found here: https://www.sccwi.gov/490/Ordinances

[10] Zoning Ordinance Comprehensive Update. July 2017.

Lower St. Croix Riverway Overlay District

The Lower St. Croix River is included in the National Wild and Scenic Rivers Act. St. Croix County has adopted regulations to protect and preserve the scenic and recreational value of the riverway.

Floodplain

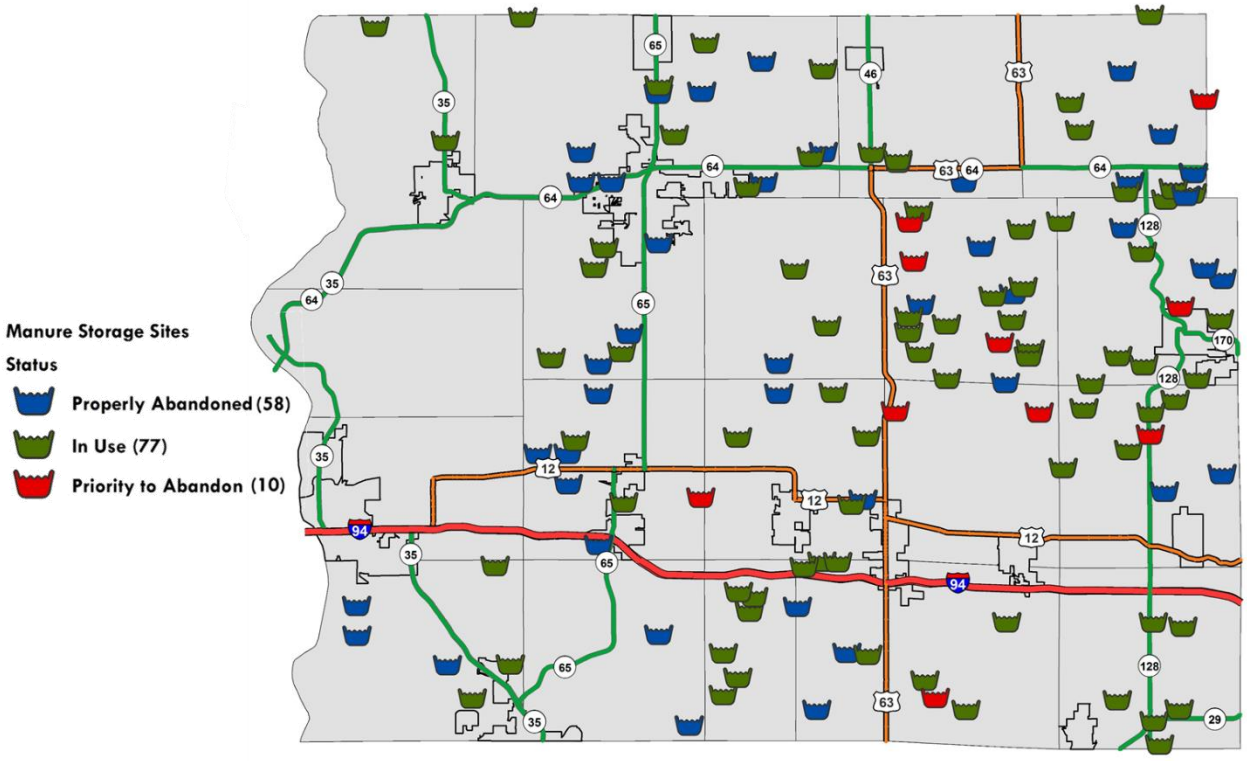
St. Croix County has adopted and implemented floodplain regulations within the county zoning ordinance. This section applies to land in all towns. In addition, the City of Hudson and the Villages of Roberts, Wilson, and Woodville have adopted floodplain ordinances.

Land Division – Chapter 13

Chapter 13 of St. Croix County's Land Use and Development Code of Ordinances regulates land divisions in the county. Land disturbance restrictions, stormwater management, and erosion and sediment control standards are part of the ordinance. All of the villages and cities have adopted local land division ordinances. The most recent amendment was in 2010.

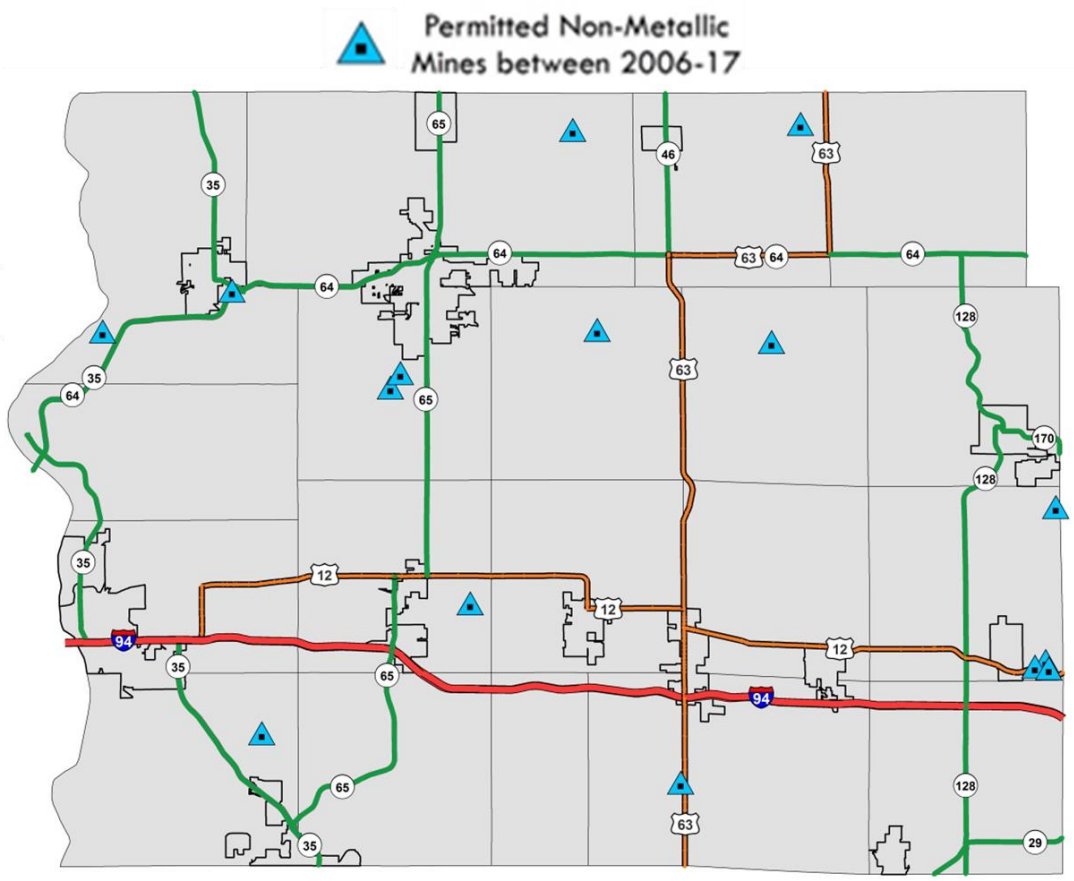
Animal Waste – Chapter 11

Chapter 11 of St. Croix County's Land Use and Development Code of Ordinances regulates animal waste storage facilities and operations, and the location, siting, design, construction, inspection, installation, management, alteration, and utilization of such facilities. The ordinance also regulates the use and application of waste from these facilities in order to prevent pollution of the county's surface and groundwater to protect public health, environment, safety, and general welfare. The ordinance was adopted in 1985 and most recently updated in 2012. It is effective in all towns. The ordinance requires a permit for animal waste storage structures. Structures must be constructed according to Natural Resource Conservation Service standards including completing and regularly updating a 590 Nutrient Management Plan. Owners/operators must comply with State Agricultural Performance Standards.



Nonmetallic Mining – Chapter 14

St. Croix County's Chapter 14, Nonmetallic Mining, of St. Croix County's Land Use and Development Code of Ordinances regulates all nonmetallic mining operations and sites within each town in the county. An operation and site restoration/ revegetation plan is required. The ordinance was enacted in 2004 and amended in 2007 and 2014.



Sanitary – Chapter 12

St. Croix County's Chapter 12, Sanitary, of St. Croix County's Land Use and Development Code of Ordinances regulates proper siting, design, installation, inspection, and management of all private onsite wastewater treatment systems (POWTS) and non-sanitation systems to protect the environment and health of the citizens of St. Croix County. This ordinance is effective countywide. The ordinance was rewritten to comply with changes to state code in 2005, and amended in 2016.

Citation – Chapter 1

St. Croix County's Chapter 1, Citation, of St. Croix County's Land Use and Development Code of Ordinances regulates appeals, fines, and enforcement procedures for county ordinances. Citation and enforcement authority rests with the County Zoning Office for the ordinances listed above. The Resource Management Division may provide technical assistance to meet appropriate chapter requirements, but the division does not have enforcement authority.

RELATED STATE REGULATIONS

NR 151

Implementation and enforcement of agricultural performance standards and prohibitions are covered under this state rule. St. Croix County's implementation plan for NR151 is included in Appendix A.

ATCP 50

Conservation practices that farmers must follow to meet the DNR standards of NR151 are included in this regulation. It also guides appropriate practices and cost share procedures for implementation of additional conservation practices.

ATCP 50 also codified specific standards for the approval of the Land and Water Resource Management plans and requires counties to consult with DNR and identify how they will assist landowners to achieve compliance with performance standards and prohibitions.

SPS 383-385

The Wisconsin Department of Safety and Professional Services (DSPS) administers regulation of POWTS in Wisconsin. Wisconsin Administrative Code Chapters SPS 383-385 contain the uniform standards for Private On-Site Wastewater Treatment Systems (POTWS) that cannot be more restrictive at the county level.

ATCP 51

Wisconsin Statute s 93.90 provides uniform regulation of the siting livestock facilities across the state. Variations that exceed state requirements are allowed but only if necessary to protect public health or safety. Local government must adopt requirements by ordinance prior to a siting application being filed. The conditions to exceed state standards must be based on "reasonable and scientifically defensible findings of facts, adopted by the political subdivision that clearly show the requirement is necessary to protect public health and safety." State permitting is "one size fits all." State policies do not account for local variations in soil conditions, geology, watershed characteristics, etc.

A siting application must be approved if it complies with ATCP 51.30. An application may be denied only if there is clear and convincing evidence that it does not comply. It may also be denied if it violates existing code, such as that for floodplains, shoreland, electrical code, etc. Counties may enact regulations of livestock operations that are consistent with and do not exceed the performance standards, prohibitions, conservation and technical standards of state law without DNR and DATCP approval. Counties may enact operational regulations that exceed state standards, if such standards are approved by the DNR and DATCP and are necessary to achieve water quality standards.

NR 243

NR 243 defines regulations governing discharge of pollutants to navigable waters of the state. In addition, it defines and governs standards associated with Confined Animal Feeding Operations (CAFOs- operations larger than 1000 animal units) and establishes permit requirements for these large-scale producers under Wisconsin Pollution Discharge Elimination System (WPDES) Permits. These permits address the following activities:

- Manure storage
- Runoff control systems
- Groundwater monitoring
- Compost facilities.
- Nutrient management to include spray irrigation

RESOURCE MANAGEMENT DIVISION ACTIVITIES

The St. Croix County Community Development Department manages and administers four divisions with seven program areas: Land and Water Conservation, Land Use Code Administration and Enforcement, Planning, Land Information and Geographic Information Services, Real Property Description, Parks, and Recycling. Although all program areas are interrelated, each program area operates under separate authority or county responsibility.

Activities related to the Land and Water Resource Management Plan are managed primarily within the Resource Management Division.

NATURAL RESOURCE MANAGEMENT VISION

By 2035, St. Croix County has maintained and enhanced its natural resource base. The water quality for drinking and recreation is excellent. The streams, rivers and lakes are clean and vibrant with healthy fish and recreational opportunities. The air quality is excellent in part because green energy is produced by solar, wind, and geothermal power.

St. Croix County has a healthy diversity of natural land resources – lakes, rivers, streams, woods, wetlands, prairie – that contribute to the quality and abundance of wildlife and to the beauty of the county. The County has conducted a natural resources inventory to provide a basis for exploring new policies such as preservation and transfer of development rights. The County works to maintain the lake and river water quality in particular in the St. Croix River, Willow, Apple and Bass Lake watersheds, and to preserve and enhance wildlife corridors along streams and rivers and through woods and prairies. Enhancing water quality has occurred by preventing contaminated runoff from agricultural lands and impervious surfaces like highways and driveways. The County has worked to give the public access to many of these natural areas for walking, nature study and quiet contemplation in coordination with the DNR and in some cases private landowners. The County has promoted the use of purchase of development rights through a land trust, has incentives to preserve viewsheds and open space and continues to examine new techniques as they are created.

The County has identified a network of natural resource corridors that provide various activities like hunting, fishing and walking when appropriate. The County has identified in conjunction with these corridors a network of bike trails and other recreational opportunities

Land & Water Conservation Responsibilities

Prepare, maintain, and implement the Land and Water Resources Management Plan under the authority of Chapter 92, Wisconsin Statutes; promote conservation of long-term soil productivity; protect the quality of natural resources; enhance water quality; and focus on correction of severe soil erosion problems through programs including watershed management of targeted lakes and rivers, support of the Working Lands and Farmer Led Council Initiatives; and promote natural resource management programs.

Financial and Technical Assistance

A variety of federal, state, and local programs encourage the installation of conservation practices such as vegetative buffers near water, wetland restoration, prairie plantings, and sedimentation basins. The program encourages participation, provides administration, and designs and inspects practices. Management plans for cropland rotations, best management practices, and fertilizer and manure applications are also prepared. Progress toward meeting program objectives is tracked.

Technical Review for State and Local Regulatory Programs

Staff review and recommend approval of plans for erosion control and stormwater management. This review occurs before land division, land use, and Board of Adjustment special exception permits can be issued. Staff members review animal waste facility operations before a facility is permitted, when an animal waste storage facility is proposed, or when a complaint is received. Plans are also reviewed for the operation and reclamation of nonmetallic mines.

Educational Activities

Educational activities that emphasize protection of natural resources are provided countywide. Conservation field days are offered throughout the county to grades K-12. Classroom presentations are given to various grade levels upon request. The department is involved with farm city day and the county fair, and has displays at sport shows and lake fairs. Staff members also assist with a statewide conservation camp each year.

ADDITIONAL COMMUNITY DEVELOPMENT DEPARTMENT PROGRAMS

Community Environmental Services

These services include well water testing, sale of trees, prairie plants, and compost bins, and radon testing. The department also promotes the take back and disposal of medications that the St. Croix County Sheriff operates.

Land Use Code Administration & Enforcement

Administer and enforce County land use ordinances, including sanitary, animal waste, zoning, nonmetallic mining and land division, under the authority of s. 59.69, s. 59.70 (5), s. 295.13 and s. 236.45, Wisconsin Statutes and related administrative codes.

Planning

Prepare, maintain and implement the County Comprehensive Plan under the authority of s. 59.69 (3) and s. 66.1001, Wisconsin Statutes.

Land Information

Prepare, maintain and implement a County land information plan and program, as well as serve as the designated Land Information Office for St. Croix County under the authority of s. 59.88, Wisconsin Statutes and related administrative codes.

Parks

Manage the County Park system of nature-based, passive outdoor recreation facilities including Glen Hills and Homestead full-service County Parks, one with overnight camping; Troy Beach and Apple River parks with limited facilities; Pine, Squaw and Bass Lake boat landings; Kinnickinnic and Stanton County forests; 7-mile off-road Wildwood Trail; management of Glen Hills PL-566 floodwater control structures and 216 miles of snowmobile trails.

Real Property Description

Maintain a listing of all real estate in St. Croix County for assessment and taxation of property, provide parcel information to local assessors, clerks, treasurers and the general public, as well as provide the appropriate forms for local taxation districts to carry out the assessment and taxation of real property under the authority of s.70.09, Wisconsin Statutes.

Recycling

Serve as the "Responsible Unit" for recycling on behalf of the County's municipalities to develop, implement and administer a comprehensive, county-wide waste reduction, reuse and recycling program and related special waste programs for waste generated in St. Croix County under the authority of Chapters 59, 144 and 159, Wisconsin Statutes and related administrative codes.

Chapter 2. Resource Assessment[11]

St. Croix County is located in west central Wisconsin and is separated from Minnesota by the St. Croix River. The county is bordered by Polk County to the north, Dunn County to the east, and Pierce County to the south. St. Croix County has a combined land and water area of approximately 469,760 acres or roughly 736 square miles. County land coverage is as follows: agricultural land 41 percent, grassland 28 percent, forest land 21 percent, developed land 5 percent, and wetlands and surface water 5 percent as illustrated in Figure 3.[12] The county is rectangular and is about 33 miles east to west and 24 miles north to south.

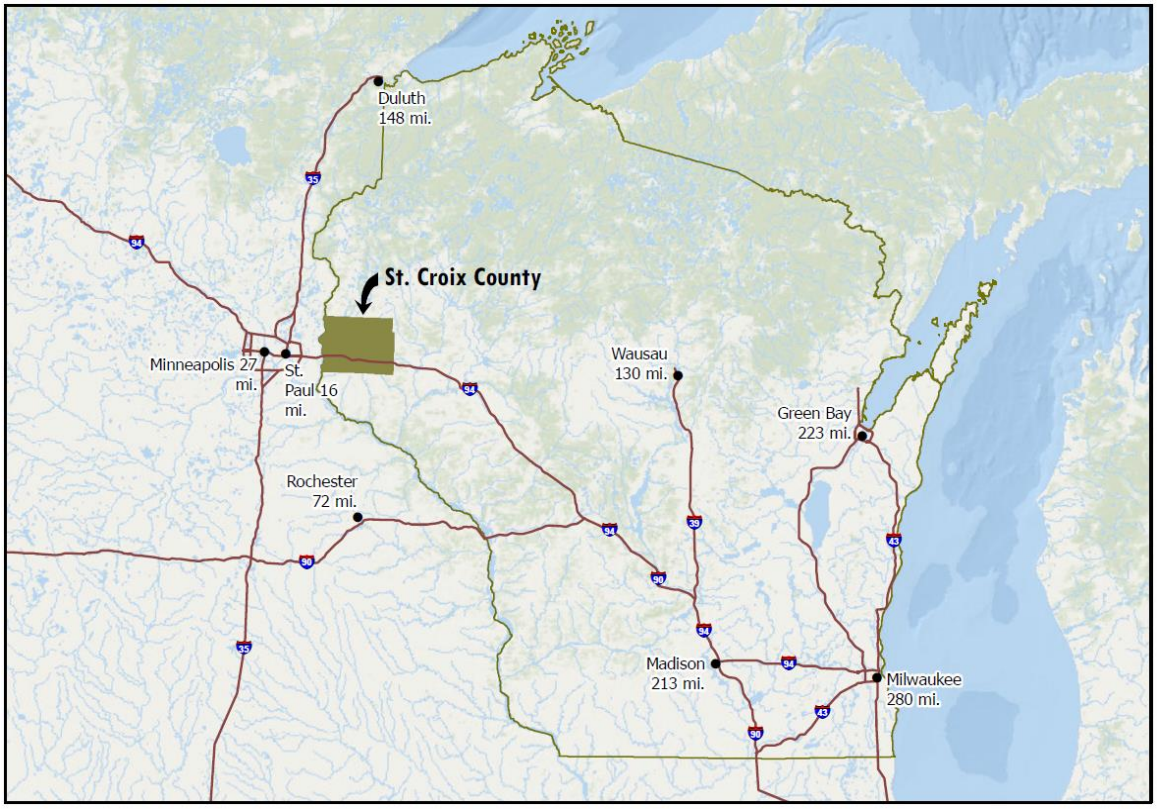


Figure 2. St. Croix County Location

[11] Much of this chapter is taken from the comprehensive plan written for the St. Croix County Planning and Zoning Department by the West Central Wisconsin Regional Planning Commission.

[12] Info was obtained from Wiscland 2, a land cover data set for the state of Wisconsin as of 2016. The dataset is primarily derived from remote sensing imagery acquired by the Landsat 5, 7, and 8 satellites between 2010 and 2014. Land cover was classified at 30 m resolution. For estimates of class and regional accuracy, and detailed information on the map production, classification scheme, and class descriptions, see the Wiscland 2 User Guide (ftp://dnrftp01.wi.gov/geodata/metadata/WI_land_cover2_user_guide.pdf)

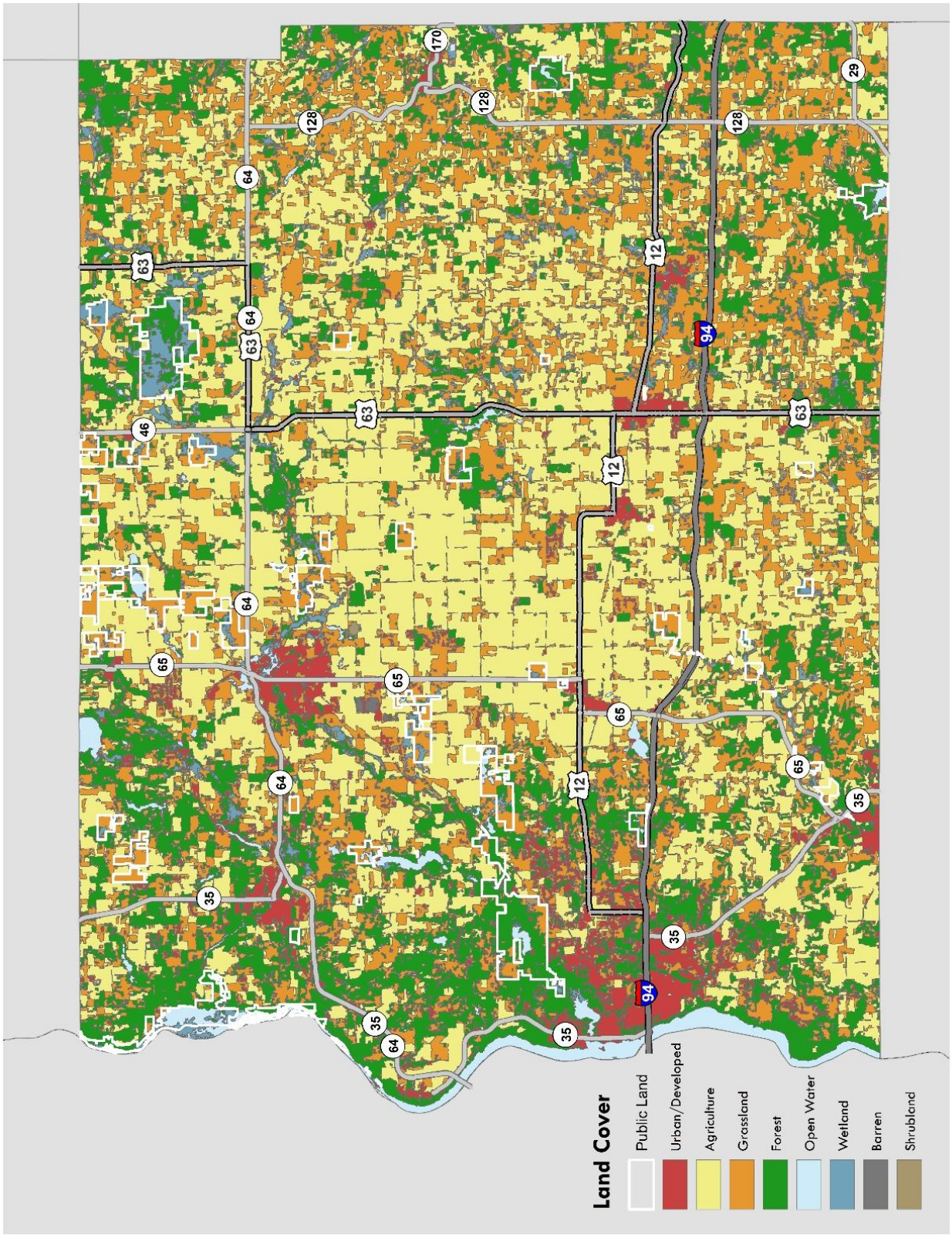


Figure 3. Land Cover (from Wiscland 2, 2016)

SOILS & TOPOGRAPHY

St. Croix County has a wide variety of soils ranging from heavy, poorly drained to light and droughty. Excessively drained and well-drained soils are generally found in the western half of the county. Moderately drained and somewhat poorly drained soils predominate in the eastern half. However, both extreme soil conditions are found throughout much of the county.

Widely varying soil types and complex slopes make the application of some best management practices troublesome. There are many areas of the county with poorly drained soils on relatively steep slopes combining erosion and drainage problems.

The General Soils Map (Figure 4) shows the soil associations in the county. Soil associations are landscapes with distinctive patterns of soils in defined proportions. They typically consist of one or more major soils and at least one minor soil, and are named for the major soils. The map contains general soils information for the county and is not intended to provide information for site-specific applications. The county has a detailed digital soil survey available for planning or management purposes.

The Wisconsin Department of Safety and Professional Services (DSPS) administers the regulation of POWTS in Wisconsin. Wisconsin Statute 145 provides DSPS with the general authority to establish minimum standards to ensure buildings and facilities in the state shall be safe, sanitary and safeguard the public health. Wisconsin Administrative Code Chapters SPS 383-385 contain the uniform standards that cannot be more restrictive at the county level. Chapter SPS 383 establishes uniform standards and criteria for the design, installation, inspection, and the management of POWTS. Chapter SPS 384 governs the quality and installation of materials and equipment relating to plumbing. Chapter SPS 385 establishes minimum requirements for evaluating and reporting soil and site characteristics that may affect the treatment or dispersal of wastewater. This code relies heavily on the ability of the soil to efficiently absorb the effluent discharged from the septic system drain field.

The Natural Resources Conservation Service soil interpretations for septic tank absorption fields consider the occurrence of most excessively drained soils over fractured bedrock or high water tables a limitation to septic system development because effluent can be readily transported to the groundwater in these situations. Hence, even though siting of septic systems may be allowed by state code, doing so has the potential to threaten groundwater quality in some areas. The digital soil survey indicates that 633 square miles or about 87 percent of the total land area of the county is covered by soils unsuitable for septic or conventional on-site sewage disposal systems. However, there are likely locations on many of these sites where soils can meet septic system requirements.

The topography of St. Croix County ranges from gently rolling to hilly and rough. A large portion of the central part of the county is a rolling plain. Mesas of resistant rock formations in the southwestern portion of the county break up this plain. The northwestern portion and eastern fringe of the county contain the most rugged topography.

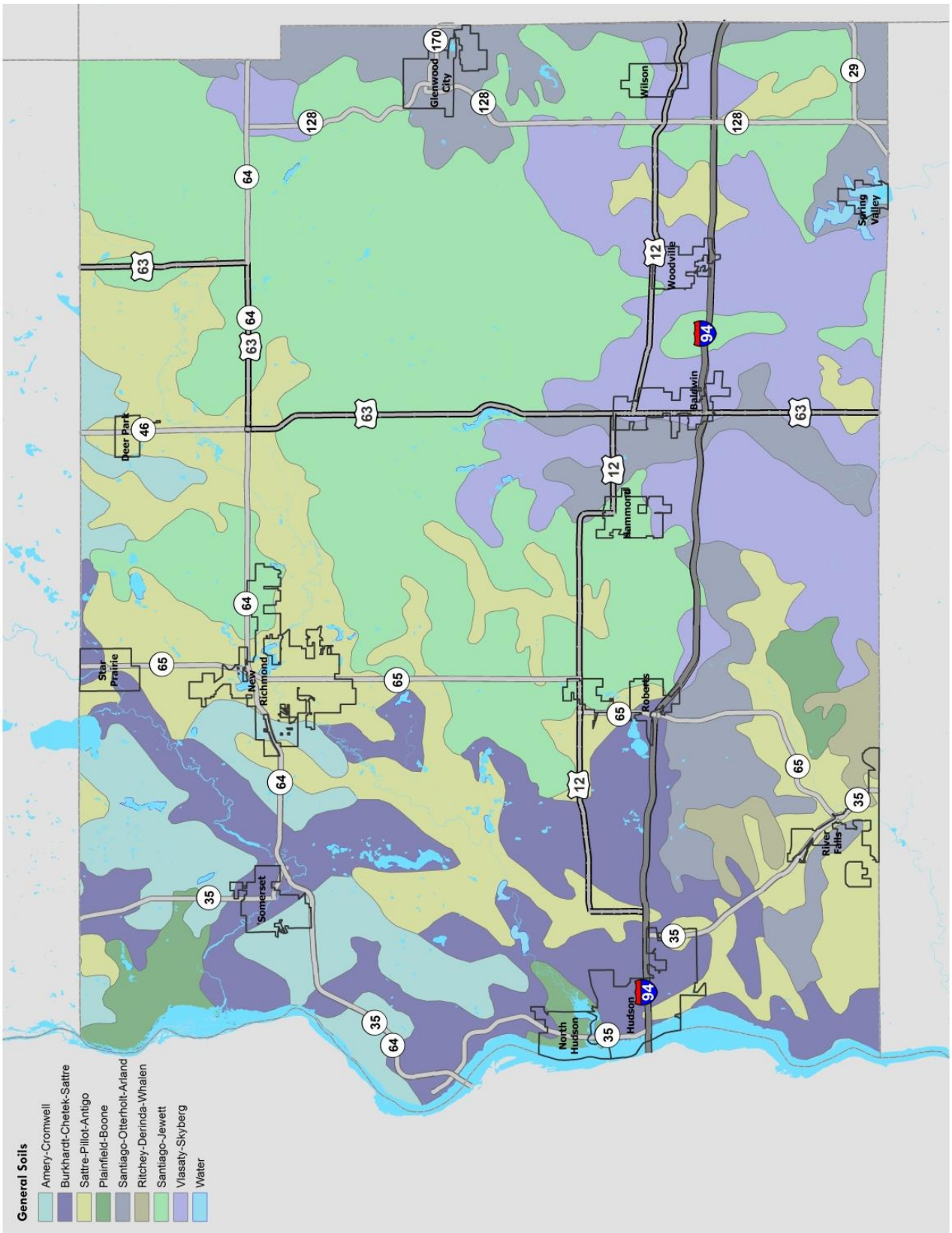


Figure 4. General Soils Map

GROUNDWATER

Groundwater supplies the majority of potable water to the residents of St. Croix County. The principal sources of potable water supplies are the sand and gravel aquifer and the sandstone aquifer. The sand and gravel aquifer consists of unconsolidated sand and gravel in glacial drift and alluvium. These deposits occur throughout about one-fourth of the county, either at the land surface or buried under less permeable drift. The sand and gravel aquifer can yield sufficient water for private residential water supplies.

The sandstone aquifer includes all dolomite and sandstone bedrock younger than the Precambrian age. Precambrian rocks generally have low permeability and mark the lower limit of groundwater movement. The bedrock geology of St. Croix County is illustrated in Figure 5 with depth to bedrock in Figure 6. The sandstone aquifer is continuous over the county and includes, from youngest to oldest rock formations, the Platteville Dolomite, the St. Peter Sandstone, the Prairie du Chien Dolomite, and Cambrian sandstones.

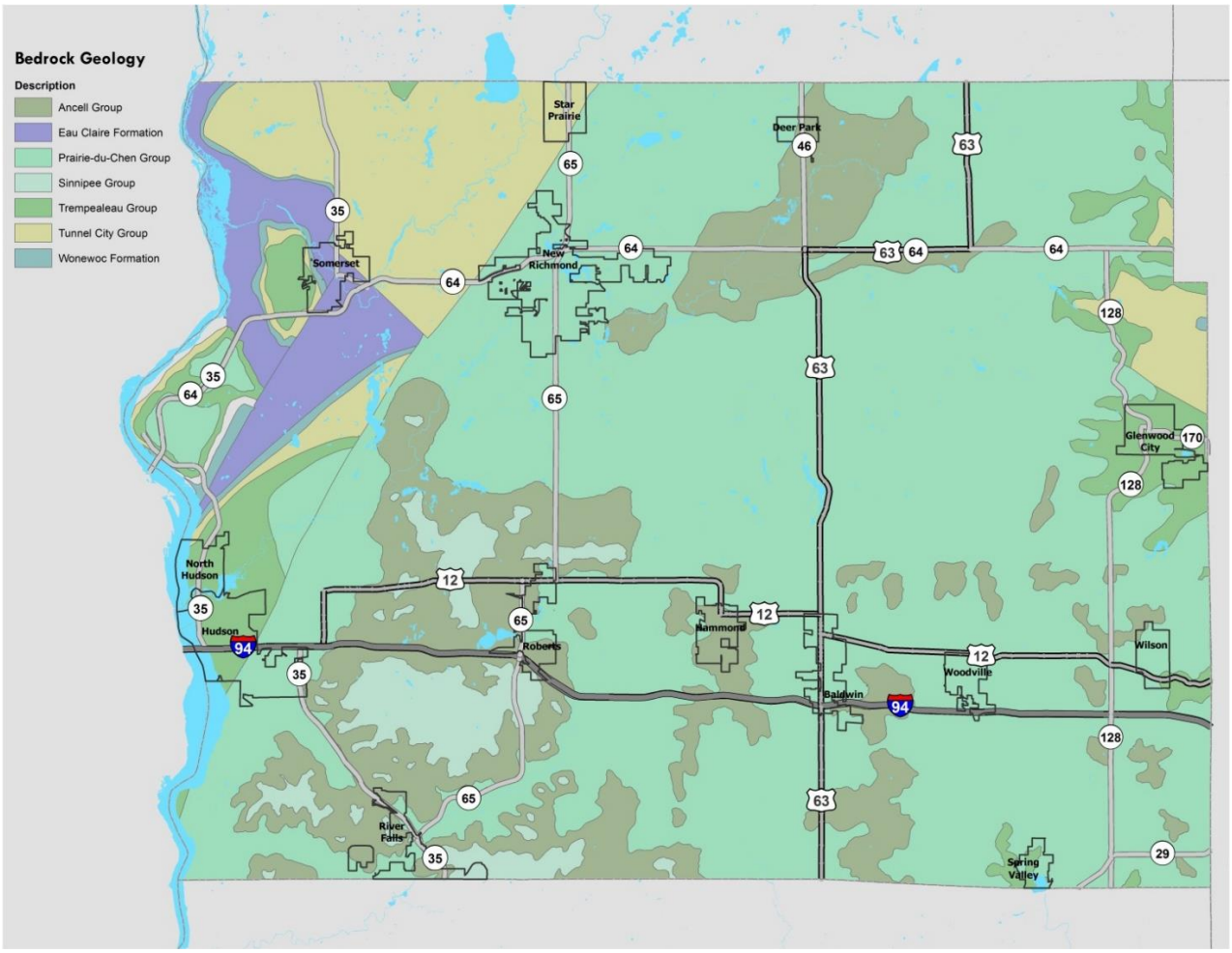


Figure 5. Bedrock Geology

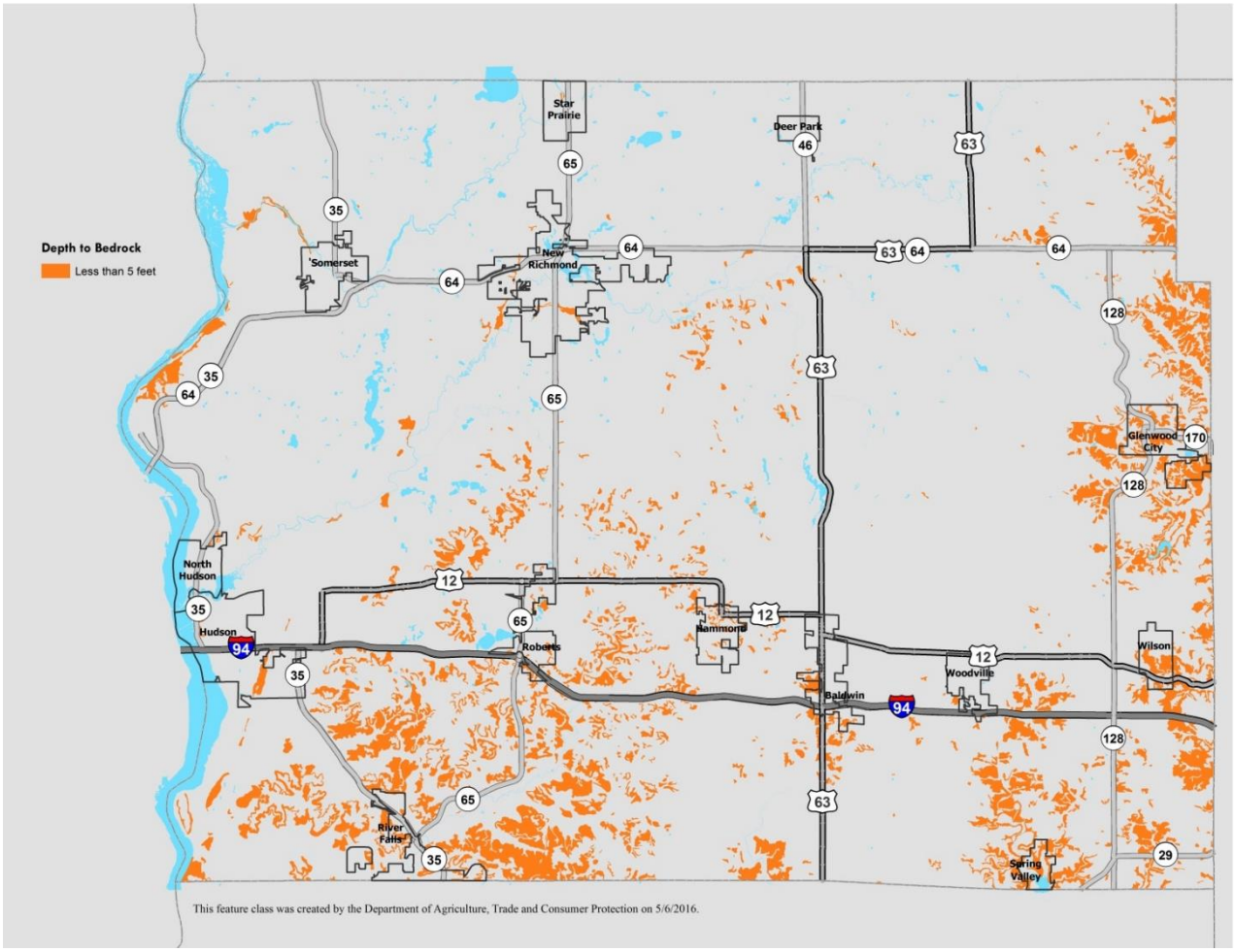


Figure 6. Depth to Bedrock

The Prairie du Chien Dolomite and the Cambrian sandstones are the major water-yielding rocks in the sandstone aquifer. The Prairie du Chien Dolomite is the uppermost, saturated bedrock in much of the county and is used extensively for private residential water supplies. Much of the county is a recharge area for this shallow aquifer. The ability of the Cambrian sandstone to store and yield water and its thickness make it the principal source of municipal water supplies. The Platteville Dolomite unit is mostly unsaturated. The St. Peter Sandstone is found in a small area and is partly saturated and yields some water to wells.

The source of all groundwater recharge in St. Croix County is precipitation. Between one and ten inches of precipitation infiltrates and recharges the groundwater aquifers each year. The amount infiltrated depends mainly on the type of rock material at the land surface.

The altitude of the water table ranges from more than 1,100 feet in several places in the eastern quarter of the county to just over 675 feet along the St. Croix River. The water table is under the glacial drift and within the bedrock in about half of the county. The depth to groundwater below the surface of the land is generally less under topographically low areas and greater in areas of higher elevation. Figure 7 depicts depth to groundwater in St. Croix County.

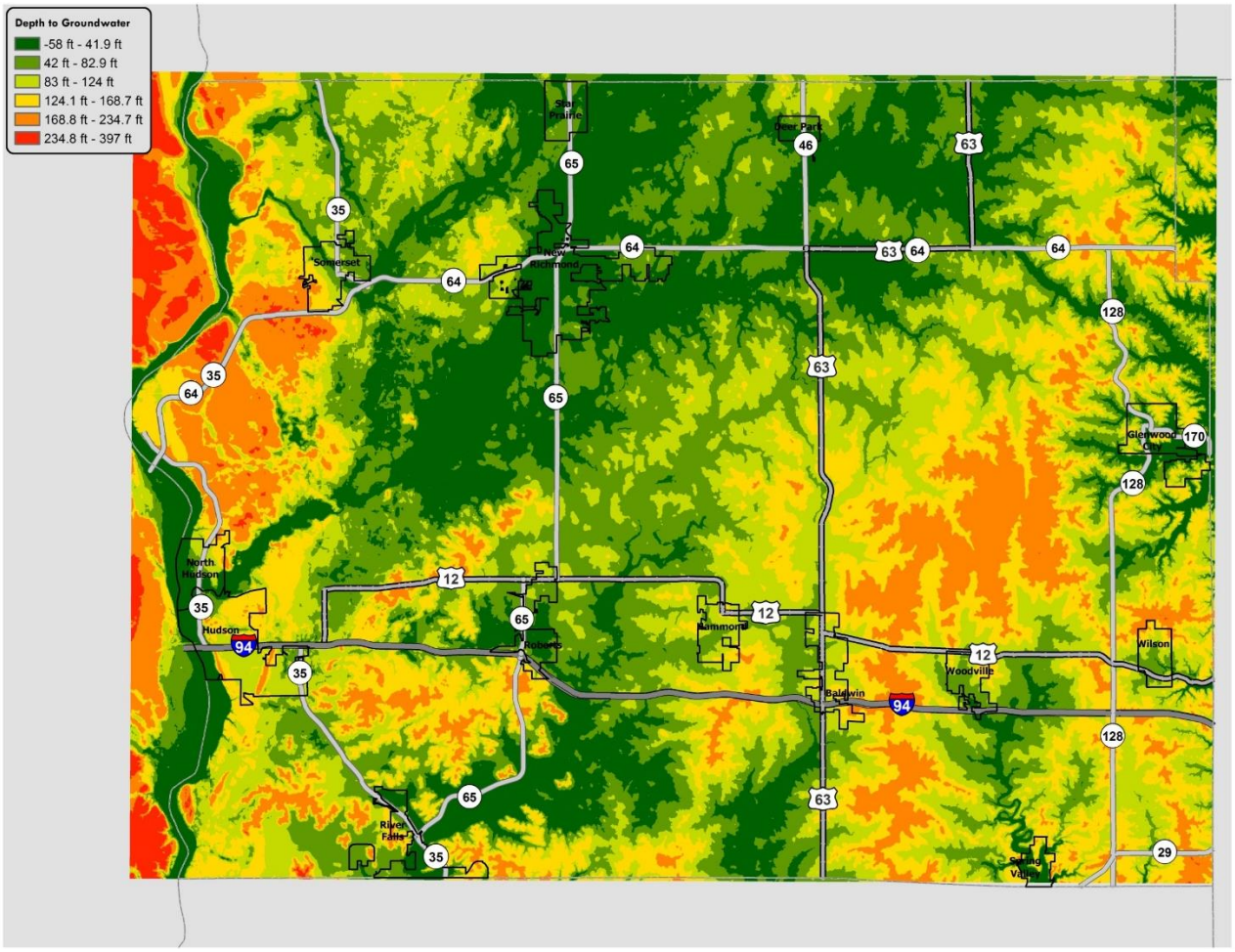


Figure 7. Depth to Groundwater

Municipal water systems develop wellhead protection plans to identify sources of drinking water and protect the quality and quantity of those sources. The communities of Baldwin, Hammond, Hudson, New Richmond, Roberts, Somerset, and Star Prairie have wellhead protection plans in place in St. Croix County.[13] St. Croix County water withdrawal from registered wells ranked 22 out of 71 counties in Wisconsin in 2015. Registered wells withdraw water primarily for municipal and agricultural use in Wisconsin.[14]

Groundwater can be adversely affected when contaminants are released into the aquifer or spilled upon the ground. Some factors influencing the susceptibility of an aquifer to pollution are depth to groundwater and bedrock, type of bedrock, sub-surface permeability, and the ability of the soil to attenuate or lessen the impact of pollutants. High-risk activities, such as industries using hazardous materials, pose serious threats to groundwater and should be kept out of the immediate recharge areas of public and private water supply wells. High concentrations of septic systems can pollute groundwater with nitrates.

[13] This information is available on the following website: http://dnr.wi.gov/topic/DrinkingWater/SourceWaterProtection.html

[14] Wisconsin Department of Natural Resources. Wisconsin Water Use. **2**015 Withdrawal Summary.

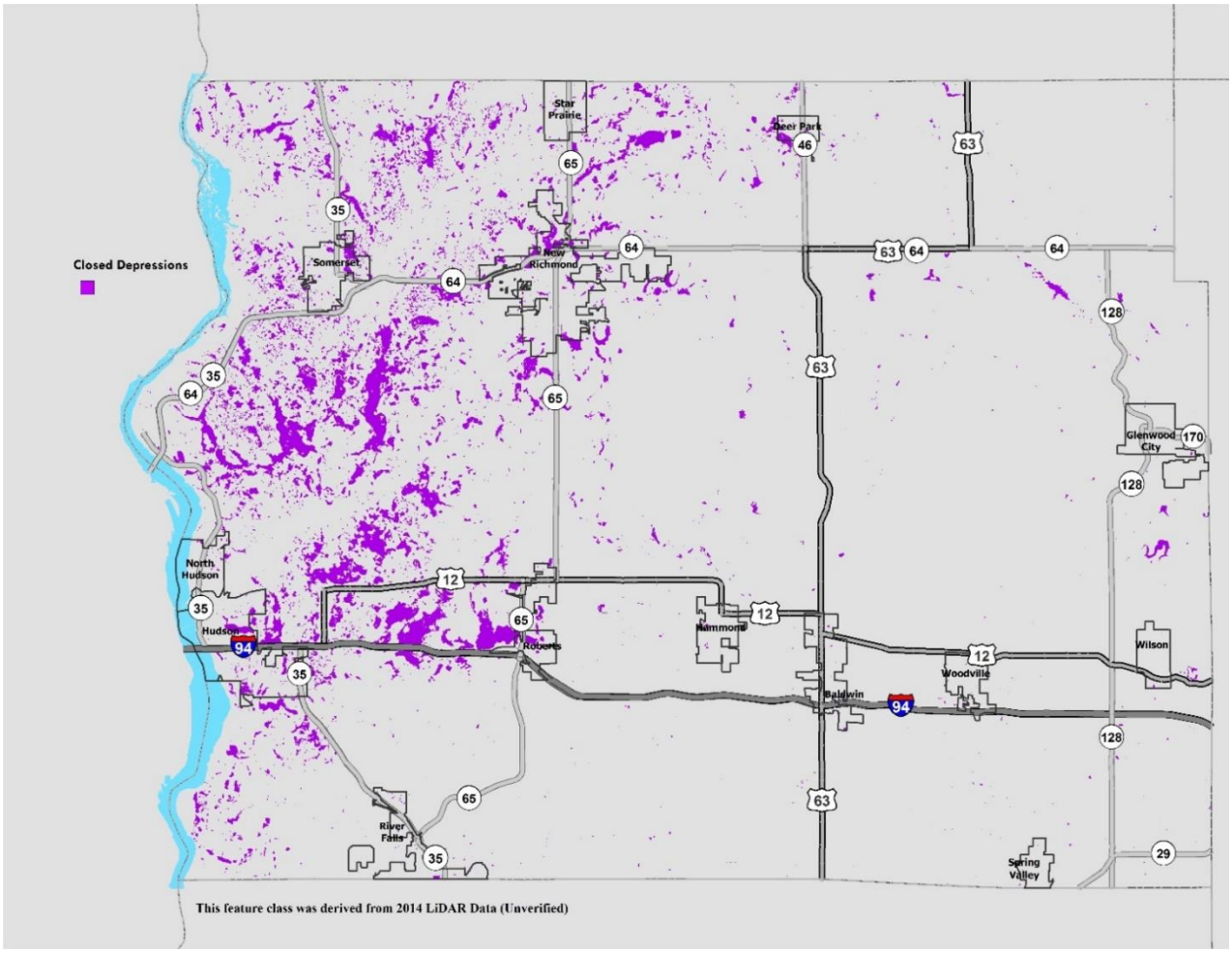


Figure 8. Closed Depressions

Leaking underground storage tanks and leaching of fertilizers and pesticides from agricultural fields and lawns are additional sources of contamination of groundwater**.**

Closed depressions are extremely sensitive land features because of their close association with the groundwater. The pollutants released into or near closed depressions are almost certain to reach groundwater. Figure 8 shows the locations of closed depressions in the county. Figure 9 shows points where all three criteria of closed depressions, agricultural land cover, and depth to bedrock less than 5 feet occur in the same place, denoting areas of high concern for potential groundwater contamination susceptibility.

Baker, Hughes, Huffman and Nelson, Closed Depression Map of St. Croix County, Wisconsin, 1991

Closed depressions are common features in St. Croix County. They have formed through two quite different geological processes: karst development and glaciation. Karst development occurs in regions with highly soluble bedrock and results in distinctive landforms such as sinkholes. St. Croix County is covered by several rather thick, soluble carbonate units, and has particularly well-developed karst, especially in the eastern half of the county. Glacial action can also result in topography marked by closed depressions known as kettles or kettleholes. Kettles develop when large blocks of glacier ice are buried within glacial deposits and subsequently melt. Many of the depressions in the western and northwestern portions of the county are kettles that developed in the St. Croix moraine after it was deposited during the Wisconsinan glaciation.

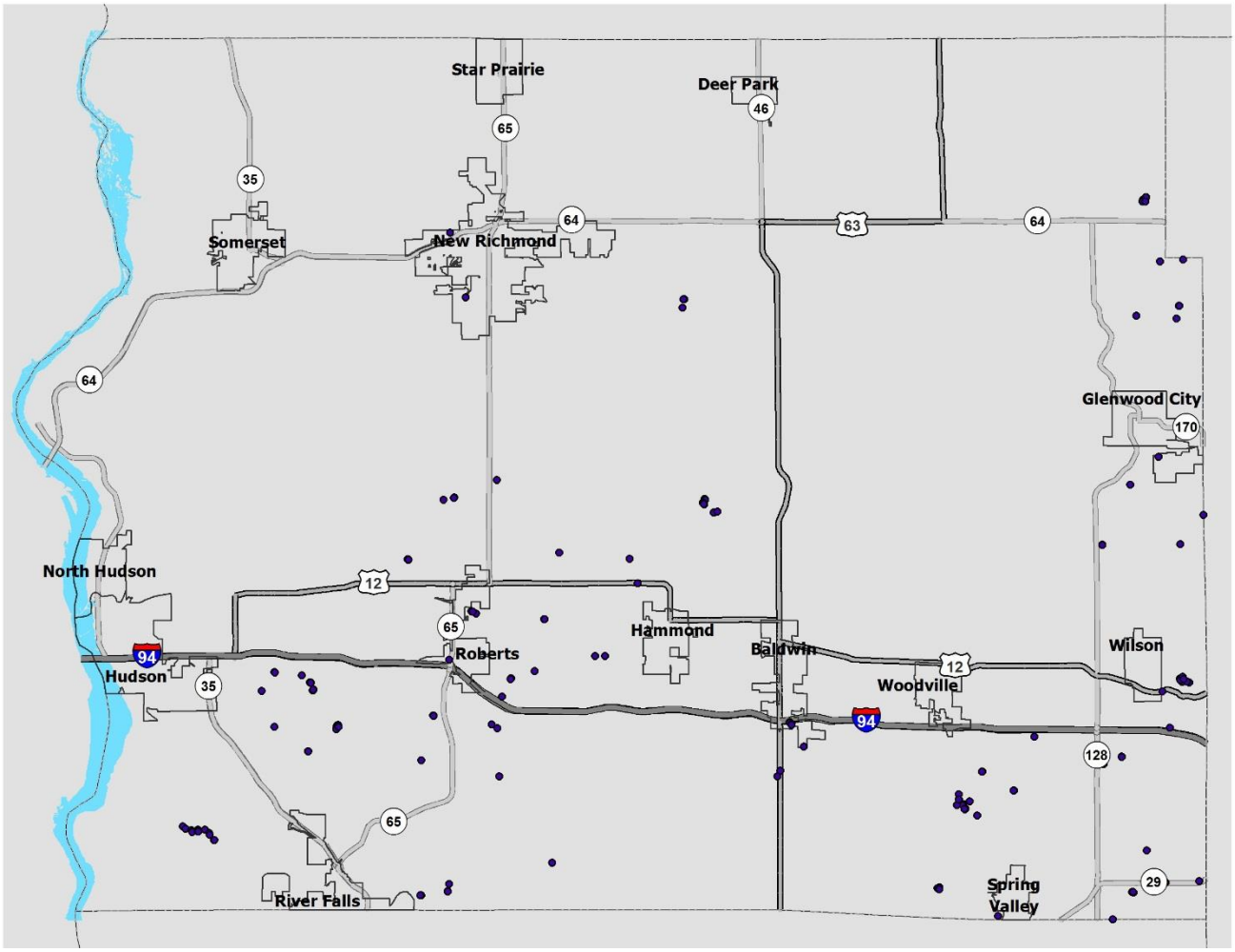


Figure 9. Areas of Special Concern for Groundwater Contamination Susceptibility

Drinking Water

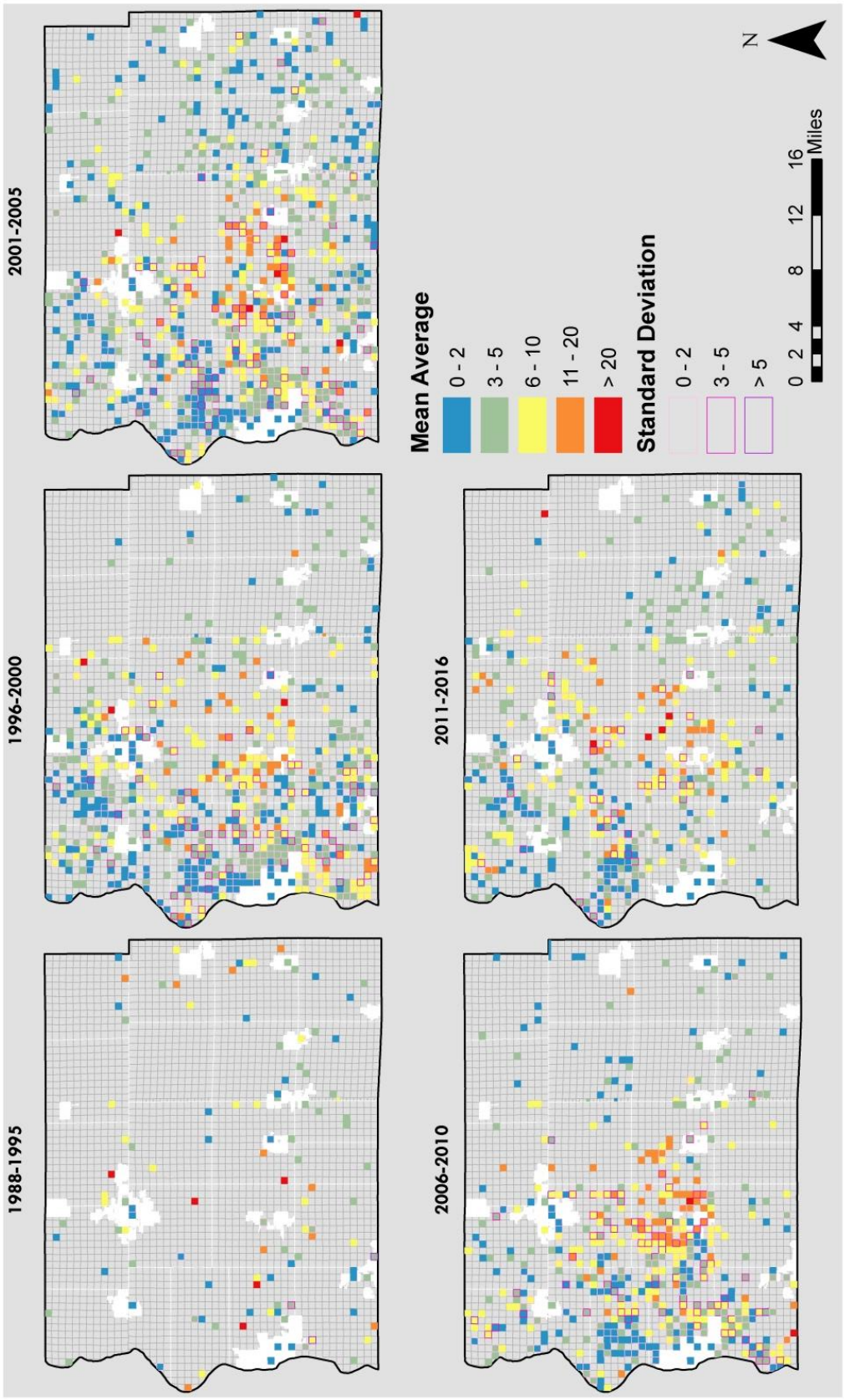
In 2016, there were approximately 161 public wells in the county with 11 municipal water systems supplying water to nearly 42,000 residents. The average municipal well depth is 300 feet. Municipal and other public water systems are regulated by the Wisconsin Department of Natural Resources and tested regularly to ensure they meet safe drinking water standards. The rest of the county's population obtains its water from private wells. It is estimated that there are around 16,000 private wells in the county with an average depth between 75-200 feet (based on an estimated 9,859 well construction logs maintained since 1988). Private wells are not required to be tested, nor any corrective action to be taken if contamination is found. Each private well owner holds the responsibility for maintaining and ensuring the safety of their well water. (St. Croix County, 2017)

Well Water Testing Program

The groundwater / drinking water testing program was developed to provide information and education on the use and quality of drinking water for the rural residents in St. Croix County. This program was a cooperative effort between UW Extension, St. Croix County Public Health Department, St. Croix County Land and Water Conservation Department/Resource Management Division, UW Stevens Point Environmental Task Force Lab, and local towns.

Between 2003 and 2016, staff worked with 21 individual towns and rural residents to conduct this voluntary drinking water program. Landowners could choose to pay for three different water tests: the homeowner's test, metals test, triazine screening, or a combination of their choice. All costs for water tests were the responsibility of the landowner. Nearly 2,100 households participated. The benefits of offering a water testing program at the town level include 1) reduced costs for sample analysis and 2) a larger sample population to monitor and document trends in water quality. The organized water testing program has been very popular with high participation rates. However, lab services with the UW-Stevens Point lab are in high demand, and the county wasn't able to offer the program in 2017 or 2018.

Private well water testing is also promoted through the septic system maintenance program where approximately 10,000 households are targeted annually. Through a direct mailing, homeowners are encouraged to have their well water tested by a certified laboratory. Water sample kits are offered in three office locations throughout the county. Although the laboratory data is not always available to the county, it is a great opportunity to remind homeowners of their individual responsibility of ensuring their water is safe to drink.



Drinking Water Quality

In 2017, the Groundwater Quality Study Group recommended establishing a water quality dataset from existing data to serve as a baseline for ongoing comparison. Staff implemented their recommendation by synthesizing the county's digital records with those kept by the Wisconsin DNR and the University of Wisconsin Stevens Point. Of wells tested between 1988 and 2016, 4,267 nitrate tests associated with 3,170 well addresses were mapped in the county's GIS. This represents approximately two thirds of available digital data in the same period. In addition, 1,000 detailed construction logs featuring well depth, casing depth and geology reports link to the dataset. Figure 10 summarizes the county's baseline data overtime.

Figure 10. Well Water Nitrate Test Results by Quarter Section (1988-2016)

A sample of 929 before and after comparisons in 511 quarter sections with testing averages in consecutive periods suggest that, since 1988, groundwater nitrate concentrations increased in more places in the county than they decreased. Specifically, 57% of all comparisons indicated an increase while the remaining 44% indicated a decrease. While this data alludes to a generalized directional trend, each well varies independently across multiple variables (nitrates, bacteria, pathogens, metals, etc.) in often-unsuspected ways. This reaffirms the need for homeowners to test their well water frequently.

The drinking water program has provided residents and policy makers with valuable information. Figure 11 illustrates the completeness of the information. The excellent coverage in the town of Warren stands out largely due to the 2008 town lead well testing effort.

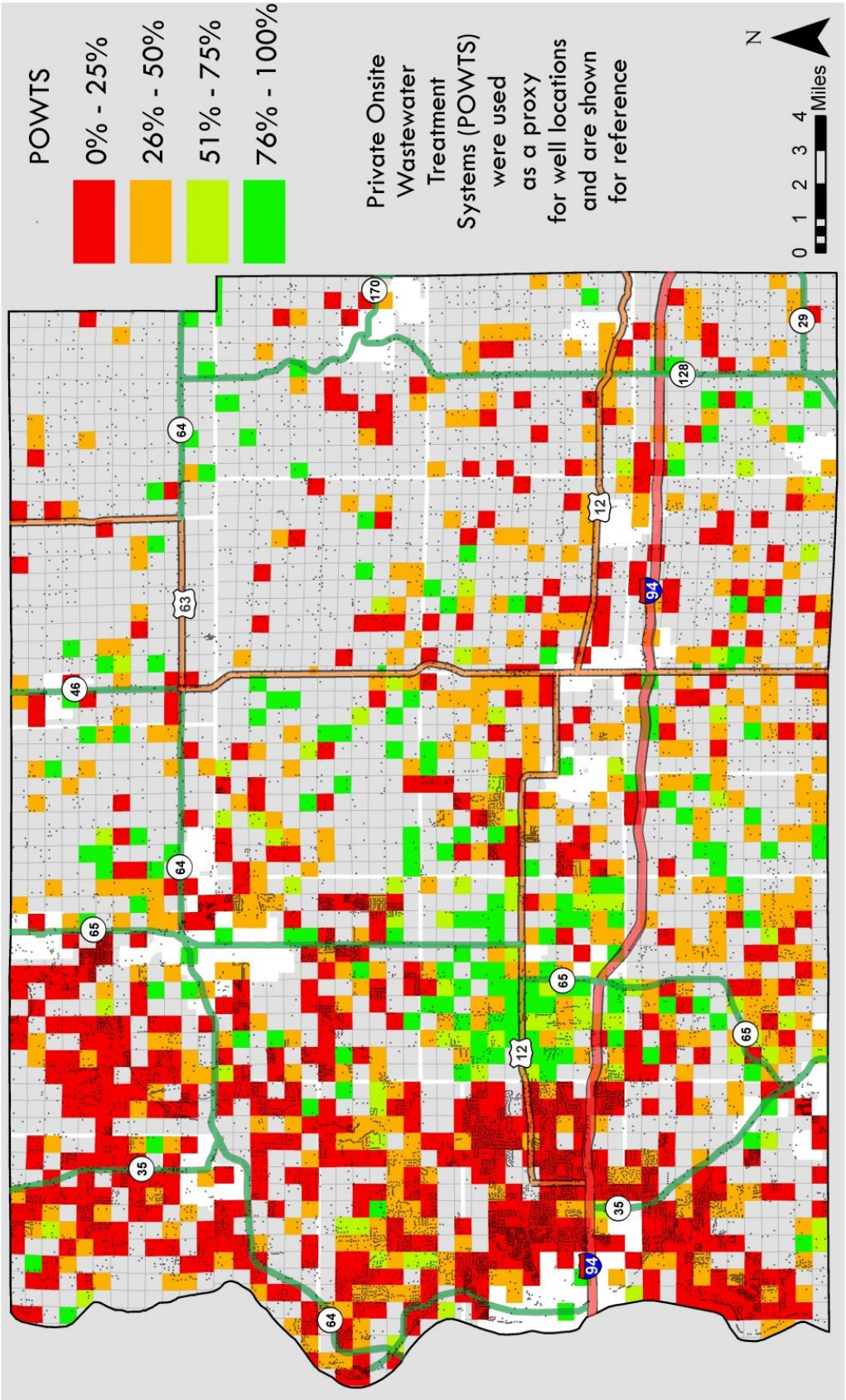


Figure 11. Well Testing Participation Rates by quarter section

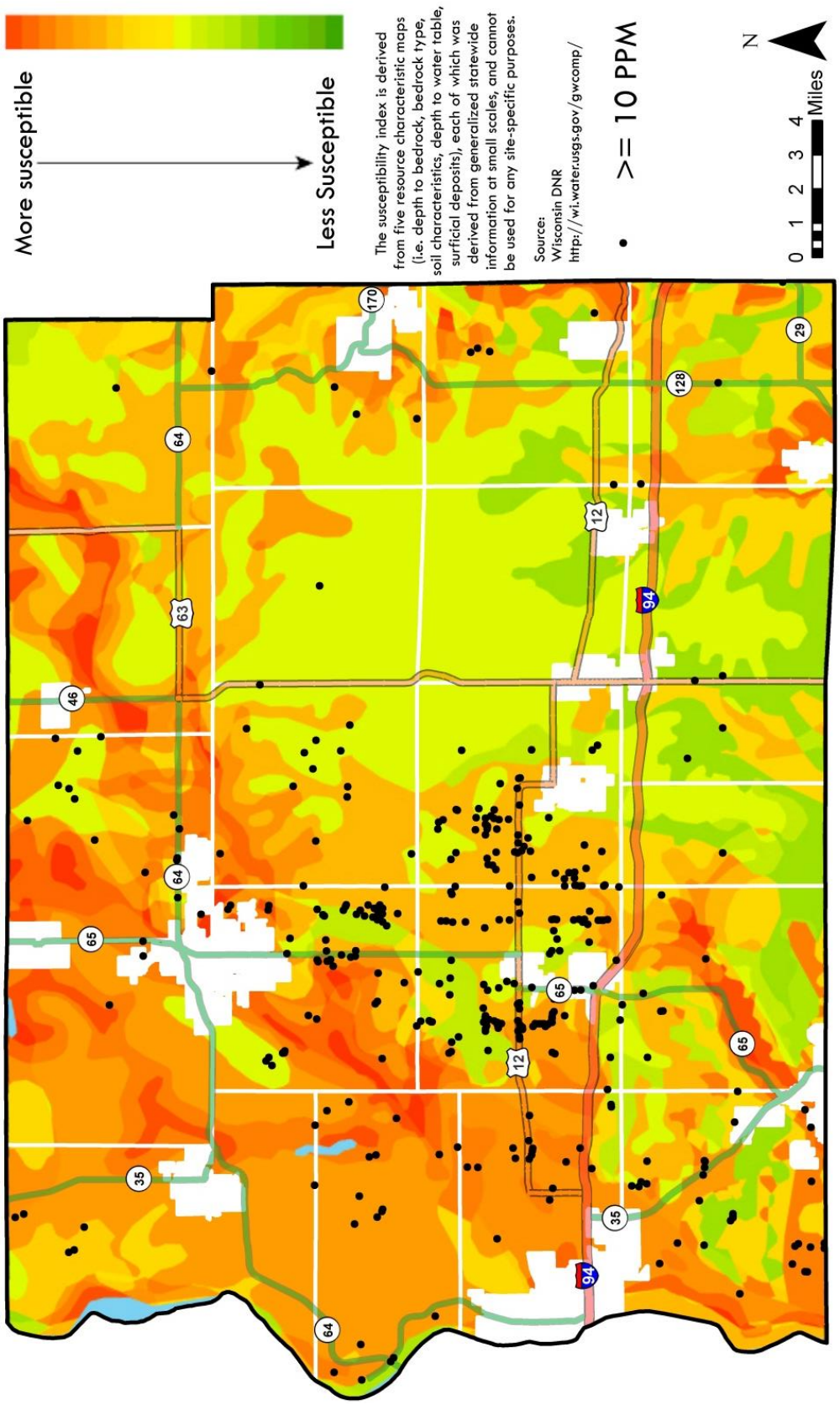


Figure 12. Groundwater Susceptibility and nitrate test results above 10

The town's careful documentation of their results, including well addresses, allowed the county to successfully incorporate them into the GIS database. Town led initiatives with county support may be an excellent model for improving the coverage of the county's drinking water testing program.

While the knowledge the county gains over time helps inform the public after the fact, mitigating health risks through prevention may be more effective. Current data suggests that one method of prevention, well construction quality, may be one of the many variables influencing the risk of well contamination. Expressly, wells with a known construction log that have had a least one test above the 10-ppm nitrate health standard have an average casing depth of 75 feet, 56% of which have their casing end in limestone.

By comparison, 35% of wells without a test above the health standard have their casing end in limestone. These have an average casing depth of 119 feet. Figure 12 displays general groundwater pollution susceptibility and the location of nitrate tests above the health standard. Figure 13 shows where points from the analysis in figure 9, where closed depressions, bedrock less than 5ft, and agricultural land cover all intersect, also occur within half a mile of well test nitrogen levels greater than 10 ppm. The resulting locations are areas of high concern for drinking water quality degradation.

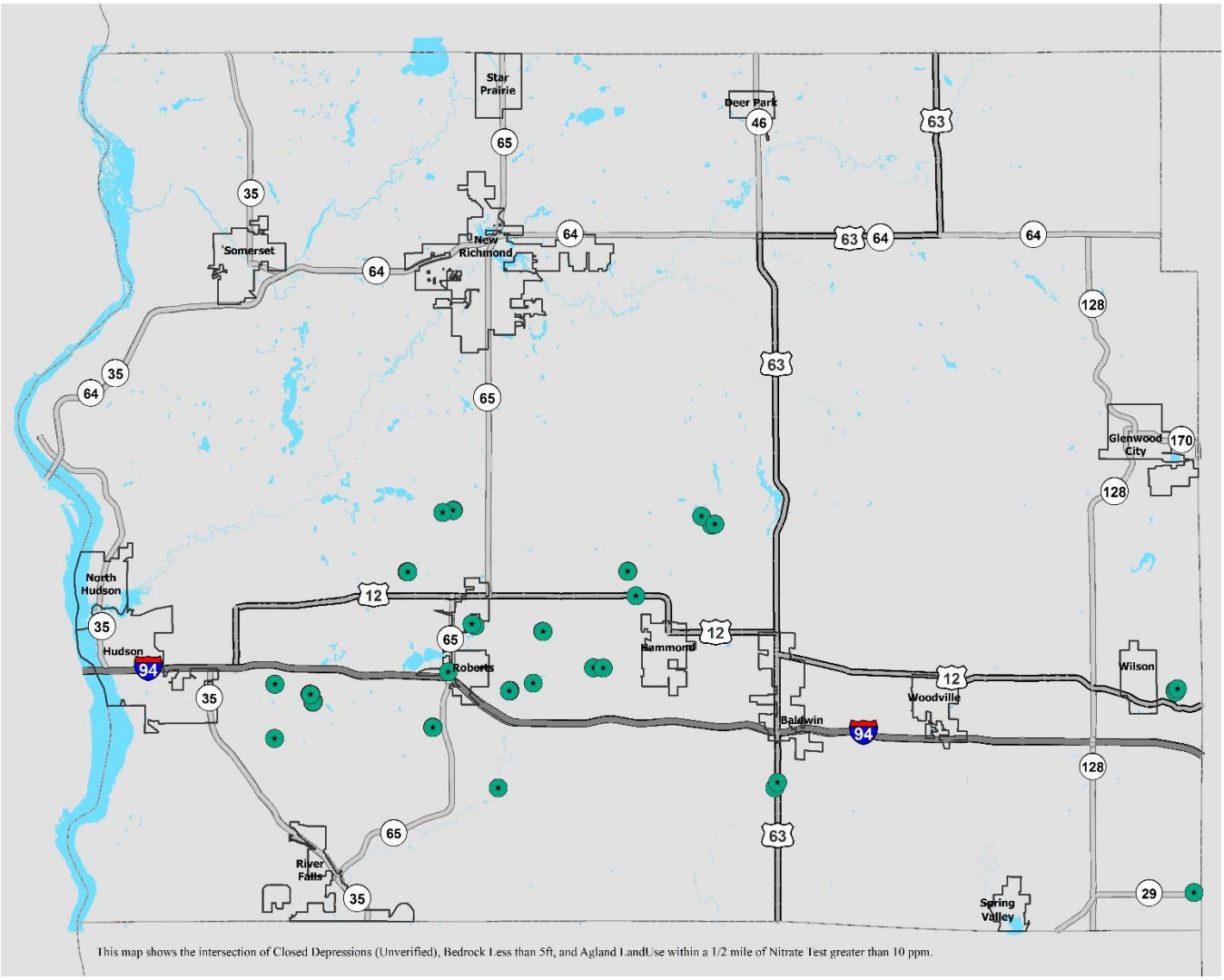


Figure 13. Areas of High Concern for Drinking Water Quality

SURFACE WATERS

Lakes, ponds, rivers, streams, and intermittent waterways make up the surface waters of St. Croix County. There are also many artificial drainage ways where the natural water flow has been altered by human activity. Sediment, nutrients, and other pollutants are carried in runoff water from watersheds that drain to these surface water features. The county is well-drained with relatively fewer lakes and ponds than counties to its north.

The surface waters of St. Croix County occupy four HUC8s (Hydrologic Unit Codes) as illustrated in Figure 14. The St. Croix River HUC8 covers the western two-thirds of the county. The Rush-Vermillion Rivers, Chippewa River, and Red Cedar River HUC8s cover the remaining third of the county. All of the above are part of the Mississippi River Basin. The Balsam Branch-Apple River, Big Marine Lake-St. Croix River, Willow River, Lake St. Croix and Kinnickinnic River watersheds (HUC10s) are located within the St. Croix River HUC8. The Trimbelle River and Rush River HUC10s are within the Rush-Vermillion Rivers HUC8. The South Fork of the Hay River and the Lake Menomin-Red Cedar River HUC10 are part of the Red Cedar River HUC8. The Eau Galle River HUC10 is within the Lower Chippewa River HUC8. In each of these hydrologic units, there are numerous intermittent streams or dry washes and other surface drainage features that carry water only during spring runoff or extreme storm events.

At 9,336 acres, the Minnesota-Wisconsin boundary water of Lake St. Croix is the lake with the largest surface acreage in St. Croix County. About half of this lake is within Wisconsin's borders. Bass Lake is the largest inland lake at 293 acres. Perch Lake is the deepest with a maximum depth of 63 feet. The stream with the greatest gradient is Spring Brook with a drop of 85 feet per mile, and the stream with the lowest gradient is the St. Croix River with a drop of 0.2 foot per mile.

The St. Croix River is the most significant surface water feature in the county. The segment of the river adjacent to St. Croix County is part of the Lower St. Croix National Scenic Riverway designated by Congress. The National Park Service and the Wisconsin Department of Natural Resources are responsible for working with local jurisdictions to manage the riverway in a manner consistent with the National Wild and Scenic River Act and the federal Lower St. Croix River Act. St. Croix County enforces zoning provisions in the riverway district consistent with federal and state law and regulations.

Portions of the St. Croix River and the Kinnickinnic River have been designated as Outstanding Resource Waters by the Department of Natural Resources. Bass Lake and Perch Lake are also designated as Outstanding Resource Waters. Portions of the St. Croix, Apple and Willow Rivers, and Parker Creek and the entire length of Cady Creek are designated as Exceptional Resource Waters. Outstanding and Exceptional Resource Waters are protected through Department of Natural Resources (DNR) regulation. These waters may not be lowered in quality due to DNR permitted activities, such as wastewater treatment plants. (NR 102.10 and 102.11)

The lakes, rivers, and wetlands of the county are impacted by land use practices in the watersheds that drain to them. Most of the pollutants that enter surface water resources are carried in runoff from many diffuse, or nonpoint, sources. The major pollutants of concern are sediment carried from areas with bare soil such as crop fields and construction sites, and phosphorus attached to soil particles or dissolved in runoff water from fertilized fields and lawns and livestock operations.

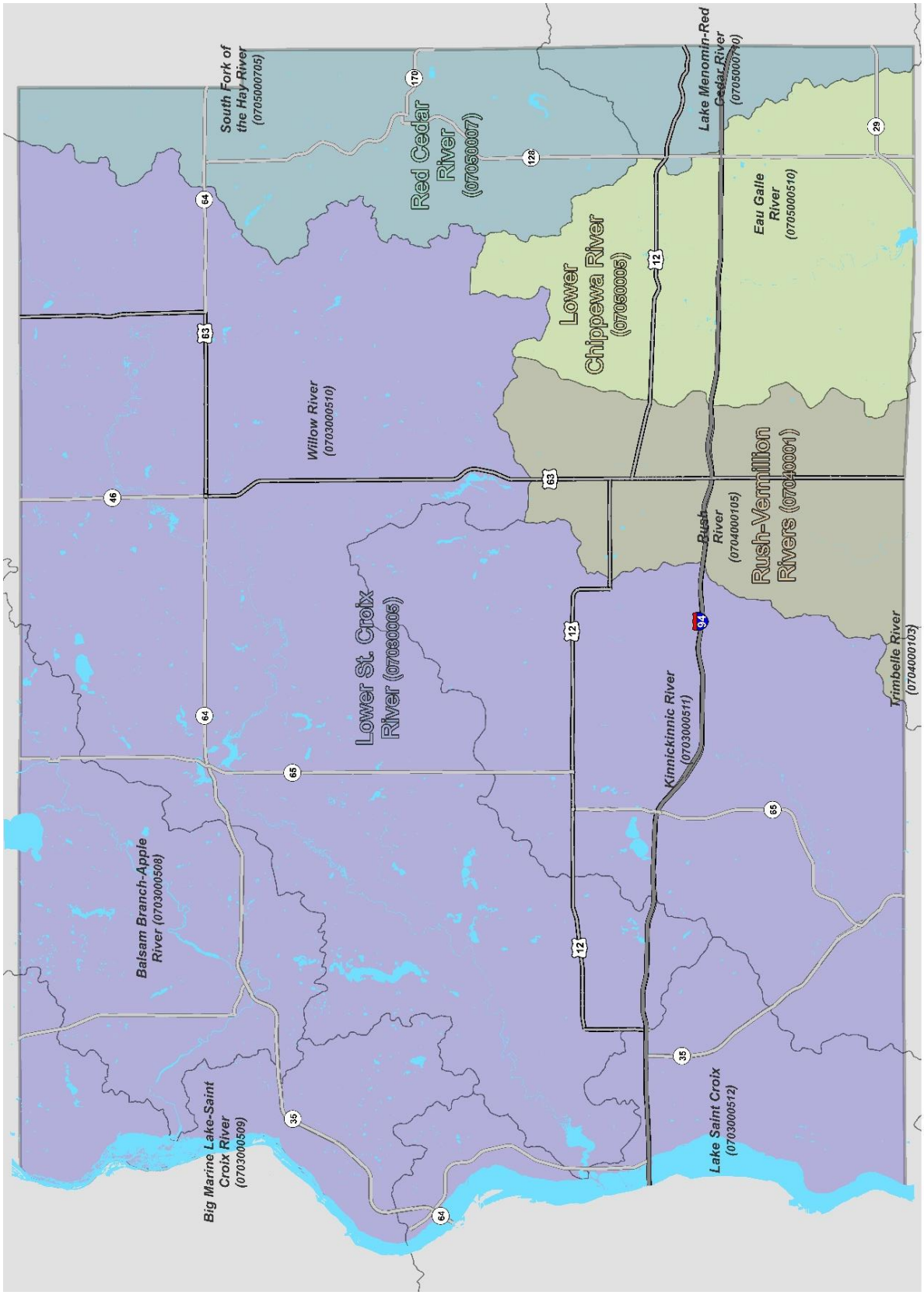


Figure 14. St. Croix County HUC 8 & 10 watersheds

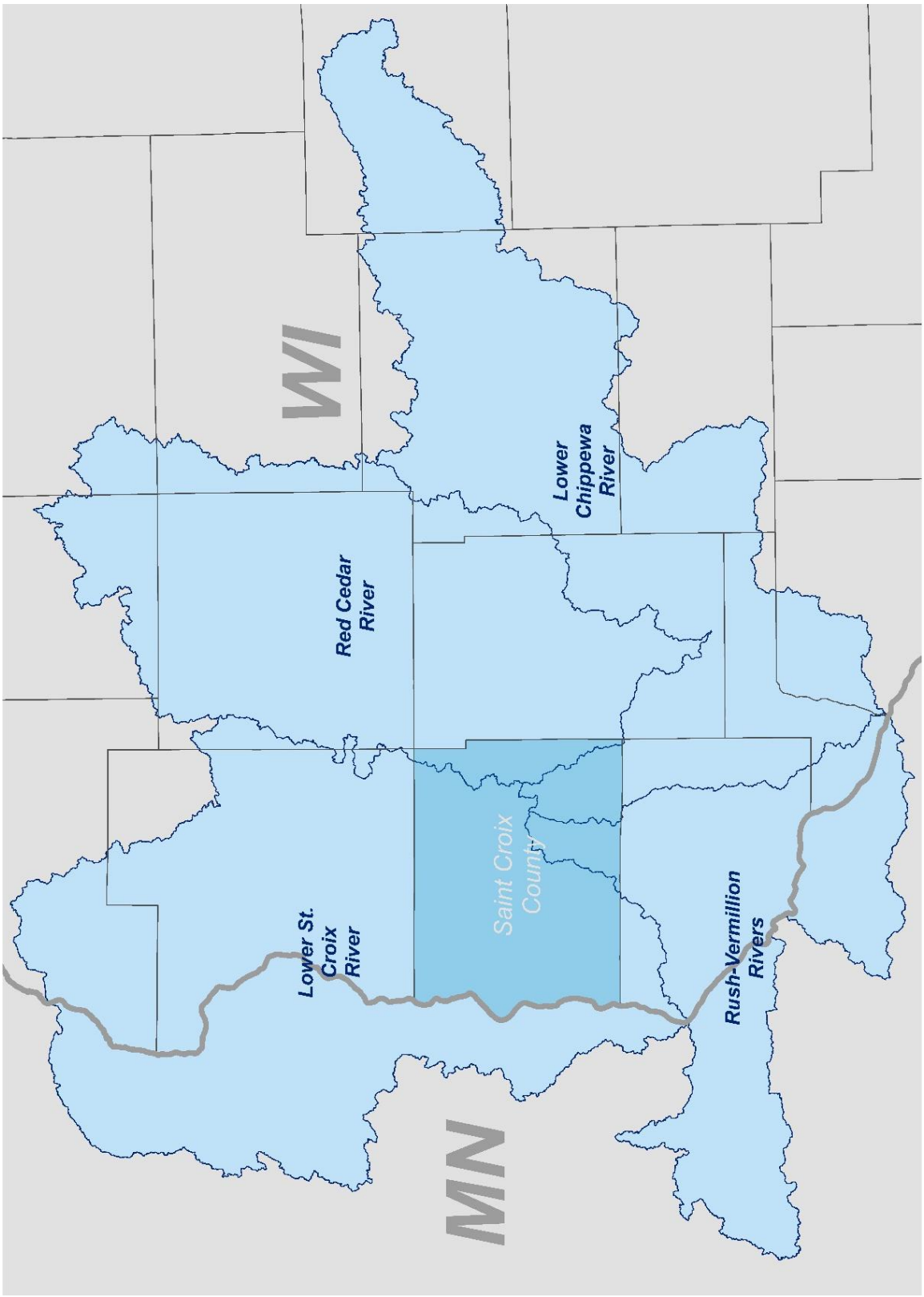


Figure 15. St. Croix County watersheds that extend beyond state and county boundaries

WATERSHED WATER QUALITY CONDITIONS

Outstanding and Exceptional Resource Waters

Outstanding and Exceptional Resource Waters are the focus for protection-oriented projects. A list of these water resources is provided below in Table 1.

Table 1. Outstanding and Exceptional Resource Waters in St. Croix County

Local Waterbody Name	WBIC	ORW/ERW	Start Mile	End Mile	Watersheds
Apple River	2614000	ERW	51.34	53.61	SC04
Bass Lake (T30N R19W S23)	2450500	ORW	null	null	SC02
Cady Creek	2058000	ERW	1.01	9.34	LC03
Kinnickinnic River	2601800	ORW	12.47	31.02	SC01
St. Croix Lake	2601500	ERW	null	null	SC01, SC02
Parker Creek	2604700	ERW	0	0.53	SC01
Perch Lake	2488300	ORW	null	null	SC02
St Croix River	2601400	ORW	17.43	44.29	SC02, SC04, SC08
St Croix River	2601400	ERW	0	17.43	SC01, SC02
Race Branch Willow River	2606900	ERW	0.2	1.32	SC02
Race Branch Side Channel	2606900	ERW	0	0.17	SC02
Race Branch Side Channel	2606900	ERW	0	0.07	SC02
Willow River (Mouth to Dam)	2606900	ERW	0	1.3	SC02

Bass Lake Management Plan[15]

The St. Croix County Community Development Department initiated the Bass Lake Management Plan. Staff from the Wisconsin Department of Natural Resources, St. Croix County, and UW Stevens Point provided guidance for plan development. The Bass Lake Rehabilitation District, the Town of St. Joseph, and the St. Croix County Sportsmen's Alliance also partnered in plan development.

Bass Lake is highly valued public water resource designated as a state Outstanding Resource Water. The plan presents information about Bass Lake water quality, fisheries, and aquatic plants. A social science assessment and a lake water quality model were completed as part of the planning process. The plan implementation period is from 2017 through 2026.

Plan goals address water quality protection, aquatic plant life and fishery, shoreland habitats, invasive species and recreational opportunities.

[15] Bass Lake Management Plan. December 2016.

Bass Lake Water Quality Objectives:

- Reduce phosphorus loading to Bass Lake.
- TP In-lake TP: 15 ug/L (Growing Season Mean-GSM).
- In-lake Chla: 3.5 ug/L (July 15 – Sept. 15)
- Sixty percent shoreland owners will reduce stormwater runoff to background levels.

Perch Lake Management Plan[16]

The Perch Lake Management Plan was also initiated by the St. Croix County Community Development Department with guidance from the Wisconsin Department of Natural Resources (DNR). Lake and community residents representing a variety of groups, local governments, and business made up the advisory committee. Staff from the Wisconsin Department of Natural Resources (DNR) and St. Croix County provided guidance for plan development. The advisory committee included representation from St. Croix County, the Town of St. Joseph, lake residents, Friends of Perch Lake, and the St. Croix County Sportsmen's Alliance.

Perch Lake is a small lake with exceptional water quality. It is a state Outstanding Resource Water with a 2-story fishery. St. Croix County's Homestead Park encompasses over half of its shoreline and about one third of the lake's watershed. Additional visitors reach the lake via a public boat landing on the south end. There are only about ten residences around the lake.

The plan presents information about Perch Lake water quality, fisheries, and aquatic plants. A public opinion survey and a lake water quality model were completed as part of the planning process. The planning period is from 2017 through 2026.

Plan goals address protection and improvement of water quality, aquatic and shoreline habitat, natural scenic beauty; aquatic invasive species prevention and control; and balancing recreational use with environmental projection.

Perch Lake Water Quality Objectives

- Allow no net degradation of Perch Lake water quality as measured by no increases in total phosphorus and algae growth. *A comprehensive record of in lake phosphorus and chlorophyll is not available for Perch Lake. 2015/16 mean summer surface TP was 6.6ug/L.*
- Minimize runoff and erosion that carry nutrients, sediment, and other pollutants to the lake.

[16] Perch Lake Management Plan. October 2016.

IMPAIRED WATERS

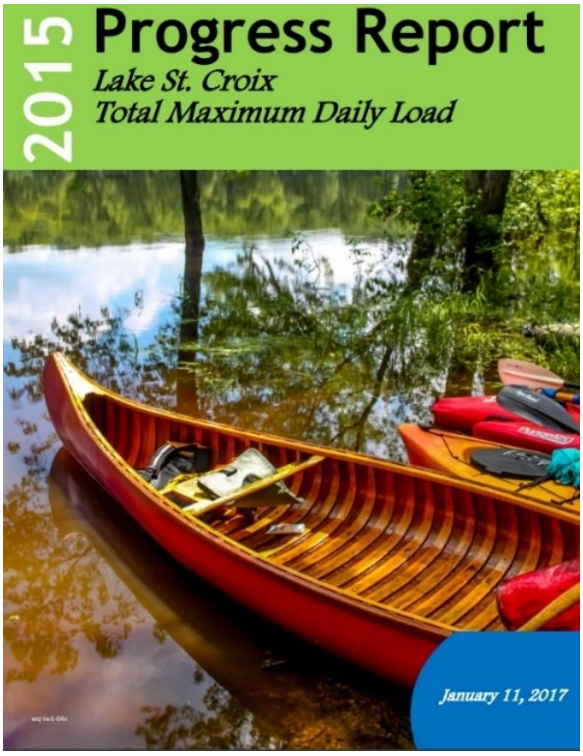
St. Croix County water quality priorities are driven in part by a focus on impaired waters through implementation of Total Maximum Daily Load (TMDL) plans and projects. Impaired waters, also known as 303(d) listed waters, are compiled in a 2018 draft list by the Wisconsin Department of Natural Resources. The list, required by the Environmental Protection Agency under the Clean Water Act, identifies water bodies that do not meet water quality standards. The Department of Natural Resources uses the 303(d) list as the basis for establishing strategies to improve water bodies using total maximum daily loads. TMDL reports and/or implementation plans have been completed for several of St. Croix County's impaired waters including Lake St. Croix, Squaw Lake, Cedar Lake, Lake Mallalieu and the Willow River, and the Red Cedar River.

Table 2. Impaired Waters (303(d) List) in St. Croix County

Lake	Watershed	Impact Type - Pollutant	Year Listed
ST CROIX BASIN			
Squaw Lake	Apple River	Excess algae - TP	2012
Cedar Lake	Apple River	Excess algae, pH - TP	1998
Lake Mallalieu	Willow River	Excess algae - TP	2004
New Richmond Flowage	Willow River	Pathogens (beach)	2012
Ten Mile Creek	Willow River	Degraded biological community	2018 (draft)
Willow River	Willow River	Low dissolved oxygen – TP, BOD	1998
Twin Lakes	Kinnickinnic River	Excess algae, pH - TP	1998
Lake George	Kinnickinnic River	Excess algae - nutrients	2002
Pine Lake	Kinnickinnic River	Excess algae - TP	2016
Lake St. Croix	St. Croix	Excess algae - TP	2008
St. Croix River	St. Croix	PCB in fish	1998
RED CEDAR BASIN			
Glen Lake	S. Fork Hay River	Mercury in fish	1998
LOWER CHIPPEWA BASIN			
Eau Galle River	Eau Galle River	Habitat, temperature - sediment	1998

TP = Total Phosphorus BOD = Biological Oxygen Demand

Lake St. Croix TMDL



The Lake St. Croix TMDL was completed in 2012 and approved by EPA in August 2012. A phosphorus load reduction of 27 percent from mid 1990s phosphorus loads is needed to meet the Lake St. Croix in-lake total phosphorus water quality standard of 40 µg/L. Phosphorus load reduction goals vary by watershed. For the Willow River and Kinnickinnic River watersheds, the phosphorus reduction goal is 37%. For the Apple River, the phosphorus reduction goal is 34%.

The Lake St. Croix TMDL Implementation Plan was completed in 2013. The plan relies on civic engagement as a key strategy for TMDL implementation. It also establishes phosphorus reduction goals by county. For all of St. Croix County, the Lake St. Croix TMDL phosphorus load reduction is 37%. This requires 49,000 lbs./yr. of reduction from the estimated TMDL baseline load of 133,000 lbs./yr. in the early 1990s. St. Croix County's required reduction ranks 2nd largest among the 19 counties in the basin. To achieve the St. Croix Basin Partners' goal of 20% Reduction by 2020, St. Croix County needs to reduce loading by 36,000 lbs./yr. by the year 2020. To attain this goal, activities must be implemented that achieve an average annual rate of phosphorus reduction of 1,200 lbs./yr. over 30 years, or 3,600 lbs./yr. over 10 years.

Table **3**. Lake St. Croix TMDL Phosphorus Load Reduction Goals

	Overall % Goal	Overall Reduction	Reduction by 2020	Annual Reduction Rate – 30 years	Progress through 2017
St. Croix County	37%	49,000 lbs.	36,000	1,200 lbs.	22,400

Squaw Lake TMDL

A total maximum daily load (TMDL) was developed for Squaw Lake in St. Croix County in August 2000. A site-specific phosphorus concentration goal of 130 micrograms per liter was identified for Squaw Lake as part of this process. Squaw Lake is part of the Apple River watershed within the St. Croix basin.

Squaw Lake Water Quality Objectives

- Summer Total Phosphorus: 100 ug/L to 30 ug/L
- Chlorophyll A: 17 ug/L
- Infiltrate 300 acre feet of runoff
- Infiltrate 400 acre feet of runoff from frozen ground
- Initiate an alum treatment following capture of 300 ac. ft. of runoff
- Install shoreland owner rain gardens.

Cedar Lake TMDL

A TMDL was developed for Cedar Lake in 2003. A Lake Management Plan followed in 2013 with an update in 2017.[17] These plans have not been reviewed to assess if they meet requirements of nine-key element plans, although Cedar Lake is within the Apple River watershed which is included in the Lake St. Croix TMDL. Cedar Creek, the outflow of Cedar Lake, flows directly to the Apple River.

Cedar Lake Water Quality Objectives

- Summer Total Phosphorus: < 40 ug/L
- Decrease internal sediment loading by 90% (through an alum treatment)
- Decrease watershed loading by 30% (through Horse Creek Farmer-Led Council, BMPs, residential BMPs, etc.)

Lake Mallalieu & Willow River TMDL

St. Croix County and the Wisconsin Department of Natural Resources prepared a draft TMDL Implementation report for Lake Mallalieu and the Willow River in 2011. The Willow River watershed is part of the St. Croix basin.

The need for substantial reduction in sediment and phosphorus loads throughout the watershed (a 65% overall reduction goal specifically) is identified as the Lake Mallalieu/Willow River TMDL's highest priority. The TMDL report for Lake Mallalieu and the Willow River also describes aquatic and habitat impairments as a result of excessive sediment and phosphorus delivery.

High Priority Implementation Activities

- SNAP based Nutrient Management Planning for 100% of the agricultural producers in top priority hydrologic units
- Urban BMPs: rain gardens and rain barrels, structural practices
- Rural BMPs: conservation tillage, cover crops, grassed waterway installation, manure management and grade stabilization
- Adopt and enforce comprehensive storm water management ordinances
- Restore native shoreline vegetation around Lake Mallalieu
- Establish and preserve vegetative buffer strips along the Willow River and its tributaries
- Preserve land for surface and groundwater protection
- Improve wastewater treatment

Kinnickinnic Priority Watershed[18]

The Kinnickinnic River Priority Watershed Project Community Report documented and communicated priority watershed project results. The watershed project ran from 1999 through 2010. The project supported staffing and installation of best management practices to meet watershed goals in the rural areas of Pierce and St. Croix County. Practices were also installed with watershed funding within the city of River Falls. The watershed project tracked some reductions in inventoried sediment and phosphorus loads in St. Croix and Pierce County although except for phosphorus reductions from barnyards, a tracking methodology was not defined and standardized. Practices installed since 2011 have resulted in additional phosphorus reductions in the Kinnickinnic River watershed.

[17] Cedar Lake Management Plan. 2017.

[18] KINNICKINNIC RIVER WATERSHED PROJECT 1999-2010. Community Report. Kinnickinnic River Land Trust. 2016.

Table 4. Phosphorus Reduction Objectives and Accomplishments						
Source	**Inventoried Load (lb./yr.)**	**Planned Reduction (%)**	**Reduction Goal (lb./yr.)**	**St. Croix Reduction Tracked (lb./yr.)**	**Pierce Reduction Tracked (lb./yr.)**	**TOTAL Tracked Reduction (lb./yr.)**
Barnyards[1]	3,885	35	1,360	1,865	246	2,111

[1] Barnyard changes account for some barnyards no longer present and others not originally included in the inventory.

Table 5. Phosphorus Reduction (2011-2015)			
Source	**St. Croix Reduction Tracked (lb./yr.)**	**Pierce Reduction Tracked (lb./yr.)**	**TOTAL Tracked Reduction (lb./yr.)**
Grassed Waterway	131.6	NA	131.6
Nutrient Management	350.3	NA	350.3
Overall	481.9	NA	481.9

Red Cedar River TMDL[19]

*The **Red Cedar River Water Quality Partnership** is a Civic Organizing entity that works for the common good of water quality within the Red Cedar River Basin through the practice of Civic Governance; whereby the partners develop the civic imagination, and organize the civic infrastructure needed to produce sustainable water quality, while coordinating the implementation of water quality strategies for the Basin.*

In 2012, the US Environmental Protection Agency (EPA) approved the total Maximum Daily Load (TMDL) developed by the Wisconsin Department of Natural Resources (DNR) for Lakes Tainter and Menomin, two impounded lakes formed by dams located on the lower Red Cedar River. The TMDL describes the extent of the phosphorus issue in the watershed and prescribes levels to which phosphorus inputs to Lakes Tainter and Menomin need to be decreased in order to significantly improve water quality. The Tainter/Menomin TMDL is based on research done mostly in the 1990s and identifies site-specific phosphorus water quality goals for each lake. Meeting these goals equates to 61% less phosphorus concentration in Tainter Lake and 54% less phosphorus concentration in Lake Menomin.

[19] Red Cedar River Water Quality Partnership. A Water Quality Strategy for the Land and Waters of the Red Cedar River Basin. July 2015.

Tainter Lake TMDL Goals

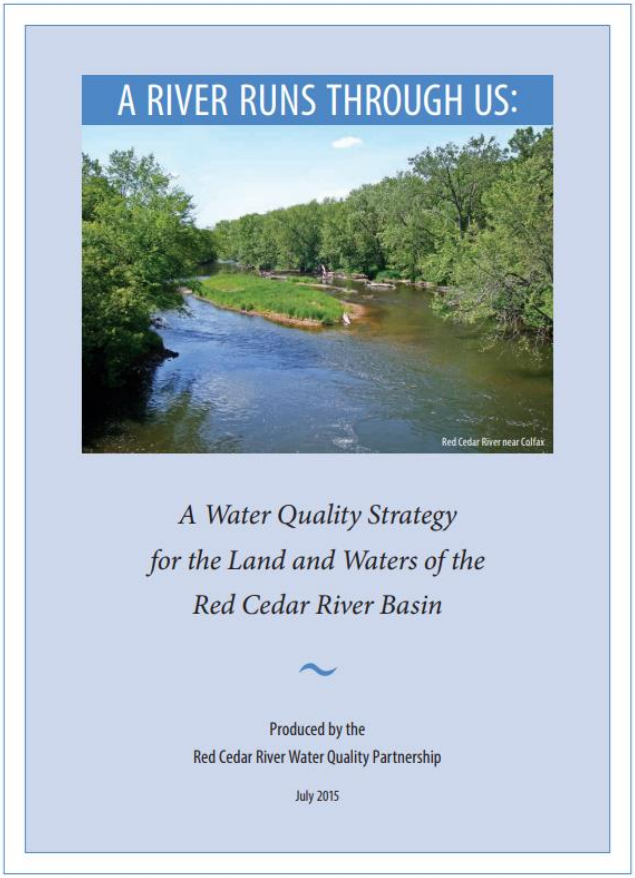
- Total phosphorus (mg/L): 59
- Chlorophyll-a (mg/L): 25
- Secchi depth (m): 1.6
- Percent time >30 mg/L chla 28%

Lake Menomin TMDL Goals

- Total phosphorus (mg/L): 57
- Chlorophyll-a (mg/L): 25
- Secchi depth (m): 2.0
- Percent time >30mg/L chla 28%

Interim phosphorus reduction goal (10 years): 40% reduction from all nonpoint sources.

The implementation plan examines a variety of best management practices to assess cost and potential effectiveness to achieve the nonpoint source reduction goal. Education, outreach, and civic engagement/governance are emphasized in plan implementation in hopes of achieving phosphorus reductions more economically than with traditional cost share programs. The EPA approved the Red Cedar Implementation plan in 2016.



Additional St. Croix County Water Quality Priorities

Rush River Watershed Targeted Runoff Management Grant

St Croix County was awarded a $385,000 Large Scale Non-TMDL Targeted Runoff Management (TRM) Grant in 2017 for the Rush River watershed. The Rush River is a Class II cold water trout stream with agriculture the major land use affecting surface waters in the watershed. The Rush River drains directly into Lake Pepin, a 303(d) listed impaired drainage lake in the Mississippi River.

According to a Spreadsheet Tool for Estimating Pollutant Loads (STEPL) analysis, land use in the Rush River watershed contributes 68,708.2 lbs./year of phosphorus (P) and 17,731.0 tons/year of sediment. Cropland is responsible for 82% of the P loading and 85% of the sediment loading. Comparing the original prairie and forest land cover to the current land use shows a significant conversion to cropland and pasture. This conversion is responsible for lower infiltration rates and therefore larger volumes and velocities of runoff, leading to dramatic upland soil and in-stream erosion, sediment and nutrient loading to surface waters, and decreased groundwater recharge quality.

The Rush River headwaters start just above the city of Baldwin where the channel is normally a dry run except during storm runoff. The storm runoff tends to be severe and highly turbid and is exacerbated due to the cropping of clay soils. South of Baldwin, sinkholes in the riverbed cause the flow to disappear underground. This direct connection between ground and surface water is potentially very hazardous to groundwater quality, especially in a heavy agricultural land use area. The grant will be used to fund best management practices (BMPs) to control nonpoint source pollution as well as support the staff time required to implement the BMPs.

Dry Run Watershed Farmer-Led Council

The Dry Run Watershed Farmer-Led Council began in 2013 as a collaboration between farmers, county staff, UW–Extension, and state government agencies to improve water quality. The council receives an annual pool of funding from two sources, the Minneapolis-based McKnight Foundation and the Wisconsin Department of Agriculture, Trade, and Consumer Protection (DATCP), with which they design a conservation incentives program that achieves water-quality goals. The farmers themselves determine the best paths to conservation success within their watershed, and recruit and encourage other farmers to participate. St. Croix County Resource Management Division staff work closely with the farmer council to provide technical assistance, facilitation, resource information and education, as well as monitor the project's outcomes.

This project combines the considerable strengths of the partners with current watershed management TMDL goals in a groundbreaking collaborative. Conceptually, it draws from research and resources on Civic Organizing, Iowa State University's sociological work on farmer-led, performance-based watershed projects, and the concept of landscape disproportionality analysis from the University of Wisconsin. With water quality improvement as their focus, the council identified grassed waterways, cover crops, and soil testing as priorities to incentivize. The council also became an important partner in St. Croix county staff efforts to implement a National Fish and Wildlife Foundation "Conservation Partners Grant," leveraging their financial resources with federally granted dollars. Two council members took part in a streambank restoration on Dry Run Creek. The streambank work was used as a demonstration, where other landowners and council members were invited to the site to discuss erosion abatement procedures and general maintenance of shorelines. As a result of the council exploring the Ag Solver Program, a general watershed wide meeting was held on this precision agriculture tool that shifts the focus from increasing yield to increasing profit. Generally, the software shows how enrolling marginal land in conservation programs can actually increase farm profitability. In the near future, the council plans on holding additional informational meetings.

Wilson/Annis Creek Water Quality Partnership

Wilson Creek, whose headwaters start in the Village of Wilson on the eastern boarder of St. Croix County, is a 303d listed impaired waterbody for exceeding total phosphorus. The watershed is part of the Red Cedar River basin but was excluded from the TMDL. Because of Wilson Creek being excluded from resources available through the TMDL despite its impairment status, a group was formed to help this trout stream.

The Wilson & Annis Creek Watershed Partnership (WACWP) is a coalition of community members who guide the implementation of an initiative to improve water quality and habitat in the Wilson and Annis Creek watersheds. Members of WACWP include St. Croix County Resource Management Division, Dunn County Land and Water Conservation Division, private landowners, non-profit groups, Wisconsin Department of Natural Resources (DNR), and the United States Department of Agriculture's Natural

Resource Conservation Service (NRCS). Agricultural conservation practices are funded through NRCS's National Water Quality Initiative (NWQI) program, which focuses Environmental Quality Incentives Program (EQIP) dollars into certain high-priority watersheds. Stream habitat improvement projects are supported through various grants, private land easements, trout stamp dollars, and volunteer hours.

SHORELANDS

Lands within 1,000 feet of the ordinary high water mark of navigable lakes ponds, or flowages and within 300 feet of the ordinary high water mark of navigable rivers or streams or landward edge of the floodplain (whichever is greater) are designated as shorelands.

Vegetation in the shorelands can provide a natural buffer which helps protect surface waters from overland runoff and contaminants. If shorelands are disturbed, their ability to slow runoff and filter contaminants is reduced. Shorelands also provide critical habitat for a variety of plants and animals and enhance the aesthetic quality of water bodies.

Wisconsin requires counties to protect and prevent the loss and erosion of these valuable resources by adopting and enforcing a shoreland ordinance. The authority to enact and enforce this provision comes from Chapter 59.69 of the Wisconsin Statutes. Wisconsin Administrative Code NR115 dictates the shoreland management program.

WETLANDS

A wetland is defined by state statute as "an area where water is at, near, or above the land surface long enough to be capable of supporting aquatic or hydrophytic (water-loving) vegetation and which has soils indicative of wet conditions." Wetlands may be seasonal or permanent and include swamps, marshes, and bogs.

Wetlands can make lakes, rivers, and streams cleaner and drinking water safer. They provide valuable habitat for both aquatic and terrestrial animals and vegetation. In addition, some wetlands replenish groundwater supplies. Groundwater is also commonly discharged from wetlands. This discharge water can be important in maintaining stream flows, especially during dry months. Groundwater discharged through wetlands can contribute to high quality water in lakes and streams. Draining and filling of wetlands or development near wetlands can remove these natural functions and values.

All construction projects involving wetlands should be reviewed according to local, state, and federal regulations before they begin. Particular attention must be given to wetlands within shorelands to ensure protection from development. The St. Croix County shoreland zoning ordinance restricts development of wetlands five acres and greater within the shoreland zone. The federal government and the Department of Natural Resources (DNR) restrict development in wetlands through Section 404 of the Clean Water Act and NR103, respectively. DNR has an inventory of wetlands of two acres and larger. However, all wetlands meeting the state definition are subject to DNR regulations. Federal regulations may apply in addition to or instead of state regulations.

WOODLANDS

Woodlands provide habitat for a variety of plants and animals, as well as adding scenic beauty to the landscape. Large continuous blocks of forested land are important habitat for a variety of plants and animals. Woodlands managed according to approved forest management practices can support varying

and sometimes complementary objectives, such as timber production and wildlife habitat.

Development can destroy the capacity of woodlands to provide wood products, habitat, and scenic beauty. The value of woodlands for habitat, production, and scenery should be considered before woodlands are converted to other uses.

DNR manages three forestry tax law programs that provide tax incentives to encourage managing private forestlands for forest crop production while recognizing a variety of other objectives. St. Croix County has 14,921 acres enrolled in Managed Forest Law programs as of 2017. 12,816 acres are closed to public access, and 2,105 acres have open public access.

PRAIRIE & OTHER GRASSLANDS

Much of St. Croix County was originally covered by prairie. However, little native prairie remains today. Prairies vary due to soils and climates, but all are dominated by grasses and sedges. Prairies are home to a rich diversity of plants and animals.

Native prairies are a threatened plant community in Wisconsin. Tallgrass prairies are among the most decimated and threatened natural communities in the Midwest and the world. Of the 2.1 million acres (6% of state land area) that were native prairie when Europeans arrived 150 years ago, less than 10,000 acres of varying quality (<1 % of state land area) native prairie remains today. Most native prairies found today in Wisconsin are small remnants that are less than 10 acres in size.[20]

The drastic changes in prairie habitat over the past 150 years have had negative impacts on many plants and animals. Many species of plants associated with Wisconsin prairies are endangered, threatened, or of special concern. Two species are known to no longer exist in the state. Many grassland birds face similar outcomes. The list of special concern species is growing, and birds once considered common in the state, such as several species of sparrows and the meadowlark, are declining drastically.

Although the majority of prairie mammals have been able to adapt to the loss of prairie habitat, some are threatened by agricultural practices and development. Prairie-associated reptiles and amphibians have been affected as well. About half have apparently adapted to the loss of prairie. Three reptiles found in prairies are on the state's endangered species list, one is listed as threatened, and two are of special concern. Little is known about the invertebrates of Wisconsin's native prairies with the exception of a few well-recognized and studied species such as the Karner blue butterfly.

There are few high-quality prairie remnants remaining. However, it will take more than the preservation of these remnants to recover or retain the biodiversity this ecosystem can offer. Degraded areas that were once prairie can often be restored with moderate effort to yield a habitat suitable for most of the associated plant and animal species. Even certain managed agricultural and livestock practices can accommodate the maintenance of the open habitats needed by many grassland species.

Oak Savanna

Oak savanna was originally present in St. Croix County. Wildfire and possibly bison and elk maintained these grasslands with scattered oaks. Only scant remnants of the ecosystem exist today.

[20] http://dnr.wi.gov/topic/EndangeredResources/Communities.asp?mode=group&Type=Grassland

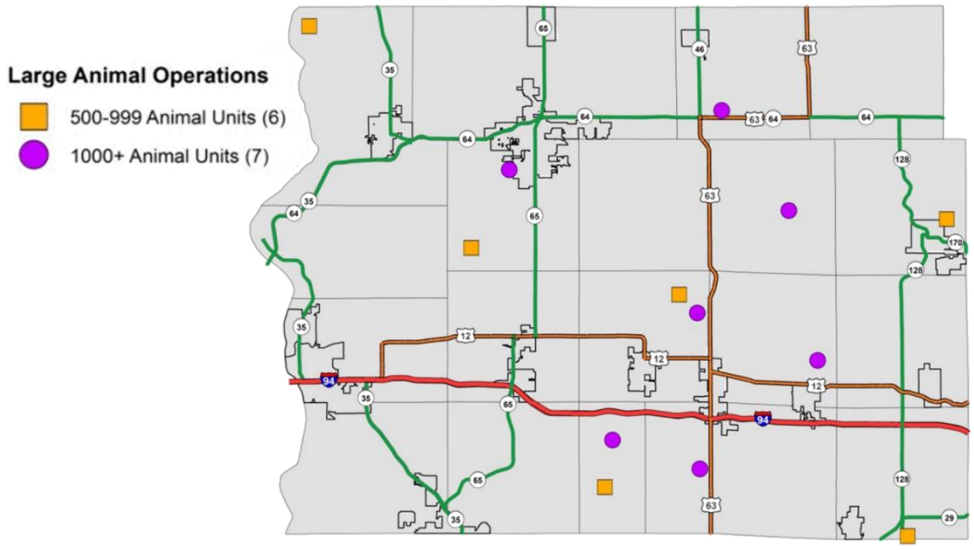
Oak savannas were home to an abundant variety of plants and animals, and were probably optimum habitat for many game species and songbirds. However, oak savanna is presently one of the most threatened plant communities in the world. Less than 500 acres of oak savanna are listed in Wisconsin's Natural Heritage Inventory. There is no inventory of oak savanna remnants in St. Croix County. However, some of the identified grasslands have the potential for savanna restoration.

RARE OR ENDANGERED SPECIES AND COMMUNITIES

The DNR Bureau of Endangered Resources maintains databases of endangered plants and animals. The Bureau urges that special notice be taken to protect any and all endangered resources from development. Rare or endangered species and communities are generally very sensitive to encroachment of development and changes in their surroundings. Development on or near the locations of rare or endangered species can threaten their survival. Rare, threatened and endangered species and natural communities in St. Croix County are available listed by township on the WDNR natural heritage inventory web pages.[21]

AGRICULTURAL LAND

Over the past three decades, the western part of St. Croix County experienced a reduction in the amount of agricultural land. The eastern half of the county is predominantly rural, and agriculture continues to be an important part of the economy and society. Despite the loss of farmland, the total number of farms in the county has not significantly changed. In the last three decades, St. Croix County has been part of a nationwide trend of larger farms. There has been a decrease in the number of dairy farms, an increase in acres of corn and soybeans, a decrease in acres of hay, an increase in the number of horses, and a recent increase in direct market and organic farming. State and national agricultural policies, purchasing habits, agricultural practices, international trade, and commodity prices have been the major reasons why St. Croix County has seen changes in the types of agriculture.[22]



[21] http://dnr.wi.gov/topic/nhi/

[22] St. Croix County Agriculture and Farmland Preservation Plan. 2012.

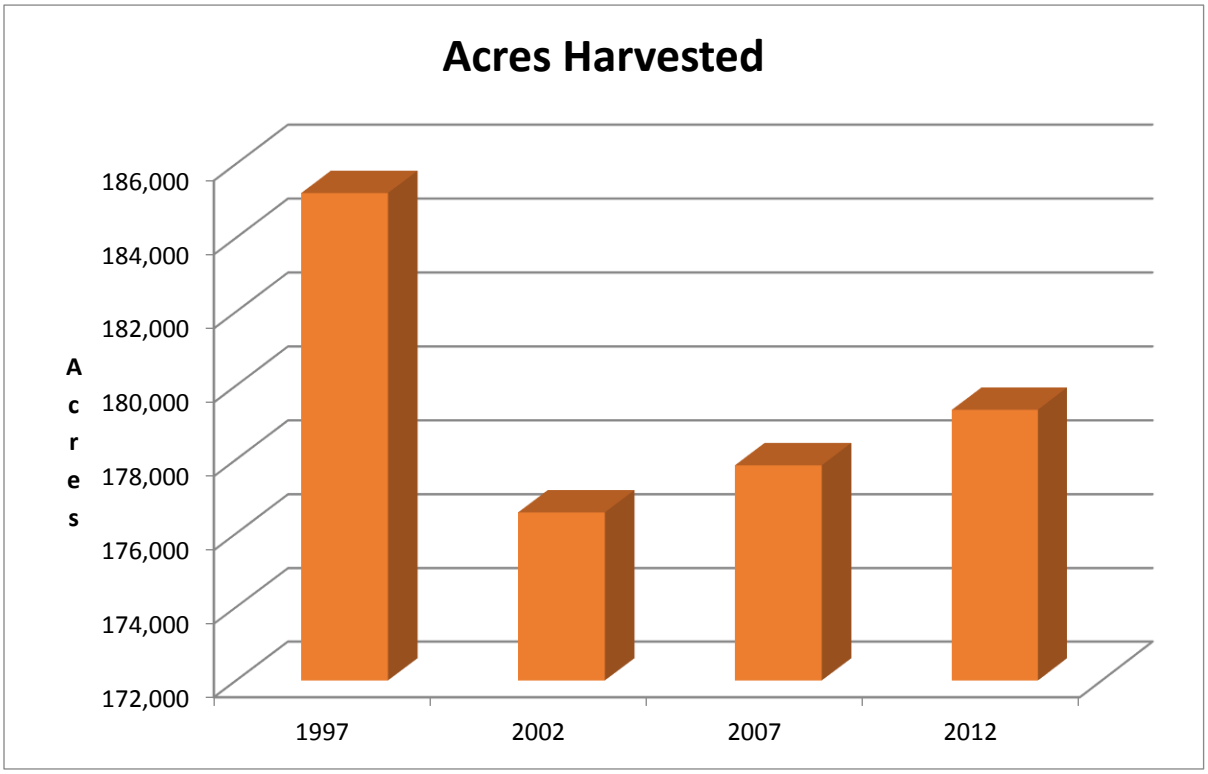


Figure 16. Acres Harvested in St. Croix County

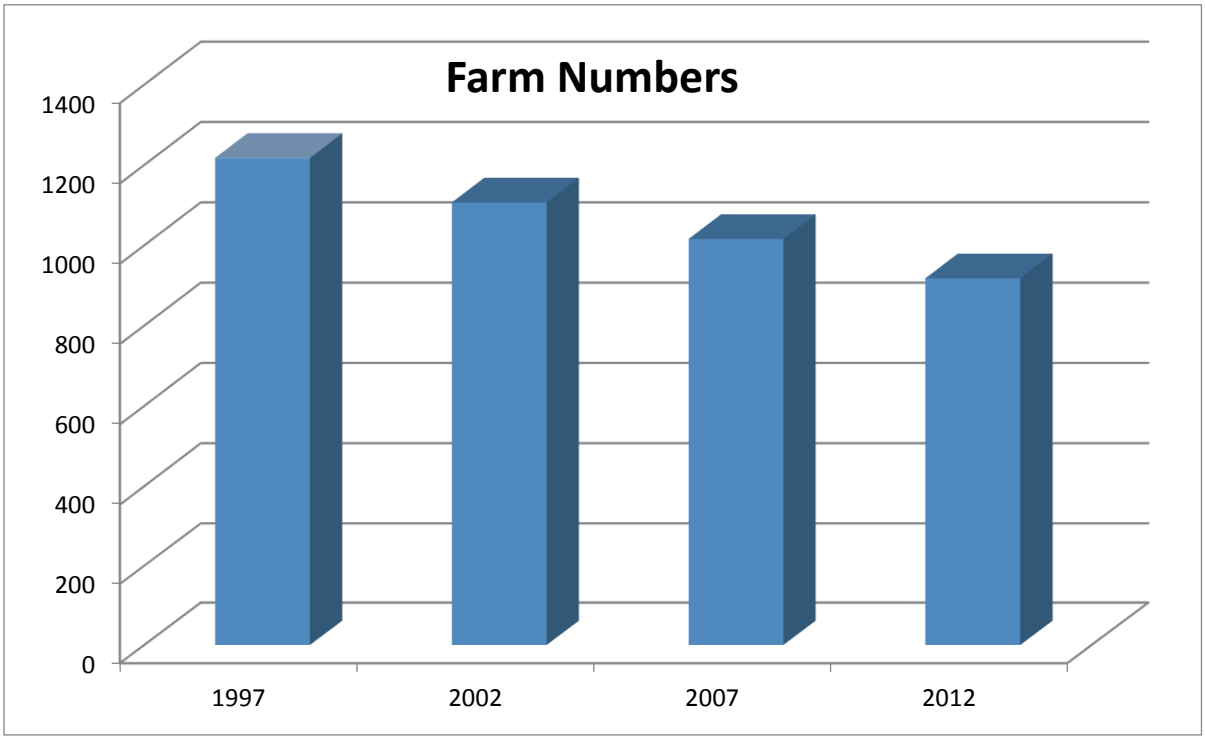


Figure 17. Number of Farms Harvesting Crops in St. Croix County

(hay reported differently in 1997 and 2002)

Figure 16 through Figure 18 which include data from the USDA Census of Agriculture illustrate the trends discussed above. Trends are toward increasing acres planted to row crops such as corn and soybeans and decreasing acres planted to hay and silage. Land in row crops tend to have higher erosion rates than land planted to hay and other grasses planted for grain because of reduced soil cover.

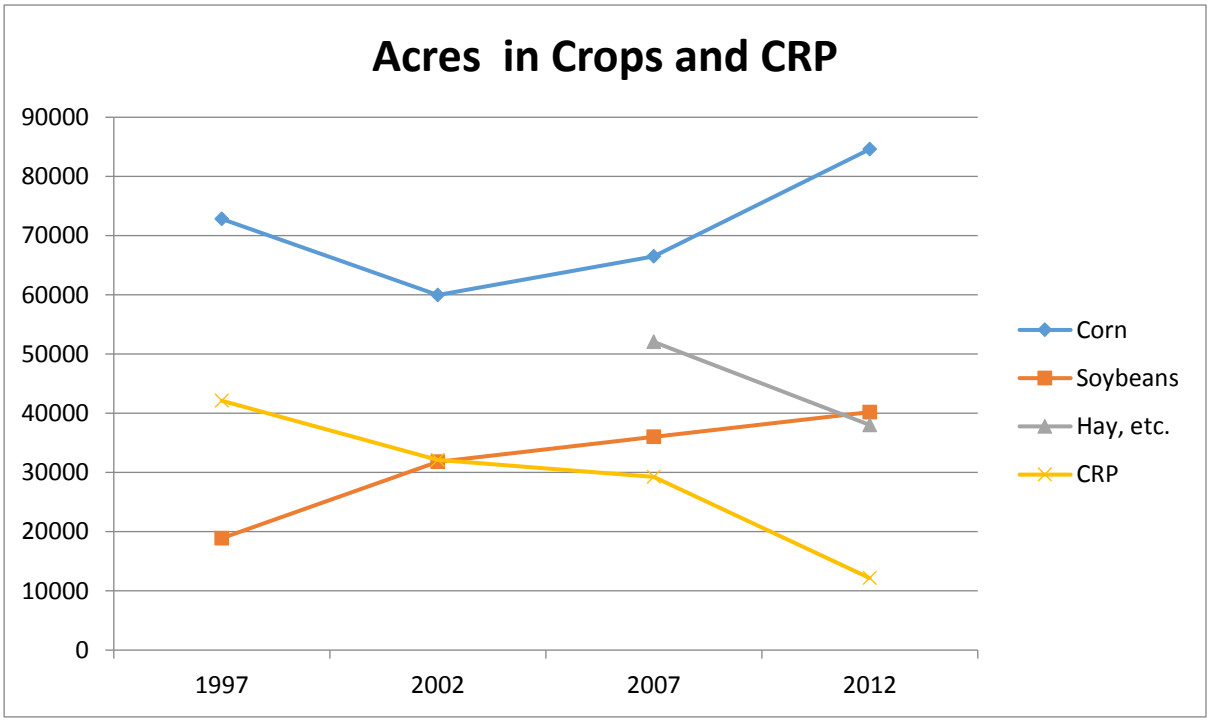


Figure 18. Acres of Corn, Soybeans, and Hay Harvested and CRP Acres in St. Croix County

There have also been significant declines in acres enrolled in the Conservation Reserve Program in St. Croix County beginning around 2007 (Figure 19). The Conservation Reserve Program requires conservation cover for contract terms of 10-15 years. By reducing water runoff and sedimentation, CRP protects groundwater and helps improve the condition of lakes, rivers, ponds, and streams.[23]

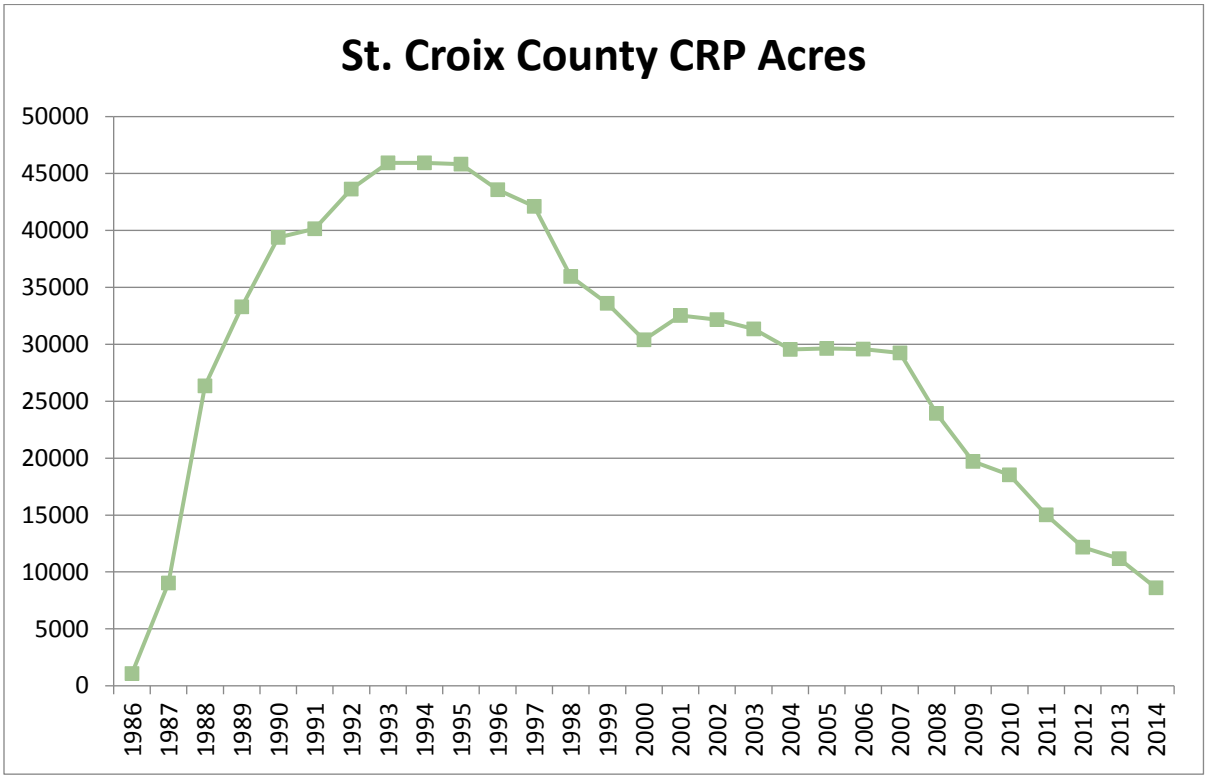


Figure 19. Conservation Reserve Program Acres in St. Croix County by Year

A transect survey of cropland cover and practices is conducted annually according to standard methods. This inventory, begun in 1999, provides information about erosion rates from cropland and assists in targeting areas for conservation practices.

The 2017 transect survey estimates a countywide average soil loss of 2.7 tons per acre per year. There were lower average soil losses estimated in the period from 2009-2017 (2.6 tons/acre/year) as compared with the period from 2001 to 2008 (2.9 tons/acre/year). Average soil erosion rates by watershed are presented in Table 6. Highest rates of erosion were found in the Big Marine Lake St. Croix River, South Fork of the Hay River Trimbelle River, and Willow River watersheds.

The soil and water conservation standard for the St. Croix County Farmland Preservation Program and other county programs is for each crop field to achieve a soil loss at or below the tolerable soil loss rate. The weighted average tolerable soil loss for St. Croix County is 4.4 tons per acre. The tolerable soil loss rate, commonly referred to as "T," is defined as the maximum average annual rate of soil erosion for each soil type that will permit a high level of crop productivity to be sustained economically and indefinitely (ATCP 50.01(16)).

[23] http://www.fsa.usda.gov/Internet/FSA_File/crpfactsheet0213.pdf

Table 6. Average HUC 10 Watershed Soil Loss	
Watershed (HUC 10)	2017 "T" (t/ac/yr.)
Balsam Branch-Apple River	2.8
Big Marine Lake-St. Croix River	3.2
Eau Galle River	2.5
Kinnickinnic River	2.7
Lake Menomin-Red Cedar River	1.5
Lake St. Croix	1.5
Rush River	2.5
South Fork of the Hay River	4.1
Trimbelle River	6.1
Willow River	3.0

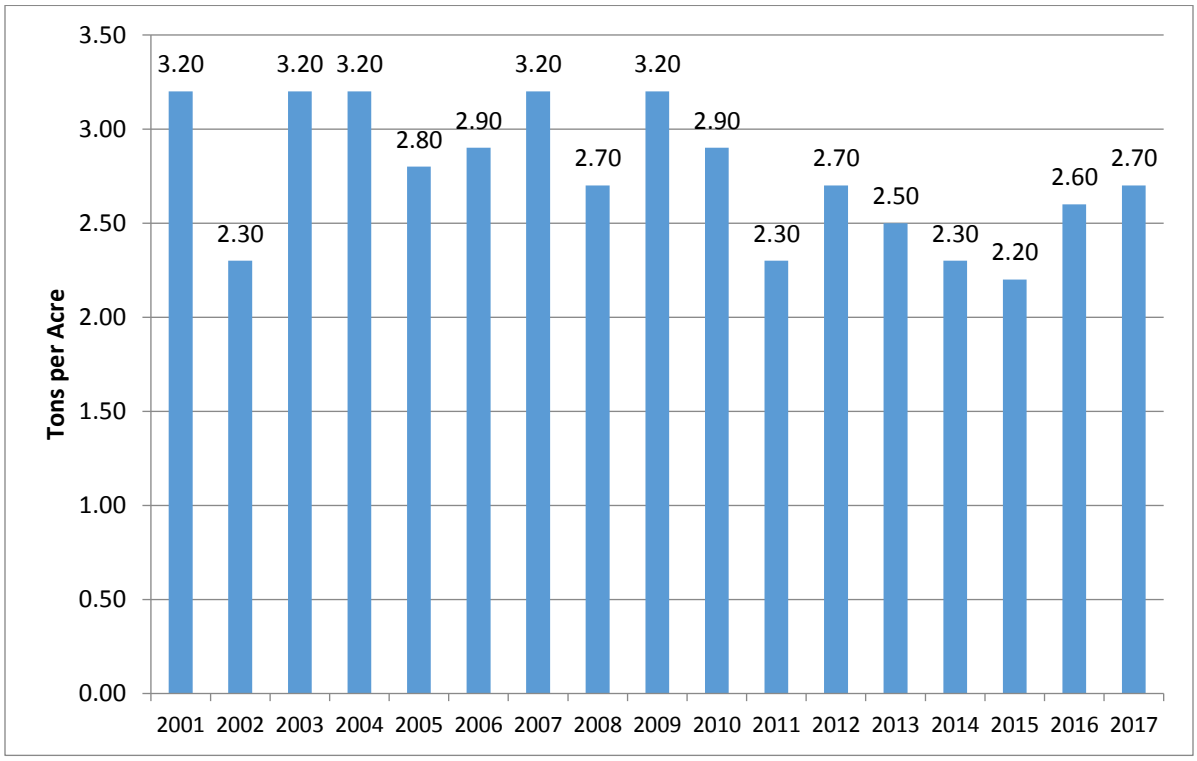
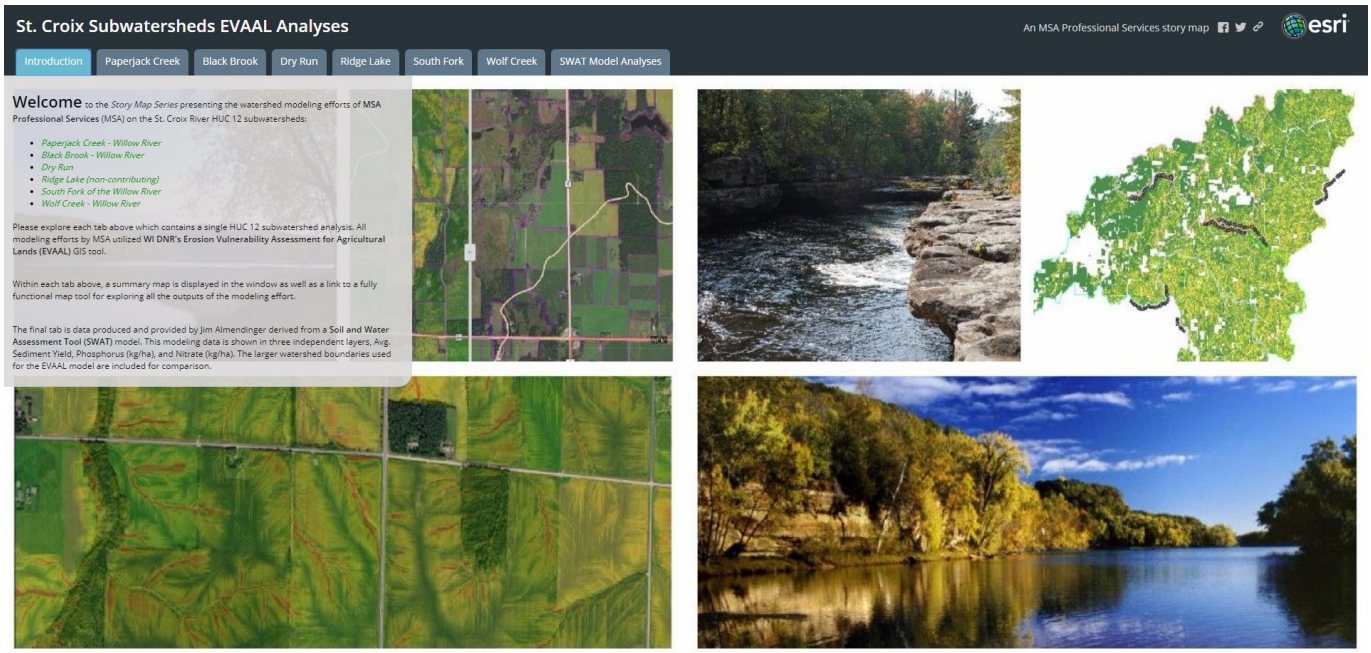


Figure 20. St. Croix County Average Annual Soil Loss

The Erosion Vulnerability Assessment for Agricultural Lands (EVAAL) tool is a GIS model that highlights areas that are highly susceptible to soil erosion. EVAAL analysis was conducted for the Willow River and the results can be accessed through the online story map page. The county may use this data during plan implementation to identify priority areas for implementing conservation practices for improving surface water quality.



https://msa-ps.maps.arcgis.com/apps/MapSeries/index.html?appid=905586554cb64f9a8101dbc33232d34b

POPULATION

The 2017 population estimate for St. Croix County is 87,828.[24] A little less than 50% of these people live in incorporated areas. St. Croix County is part of the Minneapolis-St. Paul Metropolitan Statistical Area (MSA) that had a total of 3,968,806 people in 2010. Population growth and development patterns in St. Croix County are heavily influenced by its proximity to the Twin Cities metro area.

The county's population has more than doubled since 1980. The county had the fastest growth rate in the state of Wisconsin in the mid-2000s, and growth rates remain in the top seven of Wisconsin's 72 counties in 2017. Much of the county's population and growth in population is concentrated in the western portions of the county closest to the Twin Cities.[25]

Figure 21 illustrates population density from the 2010 US Census. Figure 22 depicts how cities, villages, and towns have changed in population from 1970 to 2010. Larger population gains occurred in the western half of St. Croix County. Towns in the eastern half of the county experienced a growth of no more than 499 people. The Towns of Forest and Stanton and the Village of Deer Park lost population during this 40-year timeframe.[26]

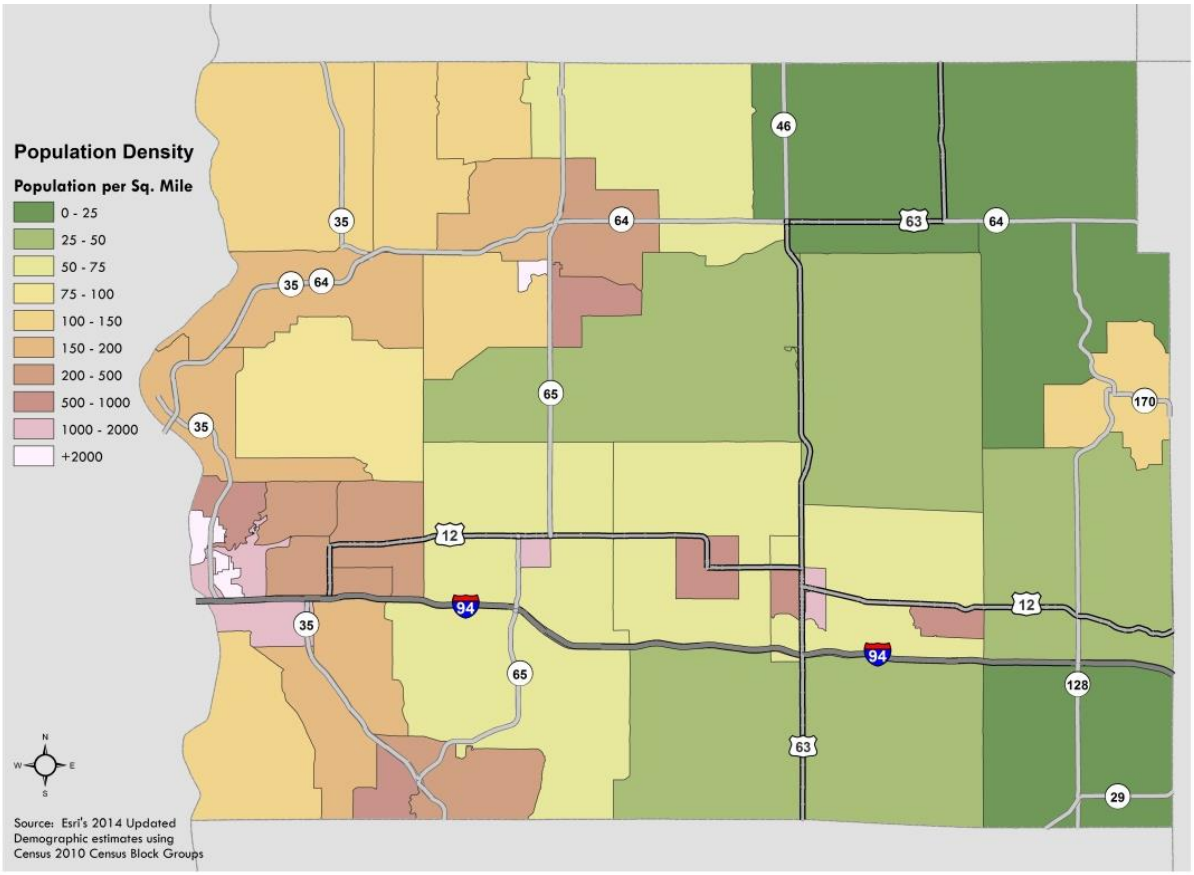


Figure 21. St. Croix County Population Density (2010)

[24] Demographic Services. Wisconsin Department of Administration.

[25] Demographic Services. Wisconsin Department of Administration.

[26] St. Croix County Comprehensive Plan Agriculture and Farmland Preservation Plan. 2012.

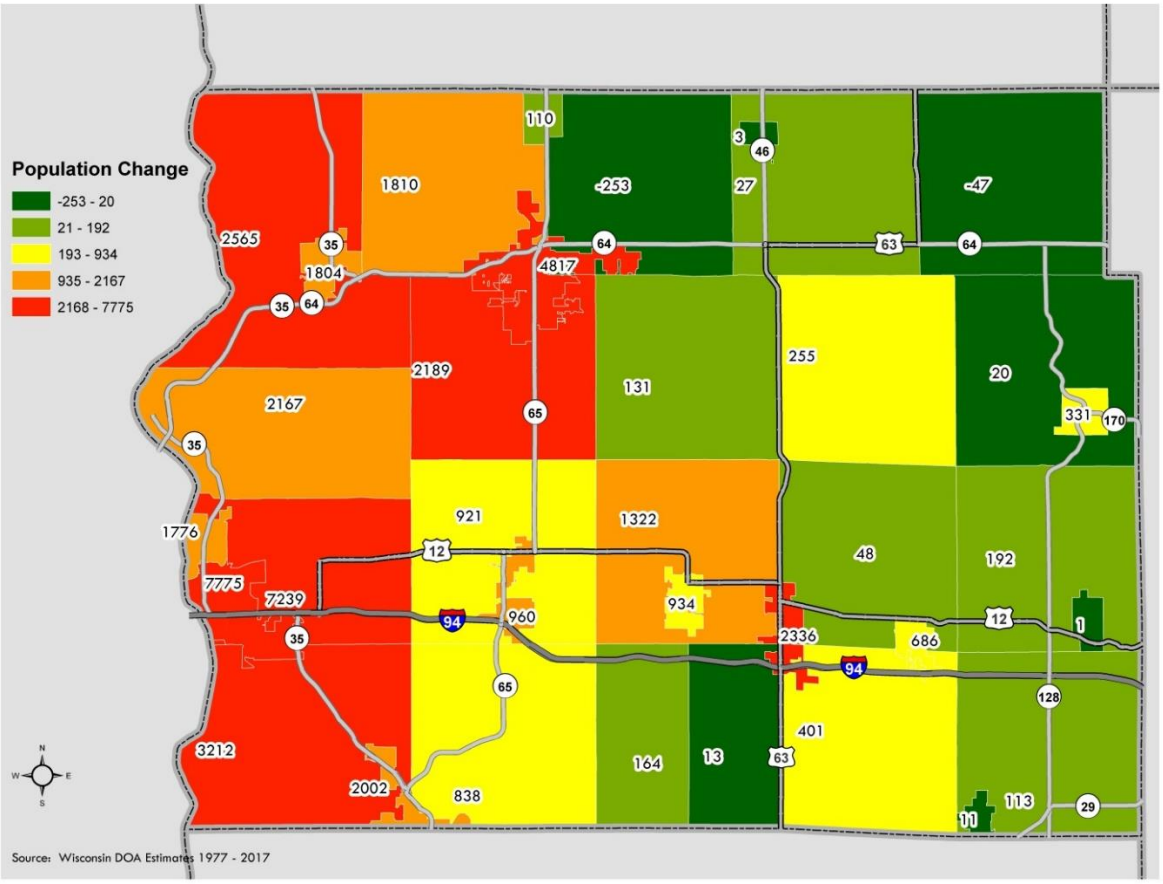


Figure 22. Population Change by Municipality (1977 to 2017)

The Stillwater Bridge/St. Croix River Crossing which opened in 2017 creates uncertainty for St. Croix County. The report *Community and Economic Impacts of the St. Croix River* Crossing: *A St. Croix County Perspective* provides information on how the crossing may affect future population growth and economic development along the Highway 64 Corridor and within greater St. Croix County. The study analyzes impacts to the corridor communities in western St. Croix County separately from the rest of the county. These communities include: the Towns of St. Joseph, Somerset, Richmond and Star Prairie, the City of New Richmond and the Villages of North Hudson, Somerset, and Star Prairie. Precise future impacts from the St. Croix River Crossing are difficult to predict but, the river crossing study makes several key findings.

COMMUNITY AND ECONOMIC IMPACTS OF THE ST. CROIX RIVER CROSSING: KEY FINDINGS RE: POPULATION

#1 - Infrastructure improvements can be seen as a catalyst for change, but are neither necessary nor sufficient to guarantee economic and population growth rates in surrounding areas. Infrastructure quality is important, but is just one of many potential factors that drive a region's development.

#2 - Population growth trends in the county and metro area are changing. These growth trends are influenced by several larger demographic and economic shifts. The trends suggest that it is less likely that St. Croix County will return to the growth rates experienced in the 1990s and 2000s, even with the improved crossing.

#3 - Despite projected slower growth rates, the population in St. Croix County and Corridor communities likely will continue to grow pending a dramatic change in the regional or national economy.

#4 - Population projections are not absolute, but should instead provide guidance for policy development.

Under several different scenarios, population projections show growth for St. Croix County and the combined corridor communities for the period between 2015 and 2040. Based on these projections, St. County is estimated to add between 19,000 and 31,000 residents over this 25-year period Figure 23). Corridor communities are projected to add between 6,100 and 10,300 residents. Using a household size of 2.5 people, county housing units could increase by a range of 7,600 to 12,400 from 2015 to 2040.

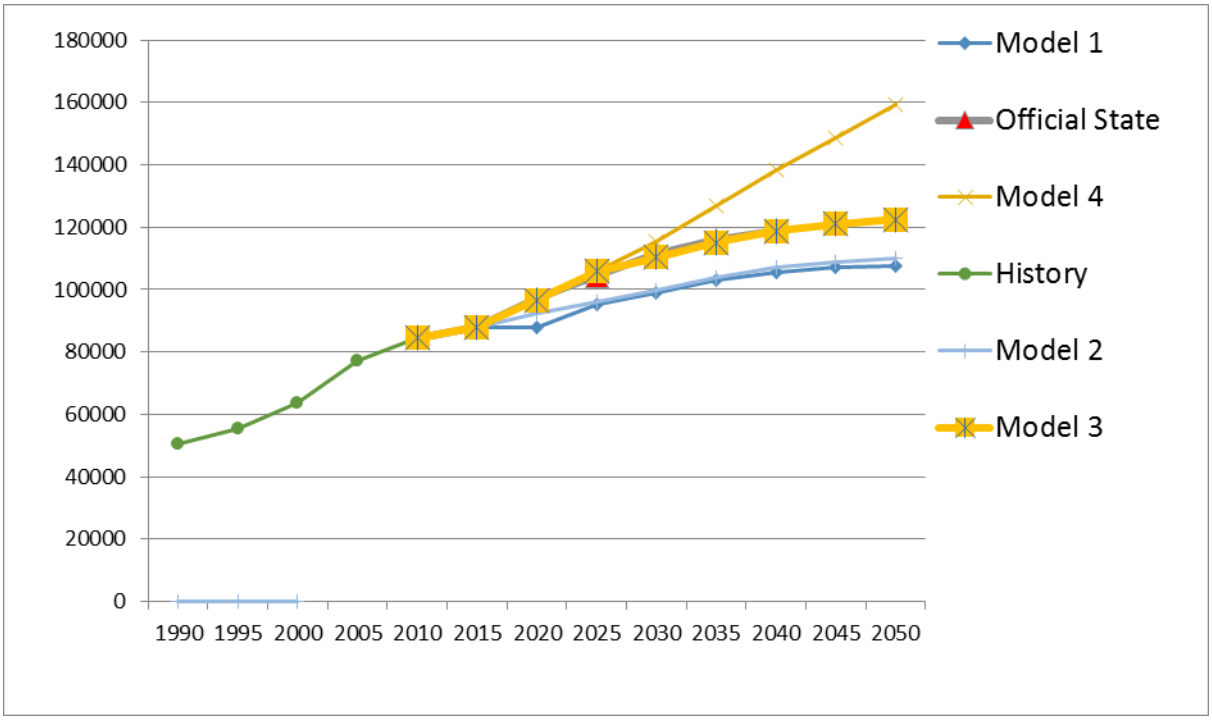


Figure 23. St. Croix County Historical and projected Population Growth (4 Models of projection) [27]

[27] Gillaspy Demographics. Presentation 2014.

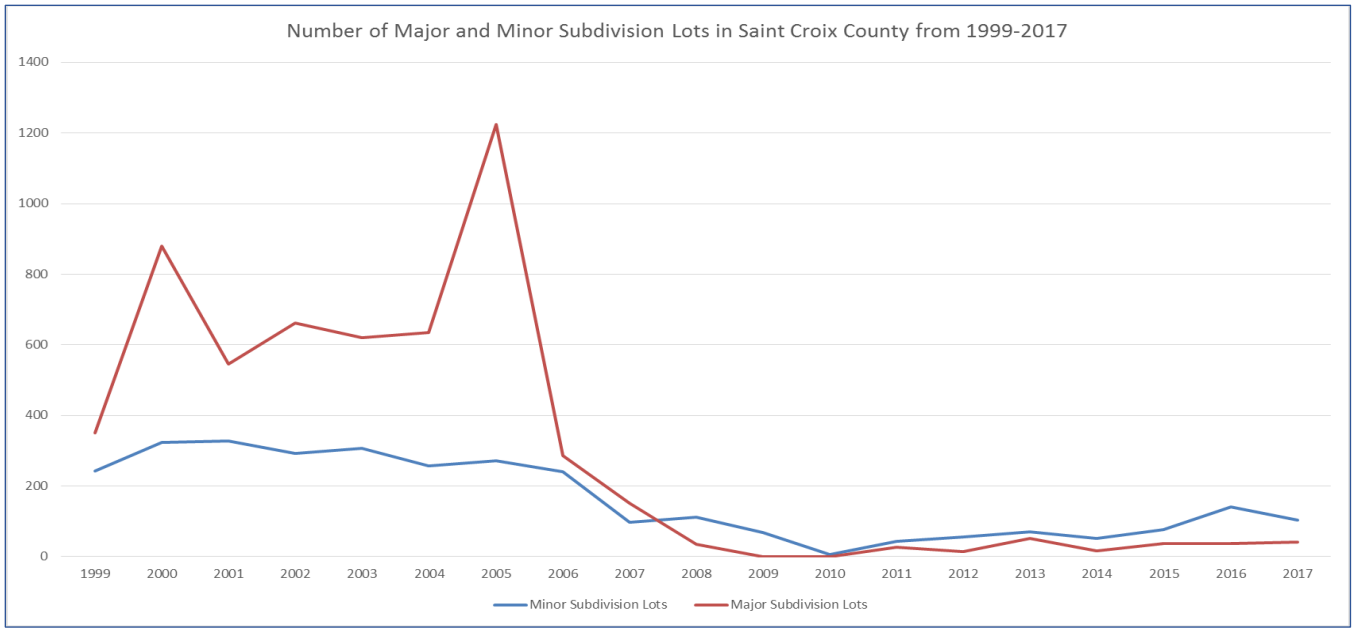


Figure 24. Number of Subdivision Lots (1999-2017)

Land divisions in St. Croix County were highest in 2000 and 2005, fell dramatically from 2005 to 2007, and have remained at relatively low levels through 2017 as shown in Figure 24.

Sanitary permits provide another indication of new construction in rural areas not served by sewer systems in St. Croix County. After a decline in new construction beginning in about 2004 and reaching lowest levels in 2007-2012, construction has increased slightly through 2017 (Figure 25).

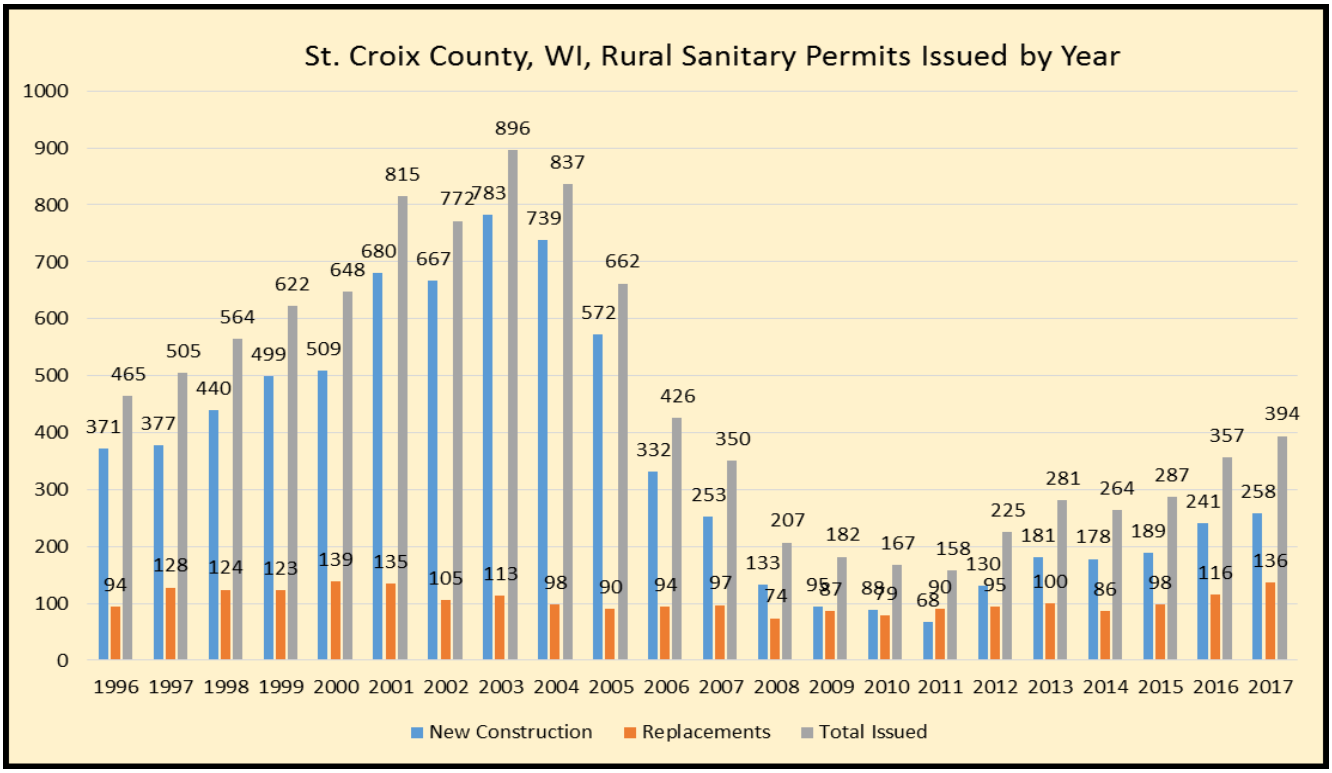


Figure 25. Sanitary Permits issued (1996 -2017)

Population growth and concurrent residential and commercial development can lead to negative environmental impacts. Surface water and groundwater can become polluted. Wildlife habitat, quality farmland, and open space can be lost to development. Recreation waters can be degraded and recreational lands lost or negatively impacted by increased use. During home and road construction, when the protective cover of vegetation is removed, there are dramatic increases in the rates of soil loss and resulting sedimentation of water resources. Poor road construction can lead to ongoing erosion problems.

Urbanization and other human activities disrupt the natural course of water as it moves across a watershed. Removing vegetation and constructing impervious surfaces such as roads, parking lots, driveways, sidewalks, and rooftops greatly increases the amount and rate of stormwater runoff. As a result, water levels fluctuate more in streams. With less infiltration, there is decreased base flow and greater runoff during and after storms. These changes may bring flooding, increased water temperatures, decreased oxygen levels, greater channel erosion, and increased sedimentation. As stormwater runoff crosses the urbanized landscape; it picks up fertilizers, pesticides, debris, salt, oil, grease, other toxic substances, and sediments and carries them to surface waters.

IDENTIFICATION OF CONCERNS AND PRIORITIES

The 2017/18 plan update focused on update of resource information, review of the goals and objectives, accomplishments to date, and implementation of activities. The Advisory Committee and county staff working group reviewed goals and objectives and identified current concerns and priorities for the future. Accomplishments for each goal from the 2008 plan are summarized below with a focus on the most recent five years of plan implementation.

St. Croix County Accomplishments (2012 through 2016)

Project Tracking

St. Croix County uses several tools that are helpful for establishing priorities, managing programs, and tracking project status. The *Transcendent* program provides broad-scale, parcel-level tracking with functions such as tracking notes for landowner site visits and production of Certificates of Compliance.

GIS tracking systems are used to create detailed reports and representative maps. GIS shapefiles and feature classes track the locations of agricultural BMPs. For example, a GIS shapefile is used to track the location, acreage, and operator information for crop fields that are operated under a Nutrient Management Plan (NMP). Results of BMP tracking from 2012 – 2017 are illustrated in Figure 27. A parcel-based GIS geodatabase is used to monitor NR151 compliance for Farmland Preservation Program participants. This FPP layer can also produce maps to aid in landowner understanding of program requirements and benefits.

Digital *Producer File Folders* store items associated with a given landowner such as engineering documents, NMP files, FPP certificates, photos, notes, etc. SnapPlus & SnapMaps are tools used to produce reports and create maps relating to our annual Transect Survey and corresponding soil erosion data.

Plan Goals (2008 Plan)

I. *Protect and improve groundwater quality and quantity to supply clean water for drinking and recharging surface waters and wetlands.*
II. *Protect and enhance surface waters and wetlands to preserve and restore their water quality, ecological functions, and recreational and scenic values.*
III. *Protect and restore fish and wildlife habitats while enhancing water quality, recreational opportunities, and natural beauty.*
IV. *Preserve agricultural land and soils for crop and livestock production, scenic values, and wildlife habitat.*

The figures that follow illustrate St. Croix County project accomplishments from a typical year (2016) and a selection of annual accomplishments under each plan goal.

Land and Water Conservation Accomplishments (2016)

Agency Collaboration Projects

2640 ft. Streambank Restoration

31735 ft. Grassed Waterways

500 ft. Streambank Stabilization

359 acres Cover Crop Establishment

3 Well Abandonments

Nutrient Management Plan

40610.4 Acres

79 Producers

9 Operations with Violations or Complaints

2 Manure Storage and Transfer Units

2 Manure Storage Closures

3 Livestock Siting Permits Reviewed

1 CUP to Exceed Animal Units Permitted

119 Farmland Preservation Program (FLP) Contracts

24481.83 Acres FLP

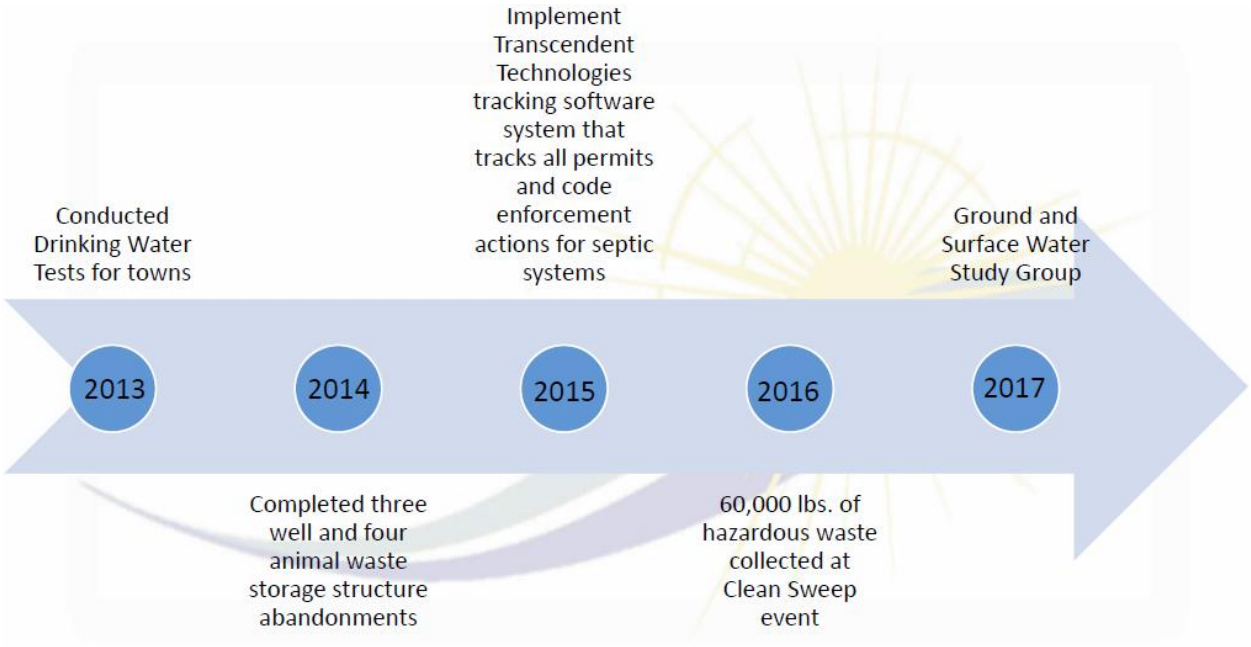
Streambank Restoration

Excessive Bank Erosion

Bank re-shaping, rock delivery and placement

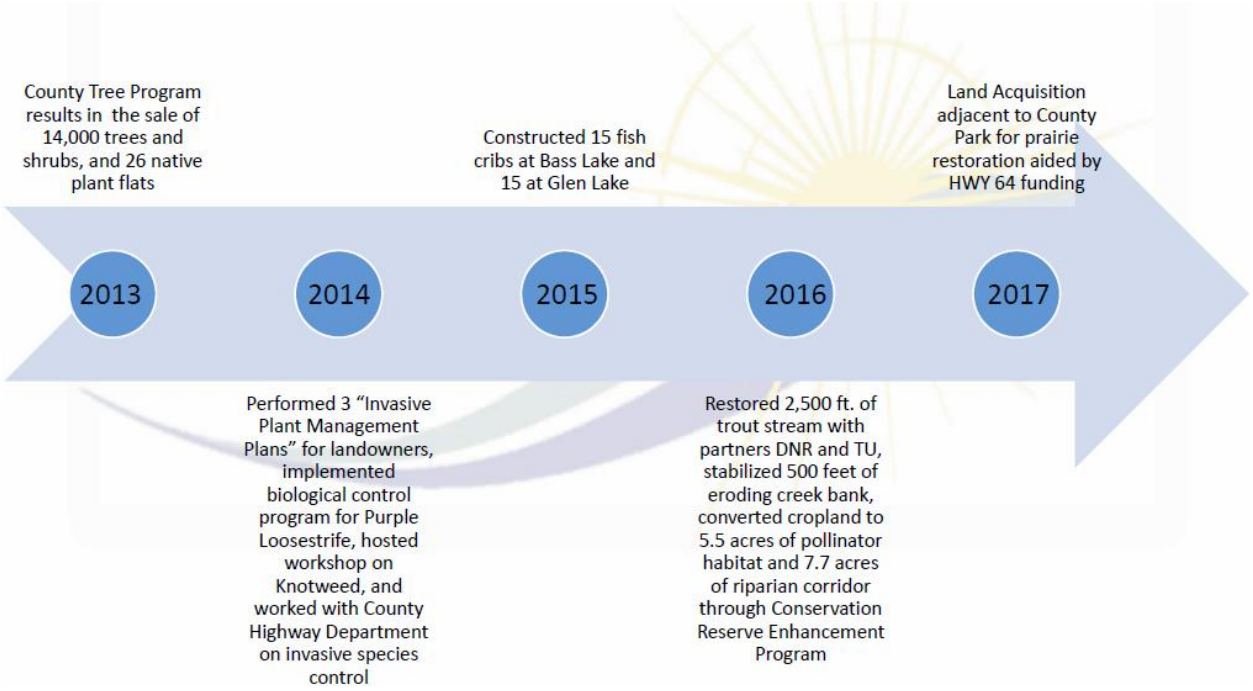
Bank seeding and mulching

Project Accomplishments Goal I. *Protect and improve groundwater quality and quantity to supply clean water for drinking and recharging surface waters and wetlands.*

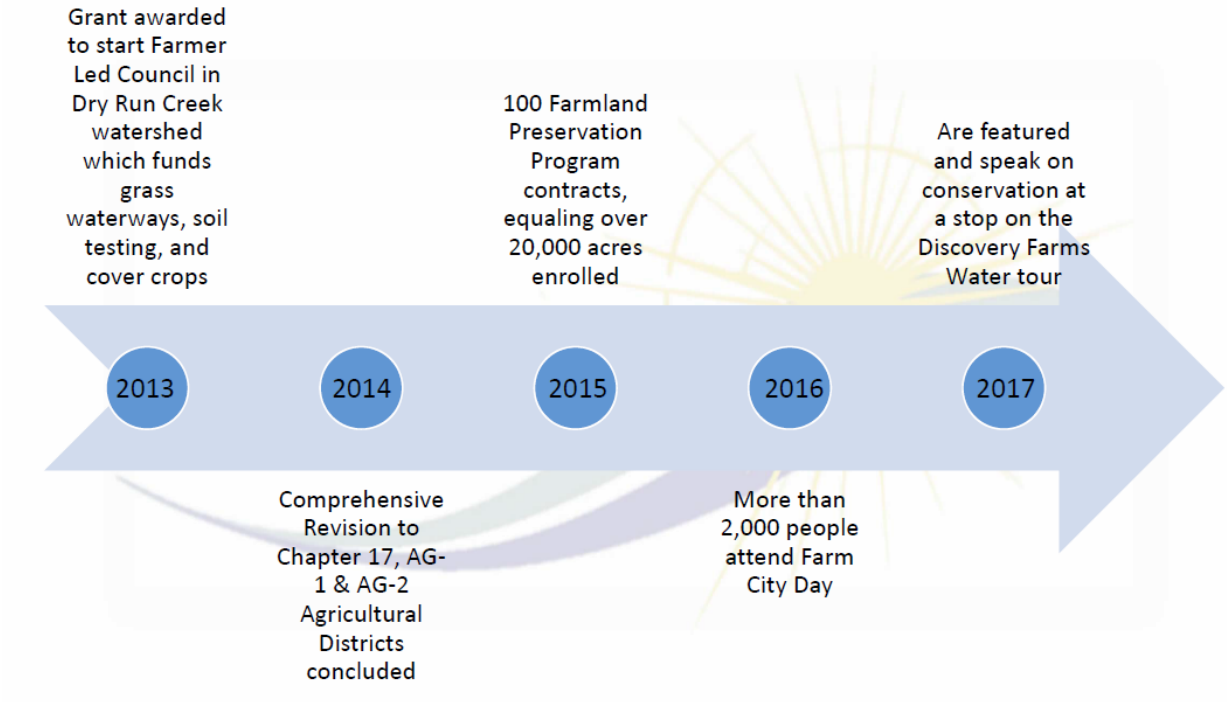


Project Accomplishments Goal II. *Protect and enhance surface waters and wetlands to preserve and restore their water quality, ecological functions, and recreational and scenic values.*

Project Accomplishments Goal III. *Protect and restore fish and wildlife habitats while enhancing water quality, recreational opportunities, and natural beauty.*



Project Accomplishments Goal IV. *Preserve agricultural land and soils for crop and livestock production, scenic values, and wildlife habitat.*



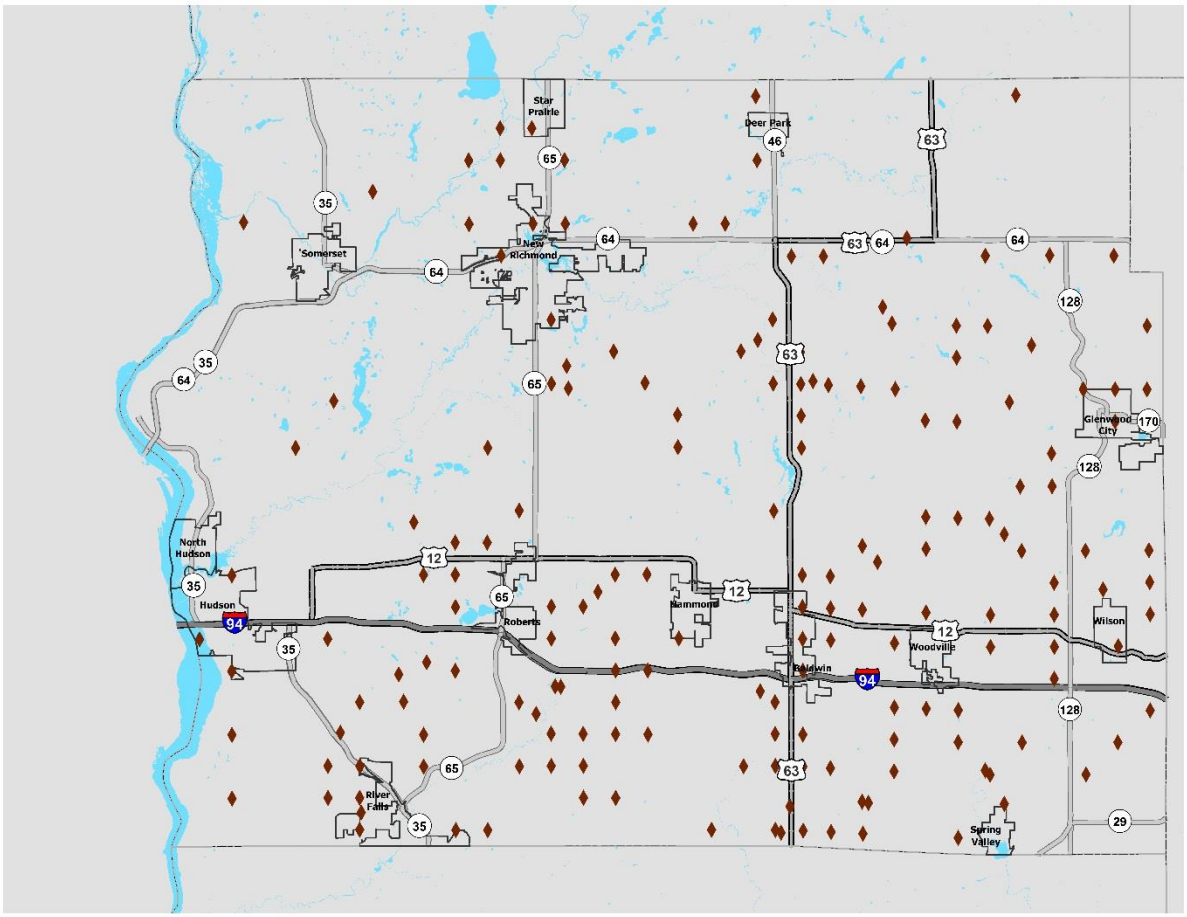


Figure 26. Wells Properly Abandoned through county cost share programs from 2003-2017

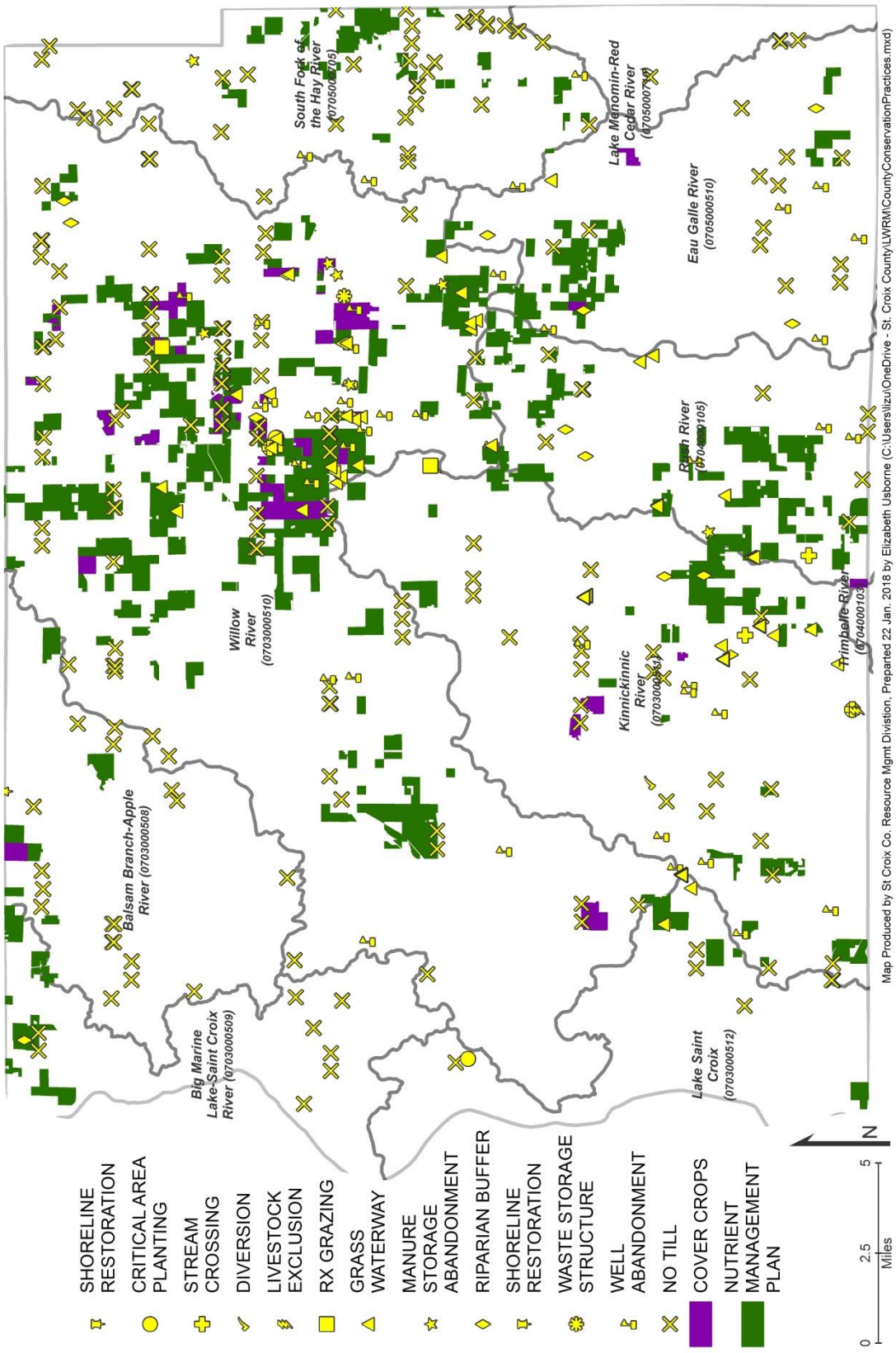


Figure 27. St. Croix County Conservation Practices 2012-2017

Chapter 3. Goals, Objectives and Activities

The goals established in this plan represent priorities for land and water resource management in St. Croix County. The advisory committee reviewed and updated the goals in 2018.

It is acknowledged that no one goal is prioritized over another. Instead, there is a continual need to seek balance in the attention given to implementing activities under each goal and the sometimes competing interests that may occur with implementation of the activities.

PLAN GOALS

1. *Protect and improve groundwater quality and quantity to supply clean water for consumption and other uses and recharging surface waters and wetlands.*
2. *Protect and enhance surface waters and wetlands to preserve and restore their water quality, ecological functions, and recreational and scenic values.*
3. *Protect and restore fish and wildlife habitats while enhancing water quality, recreational opportunities, and natural beauty.*
4. *Preserve agricultural land and improve soil health for crop and livestock production, scenic values, and wildlife habitat.*
5. *Develop and connect with active environmental stewards and future leaders to support and carry out the above goals.*

IMPLEMENTATION STRATEGIES

An implementation strategy is provided for each goal in the following section. The objectives are the detailed and measurable steps toward reaching each goal. Activities are the means for reaching the objectives. Priority activities are shown in bold lettering. The objectives that correlate with each activity are identified in parenthesis following the activity. Implementation of activities to be completed in 2018 is detailed in the work plan in Appendix B. There is also a list of activities to be carried out primarily by partners or considered at a later date. Additional lower priority activities were considered, but eliminated from the plan because of resource constraints. An information and education strategy is included for each goal.

OVERALL ACTIVITIES

1. **Coordinate Community Development Department, primarily Resource Management Division (RMD), activities with other county departments, nonprofit and other non-governmental organizations, neighboring counties, and state and federal agency partners.**
2. **Utilize existing resource plan goals and priorities in county decision-making processes.**
3. **Implement changing state and federal regulations locally.**
4. **Provide input to federal and state policies and programs.**
5. **Provide software, hardware, staff training, and data for an integrated geographic information system (GIS). Map and house this data appropriately.**

INFORMATION AND EDUCATION STRATEGY

Information and education activities will be critical to reaching each plan goal. An information and education strategy is outlined in the boxes following the objectives and other activities for each goal statement. In the information and education strategy, target audiences and key messages are identified, and the recommended activities to deliver those messages are listed. New messages and activities may be developed as the plan is implemented. Initial implementation of the information and education strategy is outlined in the one-year work plan. The strategy will be evaluated and modified along with other components of the work plan each year.

Targeted information and education activities are used for each of the plan goals. Educational tools that are common to more than one program are listed below. A given educational strategy may use several of these educational tools.

Citizen engagement and governance are important components of implementation of this plan. More information about St. Croix County's strategy is found under Goal V.

General recommendations for the educational program:

- *A part-time environmental education/volunteer coordinator gives focus to and coordinates natural resource educational efforts in St. Croix County.*
- *Staff that deal directly with the public by answering the telephone or greeting clients are trained to distribute appropriate educational materials and refer clients to the appropriate staff person, department, or agency.*
- *Outreach to the public about the skills and resources available through the Resource Management Division (RMD) helps the department carry out its mission effectively.*

Common Educational Tools

Media

- Newspaper articles, conservation columns and public service announcements
- Newsletter articles: Public Health, Aging and Disability Resource Center, Sportsmen's Alliance, lake districts, Farm Bureau
- County intranet
- County internet
- Social media, podcasts, email
- Advertising campaigns - newspaper, radio (River Falls - WEVR, Baldwin - 95.7), cable
- Direct mail

Youth Education

- School presentations/classroom activities
- Field trips
- Service learning days
- Conservation speech contest
- Conservation poster contest
- Envirothon

Adult Education

- Staff presentations/seminars
- Workshops
- Tours and demonstrations of best management practices
- “Coffee and Conversation” or “Lunch and Learn” - casual conversations with conservation partners
- Displays at events: e.g., county fair, farm city day, sport shows, Garden U, art fair, hot air balloon festival, Earth Day
- Clearinghouse for information/brochures
- One-on-one contacts

Common Educational Strategy Audiences

Each of the first four goals has targeted audiences for message delivery. Where audiences are common to more than one goal, they are listed below.

- Agricultural landowners
- Residential landowners
- Agricultural service providers
- General public
- City, town, village, and county officials
- Developers, builders, surveyors, etc.
- Youth: schools, organizations
- Adult organizations: sportsmen’s groups, gardening, non-profit organizations
- Faith organizations

GOAL 1

Protect and improve groundwater quality and quantity to supply clean water for consumption and other uses and recharging surface waters and wetlands.

Objectives

1.1 Quality drinking water is available to residents of St. Croix County.

1.2 Groundwater is protected from contaminated surface water.

1.3 Groundwater is conserved so that adequate supplies of groundwater are available.

1.4 RMD conservation practices are designed to protect groundwater quality and quantity.

1.5 Land surface infiltration capacity is conserved or enhanced to preserve natural recharge of groundwater supplies.

1.6 Groundwater data is expanded, updated, and utilized for decision making.

Priority Best Management Practices

Nutrient and pest management plans (includes a conservation plan)

Riparian and wetland buffers

Filling and sealing of unused/abandoned wells

BMPs that infiltrate stormwater

Current Groundwater Geographic Priorities

Towns of Richmond, Erin Prairie, Hammond

High nitrate test results
Urban development nearby
High groundwater susceptibility
Dry-run Farmer Led Council

- Active citizens
- Field tests
- River sampling data

Activities[28]

Technical and financial assistance

1. **Implement best management practices by providing technical assistance and promoting and administering federal, state, and county cost share programs. (Objectives A, B, C, D, E)**
    a. **Increase the number of acres in nutrient management plans.**
    b. **Increase enrollment in Farmland Preservation Zoning.**

[28] Advisory committee top priorities are listed in bold.

c. Monitor installed best management practices emphasizing compliance checks for nutrient management.

Enforcement and compliance

2. Evaluate parcels, notify regarding compliance status, offer cost sharing, provide technical assistance, and participate in enforcement actions to implement the NR151 Agricultural Performance Standards in accordance with the priority farm strategy. The Agricultural Performance Standards Memorandum of Understanding is included in Appendix A. (A, B, C, D)
3. Review stormwater design, maintenance plans, and land use permits for groundwater concerns under the land division and the zoning ordinances. (A, B, C, E)
4. Review nonmetallic mining operation and reclamation plans. Participate in revisions to the ordinance as needed. (B, E)
5. **Revise the county's land use, agricultural operations, and zoning ordinances to protect groundwater resources.**[29] (A – F)
6. Update county construction site erosion control and stormwater ordinance. Consider infiltration/impervious surface standards to maintain groundwater recharge. (A – F)

Policies and Procedures

7. Develop a county protocol for urgent response to actual or potential water resource pollution events that threaten human health, the environment, or natural resources. (B)

Evaluation/Monitoring

8. **Develop a scientifically sound drinking water well testing program to create baseline data to measure drinking water quality over time (F), including:**
    - **Repeat testing of rural wells every five years for consistent recording of pertinent data**
    - **Recommended to test 1,000 wells every five years, which is 6 percent of all wells in St. Croix County (~16,000)**
    - **Maintain and improve the county database of all well construction records and water test information**
    - **Increase participation in the existing drinking water well testing program**
    - **Offer free water quality screening to increase education and participation**
    - **Develop a public health certified lab to test bacteria & nitrates.**

Additional Activities

These activities are either not scheduled for immediate implementation or would likely be carried out primarily by partner groups.

9. Identify and map environmentally sensitive areas and conduits to groundwater to improve siting of POWTS, wells, spreading, etc. (A, B, D, F)

[29] More detailed recommendations are found in the St. Croix County Groundwater Study (2017) https://www.sccwi.gov/DocumentCenter/View/2378

10. Develop a plan with cost estimates for constructing another inset model (to the USGS groundwater model) for areas of interest and concern. Conduct research to determine the source of nitrate issues, distinguishing between non-agricultural or agricultural sources. (F)

    - Research source of nitrate issues
    - Input and model data
    - Analyze nitrate source results

11. Combine groundwater data from various agencies and incorporate into GIS layers. Evaluate groundwater quality and track inventory results by aquifer. (F)
12. Use groundwater data to analyze the effectiveness of various land uses and conservation practices in the protection of groundwater quality and quantity. (D, F)
13. Develop a county groundwater management plan or complete elements of the plan which might include the following: (A – F)

    - assess and map the location of groundwater recharge areas
    - establish wellhead protection areas
    - identify and encourage groundwater conservation measures
    - provide opportunities for regional stormwater infiltration ponds
    - plan for regional water-supply needs
    - assist in the implementation of municipal wellhead protection plans
    - implement groundwater/wellhead protection in local ordinances
    - encourage and cost-share for the proper fill and sealing of wells.
    - require the fill and sealing of any unused wells at time of property sale.
    - establish special stormwater requirements for high-risk industries (as allowed in NR151). (A, B, C, E, F)

14. Promote partner programs that increase infiltration of runoff water. These include but are not limited to, CRP, EQUIP, WRE, CREP, SAFE, and Partners for Fish and Wildlife. These and other partner programs and funding sources are listed in following pages. (E)

GROUNDWATER EDUCATIONAL STRATEGY

Audiences

Private well owners
Public well owners: golf courses, parks, schools, campgrounds, trailer parks
Private and public well operators: city and village workers
Well drillers, plumbers
Realtors and appraisers
Chemical suppliers

Messages

1. We all drink groundwater in St. Croix County.
2. Groundwater health hazards include: nitrates, volatile organic compounds, and bacteria.
3. Septic systems need regular maintenance (pumping).
4. Groundwater is a limited resource; conserve groundwater.
5. Encourage infiltration to maintain groundwater level.
6. Groundwater recharges surface water.
7. Wetlands protect groundwater. They should be protected and restored.
8. St. Croix County's geology and soils make most of the county a recharge area. Don't dump oil, anti-freeze, or other hazardous liquids on the ground.
9. Landscaping alternatives to large, manicured lawns protect groundwater. There are fewer chemical applications, less fuel consumed and more precipitation infiltrating to recharge groundwater. These methods also save time.
10. Fertilizers contain nitrate. Nitrate in groundwater can cause health problems.
11. To protect groundwater use proper chemical application amounts and techniques: read labels, follow directions, measure properly, and dispose of containers correctly.
12. Use environmentally friendly alternatives to chemicals, pesticides, etc.
13. Avoid over-watering after applying chemicals. This forced leaching can push the chemicals into groundwater.
14. Sinkholes are direct conduits to groundwater and need to be protected from runoff.
15. Abandoned wells are direct conduits to groundwater. They need to be appropriately filled and sealed.
16. Nutrient management plans are required for municipalities and private sites with more than five acres of turf.
17. Promote low impact development such as conservation design land divisions.

Tools/Activities

Interactive groundwater model for presentations
Septic system maintenance reminder postcards
Individual well tests supported with groundwater information
Groundwater information distributed with land use permits
Increase promotion of cost sharing for filling and sealing wells
Clean Sweep programs

GOAL 2

Protect and enhance surface waters and wetlands to preserve and restore their water quality, ecological functions, and recreational and scenic values.

Objectives

2.1 Maintain/improve the water quality and clarity of St. Croix County lakes and streams.

- Reduce phosphorus loading by 20% in the portions of the St. Croix River Basin within St. Croix County.
- Achieve established water quality objectives for additional TMDL (Total Maximum Daily Load) and ORW (Outstanding Resource) water bodies such as:

Willow/Lake Mallalieu (TMDL)	Bass Lake (ORW)
Squaw Lake (TMDL)	Perch Lake (ORW)
Cedar Lake (TMDL)	

2.2 Land infiltration capacity is conserved and/or enhanced to maintain surface water quality.

2.3 Conserve and/or enhance warm and cold water fisheries.

2.4 Restore and/or conserve ecological functions of wetlands, forest, and riparian buffers.

2.5 Maintain and enhance recreational and scenic values associated with surface waters and wetlands.

2.6 Establish water quality goals and implement best management practices using watershed-based management.

2.7 Prevent the establishment and spread of invasive species within surface waters and uplands.

Overview of Approach to Administer NR151 Agricultural Performance Standards

The specific roles and responsibilities of St. Croix County and state agencies in implementing these standards are outlined in a Memorandum of Understanding (MOU) between the County and the Wisconsin Department of Natural Resources. This agreement will be used to assure compliance with all the agricultural nonpoint performance standards and prohibitions. A copy of the MOU is provided as Appendix A.

Under this program approach, the St. Croix County Community Development Department Resource Management Division (RMD) will conduct status reviews of cropland and animal production areas for compliance with NR151 Agricultural Performance Standards and Prohibitions as part of existing cost sharing and permitting programs. In conducting the evaluation, the RMD will determine which of the state standards apply to parcels being evaluated and determine the extent of compliance for each of the applicable standards.

While conducting status reviews, staff use a flow-chart type checklist as a tool to determine compliance with applicable NR151 conservation performance standards. The information from the status review form is used to document the compliance status of landowners. The status review results are then uploaded in the county's GIS tracking system so staff can track, monitor, and create reports pertaining to overall NR151 compliance throughout the county.

Upon completion of the evaluation, the RMD will review the results with the landowner and provide the opportunity for review, comment, and appeal. In circumstances where full compliance has not yet been achieved, the RMD will work with the landowner to secure technical assistance and cost-share funding available to pursue compliance.

Farms subject to regulatory enforcement of the state standards include:

1. Operations which require permits under the St. Croix County Animal Waste Management Ordinance to install or alter manure storage facilities.
2. Operations enrolled in the Farmland Preservation Program.
3. Livestock operations which are new or expanding and which require zoning or special exception permits for livestock expansion through the (St. Croix County Land Use and Development Code of Ordinances (Chapter 17).
4. Operations which are subject to state jurisdiction under WI Stats. 281 and Wis. Administrative Rules NR243 or NR151 that are found to be out of compliance with the NR151 agricultural standards, as determined by a site evaluation conducted as part of routine permit monitoring or in response to a public complaint.

Priorities for Servicing Farms

Currently there is high demand for administrative, technical, cost-sharing, and regulatory services administered through the Community Development Committee. To most efficiently and cost effectively meet these demands, the priority categories of farms and water resource areas where efforts will be most focused are identified below.

FARMLAND PRESERVATION PROGRAM and NR 151 - CONSERVATION PERFORMANCE PRACTICE REQUIREMENTS[1]

1) Landowners with Cropland or Pasture:

- **Cropland and Pasture Soil Erosion Control**
  - Maintain soil erosion rates at or below Tolerable level, "T"
    - Control gully erosion

- **Cropland and *Pasture Nutrient Management**
  - Annually develop and follow a Nutrient Management plan that meets Natural Resources Conservation Service (NRCS) Standard 590 on cropland.
  - *On pasture land if:
    - Receives mechanical applications of nutrients, and/or
    - Is stocked at >1 animal unit per acre during the grazing season
  - Average rotational phosphorus index (PI) of 6 or less, and annual PI of 12 or less, on all cropland, pasture land, and winter grazing areas

- **Tillage Setback**
  - No tillage within 5' (up to 20') from surface water

2) Landowners with Livestock, Livestock Facilities, or Manure:

- **Manure Storage Facilities**
  - New Construction and Alterations must meet NRCS Standard 313.
  - Manure storage facilities must be closed within 2 years of abandonment according to NRCS Standard 360.
  - Manure storage facilities that are failing or leaking must be upgraded, replaced, or closed.

    (Note: These activities all require an Animal Waste Storage Facilities Permit from St. Croix County Community Development Department prior to beginning work.)

- **Clean Water Diversion**
  - Divert runoff away from feedlots, manure storage, and barnyards. Applies to:
    - Livestock Producers within Water Quality Management Areas (WQMAs).

      (**WQMAs** are areas within 300' of river or stream; areas within 1000' of lake, flowage or pond; and sites susceptible to groundwater contamination or potential direct conduit to groundwater.)

- **Process Wastewater Management**
  - No significant discharge to waters of the State. Applies to: feed leachate, milking center waste, wash water, watering system spillage or overflow, etc.

- **Manure Management Prohibitions**
  - All Livestock Producers
    - No overflow of manure storage facilities
    - No unconfined manure piles in WQMAs (see above for definition)
    - No direct runoff from feedlots, stored manure, and barnyards to waters of the State
    - No unlimited livestock access to waters of the State where sod or vegetative cover cannot be maintained

Footnotes: [1] Informational Summary Only. See WI Administrative Codes ATCP 50 and NR 151 for complete codes and details.

(● = **new** "2012" standards)

(Produced 9/06, rev. 9/08, 1/11, 3/11, 7/13, 7/14, 9/14, 11/14, 11/15)

High Priority for Services

- St. Croix County farms located within the St. Croix River Basin, for practices that meet or exceed the performance standards for nutrient management, in order to achieve the basin nutrient reduction goal.
- Farms located within watersheds of impaired waters where TMDL reports or implementation plans have been or are being prepared, with highest priority for practices that address the identified impairments. Impaired waters in St. Croix County that meet these criteria at this time include the Willow River (Lake Mallalieu), Cedar Lake, Red Cedar River, and Squaw Lake. For these waters, excessive nutrients are the primary pollutant.
- Status reviews for compliance with NR151 Standards for farms located in the county that are in cost sharing, permitting, or other programs that require compliance with one or more of the state standards:
    - Animal Waste Management Ordinance
    - Livestock Siting Special Exception permits
    - Farmland Preservation Program participants
    - Participants in other voluntary cost sharing programs (DNR, SWRM, DATCP SEG, TRM, or other programs)
- In responding to public complaints or staff observations, highest priority is assigned to:
    - Sites or farms identified above as high priority for services
    - Sites or farms where there is an immediate threat to fish, wildlife, and habitat
    - Sites or farms where resource impacts are severe, and compliance can be achieved cost-effectively
- Technical and administrative support for local units of government undertaking initiatives to improve water quality.

Medium Priority for Services

- Farms located within watersheds of ORW or ERW waters.
- Farms located within watersheds of impaired waters where TMDL reports or implementation plans are not yet being prepared.
- In responding to public complaints or staff observations, medium priority is assigned to:
    - Sites or farms identified above as medium priority for services
    - Sites or farms where impacts are less severe and/or achieving compliance is just moderately cost-effective.

Low Priority for Services

- All other operations

NR151 Non-Agricultural Performance Standards

Construction Sites >1 acre – must control 80% of sediment load from sites
Stormwater management plans and practices on developed sites (>1 acre) must meet standards for:

- Total suspended solids
- Peak discharge rate
- Infiltration
- Riparian buffers

Developed urban areas (>1000 persons/square mile) must address the following:

- Public education
- Yard waste management
- Nutrient management
- Reduction of suspended solid

Priority Best Management Practices (BMPs)[30]

BMPs to reduce agricultural soil erosion: grassed waterways, cover crops, no-till, clean water diversions, etc.

Riparian and wetland buffers

Nutrient management plans

Current Geographic Priority

Willow River Watershed (TMDL Implementation)

General Activities[31]

Technical and financial assistance

1. Implement best management practices by providing technical assistance and promoting and administering federal, state, and county cost share conservation programs. (Objectives A - G)
    a. Monitor and track conservation plans and practices and assess resource needs. (F)
2. Provide training for farmer developed nutrient management plans. (A)

Enforcement and compliance

3. **Evaluate land parcels, notify landowners of compliance status, offer cost sharing, provide technical assistance, and participate in enforcement actions to implement the NR151 Agricultural Performance Standards in accordance with the priority farm strategy. The Agricultural Performance Standards Memorandum of Understanding is included in Appendix A. (Objectives A, C, D, F)**

[30] Advisory committee top priorities are listed in bold.

[31] Note that activities in bold lettering are advisory committee priorities for implementation.

4. Update and implement county animal waste ordinance and agricultural facility regulations as needed or required by state statute or regulation. (A, C)
5. Update and implement county stormwater and construction site erosion control and land division ordinances, and provide floodplain review.
    a. Continue long-term monitoring and enforcement for maintenance of stormwater facilities.
    b. Consider techniques and standards to address thermal pollution of cold water streams. (A-F)
    c. Encourage conservation design land divisions to maintain open space. (A – E)

Evaluation/Monitoring

6. Complete transect survey for soil loss. (A)

Additional Activities

These activities are either not scheduled for immediate implementation or would likely be carried out primarily by partner groups.

7. **Provide technical assistance and promote cooperative projects between the county, private non-profit conservation organizations, lake associations and districts, and the state and federal government partners. (A - G)**
8. **Encourage preservation of riparian and other resource areas through conservation easements and land acquisition. (A - G)**
9. Develop stormwater management plan and/or complete plan elements listed below:
    - Map land uses and model pollutant loading
    - Recommend appropriate stormwater management methods
    - Provide homeowner education
    - Encourage woodland owners and forestry service providers to conduct forest management according to DNR recommendations and guidelines. (A-E)
10. Conduct ongoing inventories to identify sensitive areas such as dry runs, small wetlands, and other waterbodies to provide information for land division ordinance plan review, stormwater planning, and land use permit review. (A - F)

AGRICULTURAL EDUCATIONAL STRATEGY

Additional Audiences

Absentee landowners & renters
Women Caring for the Land

Messages

1. Agricultural Performance Standards are outlined in Wisconsin Administrative Code Chapter NR151 which establishes expectations for compliance and consequences for non-compliance.
2. Statewide standards are in place to protect soil health and surface water and groundwater quality.
3. Cost sharing is available to implement state performance standards.
4. Farmers are carrying out conservation efforts.
5. Sustainable agriculture practices help your business and protect natural resources.
6. Soil is an important resource. Protect your soil health.
7. Follow UWEX recommendations and nutrient management standards for phosphorus crop requirements.
8. Keep nutrients where they are beneficial.
9. Excess nutrients may adversely impact water quality.
10. Soil erosion may adversely impact surface water and wetlands.
11. Winter spreading of manure can cause surface water and groundwater pollution.
12. Wetlands should be protected.
13. Wetlands protect surface water and groundwater, control flooding, and provide wildlife habitat.
14. Buffer strips protect surface water: lakes, streams, and wetlands.
15. Rotational grazing is economically viable and benefits herd health and the environment.
16. Alternative waste treatment systems are under development.

Tools/Activities

Distribute information prepared by DNR regarding NR151
One-on-one work with farm operators (e.g., conservation planning, nutrient management plans)
Spring and fall radio spots on managing nutrients, winter spreading
Signage at manure application sites
Farmer training: soil health, nutrient/manure management, conservation practices
Tours of local conservation successes
Native tree and plant sale

NON-AGRICULTURAL EDUCATIONAL STRATEGY

Additional Audience

Elected officials (including towns)
UDC construction inspectors
Lake associations and districts
Homeowner's associations
Realtors and appraisers
Tourism businesses
Forestry service providers
Golf course owners and managers

Messages

1. Surface water quality depends on upland land use.
2. The St. Croix River Basin has a 20% phosphorus reduction goal.
3. Everyone is connected to surface water by ditches or storm drains.
4. Lawn care chemicals can negatively impact surface water.
5. Nutrients adversely impact water quality by causing algae blooms that affect the water appearance, aquatic species, and cause odors.
6. Residential sources of nutrients include septic systems and fertilizers.
7. Inhibit algae growth by decreasing phosphorus runoff.
8. Non-Agricultural Performance Standards are outlined in Wisconsin Administrative Code NR151. Establish expectations for compliance and consequences for non-compliance.
9. Construction site erosion control is required and critical for protection of water resources.
10. Impervious surfaces increase runoff and water pollution.
11. Practices like porous surfacing, rain gardens, infiltration basins allow infiltration and improve nearby surface water quality and prevent flooding.
12. Describe the difference between a 25 year and 100 year storm event.
13. Designing and planning for the 100 year storm event provides a greater level of safety.
14. Wetlands protect surface water and groundwater, control flooding and provide wildlife habitat.
15. Protection of wetlands and shoreland vegetation is preferable to restoration.
16. Describe conservation practices: vegetative buffers for lakes, streams and wetlands.
17. Encourage town and other municipal road departments to use the WI County Highway Association's Standard Erosion Control Plan.
18. Tourism is good for the local economy.
19. Aquatic invasive species threaten to take over native species habitat and create nuisance conditions. Aquatic plants can be spread by boats and trailers into lakes and streams. Inspect boats and trailers to prevent transporting invasive species.
20. Protect sensitive trout resources and the cold water ecosystem - Trout need cold water
21. Home values drop as water quality diminishes.

Additional Tool/Activities

Presentations at town meetings: e.g., stormwater management planning
Support volunteer monitoring efforts: Water Action Volunteers, Citizen Lakes Monitoring
Workshops: e.g., erosion control, rain gardens, invasive species management
Compost bin distribution
Demonstration projects
Clean Boats/Clean Waters program
Native tree and plant sale

GOAL 3

Protect and restore fish and wildlife habitats while enhancing water quality, recreational opportunities, and natural beauty.

Objectives

3.1 Preserve remnants of native habitats, reduce fragmentation, and restore habitat areas.

3.2 Protect agricultural lands adjacent to priority habitat areas from development.

3.3 Preserve and restore shoreland, wetland, and aquatic habitat.

3.4 Control and eradicate invasive species.

3.5 Encourage native species diversity.

3.6 Establish county land management practices as models for habitat protection.

3.7 Encourage sustainable forestry practices.

Priority Best Management Practice

- **Riparian buffers**
- **Streambank restoration**

Current Geographic Priorities

- Twin Lakes – Clapp
- Erin Prairie
  - Prevalent row crop
- Casey Lake
  - Bird conservation area
- New Richmond
  - Adaptive management project – funding for CRP and conservation BMPs
  - Nutrient trading
  - Coordinates with other goal priority areas

Activities[32]

Technical and financial assistance and Partnerships

1. **Provide technical assistance and participate in cooperative projects between the county, private non-profit conservation organizations, and the state and federal government for habitat restoration and land protection. These projects may include wetland, forest, prairie, and stream and lake restoration projects. (Objectives A – G)**
2. **Promote and coordinate land management activities of priority focus areas such as the Western Prairie Habitat Restoration Area and other private, local, state, and federal habitat protection and restoration programs. (A – E)**
3. Sell native trees, shrubs, and prairie plants. (A, C, D)
4. Provide input for management policies and practices on county-owned and managed lands (including road rights-of way) to ensure prairie remnants, forests, and other natural communities are preserved and managed in a sustainable manner. Review county-owned land management policies periodically. (F)

Enforcement and compliance

5. Monitor county-held conservation easements annually and enforce them as needed. (A, B, C, E, G)

Additional Activities

These activities are either not scheduled for immediate implementation or would likely be carried out primarily by partner groups.

6. Assess the interest in a local purchase and/or transfer of development rights program for preservation of undeveloped natural and agricultural lands and then study how to implement a program at the town or county level. (A, B, C, E, G)
7. Review and update county cost-sharing practices and standards to support habitat improvements. (A – G)
8. Refer woodland owners and forestry service providers to DNR foresters for forest tax law information, technical assistance, forest management planning, and cost share opportunities.(G)
9. Assist with inventory and update of environmental corridors, environmentally sensitive areas, and quality habitats such as native community remnants as information is available. (A, B, C, E)

[32] Note that activities in bold lettering are priority activities for implementation.

HABITAT EDUCATIONAL STRATEGY

Additional Audiences

Absentee landowners & renters
Women for the Land

Aquatic Habitat Messages

1. Shoreline and aquatic habitats are home to a diverse variety of creatures; if we preserve their homes, we can enjoy their presence.
2. Shoreline regulations are in place to protect habitat for fish and wildlife, stabilize the shoreline, and limit visual impacts of development.
3. Aquatic habitat is destroyed by sediment carried in runoff.
4. Technical assistance is available to restore shoreline habitat.

Upland Habitat Messages

1. Prairie and woodland were historically prevalent in St. Croix County and are important wildlife areas.
2. Prairies provide habitat for threatened songbirds and mammals.
3. Undeveloped land and native plant species provide many benefits including diverse wildlife, surface and groundwater quality, soil erosion control, recreation, economic, and natural beauty.
4. Rotational grazing provides quality pasture, healthy cattle, and enhances wildlife habitat.
5. Agricultural land adjacent to natural habitat areas enhances wildlife and recreational benefits.
6. Blocks of wooded and grassland habitat are better than small, scattered, fragmented pieces. These contiguous wildland corridors are essential to sustain healthy wildlife.
7. Wisconsin Managed Forest Law program offers sustainable forestry alternatives to agricultural land owners. Forest management can complement farming operations or replace grazing or cultivation of less productive land.
8. Invasive species threaten to take over native species habitat and create nuisance conditions.

Activities

Encourage use of conservation easements and other land protection tools.
Encourage habitat protection in land division review (conservation design development)
Promote available government programs such as CRP, CREP, SAFE, FRPP, MFL, WFLGP, and WRP.
Provide technical assistance to landowners of small tracts.
Encourage landowners to preserve native plant remnant communities.
Support and promote a model “green development.” Include consideration of habitat, fill and seal wells, POWTS, recycling, composting, low-impact lawns, etc.
Promotion of public access on private lands (similar to DNR Project Respect)
School involvement (e.g., trees, prairies, wetlands, New Richmond schools environmental learning center)
Host landowner invasive species control workshop
Provide invasive species control guidance to Highway Department.
Native tree and plant sale

GOAL 4

Preserve agricultural land and improve soil health for crop and livestock production, scenic values, and wildlife habitat.

Objectives

4.1 Preserve potentially productive agricultural land.

4.2 Discourage development of prime agricultural land.

4.3 Maintain agricultural land adjacent to designated habitat areas.

4.4 Encourage preservation of scenic and open space areas.

4.5 Maintain soil health through appropriate agricultural practices.

Current Geographic Priorities

Towns (to encourage agricultural preservation zoning): Emerald, Richmond, Warren, Hammond

Activities[33]

Technical and Financial Assistance

1. **Implement the Farmland Preservation Program using conservation planning and soil erosion control practices. (A – E)**
2. **Encourage implementation of BMPs and sustainable farming practices to maintain soil health. (E)**
3. Compensate farmers for wildlife damage to crops. (C)

Partnerships

4. **Partner with other agencies and organizations to protect agricultural land from development. This activity includes working with local land trusts in purchase of development rights (PDR) initiatives and seeking alternative federal, state, and local funding sources to purchase development rights. (A – D)**
5. Assist and provide resource information to protect agricultural land as part of town comprehensive land use planning including identification of Agricultural Enterprise Areas. (A – D)

Additional Activities

These activities are either not scheduled for immediate implementation or would likely be carried out primarily by partner groups.

6. **Assess the interest in a local purchase and/or transfer of development rights program for preservation of undeveloped natural and agricultural lands and then study how to implement a program at the town or county level. (Objectives A – D).**

[33] Note that activities in bold lettering are priority activities for implementation.

AGRICULTURAL LAND EDUCATIONAL STRATEGY

Additional Audiences

Absentee landowners & renters
Women for the Land

Messages

1. Farming is an important part of St. Croix County's economy.
2. Agricultural land demands fewer services than residential or commercial land.
3. Tools are available to protect farmland.
4. Protecting agricultural land can protect open spaces.
5. Agricultural land can provide wildlife habitat.
6. Protecting farmland promotes good land use planning.
7. BMPs can improve economic productivity while maximizing erosion control.

Tools/Activities

Encourage protection of agricultural land in conservation design developments.
Volunteer training to promote federal and state conservation programs
Partnerships between sports groups, conservation organizations and farmers
Field days which welcome non-agricultural groups to tour agricultural operations
Training courses for teachers
Native tree and plant sale

GOAL 5

Develop and connect with active environmental stewards and future leaders to support and carry out the above goals.

Objectives

5.1 Increase citizen involvement and expand partnership capacity by adopting the following Civic Governance standards as a means to improved water quality.

a. All those impacted by the problem are stakeholders and help define the problem in light of civic principles[34] and the realities of their situations.

b. All stakeholders are accountable for contributing resources (leadership/time, knowledge, constituencies and dollars) to solve the problem.

c. All stakeholders engage in decision-making and policy-making that contributes to the common good.

d. All stakeholders implement policies grounded in civic principles in the places where they have the authority to act.

5.2 Support and promote new and existing partnerships by working to help build the civic infrastructures necessary for complex problem solving.

5.3 Market departmental goals and objectives through social media, mailings (conventional media), and/or one-on-one contacts with key stakeholders.

Promote the economic value of water quality improvements by making a case for a need to invest in the future of our resources.

Activities

1. Encourage acceptance and expansion of Farmer Led Councils within TMDL watersheds.
2. Continue staff engagement with civic governance training opportunities.
3. Support existing partnerships with conservation organizations by having a presence at meetings, group functions, and educational activities.
4. Promote departmental conservation efforts through newspapers, newsletters, and other publications.
5. Make staff available for one-on-one contacts with stakeholders (landowners).

Partnerships

6. Partner with local, state, and federal units of government to protect water resources and to enhance and protect wildlife habitat.
7. Continue to develop Farmer Led Councils.
8. Develop partnerships with agricultural businesses and the private sector.

---

[34] The Civic Principles are: Human Capacity (to govern for the common good), Democracy (a system of governance that requires citizens to govern for the common good), Active Citizenship (role that obligates all stakeholders to govern for the common good), Political Competence (mindset and skill needed to carry out obligation of active citizenship), and Institutional Efficacy (societal structure needed to sustain democracy and develop active citizenship)

Chapter 4. Plan Implementation

The land and water resource management plan is a ten-year strategic plan for the St. Croix County Community Development Department, primarily providing direction to the Resource Management Division (RMD). Although the plan is developed to guide the RMD, cooperation of natural resource agency and organization partners will be sought in its implementation.

PARTNERS

The Resource Management Division staff frequently work together with other departments and agencies to carry out plan activities. One way this occurs is through promotion of available federal, state, and local programs. For example, the RMD promotes the Farm Service Agency's State Acres for Wildlife Enhancement program (SAFE) to encourage restoration of prairie habitat, and the Natural Resource Conservation Service's Environmental Quality Incentives Program (EQIP) to implement agricultural best management practices. Initiatives with the U.S. Fish and Wildlife Service and the Department of Natural Resources restore prairie and wetland habitat and enhance stream habitat.

Good communication enhances coordination of activities. The RMD will seek to improve communication by undertaking the following activities:

Identify RMD programs and cooperating/interested agencies.

Establish coordination based upon specific priority programs.

Provide cross education to increase the understanding of various programs, agency roles, and terminology.

Schedule presentations about programs on a regular basis including at town board, lake organization, and farmer organization meetings

- *Distribute packets of resource materials*
- *Videotape and provide RSS feed of Community Development Committee (CDC) meetings and provide for video, agenda presentation materials and minutes on St. Croix County web site*
- *Utilize TMDL implementation teams to provide updates on various programs.*

Support staff time allocated to sharing information. Stress the importance of active communication and working together.

Additional Partner Activities

Coordinate a community calendar of partner events

Assist in grant writing

Participate as active members in partner conservation and government organization meetings

Support conservation partner workshops, training, and events

ST. CROIX COUNTY PARTNERS

Federal

- Environmental Protection Agency
- Natural Resources Conservation Service
- National Park Service
- US Fish and Wildlife Service
- US Geological Survey

State

- Department of Agriculture, Trade and Consumer Protection
- University of Wisconsin - Extension
- Wisconsin Department of Natural Resources
- WI Tax Law – Tax 18 list of partners

Local

- Adjacent counties
- Cities and towns
- Lake districts
- St. Croix/Red Cedar Cooperative Weed Management Area

Business

- Crop consultants
- Title companies
- Well drillers
- Banks/financial institutions
    - Ag Star
    - Bremer Bank
    - Westconsin Credit Union
    - Royal Credit Union
    - Farm Service Agency
- Implement dealers
    - Frontier Ag & Turf, Value Implement
- Crop suppliers
    - Synergy Coop
    - Countryside Coop
- Utility companies
    - St. Croix Electric

Nonprofit and Informal Organizations

- St. Croix River Association
- St. Croix Basin Team
- Green Fire (retired group of DNR employees)
- Sustain Rural WI Network (and other advocacy groups)
- Friends groups
- Tropical Wings
- St. Croix Bike & Pedestrian Trails Coalition

- Snowmobile clubs
- Garden clubs
- Lake associations
- Farmer-led councils
- WI Land and Water Association

Agriculture Organizations

- Farm Bureau
- Farmers Union
- Corn Growers Association (national and state)
- Soybean Growers Association (national and state)
- Soybean Board
- Cattlemen's Association
- New Richmond High School SOAR (Student Opportunities with Agricultural Resources) Educational Center

Land Trusts

- Kinnickinnic River Land Trust
- West Wisconsin Land Trust
- Star Prairie Land Preservation Trust
- Standing Cedars Land Trust

Sportsmen's Alliance and associated sportsmen's clubs

- Ducks Unlimited
- Kinni Bass Masters
- Pheasants Forever
- Trout Unlimited
- Wisconsin Waterfowler's Association
- Hudson Rod Gun Archery Club
- National Wild Turkey Federation

Schools (K-12) and Universities

- St. Croix Research Station – SWAT
- University of Wisconsin River Falls

Others

- Kinni Partnership
- Western WI Conservation Council - groundwater study
- Venison Donation Program

WORK PLAN AND TIMELINE

A 2018 year work plan to implement the objectives contained in this document is included in Appendix B. The work plan identifies planned activities with benchmarks and performance measures. It also includes staff hours and expected costs (including for cost sharing). The document will be updated each year both as a year-end report and a plan for the upcoming year.

POTENTIAL FUNDING SOURCES

The St. Croix County Land and Water Resource Management Plan is a document that can be used by all of the partners that work to protect natural resources in St. Croix County. A combination of private, local, state, and federal funding sources will be sought to implement the priorities of the plan. As funding opportunities arise, the plan goals and objectives will be referenced to develop project applications. A partial list of potential funding sources is outlined below. The lead agency to pursue funding will depend upon the individual activity being pursued.

Local residents, staff, and elected officials should also use their influence to structure the development of state and federal grant programs whenever possible.

Private Sources

- Private Foundations
  - National Fish and Wildlife Foundation
  - McKnight Foundation
  - Excel Energy Foundation
- Individual Contributions
- Volunteer Hours
- Lake Associations and Districts
- Conservation Organizations (see partner list)

Local Government Sources

- St. Croix County Department budgets
- Cities with Adaptive Management/Pollutant Trading budgets (Hudson, New Richmond, etc.)

State Government Sources

- Department of Natural Resources
  - Targeted Runoff Management
  - Stewardship Grants
  - Lakes Planning Grants
  - Lakes Protection Grants
  - Aquatic Invasive Species Grants
  - River and Stream Planning and Protection Grants
- DNR Wildlife Sources
  - Pheasant Stamp
  - Segregated Funds (general license)
  - Wisconsin Waterfowl Stamp
  - Turkey Stamp

- Trout Stamp (Inland)
- Department of Agriculture, Trade and Consumer Protection
  - Annual Joint Allocation Plan (SWRM – DNR/DATCP)
  - Nutrient Management Farmer Education Grants (NMFE)
  - Farmer-Led/Producer-Led Grants
- Department of Transportation (mitigation funds)
- University of Wisconsin Extension
- Wisconsin Environmental Education Board Grants Programs
- Cooperative Educational Services Administration
- Wisconsin Geologic and Natural History Survey
- Wisconsin Groundwater Resource Center

Federal Sources

- United States Department of Agriculture
  - Farm Service Agency
    - Conservation Reserve Program (CRP)
    - Conservation Reserve Enhancement Program (CREP)
    - State Acres for Wildlife Enhancement (SAFE)
  - Rural Development Administration
  - Natural Resources Conservation Service
    - Environmental Quality Incentives Program (EQIP)
    - Farm and Ranchland Protection Program (FRPP)
    - National Water Quality Initiative
    - Wetland Reserve Program (WRP)
  - Environmental Protection Agency
    - Environmental Education Grants
    - 319 (Clean Water Act) Grants (passed through via WDNR grants)
    - Five Star Grants
  - U. S. Fish and Wildlife Service
    - North American Waterfowl Conservation Act (NAWCA)
    - Partners for Fish and Wildlife
  - National Park Service

Chapter 5. Monitoring & Evaluation

This chapter addresses both water quality and habitat monitoring for evaluation of progress toward meeting plan goals and tracking of plan activities. Although they are interrelated, each has a distinct function.

WATER QUALITY MONITORING

Recommendations related to improving water quality data for the land and water resource management plan are stated below.

- *The Department of Natural Resources should invest resources in monitoring lakes, rivers, and groundwater in St. Croix County in accordance with DNR's Water Resources Monitoring Strategy.*
- *The Department of Natural Resources and St. Croix County should support efforts of lake groups and other organizations to pursue funding for lake and river management projects.*
- *The Department of Natural Resources and St. Croix County should encourage and support self-help monitoring programs.*

A partial list of current efforts to monitor water resources is included below.

Table 7. Water Quality Monitoring Effort

Program	Resource	Responsible Agency
Self-Help Lakes Monitoring	Lakes	DNR, Lakes Organizations
Lake Planning Grant	Lakes	DNR, Lakes Organizations
Chemical Measurements[35]	Lakes/Streams	DNR, USGS, RMD
Habitat	Lakes/Streams	DNR, USGS
Biological Assessments	Lakes/Streams	DNR
Nitrate Testing	Groundwater	RMD, County Public Health
Water Action Volunteers	Rivers/Streams	RMD, UWEX

[35] A YSI in situ data sonde is available to assist with surface (and potentially) groundwater monitoring.

HABITAT MONITORING

State and federal agencies that emphasize fish and wildlife habitat restoration and protection have many ongoing efforts to monitor habitats and species. Some of these efforts are listed below. The RMD does not intend to carry out habitat monitoring activities for the implementation of this plan. Instead it will support habitat restoration efforts and utilize monitoring data from other sources.

Table 7. Habitat Monitoring Efforts

Resource	Responsible Agency
Restored wetlands	USFWS, DNR
Rare, Threatened, and endangered plant and animal species	DNR
Christmas bird count	Audubon
Sandhill crane	Intl. Crane Foundation
Frog and Toad Survey	DNR
Breeding bird survey	DNR
Deer Count	DNR
Woodcock/grouse survey	DNR
Pheasant	Sportsmen's Alliance/DNR Alliance/DNR
Breeding waterfowl survey	USFWS
Monarch habitat use/suitability study	USFWS, UW, Monarch Joint Venture, USGS

CITIZEN MONITORING

Volunteer citizen monitoring will be encouraged to assist in evaluating progress toward goals and objectives and to increase public involvement. Participation in the Department of Natural Resources Self Help Lakes Monitoring Program will be encouraged to monitor progress toward improving lake water quality. Bass Lake, Lake Mallalieu, Perch Lake, Squaw Lake and Cedar Lake currently have active volunteers. Citizen monitoring is supported by the Kinnickinnic River Land Trust, Kinnickinnic River Priority Watershed project, University of Wisconsin River Falls, Water Action Volunteers, and Trout Unlimited.

INVENTORIES

Inventories track changes in land use or land management practices that affect water quality or habitat. Several methods are currently used by resource agencies to track these changes.

Table 8. Resource Inventories in St. Croix County

Inventory Method	Resource/Source	Responsible Agency
BARNY	Barnyards	RMD
Transect Survey	Cropland	RMD
SNAP Plus	Ag Practice Pollutant Reduction	RMD
STEPL	Ag Practice Pollutant Reduction	RMD
Location	Closed & Sealed Wells	RMD/DNR
Location	Animal Waste Facilities	Community Development/RMD
Location	Nonmetallic Mines	Community Development/RMD/DNR
Water Quality/Quantity	Groundwater	Community Development/RMD
National Resource	Land Use	Community Development/NRCS
LandSat	Land Cover	Community Development/DNR
CRP Acres	Cropland	FSA

PROJECT TRACKING

St. Croix County uses several tools that are helpful for establishing priorities, managing programs, and tracking project status. The Transcendent program provides broad-scale, parcel-level tracking with functions such as tracking notes for landowner site visits and production of *Certificates of Compliance*.

GIS tracking systems are used to create detailed reports and representative maps. GIS shapefiles and feature classes track the locations of agricultural BMPs. For example, a GIS shapefile is used to track the location, acreage, and operator information for crop fields that are operated under a Nutrient Management Plan (NMP). A parcel-based GIS geodatabase is used to monitor NR151 compliance for Farmland Preservation Program Participants. This FPP layer can also produce maps to aid in landowner understanding of program requirements and benefits.

Digital *Producer File Folders* store items associated with a given landowner such as engineering documents, NMP files, FPP certificates, photos, notes, etc. SnapPlus & SnapMaps are tools used to produce reports and create maps relating to our annual Transect Survey and corresponding soil erosion data.

PLAN EVALUATION

Plan evaluation assesses whether the objectives and activities of the plan are being accomplished. Performance measures are listed for each plan activity in the 2018 work plan in Appendix B. The RMD will report work plan progress each year.

Measures of success and/or evaluation methods are relatively straightforward for most of the objectives. However, evaluating the success of the information and education objectives poses special challenges. It is often difficult to economically measure if an educational technique is effective. Did a particular event such as a workshop change an attitude or behavior; did information in a brochure or video lead to the change; or did an individual act independently of the information and education program?

Measures of success will vary by activity. Most activities are geared toward meeting objectives in a few general categories:

- promoting the availability of financial and technical assistance;
- teaching best management practice techniques;
- increasing understanding about the importance of protecting natural resources;
- convincing people to change behaviors to protect natural resources; and
- increasing citizen engagement.

The first two categories are relatively easy to evaluate. Effectiveness of promotional techniques will be tracked by simply asking people how they heard about the program when they sign up for an activity or inquire about a management practice. Knowledge of management techniques gained from workshops and other activities will be evaluated with questionnaires prior to and after events. Assessing understanding and behavioral change that result from educational activities is more difficult. Activities in these categories usually seek to reach a relatively broad audience, and many factors influence an individual's values and behaviors.

APPENDIX A

APPENDIX A
NR151 MOU

A Memorandum of Understanding between the St. Croix County Land and Water Conservation Department and the Department of Natural Resources for the Implementation of the Agricultural Performance Standards and Prohibitions under NR151

January 12, 2005
(As amended July 2006)

Prepared by
Bob Heise, Director, Land and Water Conservation and Parks Departments
St. Croix County Land Conservation Committee
Karen Voss, DNR Planner
Dan Simonson, DNR Planner
John Pfender, DNR Planner

APPENDIX A
NR151 MOU

APPENDIX A
NR151 MOU

Table of Contents

APPENDIX A
NR151 MOU

APPENDIX A
NR151 MOU

Glossary for St. Croix County and DNR NR151 Implementation MOU

Compliance Status Report (CSR): A document that is prepared by St. Croix County, that contains detailed information for each practice and facility where an on-site evaluation (field inspection) or records review has been conducted (See Appendix C). The CSR will include the compliance status and basis for the compliance determination, such as field inspection or records review. The following information was identified by the Chippewa County NR151 MOU to be included in the Compliance Status Report:

a. Parcel status (new versus existing)
b. The current compliance status of individual tax parcels with reference to each of the performance standards and prohibitions.
c. Corrective measure options and rough cost estimates to comply with each of the performance standards and prohibitions for which a parcel is not in compliance.
d. Status of eligibility (costs eligible) for public cost sharing.
e. Grant funding sources and technical assistance available from Federal, State, and local sources, and third party service providers.
f. An explanation of conditions that apply if public cost share funds are used.
g. Signature lines indicating landowner agreement or disagreement with report findings.
h. The purpose of the report, the implications for achieving and maintaining compliance.
i. Process and procedures to discuss evaluation results with county and or state.
j. If appropriate, a copy of performance standards and prohibitions and technical design standards.

Cost-share agreement and supplemental form for NR151. This document package is to be developed by the DNR. The cost-share agreement offers funding to comply with performance standards and prohibitions. The supplemental form includes a compliance schedule to achieve compliance, requirements to maintain compliance in perpetuity and appeals procedures. Together, the agreement and form meet the requirements of s. NR 151.09 and NR 151.095."

On-site evaluation: A process, to be established by the St. Croix County LWCD, for conducting on-site evaluations for the purpose of making a determination of parcel compliance with agricultural performance standards and manure management prohibitions.

On-site evaluation form: A standardized form that is developed by St. Croix County for use by county staff, for the purpose of conducting consistent and complete on-site evaluations. The on-site evaluation form should be designed to record all the information necessary to complete the Compliance Status Report.

Records review: A process, to be established by the St. Croix County LWCD, for checking information contained in existing files for the purpose of making a preliminary determination of parcel compliance with agricultural performance standards and manure management prohibitions. *Similar terms that should be consistent: Records inventory, records evaluation*

Records review form: A standardized form that is developed by St. Croix County for use by county staff for the purpose of conducting and recording the results of consistent and complete records reviews.

Statewide Implementation Strategy: This is the Draft Implementation Strategy for NR151 Agricultural Nonpoint Performance Standards, located in Appendix E-3 of the Draft Land and Water Resource Management Plan Guidelines, 2003. St. Croix County intends to implement select portions of the administrative rules and components of the Statewide Implementation Strategy, as specified in their Land and Water Resources Management Plan and this MOU.

APPENDIX A
NR151 MOU

DNR and St. Croix Co. LWCD NR151 MOU

Purpose

This MOU has been developed by the St. Croix County Land and Water Conservation Committee (LWCC) and the Wisconsin Department of Natural Resources (DNR) to clarify their respective roles and responsibilities as needed to implement and enforce agricultural nonpoint pollution performance standards and prohibitions established in ch. NR 151, Wis. Adm. Code.

- This agreement defines the commitment of each party to conduct administrative tasks that have been defined by Wisconsin conservation agencies as standardized components of a program delivery system. The standardized components are in a guidance document titled *Implementation Strategy for NR 151 Agricultural Performance Standards and Prohibitions*.[36]

(hereafter referred to as the Statewide Implementation Strategy).

Specifically, this agreement clarifies how the DNR and the County will:

- Systematically evaluate and define the level of agency commitment to the NR 151 workload using a county-sponsored annual needs assessment and interagency work planning process.
- Conduct information and education activities.
- Systematically select and evaluate parcels to determine compliance with standards and prohibitions.
- Prepare compliance reports and notify landowners of compliance status.
- Provide technical assistance and cost-sharing funding as needed to allow landowners to meet performance standards and prohibitions.
- Issue notice letters under NR 151.09 and NR 151.095 as appropriate.
- Monitor compliance.
- Conduct enforcement activities.
- Develop annual reports.

Component 1: Plan the Implementation Approach

The Parties Agree:

1. The Statewide Implementation Strategy provides a structural framework that can be used to discuss and plan how the parties will cooperate to implement the agricultural performance standards and prohibitions.
2. This memorandum of understanding and the County Land and Water Plan can be used as the means to document procedures for implementing NR 151.

---

[36] *This document was prepared jointly by the Wisconsin DNR, Wisconsin DATCP, the Wisconsin Land and Water Conservation Association and the Wisconsin Association of Land Conservation Employees (April 2002). It was approved by the Wisconsin Land Conservation Board as Appendix E to the Land and Water Resources Management Plan Guidelines. The document can be found at http://dnr.wi.gov/org/water/nps/rules/NR151strategy.htm.*

3. Guidance prepared by DNR and incorporated as Appendix B to this agreement *(Working with Landowners to Implement Agricultural Performance Standards & Prohibitions Under NR 151)*, is useful for making formal correspondence with landowners concerning compliance issues.
4. NR 151.004 contains a process for developing targeted performance standards where implementation of statewide performance standards and prohibitions may not be sufficient to meet water quality standards.
5. Sections NR151.09, NR 151.095, ATCP 50.04 and ATCP 50.08 require agricultural landowners and operators to meet agricultural nonpoint performance standards and manure management prohibitions. These requirements are contingent upon sufficient cost sharing for existing facilities and practices.

St. Croix County will:

1. Use this memorandum of understanding to implement select portions of the administrative rules and components of the Statewide Implementation Strategy, as defined in this agreement.
2. Focus NR 151 implementation activities initially on targeted watershed areas.
3. Cooperate with DNR to identify priority areas where the county may apply for funding under the Targeted Runoff Management Program to alleviate violations of performance standards and prohibitions that result in significant pollutant loadings or impacts to waters of the State.
4. Where appropriate, cooperate with DNR in identifying the need for targeted performance standards.

DNR will:

1. Use this memorandum of understanding to coordinate implementation of agricultural performance standards and prohibitions.
2. Implement select portions of the administrative rules and components of the State-wide Implementation Strategy, as defined in this agreement.
3. Assign an agency representative to actively participate in the County Land and Water Resource Management planning process and provide input into the development of the County strategy to implement agricultural performance standards and prohibitions.
4. Work jointly with St. Croix County to set mutual priorities for implementing agricultural performance standards and prohibitions.
5. Provide St. Croix County with guidance needed to fulfill its agreed-upon roles and responsibilities to implement portions of NR 151.
6. Where appropriate, cooperate with St. Croix County in identifying the need for targeted performance standards.

Component 2: Define Level of Agencies' Commitment to NR151 Workload

The parties agree:

1. There must be a mutual understanding of each agency's responsibilities and level of commitment in carrying out implementation of agricultural performance standards and prohibitions, including implementation and enforcement activities identified under NR151.09 and NR151.095.

2. The extent of each agency's commitment is dependent upon the availability of public funds and agency priorities and, therefore, may be expected to change through time.

St. Croix County will:

1. Meet annually with the Department to review this Memorandum of Understanding and the associated work load commitment.

DNR will:

1. Meet annually with St. Croix County to review this Memorandum of Understanding and the associated workload.
2. Notify St. Croix County of any significant changes in workload capability.
3. To the extent staffing limitations allow, involve the DNR Environmental Enforcement staff in development of NR151 enforcement processes and guidance.

Component 3: Conduct information and education activities

The Parties Agree:

1. A structured information and educational program is a critical component of an agricultural nonpoint source pollution control program.
2. An effective educational program will meet the following objectives:
   a. Educate landowners about Wisconsin's agricultural performance standards and prohibitions, applicable conservation practices, and cost share grant opportunities;
   b. Promote implementation of conservation practices necessary to meet performance standards and prohibitions;
   c. Inform landowners about procedures and agency roles to be used statewide and locally for ensuring compliance with the performance standards and prohibitions; and
   d. Establish expectations for compliance and consequences for non-compliance.

St. Croix County will:

1. The LWCD will implement a local information and education strategy as outlined in the Land and Water Resource Management Plan, to support NR151 implementation.
2. The LWCD will distribute information and educational material prepared by the DNR. The information may be distributed via news media, newsletters, public information meetings, and one-on-one contacts.

DNR will:

1. Work with UW-Extension, DATCP and others to identify and develop I & E materials and activities needed on a statewide basis and to make these materials available to St. Croix County for use and dissemination.
2. Provide input into the St. Croix County information and education program.
3. Assist St. Croix County and the Basin Educator, where possible, with implementation of the Information and Education program.

Component 4a: Determine current compliance through records review

The parties agree:

1. A significant public investment has been made (through the Wisconsin Nonpoint Source Water Pollution Abatement Program, the Wisconsin Soil and Water Resource Management Program, and the St. Croix County Land Conservation Program) to assist owners of croplands and livestock facilities to install best management practices to control agricultural nonpoint source pollution. As a result of this conservation work, there are many croplands and livestock facilities that fully or partially comply with the agricultural performance standards and prohibitions.
2. Sections NR151.09(3)(b) and NR 151.095(4)(b) require existing cropland practices and livestock facilities that achieve compliance with performance standards and prohibitions to remain in compliance regardless of public cost share.
3. Sections NR 151.09(3)(d) and NR 151.095(4)(d) require new cropland practices and livestock facilities to comply with performance standards and prohibitions regardless of cost share.
4. To establish a baseline for program implementation, it is in the public's interest that documentation be made of the location of cropland practices and livestock facilities that were in compliance as of October 1, 2002, and to inform the landowners, in writing, of the compliance determination and the requirements to maintain compliance.
5. State cost-share agreements, subject to contractual obligations of active operation and maintenance plans on or after October 1, 2002, can be used to document the extent of current compliance achieved through previous public investments.
6. St. Croix County will use the tax parcel as the basic geographic unit for evaluating and reporting compliance. Where a tax parcel contains more than one livestock facility or cropland practice, the evaluation and reporting system will contain information to distinguish between facilities and practices based on whether they are new, existing, in compliance and out of compliance.
7. The information in landowner files may not be up-to-date. An on site evaluation may be necessary to determine the accuracy of file information.

St. Croix County will:

1. Work towards developing a geographic database to input conservation plans, practices, and resource needs and compliance status determinations.

2. Conduct a records review of farms in priority areas and/or priority farms, as shown in Table A-1 of Appendix A. This table comes from the St. Croix County Land and Water Conservation Department Natural Resource Management Plan, October 2003.
3. Initially select parcels for records review from within the KNC, SCL and SFH priority watersheds.
4. Include in the records review parcels which have priority watershed cost share agreements that were in the operation and maintenance period as of October 1, 2002, and which provided cost sharing for practices that address agricultural performance standards and prohibitions. From the records review, determine whether these practices are clearly in compliance, or whether they have records that are inconclusive and warrant an on-site evaluation to determine compliance, as described in Component 4b.
5. From the records review, make a preliminary determination as to the location of cropland practices and livestock facilities that were clearly in compliance with all performance standards and prohibitions applicable to the parcel. Document compliance that is a result of:
    a. Installed or implemented BMPs under an existing state or federal cost share agreement; and/or
    b. Maintaining compliance with state or county animal waste regulations (e.g. NR 243, WPDES, or SWRM programs).
6. From the records review, identify the location of parcels and operations that are inconclusive and warrant an on-site evaluation to determine compliance, as described in Component 4b.
7. Utilize county-developed standardized records review forms to document all record reviews. Document compliance using a county-developed standardized Compliance Status Report form (CSR) in accordance with Component 5 of this MOU document.

The DNR will:

1. Evaluate St. Croix County records review forms and Compliance Status Report forms for consistency with status determination and notification requirements under NR 151.09 and NR 151.095. The County CSR is included as Appendix C.
2. Provide information to St. Croix County from the DNR CAOS database (which tracks cost share agreements) as it pertains to KNC, SCL or SFH Priority Watershed and Targeted Runoff Management project cost-share contracts.
3. For large scale livestock operations WPDES permitted facilities:

a. Compile records of existing WPDES permits for Concentrated Animal Feeding Operations (CAFO) and evaluate these records to determine compliance with NR 151 agricultural performance standards and prohibitions.

b. When coverage applies, and at the time of permit modifications or reissuances, incorporate into WPDES permits standards and prohibitions that equal or exceed the requirements of NR151. (Note: The WPDES permit does not cover cropped fields where manure is not applied)

c. Adhere to the permit compliance strategy and make available to the County copies of inspection records and inspection letters sent to the facility. Make available to the County copies of portions of the WPDES permit application that describes a facility's manure storage, animal yards, and locations.

d. Make available annually to the County, by June 30th, an updated Nutrient Management Plan for each WPDES permitted facility where applicable. The plan will include current soil samples, spreading reports and a Nutrient Management Plan checklist.

e. Make available to the County all draft and issued WPDES permits for their review.

Note: St. Croix County requests that the DNR will work towards incorporating UW-Extension recommendations with respect to phosphorus and other nutrients into WPDES permits.

Component 4b: Determine Compliance through On-Site Evaluation

The parties agree:

1. On-site evaluations are often necessary to document current resource conditions and current management practices, as a basis for determining compliance.
2. The accuracy of on-site evaluations will be enhanced if formal evaluation procedures and protocol are established, and standardized on-site evaluation forms are adopted.
3. Greater consistency in conducting on-site evaluations can be achieved if a structured training program is established to educate staff about the standards, evaluation procedures, and requirements for program documentation.
4. The process for responding to public animal waste complaints, is spelled out in NR243.24, and is routinely administered through the cooperation of the DNR and the LWCD.
5. New or expanding livestock facilities subject to regulations under NR 243 or the St. Croix County Manure Storage Ordinance will be evaluated for compliance with performance standards and prohibitions. The on-site evaluation and Compliance Status Report should be completed prior to issuance of the state or county permits.

St. Croix County will:

1. Following the records review process as specified in Component 4a, compile a list of parcels and operations that have records that are inconclusive and warrant an on-site evaluation to determine compliance.
2. From this list, highest priority parcels for on-site evaluations will be
    a. From within the KNC, SCL and SFH priority watersheds.
    b. In priority areas and/or priority farms, as shown in Table A-1 of Appendix A, (indicated with "HHP" in the table).
    c. All parcels with new cost-share agreements signed after January 1, 2004.
    d. All parcels with priority watershed cost share agreements that were in the operation and maintenance period as of October 1, 2002, and which provided cost sharing for practices that address agricultural performance standards and prohibitions
3. Additional sites in highest priority areas, as identified in Table A-1 of Appendix A, and identified through public complaints or staff observations may also be included in on-site evaluations.
4. Contact owners of selected parcels and schedule site evaluations.
5. Utilize county-developed standardized on-site evaluation forms to document all on-site evaluations. Document compliance using a county-developed standardized Compliance Status Report form (CSR) in accordance with Component 5 of this MOU document (see Appendix C).

DNR will:

1. Review St. Croix County on-site evaluation forms and CSR forms for consistency with status determination and notification requirements under NR 151.09 and NR 151.095.
2. Provide a structured training framework and training opportunities to educate DNR and County staff about the agricultural performance standards and prohibitions, procedures for making compliance determinations, policy aspects of program administration and proper documentation.
3. Assist in the identification of environmental models, site evaluation forms, and other assessment tools used to evaluate compliance. Assist in providing training.
4. As part of the County LWCC's annual work planning process have the opportunity to provide:
    a. The location of livestock facilities and cropland parcels where, if standards are not implemented, there is a high potential for nonpoint discharge that may adversely impact waters of the state.
    b. A request to the County for an onsite evaluation and report to determine and document the extent of current compliance.
5. Assist in making compliance status determinations for high priority or potentially controversial situations, such as those that may require notification.

Component 5: Prepare Compliance Status Report and Inform Landowners of Compliance Status

The parties agree:

1. To be valid, the results of a record review and/or on-site compliance evaluation must be documented and be based upon confirmed facts.
2. A standardized report format will allow for the systematic collection and reporting of evaluation results and will provide consistency through time.
3. A local process, independent of a formal administrative appeal under chapter 227, Wis. Stats., can be used to provide for a structured review of any local decision pertaining to an initial finding of compliance or other decision involving the interpretation of NR 151.
4. Site evaluation forms, compliance status reports (CSR's) and associated correspondence are public records that should be retained by a custodial agency.
5. The CSR is a document that can be used to inform the landowner about the compliance status of his/her operation, seek confirmation of information used to determine current compliance, and, if necessary, resolve disagreements regarding compliance status.
6. The CSR provides important baseline information needed to secure and allocate funding and technical assistance to address on-farm conservation needs.
7. A geographic data base and record keeping system is necessary to provide ready access to compliance reports completed over time.

St. Croix County will:

1. Establish a local process to provide for reconsideration of local administrative decisions regarding

findings of compliance as established in a compliance status report (CSR). The LWCC will be the administrative body that reconsiders decisions made by County staff in implementing NR 151.

2. Following completion of the record reviews and site evaluations, prepare CSR's of the evaluated parcels. At a minimum, a CSR will convey the following information:

a. The status of cropping practices or livestock operations based on whether they are "new" (not in existence on the effective date of the rule) or "existing".

b. Current status of compliance of individual parcels with each of the performance standards and prohibitions.

c. Corrective measure options and rough cost estimates to comply with each of the performance standards and prohibitions.

d. Status of eligibility for public cost sharing.

e. Grant funding sources and technical assistance available from Federal, State and local sources, and third party service providers.

f. An explanation of conditions that apply if public cost share funds are used. *(If public funds are used, applicable technical standards must be met.)*

g. Signature lines indicating landowner agreement or disagreement with report findings.

h. Process and procedures to contest evaluation results to county and/or state.

i. (Optional) A copy of performance standards and prohibitions and technical design standards.

3. Provide a copy of the CSR and an accompanying informational status letter Type A or Type B to the landowner. Appendix B describes this administrative process and the contents of informational status letter Types A and B.

4. If the landowner disagrees with the facts and findings of the CSR, gather additional information and/or provide the landowner with written procedures and a timeframe to pursue reconsideration of local decisions.

5. Where livestock facilities or cropping practices are not in compliance, assess the relative pollution threat associated with the noncompliance and make a determination regarding the allocation of staff and financial resources under Component 6 of this agreement.

6. Keep and maintain public records, as the custodial authority, following requirements of the Wisconsin Open Records Law

7. Work toward developing a geographically based record keeping system and database to track site evaluations, CSR's and informational status letters issued, CSR appeals, etc.

8. Work toward developing a process for informing landowners of compliance status at the time of property ownership changes.

The DNR will:

1. Co-sign informational status letters Type A and Type B, if requested by the County, where the Department concurs with the County's CSR findings.

2. Provide support to St. Croix County in explaining compliance determinations that DNR assisted in developing.

Component 6A: Secure Funding and Technical Assistance – Voluntary Cost-Share Component

The parties agree:

1. Previous commitments for cost-share funding have been made through cost-share agreements signed under the Kinnickinnic River, South Fork Hay River and St. Croix Co. Lakes Priority Watershed Projects.
2. Section 281.16(3), Wis. Stats., and sections NR151.09(3)(c), and NR151.095(4)(d) prohibit the State or municipalities from requiring that "existing" practices and facilities , which were not in compliance with the agricultural performance standards and prohibitions on the effective date of the rule, to come into compliance through State regulation or local ordinance unless public cost share funds are provided for eligible costs.
3. NR151.09(3) and NR151.095(4) identify compliance requirements for owners and operators of cropland practices and livestock facilities based on whether the practices and facilities are determined to be "existing" or "new", and whether cost sharing is required and made available.
4. The CSR and accompanying Status Letter (see Glossary and Appendix B) are important informational documents that explain the obligations of accepting cost sharing for practices that bring livestock facilities or cropland into compliance with applicable performance standards and prohibitions.
5. NR151 defines cost share availability requirements for funding administered by DNR under 281.65, Stats. ATCP 50 defines cost-share availability from any other source. These requirements must be clearly understood to ensure that DNR and County staffs make proper determinations of cost-share availability.
6. Cost-share funds to pursue compliance may be available from a combination of public and private non-profit grant sources, including: the Priority Watershed Program, the DATCP Soil and Water Management Program (SWRM), the DNR Targeted Runoff Management Program (TRM), USDA cost-share and land set-aside programs and nonprofit organizations.
7. Developing cost-share funding proposals and grant contracts requires significant knowledge of multiple grant programs, administrative rules, and contracting requirements.

St. Croix County will:

1. Prioritize parcels identified as noncompliant through the CSR process, based on the relative pollution threat associated with the noncompliance. Utilize Table A-1 of Appendix A in developing a prioritized list.
2. If feasible, seek additional cost-share funds through the DNR TRM grant program or other State or Federal funding programs.
3. Encourage and receive requests for voluntary cost-sharing and/or technical assistance from landowners.
4. Confirm cost-share grant eligibility and availability of cost-share & technical assistance.
5. When administering state or local cost-share agreements where there is high likelihood that practices will be installed and/or non-compliance is of a nature that enforcement would not be pursued, utilize, when available, a DNR-developed cost-share agreement.

6. When administering state or local cost-share agreements that involve high cost practices and/or are high priority for compliance, consider and discuss with the Department the need for issuance of notification, as described in Appendix B.

The DNR will:

1. Provide cost sharing (if available) through the Priority Watershed or Targeted Runoff Management grant programs where there is voluntary compliance and cost sharing is required.
2. With DATCP, seek to secure sources of funding to reimburse the County for its administrative and technical services.
3. Develop a Cost Share Agreement and supplemental form for NR151. The supplemental form informs landowners of their NR151 obligations as a condition of accepting cost sharing, and stipulates that the affected cropland practices and livestock facilities will maintain or be brought into compliance with applicable performance standards and prohibitions, as enumerated in the compliance status report.

Component 6B: Option to Issue Non-Voluntary NR151 Notice of Cost-Share and/or Noncompliance

The parties agree:

1. Chapter NR 151.09 and NR 151.095 set forth notification requirements that must be met before DNR can initiate enforcement action under Ch. 281, Stats., for non-compliance with performance standards and prohibitions. This includes provision of a notification to the landowner at the time that cost sharing is made available, or in cases when cost share is not required, when the compliance achievement period starts.
2. Notification requirements and cost-share availability requirements vary depending upon the legal authority that is used to enforce the standards and the source of funding. These requirements are documented in Appendix B.
3. Developing and issuing notices of cost sharing under the non-voluntary NR151 option is a joint responsibility of St. Croix County and DNR.

St. Croix County will:

1. If a landowner chooses not to voluntarily apply for public funding to install or implement corrective measures that entail eligible costs, or not to voluntarily install or implement corrective measures that do not entail eligible cost, issue landowner notification per NR 151.09(5-6) and/or 151.095(6-7). LWCD will issue this notice jointly with DNR.
    a. If eligible costs are involved, this notification shall include an offer of cost sharing.
    b. If no eligible costs are involved, or if cost sharing is already available, the notification will not include an offer of cost sharing.
2. Develop and cosign (if desired and appropriate) notices (letter types C and D). Provide draft notices to DNR regional staff for completion and DNR signature. Appendix B includes standard notification letters types C and D.

DNR will:

1. Co-sign (if requested) and issue notices (Letter types C & D) to landowners under NR151.09 and NR151.095, provided the DNR concurs with the County's findings.

Component 7: Administer Funding and Technical Assistance

The Parties agree:

1. If public cost share funds are offered to install conservation practices, through either the voluntary or non-voluntary option, a cost share agreement must be developed and public funds must be accounted for.
2. The successful completion of the conservation planning, contracting, and engineering process requires a broad range of skills and services in the fields of agronomy, engineering, and public administration.
3. The DNR, DATCP and County have, through the Wisconsin Nonpoint Source Water Pollution Abatement Program and the Soil and Water Management Program recruited, supported and maintained a technical delivery staff with proven expertise in administering a nonpoint pollution abatement program for the purpose of meeting agricultural performance standards and prohibitions.

St. Croix County will:

1. Establish and administer a budget and accounting system to receive and disperse state funds administered by the County on behalf of the State.
2. Employ or contract professional staff to develop and administer cost share contracts on behalf of state and federal agencies.
3. Employ or contract a certified agronomist or conservation planner, to provide conservation planning services to landowners, and to review the adequacy of conservation plans prepared by private service providers or federal agency staff.
4. Utilize, if available, a DNR-developed cost share agreement and supplemental form for NR151 as described in Component 6a and as defined in the Glossary.
5. Keep and maintain public records, as the custodial authority, following requirements of the Wisconsin Open Records Law.
6. Upon completion of BMP's implemented through the NR151 cost share agreement, conduct an on-site evaluation of the operation to document compliance with the agricultural performance standards and prohibitions.
7. If the site is compliant, prepare and issue a document that verifies satisfactory compliance with applicable performance standards. See "Satisfaction Letter Type E" in Appendix B.
8. If site is non-compliant, determine whether non-compliance is weather-related, is the fault of the landowner, or whether there has been a willful breach of contract. Nonregulatory remedies, or enforcement action taken by the County will be determined by the Land Conservation Committee, and will be based on the cause of the non-compliance.

The DNR will:

1. With DATCP, seek to secure sources of funding to reimburse the County for its administrative and technical services.
2. Conduct program reviews to verify that cost share funding and conservation services have been administered in accordance with appropriate state administrative rules.
3. Co-sign, if requested, a document that verifies satisfactory compliance with applicable performance standards. The "Satisfaction Letter Type E" (Appendix B) may be used for this purpose.

Component 8: Enforcement

The parties agree:

1. DNR and St. Croix County will use voluntary means, to the extent practical, to achieve compliance with performance standards and prohibitions, but may use enforcement when necessary to meet requirements of ch. 281, Stats., and NR151.
2. Each party has independent authority to enforce standards and reserves the right to exercise that authority without permission of the other.
3. To be effective, the public and affected landowners must perceive enforcement as a necessary option, pursued jointly by the parties, after voluntary measures to achieve compliance have failed.
4. The County has authority to enforce performance standards and prohibitions through local ordinances. The County will rely on DNR to use the state's enforcement authority for cropland practices and livestock facilities that are not covered by local ordinances.
5. DNR has authority to enforce performance standards and prohibitions through a number of statutory options. These include, but are not limited to:
   a. Referral by DNR to the Wisconsin Department of Justice to seek relief under s.281.98, Wis. Stats.
   b. Use of enforcement procedures under NR 243 and s. 283.89, Stats., to obtain compliance with performance standards and prohibitions or to resolve a water quality problem.
   c. Use of other state laws, including citation authority under s. 29.601, Wis. Stats.
6. To be effective, enforcement procedures must be well-coordinated and documented between DNR and St. Croix County, and must be supported by both parties.
7. NR 151.09 and NR 151.095 establish the procedures that must be followed as pre-requisites to enforcement when DNR funds are used or when DNR pursues enforcement under s. 281.98, Wis. Stats.
8. Formal enforcement procedures will generally begin with the issuance of a Notice of Violation. Grounds for issuing a Notice of Violation letter is non-compliance by the landowner or operator with the notice issued under NR 151.09(5), NR 151.09(6), NR 151.095(6), or NR 151.095(7) and as spelled out in Components 6a and 6b of this agreement.

St. Croix County will:

1. Enforce the performance standards and prohibitions contained within its local ordinances, and support DNR's lead role in enforcing standards and prohibitions at sites that are not covered by

County ordinances.

2. Identify cases where landowners do not follow the requirements of their noncompliance notices and provide this information to the DNR.
3. Participate in DNR enforcement conferences.
4. Provide background information to DNR needed for WPDES permits or to develop referral packages to the Wisconsin Department of Justice.
5. Provide testimony, documents or other technical support for enforcement cases.
6. In circumstances where the County has issued permits or is pursuing legal actions under other authority, ensure that appropriate information concerning those permits or enforcement activity is transmitted to DNR.

DNR will:

1. Take the lead role in initiating enforcement action for cropland practices and livestock facilities that are not covered by County ordinances, including issuing notices of violation.
2. Ensure that appropriate information concerning enforcement activity by the Department is transmitted to the County.
3. Schedule and conduct enforcement conferences if appropriate.
4. If a point source discharge exists, issue a WPDES permit or take enforcement action under NR 243 and ch. 283, Stats., if consistent with regional and statewide permitting priorities.
5. Determine compliance with permits if consistent with regional and statewide compliance activities.
6. Prepare referral packages to Attorney General's Office if non-compliance continues and referral is approved by the DNR Secretary's Office.

Component 9. Ongoing Compliance Monitoring

The parties agree:

1. NR151.09(3)(b) and NR151.095(4)(b) require that existing cropland practices and livestock facilities, which are in compliance on or after October 1, 2002, remain in compliance without the offer of cost share.
2. Ongoing agricultural operations continually change in response to market forces, changes in technology, and changes in land ownership.
3. Periodic compliance evaluations benefit owners and operators, as they make routine business decisions, including capital investments, land rental, and land sales.
4. Routine compliance monitoring benefits the general public by verifying that compliance is maintained.

St. Croix County will:

1. Conduct routine compliance monitoring for operations that have received a letter indicating compliance (Appendix B, Letter Types A, B or E). The extent of monitoring will be proportional to the amount of State funding allocated to support this effort.

2. Under the monitoring system:
   a. Conduct an annual reporting and self-certification program for operations that have an active State cost share contract subject to a 10-year Operation and Maintenance Plan.
   b. Conduct an annual educational mailing for operations that are in compliance.
3. Respond to public complaints, conduct site evaluations and make compliance determinations following procedures established in Components 4 and 5.

DNR will:

1. Be responsible for compliance monitoring on large-scale livestock operations WPDES permitted facilities.

Component 10: Annual Reporting

The parties agree:

1. Annual reports should track progress toward implementing the NR151 agricultural performance standards and prohibitions.
2. The County's record-keeping system must systematically capture information needed for an annual report.
3. To assure effective recording keeping, State agencies must pre-identify their data needs.

St. Croix County will:

1. Provide a compliance status summary annually by April 15, on reporting forms provided by DNR .
2. Work toward developing mapping capabilities to show the locations of cropland parcels and livestock operations that have been evaluated, and the compliance status of these lands and operations.

DNR will:

1. Develop an annual reporting form for the county to use to report progress on the implementation strategy for NR151. The annual report may include a summary for (1) the county, (2) each watershed and (3) each standard or prohibition.
2. Provide an electronic annual reporting form to the County at least three months prior to the reporting deadline (and as early as possible in advance of the deadline).
3. Work with DATCP to prepare an annual statewide report that documents the status of program implementation. Make this report available to the Land and Water Conservation Board, DNR Board, Agricultural Board, Wisconsin Legislature and other interested parties**.**

   Note: DNR intends to develop this report jointly with DATCP.

APPENDIX B

APPENDIX B
ST. CROIX COUNTY 2018 ANNUAL WORK PLAN
LOCALLY-IDENTIFIED PRIORITIES

Table 1: Planned activities and performance measures by category

CATEGORY (goal and objective from LWRM plan can be added in each category)	PLANNED ACTIVITIES WITH BENCHMARKS If applicable identify focus areas, e.g. HUC 12 watershed code (examples of types of "planned activities" in italics)	PERFORMANCE MEASUREMENTS (examples in italics)
• *Cropland*		
Cropland, soil health and/or nutrient management	*NM plan development (500acres)* *NM planning and training workshop (1)* *Grassed Waterways (15)* *FPP compliance reviews (130)* *Regional biogas and nutrient recovery facility (1)*	*Plan numbers and acres* *Type and units of practice(s) installed* *Amount of cost-share dollars spent* *# lbs of sediment reduced (using any approved method)* *# lbs of P reduced (using any approved method)* *# acres of cropland in compliance with a performance standard*
• *Livestock*		
Livestock	*Clean water diversion (1)* *Waste facility closure (3)* *Permit waste storage facility (1)* *Livestock facility siting applications (1)*	*Type and units of practice(s) installed* *Amount of cost-share dollars spent* *# lbs of sediment reduced (using any approved method)* *# lbs of P reduced (using any approved method)* *# of livestock facilities in compliance with a performance standard*
• *Water quality*		
Water quality/quantity (other than activities already listed in other categories)	*Shoreland protection (500 ft)* *Well decommissioning (8)* *Critical area planting (5)* *Karst sinkhole treatment (1)* *Milking center waste system(1)* *Residential well water screening program (100)*	*Type and units of practice(s) installed* *Amount of cost-share dollars spent* *# lbs of sediment reduced (using any approved method)* *# lbs of P reduced (using any approved method)*
• *Forestry*		
Forestry	*Native tree and shrub sale(17,000)*	*Number sold*
• *Invasive*		
Invasive species	*Public inquiries and educational efforts (30)*	*Number of contacts handled*
• *Wildlife*		
Wildlife-Wetlands-Habitat (other than forestry or invasive species)	*Wildlife damage program funding (20)* *Native prairie plant sales (15)*	*Number of claims funded* *Number of plant plug flats sold*
• *Urban*		
Urban issues	*Stormwater and erosion control permits (60)* *Stormwater and erosion control reviews (150)*	*Number of sites visited* *Number of plans reviews* *Number of permits issued*

APPENDIX B
ST. CROIX COUNTY 2018 ANNUAL WORK PLAN
LOCALLY-IDENTIFIED PRIORITIES

		Number of compliance issues resolved

- *Watershed*

Watershed strategies	*ke St. Croix TMDL implementation (4 mtg's)* *y Run Creek Producer-Led project (5 mtg's)* *ic Governance (12 mtg's)* *lson Annis Creek National Water Quality Initiative (4mtg's)* *rgeted Runoff Management Grant project area meeting.*	*Number of meetings attended/presentations given* *Modeling completed* *Number of partner contacts made* *Information system/tracking developed* *Number of partnership development activities accomplished*

- *Other*

Other	*PL 566 inspections (43)* *n-metallic mining and reclamation inspection (20)*	*Number of plans reviewed* *Number of inspections*

Permits and Ordinances	Plans/application reviews anticipated	Permits anticipated to be issued
Feedlot permits	2	1
Manure storage construction and transfer systems	2	1
Manure storage closure	3	3
Livestock facility siting	1	1
Nonmetallic/frac sand mining	7	5
Stormwater and construction site erosion control	75	60
Shoreland zoning	50	45

APPENDIX B
ST. CROIX COUNTY 2018 ANNUAL WORK PLAN
LOCALLY-IDENTIFIED PRIORITIES

Table 3: Planned inspections

Inspections	Number of inspections planned
Total Farm Inspections	*150*
For FPP	*130*
For NR 151	*20*
Animal waste ordinance	5
Livestock facility siting	3
Stormwater and construction site erosion control	130
Nonmetallic mining	7
PL 566 Dam inspections	43
Transect survey for soil loss	1010
Transect survey for cover crops	1010

Table 4: Planned outreach and education activities

Activity	Number
Tours	3
Field days	4
Trainings/workshops	7
School-age programs (camps, field days, classroom)	70
Newsletters	3
Social media posts	24
News release/story	6

Table 5: Staff Hours and Expected Costs (staff can be combined or listed individually)

Staff/Support	Hours	Costs
Conservation and Land Use Specialist	2080	$94,953
Conservation and Land Use Specialist	*2080*	*$94,953*
Land Use Technician	*2080*	*$74,502*
Land Use Technician	1456	$51,376
Conservation and Land Use Planner	1040	$49,953
Support Staff	416	$29,679
Cost Sharing		
Bonding	*640*	*$30,000*
SEG	*150*	$15,000
County Cost-share	*500*	*$40,000*
TRM	*1280*	*$160,000*
Conservation Aids	*30*	*$2,000*

APPENDIX C

APPENDIX C.
REFERENCES

Background, Main Findings, and Recommendations Report for the Protection of Surface and Groundwater Quality in St. Croix County. St. Croix County Surface and Groundwater Quality Protection Study Group. October 2017

Bass Lake Management Plan. St. Croix County Community Development Department and Bass Lake Rehabilitation District. December 2016.

Cedar Lake Management Plan. Cedar Lake Protection and Rehabilitation District. 2017.

Cedar Lake Phosphorus TMDL Report. Wisconsin Department of Natural Resources. 2003.

Community and Economic Impacts of the St. Croix River Crossing A St. Croix County Perspective. University of Wisconsin – Extension Center for Community and Economic Development with contributions from Gillaspy Demographics.

Foundation Document for the St. Croix National Scenic Riverway. National Park Service. 2017.

Ground-water flow and quality in Wisconsin's shallow aquifer system. Kammerer, P.A. Jr. U.S. Geological Survey. Water Investigations Report 90-4171.

Heritage Areas of St. Croix County. Wisconsin Heritage Areas Program. UW-Extension. 1976.

Kinnickinnic River Watershed Project 1999-2010. Community Report. Kinnickinnic River Land Trust. 2016.

Lower St. Croix River National Scenic Riverway Cooperative Management Plan. National Park Service. 2001.

National Resource Inventory. Natural Resources Conservation Service. 1992.

New Approaches to the Farmland Preservation Program. Working Lands Commission Study Paper. DATCP. 2005.

Nonpoint Source Control Plan for the St. Croix County Lakes Cluster Priority Watershed Project. April 1997.

Nonpoint Source Control Plan for the Kinnickinnic River Priority Watershed Project. April

1999.

Perch Lake Forest & Prairie Stewardship Plan. Wisconsin Department of Natural Resources. April 2002.

Perch Lake Management Plan. St. Croix County Community Development Department. October 2016.

Pollution Reduction Incentive Program: A Runoff Management Plan for the South Fork of the Hay River Priority Watershed Project. November 1997.

Red Cedar River Water Quality Partnership. A Water Quality Strategy for the Land and Waters of the Red Cedar River Basin. July 2015.

Addendum to the Implementation Plan for the Lake St. Croix Nutrient Total Maximum Daily Load. 2014.

APPENDIX C.
REFERENCES

St. Croix County Agriculture and Farmland Preservation Plan. 2012.

St. Croix County 2012-2035 Comprehensive Plan. Adopted November 2012 Amended December 2017.

St. Croix County Parks and Recreation Bicycle and Pedestrian Plan. West Central Wisconsin Regional Planning Commission. 2008.

St. Croix County Development Management Plan . West Central Wisconsin Regional Planning Commission, St. Croix County Planning Department, University of Wisconsin-Extension. 2000.

St. Croix County Outdoor Recreation Plan. St. Croix County Parks Department and St. Croix County Planning and Zoning Department. 2006.

St. Croix County Resource Management Plan Public Survey. St. Croix County Land and Water Conservation Department and University of Wisconsin Extension. 1999.

St. Croix County Soil Erosion Control Plan. West Central Regional Planning Commission. October 1988.

St. Croix County Soil and Water Conservation District. Resource Conservation Program. October 1978.

St. Croix County Zoning Ordinance Comprehensive Update. July 2017.

St. Croix Economic Profile. St. Croix Economic Development Corporation. 2008.

St. Croix Lakes Cluster Watershed. Protecting Water Quality And Your Lake. Combined St. Croix County Lakes Cluster Watershed Results. Fall 1998.

The State of the Lower Chippewa Basin. Department of Natural Resources. 2001.

The State of the St. Croix Basin. Department of Natural Resources. March 2002.

TMDL Implementation report for Lake Mallalieu and the Willow River (draft). St. Croix County and the Wisconsin Department of Natural Resources. 2011.

Squaw Lake TMDL Report. Wisconsin Department of Natural Resources. 2000.

Stewardship of the Lower St. Croix River and its Watershed. Minnesota-Wisconsin Boundary Commission. November 1993.

Water Quality in the St. Croix National Scenic Riverway, Wisconsin. U.S. Geological Survey. D. Graczyk. 1986. Water-Resources Investigations Report 85-4319.

Western Prairie Habitat Restoration Area Feasibility Study and Environmental Impact Statement. Department of Natural Resources. 1998.

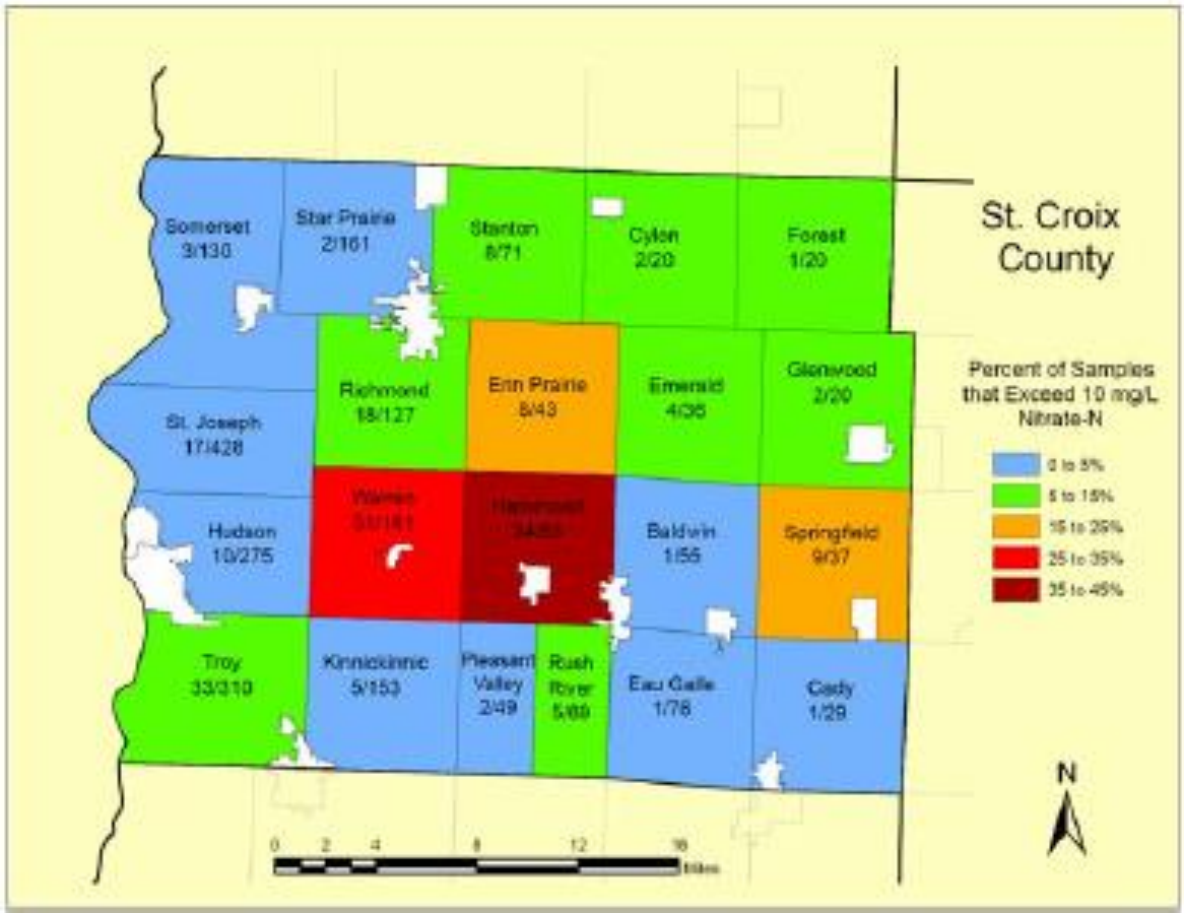
Wisconsin Population 2030. A Report on Projected State, County and Municipal Populations and Households for the Period 2000 – 2030. Demographic Services Center. Wisconsin Department of Administration. 2004.

Wisconsin Water Use. 2015 Withdrawal Summary. Wisconsin Department of Natural Resources

APPENDIX D

APPENDIX D
GROUNDWATER RECOMMENDATIONS REPORT

Prioritized Recommendations from the Ground & Surface Water Quality Study Report



ST. CROIX COUNTY Wisconsin
Innovation Through Cooperation

APPENDIX D
GROUNDWATER RECOMMENDATIONS REPORT

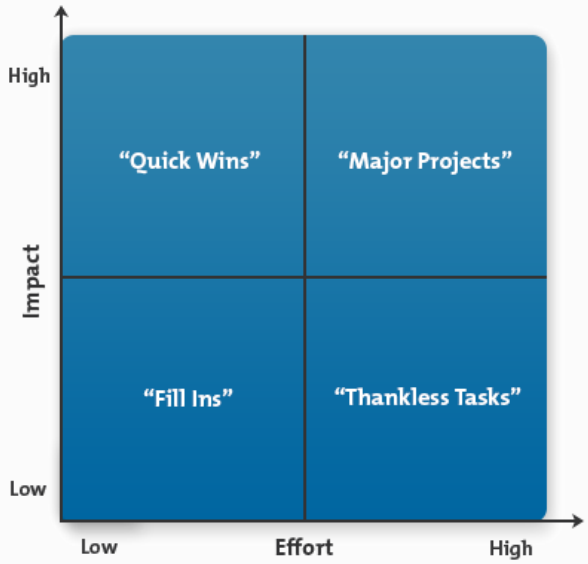
Table of Contents

APPENDIX D
GROUNDWATER RECOMMENDATIONS REPORT

Project Prioritization

CDD reviewed and prioritized the water quality study report recommendations according to the over-arching goal of the Groundwater Study Group, "*To provide the St. Croix County Board with sound science-based recommendations for policies that protect the quality of groundwater supply that our County residents rely upon for personal household use and consumption.*" CDD prioritized the recommendations according to the above goal and the adjacent Action Priority Matrix. The priorities were scored by impact and effort involved. Effort involved includes estimated project cost.

Figure 1 – The Action Priority Matrix



The short-term immediate priorities are specific to advancing the understanding of groundwater quality changes; sources of nitrate pollution, whether human, animal, or commercial fertilizer; groundwater flow in karst aquifers and mapping of environmentally sensitive areas in order to make science-based recommendations for policies that protect groundwater. These priority recommendations include groundwater staff, water quality tests, consultant fees for remote sensing and study of karst aquifers and calibration of the groundwater flow model, and mapping of sensitive groundwater recharge areas. Without this information, it will be difficult to determine the benefits of policy changes implemented through the long-term recommendations.

The short-term immediate priorities include the reclassification of an existing CDD administrative assistant position to Water Resources / Marketing Specialist. It is anticipated that this position would dedicate about 60% of their time to groundwater related activities. The position will be the project coordinator for the drinking-water well-testing program and be responsible for coordinating resources to accomplish the tasks associated with the priority recommendations. The position will be the point of contact for groundwater education, outreach and emergency response.

The long-term recommendations include new ordinances and revisions to existing ordinances. County Board efforts to advocate at the state level for changes to statute and administrative rule to allow the county to regulate beyond the state minimum standards would likely be both short-term and long-term. Changes to statute and administrative rule could include:

- Allow counties to obtain private water sample test results for the protection of public health
- Changes to NR 151, to include St. Croix County karst aquifer bedrock in performance standards that exceed general state standards, similar to the changes for karst Silurian bedrock
- Require nitrate removal systems for POWTS in karst aquifers through revisions in state statute and Administrative Code DSPS 383.
- Increase well casing and grouting standards for wells in karst aquifers through revisions in state statute and Administrative Code NR811 and 812.

- Require water treatment systems, reverse osmosis, nitrate removal, and UV treatment for bacteria in karst aquifers and areas with high test results for new construction and replacement through revisions in state statute and Wisconsin Uniform Building Code.

Implementation of rule changes and ordinances could require additional county staff.

The document table of contents outlines the priority of tasks and projects as determined by CDD staff. The chart below lists CDD priority recommendations and a proposed timeline. The priorities are separated into short-term or immediate recommendations and long-term recommendations. For purposes of these recommendations one CDD full time employee salary and benefits is estimated to cost $90,000, one Corporation Counsel employee salary and benefits is estimated to cost &130,000

APPENDIX D
GROUNDWATER RECOMMENDATIONS REPORT

Short Term / Immediate Recommendations				
Timeline	**Project Priority Order**	**#**	**Resource**	**Estimated Costs**
2018-2019	Sinkhole Mapping	2.A	Consultant	$21,000 Funded
2018	Reclassification of Existing Position 0.6 FTE of position Water Resources	3.A	1.0 FTE Co Staff	~0.6 FTE $53,000 annually ~$13,000 annual budget increase over existing
2019-2029	Water Quality Screening Clinic	1.C	Co. Staff	
2019-2029	Baseline Water Quality Analysis	1.A	Tests	$10,000 annually
2020	Nitrate Source Analysis	1.B	Tests	$22,000
2018-2019	Emergency Response Protocol to Potential Pollution Events	3.B	Co. Staff	
2018-2019	Emergency Response Bacteria Testing Policies	3.C	Co. Staff	
2019	EVAAL Study Kinnickinnic Watershed	2.E	Consultant	$12,000
2020-2022	Karst Aquifers, Groundwater Flow Model, Groundwater Recharge and Environmentally Sensitive Areas Mapping	2.B, 2.C, 2.D	Consultant	$75,000 -$150,000
Total Annual Cost	Water Resource Staff, Baseline Testing			~$63,000 annually
Total One-Time Projects				$55,000-$200,000

Long- Term Recommendations				
Timeline	**Project Priority Order**	**#**	**Resource**	**Estimated Costs**
Ongoing	Increase Acres in NMP	4	1 New FTE	$90,000 annually
Research Mid 2024 Implementation 2025	Revise Land Use Policy Zoning Ordinances Agricultural Shoreland Management Ordinance County Administration of State Well Code	5	1 New FTE Ag 1 New FTE Well	$180,000 annually $8,000 ordinance development
Research mid 2024 Implementation 2025	Livestock Operations and Licensing Ordinance(s)	6	1 New FTE Ag 1 New FTE Legal	$220,000 annually $20,000-$30,000 ordinance development
Total Annual Cost			5 New FTE	$490,000 annually
Total One-Time Projects			Ordinance Development	$28,000-$38,000

Priority 1. Develop a scientifically sound drinking water well testing program to expand baseline data in order to measure drinking water quality over time.

Baseline Water Quality Testing

The Community Development Department (CDD) and Public Health will partner to develop a scientifically sound drinking water well testing program to expand baseline data in order to measure changes in drinking water quality over time. The program will focus on measuring nitrates and bacteria. The results will educate and assist rural homeowners and policy makers in developing informed decisions regarding private wells, water treatment, land use, and regulation.

Public Health has contacted the Eau Claire City-County Health Department Lab. The Eau Claire Lab can accommodate 200 tests per year @ ~$50 per test for Nitrates and bacteria. The sample number and test schedule will need to be determined with the Eau Claire lab to avoid staffing concerns and conflict with other tests. CDD will use its existing well and drinking-water testing program database to identify potential well owners. These wells will have a Wisconsin Unique Well ID, construction log, and have an accurate spatial location suitable for this program. We will consult with Wisconsin Geological and Natural History Survey and United States Geological Survey geologists on best locations for these wells. CDD will contact the identified well owners to provide information to them regarding the long-term testing program, data use, and testing procedure.

The program will strive to test 200 wells each year, for five years, for 1,000 individual wells tested at the end of five years. One thousand wells is 6% of the existing ~16,000 wells in St. Croix County. In the 6th year, the cycle will begin again with tests on the first 200. The 1,000 wells tested in five years shall be spatially located to provide countywide coverage of well tests.

Private well drinking water testing often occurs as part of real estate property transfer and home inspections. This well testing data would add significantly to the county baseline data and allow drinking water quality trends and geographic areas of concern to be identified more quickly. Currently, water test samples are sent to the person requesting the inspection. Advocating at the state level to allow counties to receive private water sample test results would need to be pursued by the County Board.

The baseline water quality test program may not be the appropriate testing program for bacteria. Bacteria in groundwater and wells is temporal in nature, and is highly dependent on snow cover, snowmelt, rain events, and manure spreading activities. It will need to be determined how many tests the Eau Claire lab can perform when bacteria may be present in samples. A separate bacteria-testing program should be developed to respond to brown water events.

Timeline

August 2018: Arrange a meeting between Eau Claire City/County Health Department Environmental Health, St. Croix County Community Development, St. Croix County Public Health to share goals of project, discuss timeline and logistics.
September - October 2018: Meet with Community Development to identify dates for nitrate screening event(s), develop plan for outreach to private well owners, and identify educational materials.
November – December 2018: Outreach to private well owners.
February – April 2019: Collect water samples (65 samples in February, 65 samples in March, 70 samples in April). Well owners will receive their own results and be provided with guidance and education if results are abnormal.
May – June 2019: Compile data and create database. Share results with stakeholders.
July 2019: Develop plan for sustainability of project.

Nitrate Source Analysis of Drinking Water Wells with High Nitrates.

In areas of the county with high nitrates, perform a nitrate-source analysis on a representative sample of drinking water wells. A nitrate source analysis can determine whether the source of nitrates is human, animal, or commercial fertilizer. The increase of rural homes and rural residential subdivisions with septic systems, CAFO's, and the increase of row crops can all impact nitrates in groundwater. A source analysis can determine how each of these sources impact nitrates in groundwater. A source analysis can inform groundwater protection policies by focusing on sources of greatest concern.

A nitrate source analysis is ~$220/sample. A county-wide nitrate source analysis study should sample 100 drinking water wells. The projected cost for this project is ~$22,000.

Free Water Quality Screening Clinics

CDD is developing the framework for hosting free drinking water quality screening clinics. CDD has purchased an YSI ProDSS Multiparameter Water Quality Meter. County staff will use the meter at water quality screening clinics. Nitrates will be tested for anyone who brings in a water sample. Groundwater and well education materials will be available for well owners. Water test kits for Eau Claire, Stevens Point or Colfax labs may be available for well owners whose screening results indicate the need for further nitrate testing.

Screening results will be captured using a CDD IPad and immediately entered into the CDD well testing database by the well owner if the owner so chooses. If the well owner does not want their test results shared, the results will not be entered into the database. Well owners could also bring in prior well test results to add to the CDD database.

The goal(s) of the water quality screening clinics are:

- Increase participation in drinking water well testing.
- Offer free water quality screening and use as an education opportunity.
- Help rural homeowner make informed decisions about their drinking water quality.
- Add to our drinking water test database to determine if more thorough baseline testing is required.

Drinking Water Quality Mapping

St. Croix County staff will develop a series of maps using the water quality testing results and the water quality screening results to display St. Croix County water quality trends related to nitrates and any changes detected in the level of nitrates. These maps will be hosted and displayed on the county website supported through existing staff and land information budgets.

Summary of Costs

Baseline Water Quality Analysis			
Baseline Water Quality Analysis (Nitrates and bacteria) *Repeat Same Wells Once every 5-years	$50/test	200/year 1,000/5 years *Repeat	$10,000 per year $50,000 over 5 years $100,000 over 10 years
Baseline water quality testing program Water Quality Screening GW-Staff & GIS-Staff $40/hr		0.5 FTE existing staff	$45,000
Nitrate Source Analysis	$220/sample	100 samples	$22,000
Mobile Water Quality Screening Lab Equipment		CDD Purchased 2017	$8,773 Grant Funded
TOTALS			$55,000/year $22,000 One time Nitrate Source Analysis

Priority 2. Identify and map environmentally sensitive areas and conduits to groundwater to improve siting of POWTS, wells, manure spreading, etc.

A. Sinkhole Identification & High Resolution Land Cover Mapping

This project will create a high-resolution land cover classification and map sinkhole locations for St Croix County, WI. The project will employ an object-based image analysis and sinkhole mapping approach using leaf-off imagery, leaf-on imagery, and LiDAR data, acquired in 2014 and 2015 with ancillary vector datasets to map land cover classes and sinkholes. The land cover classes mapped will include tree canopy, shrub, grassland, agriculture, wetland, barren, impervious, and water. The resulting land cover classification will be used with lidar-derived surface and topographic models to map sinkhole locations. The results of these analyses will include map layers and documents with land cover classes and sinkhole locations for the extent of the county. These analyses will be summarized by geographies such as parcel boundaries as defined by St Croix County.

The deliverables for this project are as follows:

- Lidar-derived surface models: normalized digital surface model (nDSM), normalized digital terrain model (nDTM), canopy height model (CHM), topographic position index (TPI), and any other surface models used for sinkhole mapping.
- 8-class, high-resolution (1m) land cover layer
- Sinkhole layers with the location and extent of each sinkhole.
- Report and map layers summarizing methods, analyses, and results.

- Metadata for each layer.

The land cover and sinkhole mapping from this remote sensing project will be used to identify environmentally sensitive areas and conduits to groundwater. Sinkhole locations will be provided to the state for inclusion in SnapPlus and incorporated into farm nutrient management plans

St. Croix County is collaborating with USFWS-St. Croix Wetland Management District on this project. St. Croix County's projected cost is $20,950. The funding is available and the project is moving forward.

Map Karst Surface Features

Starting with the sinkhole data from the sinkhole identification project, begin to collect other surface data related to karst topography and develop a GIS database of sinkholes, springs, and stream sinks. The St. Croix County Karst Feature dataset will be continuously updated as more karst related surface features are identified.

Groundwater flow through local karst aquifers, in central St. Croix County is not well simulated in the USGS Groundwater Flow Model. The groundwater flow model final report suggests that simulation of groundwater flow through the karst aquifer in St. Croix County would most likely be improved with further karst investigation. The karst surface features will be used in the study of local karst aquifers to provide data to likely improve the groundwater flow model.

The karst feature map may be used to regulate land use in order to protect groundwater resources.

APPENDIX D
GROUNDWATER RECOMMENDATIONS REPORT

Update Hydrologic Data & Calibrate the USGS Groundwater Flow Model

In 2009 the US Geological Survey (USGS) published a regional three-dimensional groundwater-flow model and three associated demonstration inset models. The model(s) simulate the groundwater-flow system in the three-county area that includes St. Croix, Polk and Pierce counties. The model was developed by the U.S. Geological Survey in cooperation with the three county governments. The objectives of the regional model of Pierce, Polk, and St. Croix counties were to improve understanding of the groundwater flow system and to develop a tool suitable for evaluating the effects of potential water-management programs.

However, these models could be enhanced to address specific questions through the collection or compilation of additional hydrologic data and by calibration of the models to address the stated purpose. Simulation of groundwater flow through karst aquifers in the St. Croix County model would most likely be improved with data from karst mapping and better understanding of local groundwater flow in karst aquifers.

This project incorporates the karst feature mapping and other enhanced data collection into a more highly calibrated groundwater flow model calibrated to answer specific questions. Due to the nature of underground karst features it is unlikely the groundwater flow model will be precise enough to answer where does a pollutant in a well originate from.

This project requires technical assistance from the USGS and Wisconsin Geological and Natural History Survey (WGNHS). The estimated cost for completing further study of groundwater flow in karst aquifers and calibrating the groundwater flow model is $75,000 to $150,000 depending on the parameters of the study.

Identify Groundwater Recharge Areas & other groundwater environmentally sensitive areas.

The karst feature dataset, soils, depth to bedrock, wetlands, groundwater flow model and any other important environmental data layer will be used to create a groundwater recharge area map and groundwater sensitivity map. The groundwater recharge map may be used to regulate land use.

EVAAL Study for Kinnickinnic Watershed

The Wisconsin Department of Natural Resources Bureau of Water Quality has developed the Erosion Vulnerability Assessment for Agricultural Lands (EVAAL) toolset to assist watershed managers in prioritizing areas within a watershed which may be vulnerable to water erosion (and thus increased nutrient export) and therefore may contribute to downstream surface water quality problems. It evaluates locations of relative vulnerability to sheet, rill and gully erosion using information about topography, soils, rainfall and land cover. This tool enables watershed managers to prioritize and focus field-scale data collection efforts, thus saving time and money while increasing the probability of locating fields with high sediment and nutrient export for implementation of best management practices (BMPs).

MSA Professional Services completed an EVAAL analysis for the Willow River Watershed as part of the Highway 64 Communities Stormwater-Wastewater study activities. Watershed managers in the implementation of the Willow and St. Croix River TMDL may use the analysis. MSA has provided a cost estimate of $12,000 for completing EVAAL analysis for the Kinnickinnic River Watershed.

Summary of Costs

Identification & Mapping of Groundwater Recharge & Flow Patterns			
Sinkhole Identification and High Resolution Land Cover Mapping		Consultant	$21,000 Funded
Groundwater Flow Model Local Groundwater Flow in Karst Aquifers		Consultant	$75,000
Identify and Map Groundwater Recharge Area		Consultant	$75,000
EVAAL Study for Kinnickinnic Watershed		Consultant	$12,000
TOTALS			$183,000

Priority 3. Groundwater & Surface Water Protection, Coordination, Education, & Outreach

A. Create and support necessary staff positions to carry out the priority recommendations.

CDD is requesting to reclassify an existing staff position as Water Resources/Marketing Specialist. The position will be the project coordinator for the drinking water well testing program and be responsible for coordinating resources to accomplish the tasks associated with the priority recommendations. The position will be the point of contact for groundwater education, outreach and emergency response. Reclassification of the existing position will be an increase of approximately $13,000 for salary and benefits.

B. Develop a county protocol for urgent response to actual or potential water-resource pollution events that threaten human health, the environment, or natural resources.

CDD is proposing to use the SCC-Alert System to notify residents of potential water resource pollution events. SCC-Alert is a free to user mass alert system offered by St. Croix County Emergency Support Services. Alerts can be sent to residents based on geographic location. The service will be publicized to local residents residing in locations susceptible to water resource pollution events. The user must register themselves to receive the alerts.

Protocol will be established to determine what constitutes a water resource pollution event.

C. Emergency Response Bacteria Testing

Public Health and CDD will create an emergency response drinking water well testing program for bacteria in response to brown-water events.

D. Summary of Costs

Groundwater Protection Education & Outreach			
CDD Staff		0.6 FTE	~$53,000 annually
Emergency Response Bacteria Testing Variable According to Weather	$15/test	20 tests per event	$300 per event

Priority 4. Increase the number of acres in nutrient management plans (NMPs)

The steps to increase the number of acres in nutrient management plan include:

- Increase enrollment in Farmland Preservation Zoning thereby requiring NMPs.
- Continually educate and encourage producers to create nutrient management plans.
- Increased participation in NMP program will require increase of cost share dollars.

The primary resource required to implement the above steps, to increase enrollment in Farmland Preservation Zoning, is additional land & water conservation staff. Increase of land enrolled in Farmland Preservation Zoning is dependent on more agricultural towns choosing Farmland Preservation Zoning. Staff would be responsible for technical assistance to producers, education, and implementing BMP's.

Increase Acres in Nutrient Management Plans		
Technical Assistance to Producers	1 New FTE	$90,000 annually

Priority 5. Revise the County's land use policy and zoning ordinances to protect groundwater resources.

A. Separate incompatible land uses and/or varying lot size requirements in environmentally sensitive area.

As an example, the comprehensive revision zoning ordinance project proposes to split the existing Rural Residential District into two districts, reflecting major plat subdivision based rural development and scattered isolated rural residential development at a lower density. The separation of these uses will minimize land use conflicts and reduce the potential for and exposure to groundwater contamination through lower residential density development in some areas of the county where zoning and town future land use desires allow.

The identification of environmentally sensitive areas and important groundwater recharge areas in karst aquifers will play a future role in determining, landuse, future residential density and lot size.

B. Update county soil and erosion control ordinances.

St. Croix County is in the process of updating these ordinances. The county must meet statutory and administrative rule standards and in most cases cannot regulate beyond state standards. Changes to legislation and administrative rule may be required for the county to regulate beyond state standards. Advocating at the state level to allow local regulation to exceed state standards would need to be pursued by the County Board.

Of particular interest is NR 151 Runoff Management. NR 151 contains performance standards for Silurian Bedrock that exceed general state standards. Silurian Bedrock is the type of karst found in eastern Wisconsin at shallow depth to bedrock. Advocating at the state level to include all karst areas for higher performance standards would need to be pursued by the county board.

Encourage common POWTS and shared wells constructed to a higher standard.

Review conservation design subdivision standards, work to incentivize the use of common POWTS and common wells to achieve a higher level of construction and treatment. Individual POWTS and wells in the county should also be encouraged to be constructed to a higher standard.

Nitrate removal technology for private onsite wastewater treatment system (POWTS) effluent does exist. However, the County cannot regulate beyond state minimum standards. Advocating at the state level to allow local regulation to require POWTS to treat nitrates to a higher standard would need to be pursued by the County Board. The installation of nitrate treatment on POWTS would add $7,000-$10,000 to the installation of a POWTS.

Adoption of Agricultural Shoreland Management Ordinance

Agricultural activities conducted in close proximity to surface waters can pollute local surface and ground water resources. When not properly managed activities such as, fertilizer and pesticide use, tillage, irrigation, drain tile, riparian grazing, confined feeding operations, and manure management can impact water quality. Contaminated water can adversely affect human and animal health through exposure to chemicals, bacteria, viruses and sediment.

An agricultural shoreland management ordinance would complement the County's Shoreland and Floodplain Overlay Zoning Ordinances, to regulate activities within designated agricultural shoreland corridors. These corridors would include areas within 35 feet of the edge of a sinkhole, centerline of an intermittent stream, top of either bank of a perennial stream or river, or the ordinary high water mark of any pond or lake.

The review of applicability and cost benefit of implementing these regulations will not occur until mid-year 2022. Additional CDD Staff would be required for administering the agricultural shoreland management ordinance.

Adopt County Administration of Private Well Code under NR 845.05

Explore options for adopting each of five levels of authority for regulating well design and construction, as specified in NR 845.05; and, exploring options to update well construction standards, including casing, depth, grouting and well casing down to water source, as well as improving data quality. Well construction standards are set by the state in NR 845.05. In most cases the county cannot regulate beyond the state minimum standards. Advocating at the state level for higher well construction standards for well casing and grouting would need to be pursued by the county board.

Drinking water treatment systems are also an alternative. Water treatment systems with reverse osmosis, nitrate removal and UV bacteria treatment are available and should be encouraged. Advocating at the state level for construction standards to include these water treatment systems would need to be pursued by the county board.

Tasks associated with county administration of private well code:

- Scoping meetings with Public Health, HHS, CDD, CDC and Corporation Counsel
- Drafting & Adoption
- 50 Hours of various staff time
- Implementation and Enforcement

The review of applicability and cost benefit of implementing these regulations will not occur until mid-year 2024. Additional Public Health or CDD Staff would be required for administering the private well code.

Summary of Costs

Revise County Land Use Policies		
Revise Policy and Ordinances Existing Staff	200 hoursover 18 mo.	$8,000
Agricultural Shoreland Management Ordinance Enforcement	1 New FTE	$90,000 annually
Administration of Well Code	1 New FTE	$90,000 annually
TOTALS	2 New FTE Ordinance Development	$180,000 annually $8,000

Priority 6. Explore options regarding the regulation of livestock operations and licensing, for facility siting for ongoing monitoring of livestock operations for the purpose of protecting water resources.

A. Agriculture Operations Ordinance – County-wide – Existing Chapter 11 Waste Storage & Waste Utilization

- Evaluate existing ordinance and alternatives, Recommend Edits and Expansion, Legal Review, Public Information Meeting
- Regulate spreading and setback requirements
- Regulate based on Karst Topography
- Regulate winter spreading based on TMDL
- Regulate based on storage capacity
- Set a manure tank cubic feet capacity requirement. Therefore, if a manure tank were above this cubic foot capacity threshold then a permit would be required. This would provide more clarity on when permits are needed.
- Increase the application fee and/or create an application fee system based off the number of animal units owned by the permit applicant.

B. Siting Licensing Ordinance – County-wide – Editing and Expanding Chapter 17 Zoning

- Evaluate existing ordinance and alternatives, Recommend Edits and Expansion, Legal Review, Public Information Meeting
- >1 Animal Unit/Acre and >500 Animal Unit
- Annual Compliance Review
- Limit zoning districts (Rural Residential, Ag1 & Ag2)

The review of the applicability and cost benefit of implementation of these regulations will not occur until mid-year 2024.

C. Summary of Costs

These ordinances will require additional implementation and enforcement activities involving Community Development and Corporation Counsel staff.

Livestock Operations & Licensing Ordinances & Enforcement		
Operations & Licensing Ordinance Development	500-750 hours over 6 mo.	$20,000 - 30,000
Implementation & Enforcement New Staff	1 New FTE CDD 1 New FTE Legal	$220,000 annually
TOTALS		$240,000 – $250,000

Priority 7. Establish active water quality committee to ensure that the protection of ground and surface water continues to be a priority issue actively addressed by the County.

CDD and HHS believe that the respective committees fulfil this role. The committees should schedule quarterly joint meetings or work sessions to address groundwater and surface water issues.