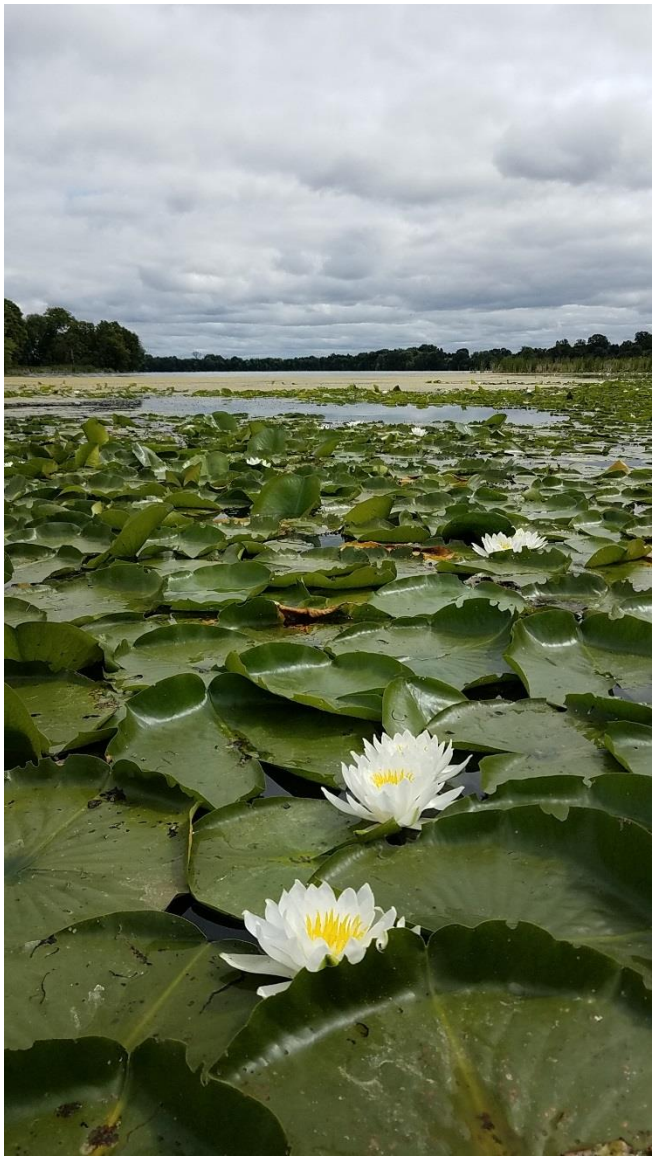


CCWMO

2020-2029 WATERSHED MANAGEMENT PLAN

CARVER COUNTY WATERSHED MANAGEMENT ORGANIZATION
600 E 4TH ST, CHASKA, MN 55318 | 952.361.1820
www.co.carver.mn.us/water

February 2020

TABLE OF CONTENTS

Chapter 6 Administration

Ordinance & Board Resolution

CARVER COUNTY, MINNESOTA

ORDINANCE 94-2020

CARVER COUNTY WATERSHED MANAGEMENT ORGANIZATION
2020 WATERSHED MANAGEMENT PLAN

The Carver County Board of Commissioners Hereby Ordains:

Section 1. The Carver County Watershed Management Organization 2020 Watershed Management Plan as approved by the Board of Water and Soil Resources on December 18, 2019 is hereby adopted as the official plan and guide to managing watersheds, surface water resources, and groundwater resources for areas within the Carver County Watershed Management Organization.

Section 2. The 2020 Watershed Management Plan and all subsequent amendments thereto shall be the basis for official controls adopted pursuant to Minnesota Statutes 103B.211 through 103B.255 and Minnesota Rules Chapter 8410.

Section 3. This ordinance becomes effective upon its passage and publication.

Adopted by the Carver County Board, Resolution #12-20, at its meeting of February 4, 2020.

DocuSigned by:
James Ische, Chair

DocuSigned by:
Dave Hemze, County Administrator

BOARD OF COUNTY COMMISSIONERS
CARVER COUNTY, MINNESOTA

DATE February 4, 2020 RESOLUTION NO. #12-20
MOTION BY COMMISSIONER Workman SECONDED BY COMMISSIONER Lynch

A RESOLUTION ADOPTING THE CARVER COUNTY WATER MANAGEMENT ORGANIZATION 2020 WATER MANAGEMENT PLAN

WHEREAS, Minnesota Statutes section 103B requires each water management organization (WMO) to update its water management plan (plan) at a minimum of every 10 years and to submit the plan to the State Board of Water & Soil Resources for review and approval; and

WHEREAS, Pursuant to MN Statute Sec. 103B.231, the Carver County Board is the water management authority for the Carver County Water Management Organization (CCWMO); and

WHEREAS, Carver County has prepared an updated plan, including goals, policies, and implementation strategies regarding permitting, projects, monitoring, education and outreach, planning and assessment, and administration; and

WHEREAS, This plan replaces the CCWMO plan adopted in 2010; and

WHEREAS, The plan was prepared with guiding input from the County Board, the CCWMO Advisory Committee and Technical Advisory Committee, as well as each township board, municipal representatives, citizens, state agencies, and other stakeholders; and

WHEREAS, To collect input and feedback on the water management plan, the County Board approved the release of the draft plan for a 60-day community review, a 90-day state agency review period has been completed, and a public hearing was held to consider the water management plan; and

WHEREAS, The State Board of Water and Soil Resources (BWSR) reviewed the DRAFT 2020 CCWMO Water Management Plan, and on December 18, 2019 approved the plan and recommended that the CCWMO place the plan into effect; and

THEREFORE, BE IT RESOLVED, THAT The Carver County Board of Commissioners hereby adopts ordinance # 94-2020, the CCWMO 2020 Water Management Plan.

YES	ABSENT	NO
Degler		
Ische		
Lynch		
Maluchnik		
Workman		

STATE OF MINNESOTA
COUNTY OF CARVER

I, David Hemze, duly appointed and qualified County Administrator of the County of Carver, State of Minnesota, do hereby certify that I have compared the foregoing copy of this resolution with the original minutes of the proceedings of the Board of County Commissioners, Carver County, Minnesota, at its session held on the 4th day of February, 2020, now on file in the Administration office, and have found the same to be a true and correct copy thereof.

Dated this 4th day of February, 2020.

DocuSigned by:
5A10677A6575420...
County Administrator

1. EXECUTIVE SUMMARY

1.1. ORGANIZATIONAL PURPOSE

The purpose of the Carver County Watershed Management Organization (CCWMO) is to fulfill the County's water management responsibilities under Minnesota Statue and Rule. The CCWMO provides a framework for water resource management as follows:

- Provides a sufficient economic base to operate a viable program;
- Avoids duplication of effort by government agencies;
- Avoids creation of a new bureaucracy by integrating water management into existing County departments and related agencies;
- Establishes a framework for cooperation and coordination of water management efforts among all affected governments, agencies, and other interested parties; and
- Establishes consistent water resource management goals and standards for approximately 80% of the county.

1.2. WATERSHED INFORMATION

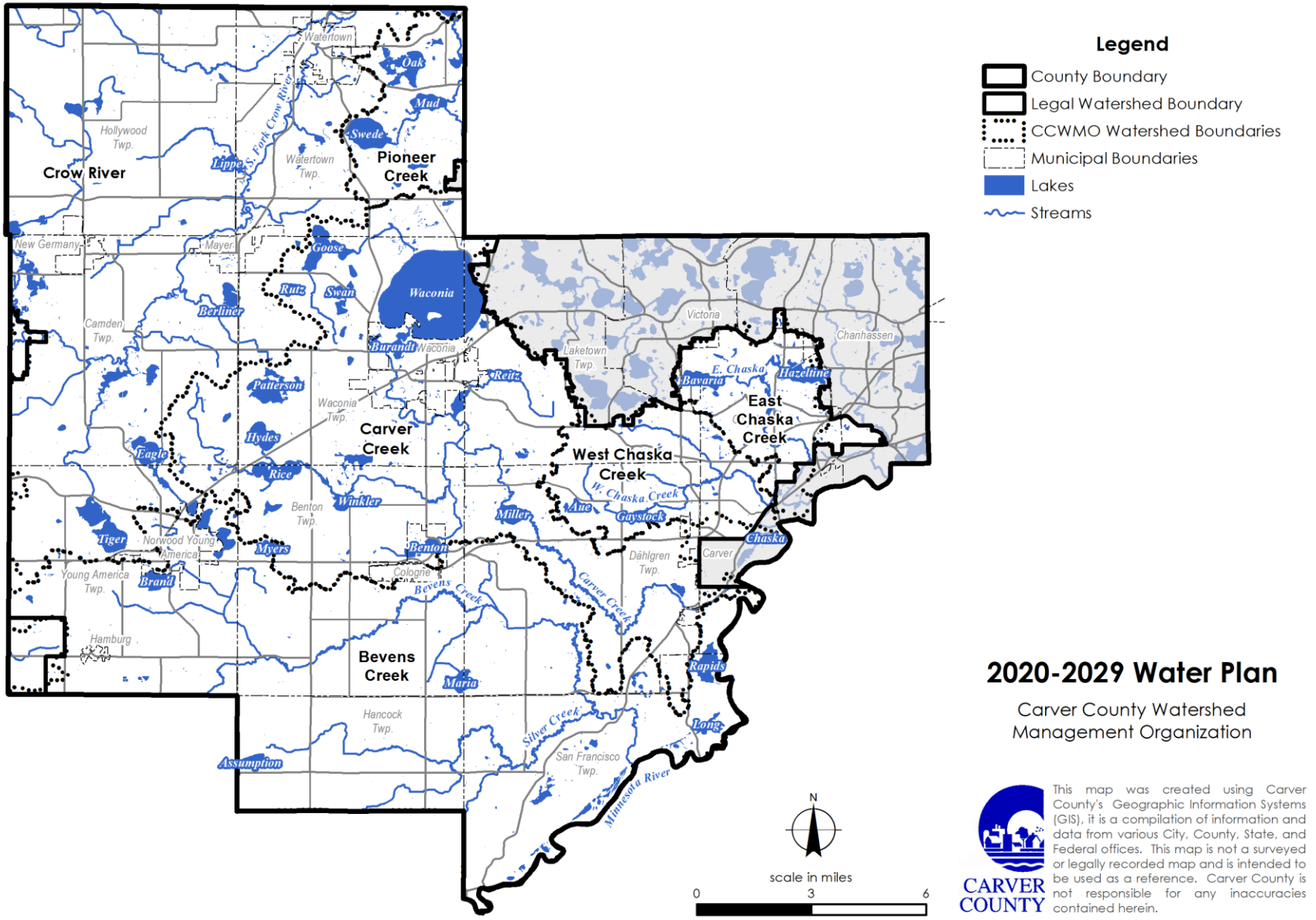
1.2.1. Watershed Boundaries

The CCWMO covers approximately 320 square miles on the southwestern edge of the Twin Cities Metropolitan Area. The watershed covers most of Carver County; draining an area approximately 23 miles from east to west and 23 miles from north to south. There are six major subwatersheds within the CCWMO. The Crow River subwatershed and the Pioneer Creek subwatershed drain to the South Fork of the Crow River. The Bevens Creek, Carver Creek, East Chaska Creek, and West Chaska Creek subwatersheds drain to the Minnesota River. Figure 1-1 shows the CCWMO's legal boundaries, subwatersheds, and governmental units located within the watershed.

1.2.2. History of the Organization

In October of 1996, the Board of Water & Soil Resources (BWSR) declared the Carver Creek, Bevens Creek, South Fork Crow River, Chaska Creek and Hazeltine Bavaria Creek Joint Powers Water Management Organizations (WMOs) "non-implementing" and terminated the organizations. On October 30, 1996, BWSR sent the Carver County Board of Commissioners a letter notifying the Board of its responsibility for water management pursuant to Minnesota Statute 103B.231 Subd. 3(b). The statute requires that the County assume all water management responsibilities in all areas of the county that were previously under the Joint Powers WMOs. The statute gives the County the authority and responsibility for management – planning, funding, regulation, and implementation – of a water management organization. The CCWMO adopted its first Watershed Management Plan in 2001. The second iteration of the plan was updated and adopted in 2010.

Figure 1-1. CCWMO Watershed Boundaries (Source: Carver County)



1.3. PLAN SUMMARY

This Watershed Management Plan is intended to be a ten-year planning document to guide CCWMO activities. The Plan is divided into the chapters listed below. A summary of each chapter follows.

- Executive Summary
- Land and Water Resources Inventory
- Issue Identification Process
- Goals, Policies, and Implementation Strategies
- Implementation Plan
- Administration
- Appendices

1.3.1. Chapter 2: Land and Water Resource Inventory

Chapter 2: Land and Water Resource Inventory contains detailed information regarding land and water resources within the Carver County Watershed Management Organization boundaries. Information is grouped into four primary categories: physical environment, biological environment, human environment, and hydrologic systems. The Physical Environment section and includes information on climate, topography and drainage, geology and soils. The Biological Environment section includes information on land cover, vegetation, and wildlife. The Human Environment section includes information on land use and growth patterns, recreation, and potential environmental hazards. The Hydrologic Systems section includes information on surface water and groundwater systems.

1.3.2. Chapter 3: Issue Identification Process

Chapter 3: Issue Identification Process describes the process used to engage stakeholders in the identification of issues to be addressed by this Plan. The chapter includes a summary of the process used to engage stakeholders in identifying, categorizing, and prioritizing issues related to water resources. Six major issues were identified:

- Surface Water Quality
- Surface Water Quantity
- Groundwater Resource Protection
- Awareness & Behavior
- Coordination with Partners
- Evaluating Effectiveness & Progress

1.3.2.1. Surface Water Quality

Improving and protecting surface water quality is a primary focus of the CCWMO. As impervious surfaces increase, more water flows off the landscape and is delivered to receiving waters more quickly. As water washes over developed landscapes it picks up materials lying upon those surfaces and delivers them to receiving waters. These materials can include sediment from construction erosion, oil and grease from automobiles, salt and other deicing chemicals from roadways and parking lots, and fertilizer and pesticides from lawns. These pollutants can adversely impact bodies of water that receive stormwater runoff.

Goal 1 To preserve and improve the quality of surface water resources within the watershed. The CCWMO has the following interim goals for improving water quality and aquatic life trends over the life of this plan:

a. Impaired waters that are close to the state standard will be delisted during the life of the plan. Determinations of what is close to the standard will be based on the characteristics of the waterbody and the impaired parameter and will be made on an ongoing basis.
b. Other impaired waters will show a stable or improving trend
c. Unlisted lakes will show a stable or improving trend

1.3.2.2. Surface Water Quantity

In a natural, undeveloped setting, the ground is generally pervious, which means that water (including stormwater runoff) can infiltrate into the soil. Land development dramatically changes how stormwater runoff moves in the local watershed, as ground surfaces become covered with impervious materials (e.g., asphalt and concrete) that prevent infiltration of water into the soil. As a result, the rate and volume of stormwater runoff from the site increases. The additional volume of runoff can increase the water level, flood areas that are normally dry, and the potential for erosion. Although both high-water levels (flooding) and low-water levels are of concern, more attention is usually paid to flooding because it is a greater threat to public health and safety and can cause significant damage.

Goal 2 To manage the volume and flow of stormwater runoff to minimize the impacts of land use change on surface water and groundwater resources within the watershed.

1.3.2.3. Groundwater Resource Protection

Groundwater is the primary source of drinking water in the County. Maintaining clean, safe groundwater supplies is critical to human and environmental health and to the economic and social vitality of communities. Once contaminated, groundwater may remain contaminated for long periods of time and clean-up is expensive and technically complex. Prevention of groundwater contamination through best management practices (for example, sealing abandoned wells and carefully siting infiltration practices) is critical.

Goal 3 To preserve and protect groundwater resources within the watershed.

1.3.2.4. Awareness & Behavior

Making the public aware of the role they can play in protecting water resources is a key task of the CCWMO. Most potential contamination threats to surface water and groundwater are human-caused, thus a significant element in the prevention of contamination can occur by educating people about issues and the role they can play in addressing them. Education increases the understanding of risks and helps prevent problems. The CCWMO strives to tailor educational efforts to specific target groups and reduce barriers to encourage sustainable behavior change.

Goal 4 To provide those living, working, and recreating in the CCWMO with the knowledge, skills, and motivation needed to make positive behavior changes that protect surface water and groundwater resources.

1.3.2.5. Coordination with Partners

The CCWMO is one of several government entities with water resource management responsibilities and regulatory authority within the watershed. Overlapping permitting and stormwater management authorities allows for localized protection of water resources but can also create the potential for redundant and inefficient processes. Regular communication between the CCWMO and other units of government can reduce these inefficiencies. In addition, the CCWMO is limited by the availability of funding. Achieving the goals of this Plan with limited funds requires partnerships with other entities working to address water resource issues.

Goal 5 To work with partners to identify and implement efficient solutions to water resource problems.

1.3.2.6. Evaluating Effectiveness & Progress

The CCWMO is a local unit of government responsible for implementing projects and programs to achieve its goals and is constrained by the availability of funding. Achieving the goals of this plan with limited funds requires efficient and effective operation. A robust data collection program, as well as accurate and unbiased interpretation of that data, enables the CCWMO to manage water resources effectively and efficiently.

Goal 6 To collect data and use the best available science to identify problems and evaluate the effectiveness of solutions.

1.3.3. Chapter 4: Goals, Policies, and Implementation Strategies

Chapter 4 includes the goals, policies, and implementation strategies that address the six overarching issues identified during the public input process. For each issue, a goal statement was developed with input from the Carver County Watershed Management Organization (CCWMO) CAC and TAC. Implementation of this plan occurs through the six primary program areas of the CCWMO. The chapter discusses which issues each program is designed to address and includes a list of policies and implementation strategies for each program area.

1.3.4. Chapter 5: Implementation Plan

A summary of the implementation program is included in **Chapter 5: Implementation.** The chapter includes a summary of the budget for each program area and cost share program (Table 5-1). Also included is a summary of each program area and a table listing each implementation strategy identified in Chapter 4 along with additional information on the program area, type of activity, who is responsible for implementation, and a timeframe for implementation (Table 5-2). The list of projects proposed during the life of the plan can be found in Table 5-5.

The chapter also highlights three priority areas that the CCWMO will focus on during the life of this plan: **priority waterbodies**, **priority wetland restoration areas**, and **untreated urban areas**. Given the size of the CCWMO and the vast array of resources and issues within it, there is a need for tools and methods to help focus implementation.

1.3.5. Chapter 6: Administration

Chapter 6: Administration includes information on the authority and organization of the CCWMO. The chapter also includes information on local water plan requirements, CCWMO Plan adoption and amendment procedures, financing, and plan evaluation.

1.3.6. Appendices

The plan contains four appendices:

- **Appendix A: Wetland Functional Value Assessment Methodology** summarizes the process used to assess wetland functional values in the CCWMO.
- **Appendix B: Waterbody Prioritization Results** includes the individual ranking results for each lake and stream reach. See Chapter 5, Section 5.3.1 for additional information.
- **Appendix C: Cost Share Program Criteria** includes the selection criteria for the cost share programs described in Chapters 5 and 6.
- **Appendix D: 2010 Plan Evaluation** includes an evaluation of the CCWMO's success in implementing the 2010 Water Plan.
- **Appendix E: Acronym List & Glossary** contains a list of acronyms used in the plan and a glossary for technical terms found in the plan.
- **Appendix F: Plan Review Process** includes a summary of the process used to solicit feedback and input on the draft Plan and a response to the comments received on the plan.

2. LAND AND WATER RESOURCE INVENTORY

2.1. INTRODUCTION

This section contains detailed information regarding land and water resources within the Carver County Watershed Management Organization (CCWMO) boundaries. Information is grouped into four primary categories: physical environment, biological environment, human environment, and hydrologic systems. The Physical Environment section includes information on climate, topography and drainage, geology and soils. The Biological Environment section includes information on land cover, vegetation, and wildlife. The Human Environment section includes information on land use and growth patterns, recreation, and potential environmental hazards. The Hydrologic Systems section includes information on surface water and groundwater systems.

2.2. PHYSICAL ENVIRONMENT

2.2.1. Climate & Precipitation

The CCWMO has a continental-type climate and is subject to frequent outbreaks of continental polar air throughout the year, with occasional Arctic outbreaks during the cold season. Spring, summer and fall are normally mild (see Table 2-1 for historic temperature and precipitation data). Occasional periods of prolonged heat occur during summer, when warm air pushes northward from the Gulf of Mexico and the southwestern United States. Vegetation native to Minnesota has a seven month growing season (April to October) and row crops grow for about five months (May through September). Approximately two-thirds of the annual precipitation occurs from May to September. On average, the watershed receives (Table 2-2). Winter snowfall averages about 43 inches. Snow generally remains on the ground from mid-December to late March. Information on the typical amount of precipitation for various storm frequencies is listed in Table 2-3.

Table 2-1. 1981-2010 Monthly Climate Normals (Chaska)

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC	ANN
Daily Maximum Temperature (°F)	22.8	28.4	40.2	57.3	69.5	78.5	82.8	80.6	71.7	58.6	41.2	26.4	**55.0**
Daily Minimum Temperature (°F)	2.6	8.3	19.8	34.2	45.9	56.1	60.7	58.0	48.7	36.4	23.3	8.5	**33.7**
Average Daily Temperature (°F)	12.7	18.4	30.0	45.8	57.7	67.3	71.8	69.3	60.2	47.5	32.3	17.5	**44.3**
Precipitation (inches)	0.93	0.73	1.83	3.10	3.70	4.29	3.95	5.16	3.53	2.59	1.74	1.18	**32.73**

Source: U.S. Climate Normals 1981-2010. National Climatic Data Center.

Table 2-2. Annual Precipitation Totals, 2011-2018 (Chanhassen)

Year	Total Precipitation
2011	27.68
2012*	32.77
2013*	35.08
2014*	36.43
2015*	35.41
2016*	40.52
2017*	37.87
2018*	34.41

*Years with above average precipitation totals
Source: Minnesota State Climatology Office

Table 2-3. Storm Frequency and Precipitation (Carver County)

Frequency	Duration	Inches of Precipitation (90% confidence interval)
1 year	24 hour	**2.49** (2.04 - 3.04)
2 year	24 hour	**2.85** (2.33 – 3.12)
5 year	24 hour	**3.55** (2.89 - 4.35)
10 year	24 hour	**4.23** (3.42 – 5.20)
25 year	24 hour	**5.30** (4.23 – 6.87)
50 year	24 hour	**6.25** (4.83 – 8.14)
100 year	24 hour	**7.29** (5.44 – 9.68)
500 year	24 hour	**10.10** (6.97 – 14.00)
1,000 year	24 hour	**11.50** (7.67 – 16.00)
25 year	10 day	**8.16** (6.71 – 9.93)
50 year	10 day	**9.21** (7.38 – 11.30)
100 year	10 day	**10.30** (7.96 – 13.00)
500 year	10 day	**13.1** (9.28 – 17.40)
1,000 year	10 day	**14.3** (9.89 – 19.30)

Source: Atlas 14. (2013). National Oceanic and Atmospheric Administration.

2.2.2. Topography & Drainage

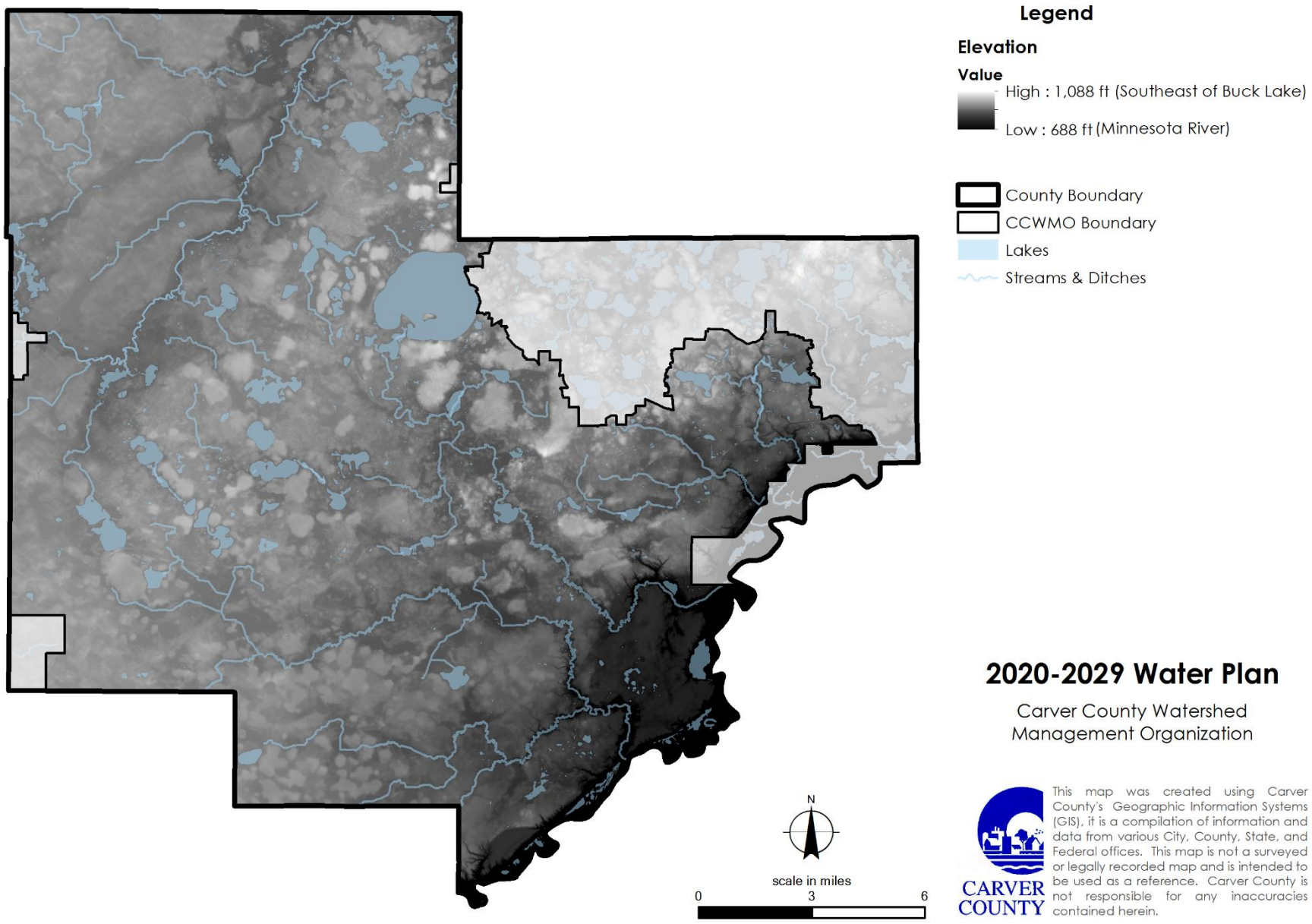
Topography

The current shape of the watershed's land surface formed during the period of the last glacial age, the Wisconsin, about 13,000 years ago. Prior to glaciation, the landscape and topography in Carver County were mostly determined by the contour of the bedrock. Pre-glacial topography consisted of highland areas cut by deep river and stream valleys. When glaciation occurred, the valleys filled in with various types of glacial material. As the glaciers melted, main river valleys followed the approximate course of many of the pre-glacial river valleys. For example, the Minnesota River Valley in Carver County follows the approximate course of a large pre-glacial valley. Figure 2-1 shows the watershed's topography.

Drainage

The watershed is divided into six subwatersheds that drain to three different larger waterbodies (see Figure 1-1 in Chapter 1 and Section 2.5.1 in this Chapter for additional information). The Bevens Creek, Carver Creek, West Chaska Creek, and East Chaska Creek subwatersheds all drain to the Minnesota River. The Crow River subwatershed is comprised of the areas in the county that drain directly to the South Fork of the Crow River. The Pioneer subwatershed drains to Pioneer Creek and eventually to the Crow River at a location downstream of Carver County.

Figure 2-1. Topography (Source: Carver County, 2011)



2.2.3. Geology

Geology in the watershed is divided into two major layers. The lowermost layer, called bedrock geology, is made up of Cretaceous, Cambrian and Ordovician rock formations. Bedrock geology determines the availability of groundwater aquifers for drinking water use and the movement of groundwater between layers. The uppermost layer, called surficial geology, contains materials deposited by glaciers. Surficial geology affects the distribution of soils and drainage patterns at the earth's surface. This section describes both major geologic layers.

Bedrock Formations

In Carver County, the bedrock formations closest to the surface were deposited as sediment in shallow seas that covered the region during the Paleozoic era of the Cambrian Period, about 504 to 458 million years ago, and again during the Cretaceous Period 95 million years ago. The shallow seas covered a large portion of central North America from central Iowa, into southeastern and south-central Minnesota during the early and middle parts of the Paleozoic era. As older layers of sediment were buried by succeeding layers, they gradually consolidated and lithified into rock: limestone, dolostone, siltstone, shale, and sandstone. These layers are divided into groups of formations based on age or type of rock. Figure 2-2 shows the bedrock geology of the county. Table 2-4 includes a description of bedrock formations, including information on the type of material and location of the formations in the County.

Table 2-4 Carver County Bedrock Geology

Age	Bedrock Formation or Group	Description	Thickness (feet)
Cretaceous (95 million years ago)	Dakota Formation	Uppermost bedrock layer comprised of fine to coarse grained sandstone. Present only in a few locations in the county.	15-80
Mesozoic or Paleozoic (age unknown)	Unnamed	An interbedded claystone, siltstone, and sandstone layer found in northwestern Carver County.	150-200
Ordovician (488 -458 million years ago)	St Peter Sandstone	A fine to coarse grained sandstone; it has a patchy distribution in the eastern part of Carver County.	35
	Prairie du Chien Group	A layer of finely crystalline dolostone and fine to medium grained sandstone. Mostly eroded in Carver County, it appears on plateaus between buried bedrock valleys and is thickest in Chanhassen.	130-160
Upper Cambrian (501 – 488 million years ago)	Jordan Sandstone	A medium to coarse grained sandstone.	80-100
	St Lawrence Formation	A fine grained sandstone and siltstone. Widely distributed throughout the county.	40-50
	Tunnel City Group (also called the Lone Rock formation and formerly called the Fraconia Formation)	Fine grained, silty, feldspathic, and glauconitic sandstone with poor to moderate cementation. It appears within and adjacent to the buried bedrock valleys in the county.	120-140
	Wonewoc Sandstone (Formerly: Ironton-Galesville)	A layer of fine to coarse grained sandstone. It appears within deeper buried valleys in Carver County.	45-70
Middle Cambrian (504 – 501 million years ago	Eau Claire Formation	A very fine grained, feldspathic sandstone and siltstone. It subcrops in the deeper parts of buried bedrock valleys.	65-75
	Mt Simon Sandstone	A thick layer of friable and poorly cemented sandstone.	160-210

Bedrock Structure

Bedrock structure refers to the angle of bedrock layers, faults, fractures, and erosional features and can play a large role in how groundwater moves through bedrock layers. In Carver County, faulting and broad folding has locally disrupted the layers of sedimentary Paleozoic rocks. A horst (a large, uplifted crustal block that is bounded by faults along its long sides) crosses through the center of the county. East of the horst structure, the Paleozoic formations dip gently to the east. West of the horst, the layers dip gently toward the southeast.

The distribution of Paleozoic formations is also affected by deep, buried valleys eroded into older formations. Prior to glaciation, river and stream systems cut deep valleys into the bedrock formations. When glaciation occurred, the valleys were filled in with various types of glacial material. As the glaciers melted, new river valleys followed the approximate course of some of the pre-glacial river valleys. The Minnesota River Valley in Carver County, for example, follows the approximate course of a large pre-glacial valley. The bedrock valleys can provide an opportunity for potential intermixing of water from all aquifers through which the valley cuts.

Paleozoic formations in Carver County are also affected by faults, especially by those that bound the horst in the central part of the county. These faults have displacements that range from a few tens of feet to over 300 feet, sufficient to juxtapose two different bedrock formations at the fault contacts. Similar to the bedrock valleys, the faults can allow intermixing of groundwater where two different aquifers come into contact.

Surficial Geology

Most of the surficial sediment in the county is glacial in origin and was deposited by an ice lobe called the Des Moines lobe that came from the northwest during the Wisconsin glacial period. The Des Moines lobe carried sediment from southwestern Manitoba and from North Dakota. These glacial deposits include varying amounts of distinctive, gray, siliceous shale fragments.

As meltwater flowed from these glaciers, they deposited sand and gravel beds that serve as shallow aquifers today. The repeated advance and retreat of glacial ice and meltwater not only deposited sediments, but also eroded older, underlying sediments, creating a very patchy distribution of sand and gravel material. The net effect of this depositional and erosional activity is that sand and gravel bodies that provide water to wells in Carver County tend to be discontinuous. See Figure 2-3 for the surface geology of Carver County.

Figure 2-2. Bedrock Geology (Source: Minnesota Geological Survey, 2009)

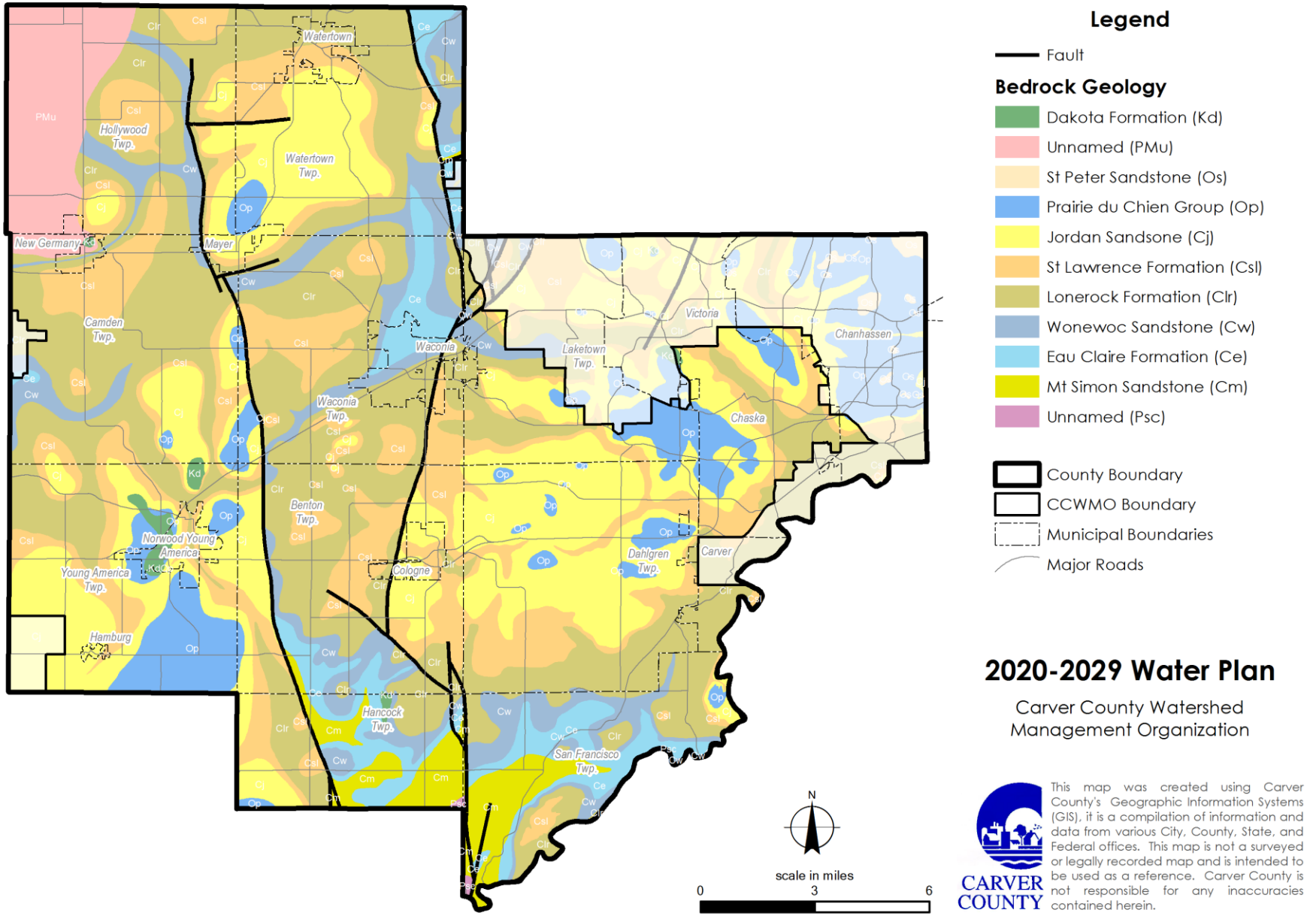
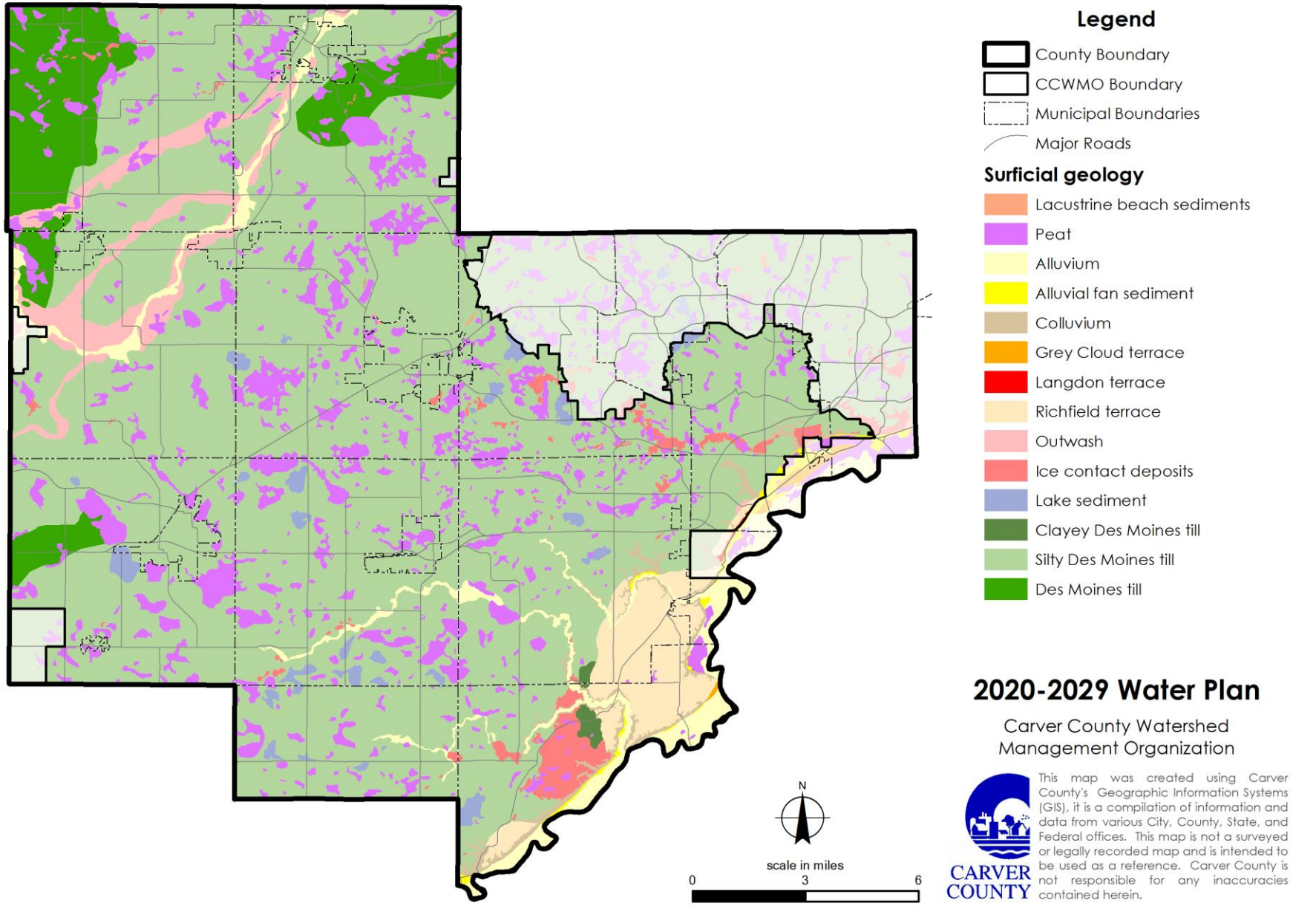


Figure 2-3. Surficial Geology (Source: Minnesota Geological Survey, 2009)



2.2.4. Soils

Soil characteristics, such as texture and infiltration rate, directly influence the amount of runoff from the landscape and can affect total water volumes generated in the watershed. To estimate the role soil plays in the generation of runoff, the Natural Resources Conservation Service (NRCS) developed a classification system that divides soils into four major hydrologic soil groups, A, B, C, and D, and three dual classes, A/D, B/D, and C/D. Each hydrologic group is composed of soils having similar runoff potential under similar storm and cover conditions. Hydrologic groups are used in equations that estimate runoff from rainfall. Table 2-5 describes the major hydrologic soil groups and their descriptions as defined by the NRCS, and Figure 2-4 illustrates their distribution across the watershed. Hydric soils (soils that formed under conditions of saturation, flooding or ponding) are showing in Figure 2-5. These areas generally represent the historic extent of wetland within the CCWMO. Figure 2-6 illustrates the location of erodible soils. Erodible soils are those that are prone to movement across the landscape when exposed to forces of water, wind, or gravity. Additional information on soils, including soil type and development limitations, can be found online at the NRCS Web Soil Survey (http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm).

Table 2-5 Hydrologic Soil Groups & Descriptions.

Soil Group	Description
A	Soils in this group have low runoff potential when thoroughly wet. Group A soils typically have less than 10 percent clay and more than 90 percent sand or gravel and have gravel or sand textures. Water is transmitted freely through the soil.
B	Soils in this group have moderate infiltration and transmission rate when thoroughly wetted. Group B soils consist chiefly of moderately well- to well-drained soils with moderately fine to moderately coarse textures. Water movement through these soils is moderately rapid.
C	Soils in this group have moderately high runoff potential when thoroughly wet. Group C soils typically have loam, silt loam, sandy clay loam, clay loam, and silty clay loam textures. Water transmission through the soil is somewhat restricted.
D	Soils in this group have high runoff potential when thoroughly wet. Group D soils typically have clayey textures. In some areas, they also have high shrink-swell potential. Soils with a depth to a water impermeable layer less than 20 inches and all soils with a water table within 24 inches of the surface are placed in this group. Water movement through the soil is restricted or very restricted.
A/D B/D C/D	Soils are assigned to dual groups if the depth to a permanent water table is the sole criteria for assigning a soil to hydrologic group D. If these soils can be adequately drained, then they are assigned to dual hydrologic soil groups (A/D, B/D, and C/D) based on their saturated hydraulic conductivity and the water table depth when drained. The first letter applies to the drained condition and the second to the undrained condition.

Source: Natural Resource Conservation Service.

Figure 2-4. Soil Hydrologic Groups (Source: NRCS)

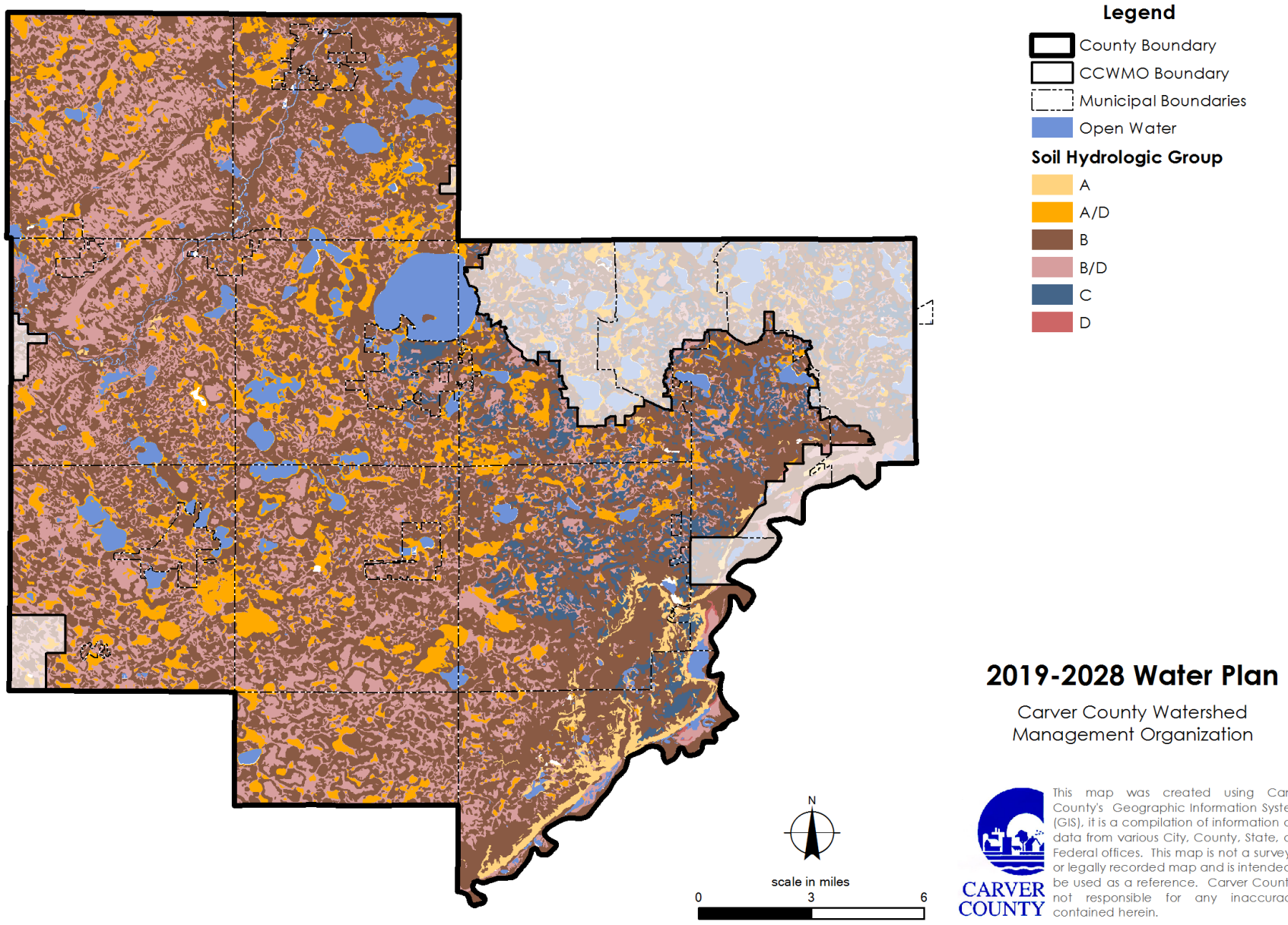


Figure 2-5. Hydric Soils (Source: NRCS)

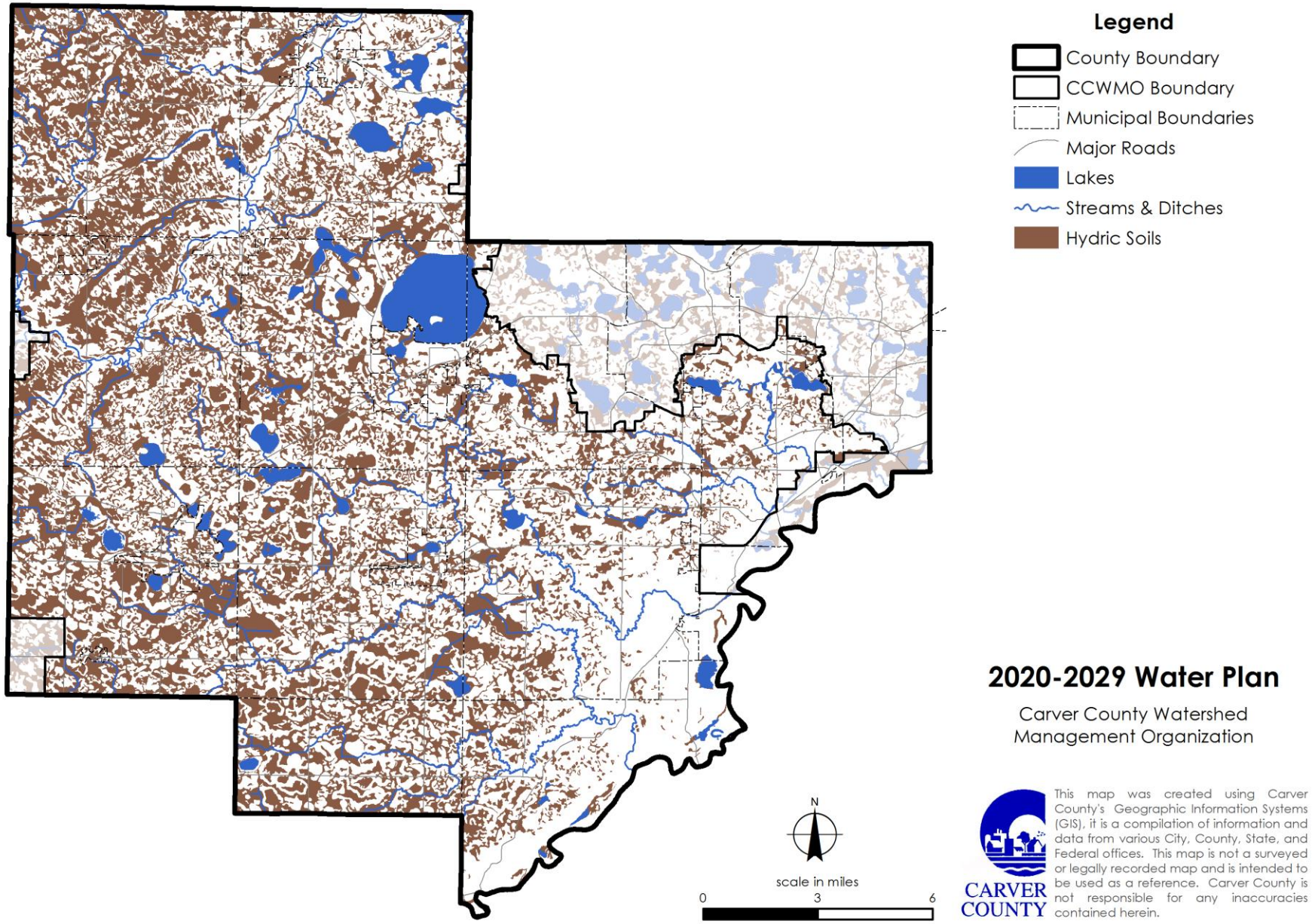
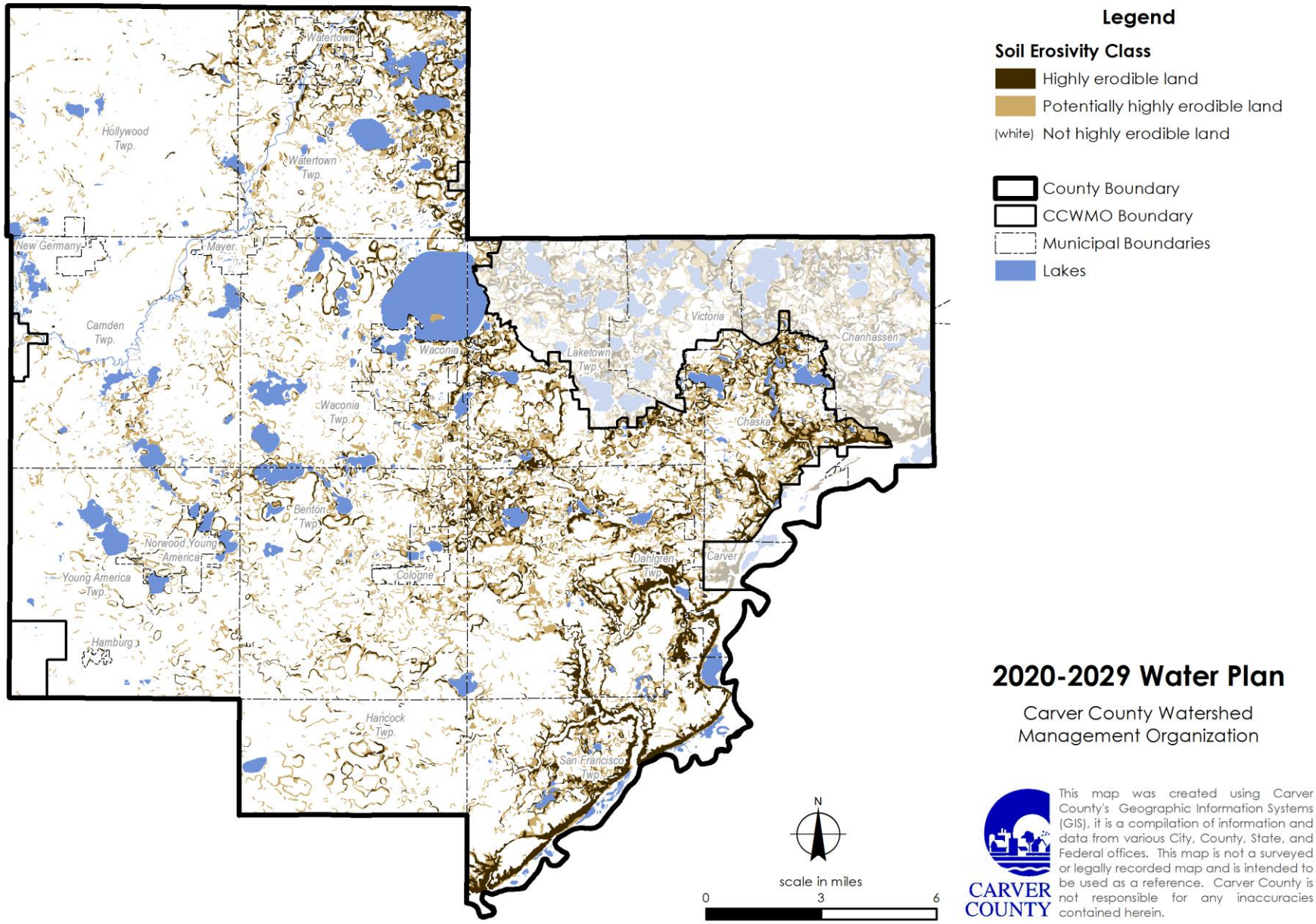


Figure 2-6. Soil Erosivity (Source: NRCS)



2.2.5. Unique Features & Scenic Areas

Many unique features and scenic areas are found within the CCWMO (Figure 2-7). Scenic areas were identified using a methodology that rated scenic factors like proximity to surface water, type of land cover, relationship of different types of land cover to each other, slope, etc. Many of these features can be found in the regional parks and protected areas within the watershed. These include Western Carver County Park, Baylor Regional Park, and Lake Waconia Regional Park. The DNR manages the Patterson Wildlife Management Area (WMA), the Scneewind WMA, the Perbix Waterfowl Production Area, and the Assumption WMA.

2.3. BIOLOGICAL ENVIRONMENT

2.3.1. Land Cover

The amount of runoff generated by a storm is influenced by several factors including the size of the storm, slope steepness, and land cover (e.g. vegetation types or impervious surfaces). Figure 2-8 shows vegetation in the CCWMO prior to European settlement (circa 1895). Pre-settlement vegetation included forest (big woods), woodlands (oak openings and barrens), herbaceous wetlands (wet prairie), and forested wetlands (bottom land forest and coniferous bogs). Early settlers cleared away the native vegetation, drained wet areas, and began to use the land for farming. Natural areas were also cleared to make way for urban development.

A county-wide land cover inventory shows that about 3 percent of the original vegetation remains. In 2007, all land within the county was mapped using the Minnesota Land Cover Classification System (MLCCS). The MLCCS, developed by the Minnesota Department of Natural Resources (MN DNR), categorizes all areas, including urban and built up areas, in terms of land cover, rather than land use. Land cover is divided into either natural/semi-natural cover types (forests, wetlands, etc.) or cultural cover types (built-up areas, agricultural areas) and subdivided on the basis of specific plant community types (oak forest, cattail marsh, etc.) Information on the amount of impervious surface and the quality of natural areas is also recorded. Figure 2-9 shows the remaining natural areas in the county.

The quality of remaining natural areas also varies. The Minnesota Biological Survey (MBS) has identified high quality native plant communities and plant communities with biodiversity significance (Figure 2-9). These remnants of historic vegetation can play an important role in managing stormwater.

Figure 2-7. Unique Features & Scenic Areas (Source: Carver County)

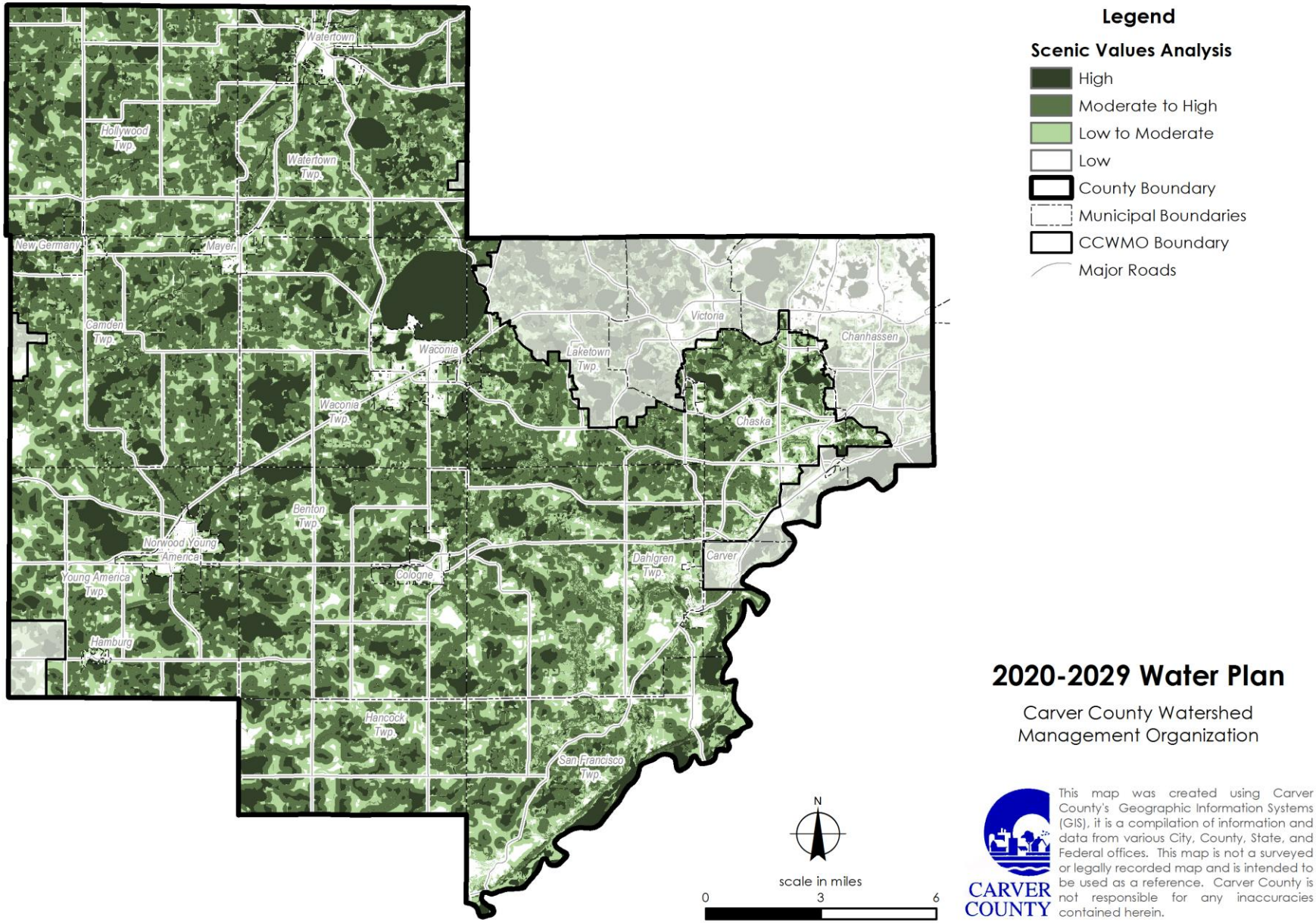


Figure 2-8. Pre-settlement Vegetation circa 1895 (Source: MN DNR)

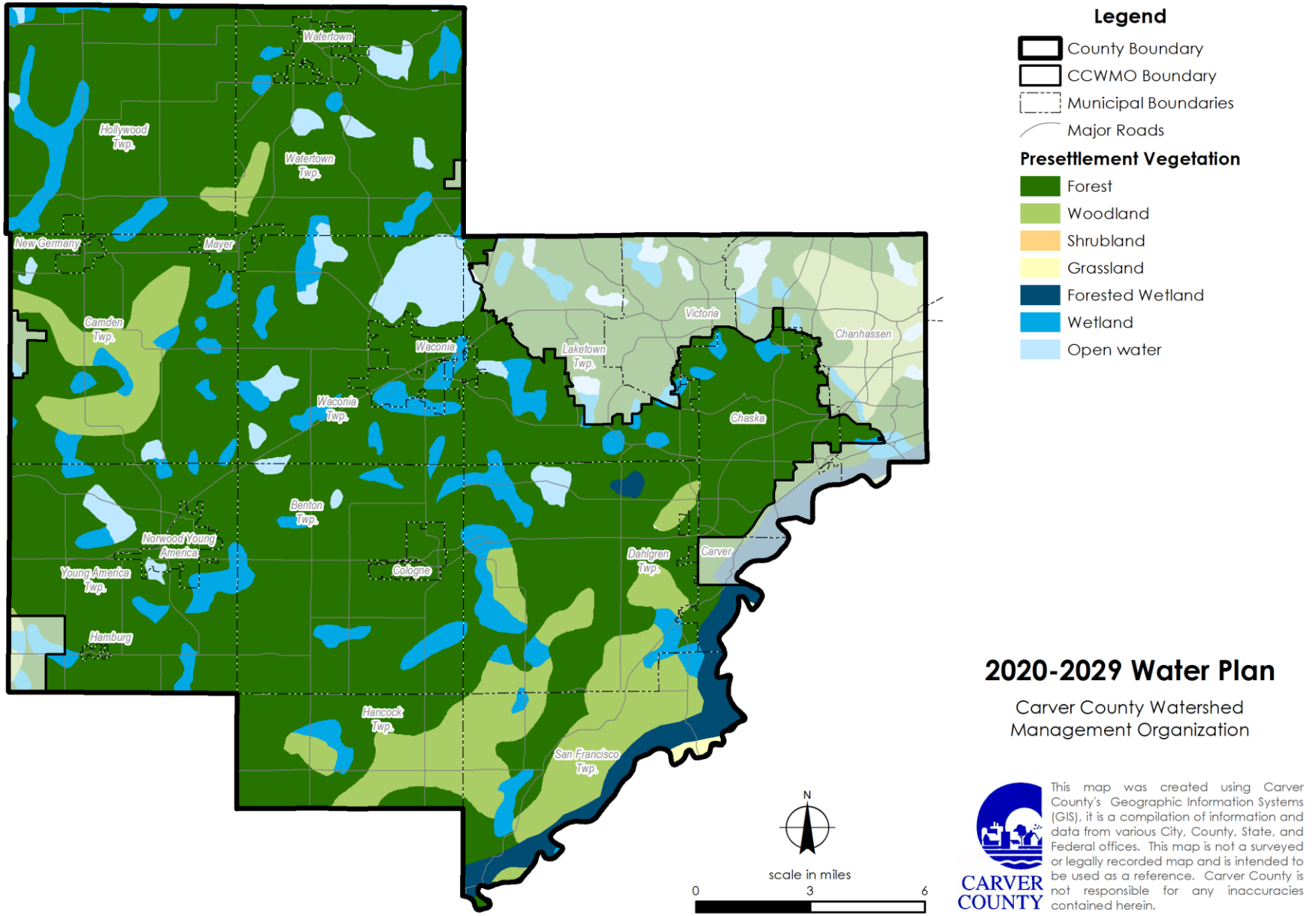
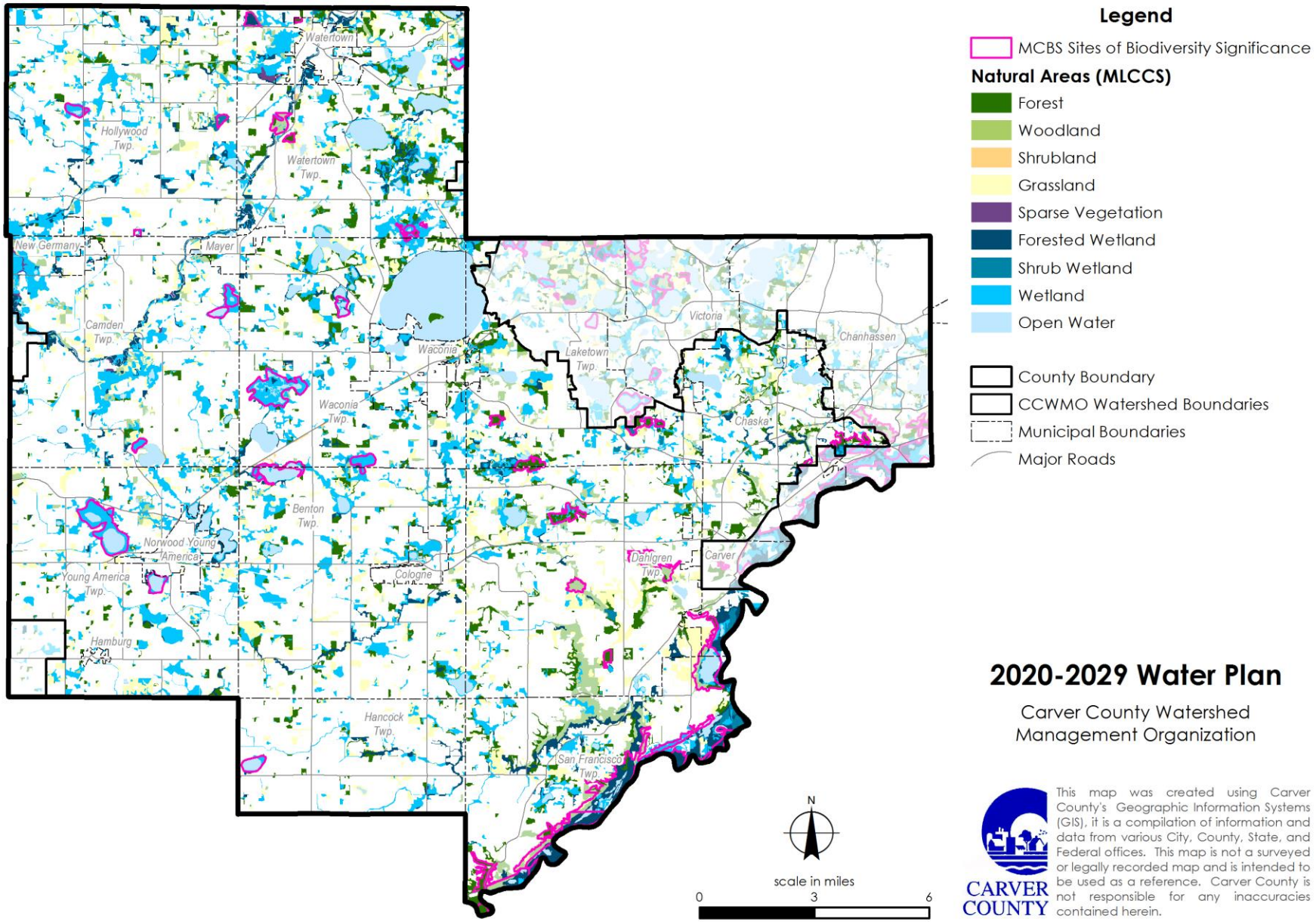


Figure 2-9. Existing Natural Areas and Sites of Biodiversity Significance (Source: MN DNR)



2.3.2. Rare, Threatened, and Endangered Species

The MN DNR Natural Heritage and Nongame Research Program maintains a database of observations of rare plant and animal species. Observations included in the database are compiled from data collected in the field, historical records from museum collections, and other published information. Table 2-6 lists the rare plant and animal species that have been observed within the watershed at some time in the past.

Table 2-6. Rare, Threatened, and Endangered Species in the CCWMO.

Scientific Name	Common Name	Last Observed	Federal Status	State Status
Vertebrate Animals				
Empidonax virescens	Acadian Flycatcher	1997		Special concern
Botaurus lentiginosus	American Bittern	1991		No legal status
Lampetra appendix	American Brook Lamprey	2000		No legal status
Haliaeetus leucocephalus	Bald Eagle	2005		Special concern
Ictiobus niger	Black Buffalo	2003		Special concern
Emydoidea blandingii	Blanding's Turtle	1987		Threatened
Cycleptus elongatus	Blue Sucker	1996		Special concern
Dendroica cerulea	Cerulean Warbler	1997		Special concern
Elaphe vulpina	Eastern Fox Snake	1939		No legal status
Heterodon platirhinos	Eastern Hognose Snake	1989		No legal status
Pituophis catenifer	Gopher Snake	1932		Special concern
Ammodramus henslowii	Henslow's Sparrow	1999		Endangered
Etheostoma microperca	Least Darter	1962		Special concern
Lanius ludovicianus	Loggerhead Shrike	1994		Threatened
Lampropeltis triangulum	Milk Snake	1997		No legal status
Polyodon spathula	Paddlefish	2004		Threatened
Notropis anogenus	Pugnose Shiner	1948		Special concern
Buteo lineatus	Red-shouldered Hawk	1997		Special concern
Grus canadensis	Sandhill Crane	2001		No legal status
Scaphirhynchus platorynchus	Shovelnose Sturgeon	1982		No legal status
Apalone mutica	Smooth Softshell	1998		Special concern
Cygnus buccinator	Trumpeter Swan	2002		Threatened
Reithrodontomys megalotis	Western Harvest Mouse	1954		No legal status
Invertebrate Animals				
Ligumia recta	Black Sandshell	1989		Special concern
Ellipsaria lineolata	Butterfly	2003		Threatened
Fusconaia ebena	Ebonyshell	1989		Endangered
Elliptio crassidens	Elephant-ear	1999		Endangered
Alasmidonta marginata	Elktoe	1997		Threatened

Scientific Name	Common Name	Last Observed	Federal Status	State Status
Lasmigona costata	Fluted-shell	1989		Special concern
Obovaria olivaria	Hickorynut	2003		Special concern
Lampsilis higginsi	Higgins Eye	1989	Endangered	Endangered
Quadrula metanevra	Monkeyface	2003		Threatened
Actinonaias ligamentina	Mucket	1989		Threatened
Tritogonia verrucosa	Pistolgrip	2003		Threatened
Cyclonaias tuberculata	Purple Wartyback	2006		Threatened
Speyeria idalia	Regal Fritillary	1975		Special concern
Arcidens confragosus	Rock Pocketbook	2006		Endangered
Pleurobema coccineum	Round Pigtoe	1999		Threatened
Cicindela macra macra	Sandy Stream Tiger Beetle	2001		Special concern
Plethobasus cyphyus	Sheepnose	2003	Candidate	Endangered
Elliptio dilatata	Spike	2006		Special concern
Quadrula nodulata	Wartyback	2000		Endangered
Megalonaias nervosa	Washboard	2006		Threatened
Quadrula fragosa	Winged Mapleleaf	2003	Endangered	Endangered
Lampsilis teres	Yellow Sandshell	1989		Endangered
Vascular Plants				
Panax quinquefolius	American Ginseng	1995		Special concern
Eleocharis rostellata	Beaked Spike-rush	1992		Threatened
Desmodium cuspidatum var. longifolium	Big Tick-trefoil	1946		Special concern
Alopecurus carolinianus	Carolina Foxtail	2004		No legal status
Erythronium propullans	Dwarf Trout Lily	2007	Endangered	Endangered
Myosotis verna	Forget-me-not	2004		No legal status
Rhynchospora capillacea	Hair-like Beak-rush	1990		Threatened
Polygonum arifolium	Halberd-leaved Tearthumb	2005		No legal status
Cirsium hillii	Hill's Thistle	1951		Special concern
Gymnocladus dioica	Kentucky Coffee-tree	1997		No legal status
Besseya bullii	Kitten-tails	1979		Threatened
Triglochin palustris	Marsh Arrow-grass	1995		No legal status
Myosurus minimus	Mousetail	2004		No legal status
Botrychium campestre	Prairie Moonwort	2004		Special concern
Eryngium yuccifolium	Rattlesnake-master	1997		Special concern
Oenothera rhombipetala	Rhombic-petaled Evening Primrose	1995		Special concern
Talinum rugospermum	Rough-seeded Fameflower	2004		Endangered
Cypripedium candidum	Small White Lady's-slipper	1995		Special concern
Arabis laevigata	Smooth Rock-cress	2000		No legal status
Carex sterilis	Sterile Sedge	1995		Threatened

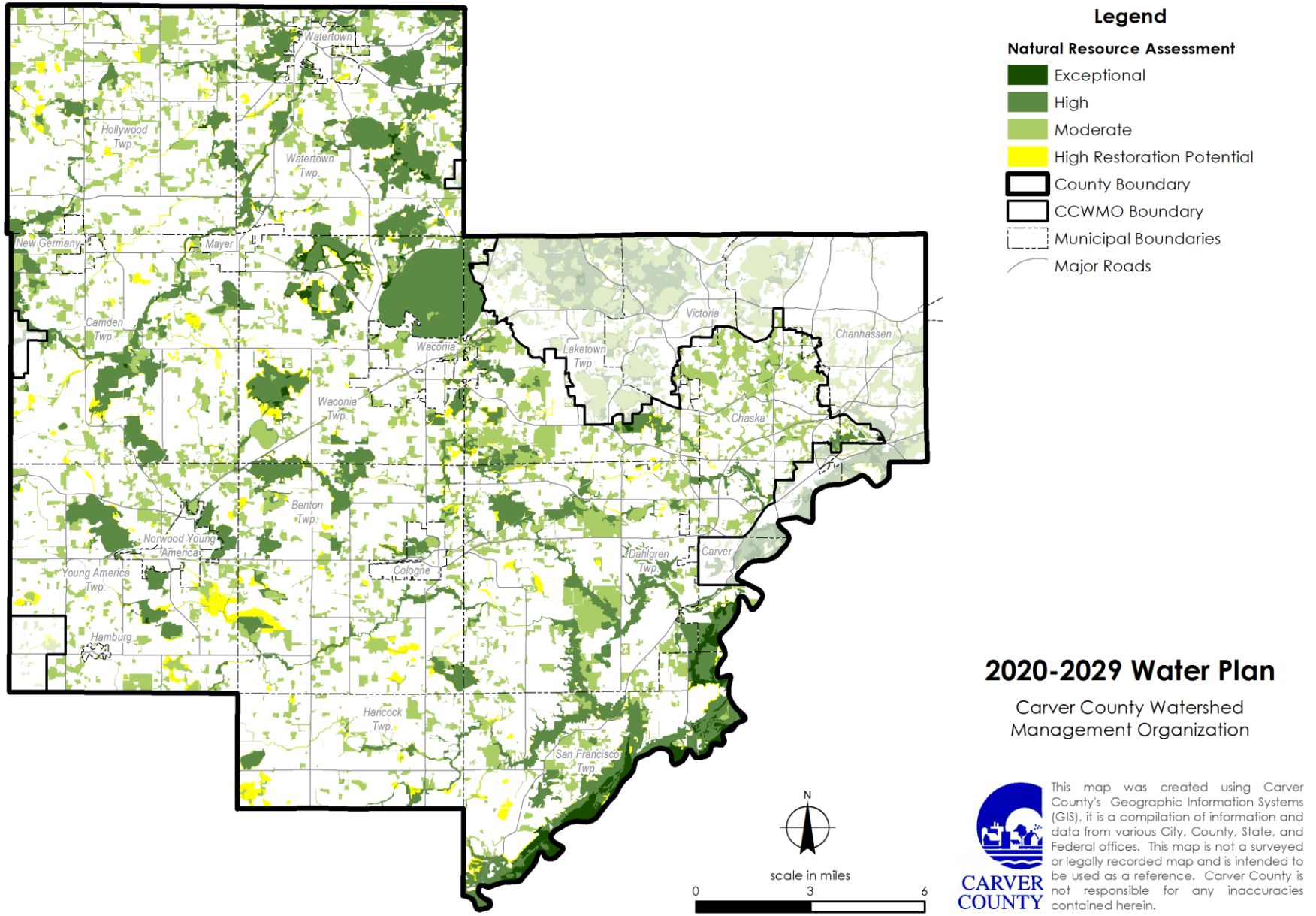
Scientific Name	Common Name	Last Observed	Federal Status	State Status
Cladium mariscoides	Twig-rush	1992		Special concern
Valeriana edulis ssp. ciliata	Valerian	1992		Threatened
Bacopa rotundifolia	Water-hyssop	2004		Special concern
Baptisia alba	White Wild Indigo	1996		Special concern
Scleria verticillata	Whorled Nut-rush	1990		Threatened
Eleocharis wolfii	Wolf's Spike-rush	2004		Endangered

2.3.3. Natural Resource Assessment

In 2007, Carver County completed an assessment of natural resources within the county (Figure 2-10). The network of natural areas acts as "green infrastructure" and provides benefits to both people and wildlife. It includes a variety of natural systems, such as, lakes, streams, and drainageways; areas of groundwater recharge; areas of natural vegetation; habitat for rare animal and plant communities; etc.

Using the county-wide land cover inventory database, the county developed a GIS tool to prioritize green infrastructure and identify areas where natural functions and systems should be preserved or restored. The Natural Resource Assessment component of the tool analyzes existing natural areas and establishes a natural area ranking system from which land use decisions can be made. The Restoration Assessment component evaluates and prioritizes restoration opportunities.

Figure 2-10. Natural Resource and Restoration Assessment (Source: Carver County, 2008)



2.3.4. Fish & Wildlife Habitat

Table 2-7 summarizes the fish species observed in recent surveys by the MN DNR of lakes within the CCWMO. There are several lakes with quality fisheries in the CCWMO. Lake Waconia, Courthouse Lake, Eagle Lake, and several other lakes are stocked by the MN DNR (Table 2-8). Lake Bavaria is primarily managed for largemouth bass and secondarily for bluegill and black crappie. Courthouse Lake is a designated trout lake and is stocked regularly with brook trout, brown trout, lake trout, and rainbow trout. Reitz Lake has a reputation as a quality bass fishery. The sport fish communities in Reitz Lake, Miller Lake, and Lake Waconia consist of black crappie, bluegill, largemouth bass, northern pike, and yellow perch. Lakes within the CCWMO that are not listed have not been surveyed by the MN DNR.

Table 2-7. Fish Species Observed in MN DNR Surveys of CCWMO Lakes (1991-2016)

Lake Name	DNR ID	Year Surveyed	Bigmouth Buffalo	Black Bullhead	Black Crappie	Bluegill	Brown Bullhead	Channel Catfish	Common Carp	Emerald Shiner	Fathead Minnow	Freshwater Drum	Green Sunfish	Golden Shiner	Hybrid Sunfish	Largemouth Bass	Muskellunge	Northern Pike	Pumpkinseed	Smallmouth Bass	Tiger Muskellunge	Walleye	White Crappie	White Sucker	Yellow Bullhead	Yellow Perch
Aue [1]	10002800	1991		✓					✓				✓	✓												✓
Bavaria [2]	10001900	2013		✓	✓	✓			✓					✓	✓	✓		✓	✓					✓	✓	✓
Burandt [2]	10008400	2006	✓	✓	✓	✓			✓			✓		✓		✓		✓	✓			✓			✓	✓
Courthouse [1]	10000500	1994		✓	✓	✓			✓	✓				✓	✓			✓				✓	✓	✓	✓	
Eagle [2]	10012100	2008		✓	✓	✓	✓							✓	✓	✓		✓	✓		✓	✓				✓
Firemen's Clayhole [1]	10022600	2010			✓	✓			✓						✓	✓		✓	✓					✓	✓	
Goose [1]	10008900	1995		✓	✓	✓	✓	✓	✓					✓	✓	✓		✓	✓							✓
Hydes [2]	10008800	2013		✓	✓	✓			✓							✓		✓							✓	✓
Maria [1]	10005800	2001		✓							✓															
Miller [2]	10002900	2006	✓	✓	✓	✓			✓			✓				✓		✓						✓	✓	✓
Oak [2]	10009300	2011		✓	✓	✓	✓		✓						✓	✓		✓				✓	✓		✓	✓
Reitz [2]	10005200	2016		✓	✓	✓			✓			✓				✓		✓	✓					✓	✓	✓
Susan [2]	10001300	2014		✓	✓	✓	✓								✓	✓		✓	✓			✓		✓	✓	✓
Swede [2]	10009500	2011		✓	✓	✓			✓				✓	✓	✓											✓
Waconia [2]	10005900	2016		✓	✓	✓	✓		✓			✓		✓	✓	✓	✓	✓	✓			✓			✓	✓

(1) No fish consumption guidelines are available for this lake.
(2) Fish consumption guidelines are available for this lake. For more information see the "Fish Consumption Advice" pages at the MN Department of Health
Source: MN DNR.

Table 2-8. Fish Species Stocked in CCWMO Lakes (2010-2017)

Lake Name	Fish Species Stocked
Benton	Black Crappie, Bluegill, Largemouth Bass
Courthouse	Brook Trout, Brown Trout, Rainbow Trout
Eagle	Bluegill, Largemouth Bass, Walleye
Firemen's Clayhole	Bluegill, Largemouth Bass, Pumpkinseed
Goose	Black Crappie, Northern Pike
Hydes	Bluegill, Walleye
Riverpointe Pond	Bluegill, Channel Catfish
Waconia	Muskellunge, Walleye

Source: MN DNR.

2.4. HUMAN ENVIRONMENT

2.4.1. Existing and Planned Land Use

Figure 2-11 and Figure 2-12 show the 2016 existing and planned land use data for the CCWMO. Table 2-9 summarizes the amount of each type of land use. In 2016, the land use of CCWMO was dominated by agricultural land uses. Residential, commercial, and industrial land uses are clustered within cities, although residences associated with farms are scattered throughout the watershed.

Table 2-9. Summary of 2016 Land Use and Planned Land Use in the CCWMO[1] (2018).

2016 Land Use Categories	2016 (Acres)	2016 % of CCWMO	Planned Land Use Categories	Planned (Acres)	Planned % of CCWMO
Agricultural	127,640.32	62.0%	Agricultural	129455.87	62.9%
Airport	35.68	0.0%			
Extractive	332.33	0.2%			
Farmstead	3,271.87	1.6%			
Golf Course	880.22	0.4%			
Industrial and Utility	1,083.96	0.5%	Industrial and Utility	1492.57	0.7%
Institutional	1,167.21	0.6%	Institutional	1699.15	0.8%
Major Highway	1,092.71	0.5%	Major Highway	1031.96	0.5%
			Railway	534.45	0.3%
Manufactured Housing Parks	137.20	0.1%			
Mixed Use Commercial	22.62	0.0%	Mixed Use	233.58	0.1%
Mixed Use Industrial	19.03	0.0%			
Mixed Use Residential	63.41	0.0%			
			Multi-Optional Development	3138.87	1.5%
Multifamily Residential	191.51	0.1%	Multfamily Residential	2780.47	1.4%
Office	112.61	0.1%			
Open Water	9,204.72	4.5%	Open Water	9142.08	4.4%
Park, Recreational, or Preserve	6,067.79	2.9%	Park, Recreational, or Preserve	4985.79	2.4%
			Open Space or Restrictive Use	24346.10	11.8%
Retail and Other Commercial	586.87	0.3%	Retail and Other Commercial	1678.12	0.8%
Seasonal/Vacation	3.12	0.0%			
Single Family Attached	420.90	0.2%	Single Family Residential	22835.56	11.1%
Single Family Detached	10,290.63	5.0%			
			Rural and Large-Lot Residential	2559.42	1.2%
Undeveloped	43,295.99	21.0%			

Source: Metropolitan Council (2016 Land Use Data, Planned Land Use Data).
Notes:
1 The table summarizes land use only within the CCWMO boundary. For a summary of land use for the entire county, please see the Carver County 2040 Comprehensive Plan.

Figure 2-11. 2016 Generalized Land Use (Source: Metropolitan Council, 2017)

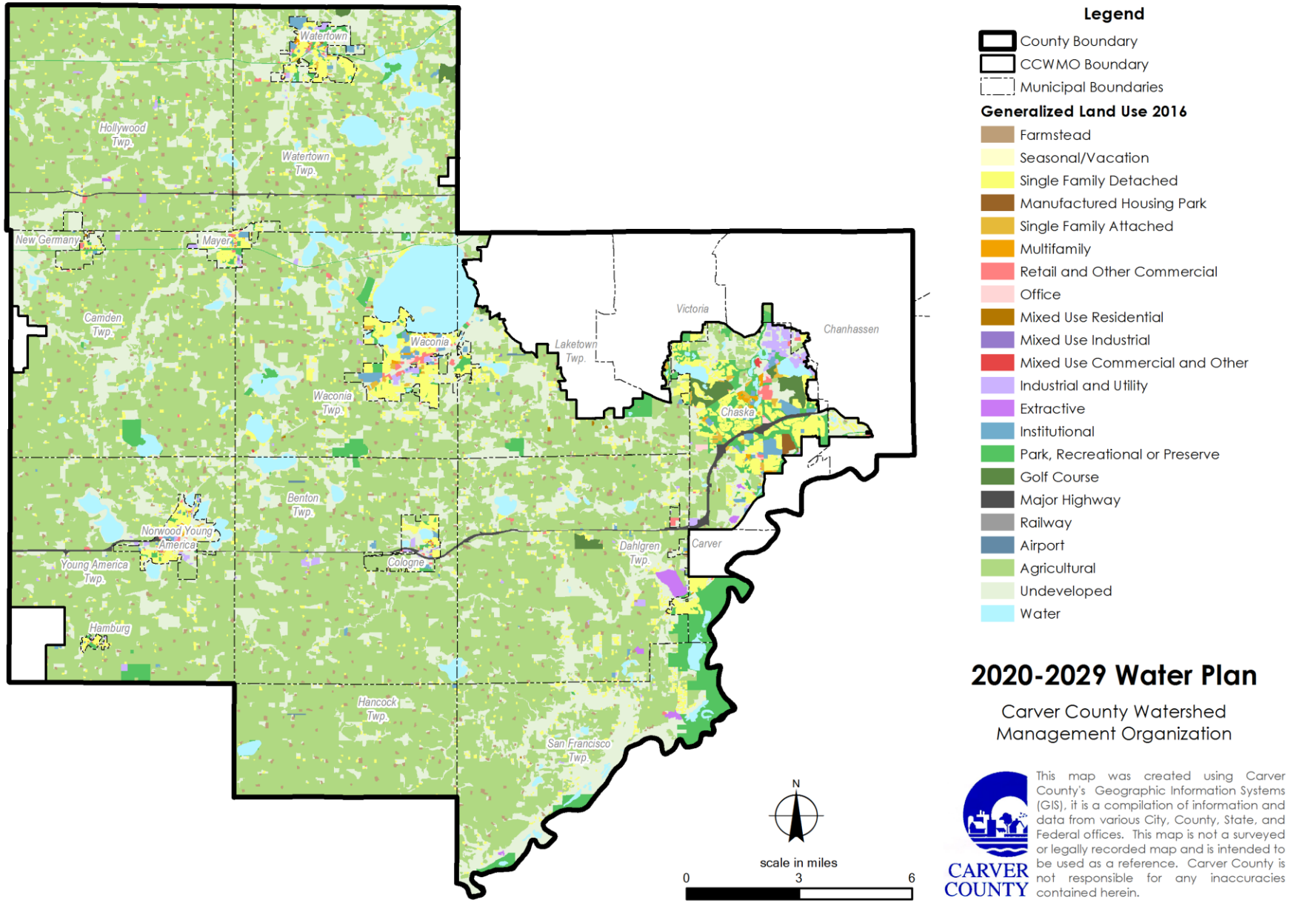
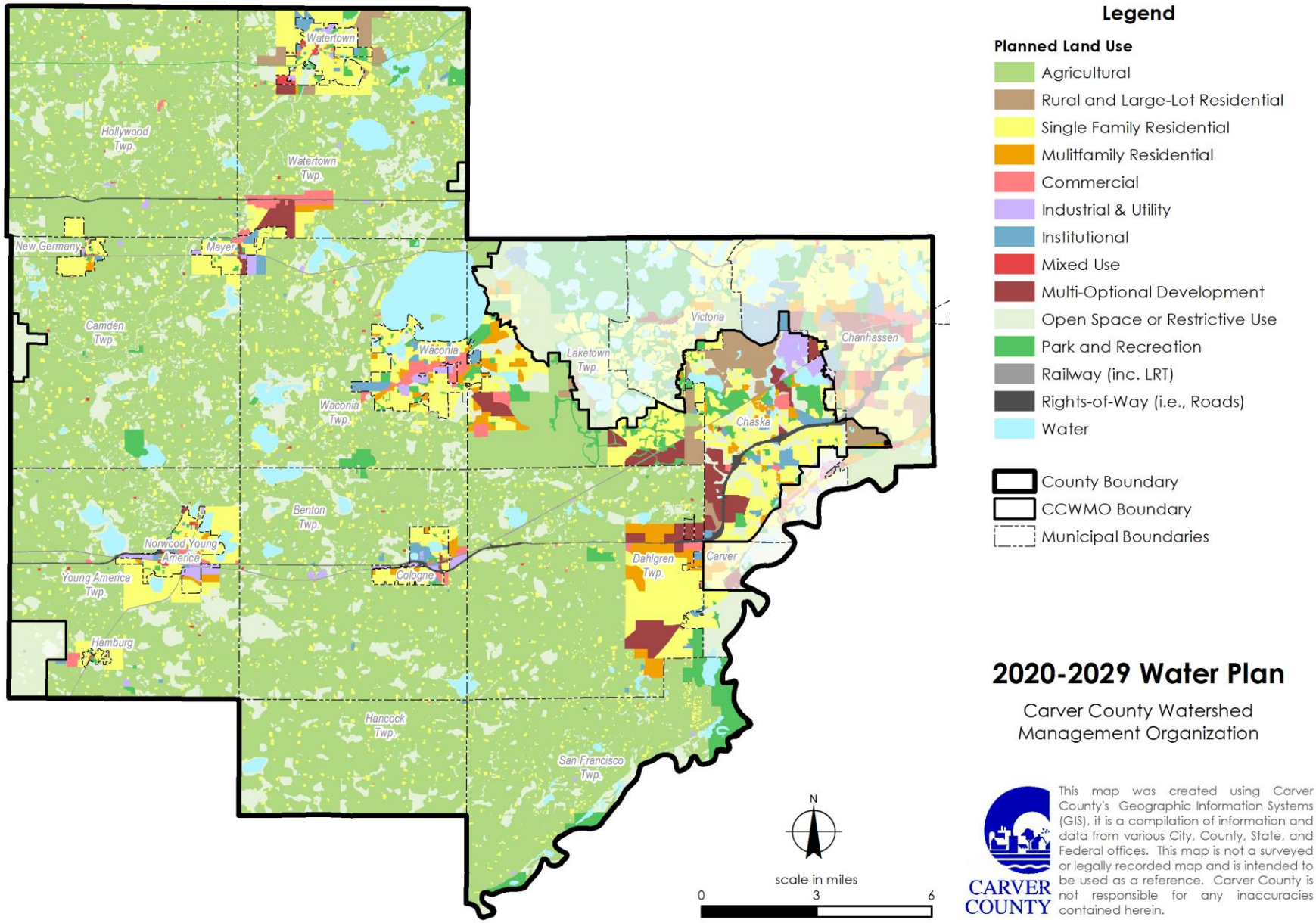


Figure 2-12. Generalized Planned Land Use (Source: Metropolitan Council, 2018)



2.4.2. Metropolitan Urban Service Area (MUSA)

The portion of the CCWMO located within the Metropolitan Urban Service Area is shown in Figure 2-13. The Metropolitan Urban Service Area is the area in which the Metropolitan Council ensures that regional services and facilities, such as sewers and major highways, are provided or planned. Figure 2-13 also shows the locations of existing sanitary sewer interceptors, and existing highways.

2.4.3. Open Space & Recreation

Figure 2-14 shows the locations of parks, boat landings, and existing and proposed regional trails. At least a portion of the following federal, state, or regional parks or dedicated open spaces are found with the CCWMO:

- Assumption Wildlife Management Area (MN DNR)
- Baylor Regional Park (Carver County Parks)
- Carver Highlands Wildlife Management Area (MN DNR)
- Lake Waconia Park (Carver County Parks)
- Minnesota Valley National Wildlife Refuge (US FWS)
- Patterson Wildlife Management Area (MN DNR)
- Perbix Waterfowl Production Area (US FWS)
- Schneewind Wildlife Management Area (MN DNR)
- Minnesota Valley State Recreation Area (MN DNR)
- University of Minnesota Landscape Arboretum (University of Minnesota)

Cities own and operate parks within the watershed that are not reflected on this list.

Figure 2-13. Metropolitan Services (Source: Metropolitan Council)

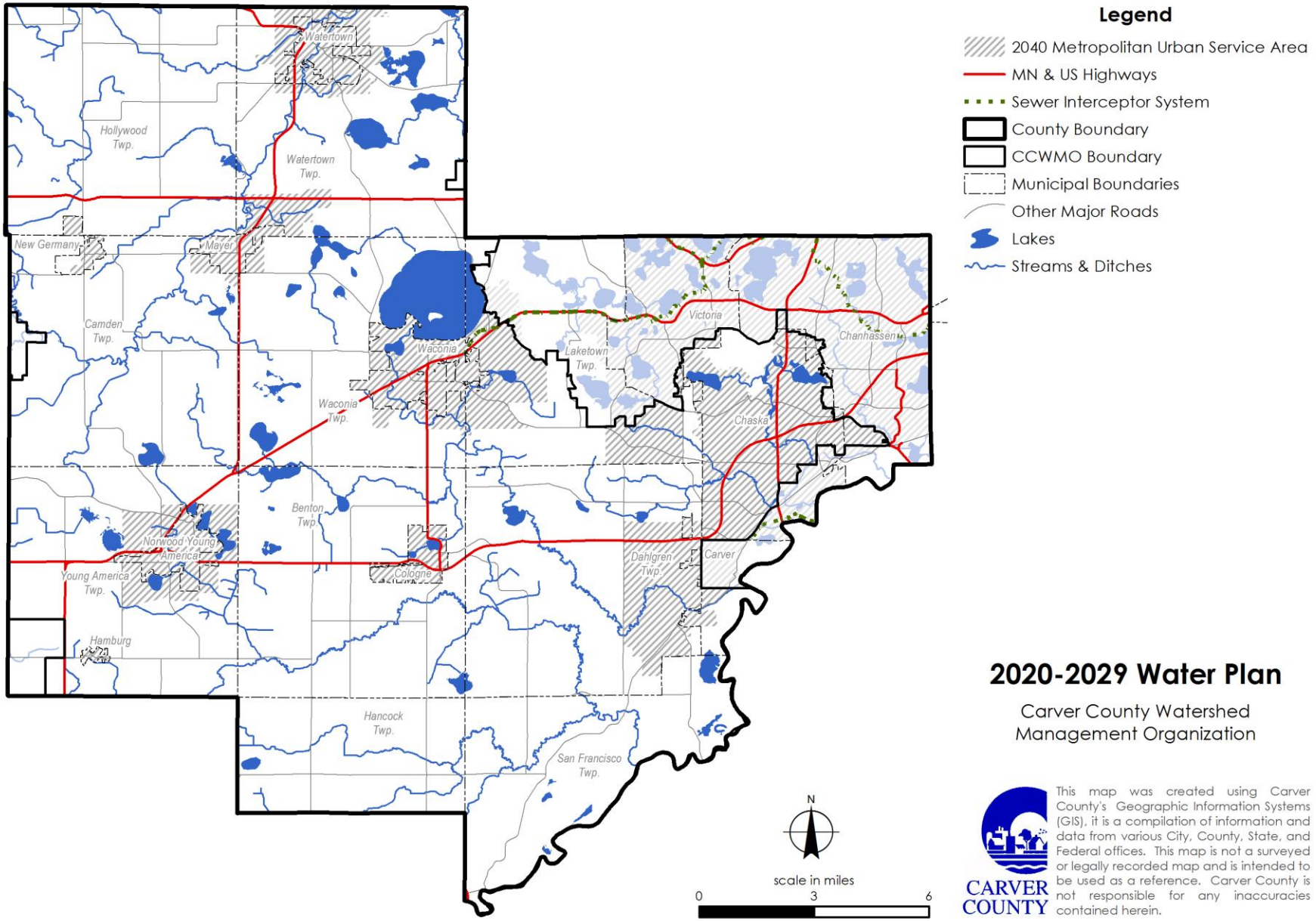
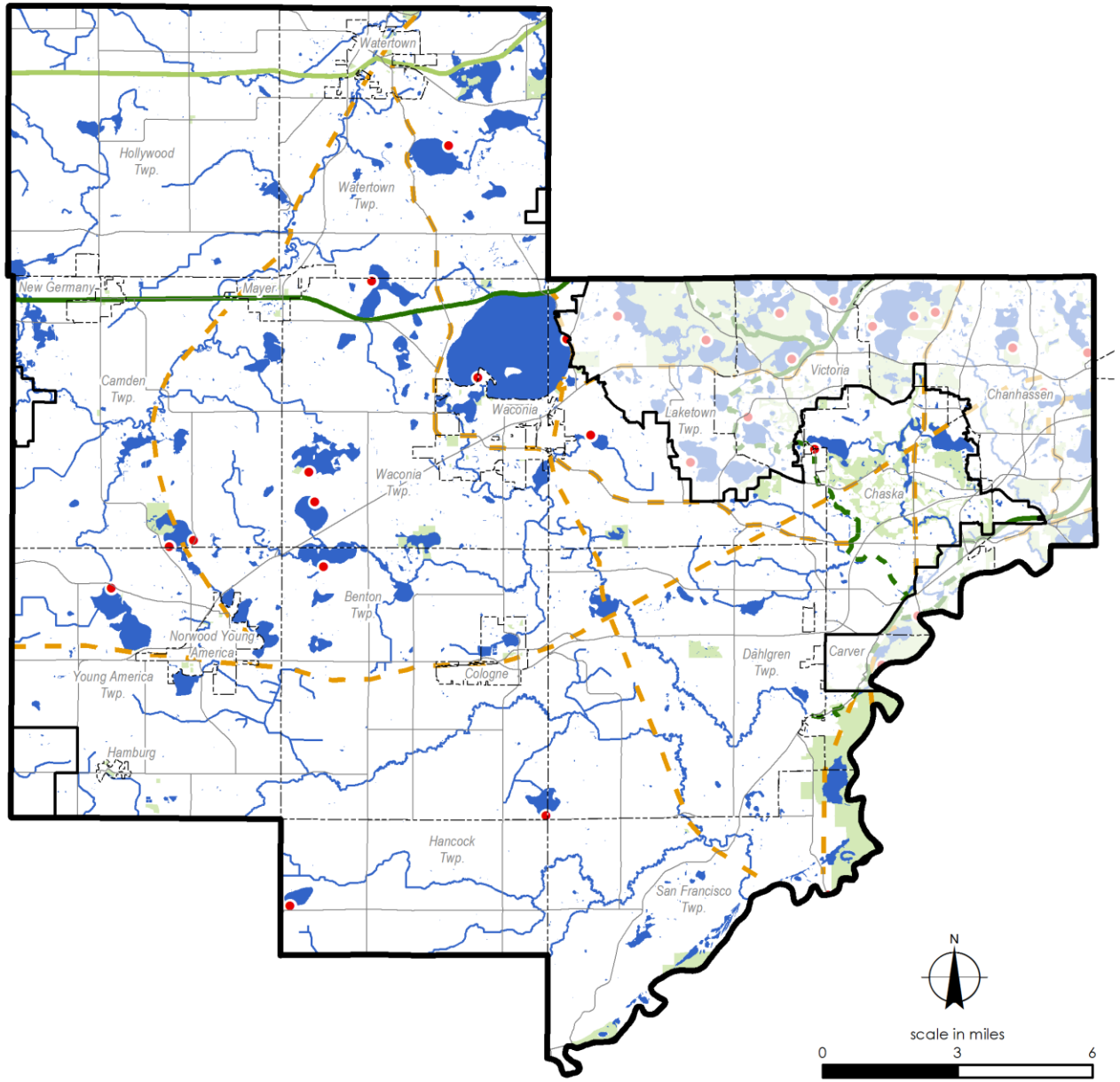


Figure 2-14. Existing and Proposed Open Space & Recreational Features (Source: MN DNR)



Legend

- Boat Landings
- Parks
- State Trail
- Existing Regional Trail
- Planned Regional Trail
- Regional Trail Search Corridors
- County Boundary
- CCWMO Boundary
- Municipal Boundaries
- Major Roads
- Lakes
- Streams & Ditches

2020-2029 Water Plan

Carver County Watershed Management Organization

CARVER COUNTY

This map was created using Carver County's Geographic Information Systems (GIS), it is a compilation of information and data from various City, County, State, and Federal offices. This map is not a surveyed or legally recorded map and is intended to be used as a reference. Carver County is not responsible for any inaccuracies contained herein.

2.4.4. Potential Environmental Hazards

Figure 2-15 shows the location of some of the potential environmental hazards within the CCWMO. Additional potential hazards like non-point source pollution, urban and agricultural runoff, as well as nutrients in surface water and groundwater may exist and are not reflected on this map. The discussion below describes some of the potential hazards within the watershed:

Known and potential sources of soil and ground water contamination

The MPCA maintains a statewide database of sites with known or potential soil and groundwater contamination, including existing and abandoned landfills, dumps, and hazardous waste sites. The database includes the following:

- properties that have already been investigated and cleaned up
- properties currently enrolled in MPCA cleanup programs
- properties that were suspected to be contaminated, but after investigation turned out to be clean

All three types of properties are shown on Figure 2-15. These sites may contain harmful chemicals or toxic substances that have the potential to contaminate water resources.

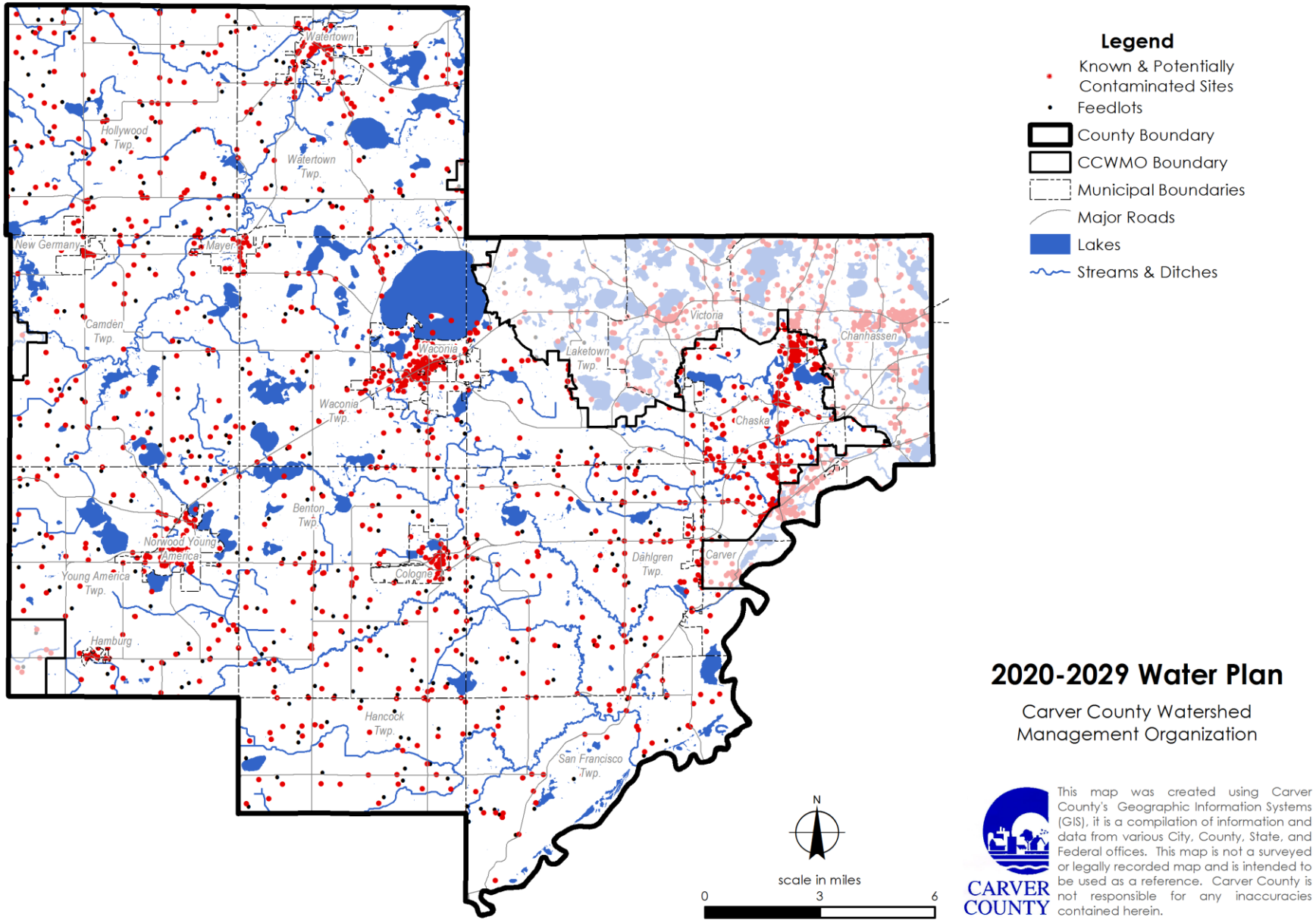
Feedlots

Feedlots are defined by the MPCA as "a lot or building or combination of lots and buildings intended for the confined feeding, breeding, raising, or holding of animals and specifically designed as a confinement area in which manure may accumulate, or where the concentration of animals is such that a vegetative cover cannot be maintained within the enclosure. …open lots used for the feeding and rearing of poultry (poultry ranges) shall be considered to be animal feedlots" (MN Administrative Rules 7020). Because of the high density of animals and the corresponding lack of vegetation, these areas are likely to produce runoff contaminated with animal waste, sediment, and other pollutants. Feedlots registered by Carver County within the CCWMO are shown on Figure 2-15.

Wells

Wells can act as a conduit for surficial and subsurface contaminants to enter the groundwater. Some wells no longer in use may have been properly sealed, but those still in operation and those abandoned but not sealed may provide a pathway for contamination of surficial or deeper aquifers. The Minnesota Department of Health maintains a databse of well location and information. For potential security concerns, wells are not shown on Figure 2-15.

Figure 2-15. Potential Environmental Hazards (Sources: MPCA – contaminated sites, Carver County - feedlots)



2.5. HYDROLOGIC SYSTEMS

2.5.1. Surface Water Resources

Watershed Boundaries

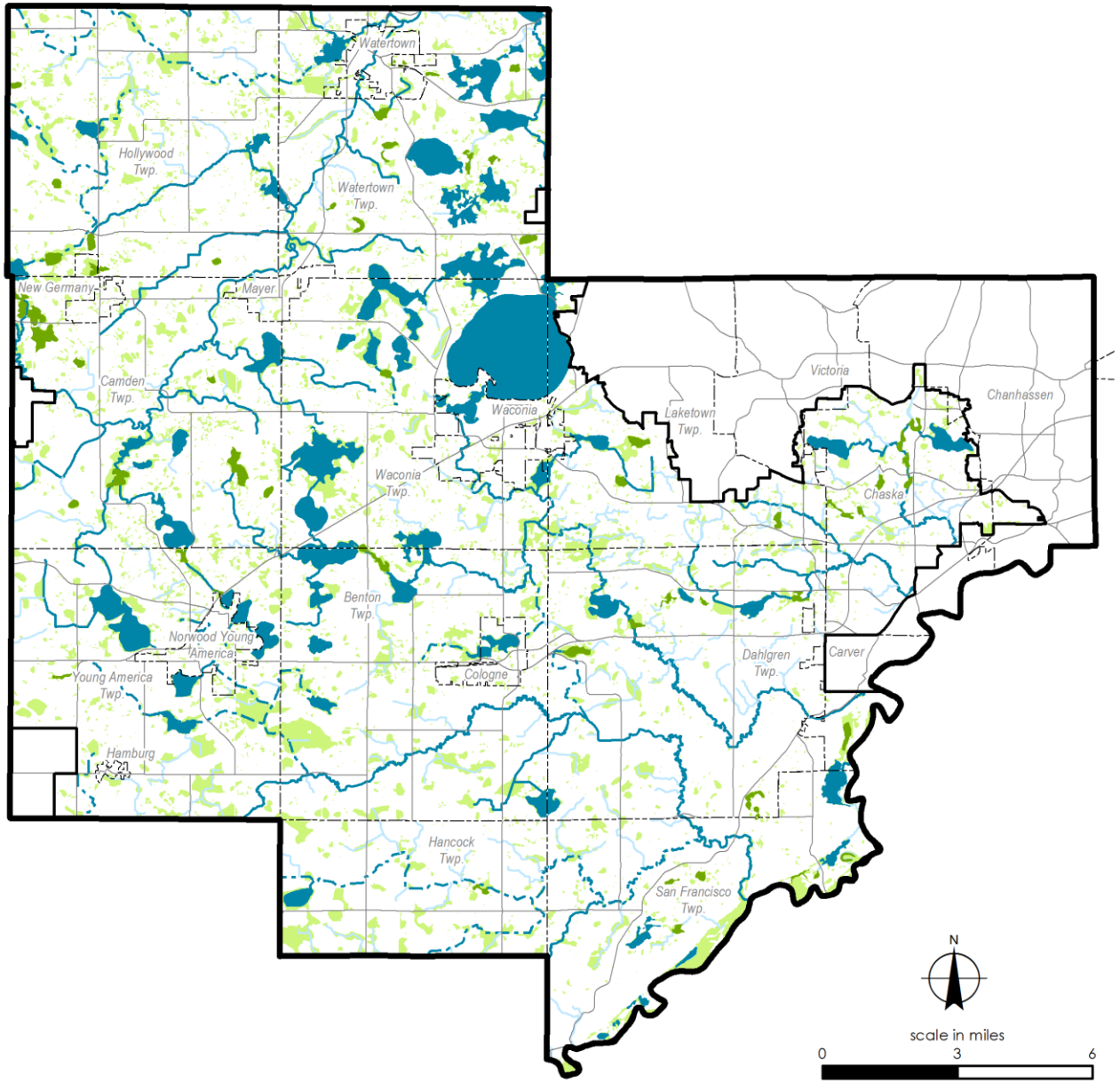
Surface water in Carver County drains to both the Mississippi River via the Crow River and the Minnesota River. The CCWMO is divided into six major subwatersheds (Figure 1-1):

- Crow River Subwatershed (drains to Crow River)
- Pioneer Creek (drains to Pioneer Creek/Crow River)
- Bevens Creek Subwatershed (drains to the Minnesota River)
- Carver Creek Subwatershed (drains to the Minnesota River)
- East Chaska Creek Subwatershed (drains to the Minnesota River)
- West Chaska Creek Subwatershed (drains to the Minnesota River)

Public Waters

Public waters are those lakes, wetlands, and watercourses over which MN DNR Waters has regulatory jurisdiction. The definition of public waters is laid out in Minnesota Statute 103G.005, Subdivision 15. The MN DNR's Public Waters Inventory identifies 128 basins within the CCWMO (Figure 2-16), including 64 protected waters and 64 protected waters wetlands. In addition, 39 protected watercourses (streams and ditches) within the CCWMO are included in the Inventory (Figure 2-16).

Figure 2-16. Public Waters (Source: MN DNR)



Legend

Public Waters Inventory

- PWI Lakes
- PWI Wetlands
- PWI Watercourses
- PWI Altered/Ditched Watercourses
- Watercourses
- Other Open Water
- Other Wetlands
- County Boundary
- CCWMO Boundary
- Municipal Boundaries

2020-2029 Water Plan

Carver County Watershed Management Organization

CARVER COUNTY

This map was created using Carver County's Geographic Information Systems (GIS), it is a compilation of information and data from various City, County, State, and Federal offices. This map is not a surveyed or legally recorded map and is intended to be used as a reference. Carver County is not responsible for any inaccuracies contained herein.

Streams

There are seven major streams and rivers in the CCWMO (Figure 1-1):

- The Crow River
- Pioneer Creek
- Bevens Creek (includes the tributary Silver Creek)
- Carver Creek
- East Chaska Creek
- West Chaska Creek
- The Minnesota River

Approximately 22 miles of the South Fork Crow River flow through the northwestern portion of the watershed. Only 15 percent of the Crow River Watershed lies in Carver County. The South Fork Crow River originates in Little Kandiyohi Lake in south-central Kandiyohi County and flows generally eastward through Meeker, McLeod, Carver, and Wright Counties. The south and north forks converge at Rockford to form the Crow River, which flows for about 30 miles northeast along the border of Wright and Hennepin Counties. The Crow River eventually discharges to the Mississippi River near Dayton.

Pioneer Creek is located in the northern part of the watershed. Pioneer Creek flows out of Swede Lake and through Mud and Rice Lakes before leaving the CCWMO. Pioneer Creek discharges into the Crow River midway between Watertown and Delano.

Bevens Creek is located in the southeastern and south-central portion of Carver County. Silver Creek, a major tributary to Bevens Creek, converges with Bevens Creek in San Francisco Township. Approximately 30 percent of the watershed is located outside Carver County in Sibley and McLeod Counties. The Bevens Creek subwatershed has approximately 117 miles of streams. Bevens Creek discharges to the Minnesota River in San Francisco Township.

Carver Creek is located in the central portion of the watershed. There are approximately 89 miles of streams within the Carver Creek subwatershed. Carver Creek discharges to the Minnesota River in Carver. The discharge point is located within the Lower Minnesota River Watershed District.

East Chaska Creek is located in the eastern portion of the watershed. There are approximately 17.4 miles of streams within the East Chaska Creek subwatershed. East Chaska Creek discharges to the Minnesota River in Chaska. The discharge point is located within the Lower Minnesota River Watershed District.

West Chaska Creek is located in the eastern portion of the watershed. There are approximately 27 miles of streams within the West Chaska Creek subwatershed. West Chaska Creek discharges to the Minnesota River in Chaska. The discharge point is located within the Lower Minnesota River Watershed District.

The Minnesota River forms the southeastern boundary of the watershed; more than half of Carver County drains to the Minnesota River. The Bevens Creek Watershed drains to the Minnesota River within the boundaries of the CCWMO. Carver Creek, West Chaska Creek, and East Chaska Creek discharge to the Minnesota River within the Lower Minnesota River Watershed District.

In 2000 the County completed a study of the ravine and bluff areas of the Minnesota River (Carver County Planning Study of Ravine and Bluff Areas along the Minnesota River, 2000). The study included the ravine systems of Carver Creek, West Chaska Creek, Bevens Creek, Silver Creek, Spring Creek and Timber Creek. The study included an inventory of stream and streambank conditions, an inventory of natural communities, and a geomorphologic assessment of channel stability, susceptibility to erosion, and potential water quality concerns.

In 2002 the County completed a study of the Crow River and its tributaries (Carver County Crow River Corridor Planning Study, 2002). The study included an inventory of stream and streambank conditions, an inventory of natural communities along the river, a biologic assessment of macroinvertebrate communities, and a geomorphologic assessment of channel stability. The study identified the need for corridors, floodplain management, and enhanced wildlife habitat. Specific projects to help meet these needs were also identified.

Public Ditches

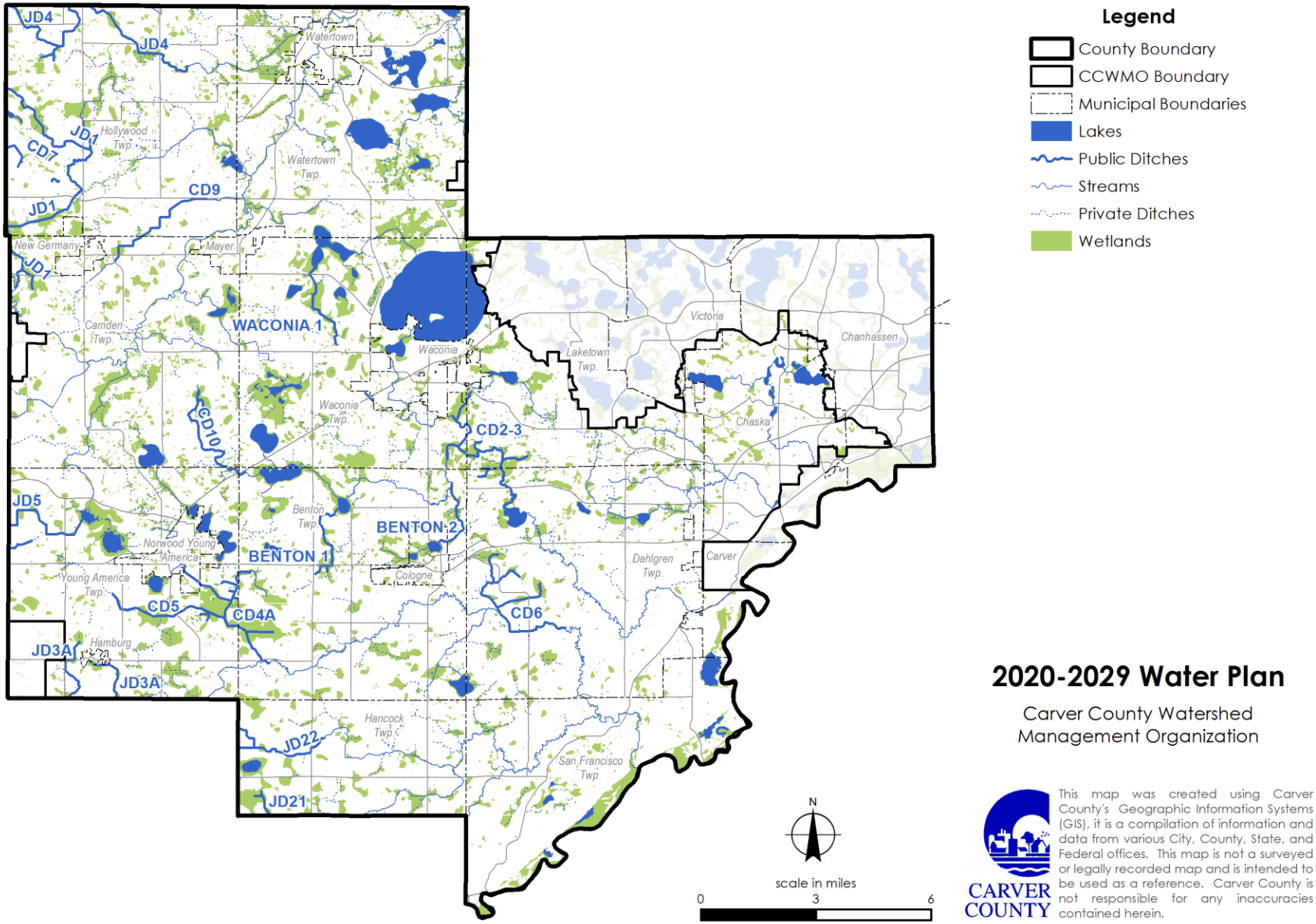
There are 15 public ditch systems in the CCWMO (Table 2-10, Figure 2-17):

Table 2-10. Public Ditch Systems

Ditch System Name	Subwatershed	Approximate System Length (miles)
County Ditch 2-3	Carver Creek	9
County Ditch 4A	Bevens Creek	8
County Ditch 5	Bevens Creek	3
County Ditch 6	Bevens Creek	7
County Ditch 7	Crow River	2
County Ditch 9	Crow River	3
County Ditch 10	Carver Creek	4
Benton Township Ditch 1	Carver Creek	3
Benton Township Ditch 2	Carver Creek	2
Waconia Township Ditch 1	Carver Creek	2
Joint Ditch 1	Crow River	13
Joint Ditch 3A	Bevens Creek	8
Joint Ditch 4	Crow River	9
Joint Ditch 5	Crow River	4
Joint Ditch 21	Bevens Creek	1
Joint Ditch 22	Bevens Creek	5

Source: Carver County.

Figure 2-17. Public Ditches (Source: Carver County)



Wetlands

In 1986, the Emergency Wetlands Resources Act mandated that the U.S. Fish and Wildlife Service complete the National Wetland Inventory (NWI); the mapping and digitizing of the Nation's wetlands. To date, all of the land area in the continental United States has been inventoried for wetlands. To create the NWI, the USFWS uses remote sensing in conjunction with field verification to map wetlands. Wetlands in Minnesota were first mapped by the U.S. Fish and Wildlife Service in the early 1980s and made digitally available in the 1990s. In 2010, the MN DNR began updating the NWI in Minnesota. The updated NWI for Carver County was completed in 2013. While the NWI does not include all wetland basins and cannot be used as an accurate delineation of a wetland's boundary, the information is useful in wetland permitting, environmental review, and watershed management. Figure 2-18 shows wetland basins included in the NWI within the CCWMO.

In 2003 the CCWMO completed a Wetland Function and Value Assessment (WFVA) using the GIS Based Wetland Assessment Methodology for Urban Watershed Planning by Douglas Snyder (1997). The analysis was completed for each of the major watershed areas within the CCWMO (Carver, Bevens, Crow, Pioneer, and East and West Chaska) as well as portions of Sibley County and portions of the Lower Minnesota River Watershed District. Wetland basins smaller than one acre were removed from the final ranking due to concerns over problems with implementation. Wetlands within the CCWMO were evaluated for seven functions:

- Surface Water Runoff
- Flood Water Storage
- Shoreline Stabilization
- Water Quality
- Habitat
- Landscape and Wetland Characteristics
- Aesthetics

The seven functions were combined into two primary values; stormwater/water quality value and natural resource value. The stormwater management value combines the surface water runoff, flood water storage, shoreline stabilization, and water quality functions. The natural resource value integrates the habitat and aesthetics functions. A final ranking for each wetland was created by combining the stormwater/water quality ranking and the natural resource ranking. Additional information on the methodogy can be found in Appendix A.

Figure 2-19 shows the final wetland functional value ranking of high, medium or low. Ranking results will be used for three major purposes: 1) to apply to the buffer standards established in the Carver County Water Resource Management Ordinance, 2) to use in stormwater and natural resource planning for growth and redevelopment areas, 3) to help prioritize wetland restoration opportunities.

With such a large reduction of pre-settlement wetlands in most areas of Carver County, wetland restoration is a valuable tool that will help replace lost wetland functions that serve the watershed including water quality treatment, flood water storage, shoreline protection, recreation, aesthetics, and ecosystem diversity. In addition to replacing lost wetland functions, restoration is an important tool in achieving TMDL goals for specific water bodies that are affected by wetlands. As part of the WFVA, an assessment was completed to determine the functional values that drained wetlands would have if they were restored.

The potentially restorable wetlands evaluated included wetland basins that have been drained or filled due to urban or agriculture land use. The functional values of these potentially restorable wetlands were assessed as undrained (pre-settlement) wetlands. The ranking therefore indicates the potential functional value of the wetland if it were restored. Figure 2-20 shows the results of this ranking.

Figure 2-18. National Wetland Inventory (Source: MN DNR, 2013)

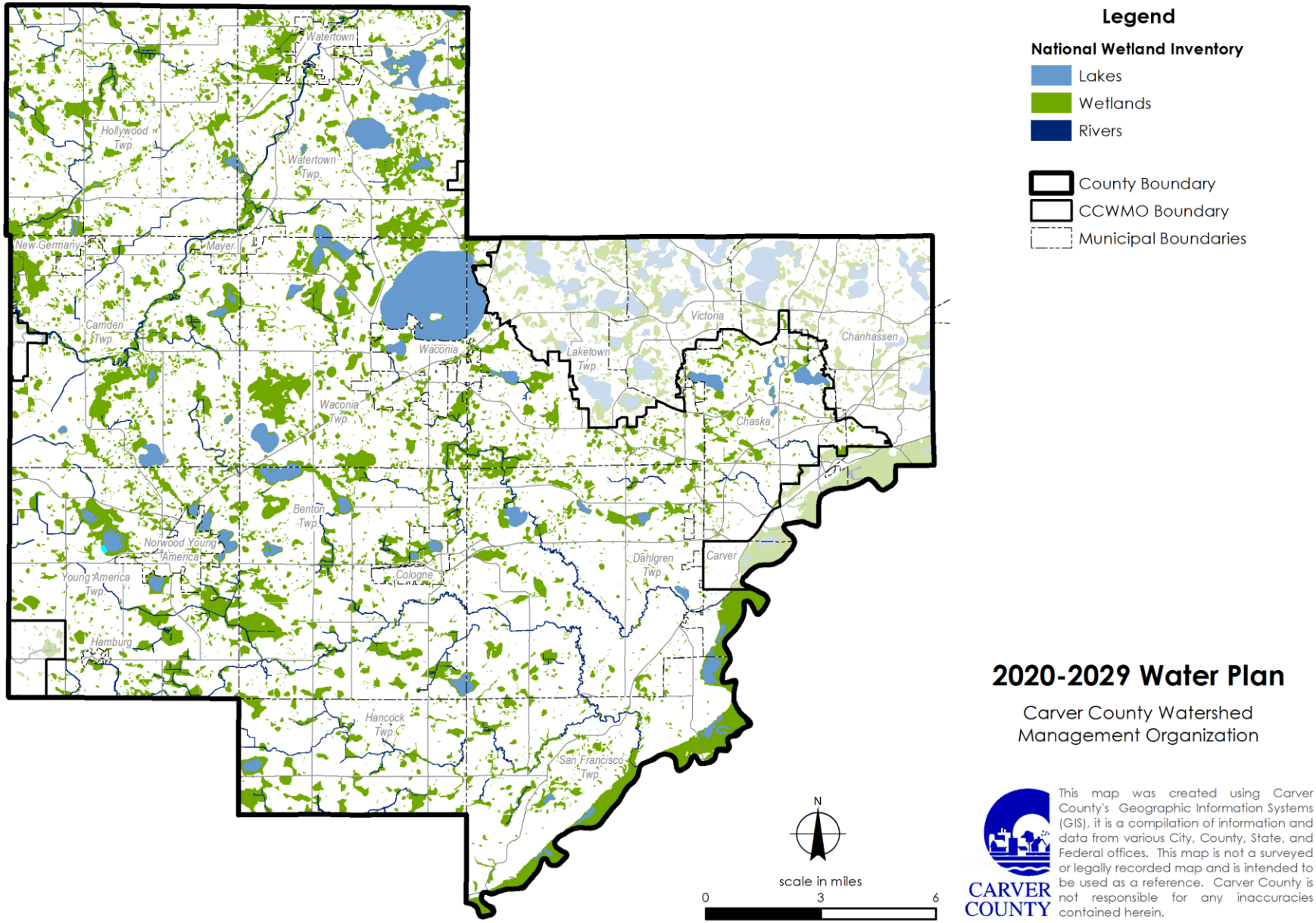


Figure 2-19. Wetland Function and Value Assessment (Source: Carver County, 2003)

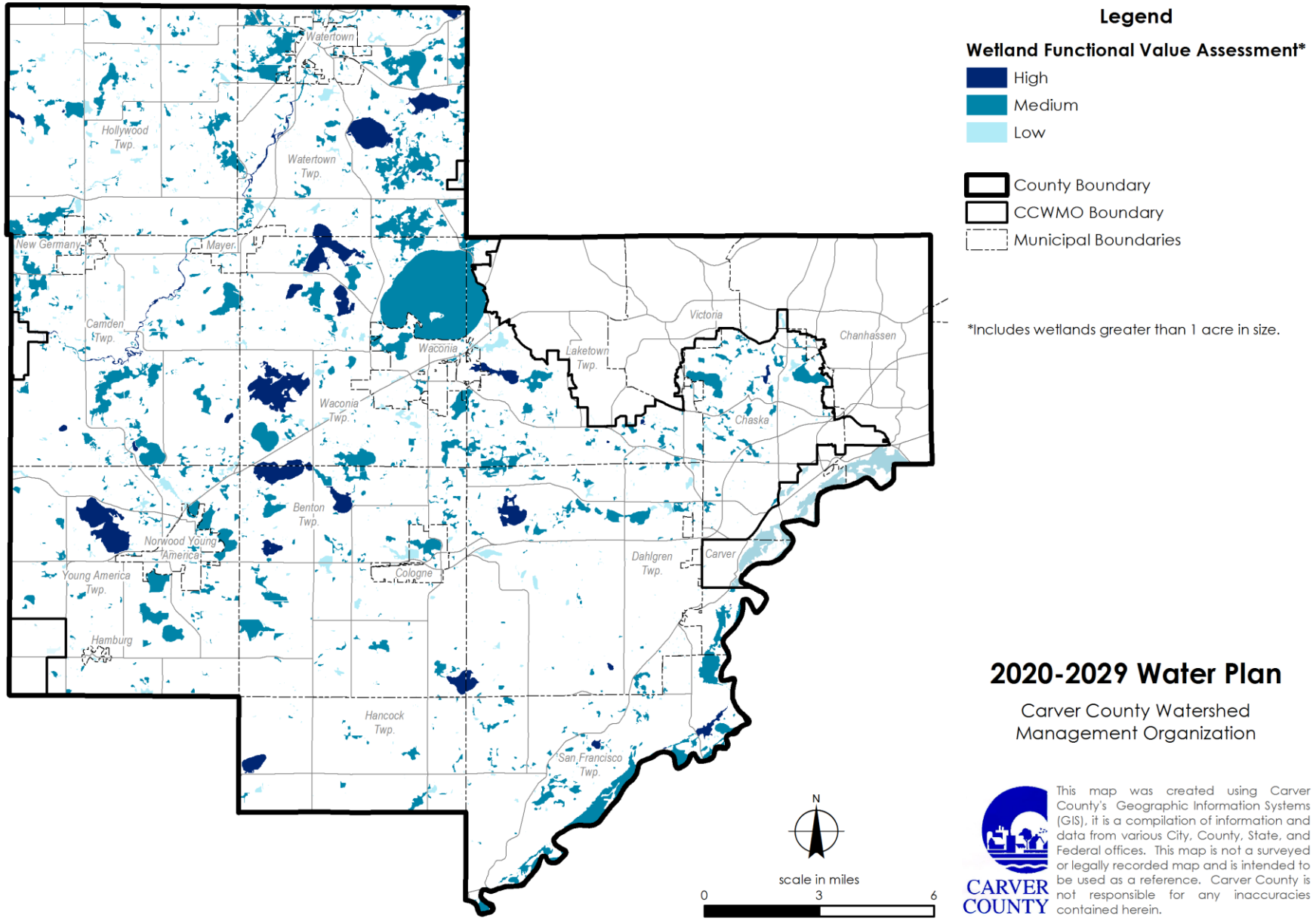
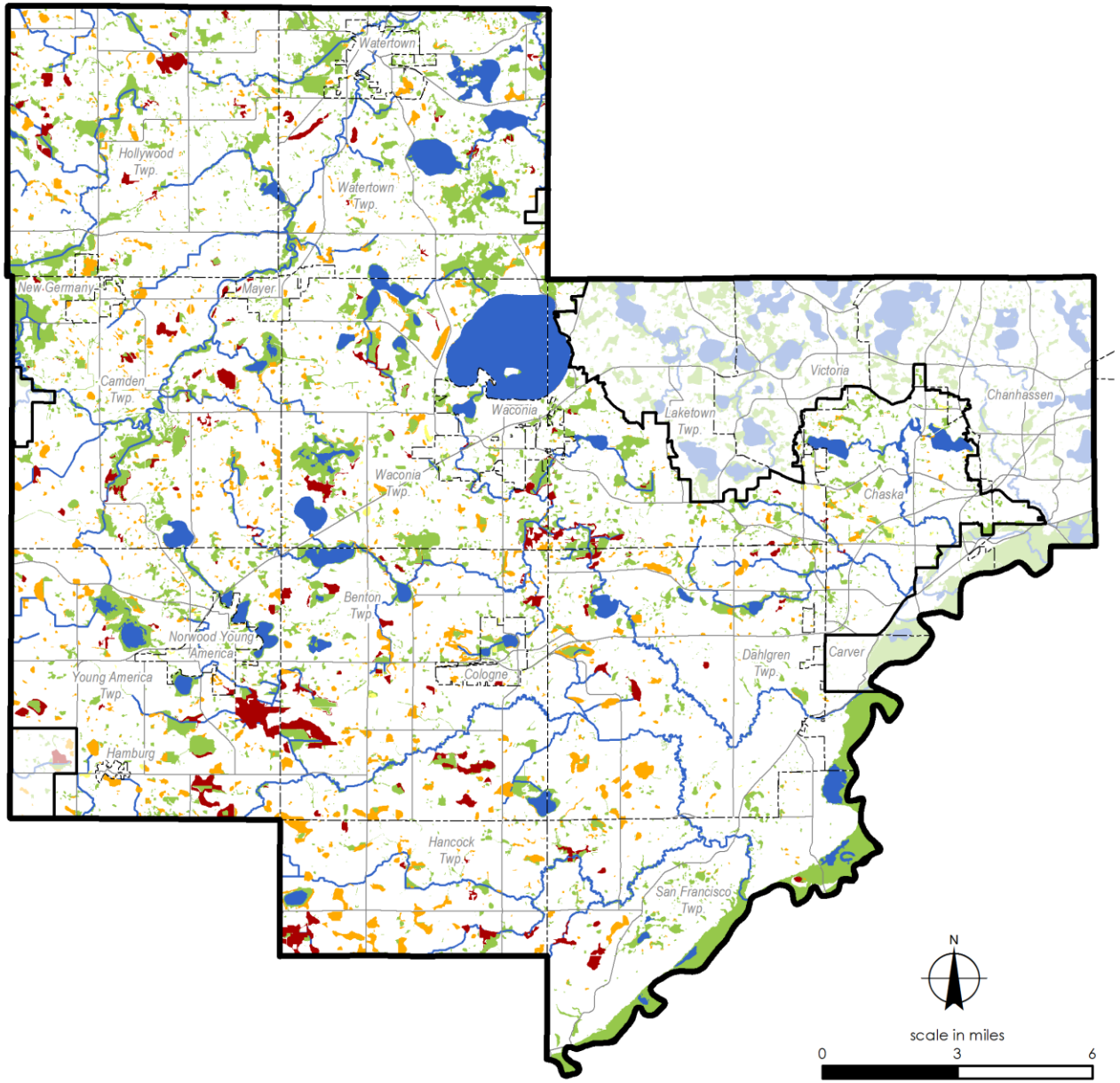


Figure 2-20. Wetland Restoration Assessment (Source: Carver County, 2003)



Legend

Wetland Restoration Assessment

- High
- Medium
- Low

- County Boundary
- CCWMO Boundary
- Municipal Boundaries
- Major Roads
- Lakes
- Streams & Ditches
- Other Wetlands (NWI)

2020-2029 Water Plan

Carver County Watershed Management Organization

CARVER COUNTY

This map was created using Carver County's Geographic Information Systems (GIS), it is a compilation of information and data from various City, County, State, and Federal offices. This map is not a surveyed or legally recorded map and is intended to be used as a reference. Carver County is not responsible for any inaccuracies contained herein.

Floodplains

State law defines the floodplain as the area covered by a flood that has a one percent chance of occurring each year, also known as the base flood or the 100-year flood. The floodplain is divided into two parts: the floodway and flood fringe. The floodway includes the river channel and those portions of the adjoining floodplain that are needed to discharge the 100-year flood. The flood fringe is the portion of the 100-year floodplain outside the floodway. The area between the limits of the base flood and the 0.2 percent annual chance flood is known as the 500-year floodplain. Figure 2-21 shows the extent of the mapped 100-year and 500-year floodplain within the CCWMO.

The MN DNR oversees the administration of the state Floodplain Management Program (see MN Statutes 103F.101 -103F.165 and MN Rules 6120.5000 - 6120.6200). The purpose of the program is to promote and ensure sound development in floodplain areas in order to protect the health and safety of the public, minimize loss of life, and reduce economic losses caused by flood damages. The MN DNR has developed minimum standards for floodplain management and requires all local floodplain regulations to be compliant with these minimum standards.

A Flood Insurance Study (FIS) contains information regarding flooding in a community and is developed in conjunction with the Flood Insurance Rate Map (FIRM). FIS texts can be viewed on-line at the FEMA Map Service Center (http://msc.fema.gov).

Water Quality Data & Monitoring Sites

Carver County's Water Quality Monitoring Program monitors and collects data on water quality in many of the lakes and streams in the watershed. Each year about 22 lakes are routinely monitored and an additional 15 lakes may be monitored on an as needed basis (Figure 2-22).

Water quality samples are collected at 16 locations on streams throughout the watershed. Samples are typically analyzed for total phosphorus, nitrite and nitrate, total suspended solids, and fecal coliform. Data for both lakes and streams is compiled into an annual report. Additional information on water quality monitoring and results can be found on the Carver County website here: https://www.co.carver.mn.us/departments/public-services/planning-water-management/water-management/water-quality.

Tables 2-11 and 2-12 summarize lake and stream water quality trends for 2009-2018. A Kendall's Tau correlation test was used to calculate each water quality analyte versus time. An upward arrow denotes a significant increase in concentration or transparency. A downward arrow denotes a significant decrease in concentration or transparency. Arrow color denotes improvement (green) or deterioration (red). Asterisks within the table denote if the state standard has been met (*) or has not been met (**) in 2018. Lake water quality data from 2018 can be found on the Carver County website here: https://carver.maps.arcgis.com/apps/MapSeries/index.html?appid=d0b77c11f4d648abb628a55a9d7c053d

Figure 2-21. Floodplains (Source: FEMA)

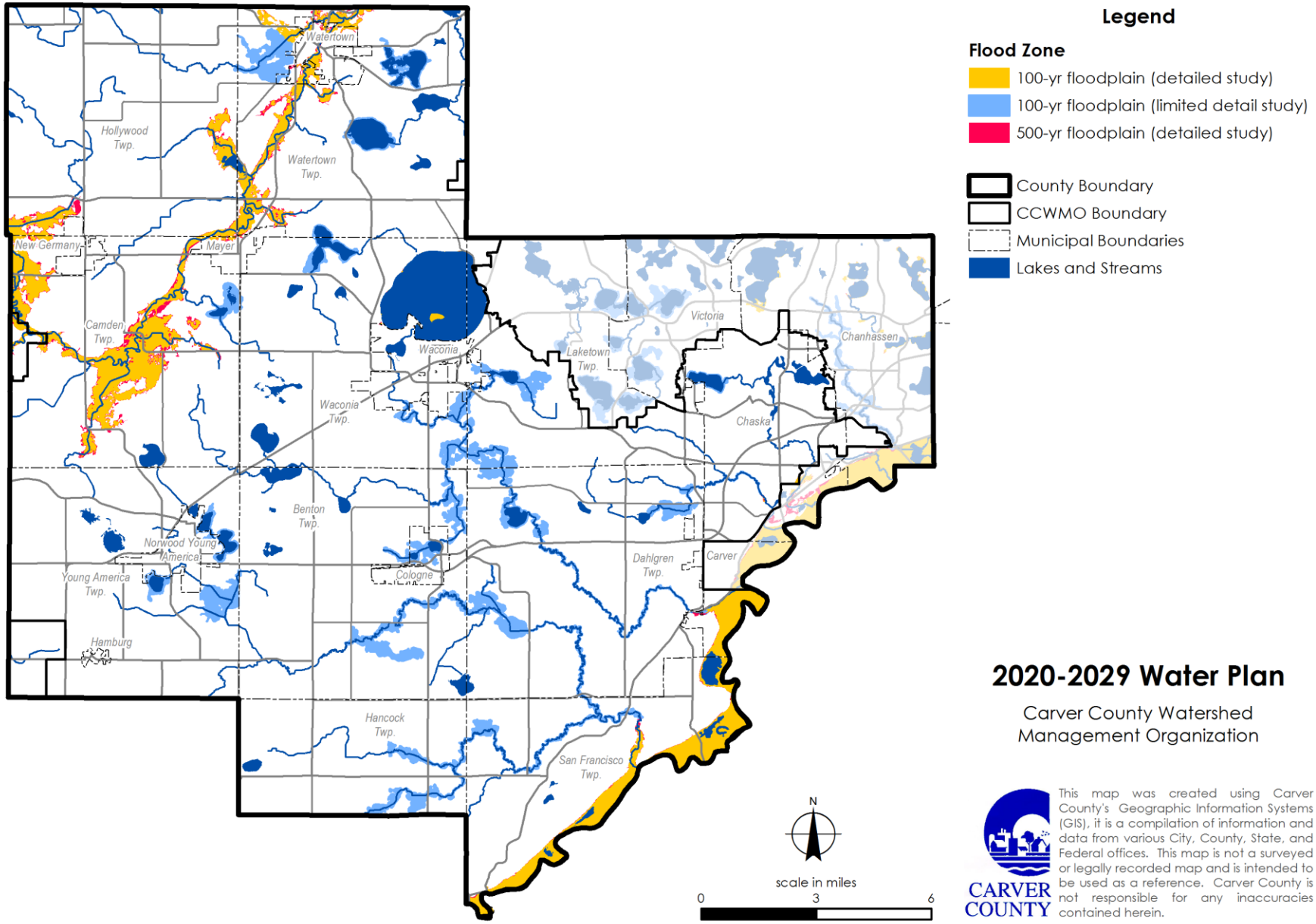


Table 2-11. Ten Year Lake Water Quality Trends (2009-2018)

Lake	Watershed	Total Phosphorus	Total Kjeldahl Nitrogen	Transparency	Chlorophyll-a
Benton	Carver Creek	↑**	No Trend**	No Trend**	↑**
Burandt	Carver Creek	No Trend*	No Trend*	No Trend*	No Trend**
Goose	Carver Creek	No Trend**	↓**	No Trend**	No Trend**
Hydes	Carver Creek	↓**	No Trend**	No Trend**	No Trend**
Miller	Carver Creek	↓**	↓**	No Trend**	No Trend**
Reitz	Carver Creek	No Trend**	No Trend**	No Trend**	No Trend**
Waconia	Carver Creek	No Trend*	↓*	No Trend*	No Trend*
Eagle	Crow River, S. Fork	No Trend**	No Trend**	No Trend**	↑**
Bavaria	East Chaska Creek	↑**	↑**	↓**	↑**
Brickyard[LMRWD]	East Chaska Creek	No Trend*	↓*	No Trend*	No Trend*
Courthouse[LMRWD]	East Chaska Creek	↓*	↓*	No Trend*	No Trend*
Grace	East Chaska Creek	No Trend**	↓**	No Trend**	No Trend**
Hazeltine	East Chaska Creek	↓**	No Trend**	No Trend**	No Trend**
Jonathan	East Chaska Creek	↓**	↓**	No Trend**	No Trend**
McKnight	East Chaska Creek	No Trend**	↓**	No Trend**	No Trend**
Swede	Pioneer Sarah	↓**	↓**	↑**	↓**
Fireman's[LMRWD]	West Chaska Creek	No Trend*	No Trend*	↓*	↑*

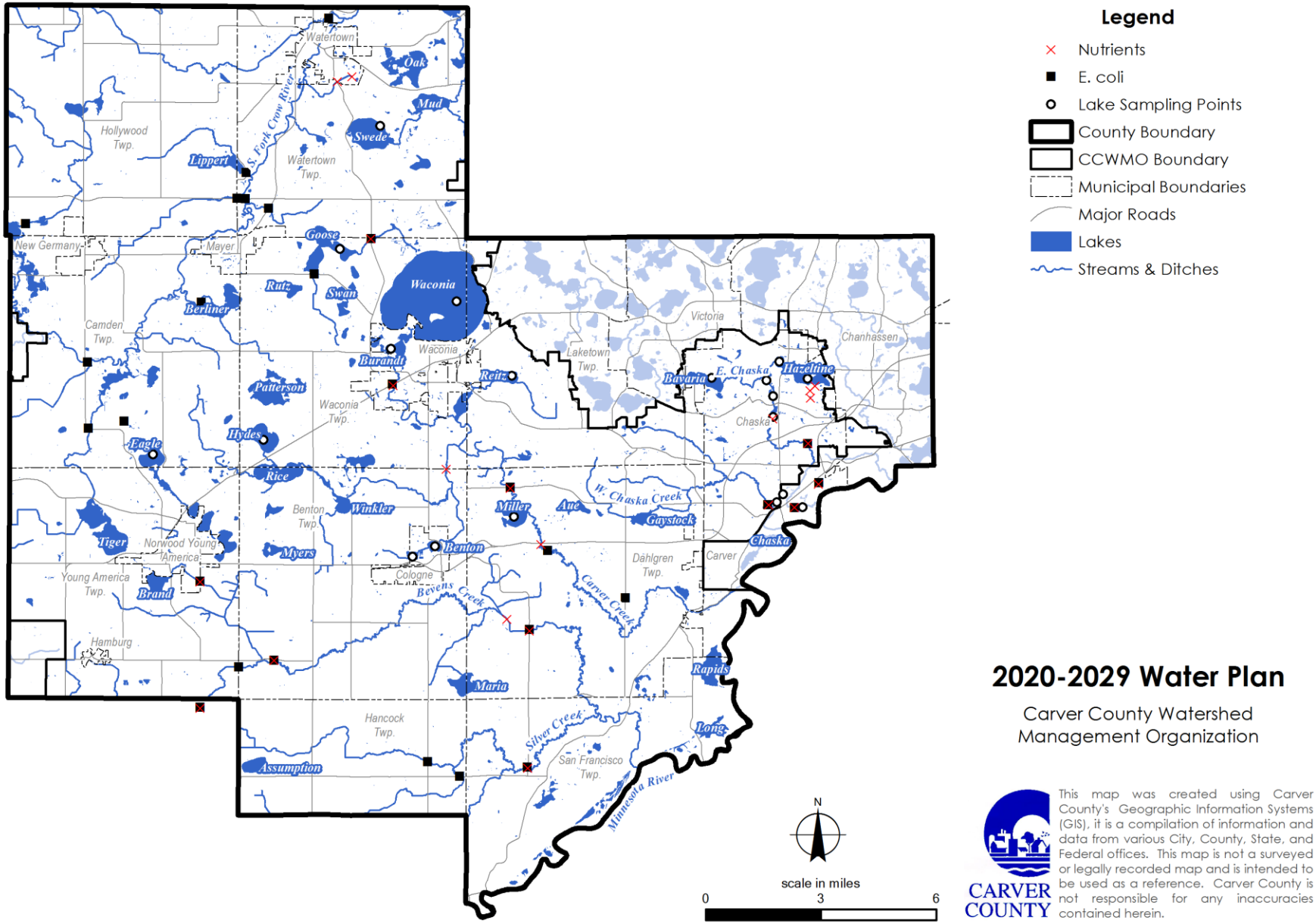
[LMRWD] Lakes within the Lower Minnesota River Watershed District
* Lake met the state standard in 2018
** Lake that did not meet the state standard in 2018
↑ denotes deterioration in trend
↓ denotes improvement in trend

Table 2-12. Ten Year Stream Water Quality Trends (2009-2018)

Stream	Stream Site	Total Phosphorus	Inorganic Nitrogen	Total Suspended Solids	*E. coli*
Bevens Creek	BE 9	No Trend**	No Trend**	No Trend**	No Trend**
Bevens Creek	BE 21	No Trend**	No Trend**	No Trend*	↑**
Bevens Creek	Sibley	No Trend**	No Trend**	No Trend*	No Trend**
Bevens Creek	Tacoma	No Trend**	↑**	No Trend*	No Trend**
Carver Creek	Bent Creek	↓*	No Trend*	↓*	↓*
Carver Creek	CA 8.7	↓**	No Trend**	No Trend*	No Trend*
Carver Creek	CA 10.4	No Trend**	No Trend**	No Trend**	↑*
Carver Creek	CC 1	No Trend**	↓**	No Trend**	No Trend*
East Chaska Creek	EC 1	↑**	↓**	↑*	↑*
East Chaska Creek	EC 2	No Trend**	No Trend**	No Trend*	↑*
East Chaska Creek	EC 3	↓*	No Trend**	↓*	No Trend*
Silver Creek	SI 2	No Trend**	No Trend**	No Trend**	No Trend**
West Chaska Creek	CH 1.0	No Trend**	↓**	No Trend*	↑*

* Stream sites met the state standard
** Stream site did not meet the state standard
↑ denotes deterioration in trend
↓ denotes improvement in trend

Figure 2-22. Water Monitoring Locations (Source: Carver County, 2018)



Impaired Waters

The federal Clean Water Act (CWA) requires states to adopt water quality standards to protect the nation's waters. Water quality standards designate beneficial uses for each waterbody and establish criteria that must be met within the waterbody to maintain the water quality necessary to support its designated use(s). Section 303(d) of the CWA requires each state to identify and establish priority rankings for waters that do not meet the water quality standards. The list of impaired waters, or sometimes called the 303(d) list, is updated by the state approximately every two years.

For impaired waterbodies, the CWA requires the development of a total maximum daily load (TMDL) study. A TMDL is a threshold calculation of the amount of a pollutant that a waterbody can receive and still meet water quality standards. A TMDL study establishes the pollutant loading capacity within a waterbody and develops an allocation scheme amongst the various contributors, which include point sources, nonpoint sources and natural background levels, as well as a margin of safety. As a part of the allocation scheme, a waste load allocation (WLA) is developed to determine allowable pollutant loadings from individual point sources (including loads from storm sewer networks in MS4 communities), and a load allocation (LA) establishes allowable pollutant loadings from nonpoint sources and natural background levels in a waterbody.

Many waterbodies within the CCWMO are on the MPCA's Proposed 2018 303(d) list of impaired Waters (see Figure 2-23 for impaired lakes and Figure 2-24 for impaired streams). Table 2-13 lists the lakes with impaired waters within the CCWMO, the affected MPCA designated use, and the pollutant or stressor that is not meeting the MPCA water quality criteria. Table 2-14 lists the streams with impaired waters within the CCWMO, a description of the stream reach, the affected MPCA designated use and the pollutant or stressor that is not meeting the MPCA water quality criteria. The State of Minnesota has developed a State-wide Mercury TMDL that addresses lakes that are listed because of mercury in fish tissue. Carver County will not be conducting any additional Mercury TMDLs because of this.

Table 2-13. Impaired Lakes in the CCWMO (Source: MPCA, 2018)

Impaired Lake	DNR Lake ID	Affected Use[1]	Pollutant/Stressor		
			Mercury in Fish Tissue[2]	Nutrient Eutrophication[2]	Fish Bioassessment[2]
Bavaria Lake	10001900	AQC, AQL	2006		2018
Benton Lake	10006900	AQR		2002	
Burandt Lake	10008400	AQR		2004	
Eagle Lake	10012100	AQC, AQR	2006	2002	
Gaystock Lake	10003100	AQR		2004	
Goose Lake	10008900	AQR		2002	
Hazeltine Lake	10001400	AQR		2004	
Hydes Lake	10008800	AQC, AQR	2004	2002	
Lake Jonathan	10021700	AQR		2014	
Long Lake	10001600	AQR		2006	
Maria Lake	10005800	AQR		2004	
McKnight	10021600	AQR		2014	
Miller Lake	10002900	AQC, AQR	2012	2002	
Mud Lake	10009400	AQR		2016	
Oak Lake	10009300	AQC, AQR	2012	2004	
Reitz Lake	10005200	AQC, AQR	2008	2002	
Rutz Lake	10008000	AQR		2006	
Swede Lake	10009500	AQR		2004	
Unnamed Lake (Grace)	10021800	AQR		2006	
Waconia	10005900	AQC, AQL	1998		2018
Winkler Lake	10006600	AQR		2004	

Notes:
1: AQC = Aquatic Consumption
AQL = Aquatic Life
AQR = Aquatic Recreation
2: Table shows year lake was listed for a parameter. A lake remains impaired until monitoring data shows that the impairment has been addressed. For example, a lake first listed as impaired in 2004 is still considered impaired.

Table 2-14. Impaired Streams in the CCWMO (Source: MPCA, 2018)

Impaired Stream	Reach Number	Reach Description	Affected Use[1]	Pollutant/Stressor									
				Acetochlor[2]	Dissolved Oxygen[2]	E. coli[2]	Fecal coliform[2]	Fish Bioassessments[2]	Mercury in Fish Tissue[2]	Macroinvertebrate Bioassessments[2]	Nutrients[2]	Turbidity[2]
Crow River, South Fork	07010205-508	Buffalo Cr to N Fk Crow R	AQC,AQL,AQR				2006	2002	1998	2016	2016	2004
Crow River, South Fork	07010205-512	Otter Cr to Buffalo Cr	AQC						1998			
Judicial Ditch 1	07010205-572	Unnamed ditch to Unnamed cr	AQL,AQR			2016		2016		2016		
Unnamed creek	07010205-593	Mud Lk (10-0094-00) to Rice Lk (86-0032-00)	AQL,AQR		2016	2016						
Unnamed creek	07010205-618	Unnamed cr to Eagle Lk Outlet	AQL					2016		2016		
Unnamed creek	07010205-624	Unnamed cr to Lippert Lk	AQL					2016		2016		
Silver Creek (County Ditch 13)	07010205-641	Unnamed cr to S Fk Crow R	AQL					2016		2016		
County Ditch 9	07010205-648	Headwaters to -93.9053 44.9055	AQL					2016		2016		
Bevens Creek	07020012-514	Silver Cr to Minnesota R	AQL,AQR				2002	2018		2018		2002
Unnamed creek	07020012-526	Headwaters to Carver Cr	AQR				2006					
Unnamed ditch	07020012-527	Burandt Lk to Unnamed cr	AQL,AQR		2006		2006					
Unnamed creek	07020012-528	Headwaters to Minnesota R	AQR				2006					
Unnamed ditch	07020012-533	T115 R26W S14, north line to CD 4A	LRV			2018						
Unnamed ditch	07020012-565	T115 R25W S16, west line to Winkler Lk	LRV			2018						
Unnamed creek	07020012-568	Benton Lk to Carver Cr	AQR			2018						
Unnamed creek (East Creek)	07020012-581	Unnamed cr to Minnesota R	AQL,AQR				2006	2004		2018		2008
Unnamed creek	07020012-618	Goose Lk (10-0089-00) to Unnamed wetland	AQR				2008					
Unnamed creek (Lake Waconia Inlet)	07020012-619	Unnamed wetland to Lk Waconia	AQR				2008					
Unnamed creek	07020012-621	Reitz Lk to Unnamed cr	AQR			2018						
Judicial Ditch 22	07020012-629	Unnamed cr to Silver Cr	AQR				2006					
Chaska Creek	07020012-803	US Hwy 212 to Creek Rd	AQL					2018		2018		
Chaska Creek	07020012-804	Creek Rd to Minnesota R	AQR				2006					
Carver Creek	07020012-806	MN Hwy 284 to Minnesota R	AQL,AQR				2002	2018		2018	2016	2002
Silver Creek	07020012-813	-93.769 44.687 to Bevens Cr	AQL,AQR	2016			2002	2018		2018		2006

Impaired Stream	Reach Number	Reach Description	Affected Use[1]	Pollutant/Stressor									
				Acetochlor[2]	Dissolved Oxygen[2]	E. coli[2]	Fecal coliform[2]	Fish Bioassessments[2]	Mercury in Fish Tissue[2]	Macroinvertebrate Bioassessments[2]	Nutrients[2]	Turbidity[2]
Bevens Creek	07020012-843	Headwaters (Washington Lk 72-0017-00) to 154th St	AQL,AQR				2002			2018	2016	
Bevens Creek	07020012-844	154th St to -93.8615 44.7265	AQR				2002					
Bevens Creek	07020012-845	-93.8615 44.7265 to -93.8455 44.7327	AQL					2018				
Bevens Creek	07020012-846	-93.8455 44.7327 to Unnamed cr	AQL									2002
Bevens Creek	07020012-847	Unnamed cr to -93.7156 44.7438	AQL,AQR				2002					2002
Bevens Creek	07020012-848	-93.7156 44.7438 to Silver Cr	AQL,AQR				2002	2018		2018	2016	2002
Unnamed creek (Goose Lake Inlet)	07020012-907	to Goose Lk (10-0089-00)	AQR			2018						

Notes:

1: AQC = Aquatic consumption
AQL = Aquatic Life
AQR = Aquatic Recreation
LRV = Limited Resource Value

2: Table shows year stream was listed for a parameter. A stream remains impaired until monitoring data shows that the impairment has been addressed. For example, a stream first listed as impaired in 2004 is still considered impaired.

Figure 2-23. Impaired Lakes (Source: MPCA, 2018 | see Table 2-12 for additional information)

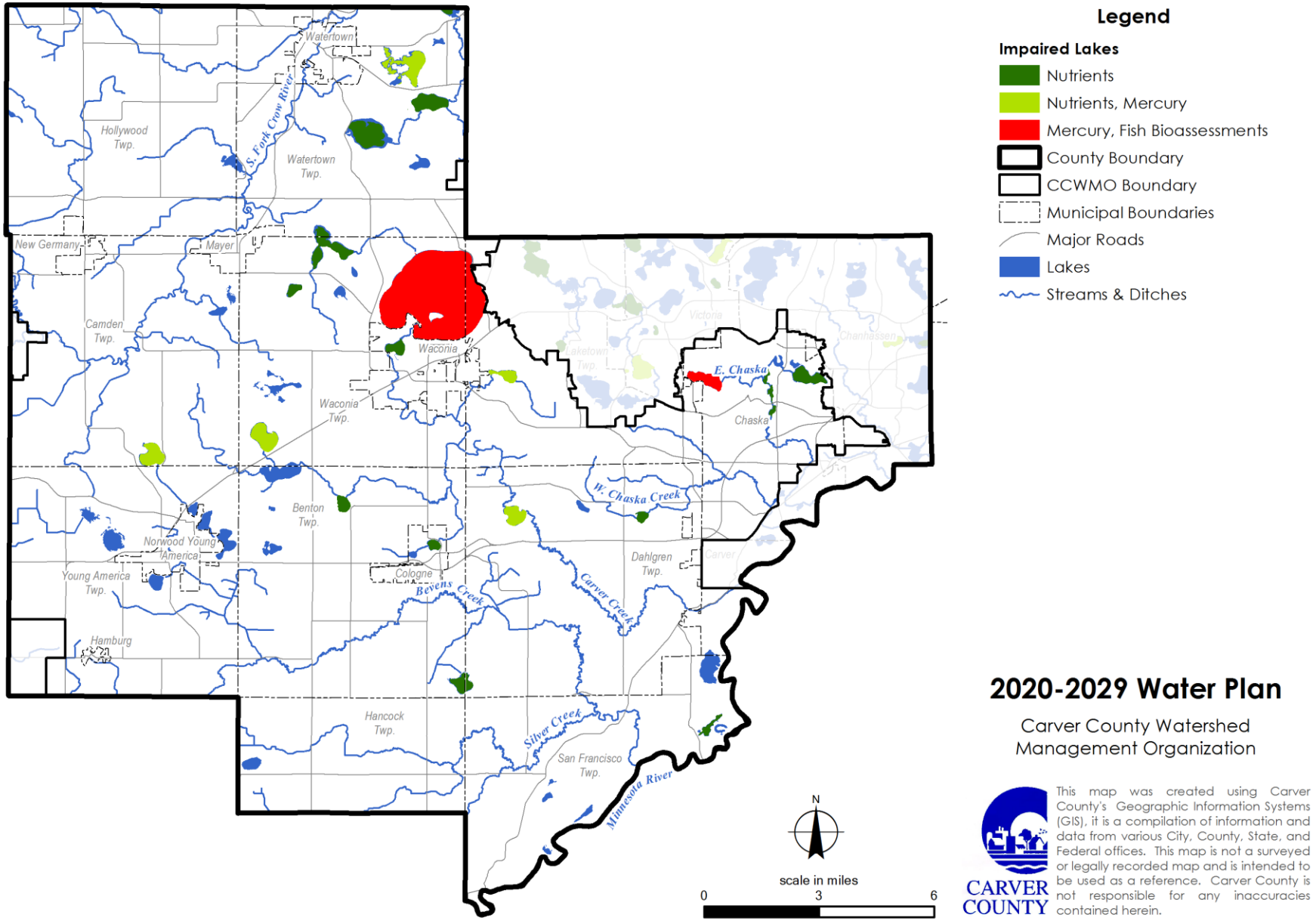
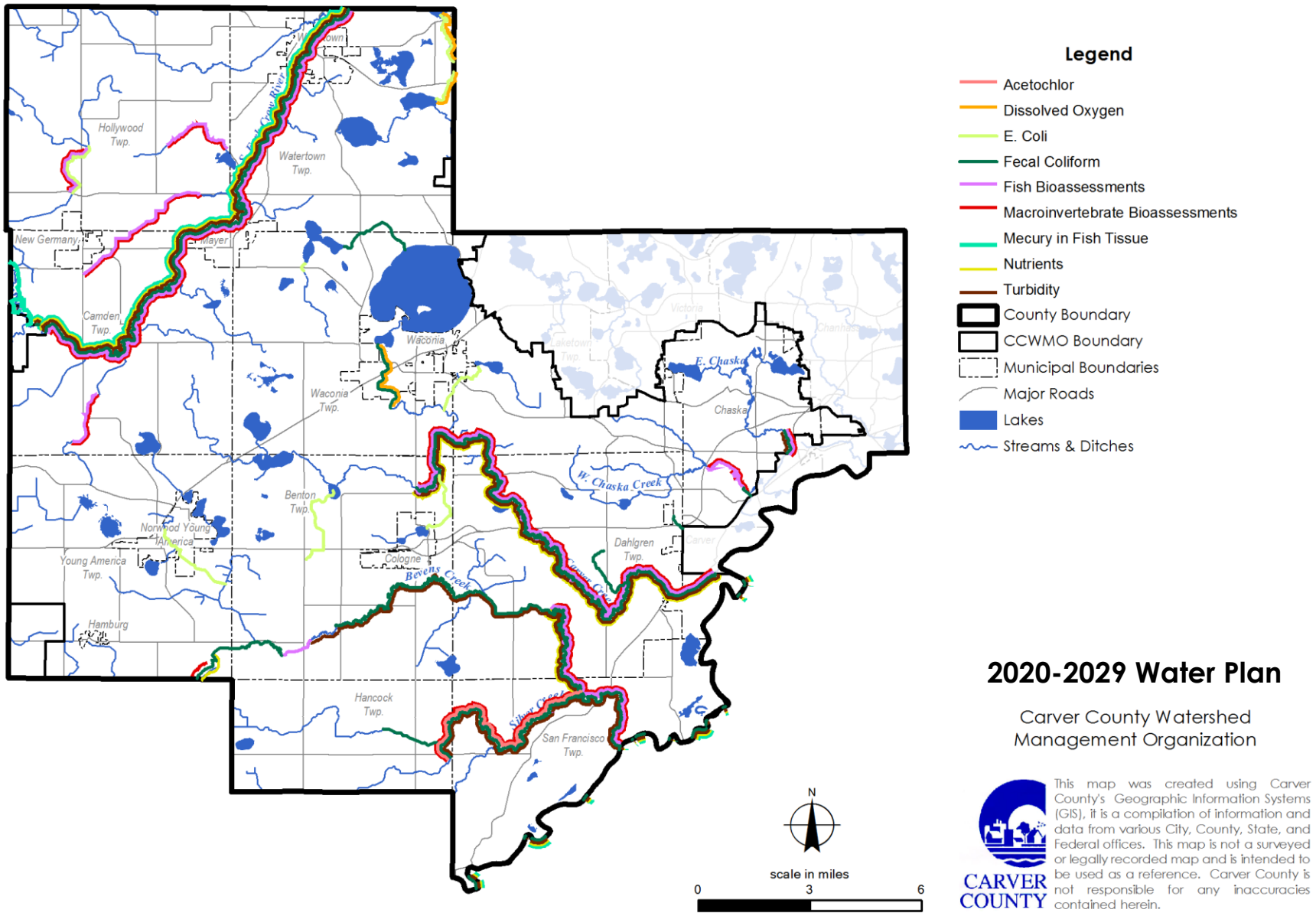


Figure 2-24. Impaired Streams (Source: MPCA, 2018 | see Table 2-13 for additional information)



2.5.2. Groundwater Resources

Surface water and groundwater issues are typically addressed separately; however, they are components of a dynamic, connected system that require a holistic management approach. Surface water and groundwater have a bi-directional interaction via groundwater recharge and discharge. Water quality of surface waters (lakes and streams) in Carver County can therefore have long-lasting effects on groundwater as well. All residents of Carver County rely on groundwater (aquifers) for drinking water; therefore, groundwater issues are equally important as surface water quality. Once groundwater has been contaminated, reclaiming it can be an expensive and complex.

Surface-Groundwater Interaction

Groundwater begins as rain and snowmelt which seeps into the ground and percolates downward to an aquifer. Water infiltrates the ground and travels downward under the force of gravity until it reaches a depth where water fills all the openings, called pore spaces, in the soil or rock. The amount of infiltration is dependent upon the natural characteristics of the overlying bedrock formations and the soil present. In porous surface material, such as sand or gravel, 40-50 percent of precipitation may infiltrate the aquifer. Seepage into less porous surface material, such as clay, ranges from 5-20 percent.

The surface-groundwater interface is a transitional region between surface water and adjacent aquifers. Recharge and discharge are terms for describing the flow of groundwater between surface water and aquifers. Recharge is the inflow to the groundwater system, while discharge is the outflow from the groundwater system. The surface-groundwater interface plays a vital role in controlling exchange of water, chemical constituents and contaminants between surface and groundwater. The interface between surface water and groundwater is spatially fluctuating, and influenced by a number of processes at various scales. This region is often functionally important to biotic integrity of water resources, providing for nutrient and dissolved oxygen exchange and refuge for certain organisms during drought conditions.

Aquifers

An aquifer is a geologic formation capable of yielding water in sufficient quantity to constitute a usable supply for human use. The water may be confined by an impermeable material, typically bedrock, above and below the porous material containing water. The hydrogeologic structure in Carver County consists of several layers, most of which are, or could be utilized for water supply, at least for domestic purposes. At present, the most important sources are the glacial drift, the Prairie du Chien-Jordan (for individual residential use), and the Ironton-Galesville and Mt. Simon aquifers (typically for municipal use). There is no layer that acts as an aquaclude, or impervious layer that stops vertical water movement. All of the layers conduct water to one extent or another. Aquifers in Carver County are described generally below and in more detail in Table 2-15.

Sand and Gravel Aquifers. A surficial sand aquifer and six Quaternary buried sand and gravel aquifers are mapped in Carver County. The extent, depth, and thickness of these aquifers vary considerably across the county. Some areas of Carver County are underlain by multiple buried sand and gravel aquifers; other areas are underlain by only one or two. This

variation in mapped aquifer distribution is partly due to irregular deposition of sediment, but is also a reflection of the limited well data available.

Bedrock Aquifers. Several bedrock aquifer units are found beneath the county. The units vary in thickness, porosity, permeability, and water quality. The principal bedrock groundwater sources used by county communities, well owners, and industry are the Prairie du Chien and Jordan aquifers. Other bedrock aquifers include the St. Peter Sandstone, the Tunnel City or Lone Rock Group (formerly named the Franconia formation, hereafter referred to as the Tunnel City Group) the Wonewoc Sandstone (formerly named the Ironton-Galesville Sandstone, hereafter referred to as the Wonewoc), and the Mt. Simon Hinckley Sandstone formations. Three bedrock hydrostratigraphic units function as major confining layers. Table 2-15 provides a description of the bedrock hydrostratigraphy of the county.

Aquifer Recharge and Discharge Conditions. Recharge and discharge are terms for describing groundwater flow and the interaction of groundwater and surface water. Recharge is the inflow of water to the groundwater system, while discharge is the outflow from the system. Identifying areas of recharge and discharge can help locations for aquifer recharge and locations where contaminants can enter the system.

Recharge to the groundwater system occurs mainly as infiltration of precipitation and percolation through unsaturated soils to the water table and, eventually, groundwater aquifers. In Carver County, relatively low permeability clay-loam and loam glacial sediment at the land surface limits downward percolation of surface water to deeper aquifers. Tritium-age testing of well water shows that most areas of Carver County have very limited local recharge. Tritium is a radioactive isotope of hydrogen which has both commercial and military applications. Tritium also occurs naturally due to interactions between the atmosphere and cosmic radiation. Scientists can use different isotops of tritium to estimate how long water has been underground and approximate the age of the water. Recent tritium-age water (since 1950) is only found to a depth of 100 feet in most of the county. Tritirum testing shows that groundwater in deeper bedrock aquifers is typically 2,000 to 20,000 years old. Pumping may be withdrawing water from these aquifers faster than they are being recharged to the northwest of Carver County.

Bedrock faults, which often act as conduits for groundwater recharge, do not act as groundwater recharge zones in Carver County. Bedrock aquifers are buried under a thick sequence of fine-grained, low permeability glacial sediment that prevents recent groundwater from entering most bedrock aquifers.

There are areas of local recharge of the sand and gravel aquifers near Watertown and the Minnesota River. In these areas recent tritium-age water has penetrated to about 150 feet. The major discharge zone for bedrock aquifers in Carver County is in the Minnesota River valley.

Importantly, most recharge of the bedrock aquifers in Carver County occurs outside the county and at a very slow rate.

Table 2-15. Carver County Bedrock Hydrostratigraphy (Source: Carver County Geologic Atlas).

Formation	Function	Description	Thickness (feet)
St. Peter Sandstone	Minor Aquifer	This aquifer is a minor source of water in Carver County.	35
Prairie du Chien-Jordan	Major Aquifer	This aquifer is a major source of water in Carver County. The formation consists of several types of rock in the Prairie du Chien group and Jordan sandstone. It is confined by the St. Peter sandstone formation in northern Chanhassen, and by drift elsewhere in the county.	130-160 80-100
St Lawrence Formation	Confining Layer	This unit acts as a confining layer due to its silty and shaley composition. The formation is present throughout the county and is missing only in areas where erosion has created bedrock valleys. While it does perform a confining function, it does not completely stop the movement of water. The rate of flow through this formation is slower than through the formations typically considered aquifers. Thirty-two percent of the bedrock wells interpreted by the MGS are finished in this formation and most are used for domestic water supply in Carver County.	40-50
Tunnel City Group (also called the Lone Rock formation and formerly called the Fraconia Formation)	Aquifer (upper) Confining Layer (lower)	These formations function as a multiple aquifer with the lower Tunnel City Formation acting as a confining unit separating the upper Tunnel City Formation from the Wonewoc sandstone. The aquifer is present throughout the county and is absent only where dissected by bedrock valleys.	120-140
Wonewoc Sandstone (Formerly: Ironton-Galesville Formation)	Aquifer		45-70
Eau Claire Formation	Confining Layer	This formation acts as a confining bed for the Mt. Simon aquifer. As with the St. Lawrence/Franconia formation, the Eau Claire formation does not totally stop vertical transmission of water, but rather transmits the water at much slower rate. In some areas, wells may be finished in this formation, but it does not appear to be a significant source of water in Carver County.	65-75
Mt Simon Formation	Major Aquifer	This formation is a major aquifer. The aquifer underlies the entire county and is confined by the Eau Claire sandstone. The Mt. Simon aquifer is exposed in the major valley and fault areas in San Francisco and Hancock Townships. Statute limits the use of this aquifer to potable water and only when there are no other feasible or practical alternatives.	160-210

Sensitivity to Contamination

The Carver County Geologic Atlas estimates the sensitivity to pollution of near-surface materials (Figure 2-25), buried sand and gravel aquifers, and the top of the bedrock (Figure 2-26). Pollution sensitivity was determined using a model that estimates the vertical travel time of a contaminant that moves conservatively with water based on permeability of soil and surficial geologic units. For near surface materials, areas with a high sensitivity to pollution are areas where it takes hours to a week for a contaminant to reach the aquifer; areas with very low sensitivity to pollution are areas where it takes months to years for a contaminant to reach the aquifer. For the bedrock aquifers, areas with a high sensitivity to pollution are areas where it takes hours to months for a contaminant to reach the aquifer; areas with very low sensitivity to pollution area areas where it takes a century or more for a contaminant to reach the aquifer.

Most aquifers in Carver County are rated very low sensitivity but there are areas of moderate to high sensitivity along the Minnesota River. The buried sand and gravel aquifer is relatively shallow and has many areas of moderate to high pollution sensitivity. The near surface materials and the top of the bedrock all have pollution sensitivity ratings of high to very high in southeast Carver County and ratings of very low elsewhere. The high sensitivity to pollution in the southeast part of the county is due to the high permeability of the surficial sand and gravel aquifer in this area, which is much more permeable than the clay loam and loam tills that overlie most of the rest of the county.

To validate the pollution sensitivity model, water samples were collected from several wells in each aquifer and analyzed for tritium-age and chloride. The results of these tests provide useful information for evaluating geologic sensitivity. Mixed tritium-age results indicate that at least a portion of the groundwater has been recharged since the 1950s. Elevated chloride concentration in samples equal to or greater than 5 parts per million (ppm) often indicates a local anthropogenic source of chloride; this usually implies a moderate or higher sensitivity.

The results of the well chemistry analysis generally affirm the sensitivity model. Sample results show that in most areas of the county, groundwater is centuries to thousands of years old and has not been recharged recently. Along the Minnesota River Valley, where the pollution sensitivity model shows higher sensitivity to pollution, the results of the sampling show that the groundwater has been recharged recently (since the 1950s), reflecting relatively rapid recharge conditions.

Figure 2-25. Pollution Sensitivity of Near-surface Materials

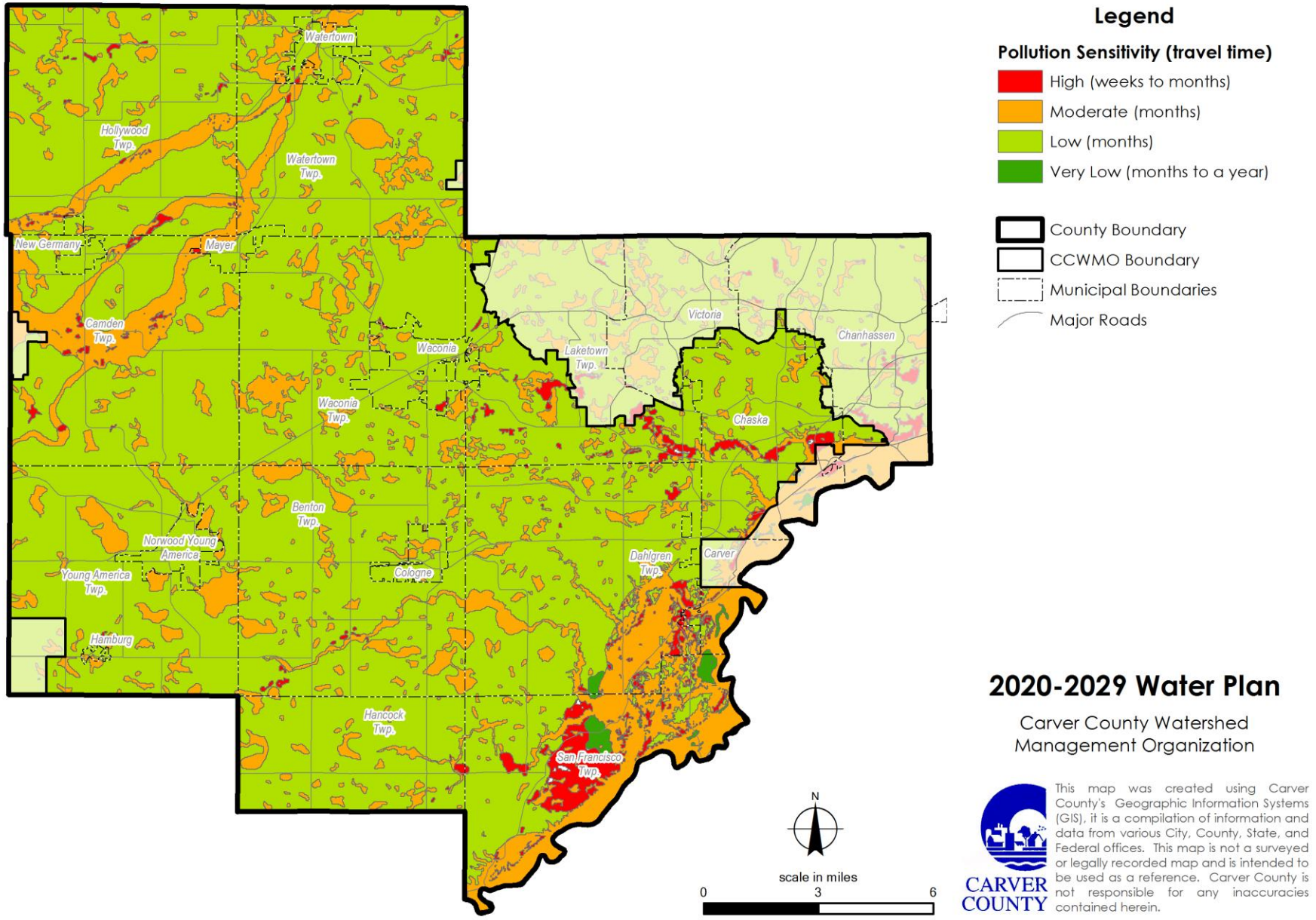
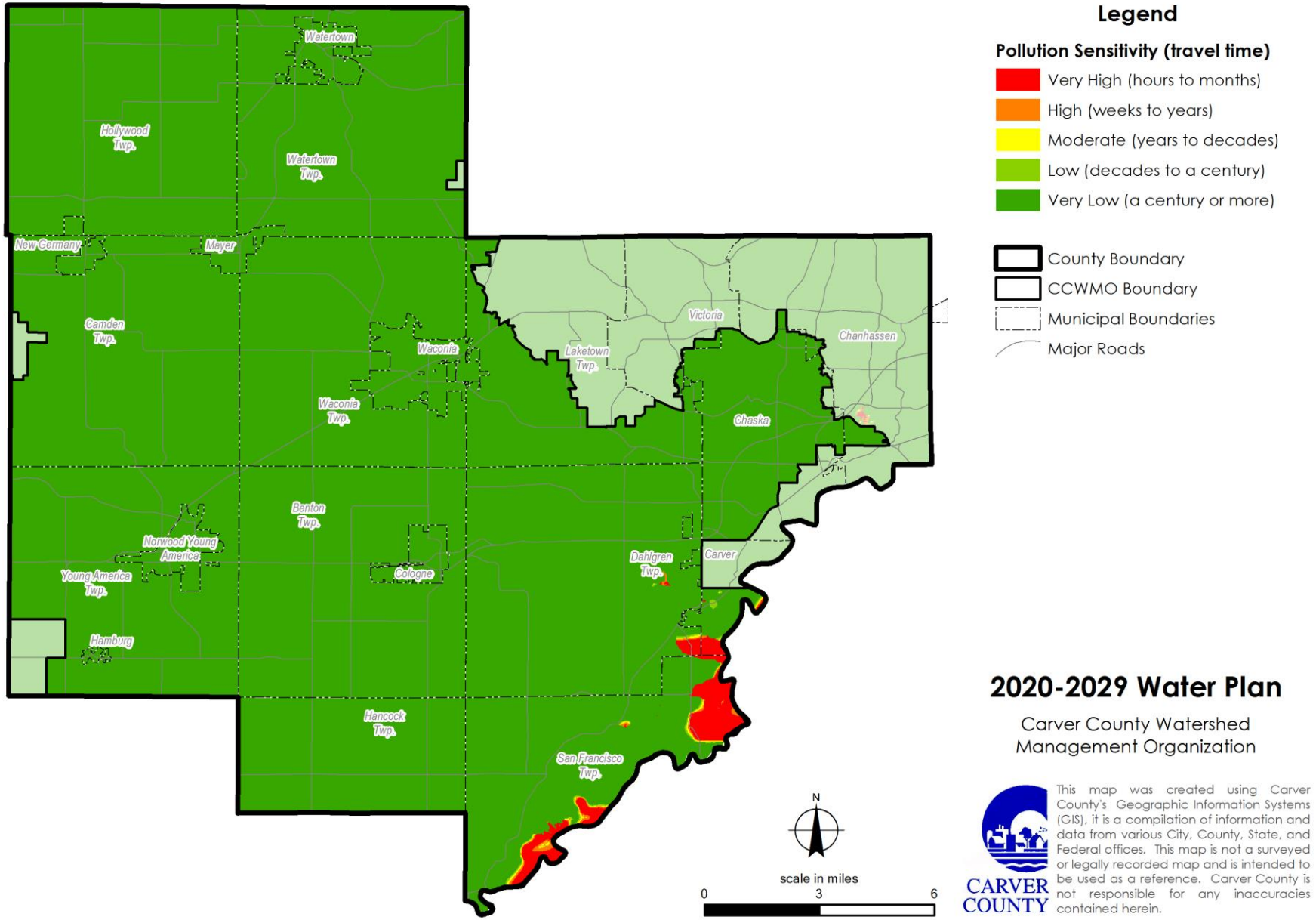


Figure 2-26. Pollution Sensitivity of the Top of Bedrock



Groundwater Quality

Limited groundwater quality and quantity data are available for the watershed. Testing of private wells by Carver County staff began in 1993 and continued through 2005. The initial testing in 1993 had several purposes:

- Establish guidelines and sampling protocol to conduct a comprehensive, consistent groundwater sampling/monitoring program for the County.
- Record a baseline of groundwater quality data for Carver County.
- Record groundwater quality data in areas of high sensitivity.
- Create an awareness and interest in groundwater protection throughout the County.

In 1993, 117 wells were chosen based on location (12 wells were selected from each township to provide County-wide sampling), and type (half of the wells were finished in bedrock, and the other half were drift wells). The groundwater retrieved from these wells was submitted for a nutrient package testing (nitrogen, phosphorous, etc.). Results show the majority (90%) of wells in the County showed little or no traces of nitrates, or other substances and that wells with elevated amounts of nitrates were clustered in certain areas of the county.

Testing done in 1994 and 1995 focused on highly sensitive areas of the County. Tests also focused on only drift wells and were from a sample of wells not included in the 1993 data. Results from these testing years showed similar patterns as those in 1993, with a small number of wells with elevated nitrates. Wells with elevated nitrate levels were generally clustered in the Carver Highlands area in the southeast portion of the County.

In 1996 samples were collected from wells sampled in 1993, wells in high sensitivity areas, and wells that had previously tested positive for high nitrates. In addition to the nutrient package, some samples were also tested for optical brighteners and tritium. Optical brighteners occur in detergents and stay present in the water as they pass through septic tanks, drainfields and the soil; testing for optical brighteners can help determine if wells are drawing water leaching from septic drainfields. The tests did not reveal any optical brighteners in the wells. This could mean that the wells tested were not drawing water leaching from septic drainfields or the water from the drainfields has not reached the depth of the wells. Results from the seven wells tested (six bedrock, one drift) revealed no or low amounts of tritium. This indicates that the water in the aquifers has been there since the mid 1940's.

In 1997 testing focused on wells in the St. Peter sandstone aquifer. Some wells in the Carver Highlands area that had previously tested high for nitrate levels were also sampled. 43 samples were collected and tested for nutrients and tritium. Nitrates were found in some of the wells, confirming earlier test results and indicating that further work is needed on determining a source of the nitrates. Tritium tests revealed the presence of "old water".

1998 well tests concentrated on the Jordon aquifer. Samples were submitted for nutrient testing and tritium tests. Continued testing was done in the Carver Highlands area. Results continued to show elevated nitrate levels in the Carver Highlands

area. Tritium tests revealed one well with "young water". This well was located in a buried drift aquifer and also had elevated nitrates.

1999-2001 well tests again focused on the Carver Highlands area, with a few additional samples from wells in the Franconian and St. Lawrence aquifers.

2002 well tests concentrated in Camden Township, samples were taken from both drift and bedrock wells. Samples were submitted for nutrient testing and tritium tests. Nitrates were only detected in one well and levels were below 10 ppm.

2003 well testing concentrated in Young America Township, samples were collected from both drift and bedrock wells and submitted for nutrient and tritium tests. Nitrates were detected in 4 of 10 wells at levels below 10 ppm.

2004 well testing concentrated in Hollywood Township. Samples were submitted for nutrient and tritium tests. Nitrates were not detected in any of the samples and tritium analysis indicated the water tested was greater than 50 years old.

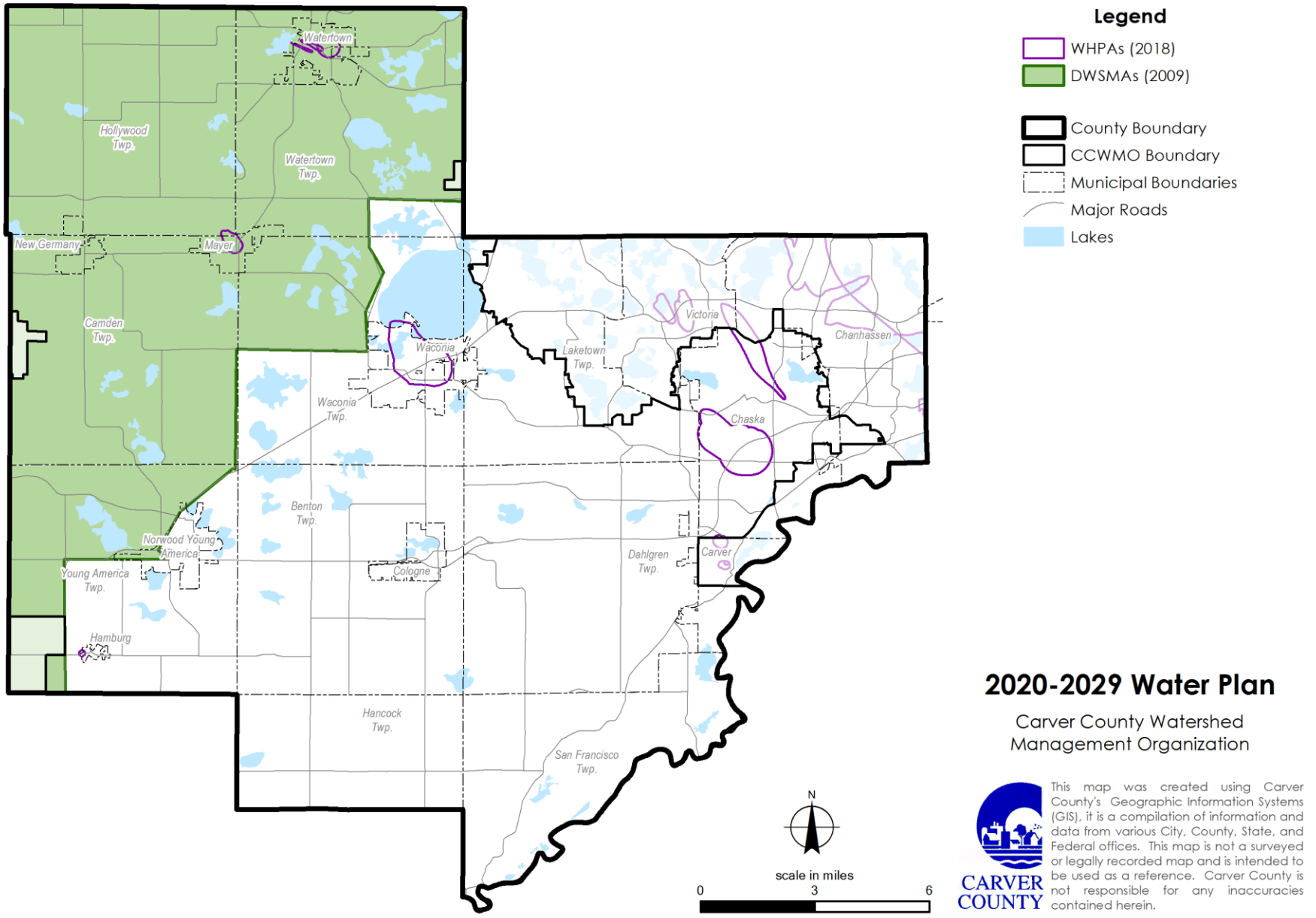
2005 well testing concentrated in Laketown Township. 15 wells were sampled for nutrients; nitrates at very low levels were detected in two wells.

In 2018, the CCWMO partnered wih the Minnesota Department of Agriculture to provide voluntary nitrate testing for residents with private wells in San Francisco Township. The township was selected due to the geology of the area and potential vulnerability to groundwater contamination. If nitrate was detected, homeowners were offered a free follow-up nitrate test, pesticide test, and well site visit to look for possible nitrate sources near the well, and provide information regarding mitigation. Follow-up sampling is scheduled for 2019. Nitrates at levels of 10 ppm or more were detected in 4 wells.

Wellhead Protection

The federal Safe Drinking Water Act requires states to implement Source Water Protection Programs to help prevent contaminants from entering public drinking water sources. The Minnesota Department of Health (MDH) requires public water suppliers to develop Wellhead Protection Studies to delineate and manage the area surrounding a public water source such as a groundwater well. A number of the communities in the watershed have completed those studies and have designated Drinking Water Supply Management Areas (DWSMA) and Wellhead Protection Areas for their public wells. The risks and vulnerability to contamination of the drinking water supply have been identified for each area and management plans for minimizing that risk have been developed and approved by the MDH. Figure 2-27 shows the Wellhead Protection Areas and Drinking Water Supply Management Areas.

Figure 2-27. Wellhead Protection Areas (Source: Minnesota Department of Health, 2009, 2018)



3. ISSUE IDENTIFICATION PROCESS

3.1. INTRODUCTION

This section describes the process used to engage stakeholders in the identification of issues to be addressed by this Plan. The process involved engaging with stakeholders in identifying, categorizing and prioritizing issues related to water resources in the Carver County Watershed Management Organization (CCWMO) and developing goals and strategies to address each issue.

3.2. ISSUE IDENTIFICATION PROCESS

The CCWMO used a variety of strategies to engage stakeholders and the public in the identification of issues that should be addressed by this Plan. Strategies for working with stakeholders included the following:

- **Issue Identification Workshops.** From October 2016 – April 2017, a series of workshops were held with different stakeholder groups to gather input on issues. Separate meetings were held with the CCWMO's Citizen Advisory Committee (CAC), the CCWMO's Technical Advisory Committee (TAC), State Review Agencies, and Township Representatives. At the workshops, attendees were asked to share and write down their concerns about resources within the watershed.

- **Individual Meetings with City Staff.** In March 2017, CCWMO staff met individually with staff from the cities within the watershed to discuss the plan update. Staff were asked to share their thoughts on what issues should be addressed in the Plan.

- **Watershed Outreach Event.** In January 2017, the CCWMO held an event to celebrate the 20th Anniversary of the creation of the CCWMO. Attendees were able to discuss issues with staff and use an online mapping tool to locate and describe issues.

- **Survey.** In January 2017, a survey was distributed to approximately 400 residents interested in watershed issues via the CCWMO's newsletter list-serve. Respondents could respond to general questions about issues the CCWMO should address or use a map to locate and describe specific issues.

3.3. ISSUE CATEGORIZATION

Over 100 unique comments were submitted during the issue identification process by the public, state review agencies, cities, CAC, TAC, CCWMO Staff, and Township supervisors. Following the stakeholder input activities described above, CCWMO staff reviewed and organized comments into general issue categories (water quality, education, monitoring, etc). The CAC and TAC provided additional feedback on the general issue categoies and helped refine the final list of issues (below) that appear in this plan:

- Surface Water Quality
- Surface Water Quantity
- Groundwater Resource Protection
- Awareness & Behavior
- Coordination with Partners
- Evaluating Effectiveness and Progress

3.4. ISSUE DESCRIPTIONS

A brief description of the issue categories is provided within this section. For each issue, major themes in the comments provided by stakeholders during the issue identification process are listed.

3.4.1. Surface Water Quality

Improving and protecting surface water quality is a primary focus of the CCWMO. As impervious surfaces increase, more water flows off the landscape and is delivered to receiving waters more quickly. As water washes over developed landscapes it picks up materials lying upon those surfaces and delivers them to receiving waters. These materials can include sediment from construction erosion, oil and grease from automobiles, salt and other deicing chemicals from roadways and parking lots, fertilizer and pesticides from lawns and plastic waste . These pollutants can adversely impact bodies of water that receive stormwater runoff.

Pollutants are discharged to surface waters via either point sources or non-point sources. Point sources discharge pollutants to receiving surface waters at a specific point from a specific identifiable source of pollution, for example, a factory or a sewage treatment plant. In contrast, non-point source pollution cannot be traced to a single source or pipe. Instead, pollutants are carried from land to water in stormwater or snowmelt runoff, in seepage through the soil, and in atmospheric transport. Examples include stormwater runoff from farm fields or urban landscapes. For most waterbodies, non-point source runoff—especially stormwater runoff—is a major contributor of pollutants. Pollutants may include phosphorus, sediment, chlorides, oil, grease, chemicals (including hydrocarbons), metals, litter, plastics and pathogens, which can severely degrade water quality.

For example, in lakes, ponds, and wetlands, phosphorous is typically the pollutant of major concern. Land use changes resulting in increased imperviousness (e.g., urbanization) or land disturbance (e.g., urbanization, construction, or agricultural practices) result in increased amounts of phosphorus carried in stormwater runoff. In addition to watershed (stormwater runoff) sources, other possibly significant sources of phosphorus include atmospheric deposition, internal loading (e.g., release from anoxic sediments, algae die-off, aquatic plant die-back, and fish-disturbed sediment), and nonfunctioning subsurface sewage treatment systems (SSTS).

As phosphorus loads increase, it is likely that water quality degradation will accelerate, resulting in profuse algae growth or algal blooms. Algal blooms, overabundant aquatic plants, and nuisance/exotic species, such as Eurasian watermilfoil, purple loosestrife, and curlyleaf pondweed, will flourish and interfere with ecological function as well as recreational and aesthetic uses of waterbodies. Phosphorus loadings must often be reduced to control or reverse water quality degradation.

Sediment is also a major contributor to water pollution. Stormwater runoff from streets, parking lots, and other impervious surfaces carries suspended sediment consisting of fine particles of soil, dust, and dirt. Abundant amounts of suspended sediment are carried by stormwater runoff from from areas where soil is exposed. Erosion and sedimentation are often accelerated by human activities (e.g. construction activities). The increased stormwater runoff rates and volumes cause increased soil erosion, which releases significant amounts of sediment that may enter water resources. Erosion also results in channelization of stormwater flow, increasing the rate of stormwater runoff and further accelerating erosion.

Regardless of the source, erosion and sediment deposition decreases water depth, degrades water quality, smothers fish and wildlife habitat, and degrades aesthetics. Sediment deposition can also wholly or partially block culverts, manholes, storm sewers, etc., causing flooding. Sediment deposition in detention ponds and wetlands reduces their capacity to store water, resulting in higher flood levels and/or reducing the amount of water quality treatment provided. As erosion and sedimentation increase, stormwater management systems (e.g., ponds, pipes) require more frequent and expensive maintenance, repair, and/or modification to ensure they will function.

The issue identification process resulted in many comments related to water quality. Key comments relating to surface water quality include:

- Concern about increased nutrient loads to water resources
- Concern about shoreline and streambank erosion
- Concern about harmful bacteria in water resources
- Improving or maintaining water quality of surface water resources

- Retrofitting existing stormwater infrastructure and using redevelopment to improve water quality
- Continuing to address waterbodies on the State's Impaired Waters list

The CCWMO seeks to address these and other issues relating to water quality through the goals, policies, and strategies described in Chapter 4.

3.4.2. Surface Water Quantity

In a natural, undeveloped setting, the ground is generally pervious, which means that water (including stormwater runoff) can infiltrate into the soil. Land development dramatically changes how stormwater runoff moves in the local watershed, as ground surfaces become covered with impervious materials (e.g., asphalt and concrete) that prevent infiltration of water into the soil. As a result, the rate and volume of stormwater runoff from the site increases. If the land drains to a basin like a pond or wetland, the additional volume of runoff can increase the water level and flood level of the basin. If the land drains to a stream, the additional runoff volume can cause the stream to flow full for longer durations, which increases the potential for erosion and flooding. Although both high-water levels (flooding) and low-water levels are of concern to watershed residents and public officials/staff, more concern and attention is usually paid to flooding because it is a greater threat to public health and safety and can cause significant economic damages.

As development and redevelopment occur within the watershed, appropriate rate and volume controls are necessary to avoid creating future flooding issues or exacerbating existing flooding issues. The negative impacts of flooding may be further minimized by thoughtful management of the floodplain (i.e., the area inundated during or after a storm event of particular frequency). Understanding how a watershed responds to large precipitation events is critical to estimating inundated areas and evaluating strategies to reduce flood risk or damages.

The CCWMO received several comments regarding water quantity and flooding during the issue identification process. These comments included:

- Providing additional upstream storage (e.g. restoring wetlands) to reduce flood risk
- Addressing flooding caused by more extreme rainfall events
- Protecting and updating public infrastructure

The CCWMO seeks to address these and other issues relating to surface water quantity through the goals, policies, and strategies described in Chapter 4.

3.4.3. Groundwater Resource Protection

Groundwater is the primary source of drinking water in the County. Maintaining clean, safe groundwater supplies is critical to human and environmental health and to the economic and social vitality of communities. Aquifers in the County that are used for domestic water supply include the glacial drift, the Prairie du Chien-Jordan, the Tunnel City-Wonewoc, and the Mt. Simon. The water in most aquifers in the county is decades to hundreds of years old.

In addition to the water-supplying aquifer layers, the County's bedrock geology includes a number of alternating confining layers that protect aquifer layers from surface contamination but also prevent recharge. No layer completely stops vertical water movement but the confining layers limit movement to a very slow rate. This means that groundwater recharge happens very slowly and that groundwater contamination can be challenging to address.

Groundwater can be contaminated by commercial and industrial waste disposal, landfills, leaking underground storage tanks, subsurface sewage treatment systems (SSTS), mining operations, accidental spills, feedlots, and fertilizer/pesticide applications. Prevention of groundwater contamination through best management practices (for example, sealing abandoned wells and carefully siting infiltration practices) is critical. Once contaminated, groundwater may remain contaminated for long periods of time and clean-up is expensive and technically complex.

Comments related to groundwater provided during the issue identification process include:

- Promoting practices that protect groundwater from contamination (e.g. well sealing)
- Promoting groundwater conservation (e.g. water reuse, reducing irrigation/sprinkling)

The CCWMO seeks to address these and other groundwater challenges through its role in implementing the Carver County Groundwater Plan (see the Chapter 4 for additional information).

3.4.4. Awareness & Behavior

Making the public aware of the role they can play in protecting water resources is a key task of the CCWMO. Education is necessary to help people make informed decisions and build sustainable lifestyles and habits that help protect water resources. Most potential contamination threats to surface water and groundwater are human-caused, thus a significant element in the prevention of contamination can occur by educating people about issues and the role they can play in addressing them.

Education increases the understanding of risks and helps prevent problems. In addition, education can be a more simple, less costly, and a more community-friendly way of achieving goals. Education efforts can provide the framework for more of a "grass roots", community plan implementation, while regulation and incentives traditionally

follow a more "top-down" approach. However, the success of any effort to change behavior depends on a variety of factors that extends beyond simply providing information about an issue. The CCWMO strives to tailor educational efforts to specific target groups and reduce barriers in order to encourage sustainable behavior change.

Common themes identified through the public input process include:

- Raising awareness of water resources
- Increasing awareness of CCWMO activities and successes
- Building capacity through volunteer programs and other forms of public engagement
- Sharing data and information with the public in ways that are easily understood

The CCWMO seeks to address these and other issues relating to awareness and behavior through the goals, policies, and strategies described in Chapter 4 and the CCWMO's Annual Education and Outreach Plan.

3.4.5. Coordination with Partners

The CCWMO is one of several government entities with water resource management responsibilities and regulatory authority within the watershed. Overlapping permitting and stormwater management authorities allows for localized protection of water resources but can also create the potential for redundant and inefficient processes. Communication between the CCWMO and other units of government, especially cities within the watershed, is necessary to identify areas where efficiency may be improved and overlapping requirements reduced. In addition, the CCWMO is limited by the availability of funding. Achieving the goals of this Plan with limited funds requires partnerships with other entities working to address water resource issues.

The issue identification process resulted in several comments related to coordination between the CCWMO and other partners. Key comments include:

- Increasing partnerships with cities, the University of Minnesota, and state agencies to identify solutions to problems
- Continuing to be transparent and seeking input from stakeholders
- Coordinating with other review agencies on the permit review process
- Coordinating with partners (cities, state agencies, private businesses, etc.) to implement projects
- Partnering with other agencies to develop and share data

The CCWMO seeks to address these and other issues relating to partnership and coordination through the goals, policies, and strategies described in Chapter 4.

3.4.6. Evaluating Effectiveness and Progress

The CCWMO is a local unit of government responsible for implementing projects and programs to achieve its goals and is constrained by the availability of funding. Achieving the goals of this plan with limited funds requires efficient and effective operation. Evaluating the effectiveness of projects and programs involves continuous monitoring and data collection.

Data collection is an important role of the CCWMO, critical to the management and protection of the many resources within the watershed. The CCWMO covers approximately 194,018 acres of the County. There are 38 lakes greater than 10 acres and approximately 365 miles of streams within the CCWMO. Accurate monitoring data allows the CCWMO to identify potential issues, track changes over time, and identify effective strategies and practices. A robust data collection program, as well as accurate and unbiased interpretation of that data, enables the CCWMO to manage water resources effectively and efficiently.

The issue identification process resulted in several comments related to evaluating effectiveness. Key comments include:

- Evaluating the effectiveness of rules through monitoring and other means
- Using data to identify problems and effective solutions
- Developing methods to track/evaluate performance of projects

The CCWMO seeks to address these and other issues relating to evaluating effectiveness through the goals, policies, and strategies described in Chapter 4 and the CCWMO's Annual Monitoring and Assessment Workplan.

4. GOALS, POLICIES, AND IMPLEMENTATION STRATEGIES

4.1. INTRODUCTION

This section includes the goals, policies, and implementation strategies that address the 6 overarching issues identified during the public input process:

1. Surface Water Quality
2. Surface Water Quantity
3. Groundwater Resource Protection
4. Awareness & Behavior
5. Coordination with Partners
6. Evaluating Effectiveness & Progress

For each issue, a **goal statement** was development with input from the Carver County Watershed Management Organization (CCWMO) CAC and TAC. Implementation of this plan occurs through the six primary program areas (see below) of the CCWMO. Table 4-1 highlights which issues each program is primarily designed to address. Following the goal statements, is a list of **policies** and **implementation strategies** for each of the CCWMO's six major program areas.

1. Permitting
2. Projects
3. Monitoring
4. Education & Outreach
5. Planning & Research
6. Administration

Table 4-1. Focus Issues for CCWMO Program Areas

Issue ▸ / Program Area ▾	Surface Water Quality	Surface Water Quantity	Groundwater Resource Protection	Awareness & Behavior	Coordination with Partners	Evaluating Effectiveness & Progress
Permitting	✓	✓			✓	
Projects	✓	✓	✓	✓	✓	
Monitoring					✓	✓
Education & Outreach			✓	✓	✓	✓
Planning & Research				✓	✓	✓
Administration					✓	✓

4.2. GOALS

Goal 1 **Surface Water Quality.** To preserve and improve the quality of surface water resources within the watershed. The CCWMO has the following interim goals for improving water quality and aquatic life trends over the life of this plan:

a. Impaired waters that are close to the state standard will be delisted during the life of the plan. Determinations of what is close to the standard will be based on the characteristics of the waterbody and the impaired parameter and will be made on an ongoing basis.
b. Other impaired waters will show a stable or improving trend
c. Unlisted lakes will show a stable or improving trend

Goal 2 **Surface Water Quantity.** To manage the volume and flow of stormwater runoff to minimize the impacts of land use change on surface water and groundwater resources within the watershed.

Goal 3 **Groundwater Resource Protection.** To preserve and protect groundwater resources within the watershed.

Goal 4 **Awareness & Behavior.** To provide those living, working, and recreating in the CCWMO with the knowledge, skills, and motivation needed to make positive behavior changes that protect surface water and groundwater resources.

Goal 5 **Coordination with Partners.** To work with partners to identify and implement efficient solutions to water resource problems.

Goal 6 **Evaluating Effectiveness & Progress.** To collect data and use the best available science to identify problems and evaluate the effectiveness of solutions.

4.3. POLICIES

Policy 1 **Permitting - Standards.** The CCWMO will continue to apply the regulatory standards described in the Water Resource Management Ordinance for erosion and sediment control, stormwater management (rate, volume, water quality), wetland protection, floodplain management, and topsoil management with the goal of preserving and improving surface water and groundwater resources and managing flood risk.

Policy 2 **Permitting - Updates to Standards.** The CCWMO will periodically review and update the Water Resource Management Ordinance. Regulatory standards will be updated in accordance with applicable Minnesota Statutes and with the involvement of cities, state agencies, and other stakeholders. When available, locally collected data will be used to evaluate the effectiveness of existing and proposed regulations.

Policy 3 **Permitting - Coordination with Partners.** The CCWMO will coordinate with cities, townships, and other regulatory agencies on development review projects with overlapping regulatory jurisdictions.

Policy 4 **Permitting - Support for other Regulations.** The CCWMO will support (by providing technical assistance, data, educational support, etc.) the Carver County Land Management, Taxpayer Services, and Public Works Departments, and the Carver County SWCD, and LGUs in implementing regulations that protect water resources and conform with state regulations and this Plan.

Policy 5 **Projects - Project List.** The CCWMO will annually review the project list (see Table 5-x) and potential project list (Table 5-x). The CCWMO will prioritize projects based on methodology described in Chapter 5, which considers the following factors:

- Benefit to a priority water body
- Project-specific water quality benefits
- Project-specific volume control benefits
- Relationship to impaired waters
- Educational benefits
- Partnership opportunities
- Cost-benefit factors

Policy 6 **Projects - Cost Share Programs.** The CCWMO will operate cost share programs designed to help with the implementation of small-scale projects that help protect and improve surface water and groundwater resources. Cost share programs reduce barriers to implementation by providing funding and technical assistance and can encourage behavior change.

Policy 7 **Projects - Coordination with Partners.** The CCWMO will partner with cities, state agencies, and other entities to identify, fund, and implement projects that meet the goals of this plan.

Policy 8 **Projects - Evaluating Effectiveness.** The CCWMO will collect data on the effectiveness of implemented projects and periodically review project success.

Policy 9 **Monitoring - Program Scope.** The CCWMO will continue to monitor lakes, streams, wetland areas, stormwater BMPs, groundwater, and other resources as needed to track trends over the long term and to comply with TMDL studies and Implementation Plans.

Policy 10 **Monitoring - Annual Workplan.** The CCWMO will continue to develop and implement an annual Monitoring Workplan. Collected data may include, but is not limited to: water chemistry, water level, flow data, vegetation, fisheries, macroinvertebrates, etc.

Policy 11 **Monitoring - Data Evaluation.** The CCWMO will use data to evaluate the performance of programs, projects, and best management practices.

Policy 12 **Monitoring - Coordination with Partners.** The CCWMO will coordinate monitoring efforts with other entities to identify and fill data gaps, promote efficiency, and increase data availability.

Policy 13 **Monitoring - AIS Coordination with Partners.** The CCWMO will partner with other entities and stakeholders to monitor the extent of aquatic invasive species (AIS) within the watershed.

Policy 14 **Monitoring – Data Accessibility.** The CCWMO will share and distribute data and findings in easy to understand and easy to access formats.

Policy 15 **Education & Outreach - Annual Workplan.** The CCWMO recognizes and supports education as a key to the protection of surface water and groundwater resources. The CCWMO will develop, approve and maintain an education plan that outlines education efforts and is reviewed annually.

Policy 16 **Education & Outreach - Target Audiences.** The CCWMO will foster stewardship of water resources through personal communications and interactions with target audiences.

Policy 17 **Education & Outreach - Behavior Change.** The CCWMO will create campaigns for specific target audiences to encourage behavior changes that protect surface water and groundwater resources.

Policy 18 **Education & Outreach - Coordination with Partners.** The CCWMO will partner with other cities, state agencies, other watersheds, schools and other organizations to further increase awareness of water resources in adults and youth.

Policy 19 **Education & Outreach - Support for Other Programs.** The CCWMO will use the education program to reinforce and support the goals of its other programs (permitting, monitoring, etc.).

Policy 20 **Education & Outreach - Evaluating Effectiveness.** The CCWMO will track information on participation and engagement in educational programs. The information will be used to evaluate the effectiveness of different education strategies.

Policy 21 **Planning & Research - Feasibility Studies.** The CCWMO will continue to develop feasibility and other studies to evaluate options to protect, manage, and improve surface water and groundwater resources.

Policy 22 **Planning & Research - TMDL Development.** The CCWMO will develop or partner in the development of TMDLs and Implementation Plans for listed impaired waters within the CCWMO, with the final goal of EPA approval for TMDL Studies for all listed impaired waters within the watershed.

Policy 23 **CCWMO Administration - Coordination with Partners.** The CCWMO will communicate regularly and effectively with partners, state agencies, and other entities to make programs more effective.

Policy 24 **CCWMO Administration - Annual Report/Plan Evaluation.** As part of the CCWMO's Annual Report, plan implementation and progress towards plan goals will be regularly evaluated.

Policy 25 **CCWMO Administration - Plan Updates.** The CCWMO will maintain an up-to-date plan document by periodically amending the plan to incorporate newly completed studies, update the project list, etc.

Policy 26 **CCWMO Administration - Infrastructure Maintenance.** The CCWMO will maintain infrastructure owned and operated by the CCWMO.

Policy 27 **CCWMO Administration - Fiscal Responsibility.** The CCWMO will optimize the use of public resources in managing resources within its boundaries.

4.4. IMPLEMENTATION STRATEGIES

4.4.1. PERMITTING

Imp Strategy 1 **Permit Program Implementation.** Continue to provide necessary resources for implementation of the Water Resource Management Ordinance. The CCWMO will continue to employ staff or a consultant to perform the following tasks:

- Review development applications
- Inspect construction sites
- Provide technical assistance for BMP installations
- Enforce compliance with the ordinance and approved permits
- Monitor sites as recommended by the annual water monitoring workplan
- Enforce maintenance requirements through procedures in the Water Resource Management Ordinance.

Imp Strategy 2 **Water Resource Management Ordinance Updates.** The Water Resource Management Ordinance will be updated as needed. When available, locally collected data will be used to evaluate the effectiveness of existing and proposed regulations. Potential updates to the ordinance include:

- clarifying requirements for upstream or downstream impacts
- clarifying permit thresholds for bridge and culvert crossings, projects near sensitive areas, and projects that construct less than one acre of impervious surface
- other items, as needed

Imp Strategy 3 **Coordination with Partners.** When possible, the CCWMO will coordinate with cities, watersheds, and other local and state agencies to streamline the project/development review process and to share knowledge about best practices for permitting programs.

Imp Strategy 4 **MS4 Permit Requirements.** The CCWMO will collaborate with other Carver County Departments (Public Works, Carver SWCD) to assist with implementation of Carver County's MS4 permit.

Imp Strategy 5 **MS4 Permit Requirements.** Collaborate with other LGUs to help them implement their NPDES Phase II MS4 requirements and to minimize duplication and increase efficiency.

4.4.2. PROJECTS

Imp Strategy 6 **Project List.** The CCWMO will maintain an up-to-date project list (see Table 5-5). As TMDL Studies, TMDL Implementation Plans, and other studies are completed, the CCWMO anticipates updating the project and potential project lists through a plan amendment.

Imp Strategy 7 **Project Prioritization.** The CCWMO will prioritize projects using the criteria described in Chapter 5 – Implementation. The criteria used to prioritize projects includes benefits of the project to water bodies, project costs, benefits to the community, priority area status, etc.

Imp Strategy 8 **Cost Share Programs.** The CCWMO will continue to utilize its cost share and incentive programs to provide funding for projects with water quality and other benefits to surface water and ground water resources within the watershed. Cost share programs include:

- LGU Cost Share Program
- Landowner Cost Share Program
- SSTS Incentive Program
- Well Sealing Program

Imp Strategy 9 **Project Funding.** The CCWMO will pursue grants, cost-sharing, and other funding opportunities to leverage and extend the CCWMO's financial resources for implementing projects.

Imp Strategy 10 **Annual City Meetings.** The CCWMO will meet annually with city representatives and engineers to review local plan implementation and to identify problems and projects that the CCWMO and cities can work together to address.

Imp Strategy 11 **Outreach.** The CCWMO will develop outreach methods and approaches to make residents more aware of cost share programs and projects implemented through its various programs.

Imp Strategy 12 **Project Evaluation.** As appropriate, the CCWMO will collect data about the benefits and outcomes of projects implemented through various programs (cost share projects, CIP projects, grant projects, etc.) The data will be reviewed periodically to evaluate project success and lessons learned will be incorporated into future project design.

Imp Strategy 13 **Outlet Control Structures**. The CCWMO will have a role in the following activities related to outlet controls:

- Work with the DNR in resolving conflicting interests of riparian property owners and/or the public;
- Modeling to assist the DNR in determining the appropriate water level control elevation and capacity for a structure;
- Structure design and construction;
- Operation and maintenance of outlet controls; and
- Funding construction, operation, and maintenance of structures. The CCWMO will seek outside funding of these costs including funding from affected/benefited properties.

Imp Strategy 14 **Demonstration Projects.** The CCWMO will investigate and demonstrate applicable new and innovative BMPs which have the potential to reduce pollutants to water bodies.

4.4.3. MONITORING

Imp Strategy 15 **Annual Monitoring Workplan.** The CCWMO will develop and implement an annual Monitoring Workplan. The workplan will outline monitoring activities for lakes and streams, groundwater, stormwater BMPs, projects, AIS, etc. Collected data may include, but is not limited to: water chemistry, water level, flow data, vegetation, fisheries, macroinvertebrates, etc.

Imp Strategy 16 **Annual Monitoring Report.** The CCWMO will prepare and distribute an annual water quality monitoring report. Data and findings will be presented in an easy to understand format.

Imp Strategy 17 **Lake Monitoring.** The CCWMO will:

- Maintain baseline water quality data for the lakes in the CCWMO, with priority given to those on the impaired waters list or that have completed TMDL Implementation Plans.
- Establish and/or maintain any lake sampling sites that are needed or have been established as part of a TMDL study or TMDL Implementation Plan.
- Establish new lake sampling sites to address gaps in data sets as needed/or directed to establish. This could include sampling for new parameters. Review of existing data sets will occur yearly, with recommendations for new sites to be completed during these reviews.

Imp Strategy 18 **Stream Monitoring.** The CCWMO will:

- Establish and/or maintain any stream sampling sites that are needed or have been established as part of a TMDL study or TMDL Implementation Plan.
- Maintain current monitoring regimes or conform as dictated by TMDL studies or TMDL Implementation Plans for fecal coliform (or E. coli) bacteria.
- Review all automated stream sampling sites within the watershed to determine if a fully automated site is needed. Replace outdated equipment with level logging sensors and switch these sites to a grab sample only site.
- Ensure Metropolitan Council sites are not abandoned.
- Conduct geomorphic assessments and flow monitoring, as needed.
- Establish new stream sampling sites to address gaps in data sets as needed/or directed to establish. This could include sampling for new parameters. Review of existing data sets will occur yearly, with recommendations for new sites to be completed during these reviews.

Imp Strategy 19 **Groundwater Monitoring.** The CCWMO will continue to sample and test groundwater as funding allows and in coordination with the monitoring objectives of the Carver County Groundwater Plan.

Imp Strategy 20 **Stormwater BMP Monitoring.** The CCWMO will:

- Establish stormwater BMP monitoring sites for intensive monitoring to review efficiencies of specific BMP type. Data will be used to update County Stormwater Ordinances.
- Establish BMP monitoring sites for specific grant requirements.
- Other BMP monitoring will be based upon funding levels for yearly monitoring seasons.

Imp Strategy 21 **CCWMO Project Monitoring.** The CCWMO will continue to monitor projects installed by the CCWMO or through one of its cost share projects as funding allows.

Imp Strategy 22 **AIS Monitoring.** The CCWMO will partner with other entities to monitor the spread of aquatic invasive species throughout the County and, when appropriate, respond with strategies that limit the spread of recent infestations of AIS.

Imp Strategy 23 **Coordination with Partners.** The CCWMO will partner with cities, adjacent watershed districts, and other entities to more efficiently and effectively monitor water resources.

4.4.4. EDUCATION & OUTREACH

Implementation of water education goals and policies will occur through an annual education plan developed by the education coordinator. The plan will identify target audiences and provide information on educational program and tools to be utilized.

It is important to tailor education programs and messages to meet the needs and priorities of each target audience. Within Carver County there are many different groups involved in the protection, preservation and management of water resources. Broadly categorized, our target audiences can be broken into 1) local decision makers such as city councils and county commissioners, 2) citizens, 3) youth and 4) staff including city and county staff, engineers, developers and planners.

Programs and tools vary in the way they reach and interact with audiences. Some educational tools are in print form, others include presentations, an experience at a water body, or interaction with staff. All are used to increase awareness of water resources, foster stewardship of water resources, and encourage behaviors that will protect and preserve water resources. Education related implementation strategies are broken down into the categories described below.

1. **Strategies to increase awareness and knowledge of water resources.** These programs target adult audiences and include mostly written, print, or online media.

2. **Strategies to increase awareness and foster stewardship**. These programs may target adult or youth audiences. All the programs include direct interaction with CCWMO staff or other water resource experts. The programs not only seek to inform but also to build relationships with and encourage stewardship of water resources.

3. **Strategies to encourage behaviors that protect and preserve water resources.** These programs target behavior change. Very targeted campaigns are created for specific audiences. Each campaign focuses on increasing one sustainable behavior or decreasing one detrimental behavior. Campaigns can take many forms and use many tools such as print media or direct interactions.

4. **Strategies to create efficiency in education programming.** These programs help reduce duplication of educational efforts, create consistent education messages, increase the reach of education messages, and increase the availability of educational resources.

STRATEGIES TO INCREASE AWARENESS AND KNOWLEDGE IN ADULTS

Imp Strategy 24 **Water Column**
CCWMO will publish a monthly Water Column in local newspapers on topics related to water resources.

Imp Strategy 25 **Carver County Water Management Organization Online Newsletter**
CCWMO will publish a monthly online newsletter providing citizens and staff with information on water quality, conservation, projects, upcoming workshops and more.

Imp Strategy 26 **Facebook Page**
CCWMO will continue to maintain a social media presence through use of Facebook. Posts to social media will provide education to citizens and increase awareness about water resources.

Imp Strategy 27 **CCWMO Website**
CCWMO will continue to maintain and update its website, providing information as needed.

Imp Strategy 28 **Educational Print Media**
CCWMO will create education materials including brochures, flyers and pamphlets to provide information to residents. CCWMO will additionally create educational signage practices in public places to increase awareness on stormwater practices, the locations and benefits.

STRATEGIES TO INCREASE AWARENESS AND FOSTER STEWARDSHIP IN ADULTS AND YOUTH

Imp Strategy 29 **Carver County Fair**
CCWMO will create and staff a display booth annually for the Carver County Fair. Each year will highlight a different topic or practice relating to water resources.

Imp Strategy 30 **Carver County's Stormwater Workshop**
CCWMO will host an annual stormwater workshop designed to educate developers, local officials, planners, engineers and decision makers about stormwater BMPs and new methods and developments in stormwater research.

Imp Strategy 31 **Water Management Organization Advisory Committee Tour**
CCWMO will coordinate an annual tour for CCWMO's Advisory Committee members to inform them of current, completed, and upcoming projects relevant information.

Imp Strategy 32 **Public Meetings**
CCWMO will use public meetings to engage the public on select topics or projects as needed. The meetings may take on different formats depending on the audience and objectives. Public meetings are typically used to gather input or feedback on an issue, plan, or project.

Imp Strategy 33 **Citizen Education Series/Workshops**
The CCWMO will provide seminars and workshops for homeowners on topics including shorelines, sustainable landscaping, and raingardens.

Imp Strategy 34 **On the Water Events**
CCWMO will create and coordinate events that bring citizens to the water for recreational and educational activities. Events will provide education on the benefits of the water body to help increase stewardship.

Imp Strategy 35 **Youth Presentations**
CCWMO will present to youth groups including scout groups, day camps and school classes as requested throughout the year.

Imp Strategy 36 **Metro Children's Water Festival**
CCWMO will continue to coordinate and lead the Metro Children's Water Festival, an annual one-day event where 4th grade students from the metro area learn about all aspects of water resources, quality, conservation, monitoring, aquatic life, etc.

Imp Strategy 37 **Other Events**
CCWMO will provide displays and presentations at other events as requested including city open houses and celebrations and county events.

STRATEGIES TO ENCOURAGE BEHAVIORS THAT PROTECT AND PRESERVE WATER RESOURCES

Imp Strategy 38 **Identify Behaviors that Protect Water Resources**
The CCWMO will identify behaviors that protect water resources. The CCWMO will research each behavior and select behaviors with the following qualities for campaigns: highest impact, highest probability of citizens adoption, and least amount of current participation.

Imp Strategy 39 **Create, pilot, and implement campaigns to encourage behaviors that protect water resources**
The CCWMO will research and implement techniques like community based social marketing to increase behavior change on a larger scale. These techniques involve identifying campaign strategies, piloting these strategies with a small sub-group, and then implementing and evaluating them on a large scale.

STRATEGIES TO CREATE EFFICIENCY IN EDUCATION PROGRAMMING

Imp Strategy 40 **Partnerships with other local units of government**
CCWMO will develop and foster relationships with other local government units in order to share tools and resources, learn from experiences and knowledge of other entities, and reduce duplication of educational efforts. Partnerships have included the Metro Watershed Partners, nearby watershed districts, Counties, Blue Thumb and Non-point Source Education for Municipal Officials (NEMO).

Imp Strategy 41 **Water education city partnerships**
CCWMO will develop partnerships with cities within Carver County to help reach city residents. Cities have a higher ability for direct contact with their citizens through their newsletter, website, city offices, and events. CCWMO will develop an annual city education plan that creates timely education materials and sends them to the cities each month for distribution through their outreach channels.

Imp Strategy 42 **Partnerships and Communication with Schools**
The CCWMO will work with teachers to pass on opportunities and resources and continue communication with teachers for CCWMO presentations and other resources.

4.4.5. PLANNING & RESEARCH

Imp Strategy 43 **TMDL and Implementation Plan Development**. The CCWMO will complete TMDLs and Implementation Plans for waterbodies in the CCWMO on the 303d TMDL List and referenced in this plan or pursue removal or delisting of waterbodies from the 303d TMDL List as appropriate. The CCWMO does not plan to lead all TMDLs within the watershed.

Imp Strategy 44 **Untreated Urban Areas.** The CCWMO will partner with LGUs to identify already developed areas with minimal or no stormwater treatment and to identify potential best management practices for improving water quality and managing flooding in untreated areas.

Imp Strategy 45 **Identify Flood Prone Areas.** The CCWMO will use models and other available tools to identify public infrastructure at risk of flooding in extreme events. The CCWMO will incorporate changing precipitation patterns and real time flood data (inundated areas), as appropriate.

Imp Strategy 46 **Stream Restoration.** The CCWMO will identify gully locations within the watershed and use monitoring and other data to prioritize areas for restoration.

Imp Strategy 47 **Wetland Restoration.** The CCWMO will further pursue restoration of the highest priority sites identified in the wetland restoration prioritization. The CCWMO will work toward restoring wetlands in cooperation with existing programs through agencies such as the Board of Water and Soil Resources, U.S. Fish and Wildlife Service, Soil and Water Conservation District, and Reinvest in Minnesota, or through regional stormwater planning by the LGU.

Imp Strategy 48 **BMP Effectiveness.** The CCWMO will collaborate with partners to research the effectiveness of new and existing BMPs, with a focus on BMPs commonly used in the watershed and/or that are appropriate to conditions within the watershed.

Imp Strategy 49 **Quantitative Measurement of Progress.** The CCWMO will work towards developing tools and models to estimate overall load reductions needed to reach water quality targets for impaired and other waterbodies and to estimate load reductions achieved by proposed projects.

4.4.6. ADMINISTRATION

Imp Strategy 50 **Additional Funding.**

Seek Funding Sources and Matching Grants. The CCWMO will seek funding sources relevant to education and implementation of BMPs that will help improve the water quality and water quantity issues within the CCWMO.

TMDL Funding. The CCWMO will pursue funding from outside sources to assist in the completion and implementation of TMDLs.

Funding Wetland Restoration. The CCWMO will seek and allocate funds through the Capital Improvement Program, the Cost Share Program, and outside sources to accomplish priority wetland restoration projects.

Imp Strategy 51 **Partnership with other County Departments.** The CCWMO will support (by providing technical assistance, data, educational support, etc.) the programs of other departments within Carver County that preserve or improve surface water and groundwater resources. This includes programs and regulations operated by the following:

- **Environmental Services Department**: Subsurface Sewage Treatment Systems (SSTS), Household Hazardous Waste/Solid Waste, and Feedlot programs.
- **Land Management Department**: Floodplain Management and Shoreland Management programs.
- **Public Works Department:** MS4 Permit Implementation.
- **Taxpayer Services:** County Ditch Administration.
- **Carver Soil and Water Conservation District:** County Ditch Administration, Technical Assistance on Agricultural BMPs, and rural conservation programs.

Imp Strategy 52 **Boundary Adjustments.** In order to maintain a legal watershed boundary that better conforms to actual topographic drainage patterns, the CCWMO will periodically review and work with adjacent watershed districts to review and identify necessary changes to the legal watershed boundary. During the life of this plan, the CCWMO will work with the Lower Minnesota River Watershed Distrcit (LMRWD) fo refine the boundary between the LMRWD and the CCWMO.

Imp Strategy 53 **Carver County Groundwater Plan Support.** The CCWMO supports Carver County in implementing the Carver County Groundwater Plan by providing funding, monitoring groundwater resources, and providing groundwater related education.

Imp Strategy 54 **Technical Assistance.** As time and funding allow, the CCWMO will provide technical assistance to landowners interested in projects and practices that provide a water quality benefit to water resources within the CCWMO.

Imp Strategy 55 **Outreach to Local Groups**. The CCWMO will develop methods to reach out to cities and local organizations/neighborhood groups to encourage partnerships with the CCWMO on project implementation, grant applications, education & outreach, etc.

Imp Strategy 56 **Citizen Advisory Committee (CAC) Meetings.** The CCWMO will continue holding CAC meetings. The CAC consists of citizen representatives and advises the CCWMO Board and staff on a variety of topics including implementation activity prioritization; plans, studies, and other documents developed by the CCWMO; cost share applications; etc.

Imp Strategy 57 **Technical Advisory Committee (TAC) Meetings.** The CCWMO will continue holding TAC meetings. The TAC consists of city staff and engineers and representatives from state agencies. The TAC advises the CCWMO staff and CAC on a variety of technical topics including the Water Resource Management Ordinance, project design and feasibility, etc.

Imp Strategy 58 **Annual City Meetings.** The CCWMO will meet annually with city representatives and engineers to review local plan implementation and to identify problems and projects that the CCWMO and cities can work together to address.

Imp Strategy 59 **Local Plan Review and Adoption.** Per MN Rule 8410.0160, Local Water Plan updates must be completed and approved by the CCWMO within two years of approval of the CCWMO Plan by the BWSR Board. Additional information on Local Plan Requirements can be found in Chapter 6. The CCWMO will consider alternative local plan amendment and update schedule requests from LGUs and will try to be flexible on due dates to accommodate the update schedules of other WMOs when LGUs are within the jurisdiction of more than one WMO. All plan updates must be submitted to the WMO at least 120 days prior to the due date to provide time for review and approval. LGUs will not be eligible for CCWMO Cost Share Funds if a local plan is determined to be expired.

Imp Strategy 60 **Program Review.** The CCWMO will assess and review CCWMO programs (including cost share programs), implementation strategies, and proposed Capital Improvement projects through the CCWMO Annual Report, the Annual Water Quality Report, and using other data collected by the CCWMO. The CCWMO intends to use these reports to identify any necessary changes to the Plan. If the reports identify needed changes, the WMO will address the changes through a plan amendment as described in Chapter 6. The CCWMO anticipates completing plan amendments periodically during the life of the Plan.

Imp Strategy 61 **Annual Report.** The CCWMO will review progress towards the goals identified in this plan using short term and long-term metrics described in Table 6-2. Short-term metrics will be incorporated into the CCWMO Annual Report. Short term metrics are related to the accomplishment of activities (e.g. number of activities, number of participants, etc.). Long-term metrics will be used to evaluate this Plan during the development of the next ten-year plan. Long term metrics generally involve resource-based outcomes.

5. IMPLEMENTATION PLAN

5.1. PLAN IMPLEMENTATION

The purpose of this chapter is to provide a summary of implementation activities recommended in this Plan. CCWMO Implementation is carried out through six main program areas: **Permitting**, **Projects**, **Monitoring**, **Education & Outreach**, **Planning & Research**, and **Administration**.

5.2. PROGRAMS

Many of the implementation strategies described in Chapter 4 Goals, Policies, and Implementation Strategies and summarized here are dependent on the continuation of established CCWMO programs. Examples of existing programs include: Permitting, Projects, Monitoring, Education & Outreach, Planning & Research, and Administration. These programs will be funded annually through financing mechanisms described in Table 5-1. The plan identifies continued funding of these programs as essential to implementation.

A brief description of each program is provided below. Table 5-2 lists the implementation strategies identified in Chapter 4 along with additional information on the program area, type of activity, whether the activity is new or existing, who is responsible for implementation, and a general timeframe for implementation.

Table 5-1. CCWMO Program & Cost Share Budget

Programs	Estimated WMO Annual Cost (2019-2028)*	Estimated Total Annual Cost (2019-2028)*	Additional Sources of Funding
Permitting	$23,000	$43,000	Applicant fees
Projects			
Capital Projects & LGU Cost Share Projects	$196,500	$464,000	State Grant Funding, LGU Match
Landowner Cost Share Fund	$30,000	$120,000	Landowner Match (typically 75%)
SSTS Direct Discharge Loan Program	$70,000	$70,000	Landowner Contribution (typically 85% or more)
Monitoring	$20,000	$25,000	State Grant Funding, LGU funding
Education & Outreach	$5,000	$5,000	LGU funding
Planning & Research	$20,000	$20,000	State Grant Funding, LGU Match
Administration	$10,000	$10,000	
Estimated Annual Total	**$374,500**	**$734,000**	

*Does not include staff costs. WMO Costs are funded by through the WMO tax levy.

5.2.1. PERMITTING

Permitting plays a very important role in managing and addressing water resource problems. The Water Resource Management Ordinance was first adopted in 2001 and mostly recently updated in 2016. The ordinance is incorporated into the Carver County Code of Ordinances as Title XV, Chapter 153. The standards incorporated into the ordinance are listed below

- 153.55 Erosion and Sediment Control Standards
- 153.56 Stormwater Management Standards
- 153.57 Wetland Protection*
- 153.68 Shoreland Protection
- 153.59 Floodplain Protection
- 153.30 Topsoil Management

The standards outlined in the ordinance are the backbone of the CCWMO's permitting program. The various standards apply to land and water resource-disturbing activities as described in the ordinance. Any person or entity undertaking an activity that triggers one or more permit thresholds must obtain the required permit from the CCWMO prior to commencing the activity. Detailed information about the permit review process and complete rule language are available on the Carver County website (Water Rules Permits).

*Note: Wetland Conservation Act permitting is carried out by Carver County.

5.2.2. PROJECTS

5.2.2.1. CAPITAL PROJECTS

Capital improvement projects involve on the ground, structural improvements initiated and funded by the CCWMO. Capital improvement projects are identified in Table 5.5. The list of capital projects will be amended frequently during the life of the plan. These projects are typically funded through a combination of the CCWMO-wide ad valorem tax, and grants/partnerships.

Projects that require cross-boundary collaboration (e.g. regional storage, lake outlets, stream restorations), are part of a County/State public works /parks projects, or are broader in nature (for example, TMDL implementation projects), may be included in the County's annual 5-year CIP process. The annual 5-year CIP process would allow the County Board to include CCWMO projects as part of the larger County CIP. These projects could include financing by the County-wide ad valorem tax.

5.2.2.2. COST SHARE FUNDS

Cost Sharing CCWMO funds is an effective way to implement the plan. Current cost share programs are listed below. Others may be established through Board resolution during the life of the plan. Appendix B contains the criteria used to distribute the funds for each program.

1. **LGU/Organization Partnerships** – In 2007, the CCWMO began an evaluation process which ranks requests from LGU/Organizations for cost-share funding for projects. Funds for LGU/Organization Partnership projects are allocated on an annual basis. Likewise, project solicitation occurs on an annual basis. Staff and the CAC advisory committee recommend projects to the County Board based on project rankings and available funds. Criteria for evaluating funding request include: amount of local match, water quality benefits, inclusion in local plan, benefit to an impaired water, and number of partners, among others. These project requests are typically funded through a combination of the CCWMO-wide ad valorem tax, LGU funds and grants/partnerships.

2. **Landowner Cost Share Fund** – The low-cost fund is intended to encourage landowners to implement innovative Best Management Practices (BMP) that protect and restore water quality within the CCWMO. Funds can be used by public or private landowners within the CCWMO to implement projects that meet any of the following criteria:

    a. Protect or restore quality of lakes and rivers
    b. Protect or restore groundwater resources
    c. Protect or restore native plant communities
    d. Innovative approaches to treat stormwater at the source

    Funding requires a match of eligible expenses and a designated maximum level. Applications are accepted year-round as funds are available. Applications are solicited through a variety of means including workshops in high priority sub-watersheds, direct mailings to landowners in priority sub-watersheds, Carver SWCD contacts, an online newsletter, the Carver County Fair, etc. CCWMO staff determine the eligibility of a project based upon an established set of criteria and priorities, including: volume control; rate control; phosphorus reduction; aesthetics; functionality; wildlife habitat; public benefit; collaboration; and TMDL goals. Additional information on the evaluation process can be found in Appendix D. These project requests are typically funded through a combination of the CCWMO-wide ad valorem tax, and grants/partnerships in addition to the landowner cost share.

3. **Well Sealing Fund** – This cost share program provides funds for sealing abandoned wells that are a public safety hazard or that have the potential to contaminate groundwater sources. Participation in the program is solicited through a variety of means, including direct mailings to landowners and flyers posted at County offices. Eligibility of a project is based upon an established set of criteria: wells that are a public safety hazard; proximity to feedlots; proximity to the 100-year floodplain; proximity to Wellhead Protection Areas; proximity to industrial areas, road right-of-ways, rail roads, or pipelines; and wells that are installed through multiple aquifers. Additional information on the evaluation process can be found in Appendix D. These project requests are typically funded through a combination of the CCWMO-wide ad valorem tax, and grants/partnerships in addition to the landowner cost share.

4. **SSTS Direct Discharge Incentive Program** – In 2007, the County Board established an incentive program to accelerate the elimination of subsurface sewage treatment systems (SSTS) that discharge directly to surface water resource. The program offers direct incentives and low-interest loans to landowners to fix these systems. Applications are accepted annually based on priority subwatersheds recommended by the CAC and approved by the County board. Additional information can be found in Appendix D. These project requests are typically funded through a combination of the CCWMO-wide ad valorem tax in addition to the landowner cost share.

5.2.3. MONITORING

Having accurate and detailed data upon which to base decisions is critical to the success of this Plan. The CCWMO operates an extensive lake and stream management program to capture the dynamic and changing nature of water resources. The monitoring program is intended to improve the CCWMO's understanding of water resources and inform decisions about management of water resources within the CCWMO.

The CCWMO's monitoring program currently includes monitoring activities for lakes, streams, wetlands, groundwater, stormwater best management practices, CCWMO projects, and aquatic invasive species. An annual monitoring workplan outlines the CCWMO's various monitoring activities.

5.2.4. EDUCATION & OUTREACH

The purpose of the education and outreach program is to support the goals of this Plan and improve water quality by educating target audiences and encouraging behavior changes that protect water resources. An annual education workplan outlines the CCWMO's various education activities. Education and outreach activities are used to increase awareness of water resources, foster stewardship of water resources, and encourage behaviors that will protect and preserve water resources. The CCWMO's education coordinator develops the annual education workplan and leads its implementation

5.2.5. PLANNING & RESEARCH

The planning & research program is integrated with other CCWMO programs and aims to further the goals of the CCWMO by:

- Researching the effectiveness of installed BMP's or proposed BMP's.
- Evaluating the effectiveness of CCWMO efforts and their effectiveness on meeting the plan goals.
- Determining the effectiveness of CCWMO efforts on changing awareness and behavior towards meeting the plan goals.
- Conducting unique or specialized planning and feasibility studies to more effectively meet the goals of the water plan and the requirements of MN statutes and rules.
- Coordinating with local, regional, state, federal, academic, non-profit and private partners to share and conduct research in a cost-effective manner.

5.2.6. ADMINISTRATION

Proper administration of the CCWMO's fiscal and staff resources is integral to achieving the goals outlined in this Plan. Effective execution of the implementation strategies and activities identified in the plan requires sound fiscal management, adequate staff capacity and expertise, regular outreach and partnership with citizens and other stakeholders, and iterative planning. Coordination with LGUs, state and regional agencies, and other partners is a key part of the administration of the CCWMO. Additionally, the CCWMO utilizes a Citizen Advisory Committee (see Section 6.2.3 for additional information) and a Technical Advisory Committee (see Section 6.2.4 for additional information) to review and recommend projects, programs, expenditures, and other activities prior to approval by the County Board.

Table 5-2. CCWMO Program Activities

ID	Program	Activity Type	Implementation Strategy	Existing Activity	Responsible Parties	Timeframe
1	Permitting	Program Implementation	**Permit Program Implementation.** Continue to provide necessary resources for implementation of the Water Resource Management Ordinance. The CCWMO will continue to employ staff or a consultant to review applications, inspect sites, provide technical assistance, ordinance enforcement, monitor BMPs, maintenance enforcement, etc.	yes	Planning & Water Management Dept, Carver SWCD	Ongoing
2	Permitting	Ordinance Updates	**Water Resource Management Ordinance Updates.** The Water Resource Management Ordinance will be updated as needed. When available, locally collected data will be used to evaluate the effectiveness of existing and proposed regulations. Potential updates to the ordinance include:	yes	Planning & Water Management Dept	2019-2020
3	Permitting	Coordination with Partners	**Coordination with Partners.** When possible, the CCWMO will coordinate with cities, watersheds, and other local and state agencies to streamline the project/development review process and to share knowledge about best practices for permitting programs.	yes	Planning & Water Management Dept, LGUs, State Agencies	As needed

Table 5-2. CCWMO Program Activities

ID	Program	Activity Type	Implementation Strategy	Existing Activity	Responsible Parties	Timeframe
4	Permitting	Coordination with Partners	**MS4 Permit Requirements.** The CCWMO will collaborate with other Carver County Departments (Public Works, Carver SWCD) to assist with implementation of Carver County's MS4 permit.	yes	Planning & Water Management Dept, Public Works, Carver SWCD	Ongoing
5	Permitting	Coordination with Partners	**MS4 Permit Requirements.** Collaborate with other LGUs to help them implement their NPDES Phase II MS4 requirements and to minimize duplication and increase efficiency.	yes	Planning & Water Management Dept, LGUs	Ongoing
6	Projects	CCWMO Plan Updates	**Project List.** The CCWMO will maintain an up-to-date project list (see Table 5-5). As TMDL Studies, TMDL Implementation Plans, and other studies are completed, the CCWMO anticipates updating the project and potential project lists through a plan amendment.	yes	Planning & Water Management Dept, Carver SWCD, LGUs	Every 2-3 years
7	Projects	Project Identification & Implementation	**Project Prioritization.** The CCWMO will prioritize projects using the criteria described in Chapter 5 – Implementation. The criteria used to prioritize projects includes benefits of the project to water bodies, project costs, benefits to the community, priority area status, etc.	yes	Planning & Water Management Dept	Annually
8	Projects	Cost Share Programs	**Cost Share Programs.** The CCWMO will continue to utilize its cost share and incentive programs to provide funding for projects with water quality and other benefits to surface water and ground water resources within the watershed.	Yes	Planning & Water Management Dept	Ongoing
9	Projects	Funding	**Project Funding.** The CCWMO will pursue grants, cost-sharing, and other funding opportunities to leverage and extend the CCWMO's financial resources for implementing projects.	Yes	Planning & Water Management Dept	Ongoing
10	Projects	Coordination with Partners	**Annual City Meetings.** The CCWMO will meet annually with city representatives and engineers to review local plan implementation and to identify problems and projects that the CCWMO and cities can work together to address.	No	Planning & Water Management Dept, LGUs	Annually
11	Projects	Education & Outreach	**Outreach.** The CCWMO will develop outreach methods and approaches to make residents more aware of cost share programs and projects implemented through its various programs.	Yes	Planning & Water Management Department	As needed
12	Projects	Evaluating Effectiveness & Reporting	**Project Evaluation.** As appropriate, the CCWMO will collect data about the benefits and outcomes of projects implemented through various programs (cost share projects, CIP projects, grant projects, etc.) The data will be reviewed periodically to evaluate project success and lessons learned will be incorporated into future project design.	Yes	Planning & Water Management Department	As needed
13	Projects	Project Identification & Implementation	**Outlet Control Structures.** The CCWMO will have a role in the following activities related to outlet controls: - Work with the DNR in resolving conflicting interests - Modeling - Structure design and construction; - Operation and maintenance of outlet controls; and - Funding construction, operation, and maintenance of structures. The CCWMO will seek outside funding of these costs including funding from affected/benefited properties.	Yes	Planning & Water Management Dept, Carver SWCD	As needed

Table 5-2. CCWMO Program Activities

ID	Program	Activity Type	Implementation Strategy	Existing Activity	Responsible Parties	Timeframe
14	Projects	Project Identification & Implementation	**Demonstration Projects.** The CCWMO will investigate and demonstrate applicable new and innovative BMPs which have the potential to reduce pollutants to water bodies.	No	Planning & Water Management Dept, Carver SWCD	Ongoing
15	Monitoring	Evaluating Effectiveness & Reporting	**Annual Monitoring Report.** The CCWMO will prepare and distribute an annual water quality monitoring report. Data and findings will be presented in an easy to understand format.	yes	Planning & Water Management Dept	Annually
16	Monitoring	Program Implementation	**Annual Monitoring Workplan.** The CCWMO will develop and implement an annual Monitoring Workplan. The workplan will outline monitoring activities for lakes and streams, groundwater, stormwater BMPs, projects, AIS, etc. Collected data may include, but is not limited to: water chemistry, water level, flow data, vegetation, fisheries, macroinvertebrates, etc.	yes	Planning & Water Management Dept	Annually
17	Monitoring	Program Implementation	**Lake Monitoring.** The CCWMO will: - Maintain baseline water quality data for the lakes in the CCWMO, with priority given to those on the impaired waters list or that have completed TMDL Implementation Plans. - Establish and/or maintain any lake sampling sites that are needed or have been established as part of a TMDL study or TMDL Implementation Plan. - Establish new lake sampling sites to address gaps in data sets as needed/or directed to establish. This could include sampling for new parameters. Review of existing data sets will occur yearly, with recommendations for new sites to be completed during these reviews.	yes	Planning & Water Management Dept	Ongoing
18	Monitoring	Program Implementation	**Stream Monitoring.** The CCWMO will: - Establish and/or maintain any stream sampling sites that are needed or have been established as part of a TMDL study or TMDL Implementation Plan. - Maintain current monitoring regimes or conform as dictated by TMDL studies or TMDL Implementation Plans for fecal coliform (or E. coli) bacteria. - Review all automated stream sampling sites within the watershed to determine if a fully automated site is needed. Replace outdated equipment with level logging sensors and switch these sites to a grab sample only site. - Ensure Metropolitan Council sites are not abandoned. - Conduct geomorphic assessments and flow monitoring, as needed. - Establish new stream sampling sites to address gaps in data sets as needed/or directed to establish. This could include sampling for new parameters. Review of existing data sets will occur yearly, with recommendations for new sites to be completed during these reviews.	yes	Planning & Water Management Dept	Ongoing
19	Monitoring	Program Implementation	**Groundwater Monitoring.** The CCWMO will continue to sample and test groundwater as funding allows and in coordination with the monitoring objectives of the Carver County Groundwater Plan.	yes	Planning & Water Management Dept	As funding allows

Table 5-2. CCWMO Program Activities

ID	Program	Activity Type	Implementation Strategy	Existing Activity	Responsible Parties	Timeframe
20	Monitoring	Program Implementation	**Stormwater BMP Monitoring.** The CCWMO will: - Establish stormwater BMP monitoring sites for intensive monitoring to review efficiencies of specific BMP type. Data will be used to update County Stormwater Ordinances. - Establish BMP monitoring sites for specific grant requirements. - Other BMP monitoring will be based upon funding levels for yearly monitoring seasons.	yes	Planning & Water Management Dept	As funding allows
21	Monitoring	Evaluating Effectiveness & Reporting	**CCWMO Project Monitoring.** The CCWMO will continue to monitor projects installed by the CCWMO or through one of its cost share projects as funding allows.	yes	Planning & Water Management Dept	As funding allows
22	Monitoring	Program Implementation	**AIS Monitoring.** The CCWMO will partner with other entities to monitor the spread of aquatic invasive species throughout the County and, when appropriate, respond with strategies that limit the spread of recent infestations of AIS.	yes	Planning & Water Management Dept	Ongoing
23	Monitoring	Coordination with Partners	**Coordination with Partners.** The CCWMO will partner with cities, adjacent watershed districts, and other entities to more efficiently and effectively monitor water resources.	yes	Planning & Water Management Dept	As needed
24	Education & Outreach	Education - Increasing Awareness	**Water Column.** CCWMO will publish a monthly Water Column in local newspapers on topics related to water resources.	yes	Planning & Water Management Dept	Monthly
25	Education & Outreach	Education - Increasing Awareness	**Carver County Water Management Organization Online Newsletter.** CCWMO will publish a monthly online newsletter providing citizens and staff with information on water quality, conservation, projects, upcoming workshops and more.	yes	Planning & Water Management Dept	Monthly
26	Education & Outreach	Education - Increasing Awareness	**Facebook Page.** CCWMO will continue to maintain a social media presence through use of Facebook. Posts to social media will provide education to citizens and increase awareness about water resources.	yes	Planning & Water Management Dept	Ongoing
27	Education & Outreach	Education - Increasing Awareness	**CCWMO Website.** CCWMO will continue to maintain and update its website, providing information as needed.	yes	Planning & Water Management Dept	As needed
28	Education & Outreach	Education - Increasing Awareness	**Educational Print Media.** CCWMO will create education materials including brochures, flyers and pamphlets to provide information to residents. CCWMO will additionally create educational signage practices in public places to increase awareness on stormwater practices, the locations and benefits.	yes	Planning & Water Management Dept	As needed
29	Education & Outreach	Education - Foster Stewardship	**Carver County Fair.** CCWMO will create and staff a display booth annually for the Carver County Fair. Each year will highlight a different topic or practice relating to water resources.	yes	Planning & Water Management Dept	Annually
30	Education & Outreach	Education - Foster Stewardship	**Carver County's Stormwater Workshop.** CCWMO will host an annual stormwater workshop designed to educate developers, local officials, planners, engineers and decision makers about stormwater BMPs and new methods and developments in stormwater research.	yes	Planning & Water Management Dept	Annually

Table 5-2. CCWMO Program Activities

ID	Program	Activity Type	Implementation Strategy	Existing Activity	Responsible Parties	Timeframe
31	Education & Outreach	Education - Foster Stewardship	**Water Management Organization Advisory Committee Tour.** CCWMO will coordinate an annual tour for CCWMO's Advisory Committee members to inform them of current, completed, and upcoming projects relevant information.	yes	Planning & Water Management Dept	Annually
32	Education & Outreach	Education - Foster Stewardship	**Public Meetings.** CCWMO will use public meetings to engage the public on select topics or projects as needed. The meetings may take on different formats depending on the audience and objectives. Public meetings are typically used to gather input or feedback on an issue, plan, or project.	yes	Planning & Water Management Dept	As needed
33	Education & Outreach	Education - Foster Stewardship	**Citizen Education Series/Workshops.** The CCWMO will provide seminars and workshops for homeowners on topics including shorelines, sustainable landscaping, and raingardens.	yes	Planning & Water Management Dept	As needed
34	Education & Outreach	Education - Foster Stewardship	**On the Water Events.** CCWMO will create and coordinate events that bring citizens to the water for recreational and educational activities. Events will provide education on the benefits of the water body to help increase stewardship.	yes	Planning & Water Management Dept	Periodicall y
35	Education & Outreach	Education - Foster Stewardship	**Youth Presentations.** CCWMO will present to youth groups including scout groups, day camps and school classes as requested throughout the year.	yes	Planning & Water Management Dept	When requested
36	Education & Outreach	Education - Foster Stewardship	**Metro Children's Water Festival.** CCWMO will continue to coordinate and lead the Metro Children's Water Festival, an annual one-day event where 4th grade students from the metro area learn about all aspects of water resources, quality, conservation, monitoring, aquatic life, etc.	yes	Planning & Water Management Dept	Annually
37	Education & Outreach	Education - Foster Stewardship	**Other Events.** CCWMO will provide displays and presentations at other events as requested including city open houses and celebrations and county events.	yes	Planning & Water Management Dept	When requested
38	Education & Outreach	Education - Changing Behavior	**Identify Behaviors that Protect Water Resources.** The CCWMO will identify behaviors that protect water resources. The CCWMO will research each behavior and select behaviors with the following qualities for campaigns: highest impact, highest probability of citizens adoption, and least amount of current participation.	no	Planning & Water Management Dept	Periodicall y
39	Education & Outreach	Education - Changing Behavior	**Create, pilot, and implement campaigns to encourage behaviors that protect water resources.** The CCWMO will research and implement techniques like community based social marketing to increase behavior change on a larger scale. These techniques involve identifying campaign strategies, piloting these strategies with a small sub-group, and then implementing and evaluating	no	Planning & Water Management Dept	Periodicall y
40	Education & Outreach	Education - Create Efficiencies	**Partnerships with other local units of government.** CCWMO will develop and foster relationships with other local government units to share tools and resources, learn from experiences and knowledge of other entities, and reduce duplication of educational efforts. Partnerships have included the Metro Watershed Partners, nearby watershed districts, Counties, Blue Thumb and Non-point Source Education for Municipal Officials (NEMO).	yes	Planning & Water Management Dept	Ongoing

Table 5-2. CCWMO Program Activities

ID	Program	Activity Type	Implementation Strategy	Existing Activity	Responsible Parties	Timeframe
41	Education & Outreach	Education - Create Efficiencies	**Water education city partnerships.** CCWMO will develop partnerships with cities within Carver County to help reach city residents. Cities have a higher ability for direct contact with their citizens through their newsletter, website, city offices, and events. CCWMO will develop an annual city education plan that creates timely education materials and sends them to the cities each month for distribution through their outreach channels.	yes	Planning & Water Management Dept	Ongoing
42	Education & Outreach	Education - Create Efficiencies	**Partnerships and Communication with Schools.** The CCWMO will work with teachers to pass on opportunities and resources and continue communication with teachers for CCWMO presentations and other resources.	yes	Planning & Water Management Dept	Ongoing
43	Planning & Research	TMDL Development/Implementation	**TMDL and Implementation Plan Development.** The CCWMO will complete TMDLs and Implementation Plans for waterbodies in the CCWMO on the 303d TMDL List and referenced in this plan or pursue removal or delisting of waterbodies from the 303d TMDL List as appropriate. The CCWMO does not plan to lead all TMDLs within the watershed.	yes	Planning & Water Management Dept	Ongoing
44	Planning & Research	Project Identification & Implementation	**Untreated Urban Areas.** The CCWMO will partner with LGUs to identify already developed areas with minimal or no stormwater treatment and to identify potential best management practices for improving water quality and managing flooding in untreated areas.	no	Planning & Water Management Dept, LGUs	Annually
45	Planning & Research	Project Identification & Implementation	**Identify Flood Prone Areas.** The CCWMO will use models and other available tools to identify public infrastructure at risk of flooding in extreme events. The CCWMO will incorporate changing precipitation patterns and real time flood data (inundated areas), as appropriate.	no	Planning & Water Management Dept	2020
46	Planning & Research	Project Identification & Implementation	**Stream Restoration.** The CCWMO will identify gully locations within the watershed and use monitoring and other data to prioritize areas for restoration.	no	Planning & Water Management Dept	2020
47	Planning & Research	Project Identification & Implementation	**Wetland Restoration.** The CCWMO will further pursue restoration of the highest priority sites identified in the wetland restoration prioritization. The CCWMO will work toward restoring wetlands in cooperation with existing programs through agencies such as the Board of Water and Soil Resources, U.S. Fish and Wildlife Service, Soil and Water Conservation District, and Reinvest in Minnesota, or through regional stormwater planning by the LGU.	no	Planning & Water Management Dept	Annually
48	Planning & Research	Evaluating Effectiveness & Reporting	**BMP Effectiveness.** The CCWMO will collaborate with partners to research the effectiveness of new and existing BMPs, with a focus on BMPs commonly used in the watershed and/or that are appropriate to conditions within the watershed.	yes	Planning & Water Management Dept	Ongoing
49	Planning & Research	Evaluating Effectiveness & Reporting	**Quantitative Measurement of Progress.** The CCWMO will work towards developing tools and models to estimate overall load reductions needed to reach water quality targets for impaired and other waterbodies and to estimate load reductions achieved by proposed projects.	no	Planning & Water Management Dept	2022

Table 5-2. CCWMO Program Activities

ID	Program	Activity Type	Implementation Strategy	Existing Activity	Responsible Parties	Timeframe
50	Administration	Funding	**Additional Funding.** - Seek Funding Sources and Matching Grants. The CCWMO will seek funding sources relevant to education and implementation of BMPs that will help improve the water quality and water quantity issues within the CCWMO. - TMDL Funding. The CCWMO will pursue funding from outside sources to assist in the completion and implementation of TMDLs. - Funding Wetland Restoration. The CCWMO will seek and allocate funds through the Capital Improvement Program, the Cost Share Program, and outside sources to accomplish priority wetland restoration projects.	yes	Planning & Water Management Dept	Ongoing
51	Administration	Coordination with Partners	**Partnership with other County Departments.** The CCWMO will support (by providing technical assistance, data, educational support, etc.) the programs of other departments within Carver County that preserve or improve surface water and groundwater resources. This includes programs and regulations operated by the following: - Environmental Services Department: Subsurface Sewage Treatment Systems (SSTS), Household Hazardous Waste/Solid Waste, and Feedlot programs. - Land Management Department: Floodplain Management and Shoreland Management programs. - Public Works Department: MS4 Permit Implementation. - Taxpayer Services: County Ditch Administration. - Carver Soil and Water Conservation District: County Ditch Administration, Technical Assistance on Agricultural BMPs, and rural conservation programs.	yes	Planning & Water Management, Environmental Services, Land Management, Public Works, Taxpayer Services, Carver SWCD	Ongoing
52	Administration	Coordination with Partners	**Boundary Adjustments.** In order to maintain a legal watershed boundary that better conforms to actual topographic drainage patterns, the CCWMO will periodically review and work with adjacent watershed districts to review and identify necessary changes to the legal watershed boundary. During the life of this plan, the CCWMO will work with the Lower Minnesota River Watershed Distrcit (LMRWD) fo refine the boundary between the LMRWD and the CCWMO.	yes	Planning & Water Management, Taxpayer Services, Municipalities, Adjacent Watersheds	2021
53	Administration	Coordination with Partners	**Carver County Groundwater Plan Support.** The CCWMO supports Carver County in implementing the Carver County Groundwater Plan by providing funding, monitoring groundwater resources, and providing groundwater related education.	yes	Planning & Water Management	Ongoing
54	Administration	Technical Assistance	**Technical Assistance.** As time and funding allow, the CCWMO will provide technical assistance to landowners interested in projects and practices that provide a water quality benefit to water resources within the CCWMO.	yes	Planning & Water Management Dept, Carver SWCD	When requested
55	Administration	Coordination with Partners	**Outreach to Local Groups.** The CCWMO will develop methods to reach out to cities and local organizations/neighborhood groups to encourage partnerships with the CCWMO on project implementation, grant applications, education & outreach, etc.	No	Planning & Water Management Dept	Ongoing

Table 5-2. CCWMO Program Activities

ID	Program	Activity Type	Implementation Strategy	Existing Activity	Responsible Parties	Timeframe
56	Administration	Outreach	**Citizen Advisory Committee (CAC) Meetings.** The CCWMO will continue holding CAC meetings. The CAC consists of citizens representatives and advises the CCWMO Board and staff on a variety of topics including implementation activity prioritization; plans, studies, and other documents developed by the CCWMO; cost share applications; etc.	Yes	Planning & Water Management Dept	Monthly
57	Administration	Outreach	**Technical Advisory Committee (TAC) Meetings.** The CCWMO will continue holding TAC meetings. The TAC consists of city staff and engineers and representatives from state agencies. The TAC advises the CCWMO staff and CAC on a variety of technical topics including the Water Resource Management Ordinance, project design and feasibility, etc.	Yes	Planning & Water Management Dept	As needed
58	Administration	Coordination with Partners	**Annual City Meetings.** The CCWMO will meet annually with city representatives and engineers to review local plan implementation and to identify problems and projects that the CCWMO and cities can work together to address.	No	Planning & Water Management Dept	Annually
59	Administration	Local Water Plan Review	**Local Plan Review and Adoption.** Per MN Rule 8410.0160, Local Water Plan updates must be completed and approved by the CCWMO within two years of approval of the CCWMO Plan by the BWSR Board. Additional information on Local Plan Requirements can be found in Chapter 6. The CCWMO will consider alternative local plan amendment and update schedule requests from LGUs and will try to be flexible on due dates to accommodate the update schedules of other WMOs when LGUs are within the jurisdiction of more than one WMO. All plan updates must be submitted to the WMO at least 120 days prior to the due date to provide time for review and approval. LGUs will not be eligible for CCWMO Cost Share Funds if a local plan is determined to be expired.	Yes	Planning & Water Management Dept	2019-2020
60	Administration	Evaluating Effectiveness & Reporting	**Program Review.** The CCWMO will assess and review CCWMO programs (including cost share programs), implementation strategies, and proposed Capital Improvement projects through the CCWMO Annual Report, the Annual Water Quality Report, and using other data collected by the CCWMO. The CCWMO intends to use these reports to identify any necessary changes to the Plan. If the reports identify needed changes, the WMO will address the changes through a plan amendment as described in Chapter 6. The CCWMO anticipates completing plan amendments periodically during the life of the Plan.	No	Planning & Water Management Dept	Annually
61	Administration	Evaluating Effectiveness & Reporting	**Annual Report.** The CCWMO will review progress towards the goals identified in this plan using short term and long-term metrics described in Table 6-2. Short-term metrics will be incorporated into the CCWMO Annual Report. Short term metrics are related to the accomplishment of activities (e.g. number of activities, number of participants, etc.). Long-term metrics will be used to evaluate this Plan during the development of the next ten-year plan. Long term metrics generally involve resource-based outcomes.	Yes	Planning & Water Management Dept	Annually

5.3. CCWMO PRIORITY AREAS

The CCWMO covers an area approximately 320 square miles and includes 35 lakes over 10 acres in size, seven major streams and 15 public ditch systems. Additionally, the watershed is divided into six major drainage areas. Given the size of the CCWMO and the vast array of issues within it, there is a need for tools and methods to help focus implementation. This section describes the following tools that will help the CCWMO prioritize implementation: **waterbody prioritization tool**, **priority wetland restoration areas**, and **untreated urban areas**. In addition to the program implementation activities described above, the CCWMO also identifies these priority areas as critical elements of plan implementation.

5.3.1. PRIORITY WATERBODIES

Prioritizing waterbodies (lakes and streams) within the CCWMO is one tool that will help prioritize implementation. The purpose of prioritizing waterbodies within the CCWMO is to:

1. Help guide implementation decisions based on both water resource issues and how the resource is used by the community
2. Help differentiate between similar projects in different parts of the CCWMO
3. Utilize data collected by the CCWMO in management and implementation decisions
4. Create a framework for project implementation that can be updated over time as new data and information becomes available

Waterbodies have been prioritized within the CCWMO using the criteria described in Table 5-3. The criteria include factors like the waterbody's impairment status, presence of aquatic invasive species, and recreational use of the waterbody, among other things. The overall impairment status score is made up of three components:

1. Lake is above the state standard for TP or TSS
   a. More points awarded to water bodies above the state standard
   b. Purpose: to identify waterbodies with known impairments

2. Lake is close to the state standard
   a. More points were awarded to water bodies close to the standard
   b. Purpose: to identify waterbodies with the potential to be removed from the impaired waters list / keep unimpaired waterbodies from getting on the list

3. Trend for lake water quality is decreasing
   a. More points awarded to water bodies with decreasing trend
   b. Purpose: to identify waterbodies with a trend of worsening water quality

The criteria incorporate a variety of data collected by the CCWMO including lake and stream water quality information, lake vegetation survey information, and stream stability assessments. A numeric score was assigned to each criterion and scores were summed to create an overall priority ranking (see Waterbodies were divided into three priority groups (Priority 1, Priority 2, and Priority 3) based on the overall score. Priority 1 waterbodies are considered the current priority for project implementation. See Appendix B for additional information and individual scores for each waterbody.

Priority waterbody status will be a significant factor when projects are prioritized for implementation but other factors like water quality benefits, benefits of the project to the public, etc. will also be considered. See Section 5.4.1 for additional information on how the CCWMO prioritizes projects for implementation.

The results of the prioritization are shown in Figure 5-1. The waterbody prioritization will be updated periodically as new monitoring and other data becomes available and as the CCWMO utilizes the ranking to prioritize projects.

PRIORITY WATERBODY TARGET: Track project implementation by priority waterbody, including information on number of projects, acres treated, pollutant reductions, and other measures, as appropriate.

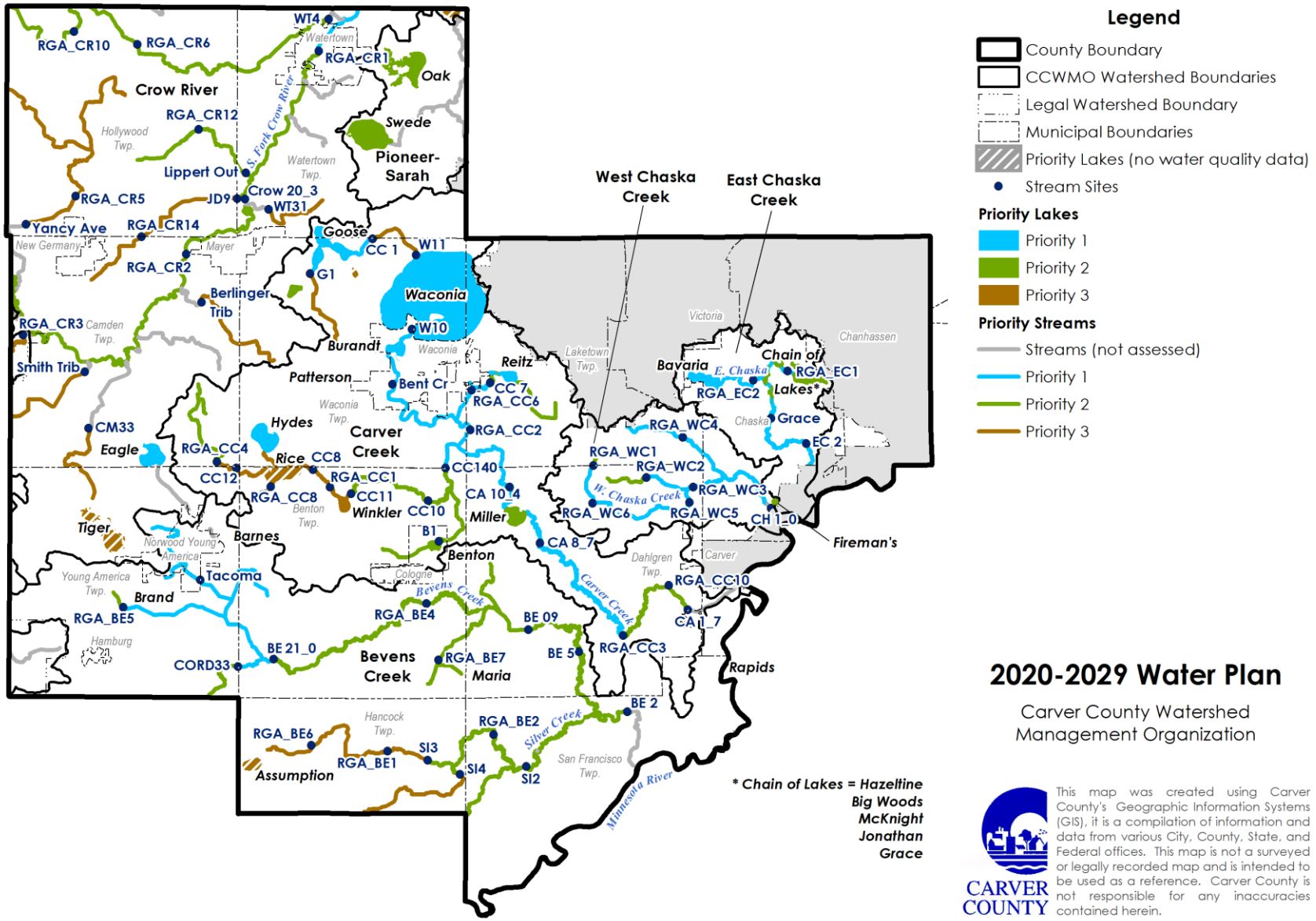
Table 5-3. Priority Waterbody Factors

Lakes	Streams
Impairment Status - Lake is above the state standard* for total phosphorus, total Kjeldahl nitrogen, or chlorophyll-a - 10-year average is close to the state standard* for total phosphorus, total Kjeldahl nitrogen, or chlorophyll-a - Trend for lake water quality is decreasing	**Impairment Status** - Stream is above the state standard for total phosphorus or total suspended solids - Stream is close to the state standard for total phosphorus or total suspended solids - Trend for stream water quality is decreasing
Aquatic Invasive Species Criteria - Suitability of lake to support zebra mussels - Number of aquatic invasive species currently present - Connectivity/ability to spread AIS to other lakes	**Rapid Geomorphic Assessment Score** - Score assigned based on the stability of the stream
In-lake Vegetation Criteria - Lake vegetation does not meet state standard for Index of Biologic Integrity - Lake vegetation is impaired under the Floristic Quality Index - Invasive species were observed at more than 50% of the sampling sites	
Fisheries Criteria	**Fisheries Criteria**

- A fish survey has been completed for the lake - Lake is stocked by DNR Fisheries	- A fish survey has been completed for the stream or river
Wildlife Criteria - A wildlife management area or other naturally maintained area is adjacent to the lake	**Wildlife Criteria** - A wildlife management area or other naturally maintained area is adjacent to the stream or river
Recreation Criteria - A fishing pier is present on the lake - A public access is present on the lake - A path or trail is adjacent to the lake - A beach is located on the lake	**Recreation Criteria** - A fishing pier is present on the stream or river - A public access is present on the stream or river - A path or trail is adjacent to the stream or river - The stream or river is designated as a State Water Trail (Crow River)
Overall Community Resource Criteria - Lake is located within or adjacent to a population center	**Overall Community Resource Criteria** - Stream/river is located within or adjacent to a population center

Notes:
*"State Standard" means the state water quality standards as developed by the Minnesota Pollution Control Agency. The standards are developed to rotect water resources for uses such as fishing, swimming and other recreation, and sustaining fish, bugs, plants, and other aquatic life as required under the federal Clean Water Act.

Figure 5-1. Priority Waterbodies (Source: Carver County)



5.3.2. PRIORITY WETLAND RESTORATION AREAS

According to the Board of Water and Soil Resources, Carver County has lost more than 50% of the wetlands that existed prior to European settlement. With such a large reduction in pre-settlement wetlands, wetland restoration is a valuable tool that will help replace lost wetland functions including water quality treatment, water storage, shoreline protection, recreation, ecosystem diversity, etc. In addition to replacing lost wetland functions, restoration is an important tool in achieving TMDL goals for streams with turbidity impairments.

Potential wetland restoration sites within the CCWMO have been identified and prioritized using the criteria described in Table 5-4. The sites are generally areas that were historically wetland but have been drained for a variety of purposes. The evaluation criteria include factors like the feasibility of restoration, storage provided, water quality benefits, and benefits to impaired waterbodies (Table 5-4). A numeric score was assigned to each criterion and scores were summed to create an overall wetland restoration priority ranking. The CCWMO will continue to refine the list of potential sites by working with landowners, site investigations, and completing preliminary design work, beginning with the sites that received the highest ranking. Specific projects involving wetland restoration will be added to the CCWMO Project List (Table 5-5) when more detailed information on project feasibility has been obtained.

Priority wetland restoration status will be a significant factor when projects are prioritized for implementation but other factors like water quality benefits, benefits of the project to the public, etc. will also be considered. See Section 5.4.1 for additional information on how the CCWMO prioritizes projects for implementation.

Table 5-4. Priority Wetland Restoration Factors

Feasibility of Restoration - Current land use (agricultural vs non-agricultural) - Existing, willing partner - Number of landowners
Storage - Available storage capacity - Percentage of the 2-year storm that can be retained - Percentage of the 10-year storm that can be retained
Water Quality Benefits - Estimated total phosphorus reduction - Estimated total suspended solids reduction - Estimated total nitrogen reduction
TMDL Implementation - Located in a watershed with an impaired waterbody - Located within 1 mile of an impaired water

PRIORITY WETLAND RESTORATION TARGET: Restore 500 acres of new wetland within the watershed through the implementation of wetland restoration projects.

5.3.3. UNTREATED URBAN AREAS

Large areas of the developed portion of the CCWMO have minimal or no stormwater treatment, especially those areas that developed before CCWMO rules were adopted in 2002. Finding ways to provide stormwater treatment in these areas will help the CCMWO address existing water quality problems and impairments. The CWWMO will require Local Plans to include a map and discussion of areas of the city with minimal or no stormwater treatment (see Section 6.4.4 of Chapter 6 for additional information). The purpose of this requirement is to clearly identify untreated urban areas so that potential stormwater retrofit project types and locations can be more easily identified. The CCWMO will partner with cities to identify and prioritize locations within these untreated areas where stormwater treatment practices can be installed that will provide additional storage capacity, reduce runoff rates and volumes, and/or reduce pollutant loads.

Projects that provide treatment in previously untreated areas will be a significant factor when projects are prioritized for implementation. Other factors like water quality benefits, benefits of the project to the public, etc. will also be considered. See Section 5.4.1 for additional information on how the CCWMO prioritizes projects for implementation.

UNTREATED URBAN AREA TARGET: Achieve a 10% reduction in the acreage of urban areas with no treatment through the implementation of stormwater retrofit projects.

5.4. CCWMO PROJECT LIST

Table 5-5 summarizes the projects proposed during the life of the plan. The project list is a planning and budgeting tool, and a way to inform partners, residents and other interested parties of the CCWMO's scope and priorities for work over the next 10 years. A project's inclusion in the project list does not mean that the project will be constructed or completed, only that the CCWMO has identified it as an action that may be a cost-effective way to achieve the water resource goals identified in this plan. Before a formal decision is made to proceed with a project, projects on the list will need additional evaluation in terms of technical feasibility, cost and financing, consistency with partner needs and priorities, and other policy considerations (see Section 5.4.1 for additional information).

The costs given in the Table 5-5 are estimated amounts and may be revised as part of feasibility studies or final designs completed prior to implementation. Funding for projects will come from the CCWMO Levy, grants, and collaborations with local governments and other partners. The CCWMO will pursue collaborations and grant opportunities to reduce the portion of the total cost borne by property owners within the CCWMO. The CCWMO may implement the activities and projects listed in Table 5-5 at a different time than shown in the table, as circumstances dictate. For example, the availability of grants or partnerships could result in either the acceleration or delay of projects.

The project list will be updated as feasibility studies, TMDL implementation plans, etc are completed and new projects are identified. The CCWMO anticipates updating the project list approximately every two years.

Table 5-5. CCWMO Projects

ID	Project Description & Need	Sub-watershed	Benefitted Waterbody	Project Type	Project Partners	Timeframe[1]	Total Cost[2]	CCWMO Cost[2]	Notes
1	**Lake Waconia SWA Implementation.** Implement strategies identified in the Lake Waconia Subwatershed Analysis Feasibility Study to preserve and protect the quality of Lake Waconia. Projects will be completed as time and funding allow.	Carver Creek	Lake Waconia (Priority 1)	Stormwater BMPs	City of Waconia	Short-, mid-, long-term	$150,000	$50,000	
2	**Eagle Lake SWA Implementation.** Implement strategies identified in the Eagle Lake Subwatershed Analysis Feasibility Study to improve the quality of Eagle Lake. Projects will be completed as time and funding allow.	Crow River	Eagle Lake (Priority 1)	Stormwater BMPs	Parks Department, SWCD	Short-, mid-, long-term	$100,000	$50,000	

Table 5-5. CCWMO Projects

ID	Project Description & Need	Sub-watershed	Benefitted Waterbody	Project Type	Project Partners	Timeframe[1]	Total Cost[2]	CCWMO Cost[2]	Notes
3	**East Chaska Creek Chain of Lakes SWA Implementation.** Collaborate with the City of Chaska to implement strategies identified in the East Chaska Creek Chain of Lakes Subwatershed Analysis Feasibility Study. Projects would reduce impervious surfaces and add stormwater treatment for currently untreated areas and improve the quality of stormwater runoff reaching the East Chaska Creek Chain of Lakes. Projects will be completed as time and funding allow.	East Chaska Creek	East Chaska Creek Chain of Lakes (Priority 2)	Stormwater Retrofit	City of Chaska	2020-2021 2022-2023 2024-2025 2026-2027 2028-2029	$200,000	$50,000	
4	**Swede Lake TMDL Implementation.** Implement strategies identified in the Swede Lake TMDL Implementation Plan to improve the water quality in Swede Lake.	Pioneer Creek	Swede Lake (Priority 2)	Lake Restoration	SWCD	2020-2021 2022-2023 2024-2025 2026-2027 2028-2029	$115,000	$50,000	
5	**Stream Restorations.** Restore stream reaches that have been altered by human activities to a more natural/stable state. Restoration practices may include remeandering, reconnection to floodplains, reconnection to historical stream beds, abandoning maintenance schedules, and other BWSR approved practices.	Watershed wide	Watershed wide	Stream Restoration	SWCD; NRCS; CROW; DNR; Army COE	2020-2021 2022-2023 2024-2025 2026-2027 2028-2029	$500,000	$100,000	
6	**Bank Stabilization.** Stabilize eroded and degraded streambanks to reduce erosion into streams. The CCWMO will prioritize projects that project infrastructure and utilize natural armoring to stabilize banks.	Watershed-wide	Watershed-wide	Bank Stabilization		2020-2021 2022-2023 2024-2025 2026-2027 2028-2029	$300,000	$150,000	

Table 5-5. CCWMO Projects

ID	Project Description & Need	Sub-watershed	Benefitted Waterbody	Project Type	Project Partners	Timeframe[1]	Total Cost[2]	CCWMO Cost[2]	Notes
7	**SSTS Direct Discharge Incentives.** In 2007, the County Board established a cost share program to accelerate the elimination of direct discharge SSTS. The program offers direct incentives and low-interest loans to landowners to fix these systems.	Watershed-wide	Watershed-wide	SSTS upgrades	Environmental Services Dept.	2020-2021 2022-2023 2024-2025 2026-2027 2028-2029	$600,000	$600,000	Replacement of direct discharge SSTS will be complete in the Bevens and Carver Creek Subwatershed in 2019 and then focus will shift to the South Fork Crow River and East and West Chaska Creek.
8	**Stormwater Retrofits in Untreated Urban Areas.** Collaborate with cities, business, and other landowners to implement stormwater retrofits practices in areas with minimal or no stormwater treatment that improve water quality in priority waterbodies. Untreated areas have been identified in local water plans.	Watershed-wide	Watershed-wide	Stormwater Retrofit	Local Partners	2020-2021 2022-2023 2024-2025 2026-2027 2028-2029	$400,000	$200,000	
9	**Turf to Prairie/Forest Initiative.** Restore large areas of managed turf grass to prairie/forest to conserve groundwater and improve the quality of stormwater runoff.	Watershed-wide	Watershed-wide	Prairie Restoration	Cities	2020-2021 2022-2023 2024-2025 2026-2027 2028-2029	$100,000	$50,000	
10	**Bevens Creek Dam Removal.** Remove an existing, failing dam and repair eroding banks. The dam is located on Bevens Creek south of County Road 50.	Bevens Creek	Bevens Creek (Priority 2)	Stream Restoration	SWCD, Public Works Department, DNR	2020-2021	$300,000	$50,000	
11	**Benton Lake Management.** Continue to manage rough fish populations in Benton Lake. Removal of rough fish will reduce in-lake pollutant loads and help restore game fish to the lake.	Carver Creek	Benton Lake (Priority 2), Carver Creek (Priority 2)	Lake Management	City of Cologne, Benton Lake Conservancy, SWCD	2020-2021 2022-2023 2024-2025	$80,000	$50,000	

Table 5-5. CCWMO Projects

ID	Project Description & Need	Sub-watershed	Benefitted Waterbody	Project Type	Project Partners	Timeframe[1]	Total Cost[2]	CCWMO Cost[2]	Notes
12	**Benton Lake Stormwater Retrofits.** Collaborate with the City of Cologne and willing landowners to install stormwater retrofit projects in the Benton Lake watershed. The retrofits will treat stormwater from untreated areas of the city and improve the quality of runoff reaching Benton Lake.	Carver Creek	Benton Lake (Priority 2), Carver Creek (Priority 2)	Stormwater Retrofit	Cologne	2020-2021	$100,000	$50,000	
13	**County Ditch 7 Treatment System Feasibility Study.** Explore the feasibility of installing a treatment system (bio-reactor or soluble phosphorus treatment) on the outlet of County Ditch (CD) 7 in Hollywood Township (Section 29). CD 7 drains approximately 750 acres of agricultural land.	Crow River	Crow River (Priority 2)	Feasibility Study	SWCD	2022-2023	$10,000	$10,000	
14	**Wetland Restoration Prioritization – Crow River Subwatershed.** Prioritize wetland restoration areas within the Crow River Subwatershed.	Crow River	Crow River (Priority 2)	Feasibility Study	SWCD	2020-2021	$10,000	$10,000	
15	**Irrigation Efficiency Pilot Project.** Conserve groundwater resources and prevent additional runoff by increasing the efficiency of irrigation systems. The program will be piloted in an area of Chaska where residents will be offered incentives to install SMART controllers on existing irrigation systems.	East Chaska Creek	East Chaska Creek (Priority 1)	Education, Groundwater Conservation	City of Chaska, Neighborhood Associations	2020-2021	$20,000	$10,000	
16	**Wetland Restoration.** Restore priority wetland restoration areas as identified in the wetland restoration area prioritization.	Watershed-wide	Watershed-wide	Wetland Restoration	Cities, SWCD, US Fish and Wildlife Service, BWSR	2022-2023 2024-2025 2026-2027 2028-2029	$50,000	$50,000	

Table 5-5. CCWMO Projects

ID	Project Description & Need	Sub-watershed	Benefitted Waterbody	Project Type	Project Partners	Timeframe[1]	Total Cost[2]	CCWMO Cost[2]	Notes
17	**BE9 Lake Restoration Implementation.** Continue work to restore a historic lake bed on Bevens Creek. Continue work with landowners on easement opportunities to fully restore the lake bed.	Bevens Creek	Bevens Creek (Priority 2)	Lake Restoration	SWCD; NRCS; Ducks Unlimited, Pheasants Forever	2022-2023	$100,000	$50,000	Approximately 50 acres of the lake bed were restored in 2018.
18	**NYA Stormwater Retrofits.** Construct a stormwater BMP to treat runoff from approximately 415 acres of agricultural land and 169 acres of residential development that is currently untreated.	Bevens Creek	Bevens Creek (Priority 1)	Stormwater Retrofit	City of NYA	2024-2025	$240,000	$50,000	
19	**Bayview Elementary Reuse Expansion.** Install 2 additional underground storage tanks and upgrade pretreatment system.	Carver Creek	Lake Burandt (Priority 1)	Stormwater Retrofit	City of Waconia, School District	2022-2023	$200,000	$50,000	
20	**Carver Creek Floodplain Reconnection.** Reconnect a degraded and historically ditched section of Carver Creek to its floodplain to reduce bank degradation and soil loss.	Carver Creek	Carver Creek	Stream Restoration	City of Carver, US Fish and Wildlife Service, SWCD	2022-2023	$100,000	$50,000	
21	**Carver Creek Gully Stabilization.** Stabilize a large gully on Carver Creek in Dahlgren Township (Section 26).	Carver Creek	Carver Creek (Priority 2)	Bank Stabilization	SWCD, NRCS	2024-2025	$40,000	$10,000	
22	**Dahlgren Road Stormwater Retrofit.** Address stormwater issues along Dahlgren Road west of County Road 11. Stormwater from the road surface currently drains untreated to Timber Creek, a tributary of Carver Creek.	Carver Creek	Timber Creek	Stormwater Retrofit	Dahlgren Township, City of Carver	2022-2023			

Table 5-5. CCWMO Projects

ID	Project Description & Need	Sub-watershed	Benefitted Waterbody	Project Type	Project Partners	Timeframe[1]	Total Cost[2]	CCWMO Cost[2]	Notes
23	**Green Parking Demonstration Project.** Replace a large area of red rock parking in the City of Waconia with a "green" parking technique. The project will reduce sediment leaving the site and improve downstream water quality.	Carver Creek	Carver Creek (Priority 1)	Stormwater Retrofit		2022-2023	$250,000	$50,000	
24	**Watertown Dam Removal.** Work with appropriate agencies to remove the dam in Watertown to connect the Crow River from the Mississippi River to Otter Lake in Hutchinson MN. Removing the dam will provide a valuable connection for native fish species to crucial spawning grounds. The project will also reduce bank erosion and reduce the risk of drowning caused by the tailwaters of the dam.	Crow River	Crow River (Priority 2)	Stream Restoration	SWCD; CROW; DNR Fish and Wildlife Services; City of Watertown; Army COE; Dam Safety Program;	2024-2025	$200,000	$25,000	
25	**East Chaska Creek Chain of Lakes Reclamation - Phase 1.** Implement methods to control carp populations and improve water quality in the East Creek Chain of Lakes as identified in the Drawdown Feasibility Study. This phase would focus on Hazeltine Lake.	East Chaska Creek	East Chaska Creek Chain of Lakes (Priority 2)	Lake Restoration	City of Chaska	2024-2025	$200,000	$75,000	
26	**Bongards Area SSTS Community Treatment Feasibility Study.** Identify options for replacing aging septic systems in the CC9 subwatershed near Bongards with a community septic system.	Carver Creek	Carver Creek (Priority 1)	SSTS upgrades		2028-2029	$50,000	$10,000	

Table 5-5. CCWMO Projects

ID	Project Description & Need	Sub-watershed	Benefitted Waterbody	Project Type	Project Partners	Timeframe[1]	Total Cost[2]	CCWMO Cost[2]	Notes
27	**East Chaska Creek Chain of Lakes Reclamation - Phase 2.** Implement methods to control carp populations and improve water quality in the East Creek Chain of Lakes as identified in the Drawdown Feasibility Study. This phase would focus on Big Woods, McKnight, Jonathan and Grace Lakes.	East Chaska Creek	East Chaska Creek Chain of Lakes (Priority 2)	Lake Restoration	City of Chaska	2026-2027	$225,000	$75,000	
28	**Low-cost Greenroof Demonstration Project.** Install a low-cost green roof as a demonstration project. Replacing traditional rooftops with living plants can improve water quality and reduce runoff.	Watershed-wide	Watershed-wide	Stormwater Retrofit		2026-2027	$30,000	$25,000	
29	**Plastics Collection Demonstration Project.** Implement a demonstration project to collect plastics and other trash from waterbodies before they move further downstream. Plastics and trash are emerging pollutants for surface water resources.	Watershed-wide	Watershed-wide	Stormwater Retrofit		2026-2027	$30,000	$30,000	

1. Timeframes:
   - 2020-2021
   - 2022-2023
   - 2024-2025
   - 2026-2027
   - 2028-2029

2. Where Total Cost exceeds CCWMO Cost, CCWMO will rely on grants and other sources of outside funding (cities, state agencies, etc) to complete the projects.

5.4.1. PRIORITIZING PROJECTS

On an annual basis, projects proposed for implementation in the following calendar year are prioritized for funding using the factors listed in Table 5-6. A overall numeric score is assigned to each project based on a quantitative or semi-quantitative analysis of a project's potential benefit based on the criteria in Table 5-6. The list of projects to be evaluated includes projects from the following sources:

- Projects from the CCWMO project list (Table 5-5) that are ready to move forward
- Projects submitted by LGUs and other entities as part of the LGU cost share program
- Other projects or initiatives identified by the county board or submitted by petition via the process described in Section 6.4.1

All potential projects are evaluated using the prioritization criteria (Table 5-6) and then projects are selected for implementation based on their score and the amount of funding available. The project prioritization and list of projects recommended for funding is reviewed by the Citizen Advisory Committee before being approved by the county board.

Table 5-6. Project Prioritization Criteria

Project Prioritization Criteria	Relative Importance of Category (% of total score)
CCWMO Priority Area Criteria Project benefits a priority waterbody Project is within an untreated urban area Priority wetland restoration	**30%**
Project Benefit Criteria Phosphorus loading reduction Sediment loading reduction Rate control reduction Volume control reduction Other parameter reduction Removal of invasive species	**30%**
Cost Criteria County share of total cost Total project cost	**5%**
Plan Status Criteria Project is included in WMO plan Project is included in Local plan	**10%**

Table 5-6. Project Prioritization Criteria

Project Prioritization Criteria	Relative Importance of Category (% of total score)
Public Benefit Criteria Project is a demonstration site (new or unique project type) Project is an educational site (readily accessible for tours or provides interpretive signage) Project is accessible to public Multiple partners support the project Overall community value	**20%**
Project Feasibility Criteria Ease of implementation	**5%**

6. ADMINISTRATION

6.1 AUTHORITY

The Carver County Watershed Management Organization's (CCWMO) authority derives from Minnesota Statute 103B.231 Subd. 3 (b).

6.2 ORGANIZATION

6.2.1 History

The CCWMO was established in 1996 when the State Board of Water & Soil Resources (BWSR) transferred management authority for the Carver Creek, Bevens Creek, South Fork Crow River, Chaska Creek and Hazeltine Bavaria Creek watershed districts to Carver County. The CCWMO was established to fulfill the County's water management responsibilities under Minnesota Statute and Rule. The County chose the watershed management organization structure for the following reasons:

- Provides a sufficient economic base to operate a viable program;
- Avoids duplication of effort by government agencies;
- Avoids creation of a new bureaucracy by integrating water management into existing County departments and related agencies;
- Establishes a framework for cooperation and coordination of water management efforts among all the affected governments, agencies, and other interested parties; and
- Establishes consistent water resource management goals and standards for at least 80% of the county.

6.2.2 Board of Managers

The County Board is the "governing body" of the CCWMO for surface water management. In function and responsibility, the County Board is equivalent to a joint powers board or a watershed district board of managers.

6.2.3 Citizen Advisory Committee

The Citizen Advisory Committee (CAC) is made up of appointed citizen representatives from each of the five commissioner districts in the county and each of the four major subwatersheds in the county. A representative of the SWCD board and a liaison from the Technical Advisory Committee also serve on the CAC. The CAC works with staff in the Planning and Water Management Department of Carver County to make recommendations to the County Board on matters relating to the CCWMO water management plan and budget; and advise staff

and the County Board on water related issues. As the need arises for special projects, the County Board reserves the right to obtain additional input from stakeholders and citizens who may not be serving on the advisory committees.

The make-up of the CAC is as follows:

- Citizen Representative from Commissioner District 1
- Citizen Representative from Commissioner District 2
- Citizen Representative from Commissioner District 3
- Citizen Representative from Commissioner District 4
- Citizen Representative from Commissioner District 5
- Citizen Representative from Carver Creek watershed
- Citizen Representative from Crow River/Pioneer Creek watersheds
- Citizen Representative from Bevens Creek watershed
- Citizen Representative from East/West Chaska Creek watersheds
- TAC Liaison
- SWCD Board Member

6.2.4 Technical Advisory Committee

The Technical Advisory Committee (TAC) is made up of city and township staff or elected representatives and representatives of state agencies (Board of Water and Soil Resources, Department of Natural Resources, Metropolitan Council, Minnesota Pollution Control Agency, etc.). The TAC provides feedback on technical issues relating to plan and project implementation. TAC meetings are called as needed throughout plan implementation.

6.2.5 Staff

Water management is an interdisciplinary effort and involves several County departments and associated County agencies including: Planning and Water Management, Land Management, Environmental Services, and the Carver Soil and Water Conservation District (SWCD). The County Planning and Water Management Department is responsible for developing and updating the water plan, coordinating plan implementation (programs, projects, and cost share programs), and other administrative functions (committees, budget, etc.).

Other departments and agencies will be called upon to perform water management duties that fall within their area of responsibility. These responsibilities may change as new issues or needs arise.

6.3 IMPACT ON LGUs

The CCWMO is the current regulatory authority for implementing the CCWMO's Water Resource Management Ordinance for all areas in the watershed. This plan does not require LGUs to take on this role and the choice to do so is at the LGUs discretion (see Section 6.4.3 for additional information). Other regulatory controls referenced in the plan are based upon existing state or federal standards and requirements to implement these standards do not originate with the CCWMO. Table 6.1 summarizes implementation responsibilities for the CCWMO, Carver County, and cities within the CCWMO for the standards and programs described in this plan.

Table 6.1 CCWMO and LGU Roles (as of 2019)

LGU	Stormwater Permitting	Erosion & Sediment Control Permitting	Shoreland Management	Floodplain Management	Wetland Conservation Act	SSTS Program	MS4 Program	Local Water Plan Status
CCWMO	Responsible for all areas within CCWMO Boundary	Responsible for all areas within CCWMO Boundary	Relies on LGUs	Relies on LGUs	Relies on LGUs (Carver County and Cities)	Relies on Carver County and City of Chanhassen	-	-
Carver County	Relies on CCWMO, RPBCWD, or MCWD	Relies on CCWMO, RPBCWD, or MCWD	Responsible for township areas	Responsible for township areas	Responsible for township areas	Responsible for all areas in the County excluding Chanhassen	Mandatory small MS4	-
Townships	Relies on CCWMO, or MCWD	Rely on CCWMO or MCWD	Rely on Carver County	Rely on Carver County	Rely on Carver County	Rely on Carver County	Laketown Township is a mandatory small MS4	Townships adopt CCWMO or MCWD plan as Local Water Plan
Carver	Relies on CCWMO, city may have additional requirements	Relies on CCWMO, city may have additional requirements	City is responsible, status of ordinance unknown	City is responsible, Ordinance adopted in 1995	City is responsible	Relies on Carver County	Mandatory small MS4	Approved December 17, 2013
Chanhassen	Relies on CCWMO, RPBCWD; city may have additional requirements	Relies on CCWMO, RPBCWD; city may have additional requirements	No Shoreland in CCWMO	No Floodplain in CCWMO	City is responsible	City is responsible	Mandatory small MS4	Approved August 22, 2006

Table 6.1 CCWMO and LGU Roles (as of 2019)

LGU	Stormwater Permitting	Erosion & Sediment Control Permitting	Shoreland Management	Floodplain Management	Wetland Conservation Act	SSTS Program	MS4 Program	Local Water Plan Status
Chaska	Relies on CCWMO, RPBCWD; city may have additional requirements	Relies on CCWMO, RPBCWD; city may have additional requirements	City is responsible, Ordinance adopted in 1989	City is responsible, Ordinance adopted in 1998	City is responsible	Relies on Carver County	Mandatory small MS4	Approved November 3, 2015
Cologne	Relies on CCWMO, city may have additional requirements	Relies on CCWMO, city may have additional requirements	City is responsible, Ordinance adopted in 2000	N/A (does not participate in National Flood Insurance Program)	City is responsible	Relies on Carver County	-	Approved October 15, 2013
Hamburg	Relies on CCWMO, city may have additional requirements	Relies on CCWMO, city may have additional requirements	No Shoreland in CCWMO	N/A (does not participate in National Flood Insurance Program)	City is responsible	Relies on Carver County	-	Approved November 7, 2006
Mayer	CCWMO is responsible, city may have additional requirements	Relies on CCWMO, city may have additional requirements	City is responsible, Ordinance adopted in 2001	City is responsible, Ordinance adopted in 2001	City is responsible	Relies on Carver County	-	Approved October 15, 2013
New Germany	Relies on CCWMO, city may have additional requirements	Relies on CCWMO, city may have additional requirements	No Shoreland in CCWMO	N/A (does not participate in National Flood Insurance Program)	City is responsible	Relies on Carver County	-	Approved October 15, 2013

Table 6.1 CCWMO and LGU Roles (as of 2019)

LGU	Stormwater Permitting	Erosion & Sediment Control Permitting	Shoreland Management	Floodplain Management	Wetland Conservation Act	SSTS Program	MS4 Program	Local Water Plan Status
Norwood Young America	Relies on CCWMO, city may have additional requirements	Relies on CCWMO, city may have additional requirements	City is responsible, Ordinance adopted in 2005	N/A (does not participate in National Flood Insurance Program)	City is responsible	Relies on Carver County	-	Approved December 17, 2019
Victoria	Relies on CCWMO, MCWD; city may have additional requirements	Relies on CCWMO, MCWD; city may have additional requirements	City is responsible, Ordinance adopted in 1994	City is responsible, Ordinance adopted in 1975	Relies on MCWD and Carver County	Relies on Carver County	Mandatory small MS4	Approved October 1, 2019
Waconia	Relies on CCWMO, city may have additional requirements	Relies on CCWMO, city may have additional requirements	City is responsible, Ordinance adopted in 1995	City is responsible, Ordinance adopted in 1992	City is responsible	Relies on Carver County	Mandatory small MS4	Approved October 15, 2013
Watertown	Relies on CCWMO, city may have additional requirements	Relies on CCWMO, city may have additional requirements	City is responsible, Ordinance in development	City is responsible, Ordinance adopted in 1992	City is responsible	Relies on Carver County	-	Approved October 15, 2013

6.4 LOCAL WATER PLANS

6.4.1 Requests to Update the Plan or Project List

The CCWMO acknowledges that this Plan cannot identify all existing or future problems, opportunities or issues. Additional issues from citizens, LGUs, or other entities may be addressed as they arise and are evaluated through plan review and adoption. The CCWMO plans to update the project list (Table 5.4) approximately every two years to maintain a current project list that reflects the needs and issues of the watershed.

Municipal LGUs or Township Boards who wish to propose a change to the project list may do so by submitting a petition to the County Board. Citizen group or organization requests for action should begin on the LGU or township level with a request that the council or board submit a petition stating the problem and reason for requesting assistance from the CCWMO. Petitions must be made in writing, clearly state the issue and desired outcome of the requested action and provide adequate supporting documentation. The petition will be reviewed by staff and the CAC and a recommendation regarding further action. The County Board will then take such action it deems appropriate based on the Plan with could include consideration as part of an annual workplan and Project Planning, use of existing programs or project funding, or plan amendments.

6.4.2 General Description of Local Plan Content

LGUs are responsible for adopting Local Surface Water Management Water Plans (Local Plans) that implement the CCWMO Water Plan. Local Plans are required to conform to Minnesota Statutes Chapter 103B.235, Minnesota Rules Chapter 8410, and the CCWMO Water Plan (Plan). A general summary of requirements for Local plans as outlined in Minnesota Statute and Rule is outlined below:

A. an executive summary that summarizes the highlights of the local water plan;

B. a summary of water resource management-related agreements that have been entered into by the local community

C. the existing and proposed physical environment and land use must be described, including drainage areas and the volumes, rates, and paths of storm water runoff

D. an assessment of existing or potential water resource-related problems must be summarized

E. a local implementation program must describe nonstructural, programmatic, and structural solutions to the problems identified in item D

Since the adoption of the CCWMO's first Plan in 2001, except for the City of Victoria, all cities within the WMO have developed and adopted local water management plans consistent with the CCWMO's Plan (see Table 6.1 for the status of local water plans). The City of Victoria is expected to grow into the CCWMO during the life of this plan and develop a local plan consistent with the CCWMO's Plan. Townships have the option to adopt the CCWMO Plan as their local water management plan or develop a separate local plan which would need to conform to the County plan and the state requirements for content. All townships have chosen to adopt the CCWMO Plan as their local plan.

6.4.3 Implementation of CCWMO Rules

Application of CCWMO rules and permit requirements is governed by Minnesota Statutes §103B.211, subdivision 1(a)(3), which authorizes the CCWMO to:

> *…regulate the use and development of land in the watershed when one or more of the following conditions exists:*
>
> *i. the local government unit exercising planning and zoning authority over the land … does not have a local water management plan approved and adopted in accordance with the requirements of section 103B.235 or has not adopted the implementation program described in the plan;*
>
> *ii. an application to the local government unit for a permit for the use and development of land requires an amendment to or variance from the adopted local water management plan or implementation program of the local unit; or*
>
> *iii. the local government unit has authorized the organization to require permits for the use and development of land;*

In accordance with this statute, the CCWMO will implement and enforce its rules and permit requirements within the boundaries of the CCWMO. **An LGU's local plan must specify whether it authorizes the CCWMO to continue to apply its rules within the locality.**

On the request of a city or township in its local plan, the CCWMO will cease to apply its rules and permit requirements within the boundaries of that LGU on its approval of the LGU's local water plan. To approve a local plan, the WMO must find that the local permit program is at least as protective of water resources as the WMO rules. If an LGU wishes to assume the sole regulatory role, the local plan must include the following:

1. **Identify those CCWMO rules for which it wishes to assume sole regulatory authority.** This includes some or all of the CCWMO's Rules (Erosion Control, Stormwater Management, Wetland Protection, Floodplain Management, Topsoil Management).

2. For those rules for which the LGU wishes to assume sole regulatory authority, the local plan must include **existing or proposed ordinances** to allow the CCWMO to determine that they are at least as protective of water resources as the rules.

3. Include **procedural details of local ordinances** (for example, procedural information on permit processing, hearings, or public notice requirements). Procedural details may differ from WMO rules if the differences do not compromise water resource protection.

4. Describe an ordinance compliance **monitoring and enforcement program** in adequate detail.

5. For those rules for which the LGU wishes to assume sole authority, it must describe the **technical expertise** it has or will acquire to implement its ordinances, describe how it will monitor and enforce compliance, and present an estimate of its annual cost to implement its program.

6. State that within one year after the CCWMO provides notice that it has significantly revised a CCWMO rule, the LGU will submit for CCWMO approval, **adopt and put into effect a revised ordinance consistent with changes to CCWMO rules**. If the LGU chooses not to make the revision, it can simply authorize the CCWMO to apply its revised rule within LGU boundaries.

7. If an LGU chooses to exercise sole regulatory authority with respect to one or more CCWMO's rules, the CCWMO's approval of the delegation of regulatory authority will be given effect through a **memorandum of understanding (MOU)** executed by the CCWMO and the LGU. The MOU will:

    a. Describe the regulatory roles of each party;
    b. State, in accordance with §103B.211, subdivision 1(a)(3)(ii), that the CCWMO must approve the granting of any variance to a water resource ordinance by the LGU;
    c. Reserve the CCWMO's ability to exercise its regulatory authority within LGU boundaries if the LGU is not implementing its regulatory program in accordance with its local plan;
    d. Describe a phased-in approach to delegating permitting authority to demonstrate effectiveness of the local permitting program and to ensure compliance with CCWMO rules;

e. Specify ongoing or periodic communication and auditing process between the WMO and the LGU to allow for WMO awareness of the LGU's water resource permitting activity.

6.4.4 Stormwater Runoff Management and Untreated Urban Areas

Local plans must include a map and discussion of areas of the city with minimal or no stormwater treatment. The purpose of this requirement is to clearly identify untreated urban areas so that potential stormwater retrofit project types and locations can be more easily identified. To comply with the CCWMO Plan, the following should be included in local plans:

1. A map of the city that clearly classifies land within the city and its growth area into the following categories:

    a. Areas of existing development with no stormwater treatment
    b. Areas of existing development with minimal stormwater treatment (i.e. areas treated by a pond that provides rate control)
    c. Areas of the existing development with full stormwater treatment (i.e. areas of the city that developed after 2002 when the CCWMO first adopted its Water Resource Management Ordinance)
    d. Undeveloped portions of the city. Undeveloped areas will be required to comply with the CCWMO's Water Resource Management Ordinance.

2. Each area should be included/labeled in the map legend.

3. Definitions of each area should be included in the plan.

4. An untreated area project category should be added to the implementation program and/or capital improvement program.

The CCWMO will partner with cities to identify and prioritize locations within these untreated areas where stormwater treatment practices can be installed that will provide additional storage capacity, reduce runoff rates and volumes, and/or reduce pollutant loads.

6.4.5 Annual Meeting with the CCWMO.

Local Plans must specify that cities will meet annually with the CCWMO to identify potential projects and other opportunities for partnership. To comply with the 2019 CCWMO Water Plan, an implementation strategy specifying that the city will meet with the CCWMO annually to coordinate plan elements (i.e. improvement projects, education opportunities, potential partnerships, etc.) must be included in the plan.

6.4.6 Local Plan Evaluation & Annual Report

Local plans must include an evaluation of their previous plan. The evaluation must include a summary of progress made towards completing the implementation strategies and capital projects identified in the previous plan. Local Plans must also include an implementation action that specifies that an annual report or summary of implementation activities will be submitted to the CCWMO

6.4.7 Local Water Plan Review & Approval by CCWMO

By updating and adopting the CCWMO Water Plan in advance of the 10-year deadline (October 2020), the CCWMO aims to better align the CCWMO's Water Plan update process with LGU updates to Comprehensive Plans and Local Water Plans. CCWMO Staff met with LGUs during the development of the CCWMO's Water Plan and provided information on the Local Water Plan requirements outlined in this chapter. Comments on CCWMO Local Water Plan requirements will also be provided to LGUs during the review of their 2040 Comprehensive Plans (which includes the Local Water Plan). Local Water Plans that include the requirements outlined in the Chapter during 2040 Comprehensive Plan review will not require further updates. Local Water Plans that do not include the requirements in this Chapter must follow the update process described below.

Local Water Plans must be submitted to the CCWMO and other entities in accordance with MN Statute 103B.235 and MN Rule 8410.0160. Local Water Plan updates must be completed and approved by the CCWMO within one year of approval of the CCWMO Plan by the BWSR Board. The CCWMO will consider alternative local plan amendment and update schedule requests from LGUs and will try to be flexible on due dates to accommodate the update schedules of other WMOs when LGUs are within the jurisdiction of more than one WMO. All plan updates must be submitted to the WMO at least 120 days prior to the due date to provide time for review and approval. LGUs will not be eligible for WMO Cost Share Funds if a local plan is determined to be expired.

6.5 CCWMO PLAN ADOPTION & AMENDMENT PROCEDURES

6.5.1 Adoption of CCWMO Plan

This CCWMO Plan was adopted by the County Board on February 4, 2020. The plan was approved by the Board of Water and Soil Resources on December 18, 2019. This Plan cannot extend beyond 10 years after BWSR approval.

6.5.2 CCWMO General Plan Amendments

Amendments to the adopted plan shall be submitted to the towns, cities, county, the Metropolitan Council, the state review agencies, and the Board of Water and Soil Resources for review in accordance with the provisions of Minnesota Statute 103B.231, Subd. 11.

6.5.3 CCWMO Minor Plan Amendments

Minnesota Statute 103B.231, Subd. 11 allows minor plan amendments to be reviewed and approved according to standards outline in the watershed management plan. Minor Plan amendments as defined by Minnesota Rule 8410-0140, Subp. 2 describes Minor Plan Amendments as follows:

A. *the board has either agreed that the amendments are minor or failed to act within five working days of the end of the comment period specified in item B unless an extension is mutually agreed to with the organization;*

B. *the organization has sent copies of the amendments to the plan review authorities for review and comment allowing at least 30 days for receipt of comments, has identified the minor amendment procedure is being followed, and directed that comments be sent to the organization and the board;*

C. *no county board has filed an objection to the amendments with the organization and the board within the comment period specified in item B unless an extension is mutually agreed upon by the county and the organization;*

D. *the organization has held a public meeting to explain the amendments and published a legal notice of the meeting twice, at least seven days and 14 days before the date of the meeting; and*

E. *the amendments are not necessary to make the plan consistent with an approved and adopted county groundwater plan.*

If the amendment to the CCWMO Water Plan meets the criteria outlined above, the CCWMO will utilize the following standards for reviewing and approving Minor Plan Amendments.

1. **Public Meeting.** The CCWMO will hold a public meeting to explain the amendments. Prior to the meeting date, legal notice of the meeting will be published twice (at least seven days and at least 14 days before the date of the meeting).

2. **Comment Period and Review by Plan Review Authorities.** The CCWMO will provide copies of the amendments to plan review authorities, allowing 30 days for review and comment. The request for review

will include notification that the CCWMO believes the amendment to be minor and that the minor plan amendment process is being followed.

3. **Close of Comment Period.** If no objections to the amendment being classified as a minor plan amendment are received within 5 business days of the close of the 30-day comment period, the CCWMO will proceed with the Minor Plan Amendment Process.

4. **Incorporate Comments.** CCWMO staff will consider comments received and incorporate them into the plan amendment, as appropriate.

5. **Adoption by County Board.** CCWMO staff will present the plan amendment to the County Board for review and adoption.

Items considered to be Minor Plan Amendments include the following:

1. changes to the project list (Table 5.1),
2. clarification of existing goals, policies, or implementation strategies,
3. changes to existing cost share program criteria
4. changes to waterbody prioritization

6.6 FINANCING

There are a variety of funding sources the CCWMO can utilize to finance water plans, projects, and activities. These include a variety of taxes, assessments, charges, grants, and loans. The CCWMO primarily relies on the following sources of funding to implement the plan:

1. **County Wide Ad valorem taxes** - Because of the unique situation of the County being the CCWMO authority, the funding of CCWMO Plan implementation is complex and interwoven into County programs and functions. Several programs which implement the plan are County-wide programs and are therefore funded through the general levy or fees collected on a county-wide basis. These include feedlots, SSTS, Solid & Hazardous Waste, and portions of the operations of the SWCD, education program, monitoring program, planning functions, administration, floodplain, shoreland, and WCA programs.

2. **CCWMO Ad valorem taxes** - A separate levy is administered within the CCWMO boundaries (see Figure 5-1). Funds collected from this levy support the landowner cost share program, LGU cost share program, WMO capital projects,

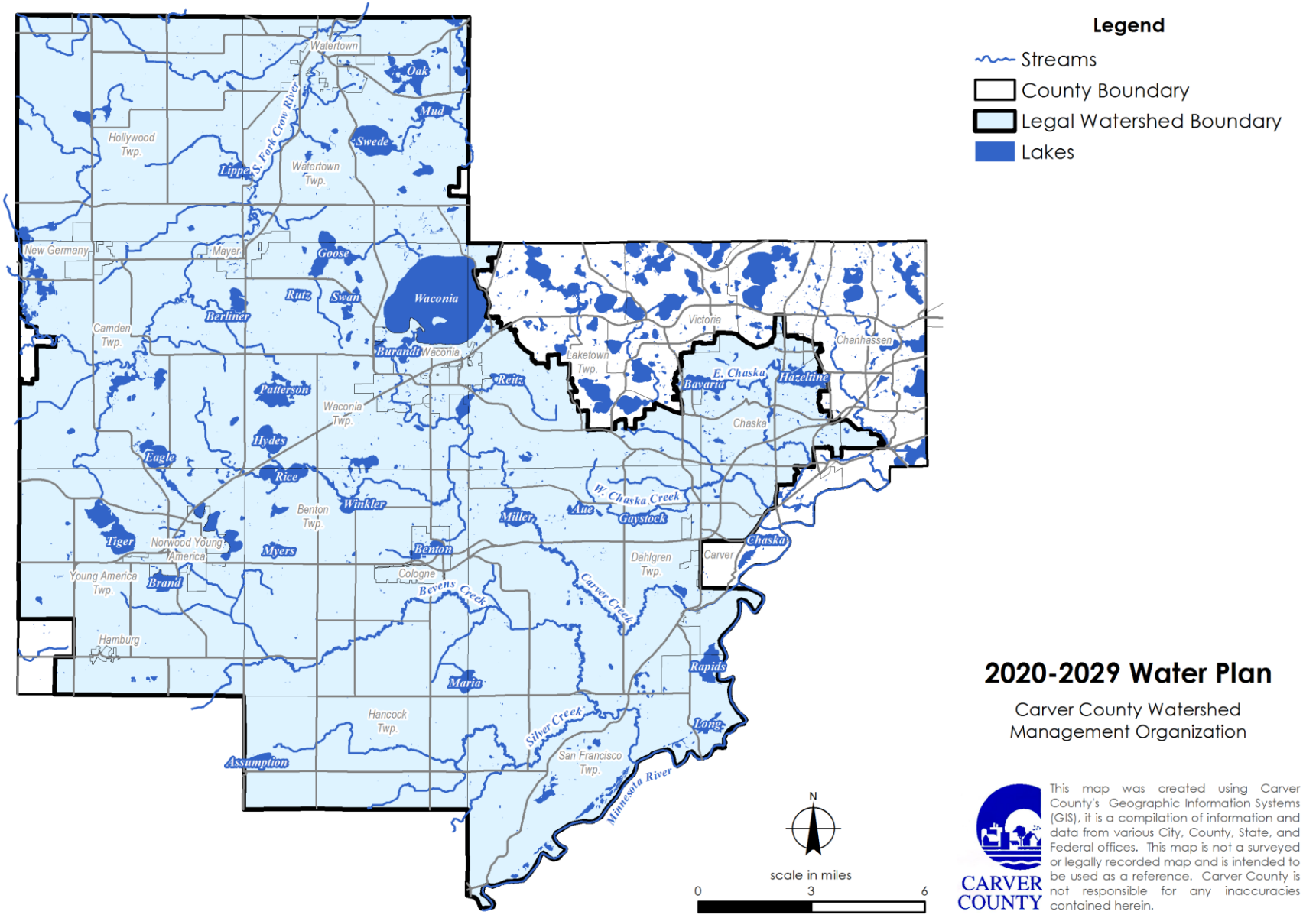
the administration of water management rules, and portions of the operations of the SWCD, education program, monitoring program, planning functions, administration, aquatic invasive species program, and WCA programs. The estimated impact of CCWMO Ad valorem taxes on an average home will likely be consistent with current impacts.

3. **Fees** – administration of the WCA and Water Resource Management Ordinance are partially funded through the collection of fees as described in the Carver County Fee Schedule.

4. **Grants and Partnerships** – the full implementation of the Water Plan will require outside funding. Current and past activities have been funded by the BWSR NRB Grant, Metropolitan Council Grants, BWSR Challenge grants, 301 grants, 319 grants, Aquatic Invasive Species State allocation, State Revolving Fund, State Cost Share funds, Clean Water Legacy funds, various federal funding sources, local agreements with LGU's and watershed districts, and private contributions of time and funds.

It is the responsibility of the LGUs to pursue funding mechanisms for programs that complement this Plan. The Metropolitan Surface Water Management Act (Act) gives LGUs within the authority to levy taxes (without regard to existing levy limitations) to pay for water resource planning and management activities required under the Act. Thus, LGU planning required to prepare or amend any plans and regulations to comply with the County's management plan can be funded by new local tax levies without regard to existing limitations on regular property tax levies within the LGU. A LGU as defined above and under Minnesota Statute 473.852 subd. 7 can also apply local levy over part of its jurisdiction by creating a local drainage district for tax and planning purposes. Since Carver County is the zoning authority for the unincorporated area in the county, the County will act as an LGU in those areas.

Figure 6-1. CCWMO Taxing District.



6.7 PROGRAM DESCRIPTIONS & FUNDING

CCWMO Implementation is carried out through six main areas: **Permitting, Projects, Monitoring, Education & Outreach, Planning & Research, and Administration.**

6.7.1 Permitting Program

Permitting plays a very important role in managing and addressing water resource problems. The Water Resource Management Ordinance was first adopted in 2001 and mostly recently updated in 2016. The ordinance is incorporated into the Carver County Code of Ordinances as Title XV, Chapter 153. The standards incorporated into the ordinance are listed below

- 153.55 Erosion and Sediment Control Standards
- 153.56 Stormwater Management Standards
- 153.57 Wetland Protection*
- 153.68 Shoreland Protection
- 153.59 Floodplain Protection
- 153.30 Topsoil Management

The standards outlined in the ordinance are the backbone of the CCWMO's permitting program. The various standards apply to land and water resource-disturbing activities as described in the ordinance. Any person or entity undertaking an activity that triggers one or more permit thresholds must obtain the required permit from the CCWMO prior to commencing the activity. Detailed information about the permit review process and complete rule language are available on the Carver County website (www.co.carver.mn.us/water_permits).

The permitting program is funded through a combination of the county-wide ad-valorem taxes, CCWMO ad valorem taxes, and fees.

*Note: Wetland Conservation Act permitting is carried out by Carver County.

6.7.2 CCWMO Projects

6.7.2.1 Capital Projects

Capital improvement projects involve on the ground, structural improvements initiated and funded by the CCWMO. Capital improvement projects are identified in Table 5.1 in the Implementation Chapter. The list of capital projects will be amended frequently during the life of the plan. These projects are typically funded through a combination of the CCWMO-wide ad valorem tax, and grants/partnerships.

Projects that require cross-boundary collaboration (e.g. regional storage, lake outlets, stream restorations), are part of a County/State public works /parks projects, or are broader in nature (for example, TMDL implementation projects), may be included in the County's annual 5-year CIP process. The annual 5-year CIP process would allow the County Board to include CCWMO projects as part of the larger County CIP. These projects could include financing by the County-wide ad valorem tax.

6.7.2.2 Cost Share Funds

Cost Sharing CCWMO funds is an effective way to implement the plan. Current cost share programs are listed below. Others may be established through Board resolution during the life of the plan. Appendix C contains the criteria used to distribute the funds for each program.

1. **LGU/Organization Partnerships** – In 2007, the CCWMO began an evaluation process which ranks requests from LGU/Organizations for cost-share funding for projects. Funds for LGU/Organization Partnership projects are allocated on an annual basis. Likewise, project solicitation occurs on an annual basis. Staff and the CAC advisory committee recommend projects to the County Board based on project rankings and available funds. Criteria for evaluating funding request include: amount of local match, water quality benefits, inclusion in local plan, benefit to an impaired water, and number of partners, among others. These project requests are typically funded through a combination of the CCWMO-wide ad valorem tax, LGU funds and grants/partnerships.

2. **Landowner Cost Share Fund** – The low-cost fund is intended to encourage landowners to implement innovative Best Management Practices (BMP) that protect and restore water quality within the CCWMO. Funds can be used by public or private landowners within the CCWMO to implement projects that meet any of the following criteria:

    a. Protect or restore quality of lakes and rivers
    b. Protect or restore groundwater resources

c. Protect or restore native plant communities
d. Innovative approaches to treat stormwater at the source

Funding requires a match of eligible expenses and a designated maximum level. Applications are accepted year-round as funds are available. Applications are solicited through a variety of means including workshops in high priority sub-watersheds, direct mailings to landowners in priority sub-watersheds, Carver SWCD contacts, an online newsletter, the Carver County Fair, etc. CCWMO staff determine the eligibility of a project based upon an established set of criteria and priorities, including: volume control; rate control; phosphorus reduction; aesthetics; functionality; wildlife habitat; public benefit; collaboration; and TMDL goals. Additional information on the evaluation process can be found in Appendix B. These project requests are typically funded through a combination of the CCWMO-wide ad valorem tax, and grants/partnerships in addition to the landowner cost share.

3. **Well Sealing Fund** – This cost share program provides funds for sealing abandoned wells that are a public safety hazard or that have the potential to contaminate groundwater sources. Participation in the program is solicited through a variety of means, including direct mailings to landowners and flyers posted at County offices. Eligibility of a project is based upon an established set of criteria: wells that are a public safety hazard; proximity to feedlots; proximity to the 100-year floodplain; proximity to Wellhead Protection Areas; proximity to industrial areas, road right-of-ways, rail roads, or pipelines; and wells that are installed through multiple aquifers. Additional information on the evaluation process can be found in Appendix B. These project requests are typically funded through a combination of the CCWMO-wide ad valorem tax, and grants/partnerships in addition to the landowner cost share.

4. **SSTS Direct Discharge Incentive Program** – In 2007, the County Board established an incentive program to accelerate the elimination of subsurface sewage treatment systems (SSTS) that discharge directly to surface water resource. The program offers direct incentives and low-interest loans to landowners to fix these systems. Applications are accepted annually based on priority subwatersheds recommended by the CAC and approved by the County board. These project requests are typically funded through a combination of the CCWMO-wide ad valorem tax in addition to the landowner cost share.

6.7.3 Monitoring Program

Having accurate and detailed data upon which to base decisions is critical to the success of this Plan. The CCWMO operates an extensive lake and stream management program to capture the dynamic and changing nature of water resources. The monitoring program is intended to improve the CCWMO's understanding of water resources and inform decisions about management of water resources within the CCWMO.

The CCWMO's monitoring program currently includes monitoring activities for lakes, streams, wetlands, groundwater, stormwater best management practices, CCWMO projects, and aquatic invasive species. An annual monitoring workplan outlines the CCWMO's various monitoring activities.

The monitoring program is funded through a combination of the CCWMO-wide ad valorem tax, state grants and state or LGU partnerships.

6.7.4 Education & Outreach Program

The purpose of the education and outreach program is to support the goals of this Plan and improve water quality by educating target audiences and encouraging behavior changes that protect water resources. An annual education workplan outlines the CCWMO's various education activities. Education and outreach activities are used to increase awareness of water resources, foster stewardship of water resources, and encourage behaviors that will protect and preserve water resources.

The CCWMO's education coordinator develops the annual education workplan and leads its implementation. The education & outreach program is funded through a combination of county-wide taxes, CCWMO-wide taxes, and grants/partnerships.

6.7.5 Planning & Research Program

The planning & research program is integrated with other CCWMO programs and aims to further the goals of the CCWMO by:

- Researching the effectiveness of installed BMP's or proposed BMP's.
- Evaluating the effectiveness of CCWMO efforts and their effectiveness on meeting the plan goals.
- Determining the effectiveness of CCWMO efforts on changing awareness and behavior towards meeting the plan goals.
- Conducting unique or specialized planning and feasibility studies to more effectively meet the goals of the water plan and the requirements of MN statutes and rules.
- Coordinating with local, regional, state, federal, academic, non-profit and private partners to share and conduct research in a cost effective manner.

Staff to manage the above duties and processes are funded through a combination of the county-wide ad-valorem taxes, and CCWMO ad valorem taxes.

6.7.6 Administration

Proper administration of the CCWMO's fiscal and staff resources is integral to achieving the goals outlined in this Plan. Effective execution of the implementation strategies and activities identified in the plan requires sound fiscal management, adequate staff capacity and expertise, regular outreach and partnership with citizens and other stakeholders, and iterative planning.

Staff to manage the above duties and processes are funded through a combination of the county-wide ad-valorem taxes, and CCWMO ad valorem taxes.

6.8 PLAN EVALUATION

6.8.1 2010 Plan Evaluation

Appendix D includes a detailed evaluation of the implementation strategies and activities outlined in the 2010 Carver County Water Plan. The evaluation lists each implementation activity/project listed in the 2010 plan, the status of the activity or project (completed, partially completed, not completed, or ongoing), and a description of the accomplishments regarding each activity. A general discussion of the effectiveness of implementing the 2010 plan is also included.

6.8.2 2020 Plan Evaluation

The CCWMO will evaluate implementation of the 2020 Plan through the CCWMO Annual Report and the annual Monitoring Report. The Annual Report will summarize the implementation strategies and cost share projects completed during the reporting time frame. Table 6.2 summarizes the metrics that will be used to evaluate short-term and long-term progress towards plan implementation. Short-term metrics will be incorporated into the CCWMO Annual Report. Short term metrics are related to the accomplishment of activities (e.g. number of activities, number of participants, etc.). Long-term metrics will be used to evaluate this Plan during the development of the next ten-year plan. Long-term metrics generally involve resource-based outcomes.

Table 6.2 Short- and Long-term Metrics.

Program Area	Issues Addressed	Short-term Metrics	Long-Term Metrics
Permitting	Surface Water Quality Surface Water Quantity Coordination with Partners	- Number of applications (stormwater and WCA) reviewed - Number/type of practices approved and installed - Number of inspections completed - Number of Stormwater BMPs monitored - Acres of wetland impacted - Summary of water quality benefits of permitted BMPs - Acres of land treated by permitted BMPs	- Achievement or maintenance of state water quality standards - % reductions for pollutants - Number of collaborations Effectiveness of collaborations
Projects	Surface Water Quality Surface Water Quantity Groundwater Resource Protection Awareness & Behavior Coordination with Partners	- Summary of project implementation (including information on funding source and amount, WMO contribution, project details) - Number of non-compliant SSTS systems replaced - Number of direct discharge SSTS systems replaced - Number of landowner cost share projects completed - Summary of water quality benefits of WMO and cost share projects	- completion of projects proposed in CCWMO Project List - % reductions for pollutants - Acreage of untreated areas retrofitted with stormwater treatment - Acreage/# of wetland restoration projects completed - Track project implementation by priority waterbody category
Monitoring	Coordination with Partners Evaluating Effectiveness & Progress	- Number of lakes monitored - Number of streams monitored - Number of stormwater BMPs monitored - Number of wells monitored - Number of coordinating partners - $ leveraged - Summary of water quality trends	- Trends in water quality parameters as identified in monitoring reports - Achievement or maintenance of state water quality standards - Prioritization of waterbodies
Education & Outreach	Surface Water Quality Surface Water Quantity Groundwater Resource Protection Awareness & Behavior Coordination with Partners Evaluating Effectiveness & Progress	- Number of educational programs offered - Number of people directly connected with education programs	- Same as short-term metrics
Planning & Research	Awareness & Behavior Coordination with Partners Evaluating Effectiveness & Progress	- Number of research efforts - Number of coordinating partners - Number of plans reviewed/approved - Number of feasibility studies	- # of projects/programs resulting from planning & research activities

Table 6.2 Short- and Long-term Metrics.

Administration	Coordination with Partners Evaluating Effectiveness & Progress	- Annual budget - Amount of grant funding received - CAC maintained and meetings held - Annual report prepared	- Budget trends over time - Number of collaborations Effectiveness of collaborations

A. WETLAND FUNCTION AND VALUES ASSESSMENT METHODOLOGY

Carver County Wetland Assessment Contents

Continue to next slide for buffer and restoration assessments

Carver County Wetland Assessment Contents (continued)

GIS Based Wetland Assessment Method

Carver County's Wetland Inventory and Functional Value Analysis was based on Doug Snyder's report entitled **"A GIS Based Wetland Assessment Methodology for Urban Watershed Planning"**

After the MN Board of Soil and Water Resources performed a pilot wetland assessment using this methodology in the Norwood Young America area, the Carver County Water Plan task forces decided it would be helpful to perform the assessment county-wide.

This presentation is the documentation of the process and results.

GIS Based Wetland Assessment Method

The purpose of the wetland assessment methodology is to aid the county in their efforts to organize, prioritize, and manage wetland resources in a comprehensive manner.

This is intended to be viewed as a dynamic document and database integrated with GIS. Changes should be made to this model as more information becomes available.

This information may be used to enhance the county's environmental and economic sustainability by identifying high functioning, high valued wetland communities and developing strategies to preserve and manage them.

Functional Values

Surface Water Runoff – Evaluates storage results for the attenuation of peak high and low stream flows by the storage and slow release of water.

Flood Water Storage – Evaluates potential significance in providing temporary storage of flood waters to alleviate down stream flooding.

Shoreline Stabilization – Evaluates significance of sediment runoff reductions by holding the soil and shoreline in place in the face of erosive forces.

Hydrologic Control – Combines the three functions above into an overall functional value for stormwater management.

Functional Values

Water Quality – Evaluates potential for removal of sediment and related pollutants from overland runoff and precipitation.

Habitat– The objective is to evaluate habitat quality to best suit the greatest number of species.

Landscape and Wetland Characteristics – Evaluates the wetland's relation to the landuse and wetlands as elements of the landscape. It tries to determine the relative risk to the watershed integrity posed by wetland loss.

Functional Values

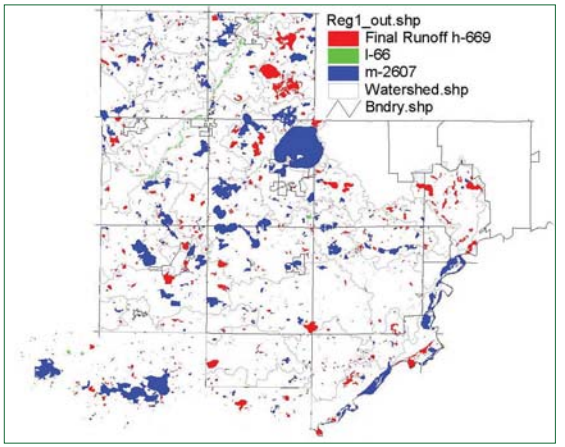
Aesthetics – Evaluates to the extent possible the things which most people agree add to the beauty of natural scenes.

Restoration – This assessment did not follow the given methodology, rather it applied the methodology for existing wetlands to those that no longer exist. The goal was to evaluate wetlands that have been drained or filled that would help develop and sustain the existing surface water/wetland matrix if restored.

Final Runoff Functional Value

Combining landscape and wetland functions for runoff into a final assessment.

- **High**
  Both high
- **Moderate**
  All other combinations
- **Low**
  Both low or one low and one moderate

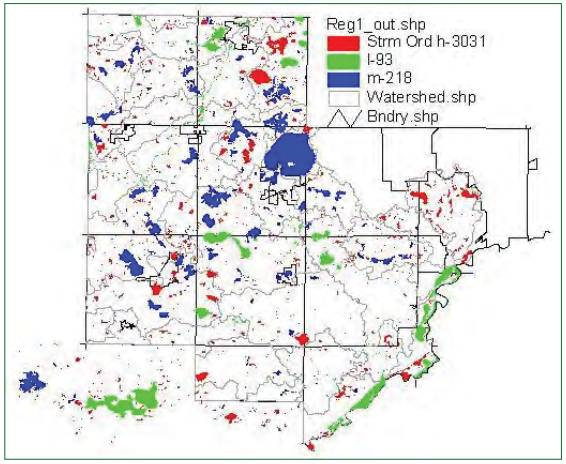


Stream Order (Landscape Function)

Runoff

The stream/ditch order number connected to the wetland basin.

- **High**
  1st order or no stream/ditch
- **Moderate**
  2nd or 3rd order
- **Low**
  4th order or greater

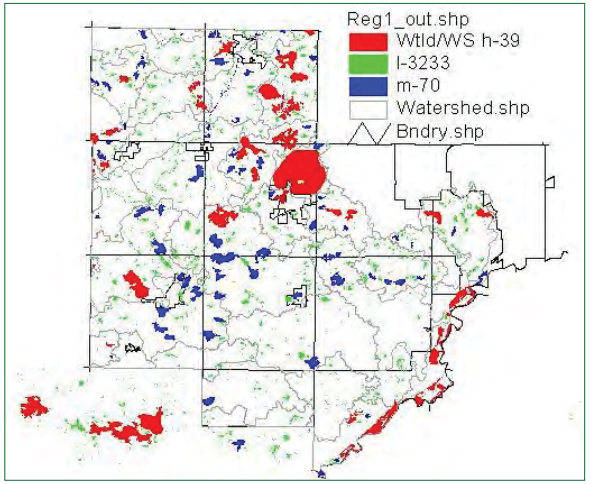


Wetland Area/Watershed Area (Landscape Function)

Runoff

The ratio of the wetland area to the subwatershed area.

- **High**
  >/= 0.02
- **Moderate**
  >/= 0.05 and <0.02
- **Low**
  <0.05

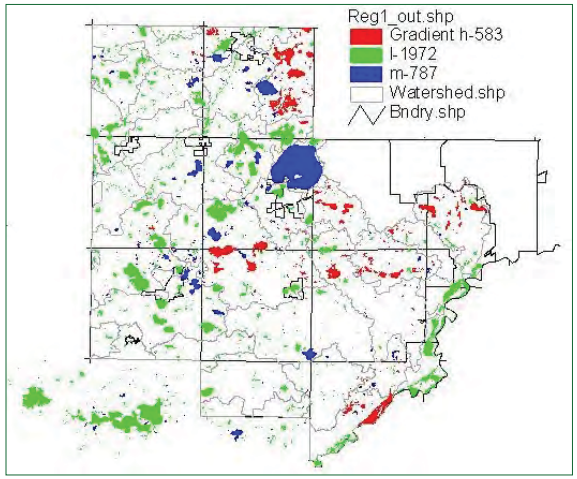


Gradient of Contributing Landscape
(Landscape Function)

Runoff

The greatest area covered by slopes ranging below from wetland to 800m out.

- **High**
  >/= 6% slope
- **Moderate**
  >/=2% and <6% slope
- **Low**
  <2% slope

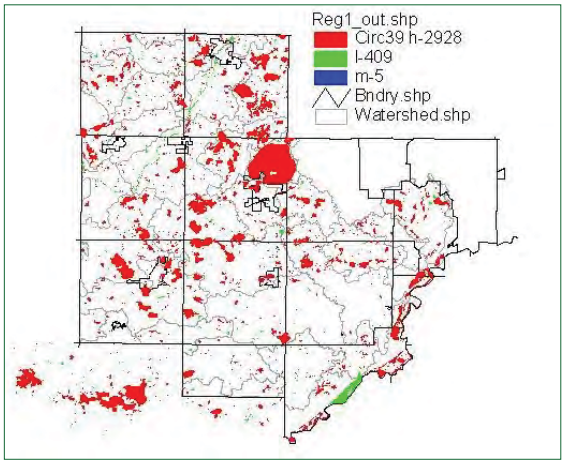


Circular 39 Wetland Type
(Wetland Function)

Runoff

The predominant wetland type for the basin.

- **High**
  Types 3, 4, 5, 6, 7
- **Moderate**
  Types 2
- **Low**
  Types 1, 90

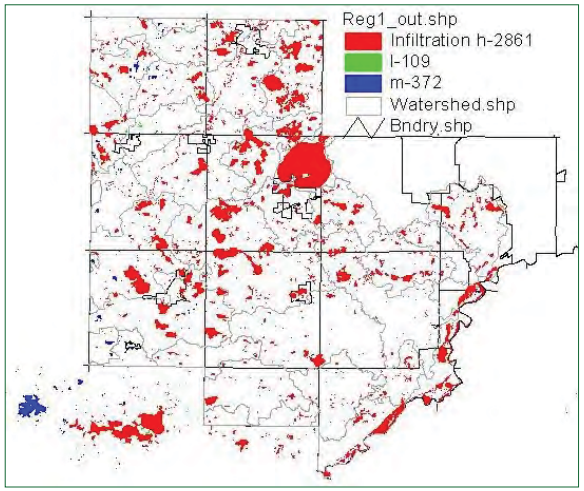


Soil Hydrologic Group (Wetland Function)

Runoff

The greatest area covered by soils types below from wetland to 800m out.

- **High**
  A, B soils
- **Moderate**
  C, A/d, B/d soils
- **Low**
  D, C/d soils

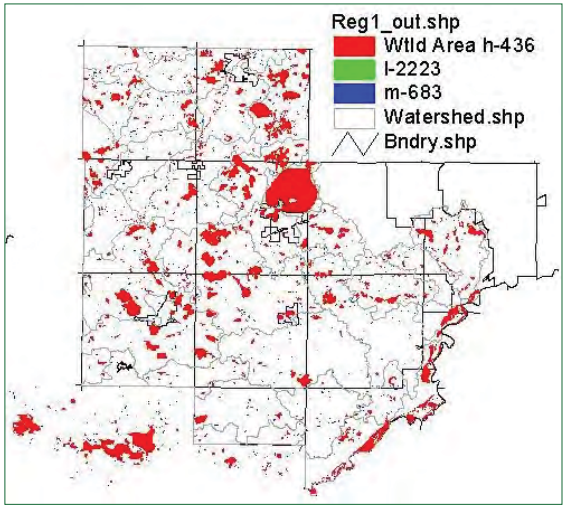


Wetland Area (Wetland Function)

Runoff

The area of the wetland basin.

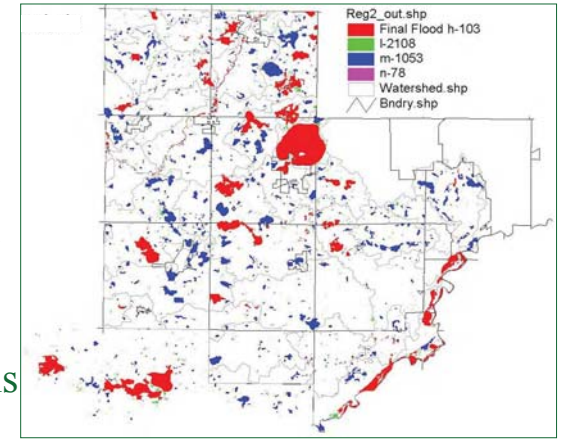
- **High**
  >/= 5 acres
- **Moderate**
  >/= 1and <5 acres
- **Low**
  <1 acre



Final Flood Functional Value

Combining landscape and wetland functions for flood into a final assessment.

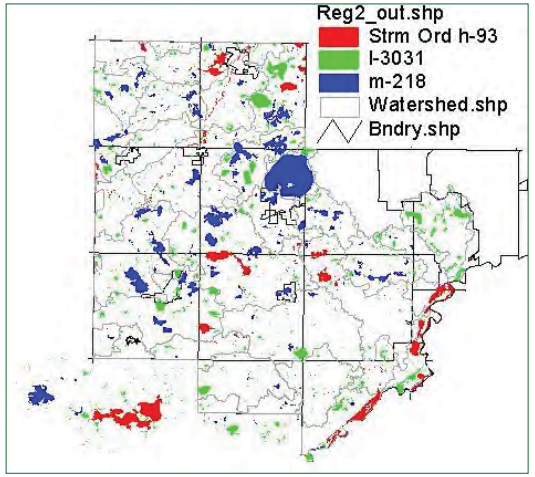
- **High**
  Both high or one high and one moderate
- **Moderate**
  All other combinations
- **Low**
  Both low or one low and one moderate



Stream Order (Landscape Function)

The stream/ditch order number connected to the wetland basin.

- **High**
  4th order or greater
- **Moderate**
  2nd or 3rd order
- **Low**
  1st order or no stream/ditch

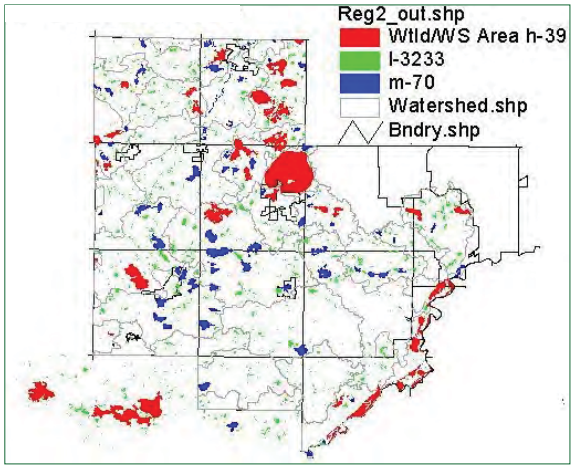


Wetland Area/Watershed Area
(Landscape Function)

Flood

The ratio of the wetland area to the subwatershed area.

- **High**
  >/= 0.02
- **Moderate**
  >/= 0.05 and <0.02
- **Low**
  <0.05

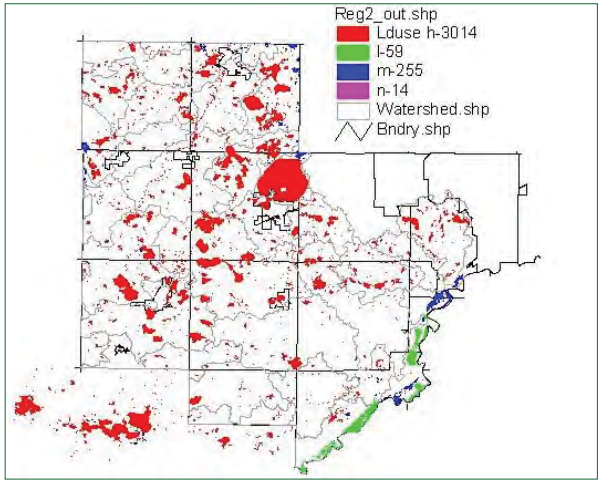


Adjacent Land Cover
(Landscape Function)

Flood

The % urban and/or ag landuse within 800m of the basin.

- **High**
  >/= 50%
- **Moderate**
  >/=25% and <50%
- **Low**
  <25%

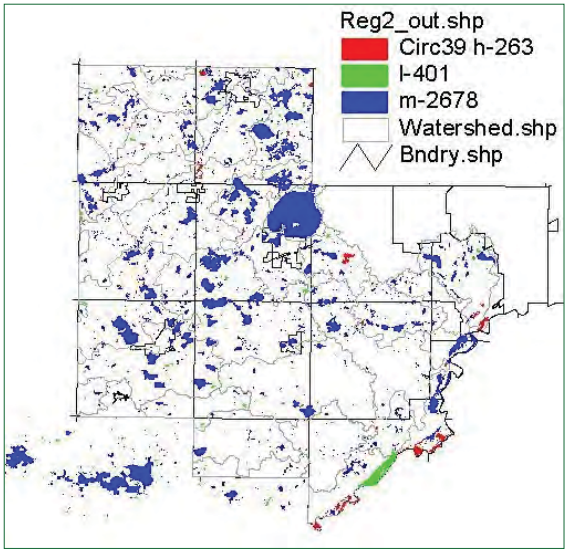


Circular 39 Wetland Type
(Wetland Function)

Flood

The predominant wetland type for the basin.

- **High**
  Types 6, 7
- **Moderate**
  Types 3, 4, 5, 90
- **Low**
  Types 1, 2

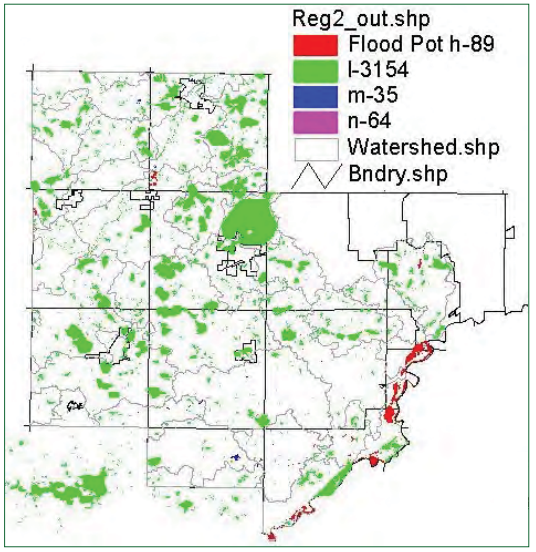


Flooding and Ponding Potential
(Wetland Function)

Flood

The potential for soils in wetland basin to hold water for a period of time.

- **High**
  Occasional to frequent
- **Moderate**
  Seasonal
- **Low**
  Infrequent

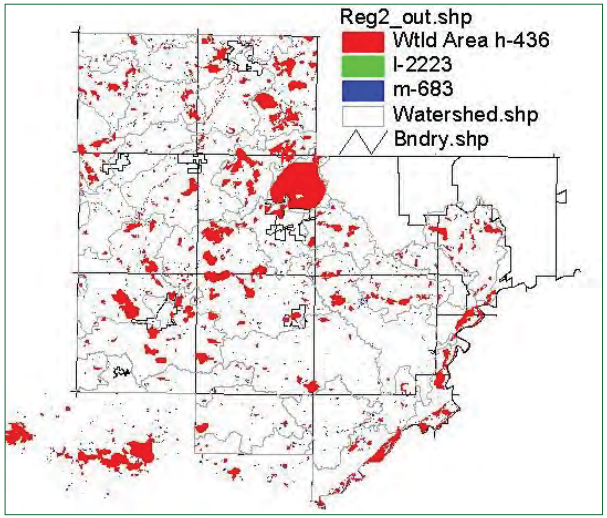


Wetland Area (Wetland Function)

Flood

The area of the wetland basin.

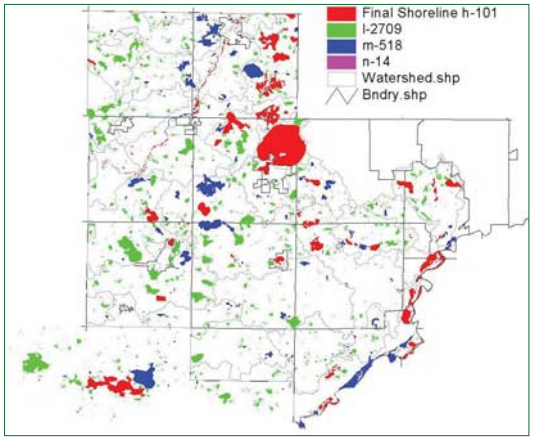
- **High**
  >/= 5 acres
- **Moderate**
  >/= 1and <5 acres
- **Low**
  <1 acre



Final Shoreline Functional Value

Combining landscape and wetland functions for shoreline into a final assessment.

- **High**
  Both high or one high and one moderate
- **Moderate**
  All other combinations
- **Low**
  Both low or one low and one moderate

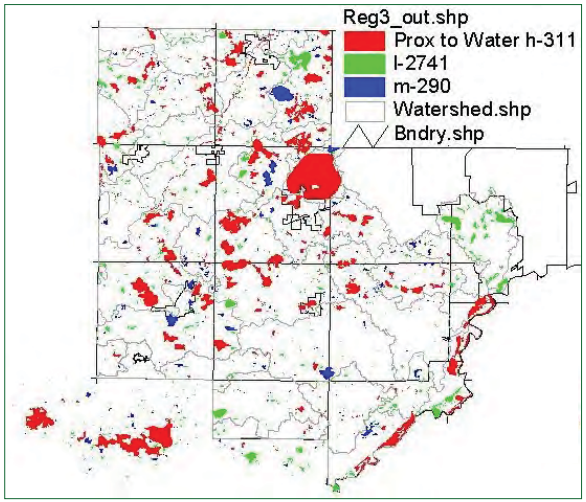


Proximity to a Water Body
(Landscape Function)

Shoreline

Basin connection to water bodies.

- **High**
  Stream order >/=2 or lake >/= 10 acres
- **Moderate**
  Stream order =1 or lake >/=2.5 and <10 acres
- **Low**
  All other wetlands

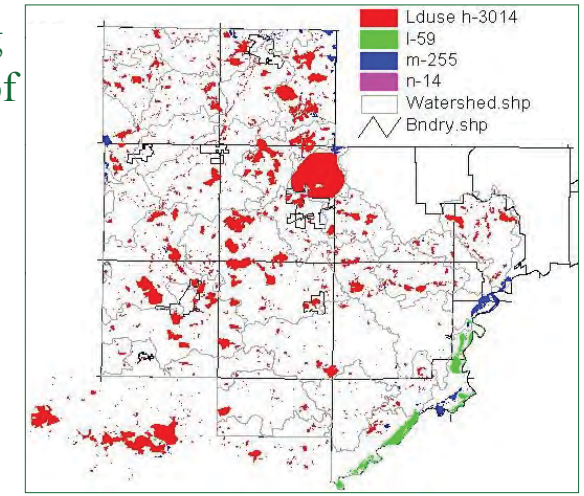


Adjacent Land Cover
(Landscape Function)

Shoreline

The % urban and/or ag landuse within 800m of the basin.

- **High**
  >/= 50%
- **Moderate**
  >/=25% and <50%
- **Low**
  <25%

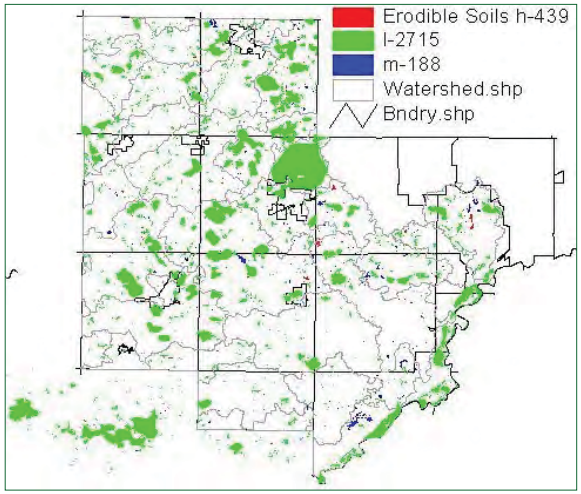


Proximity to Upland Erodible Soils
(Landscape Function)

Shoreline

The % area of soils within 200m of the basin that are highly erodible.

- **High**
  >/= 25%
- **Moderate**
  >/=10% and <25%
- **Low**
  All others

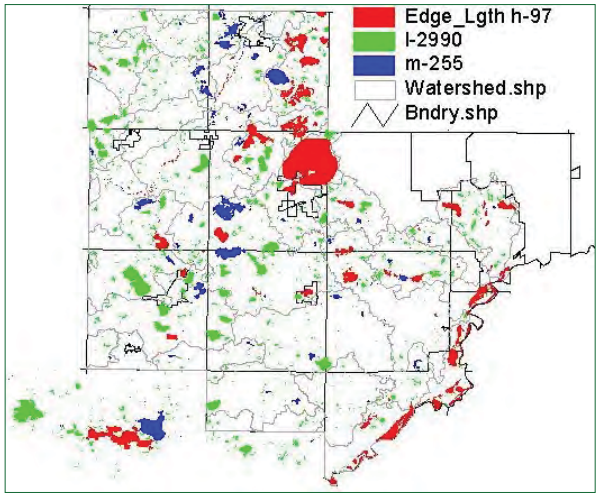


Edge Length Exposed to Open Water
(Wetland Function)

Shoreline

The edge length of basin exposed to open water.

- **High**
  >/=200m
- **Moderate**
  >/=60m and <200m
- **Low**
  <60m

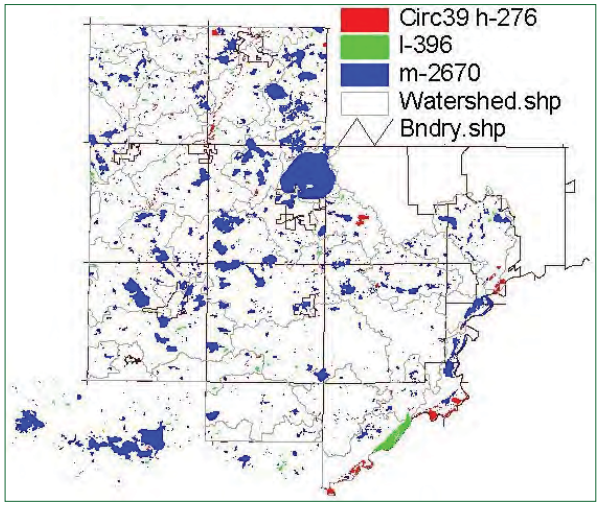


Circular 39 Wetland Type (Wetland Function)

Shoreline

The predominant wetland type for the basin.

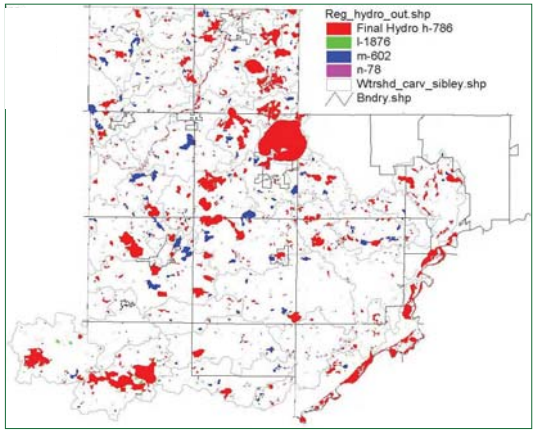
- **High**
  Types 6, 7, 90
- **Moderate**
  Types 2, 3, 4, 5
- **Low**
  Type 1



Hydrologic Functional Value

This function combined runoff, flood, and shoreline into a hydrologic control value

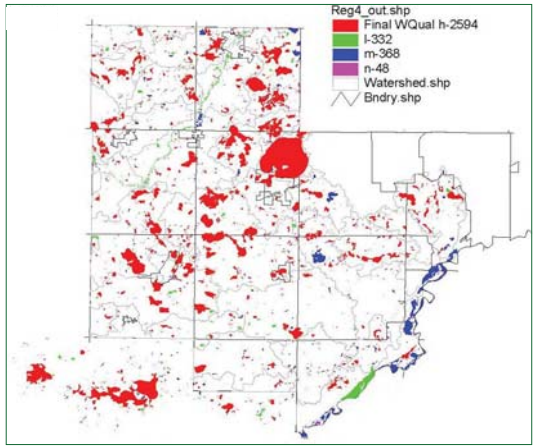
- **High**
  One or more is high
- **Moderate**
  All other combinations
- **Low**
  Two or three are low and none are high



Final Water Quality Functional Value

Combining landscape and wetland functions for water quality into a final assessment.

- **High**
  Both high or one high and one moderate
- **Moderate**
  All other combinations
- **Low**
  Both low or wetland is low and landscape is moderate

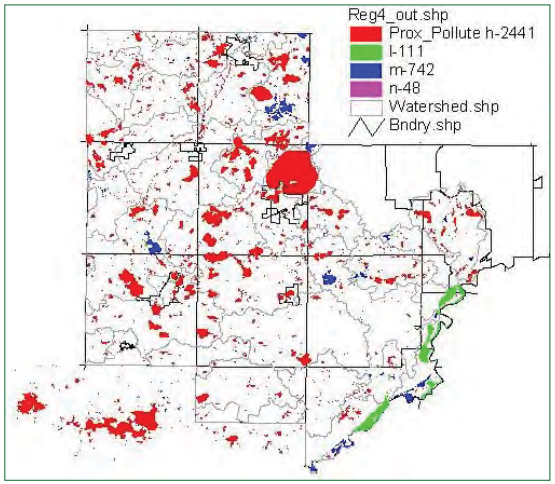


Proximity to Pollutant Sources
(Landscape Function)

Water Quality

The % urban and/or ag landuse within 200m of the basin.

- **High**
  >/= 50%
- **Moderate**
  >/=15% and <50%
- **Low**
  <15%

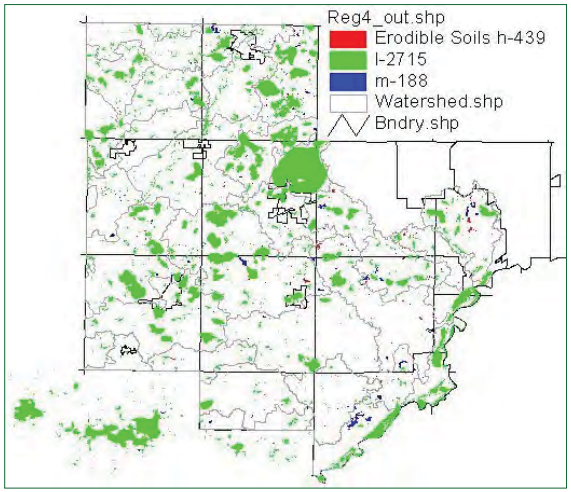


Proximity to Upland Erodible Soils (Landscape Function)

Water Quality

The % area of soils within 200m of the basin that are highly erodible.

- **High**
  >/= 25%
- **Moderate**
  >/=10% and <25%
- **Low**
  All others

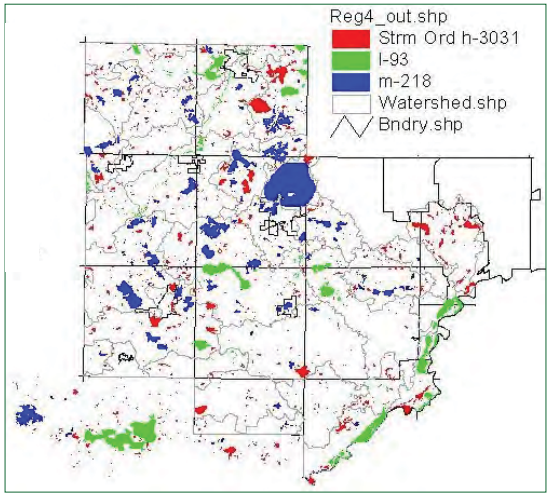


Stream Order (Landscape Function)

Water Quality

The stream/ditch order number connected to the wetland basin.

- **High**
  1st order or no stream/ditch
- **Moderate**
  2nd or 3rd order
- **Low**
  4th order or greater

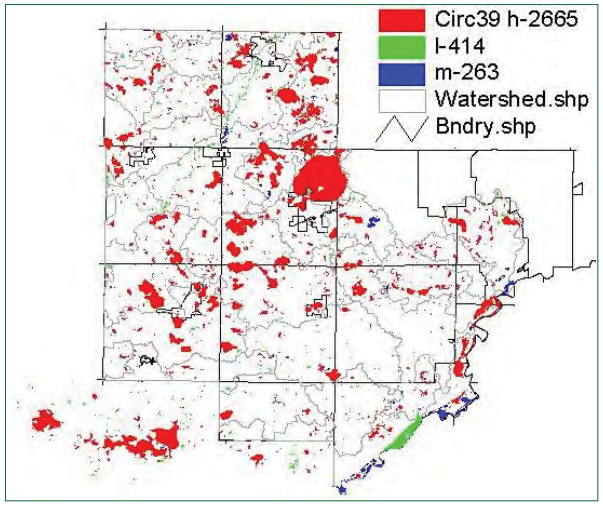


Circular 39 Wetland Type
(Wetland Function)

Water Quality

The predominant wetland type for the basin.

- **High**
  Types 3, 4, 5
- **Moderate**
  Types 6, 7
- **Low**
  Types 1, 2, 90

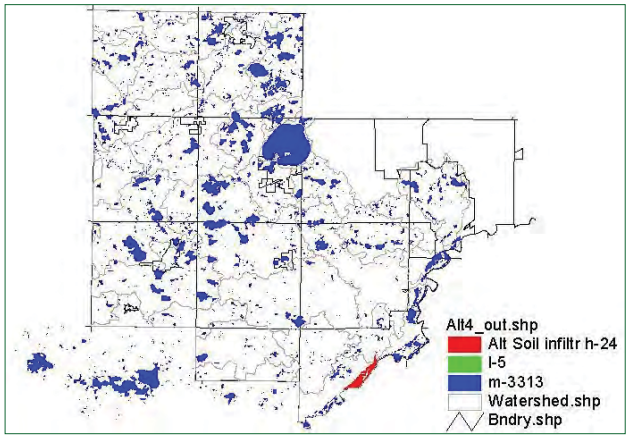


Soil Hydrologic Group
(Wetland Function)

Water Quality

The greatest area covered by soils types below from wetland to 800m out.

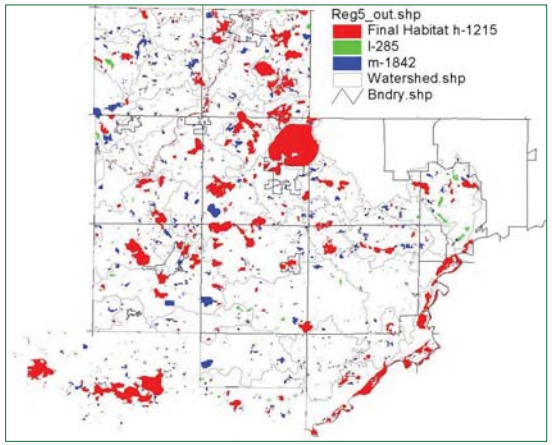
- **High**
  A, A/d soils
- **Moderate**
  B, B/d, C, C/d soils
- **Low**
  D soils



Final Habitat Functional Value

Combining landscape and wetland functions for habitat into a final assessment.

- **High**
  Both high or one high and one moderate
- **Moderate**
  All other combinations
- **Low**
  Both low or one low and one moderate

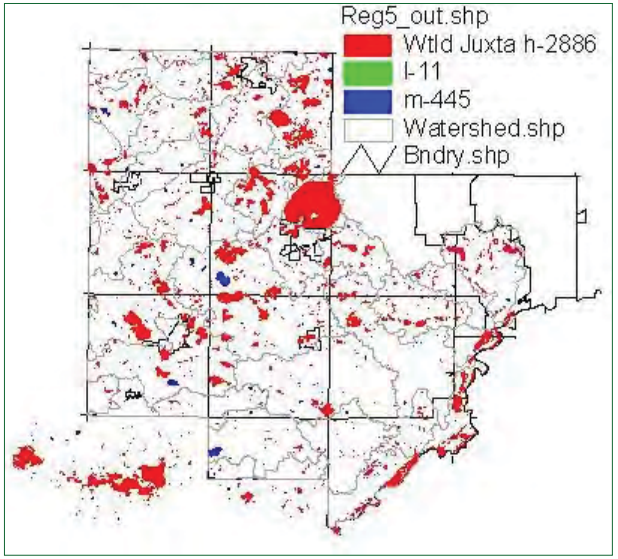


Adjacency to Other Wetlands
(Landscape Function)

Habitat

Distance from wetland to other wetlands.

- **High**
  </=200m
- **Moderate**
  </=800m
- **Low**
  >800m (isolated)



Landuse for Habitat (Landscape Function)

Habitat

Landuse type within 800m of wetland

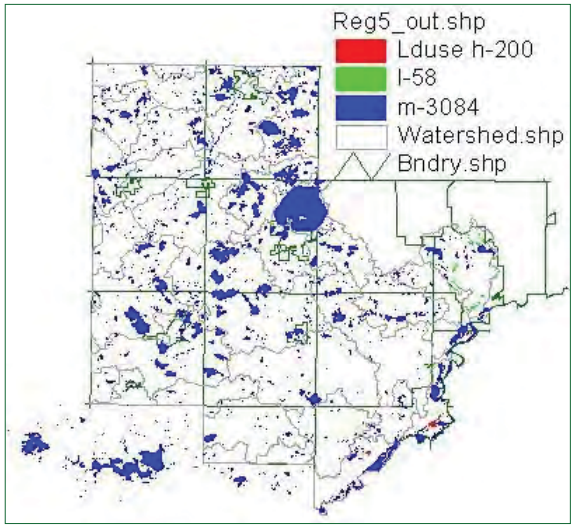
- **High**
- >50% natural

Moderate

All other land cover combinations

- **Low**

>50% developed



Connection to Water Bodies/Natural Vegetation (Landscape Function)

Habitat

Connection to contiguous natural vegetation, lake, stream, or ditch.

- **High**

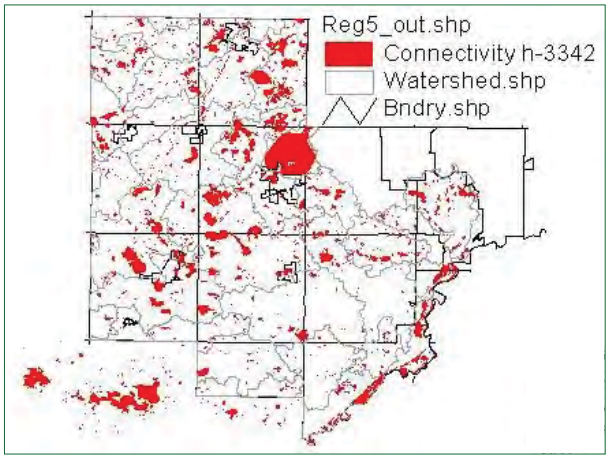
Connected

- **Moderate**

Within 200m

- **Low**

Greater than 200m

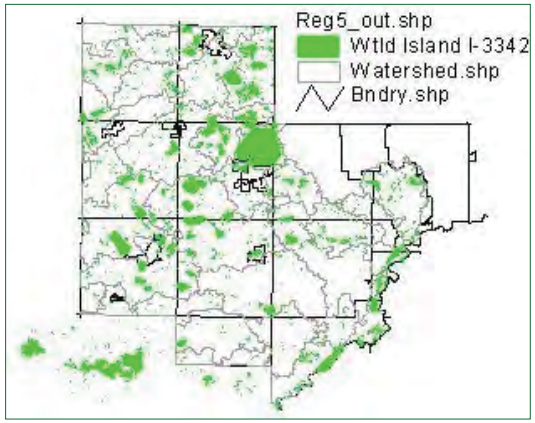


Wetland Island
(Landscape Function)

Habitat

Wetland isolation (>800m from other wetlands) and size.

- **High**
  Isolated and >/=5 acres
- **Moderate**
  Isolated and >/=5 and <1acres
- **Low**
  Wetlands <1 acre

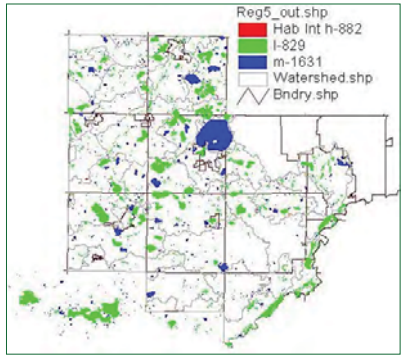


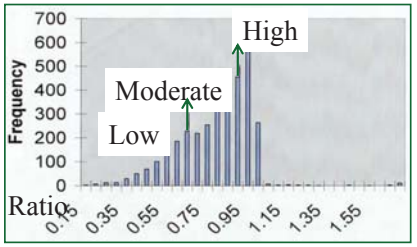
Interior Habitat Complex
(Wetland Function)

Habitat

Ratio of wetland perimeter to the perimeter of a similar wetland if it were a perfect circle.

- **High**
  Ratio >0.90
- **Moderate**
  Ratio </=0.90 and >0.65
- **Low**
  Ratio </=0.65



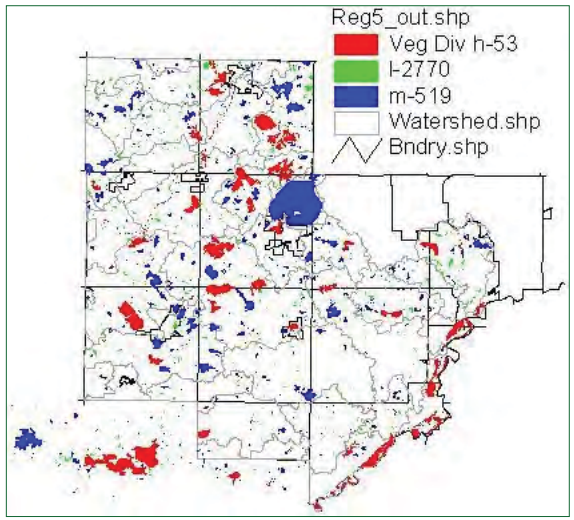


Circular 39 Wetland Types
(Wetland Function)

Habitat

The number of wetland types in the basin helps define vegetation diversity.

- **High**
  >/= 4 types
- **Moderate**
  2 or 3 types
- **Low**
  1 type

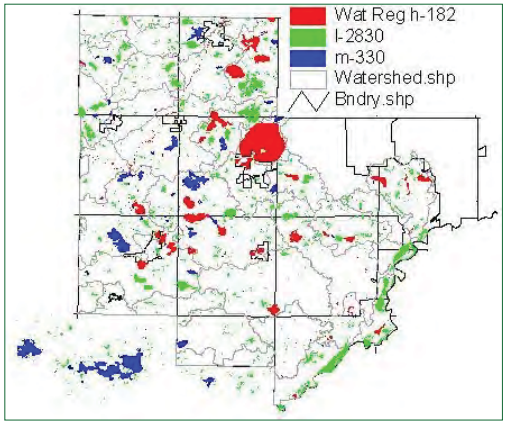


Wetland Water Regime
(Wetland Function)

Habitat

The predominant wetland water regime using Cowardin type.

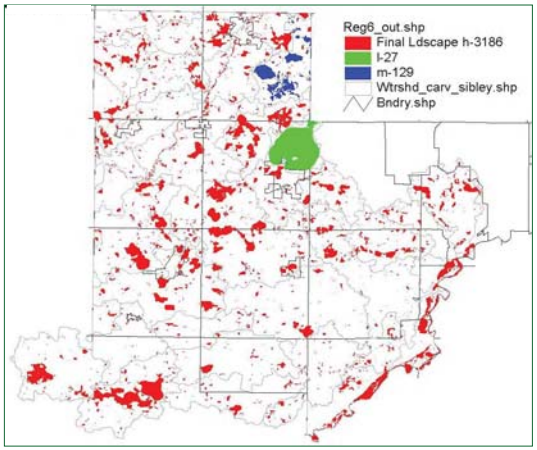
- **High**
  Permanent open water, intermittently exposed, or permanently flooded (G, H)
- **Moderate**
  Semi-permanently, intermittently, or seasonally flooded (F)
- **Low**
  Saturated or temporarily flooded (A, B, C, D, E)



Final Landscape Functional Value

Combining landscape and wetland functions for landscape into a final assessment.

- **High**
  Both high or one high and one moderate
- **Moderate**
  All other combinations
- **Low**
  Both low or one low and one moderate



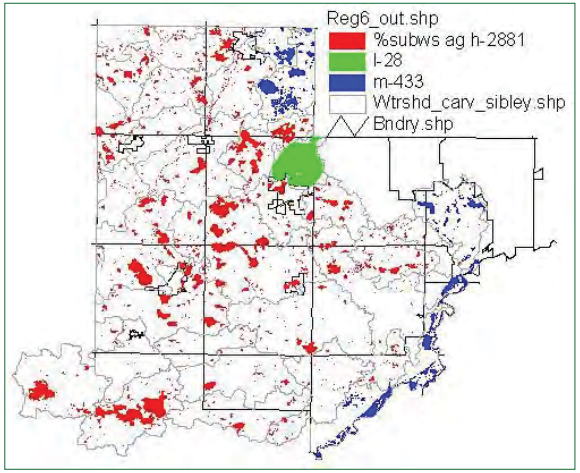
Return to Alternative Analysisi

% Subwatershed Ag Landuse (Landscape Function)

Landscape

The % ag landuse within the **minor** watershed.

- **High**
  >/= 50%
- **Moderate**
  >/=20% and <50%
- **Low**
  <20%

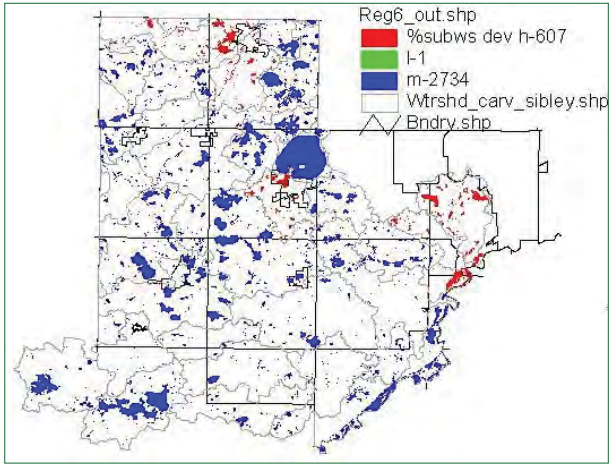


% Subwatershed UrbanLanduse
(Landscape Function)

Landscape

The % urban landuse within the **minor** watershed.

- **High**
  >/= 10%
- **Moderate**
  >/=2.5% and <10%
- **Low**
  <2.5%

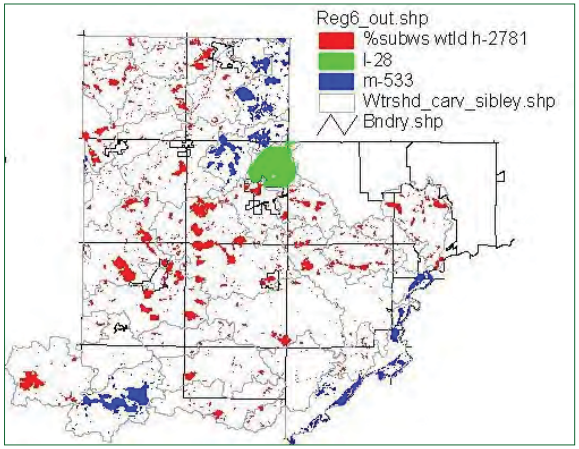


% Subwatershed Composed of Wetlands
(Wetland Function)

Landscape

The % of wetlands within the **minor** watershed.

- **High**
  </= 15%
- **Moderate**
  >15% and </=50%
- **Low**
  >50%

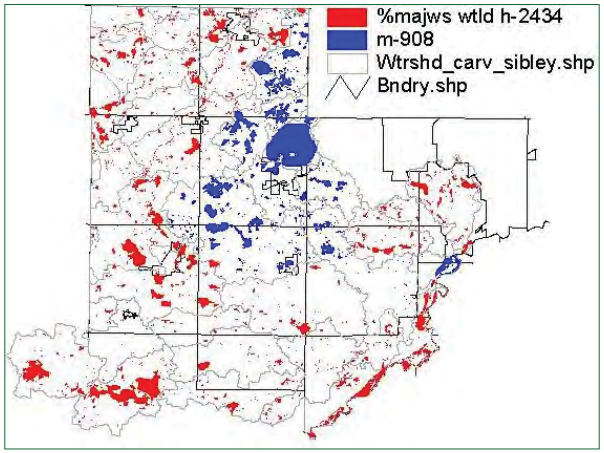


% Watershed Composed of Wetland Type (Wetland Function)

Landscape

The % the wetland's within the **major** watershed.

- **High**
  </= 15%
- **Moderate**
  >15% and </=50%
- **Low**
  >50%

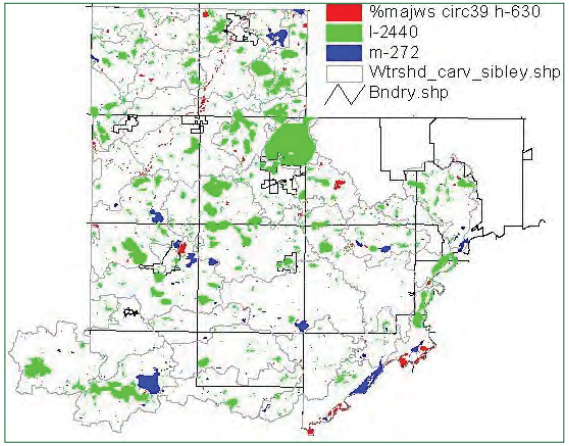


% Watershed Composed of Wetland Type (Wetland Function)

Landscape

The % of the wetland's predominant circular 39 type within the **major** watershed.

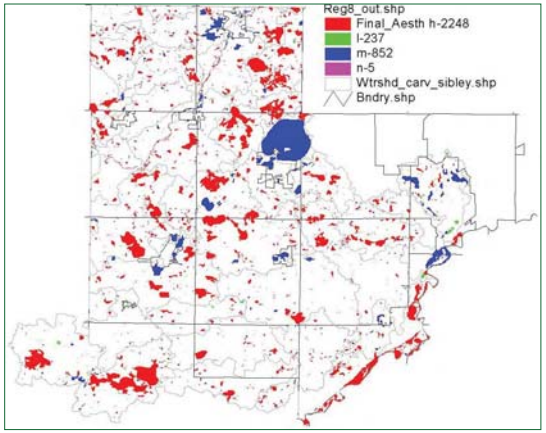
- **High**
  <10%
- **Moderate**
  >/=10% and <25%
- **Low**
  >/=25%



Final Aesthetic Functional Value

Combining landscape and wetland functions for aesthetics into a final assessment.

- **High**
  Both high or one high and one moderate
- **Moderate**
  All other combinations
- **Low**
  Both low or one low and one moderate

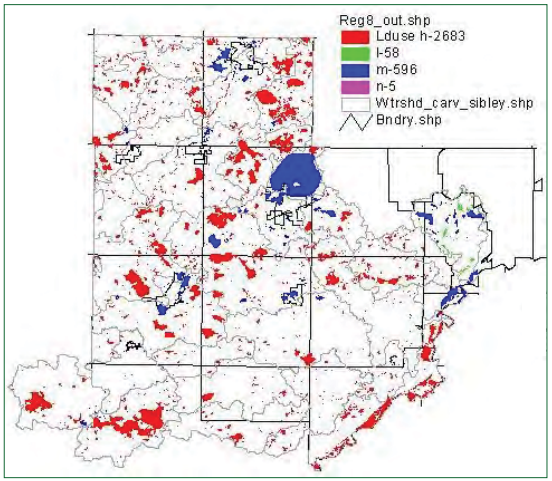


Adjacent Landuse (Landscape Function)

Aesthetics

The % urban landuse within 800m of the basin.

- **High**
  < 10%
- **Moderate**
  >/=10% and <50%
- **Low**
  >/=50%

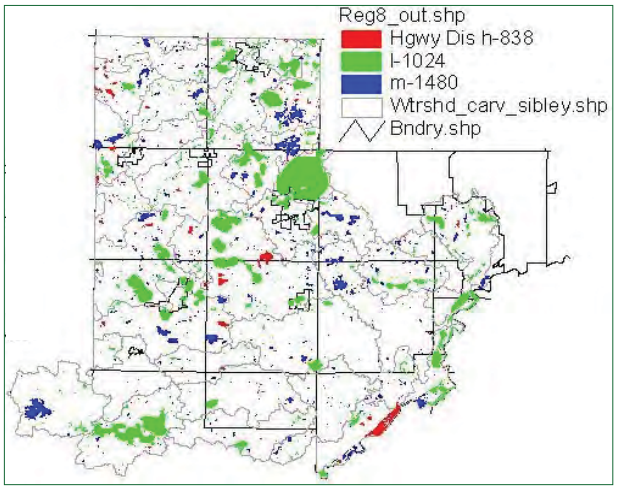


Distance from Roads
(Landscape Function)

Aesthetics

The distance from Highway 1 or County 2 roads.

- **High**
  >/= 800m
- **Moderate**
  >200m and <800m
- **Low**
  </=200m

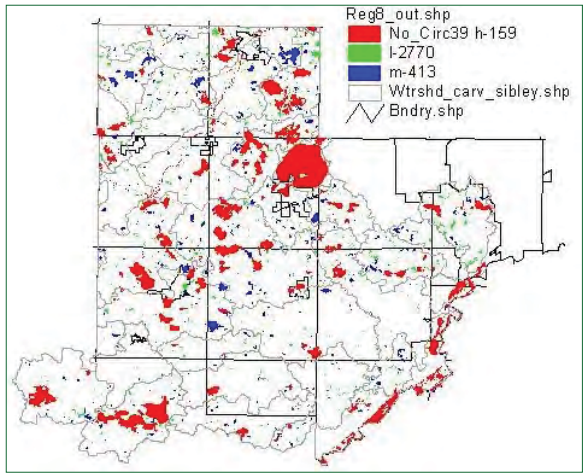


Circular 39 Wetland Types
(Wetland Function)

Aesthetics

The number of wetland types for the basin.

- **High**
  3 or more types
- **Moderate**
  2 types
- **Low**
  1 type

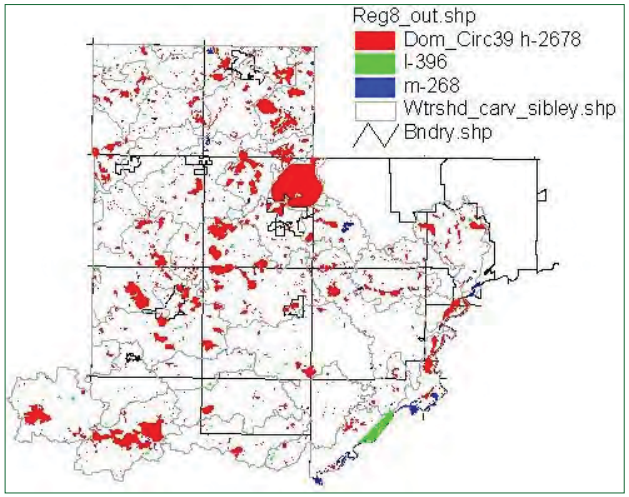


Circular 39 Predominant Wetland Type
(Wetland Function)

Aesthetics

The predominant wetland type for the basin.

- **High**
  Types 3, 4, 5, 90
- **Moderate**
  Types 2, 6, 7
- **Low**
  Type 1

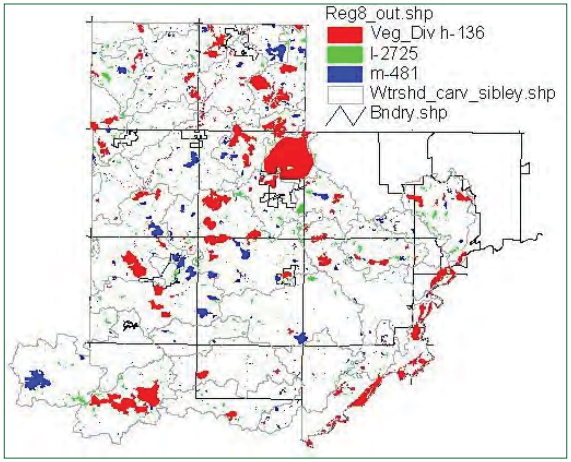


Wetland Structure
(Wetland Function)

Aesthetics

The number of wetland stories based on Cowardin classification (EM, SS, FO, OW).

- **High**
  3 or more layers
- **Moderate**
  2 layers
- **Low**
  1 layer

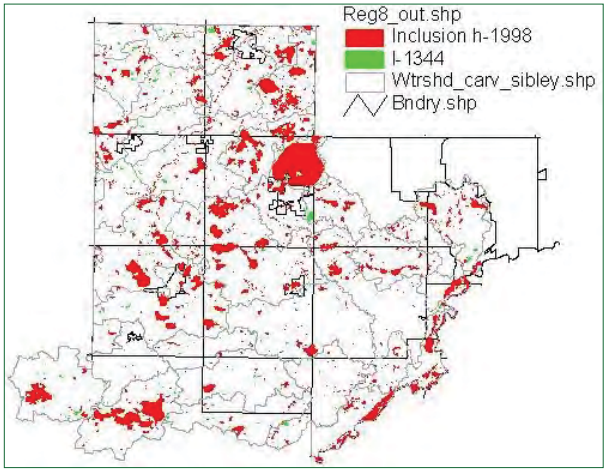


Presence of Upland Inclusions (Wetland Function)

Aesthetics

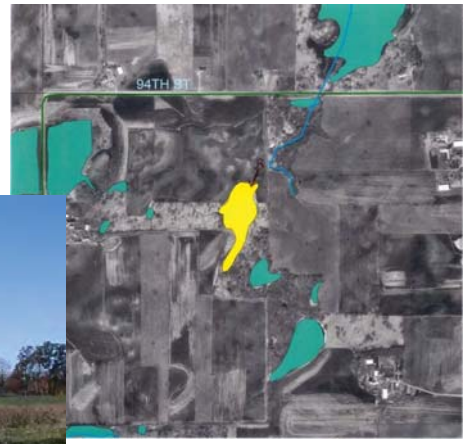
The presence of non-hydric soils within wetlands types 3, 4, 5, and 90 (island).

- **High**
  Inclusions exist
- **Moderate**
  Not applicable
- **Low**
  No inclusions



Field Inventory

Wetlands were randomly selected and visited for inspection



Field Inventory

Information collected included:

1. Does the wetland exist?
2. Does it appear to meet the conditions of the dominant type (hydrologic judgement, only)?

Field Inventory Analysis

- For the most part, the NWI wetlands exist.
- Wetlands appear more dry than the NWI tables. Only 7 of the 47 wetlands observed had similar water regimes.
- Statistical evaluation to the 95% confidence level gives a 5% to 25% chance the wetlands are properly classified.
- Visual assessments indicate greater degradation from human/animal impacts than anticipated.
- Functional value assessment should not include dominant wetland type or water regime because of the inaccuracy.

Alternative Functional Values

Based on the GIS mapping, database analysis, and field inventory, the following alterations were functional value assessments were used for evaluation purposes:

1. Use the **Landscape and Wetland Characteristics** for discussion purposes.
2. Combine the flood and runoff function into a **Stormwater Function**.
3. Combine the habitat and aesthetics function into a **Natural Resource Function**.
4. Use the **Water Quality Function** as is.
5. Review the **High Functional Values** for management discussion.

Landscape and Wetland Characteristics

- This function evaluates the relative risk to watershed integrity posed by the wetland's loss.
- 95% of the wetlands are high.
- With more than 80% of the County's wetlands drained or filled; this analysis emphasizes that all the remaining wetlands in Carver County are very important to the landscape.
- Wetlands provide important functions to the watershed systems.

Return to Alternative Analysisi

Map

Concepts Considered in Developing the Stormwater Function

- Evaluate flood and runoff only.
- Remove shoreline due to repetition. The functions used to evaluate shoreline appeared to be covered in the flood, runoff, and water quality functions.
- Wetland size had the strongest correlation to the final runoff (0.56)and flood (0.72) functional values.
- Circular 39 Wetland Type function was removed because not dependable.
- Other functions were evaluated together (stream order, flooding/ponding potential, soil infiltration, wetland size, ratio of wetland size to watershed area, landscape gradient, adjacent landuse).

Adjustment to Runoff and Flood Final Wetland Indicator

The **wetland indicator** portion for runoff and flood (after removing the Circular 39 Wetland Type) were evaluated as follows:

Runoff

Soil hydrologic group and and wetland area functions:

- •High – both high
- •Moderate – at least one moderate
- •Low – at least one low and no highs.

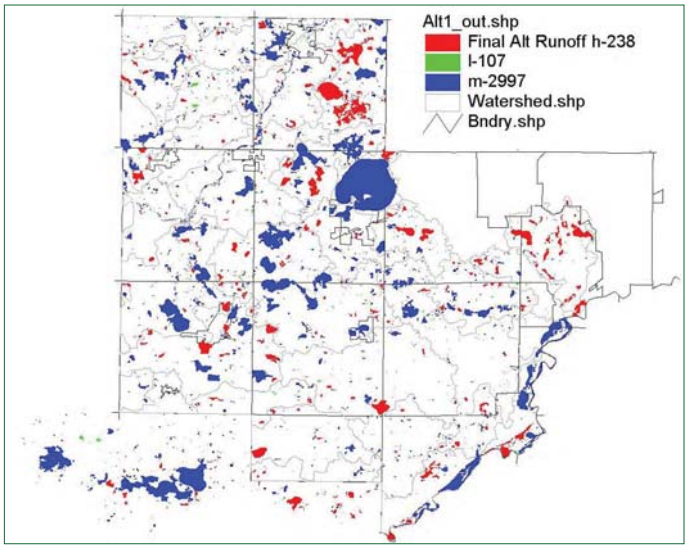
Flood

Flood potential and and wetland area functions:

- •High – both high
- •Moderate – at least one moderate
- •Low – at least one low and no highs.

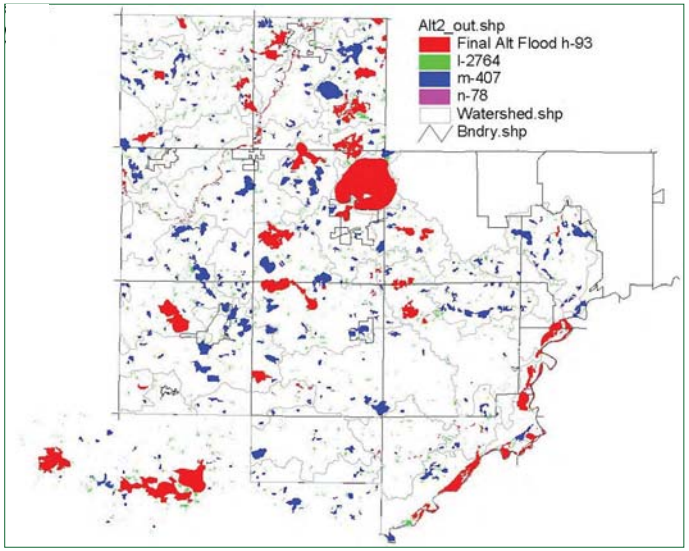
Alternative Final Runoff Result

This is the result of evaluating the landscape and wetland indicators together after adjustments were made to the wetland indicator.



Alternative Final Flood Result

This is the result of evaluating the landscape and wetland indicators together after adjustments were made to the wetland indicator.



Stormwater Functional Value

The flood and runoff functions were re-evaluated after adjusting the wetland indicator. The finals were then combined as shown below to form the stormwater functional value.

High

Both high or one high and one moderate

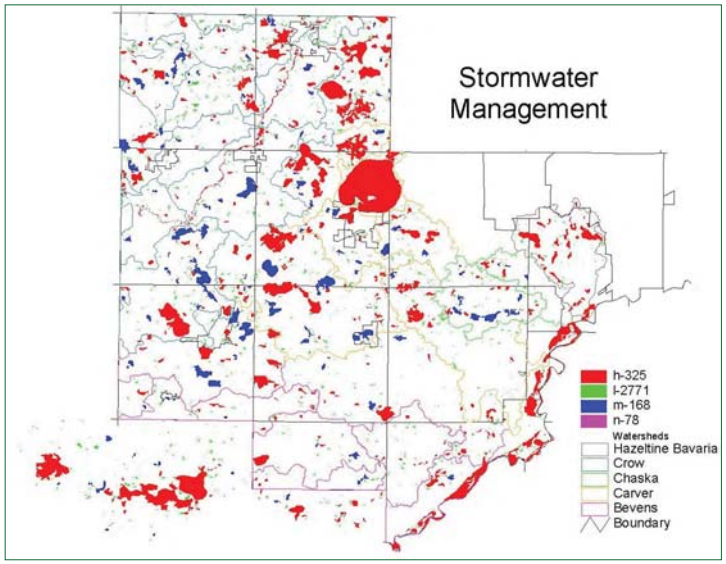
Moderate

All other combinations

Low

Both low or one low and one moderate

Final Stormwater Functional Values



Return to Alternative Analysisi

Concepts Considered in Developing the Natural Resources Function

- Evaluate habitat and aesthetics only.
- Did not evaluate habitat function for interior habitat. Many of the very small wetlands appeared to have a large amount of interior habitat because the ratio of the perimeter to that of a perfect circle were very close to 1.
- Did not evaluate habitat function for water regime because not dependable.
- Dominant Circular 39 wetland type for the aesthetic function was removed because not dependable.

Adjustment to Habitat and Aesthetics Final Wetland Indicator

The **wetland indicator** portion for habitat and aesthetics (after removing certain functions as discussed on previous slide) were evaluated as follows:

Habitat

Evaluated vegetative diversity table only:

- High – >/= 3 types
- Moderate – 2 types
- Low – 1 type

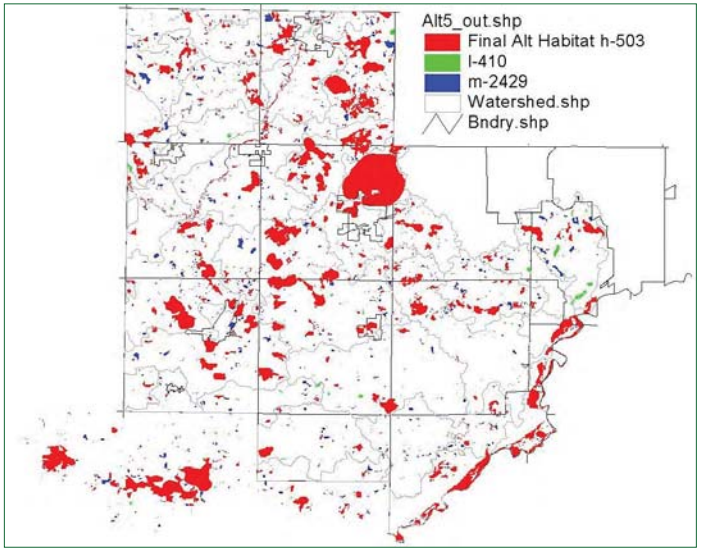
Aesthetics

Evaluated number of types, structural layers, and upland inclusions:

- High – at least two highs
- Moderate – all others
- Low – at least two lows and no highs.

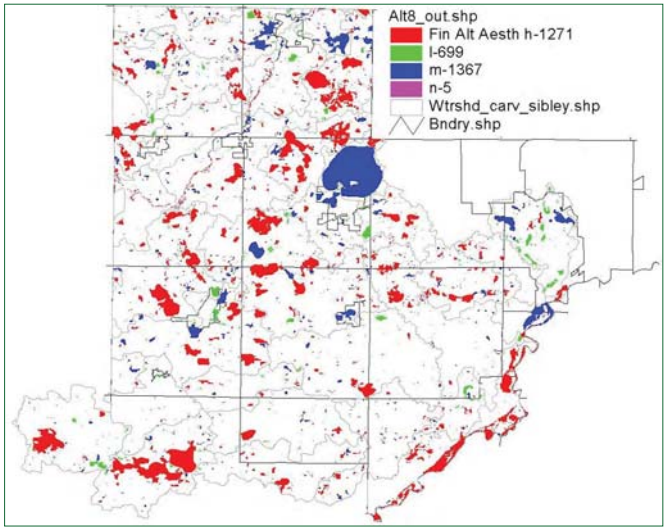
Alternative Final Habitat Result

This is the result of evaluating the landscape and wetland indicators together after adjustments were made to the wetland indicator.



Alternative Aesthetics Result

This is the result of evaluating the landscape and wetland indicators together after adjustments were made to the wetland indicator.



Natural Resource Functional Value

After the habitat and aesthetics functions were re-evaluated after adjusting the wetland indicator, the final habitat and aesthetic functions were re-evaluated (wetland and landscape). Then the functions were combined as shown below to form the natural resource functional value.

High

Both high

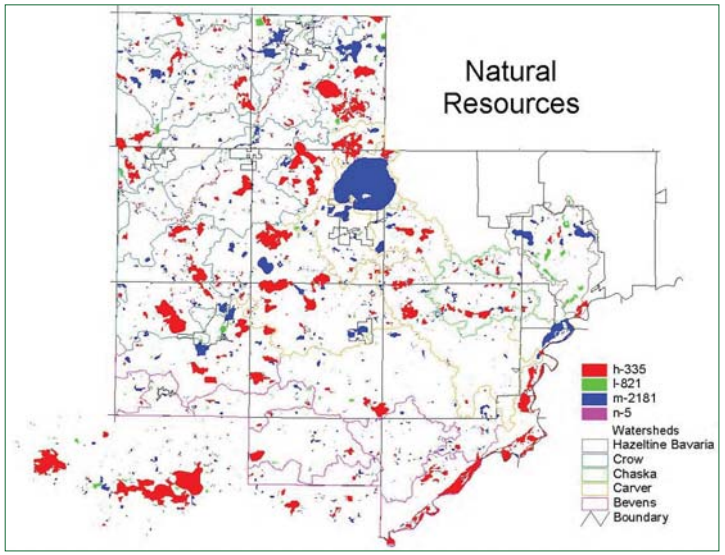
Moderate

All other combinations

Low

Both low or one low and one moderate

Final Natural Resource Functional Values



Return to Alternative Analysisi

Concepts Considered in Developing the Water Quality Function

- Evaluate water quality only.
- Did not evaluate water quality function for wetland type because not dependable.

Adjustment to Water Quality Final Wetland Indicator

The wetland indicator portion for water quality (after removing wetland type and adjusting the soil infiltration table) was evaluated as follows:

Water Quality

Evaluated soil infiltration table only based on highest percent area of the following hydrologic soil groups:

- High – A, A/d
- Moderate – B, B/d, C, C/d
- Low – D

Water Quality Functional Value

The water quality function was re-evaluated after adjusting the wetland indicator. The final water quality functional value was based on the water quality landscape and wetland indicators only where:

High

Both high or one high and one moderate

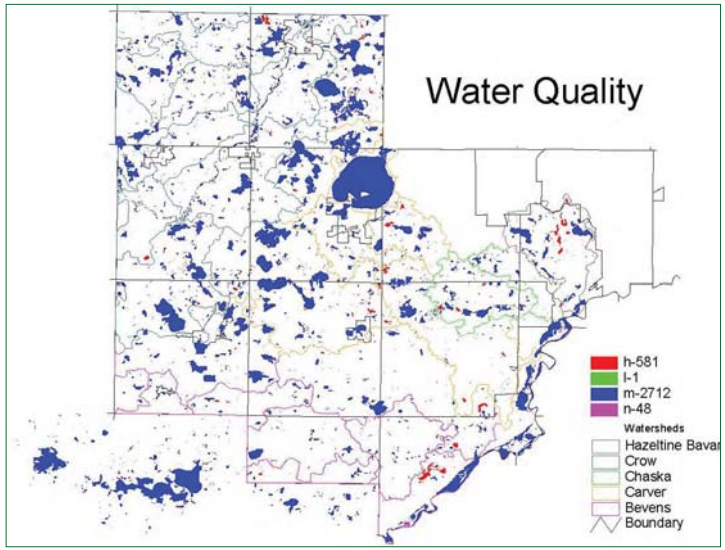
Moderate

All other combinations

Low

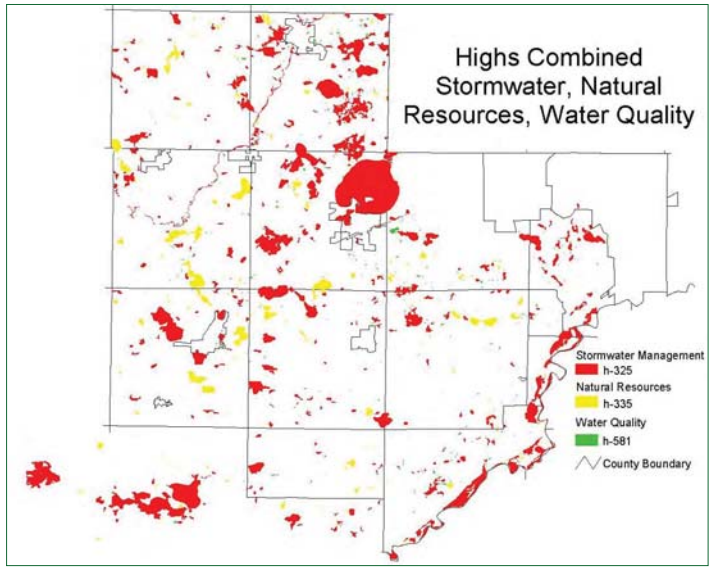
Both low or wetland low and landscape moderate

Final Water Quality Functional Values



Return to Alternative Analysisi

Highs Combined for Alternative Functional Value Assessment



Return to Alternative Analysisi

Matrix Analysis for Establishing Buffers

- The technical advisory committee recommended the development of a matrix for classifying wetlands for buffers.
- The matrix consists of the options available when combining the stormwater, natural resource, and water quality functions.
- After re-evaluating the water quality function, a great deal of overlap was recognized between the water quality tables and the stormwater tables (runoff and flood).

Water Quality Function Similarities to Stormwater Function

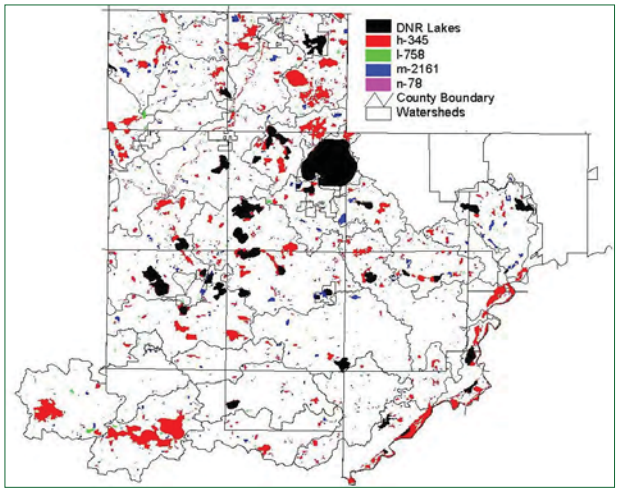
- Wetland type not used in either tables.
- Stream order same as runoff table.
- Soil infiltration fairly similar to runoff, but used runoff analysis where the highs include the B soil types.
- Proximity to pollutants similar to flood landuse, except the analysis in the flood function goes out 800m where the water quality function goes out 200m.
- HEL soils is similar to runoff gradient function. The correlation between the HEL and gradient was 0.34. When the HEL table was added to the runoff landscape function, there was essentially no difference in the highs (3034 with the HEL soils vs. 3031without the HEL soils for the final landscape analysis) generated. The stream order defined the outcome to the landscape analysis.

Buffer Matrix

Basin Rating	Stormwater/ Water Quality	Natural Resource
H	H	H
H	H	M
H	M	H
M	M	M
M	L	M
M	L	H
M	H	L
L	M	L
L	L	L

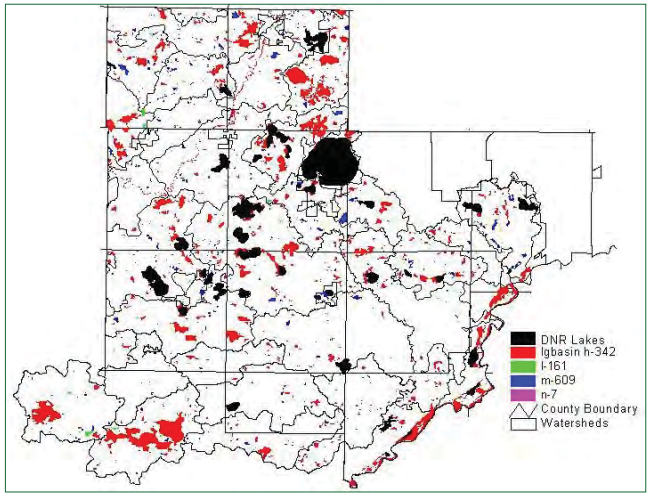
Buffer Map for All Basins

- Map shows basin rating for 3342 wetland basins.
- Lakes (black) will have a separate buffer requirement.



Buffer Map for Basins Greater than One Acre

- Map shows basin rating for basins greater than one acre.
- Lakes (black) will have a separate buffer requirement.



Buffer Recommendations

Buffer Width Standards	Exceptional	High	Moderate	Low	Stormwater Ponds
Average Buffer Width (ft)	100	100	50	25	0
Minimum Buffer Width (ft)	100	50	25	20	0
Building Setback from Outer Edge of Buffer (ft)	10	10	10	10	10

Explanations to Buffer Recommendations

Exceptional – Wetlands automatically get an exceptional rating if there is a noteworthy natural and/or cultural feature. Features include rare, endangered, threatened species, significant natural community, historical state preservation list, identified in county plan(s) as unique/significant.

High – Wetlands assigned the high rating in the wetland functional value assessment, lakes, and streams.

Moderate – Wetlands assigned the moderate rating in the wetland functional value assessment.

Low – Wetlands assigned the low rating in the wetland functional value assessment.

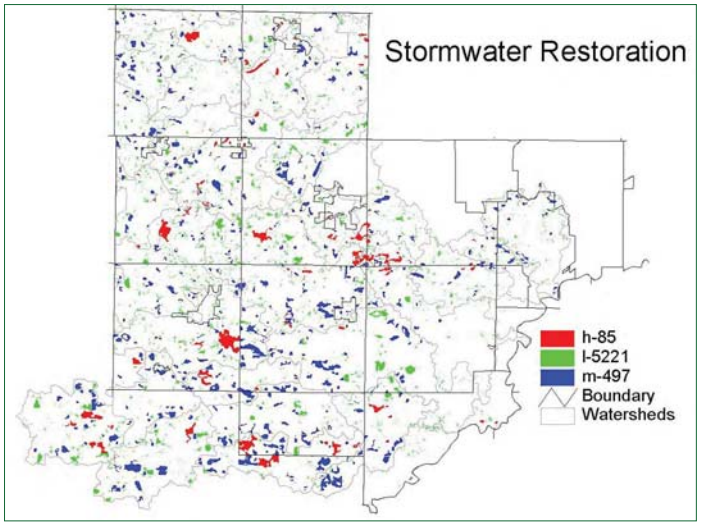
Stormwater Ponds – Jurisdictional wetlands designed strictly for treating and retaining stormwater runoff.

Concepts Considered in Developing the Restoration Function

- Evaluate the non-existing NWI wetlands that have been drained or filled due to urban or agriculture landuses.
- Use the 1997 landuse classifications to determine the non-existing wetlands.
- Analyze the functional values of these wetlands as if they existed using the stormwater, natural resource, and water quality functions determined for existing wetlands.
- Prepare a final functional value using the buffer matrix table evaluation for existing wetlands.

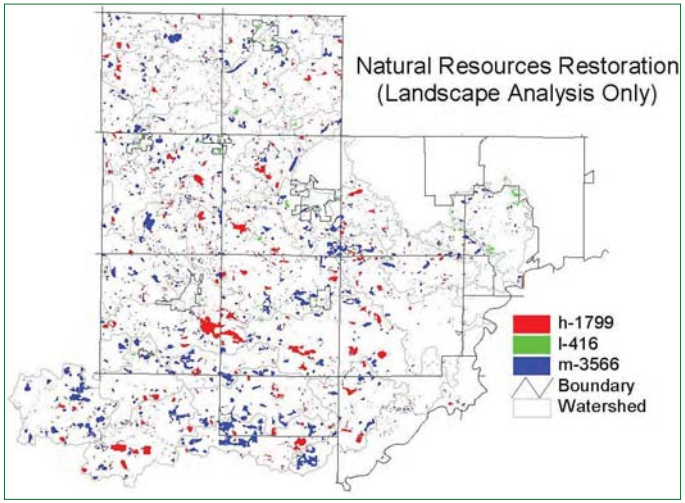
Stormwater Restoration

This provides a reasonable number of wetlands for restoration. Keep in mind that any restoration is good because of the overall loss of wetlands in the county.



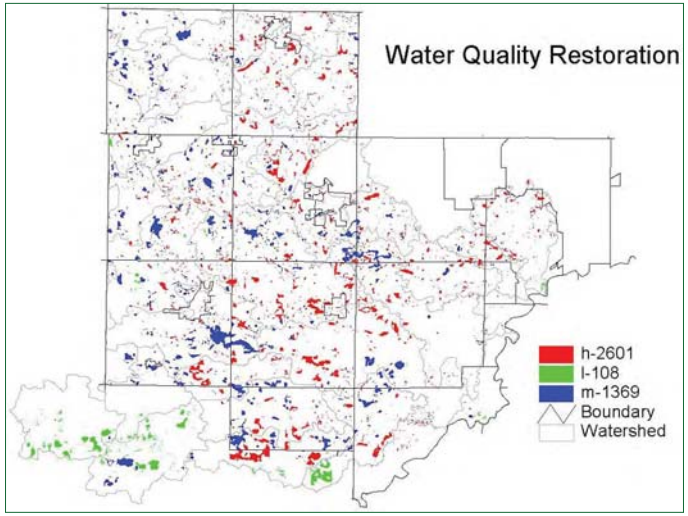
Natural Resource Restoration

This evaluation only views the wetland's importance within the landscape, not the past wetland type. Data was not available to evaluate the wetland indicators. However, for restoration purposes the wetland type can be altered.



Water Quality Restoration High Priority

There are a great deal of wetlands here to consider raising management options that need further discussion.



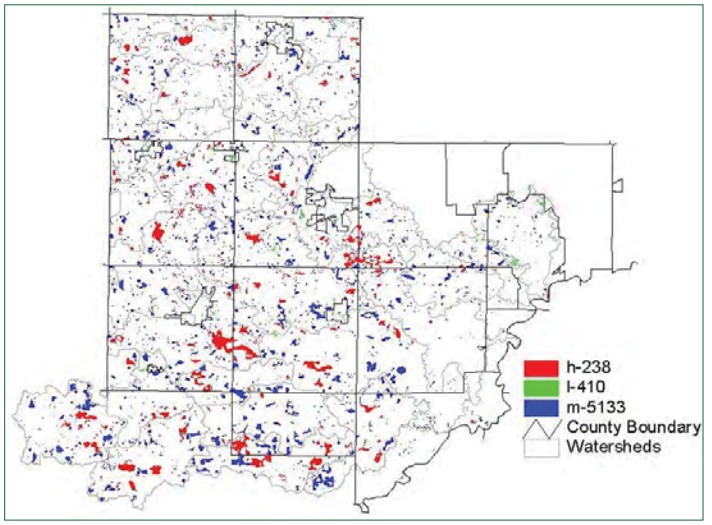
Restoration Matrix

The matrix used to evaluate an overall functional value for existing wetlands was used for the non-existing wetlands.

Basin Rating	Stormwater/ Water Quality	Natural Resource
H	H	H
H	H	M
H	M	H
M	M	M
M	L	M
M	L	H
M	H	L
L	M	L
L	L	L

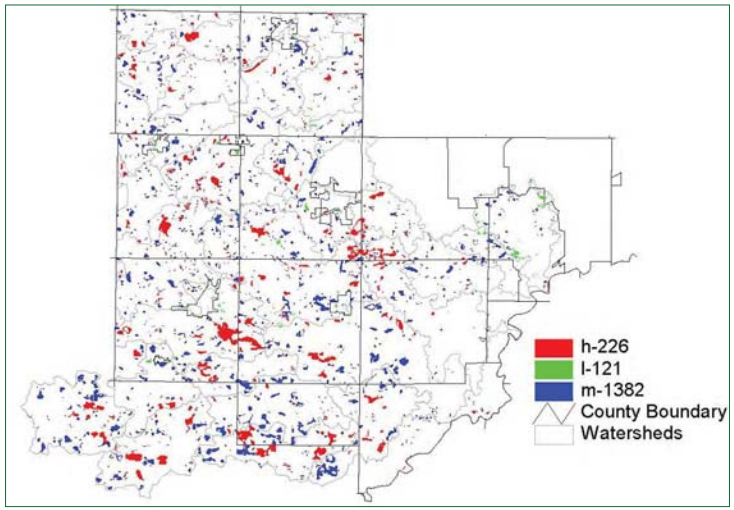
Restoration Map for All Basins

Map shows a restoration basin rating for 5781 non-existing wetland basins.



Restoration Map for Basins Greater than One Acre

Map shows a restoration basin rating for 1729 non-existing wetland basins.



Questions for Wetland Management

- How does the County want to use the buffers as recommended in the draft Water Plan?
- How does the restoration piece fit into a wetland management plan as part of the capital improvement program?
- How do we incorporate a wetland management plan into future stormwater modeling and the water plan?
- How will all of this best be useful to staff implementing these programs on a day to day basis?

B. WATERBODY PRIORITIZATION RESULTS

Table B1. Results of Priority Lake Ranking

Name	Sub Watershed	Impairment Status[1]	AIS[2]	In-lake Vegetation[3]	Fisheries[4]	Wildlife[5]	Recreation[6]	Overall Comm. Value[7]	Overall Ranking	Priority Group
Assumption	Bevens	-	-	2	0	1	1	0	4	Priority 2
Aue	West Chaska	-	-	-	1	0	0	0	1	Priority 2
Barnes	Bevens	-	-	-	0	0	1	1	2	Priority 3
Bavaria	East Chaska	8	4	1	1	0	2	1	17	Priority 1
Benton	Carver	7	-	1	1	0	3	1	13	Priority 2
Big Woods	East Chaska	6	-	1	0	0	1	1	9	Priority 3
Brand	Bevens	-	-	-	0	0	1	1	2	Priority 3
Brickyard	Lower MN	0	-	2	1	0	2	1	6	Priority 3
Burandt	Carver	8	5	1	1	0	0	1	16	Priority 2
Donders	Carver	-	-	-	0	0	1	0	1	Priority 3
Eagle	Crow	6	3	3	2	0	2	0	16	Priority 1
Firemens Clayhole	East Chaska	1	-	2	2	0	2	1	8	Priority 3
Gaystock	West Chaska	6	-	-	0	0	0	0	6	Priority 2
Goose	Carver	8	2	-	2	1	2	0	15	Priority 2
Grace	East Chaska	10	-	1	0	0	2	1	14	Priority 2
Hazeltine	East Chaska	6	-	2	0	0	0	1	9	Priority 3
Hydes	Carver	9	4	3	2	0	1	0	19	Priority 1
Jonathan	East Chaska	8	-	1	0	0	2	1	12	Priority 2
Maria	Bevens	9	1	1	1	1	1	0	14	Priority 2
McKnight	East Chaska	6	-	1	0	0	1	1	9	Priority 3
Meuwissen	Carver	6	-	-	0	0	0	0	6	Priority 3
Miller	Carver	7	-	-	1	0	0	0	8	Priority 3
Oak	Sarah	9	-	-	1	0	2	0	12	Priority 2
Patterson	Carver	-	1	-	0	1	1	0	3	Priority 3
Rapids	Bevens	-	-	-	0	0	1	0	1	Priority 3
Reitz	Carver	7	3	2	1	0	1	1	15	Priority 2
Rice	Carver	-	-	-	0	1	1	0	2	Priority 3

Table B1. Results of Priority Lake Ranking

Name	Sub Watershed	Impairment Status[1]	AIS[2]	In-lake Vegetation[3]	Fisheries[4]	Wildlife[5]	Recreation[6]	Overall Comm. Value[7]	Overall Ranking	Priority Group
Rutz	Carver	12	-	-	0	0	0	0	12	Priority 2
Swede	Sarah	6	2	2	1	0	1	0	12	Priority 1
Tiger	Crow	-	1	-	0	1	1	0	3	Priority 2
Waconia	Carver	10	8	-	2	0	4	1	25	Priority 1
Winkler	Carver	6	-	-	0	0	0	0	6	Priority 3

Notes:
1 Impairment status criteria total score
2 Aquatic invasive species criteria total score
3 In-lake vegetation criteria total score
4 Fisheries criteria total score
5 Wildlife criteria total score
6 Recreation criteria total score
7 Overall community value score

"-" indicates that data was not available

Lakes were divided into three groups based on the overall ranking using the natural breaks method. The natural breaks method identifies groups with similar values while maximizing the differences between groups. The ranking will be updated periodically as additional data becomes available. See Chapter 5, Section 5.3.1 for additional information on the waterbody prioritization.

The overall impairment status score is made up of three components:

- Lake is above the state standard for TP or TSS
    - More points awarded to water bodies above the state standard
    - Purpose: to identify waterbodies with known impairments
- Lake is close to the state standard
    - More points were awarded to water bodies close to the standard
    - Purpose: to identify waterbodies with the potential to be removed from the impaired waters list / keep unimpaired waterbodies from getting on the list
- Trend for lake water quality is decreasing
    - More points awarded to water bodies with decreasing trend
    - Purpose: to identify waterbodies with a trend of worsening water quality

Table B2. Results of Priority Stream Ranking

Creek	Reach Name	Impairment Status[1]	RGA[2]	Fisheries[3]	Wildlife[4]	Recreation[5]	Overall Comm. Value[6]	Overall Ranking	Priority Group
Bevens	Tacoma	13	5	-	0	2	1	21	Priority 1
Bevens	SI4	2	2	-	0	0	0	4	Priority 3
Bevens	SI3	3	-	-	0	0	0	3	Priority 3
Bevens	SI2_0	10	3	-	0	0	0	13	Priority 2
Bevens	RGA_BE7	8	4	-	0	0	0	12	Priority 2
Bevens	RGA_BE6	3	1	-	0	0	0	4	Priority 3
Bevens	RGA_BE5	9	4	-	0	0	0	13	Priority 2
Bevens	RGA_BE4	8	1	-	0	0	0	9	Priority 2
Bevens	RGA_BE2	10	2	-	0	0	0	12	Priority 2
Bevens	RGA_BE1	3	3	-	0	0	0	6	Priority 3
Bevens	CO RD 33	5	4	-	0	0	0	9	Priority 2
Bevens	BE 09	8	4	-	0	0	0	12	Priority 2
Bevens	BE 5	9	-	-	0	0	0	9	Priority 2
Bevens	BE 21_0	9	3	-	0	1	1	14	Priority 1
Bevens	BE 2	9	3	-	0	1	0	13	Priority 2
Carver	W 11	4	-	-	0	1	0	5	Priority 3
Carver	Waconia Out	3	4	-	0	1	1	9	Priority 2
Carver	RGA_CC6	11	3	-	0	1	1	16	Priority 1
Carver	RGA_CC4	3	3	-	0	0	0	6	Priority 3
Carver	RGA_CC3	11	4	-	0	1	0	16	Priority 1
Carver	RGA_CC2	11	4	-	0	1	1	17	Priority 1
Carver	RGA_CC10	11	1	-	0	0	0	12	Priority 2
Carver	RGA_CC1	11	4	-	0	0	0	15	Priority 1
Carver	G1	3	1	-	0	1	0	5	Priority 3
Carver	DA 12	2	2	-	0	0	0	4	Priority 3
Carver	CC 9	7	1	-	0	0	0	8	Priority 2
Carver	CC 8	3	3	-	0	0	0	6	Priority 3
Carver	CC 7	3	4	-	0	1	0	8	Priority 2
Carver	CC 140	6	4	-	0	0	1	11	Priority 2
Carver	CC 12	3	-	-	0	0	0	3	Priority 3
Carver	CC 11	3	-	-	0	0	0	3	Priority 3

Table B2. Results of Priority Stream Ranking

Creek	Reach Name	Impairment Status[1]	RGA[2]	Fisheries[3]	Wildlife[4]	Recreation[5]	Overall Comm. Value[6]	Overall Ranking	Priority Group
Carver	CC 10	10	-	-	1	1	0	12	Priority 2
Carver	CC 1	11	2	-	0	1	0	14	Priority 1
Carver	CA 10_4	11	2	-	0	2	1	16	Priority 1
Carver	CA 8.7	12	2	-	0	1	0	15	Priority 1
Carver	CA 1.7	3	3	-	0	1	1	8	Priority 2
Carver	Bent Cr	17	3	-	0	2	1	23	Priority 1
Carver	B1	3	3	-	0	1	1	8	Priority 2
Crow	Yancy Ave	2	-	-	0	0	0	2	Priority 3
Crow	WT 4	4	4	-	0	1	1	8	Priority 2
Crow	WT 31	6	-	-	0	1	0	6	Priority 3
Crow	Smith Trib	4	-	-	0	0	0	4	Priority 3
Crow	RGA_CR9	4	2	-	0	0	0	6	Priority 3
Crow	RGA_CR8	4	1	-	0	0	0	5	Priority 3
Crow	RGA_CR7	6	4	1	0	0	0	11	Priority 2
Crow	RGA_CR6	4	3	-	0	0	0	7	Priority 2
Crow	RGA_CR5	2	4	-	0	0	0	6	Priority 3
Crow	RGA_CR3	-	2	-	0	0	0	2	Priority 3
Crow	RGA_CR2	4	4	1	0	1	0	10	Priority 2
Crow	RGA_CR16	6	2	-	0	0	0	8	Priority 2
Crow	RGA_CR14	4	2	-	0	1	0	6	Priority 3
Crow	RGA_CR12	5	2	-	0	0	0	7	Priority 2
Crow	RGA_CR10	4	3	-	0	0	0	7	Priority 2
Crow	RGA_CR1	4	3	1	0	3	1	12	Priority 2
Crow	Lippert Out	5	5	-	0	0	0	10	Priority 2
Crow	JD 9	4	-	-	0	0	0	4	Priority 3
Crow	Crow 20_3	4	2	1	0	1	1	9	Priority 2
Crow	CM 33	6	4	-	0	0	0	10	Priority 2
Crow	CM 28	3	-	1	0	0	0	4	Priority 3
Crow	Berliner Trib	3	3	-	0	0	0	6	Priority 3
East Chaska	Grace OUT	15	4	-	0	2	1	22	Priority 1
East Chaska	EC 3	19	4	-	0	2	1	26	Priority 1

Table B2. Results of Priority Stream Ranking

Creek	Reach Name	Impairment Status[1]	RGA[2]	Fisheries[3]	Wildlife[4]	Recreation[5]	Overall Comm. Value[6]	Overall Ranking	Priority Group
East Chaska	EC 2	13	4	-	0	1	1	19	Priority 1
East Chaska	EC 1	19	5	-	0	0	0	24	Priority 1
West Chaska	RGA_WC6	11	3	-	0	1	0	15	Priority 1
West Chaska	RGA_WC5	11	4	-	0	0	0	15	Priority 1
West Chaska	RGA_WC4	11	3	-	0	1	0	15	Priority 1
West Chaska	RGA_WC3	11	4	-	0	0	0	15	Priority 1
West Chaska	RGA_WC2	11	1	-	0	0	0	12	Priority 2
West Chaska	RGA_WC1	11	1	-	0	0	0	12	Priority 2
West Chaska	CH 1_0	11	3	-	0	1	1	16	Priority 1

Notes:
1 Impairment status criteria total score
2 Rapid Geomorphic Assessment total score
3 Fisheries criteria total score
4 Wildlife criteria total score
5 Recreation criteria total score
6 Overall community value score

"-" indicates that data was not available

Lakes were divided into three groups based on the overall ranking using the natural breaks method. The natural breaks method identifies groups with similar values while maximizing the differences between groups. The ranking will be updated periodically as additional data becomes available. See Chapter 5, Section 5.3.1 for additional information on the waterbody prioritization.

The overall impairment status score is made up of three components:

- Stream is above the state standard
  - More points awarded to water bodies above the state standard
  - Purpose: to identify waterbodies with known impairments
- Stream is close to the state standard
  - More points were awarded to water bodies close to the standard
  - Purpose: to identify waterbodies with the potential to be removed from the impaired waters list / keep unimpaired waterbodies from getting on the list
- Trend for stream water quality is decreasing
  - More points awarded to water bodies with decreasing trend
  - Purpose: to identify waterbodies with a trend of worsening water quality

C. COST SHARE PROGRAM CRITERIA

Water Stewardship / County CIP Cost Share Criteria

Criteria	Max. Points Allowed	Point Categories	Discussion
TMDL Watershed Criteria			
Project Site Location	10	Within a subwatershed with approved TMDL (10) | Within a subwatershed with an active TMDL Study (5) | Within a subwatershed with a listed water body (3)	Subwatersheds will change based upon the TMDL process through the County, MPCA, and EPA. Check with Carver County Staff to get list of affected watersheds.
Water Quality Impact Criteria (more than one may apply)			
Phosphorus Loading	10	1 pt for each 10% reduction	Points based upon % reduction discharge from site and total water volume leaving the site. Every 10% of overall reduction is within these criteria onsite is equal to one point.
Sedimentation Loading	10	1 pt for each 10% reduction	
Rate Control	10	1 pt for each 10% reduction	
Volume Control	10	1 pt for each 10% reduction	
Other	10	1 pt for each 10% reduction	
Natural Resource Criteria			
Invasive Nuisance Removal	10	1 pt for each 10% reduction	Project incorporates exotic/invasive/noxious species removal. Ranking based upon overall % reduction from project area.
Additional Criteria			
County Share of Total Project Cost	10	<25% (10) | 25-50% (5) 50% -75% (0) | >75% (-1)	What percentage of the total cost is the County being asked to contribute? Encouraging contribution from applicants should result in better maintenance, satisfaction, ownership, & greater use of public dollars.
Demonstration Site	5	New to County	Can it be used as a demonstration site due to its being the first such project in the County? Is the site available to public without prior notification to landowner?
Educational Site	5	Visible to County	Available for tours with prior notification.
Mulitple partners support the project	10	2 points per involved partner	Identifying broad based support is beneficial to project short and long term success. Additional contributions should be encouraged to foster support, extend project dollars, and demonstrate success to additional parties. Grants and funding from outside Carver County and landowner.
Total (max 100)			

County CIP Cost Share Criteria

Criteria	Max. Points Allowed	Point Categories	Discussion
Plan Status			
Project included in WMO Plan	10	Specific (10) | General (5) | No (0)	Is the project included in the WMO Water Plan?
Project included in Local Plan	10	Yes (10) | No (0)	Is the project included in the City's Local Water Plan?
Cost Implications			
Total County Cost	10	$1,000-$9,999 (10) | $10,000-$24,999 (8) $25,000-$49,999 (6) | $50,000-99,999 (4) $100,000-$$249,000 (2) | >$250,000 (0)	What amount is the County being asked to contribute?
Public Benefit of Resource Value			
Public Use Value	5	High (5) | Medium (3) | Low (1)	How accessible will the project be to the public?
Overall Community Value	5	High (5) | Medium (3) | Low (1)	What is the overall community value (e.g. education, public relations, visibility)?
Ease of Implementation			
Ease of Implementation	5	Easy (5) | Standard (3) | Difficult (1)	How easy will the project be to implement? Are there factors that could complicate implementation of the project (multiple landowners involved, easements required, access issues, etc).
Additional Criteria			
Resource Value - Natural Resource Ranking	5	High (5) | Medium (3) | Low (1) | NA (0)	What is the assessed quality of any MLCCS land cover features?
Total (max 150)			

APPLICATION FOR COST SHARE PROJECT FUNDING

File Number (Office Use Only): _____

Instructions

1. *Complete and submit application. Electronic submittals preferred. See page 2 for information on how to submit applications.*
2. ***Applications are due January 31, 2014.***

APPLICANT INFORMATION (MAIN CONTACT)

Name:
Telephone:
Email:
Address:
City/Township: **Zip:**

PROJECT LOCATION

Address:
City/Township:
PID:
Waterbody:

PROJECT INFORMATION

Project Name:

Description: (please attach addition sheets as necessary, maps, designs, size/area involved, modeling information, expected outcomes, benefits to water resources etc.)

Will the project be accessible to the public?: ◯ yes ◉ no

Can it be a demonstration site due to its being the first such project in the County?: ◯ yes ◉ no

Is the project included in the Carver County Water Plan or a local Water Plan?: ☐ WMO Plan ☐ Local Plan

How will the project improve water quality? Please provide information on percent reductions from existing conditions for the following parameters (if known).

Phosphorus Loading 0.00% Rate Control 0.00%

Sedimentation Loading 0.00% Volume Control 0.00%

Other (list parameter) 0.00%

Please list any partners involved:

PROJECT COST ESTIMATES

Total Amount Requested:
Match Amount:
Total Project Cost:

AUTHORIZATION & SIGNATURES

I hereby authorize the County of Carver and the County's authorized representative to enter upon the property subject to this application for the purpose of evaluating the application and upon approval of this application to determine compliance with the application and any associated agreements.

As the person legally responsible for this project I hereby certify that I understand that this project must be conducted in accordance with the approved plans and any attached or subsequent agreements and the Water Management Rules. I further certify that all of information supplied with this application is true and correct to the best of my knowledge.

Signature of Legally Responsible Party:

_____

Date: _____

Return application to:

Paul Moline
Carver Co Planning & Water Mgmt
600 East Fourth Street
Chaska, MN 55318

Email: pmoline@co.carver.mn.us
Phone: 952.361.1820

OFFICE USE ONLY

Date Received:
Project Number:
Water Stewardship Ranking:
WENR Recommendation:
County Board Approval:
Amount Funded:

Carver County Cost Share Program

Overview:

Carver County is funding a low-cost cost-share program to promote citizens' use of innovative Best Management Practices (BMP) to protect and restore the quality of water within Carver County.

Purpose:

BMP Cost Share funds can be used by public or private landowners within Carver County to implement projects that assist in one or all of the following:

1) Protect or restore quality of lakes and rivers
2) Protect or restore groundwater resources
3) Protect or restore native plant communities
4) Innovative approaches to treat stormwater at the source

Funding:

Funding is a 75% match of eligible expenses with a maximum level of $5,000 per project. Applications are accepted year round. COST SHARE FUNDING IS A REIMBURSEMENT!!! After all program requirements have been met, approved of, and the project is completed, funds will be disbursed to program participant(s). Completion of project MUST be within one (1) year of approved and signed agreement, unless a written extension has been granted by Carver County. Labor done by the home owner will be reimbursed at a rate of $12.00 per hour with a signed form of completed work. In-kind labor costs cannot exceed the cost of materials of the project.

Eligibility within Carver County Water Resource Management Area:

There will be A five year waiting period from the previous grant if the County share is between $2,500 and $5,000. For projects that are between $500 and $2,500, a three year waiting period from the previous grant. For any grants less than $500, there will be no waiting period. If a resident that has had a successful grant moves to a new location or if a new resident moves to a location that has had a cost share project, then this requirement is waived. Below is a list of who is eligible for this program:

- Landowners
- Not-for-profit and religious organizations
- Local government agencies
- Public and private schools
- Private Businesses

Eligible Expenses

Carver County may fund partial or full amounts of the requested cost share amount. Any project that is under construction or completed at the time of approval is not eligible. All matching funds will be awarded to projects that are above and beyond Carver County Watershed Management Plan requirements. Partial list of eligible projects are below:

- Raingardens
- Shoreline restoration
- Native planting restoration
- Native buffers

Evaluation Criteria:

Carver County Staff will determine the eligibility of a project based upon an established set of criteria. The following are the priorities that are within the criteria and are based upon Carver County's Water Management Plan, in no particular order:

- Volume Control
- Rate Control
- Phosphorus Reduction
- Aesthetics
- Functionality
- Wildlife Habitat
- Public Benefit
- Collaboration
- TMDL

Submittal Requirements:

Cost share applications will have the following to be considered a complete application. A signed application form, sketch of onsite location of the project, sketch of project, line item budget including type of materials to used, and if going to bid, three separate bids from contractors. Additional information, if needed, will be requested by Carver County Staff.

Selection Process:

Staff will receive and present to the Joint Agency Members (JAM) a complete application for their review. The Joint Agency Members will review, recommend, and award cost share grants based upon the Evaluation Criteria. JAM will decide upon the final grant approval. The Carver County Cost Share Program is a competitive grant process; therefore some projects may not be funded. Incomplete applications will not be presented to JAM for review.

Cost Share Grant Agreement:

Applicants that are awarded funding will enter into an agreement with Carver County. This agreement will stipulate the responsibilities and obligations of both the grant applicant and Carver County.

Reporting Requirements:

In addition to a cost share agreement, an operation and maintenance plan will be required that stipulates responsibilities of the applicant for maintenance of the project for a period of five (5) years. To assist Carver County Staff in determining this agreement is followed, yearly reporting that consists of photo documentation will be submitted to Carver County by August 1st of each year.

Application Procedures:

Applicants are encouraged to contact Carver County Soil and Water Conservation District to discuss the potential project as the first step. Applicants that fill out the cost share application need to send it to Carver County Planning and Water Management Department, c/o Charlie Sawdey at 600 E 4th Street, Chaska, MN. Staff will contact the applicant to review the application, with the potential for a site visit. During the site visit, project location will be further evaluated to determine consistency with evaluation criteria. Carver County Staff will make a recommendation to the JAM.

Staff will contact the applicant on the approval status of the application once a decision has been reached. If the application is approved, a meeting will be scheduled to review responsibilities and sign appropriate agreements. Notification of the start date of the construction and of new major tasks is required to Carver County Staff. Upon completion of the project, the applicant must notify Carver County Staff for End of Project Review. Release of funds to the applicant will be awarded after this review.

Carver County Cost Share Application

Contact Information

Name		
Address		
City	State MN	Zip Code
Project Location (If different than above)		
Nearest Lake or Stream		
Home Phone	Work or Cell Phone	
Email Address	Other Contact Info	

Project Information (use additional sheets as necessary)

Project Description

Water Quality Issues the Project will address		
Contributing Drainage Area	Maximum Size of Practice	Landuse in Drainage Area

Cost-Share Request

Total Project Cost (Attach itemized list – required for cost share)	Cost Share Request (Max of 75%)
Collaborators (List partners and contributing funds, if applicable)	

I certify to the best of my knowledge that the information included in this application is true, complete, and accurate.

Signature	Date

Office Use Only:

Approval:_____ Date:_____

Carver County Cost Share Criteria

Criteria	Max. Points Allowed	Actual Points	Discussion
Watershed Criteria			
Project Site Location			Subwatersheds will change based upon the TMDL process through the County, MPCA, and EPA. Check with Carver County Staff to get list of affected watersheds.
Rank 1 - Site is directly within a subwatershed with approved TMDL IP	10		
Rank 2 - Site is directly within a subwatershed with approved TMDL	8		
Rank 3 - Site is directly within a subwatershed with pending TMDL	6		
Rank 4 - Site is directly within a subwatershed with an active TMDL Study	4		
Rank 5 - Site is located within non-critical waterbody	2		
Water Quality Impact Criteria			
Impact Type to Waterbody (more than 1 may apply)			Based upon what the project will improve and what is the most detrimental to the waterbody.
Phosphorus Loading	8		
Fecal (*E. coli*) Bacteria Loading	8		
Sedimentation Loading	5		
Rate Control	0-10		Points based upon % reduction discharge from site and total water volume leaving the site. Every 10% of overall reduction is within these criteria onsite is equal to one point.
Volume Control	0-10		
Ability to Monitor	0-10		Points based on both the quality of data and the number of parameters that will be monitored.
Natural Resource Criteria			
Exotic Vegetation/Aquatic Nuisance Removal	0-10		Project incorporates exotic/invasive/noxious vegetation removal. Ranking based upon overall % reduction from project area.
BMP Type			Different BMPs have varying degrees of benefit to waterbodies. The innovative BMP will be giving points based upon the level of benefit to the receiving waterbody.
Shoreline Restoration	10		
Raingarden	9		
Buffer Strip	6		
Native Restoration	5		
Innovative BMP	0-10		
Additional Criteria			
Landowner Contribution			Encouraging landowner contribution should result in better maintenance, satisfaction, ownership, & greater use of public dollars.
Cost-Share Reduction	0-5		
In-kind Contribution	0-5		
Demonstration Site	5		Site available to public without prior notification to landowner.
Educational Site	3		Available for tours with prior notification.
Community Support			Identifying broad based support is beneficial to project short and long term success.
Active Lake Association/Neighborhood	3		
2+ adjoining neighbors	3		
Other Contributions (other than Landowner)	5		Additional contributions should be encouraged to foster support, extend project dollars, and demonstrate success to additional parties. Grants and funding from outside Carver County and landowner.
Violation or Permit Requirement	**0**	**0**	**Projects to repair violations or projects that are required by permit are not eligible.**
	TOTAL:	0	

CARVER COUNTY WELL SEALING COST SHARE PROGRAM

Eligibility: wells that are sealed prior to approval of an application by the County Board shall not be eligible for funding. It is not the intent of the Board to subsidize the sealing of wells that will be sealed as part of the normal course of life and business. Specifically, wells required to be sealed as a result of a property transfer, or replacement of an existing well currently being utilized are not eligible for this program. Abandoned wells meeting one or more of the following criteria are eligible for participation in this program:

1. Wells that are a public safety hazard – large diameter open pit for example
2. Wells within 100' of an active feedlot
3. Wells within the 100 year floodplain
4. Wells in wellhead protection areas
5. Wells in industrial areas or in the right-of way of roads, railroads, or pipelines
6. Wells at unattended sites
7. Wells located within sensitive areas as identified by Geologic Atlas Part B
8. Multiple aquifer wells

Application: applications will be taken on forms developed by the County. Completed applications shall be submitted to the Planning and Water Management (PWM) Department. Applications not meeting at least one of the eligibility criteria listed above shall not be accepted.

Administration: the program shall be administered by the Planning and Water Management Department; applications shall be accepted on a rolling basis as long as funds are available. The Joint Agency group (made up of Planning and Water Management, Environmental Services, and Soil and Water Conservation District Staff) will make a recommendation to the County Board; the County Board shall have final approval authority.

Cost Share: the County will pay 75% of the sealing cost up to a maximum of $750 per well; however in cases where the cost is substantially higher and there is an imminent threat of contamination, staff will consider and the Board may increase County participation in percentage and/or amount of funding. If approved, an agreement will be entered into with the property owner and the county to ensure payment if the proper conditions are met (see below).

Payment: payment shall be made by Commissioner's claim upon submittal to PWM by the applicant of a well sealing log and invoice.

Duration: the program shall operate so long as funds are available. The Board may, from time to time, appropriate additional funds and/or program operation.

APPLICATION FOR WELL SEALING COST SHARE FUNDING

File Number (Office Use Only): _____

Instructions

1. *Complete and submit application. Electronic submittals preferred. See page 2 for information on how to submit applications.*
2. ***Applications are accepted on a rolling basis.***

APPLICANT INFORMATION (MAIN CONTACT)

Name: _____

Telephone: _____

Email: _____

Address: _____

City/Township: _____ **Zip:** _____

WELL LOCATION

Address: _____

City/Township: _____ **Zip:** _____

PID:

WELL INFORMATION

(If known – a well contractor may be able to assist with completing this section)

Depth (ft): _____ **Aquifers penetrated:** _____

Diameter (in): _____ **Year Constructed:** _____

Casing Depth (ft): _____ **Well Condition:** (ruptured casing, rusting) _____

Type of Construction: (ungrouted, open hole, etc.)

WELL SEALING COST ESTIMATES

Number of Wells to Be Sealed: _____

Estimate 1: $ _____ **Company Name:** _____

Estimate 2: $ _____ **Company Name:** _____

Estimate 3: $ _____ **Company Name:** _____

WELL QUESTIONNAIRE

The questionnaire below will enable us to prioritize wells for sealing. Please answer as many questions as possible to the best of your knowledge. A well contractor may provide valuable assistance.

		Yes	No
1.	Is the well a public safety hazard (e.g. a large diameter open pit)?	☐	☐
2.	Is the well located within 100' of an active feedlot?	☐	☐
3.	Is the well located within a 100 yr floodplain?	☐	☐
4.	Is the well located within a Wellhead Protection Area?	☐	☐
5.	Is the well located in an industrial area or in the right-of way of roads, railroads, or pipelines?	☐	☐
6.	Is the well located at an unattended site?	☐	☐
7.	Is the well located within an area sensitive to groundwater pollution as identified in the Carver County Geologic Atlas Part B?	☐	☐
8.	Does the well extend through multiple aquifers?	☐	☐

As the owner of the above listed property, I/we apply for cost share funds to have the unused well(s) sealed.

Property Owner Signature: _____ **Date:** _____

Please note: This is the application to be considered for funding. This is not a contract that guarantees reimbursement. Your application will be evaluated and you will be notified if your well is chosen for the cost share program.

Return application to:

Charlie Sawdey
Carver County Planning & Water Management
600 East Fourth Street
Chaska, MN 55318

Email: csawdey@co.carver.mn.us
Phone: 952.361.1820

OFFICE USE ONLY

Date Received: _____

Staff Recommendation: _____

County Board Approval: _____

Amount Funded:

D. 2010 PLAN EVALUATION

D.1. IMPACT ON 2020 PLAN

The 2020 Water Plan has been updated to incorporate several issues that were not included in the 2010 Water Plan (e.g. aquatic invasive species) and several new priority issues/areas (untreated urban areas, priority waterbodies, and priority wetland restoration areas). While the CCWMO cannot predict future reductions in funding or staffing levels or all future trends in water management, the 2020 Plan acknowledges the need to periodically evaluate implementation success and update the plan on a regular basis.

D.2. IMPLEMENTATION STRATEGY EVALUATION.

Table D1 lists implementation strategies identified in the 2010 Water Plan. Columns 1-6 were taken directly from the Implementation Chapter of the 2010 Plan. The status (ongoing, completed, partially completed, not completed, not needed/not request) of each implementation strategy is identified in column labeled "Status". Strategies listed as "ongoing" are typically programmatic in nature, for example, providing educational opportunities or administering state and county stormwater rules. The column labeled "Accomplishments" provides additional information on the progress towards completing each strategy. The status was determined by reviewing CCWMO Annual Reports and through conversations with CCWMO and County staff working in each issue area.

Table D1 lists a total of 121 different implementation strategies. 104 strategies were identified as "completed" or "ongoing" (86.0%); 4 strategies were identified as "partially completed" (3.3%); 11 strategies were identified as "not completed" (9.1%); and 2 strategies were identified as "not needed/not requested" (1.6%).

There are a variety of reasons why strategies outlined in the 2010 plan were not completed. Like many other watersheds, the CCWMO became heavily involved in monitoring aquatic invasive species and responding to new infestations, a topic that was not covered in depth in the 2010 Water Plan. As the CCWMO shifted funding and staff resources to meet new needs, implementation of some strategies identified in the 2010 Plan became lower priority.

Table D1. 2010 CCWMO Water Plan Implementation Strategy Evaluation

No.	Strategy ID	Major Issue/ Program Areas	Implementation Strategy	Responsible Parties	Status	Accomplishments (as of December 2018)
1	Imp Strategy SW-1	Surface Water Management	The CCWMO relies on Carver County Land Management Department to regulate and enforce floodplain and shoreland regulations.	Planning & Water Management Dept	Ongoing	
2	Imp Strategy SW-1	Surface Water Management	Review local water plans for compliance with shoreland requirements of this plan.	Planning & Water Management Dept	Completed	Local Plans were reviewed and approved in 2013-2015.
3	Imp Strategy SW-1	Surface Water Management	Update the Shoreland Management component of the County's Zoning Ordinance to reflect upcoming changes to the minimum shoreland standards in Minnesota Rules Chapter 6120.	Land Management Dept	Not completed	
4	Imp Strategy SW-1	Surface Water Management	Review local water plans for compliance with the floodplain management requirements of this plan.	Planning & Water Management Dept	Completed	Local Plans were reviewed and approved in 2013-2015.
5	Imp Strategy SW-1	Surface Water Management	Amend County ordinances so that any volume lost due to fill in the floodplain is mitigated within the same stream reach.	Planning & Water Management Dept	Completed	The Water Resource Management Ordinance was amended in 2012 to include this requirement.
6	Imp Strategy SW-1	Surface Water Management	Complete floodplain map updates as needed.	Land Management Dept	Completed	Revised floodplain map was adopted in 2018.
7	Imp Strategy SW-2	Surface Water Management	Update county ordinance to incorporate stream setbacks. Amend the CCWMO Rules to include stream setback standards. Flexible stream setbacks will be developed using information from the WFVA, NRA, and the factors described in this plan (See Section 2.4).	Planning & Water Management Dept	Not completed	It was determined that existing requirements (shoreland, Minnesota Buffer Law, etc) provide adequate protection and that an additional layer of regulation was not beneficial.
8	Imp Strategy SW-3	Surface Water Management	Update the 2005 Carver County Stream inventory.	Planning & Water Management Dept	Not completed	The existing inventory was determined to be adequate.
9	Imp Strategy SW-4	Surface Water Management	Prioritize stream restoration sites using information from existing studies, TMDL Implementation Plans, and the criteria described in this plan (see Section 2.4).	Planning & Water Management Dept	Partially completed	Will be completed as part of implementation of the 2019 Water Plan.

Table D1. 2010 CCWMO Water Plan Implementation Strategy Evaluation

No.	Strategy ID	Major Issue/ Program Areas	Implementation Strategy	Responsible Parties	Status	Accomplishments (as of December 2018)
10	Imp Strategy SW-5	Surface Water Management	Prioritize regional ponding projects using Total Maximum Daily Load Studies and Implementation Plans, Local Surface Water Management Plans, and other studies.	Planning & Water Mangement Dept	Not completed	The CCWMO shifted away from regional ponding with the adoption of an updated Water Resource Management Ordinance in 2012 which encourages onsite treatment practices. Regional wetland restoration will be a focus of the 2019-2028 CCWMO Water Plan.
11	Imp Strategy SW-6	Surface Water Management	Provide technical assistance to landowners in evaluating the impacts of naturally occurring debris jams if the obstruction fills approximately 75% of the bankful channel. If it is determined that the obstruction be removed, the County may request the riparian landowner to remove the obstruction. The County reserves the right to assist the riparian landowner with the removal of an obstruction on a case-by-case basis.	Planning & Water Mangement Dept, SWCD	Not requested	
12	Imp Strategy SW-7	Surface Water Management	The Minnesota Public Drainage Law is administered through the Carver County Ditch Board, the Carver County Auditor, and Carver County Soil and Water Conservation District.	Planning & Water Mangement Dept, SWCD	Ongoing	The Carver SWCD and the Carver County Auditor continue to jointly administer and operate county ditches.
13	Imp Strategy SW-8	Surface Water Management	Provide technical and financial assistance for BMPs that mitigate some of the negative effects of ditched systems while not impeding drainage.	Planning & Water Mangement Dept, SWCD	Ongoing	Completed a sediment detention trap project on County Ditch 4A in 2011 and another on the east side of Reitz Lake in 2012.
14	Imp Strategy SW-9	Surface Water Management	Review ditch projects (cleanouts, maintenance, improvements) through the Carver County Ordinance to encourage the use of adequate buffers, stable channels, etc.	Planning & Water Mangement Dept, SWCD	Completed	13 ditch cleanout projects were reviewed between 2011 and 2018. Buffers were reviewed by the SWCD as part of the implementation of the State Buffer Law.
15	Imp Strategy SW-10	Surface Water Management	Carver County will have a role in the following activities related to outlet controls: - Work with the DNR in resolving conflicting interests of riparian property owners and/or the general public; - Modeling to assist the DNR in determining the appropriate water level control elevation and capacity for a structure; - Structure design and construction; - Operation and maintenance of outlet controls; and	Planning & Water Mangement Dept, SWCD	Completed	- Replaced outlet to Barnes Lake in 2011 - Completed analysis of Burandt Lake outlet in 2011 - Completed analysis of the Swede Lake outlet in 2012 - Reviewed proposed changes to the channel between Lake Waconia and Lake Burandt in 2018 - No other requests received

Table D1. 2010 CCWMO Water Plan Implementation Strategy Evaluation

No.	Strategy ID	Major Issue/ Program Areas	Implementation Strategy	Responsible Parties	Status	Accomplishments (as of December 2018)
			- Funding construction, operation, and maintenance of structures. The County will seek outside funding of these costs including funding from affected/benefited properties.			
16	Imp Strategy SW-11	Surface Water Management	Incorporate the goals, policies, implementation activities listed in this Surface Water Management Chapter into the CCWMO education program. Public involvement processes will be included in the implementation of the activities described above.	Planning & Water Management Dept	Completed	The annual Education Workplan incorporates priorities identified in the Plan.
17	Imp Strategy IW-1	Impaired Waters & TMDL Approach	Complete TMDLs and Implementation Plans for waterbodies in the CCWMO on 303d TMDL List and referenced in this plan, or pursue removal or delisting of waterbodies from the 303d TMDL List as appropriate. The CCWMO does not plan to lead all TMDLs within the watershed, as indicated in Tables 3B-1 and 3B-2.	Planning & Water Management Dept, SWCD	Partially completed	All remaining impaired water bodies that require a TMDL will be led by the MPCA, with CCWMO having an advisory role.
18	Imp Strategy IW-2	Impaired Waters & TMDL Approach	Pursue funding from outside sources to assist in the completion and implementation of TMDLs.	Planning & Water Management Dept, SWCD	Ongoing	Received multiple grants since 2010 to implement projects that address TMDLs and impaired water bodies in Carver County.
19	Imp Strategy IW-3	Impaired Waters & TMDL Approach	Review local water plans for TMDL compliance.	Planning & Water Management Dept	Completed	Local Plans were reviewed and approved in 2013-2015.
20	Imp Strategy IW-4	Impaired Waters & TMDL Approach	Incorporate the goals, policies, implementation activities listed in this Surface Water Management Chapter into the CCWMO education program. Public involvement processes will be included in the implementation of the activities described above.	Planning & Water Management Dept	Completed	The annual Education Workplan incorporates priorities identified in the Plan.
21	Imp Strategy IW-5	Impaired Waters & TMDL Approach	The CCWMO may periodically amend this chapter and the list of CWWMO Projects and list of CCWMO Potential Projects to incorporate implementation strategies and activities identified in approved TMDL Implementation Plans.	Planning & Water Management Dept	Completed	The CCWMO Project List was updated in 2015 to incorporate projects that address impaired waterbodies.

Table D1. 2010 CCWMO Water Plan Implementation Strategy Evaluation

No.	Strategy ID	Major Issue/ Program Areas	Implementation Strategy	Responsible Parties	Status	Accomplishments (as of December 2018)
22	Imp Strategy USM-1	Urban Stormwater Management	Continue to operate the Water Management Permit Program and apply existing CCWMO Rules until they are amended following the adoption of this plan. The CCWMO Rules will be amended to include the standards described in this plan for rate control, volume control, water quality treatment, floodplain impacts, natural resource impacts, and erosion and sediment control. The rules will allow for flexibility and innovation in meeting the standards.	Planning & Water Management Dept, SWCD	Completed	The Water Resource Management Ordinance was amended in 2012 to incorporate these standards and updated again in 2016. The Planning & Water Management Department and the Carver SWCD continue to jointly operate and implement the Permit Program. 391 permits were reviewed between 2011 and 2018.
23	Imp Strategy USM-2	Urban Stormwater Management	Cities are required to prepare a local water management (local) plan that conforms with the CCWMO Plan. The CCWMO is required to review and approve each local plan. More information about local plan requirements can be found in the Administration Chapter. a. Cities are required to prepare or amend their local water management plans and ordinances to be consistent with the CCWMO Plan within two years of the date of this plan's approval by the BWSR Board. The CCWMO will consider alternative local plan amendment and update schedule requests from LGUs and will try to be flexible on due dates to accommodate the update schedules of other WMOs when LGUs are within the jurisdiction of more than one WMO. b. City local water management plans are required meet Metropolitan Council and applicable state statute requirements. c. Cities should seek input and assistance from the CCWMO during the preparation of the local plan.	Planning & Water Management Dept, LGUs	Completed	Local Plans were reviewed and approved in 2013-2015.
24	Imp Strategy USM-3	Urban Stormwater Management	Follow and incorporate Total Maximum Daily Load Studies and Implementation Plans.	JAM, LGUs	Ongoing	Multiple projects benefitting impaired water projects have been installed. See Table C2 and 2011-2017 CCWMO Annual Reports for additional information.

Table D1. 2010 CCWMO Water Plan Implementation Strategy Evaluation

No.	Strategy ID	Major Issue/ Program Areas	Implementation Strategy	Responsible Parties	Status	Accomplishments (as of December 2018)
25	Imp Strategy USM-4	Urban Stormwater Management	Continue to meet or exceed the NPDES Phase II MS4 requirements that apply to the CCWMO stormwater system.	Planning & Water Management Dept.	Ongoing	The Planning & Water Management Department works with the Public Works Department and partners with cities to implement the County's MS4 permit.
26	Imp Strategy USM-5	Urban Stormwater Management	Collaborate with other LGUs to help them implement their NPDES Phase II MS4 requirements and to minimize duplication and increase efficiency.	Planning & Water Management Dept, LGUs	Ongoing	The Planning & Water Management Department has agreements with the cities of Chaska and Chanhassen to assist with implementation of the education and outreach portions of each city's MS4 permit.
27	Imp Strategy USM-6	Urban Stormwater Management	Establish a capital improvement program and cost share program to provide funding for priority stormwater projects and for landowner Best Management Practices.	Planning & Water Management Dept	Completed	The Planning & Water Management Department has operated the low-cost landowner cost share program since 2009. 32 small-scale BMPs have been installed through the program.
28	Imp Strategy USM-7	Urban Stormwater Management	Prioritize stormwater retrofit projects and regional ponding projects using Total Maximum Daily Load Studies and Implementation Plans, Local Surface Water Management Plans, and other studies.	JAM	Not completed	The CCWMO shifted away from regional ponding with the adoption of an updated Water Resource Management Ordinance in 2012 which encourages onsite treatment practices.
29	Imp Strategy USM-8	Urban Stormwater Management	Work with Carver County Public Works to develop and adopt a road maintenance and operation plan using the practices described in this section. Carver County Public Works would be responsible for implementation of the Plan.	Planning & Water Management Dept	Not completed	Best management practices for road maintenance and operations are incorporated into the County's MS4 permit.
30	Imp Strategy USM-9	Urban Stormwater Management	Provide technical assistance to both private and public landowners on stormwater management and the BMPs described in this plan.	Planning & Water Management Dept, SWCD	Completed	The Planning & Water Management Department and Carver SWCD provide technical assistance through the low-cost landowner cost share program and other means.
31	Imp Strategy USM-10	Urban Stormwater Management	Continue to provide necessary resources for implementation of the Water Management Permit Program, Stormwater Design Standards, and Erosion & Sediment Control Standards. The CCWMO will continue to employ staff or a consultant to perform the following tasks:	Planning & Water Management Dept, SWCD	Completed	The Planning & Water Management Department and the Carver SWCD continue to jointly operate and implement the Permit Program. 391 permits were reviewed between 2011 and 2018.

Table D1. 2010 CCWMO Water Plan Implementation Strategy Evaluation

No.	Strategy ID	Major Issue/ Program Areas	Implementation Strategy	Responsible Parties	Status	Accomplishments (as of December 2018)
			-Review Water Management Applications (including stormwater design standards and erosion and sediment control plans) -Inspect BMP installations -Monitor sites as recommended by the water plan; and -Enforce maintenance through procedures in the water resource management ordinance.			
32	Imp Strategy USM-11	Urban Stormwater Management	Continue to monitor construction activities and resolve sediment and erosion problems if and when they arise.	Planning & Water Management Dept, SWCD	Completed	See 2011 - 2017 annual reports.
33	Imp Strategy USM-12	Urban Stormwater Management	Evaluate Water Plan policy and implementation effectiveness as part of the CCWMO annual report.	Planning & Water Management Dept	Completed	See 2011 - 2017 annual reports.
34	Imp Strategy USM-13	Urban Stormwater Management	Develop a list of priority subwatersheds based on watershed susceptibility to water quality degradation, water quantity impacts, streambank erosion, wildlife habitat, recreation, and aesthetic impacts from urban and rural practices. The list of priority subwatershed will be used to focus project implementation in high priority watersheds to reduce impacts of impervious development.	JAM	Partially completed	Subwatershed Assessments identifying projects and other implementation strategies were completed for Burandt Lake, Grace Chain of Lakes, Benton Lake, Eagle Lake, and Lake Waconia. As part of the 2019 CCWMO Water Plan, cities within the watershed will be required to identify developed areas with no or minimal stormwater treatment.
35	Imp Strategy USM-14	Urban Stormwater Management	Develop and maintain a database for stormwater related data, such as the location and type of stormwater infrastructure.	Planning & Water Management Dept	Completed	A GIS database of stormwater infrastructure was created in 2011 and is updated annually.
36	Imp Strategy USM-15	Urban Stormwater Management	Continue to monitor BMPs to provide information on BMP effectiveness.	Planning & Water Management Dept, SWCD	Completed	BMPs are visually inspected by WMO staff 2, 5, and 10 years following installation. Water quality samples and other samples are taken at 1-5 BMPs annually. The annual Monitoring Workplan outlines the sites to be inspected and the type of information collected during the inspection.

Table D1. 2010 CCWMO Water Plan Implementation Strategy Evaluation

No.	Strategy ID	Major Issue/ Program Areas	Implementation Strategy	Responsible Parties	Status	Accomplishments (as of December 2018)
37	Imp Strategy WM-1	Wetland Management	Ensure competent administration and enforcement of the Wetland Conservation Act, the Shoreland Management Act, Total Daily Maximum Loads Studies and Implementation Plans, Local Surface Water Management Plans, and other laws and regulations relevant to wetland management by LGU's (county and the cities) within the CCWMO.	Planning & Water Management Dept, SWCD	Completed	Wetland Conservation Act documentation is requested as part of the Water Rules Permit Process. Local Plans were reviewed and approved in 2013-2015.
38	Imp Strategy WM-2	Wetland Management	Consider amending the CCWMO Rules to include additional wetland protection standards including, but not limited to, wetland transition setbacks. Flexible transition setbacks will be developed using information from the WFVA, NRA, and the factors described in this plan (See Section 3.2.2). Where further site specific wetland information is presented as part of a detailed site design, wetland functional values may be adjusted.	Planning & Water Management Dept, SWCD	Completed	The Water Resource Management Ordinance was amended in 2012 to incorporate wetland transition setbacks.
39	Imp Strategy WM-3	Wetland Management	Develop a list of priority wetland restoration sites. The CCWMO will develop a list of priority wetland restoration sites using the 2003 wetland restoration assessment, the NRA, TMDL Implementation Plans, and the criteria described in this plan (see Section 4.2). The CCWMO will work toward restoring wetlands in cooperation with existing programs through agencies such as the U.S. Fish and Wildlife Service, Soil and Water Conservation District, Reinvest in Minnesota, or through regional stormwater planning by the LGU. The County will prioritize wetland restoration opportunities and will pursue wetland restoration funds on an annual basis.	JAM	Completed	Completed in 2018. See the Implementation Chapter (Chapter 5) of the 2019 CCWMO Water Plan for additional information.
40	Imp Strategy WM-4	Wetland Management	Seek and allocate funds through the Capital Improvement Program, the Cost Share Program, and outside sources to accomplish priority wetland restoration projects.	JAM	Completed	Wetland restorations in Mayer and Watertown were funded through the Capital Improvement Program in 2010 and 2016.
41	Imp Strategy WM-5	Wetland Management	Develop programs to educate those who live and work in the watershed about the importance of wetlands and wetland management.	Planning & Water Management Dept, SWCD	Completed	The annual Education Workplan incorporates priorities identified in the Plan.

Table D1. 2010 CCWMO Water Plan Implementation Strategy Evaluation

No.	Strategy ID	Major Issue/ Program Areas	Implementation Strategy	Responsible Parties	Status	Accomplishments (as of December 2018)
42	Imp Strategy WM-6	Wetland Management	Establish a variety of programs for both private and public landowners for priority natural resources (e.g. wetlands). Programs for landowners may include education and incentive-based conservation activities.	Planning & Water Management Dept, SWCD	Completed	The CCWMO held several workshops discussing the benefits of natural areas and buffers for wetlands and other resources in 2013 and 2014.
43	Imp Strategy WM-7	Wetland Management	Develop and maintain a database for wetland related data, such as the location, type, and acreage of wetland restoration projects, and the location type, and acreage of wetland impacts.	Planning & Water Management Dept	Completed	Locations of wetland related projects (impacts, restoration sites, etc) are tracked trhough the CCWMOs permitting software.
44	Imp Strategy WM-8	Wetland Management	Evaluate wetland policy and implementation effectiveness as part of the CCWMO annual report.	Planning & Water Management Dept	Completed	See 2011 - 2017 annual reports.
45	Imp Strategy AG-1	Agicultural Practices (feedlots)	The CCWMO relies on the Carver County Feedlot Program to regulate and enforce feedlots. Carver County Land and Water Services Division is responsible for the implementation of the program.	Environmental Services, SWCD	Completed	The Environmental Services Department enforces the feedlot ordinance. 230+ feedlots are registered in the County and 15-20 are inspected annually. See 2011-2017 annual reports for additional information.
46	Imp Strategy AG-2	Agicultural Practices (feedlots)	Provide educational opportunities to encourage feedlot operators to operate in accordance with existing regulations.	Environmental Services, SWCD	Completed	In 2014, the Environmental Services Department began a Manure Management Program that rewards feedlot operators for completing a sensitive area plan and then offers the opportunity for additional reward for meeting manure setback requirements.
47	Imp Strategy AG-3	Agicultural Practices (feedlots)	If needed, prioritize permitting enforcement based on complaints, proposed changes to existing operations (i.e. additional buildings or expansion), location of feedlot relative to sensitive areas, and feedlots located with subwatersheds that are targeted for TMDL implementation.	Environmental Services, SWCD	Not needed	

Table D1. 2010 CCWMO Water Plan Implementation Strategy Evaluation

No.	Strategy ID	Major Issue/ Program Areas	Implementation Strategy	Responsible Parties	Status	Accomplishments (as of December 2018)
48	Imp Strategy AG-4	Agicultural Practices (feedlots)	Provide financial assistance and/or incentives to encourage existing feedlot operations to upgrade to meet current standards, as funding allows.	Enviromental Services, SWCD	Partially completed	The CCWMO applied for and received a grant to exclude livestock from streams and other waterbodies through the installation of fencing and alternative water sources. Despite extensive marketing of the program, landowner interest was very low.
49	Imp Strategy AG-5	Agicultural Practices (rural land use practices)	The CCWMO relies, in large part, on the Carver County SWCD to implement rural land use practices. The CCWMO will work with the Carver SWCD to prioritize education, technical assistance, and funding for rural practices as described in this section. First priority will go toward promoting buffer strips, nutrient management, and rock inlet construction. Second priority will go toward tillage and pest management practices.	SWCD, Planning & Water Management Dept.	Completed	The SWCD offers technical assistance on a variety of agricultural best management practices including critial area plantings, grassed waterways, soil health and cover crops, etc. See the 2011-2017 Annual Reports for additional information.
50	Imp Strategy AG-6	Agicultural Practices (rural land use practices)	As discussed in this section, there is a wealth of knowledge related to water resource practices that landowners can implement. Getting the word out and providing the technical assistance or experts from outside the County to interested landowners is a key to the program's success.	SWCD, Planning & Water Management Dept	Completed	The SWCD promotes the use of agricultural best management practices throughout the county. SWCD reaches out to landowners via the SWCD newsletter, press releases, the SWCD website, social media, and direct mailings, as appropriate.

Table D1. 2010 CCWMO Water Plan Implementation Strategy Evaluation

No.	Strategy ID	Major Issue/ Program Areas	Implementation Strategy	Responsible Parties	Status	Accomplishments (as of December 2018)
51	Imp Strategy AG-7	Agicultural Practices (rural land use practices)	The CCWMO will seek funding sources relevant to education and implementation of private landowner practices that will help improve the water quality and water quantity issues within a watershed. State and federal agencies such as the BWSR, NRCS, USDA, U.S. Fish and Wildlife, MPCA and non-profit agencies such as the Nature Conservancy and Friends of the Minnesota River offer matching funds to a variety of programs that support and encourage private landowner practices that will improve water resources. More and more matching grants encourage partnerships with the private and public sector and a sound watershed management plan. TMDL implementation funding and Clean Water Legacy funding will be important sources of funding.	Planning & Water Management Dept, SWCD	Completed	
52	Imp Strategy SSD-1	Sanitary Sewer Discharges (SSTS)	The CCWMO relies on the Carver County SSTS Program to regulate and enforce SSTS. Carver County Land and Water Services Division is responsible for the implementation of the program, including the following: Follow and implement all state statutes and rules as they are updated. State rules, statutes, and standards change periodically. The County implements the State standards through the SSTS ordinance. The ordinance also includes provisions that the County feels are necessary due to local conditions. At the time of writing of this chapter the County is in the process of updating the SSTS ordinance to comply with the most recent changes in statute and rule.	Enviromental Services	Completed	The Environmental Services Department enforces the SSTS ordinance. Over 800 SSTS construction permits were issued between 2011 and 2018.

Table D1. 2010 CCWMO Water Plan Implementation Strategy Evaluation

No.	Strategy ID	Major Issue/ Program Areas	Implementation Strategy	Responsible Parties	Status	Accomplishments (as of December 2018)
53	Imp Strategy SSD-1	Sanitary Sewer Discharges (SSTS)	Implement the provisions of the County SSTS Ordinance. The SSTS ordinance regulates the design, location, installation, construction, alteration, extension, repair, and maintenance of SSTS's. The County currently enforces the ordinance in the unincorporated area; cities have historically been responsible in their jurisdiction. The law gives responsibility throughout the county unless a city specifically develops and implements its own program and SSTS ordinance.	Environmental Services, SWCD	Completed	The Environmental Services Department enforces the SSTS ordinance. Over 800 SSTS construction permits were issued between 2011 and 2018.
54	Imp Strategy SSD-1	Sanitary Sewer Discharges (SSTS)	Require all lot splits and plats to have systems upgraded. Any time a lot is split or platted, the County requires that the septic system be inspected and brought into compliance. There are currently some limited exceptions to this rule - the appropriate ordinances should be changed to eliminate any loopholes.	Environmental Services, SWCD	Completed	The Environmental Services Department and the Land Management Department work together to ensure that all lot splits and plats have up to date SSTS systems.
55	Imp Strategy SSD-1	Sanitary Sewer Discharges (SSTS)	Eliminate SSTSs in cities by connection to municipal systems. An easy way to remove non-compliant systems is connect the systems to a central sewer system. In most cases in the unincorporated area, this is not feasible for financial and system design reasons. Most systems located near municipalities will slowly be absorbed by growing urban areas and will be connected to municipalities as is feasible.	N/A (occurs as cities grow)	Completed	Occurs as cities annex new areas and expand municipal sewer service. 64 SSTS systems were properly abandoned and connected to municipal sewer service between 2011 and 2018.
56	Imp Strategy SSD-1	Sanitary Sewer Discharges (SSTS)	Continue to implement programs to ensure proper maintenance of SSTS - education, incentives, notification, and inspection. Much of the contamination risk in the county stems from improperly maintained systems. A variety of strategies have been and will continue be used to ensure system maintenance. These strategies include educational programs, incentive programs, notification programs, and inspection programs.	Environmental Services, SWCD	Completed	The Environmental Services Department mails reminders about required maintenance. All property transfers, lot splits, and plats are required to have up to date systems.

Table D1. 2010 CCWMO Water Plan Implementation Strategy Evaluation

No.	Strategy ID	Major Issue/ Program Areas	Implementation Strategy	Responsible Parties	Status	Accomplishments (as of December 2018)
57	Imp Strategy SSD-1	Sanitary Sewer Discharges (SSTS)	Develop and implement a process to eliminate improper disposal, and improper land application of septic waste pumped from SSTS. In addition to improper maintenance of SSTS, improper disposal of pumped waste can pose a direct contamination risk to surface and groundwater.	Environmental Services, SWCD	Completed	
58	Imp Strategy SSD-1	Sanitary Sewer Discharges (SSTS)	Continue to develop and implement programs, including financial incentives, focused on the replacement of direct discharge systems with highest priority given to TMDL implementation. The replacement of existing failing systems is a major component of an SSTS program. The replacement process can be accelerated by providing financial assistance to property owners. As funding allows, the County will continue to provide assistance to property owners to replace old, failing systems, through grants, loans, and other financial assistance.	Environmental Services, SWCD	Completed	Between 2008 and 2017, the Direct Discharge Incentive Program has led to the replacement of 590 non-compliant SSTS, including 235 SSTS that discharged directly to a surface water,
59	Imp Strategy SSD-2	Sanitary Sewer Discharges (SSTS)	Monitor progress of new SSTS technologies. New SSTS designs may be approved by the state as they are developed. The County will monitor the function and practicality of new technologies and may choose to be more restrictive than the state in allowing new technologies.	Environmental Services, SWCD	Completed	
60	Imp Strategy SSD-3	Sanitary Sewer Discharges (WWTP)	Coordinate with the MPCA, WWTP operators, LGUs, etc., to ensure that waste load reductions identified through the TMDL process are incorporated into WWTP permits.	Planning & Water Management Dept	Completed	The City of Cologne, MPCA, and the CCWMO coordinated on waste load allocations for the treatment plant in Cologne which discharges to Meuwissen Lake and then into Benton Lake.
61	Imp Strategy NR-1	Upland Natural Resources	Maintain and update the Minnesota Land Cover Classification System (MLCCS), Natural Resource Assessment, Restoration Assessment, and Corridor Assessment data.	Planning & Water Management Dept	Not completed	Determined to not yet be necessary.
62	Imp Strategy NR-2	Upland Natural Resources	The County may invest in studies or acquire new data to better evaluate natural resource within the county. County staff may periodically update the NRA to incorporate better data as it becomes available.	Planning & Water Management Dept	Not completed	Determined to not yet be necessary.

Table D1. 2010 CCWMO Water Plan Implementation Strategy Evaluation

No.	Strategy ID	Major Issue/ Program Areas	Implementation Strategy	Responsible Parties	Status	Accomplishments (as of December 2018)
63	Imp Strategy NR-3	Upland Natural Resources	Implement conservation and restoration projects on county-owned land including parks and road rights-of-way.	JAM	Completed	Installed native prairie and shade gardens at the Carver County Government Center in Chaska in 2017.
64	Imp Strategy NR-4	Upland Natural Resources	Explore options for creating County funding to protect or restore natural areas including trading or offsets for implementing TMDLs and/or CCWMO Levy funding for capital projects.	JAM	Completed	The Water Resource Management Ordinance was amdended in 2012 to incoporate a volume control credit for applicants preserving or restoring natural areas. Approximately 59 acres of natural areas have been preserved or restored as a result of the credit.
65	Imp Strategy NR-5	Upland Natural Resources	Seek and allocate funds through the Capital Improvement Program, the Cost Share Program, and outside sources to accomplish restoration and conservation projects.	JAM	Completed	Several restoration and conservation projects were accomplished between 2011 and 2018 and at least partially funded through the Capital Improvement Program, including the Mayer Wetland Restoration, the Watertown Wetland Restoration, native plantings at the Carver County Government Center. See 2011-2017 Annual Reports for additional information.
66	Imp Strategy NR-6	Upland Natural Resources	Coordinate with Carver County Land Management on the implementation of the Conservation Incentive Zoning option.	Land Management Dept, Planning & Water Management Dept	Completed	To date, one development has been completed under the Conservation Incentive Zoning Option. Approximately 26 acres of sensitve natural area adjacent to Bevens Creek were put under permanent conservation easement as part of the development. 3 townships have now adopted the Conservation Incentive Zoning Option.

Table D1. 2010 CCWMO Water Plan Implementation Strategy Evaluation

No.	Strategy ID	Major Issue/ Program Areas	Implementation Strategy	Responsible Parties	Status	Accomplishments (as of December 2018)
67	Imp Strategy NR-7	Upland Natural Resources	Develop a natural area protection and restoration program for interested landowners	JAM	Not completed	It was determined that existing programs and incentives (federal and state conservation programs, the County's Conservation Incentive Zoning Option, the upland preservation credit available through the Water Resource Management Ordinance, etc) provide adequate opportunities for landowners interested in conservation.
68	Imp Strategy NR-8	Upland Natural Resources	Evaluate upland natural resource policy and implementation effectiveness as part of the CCWMO annual report.	Planning & Water Management Dept	Completed	See 2011 - 2017 annual reports.
69	Imp Strategy GW-1	Groundwater Management	Include wellhead protection in the CCWMO Education Program.	Planning & Water Management Dept	Completed	The annual Education Workplan incorporates priorities identified in the Plan.
70	Imp Strategy GW-2	Groundwater Management	Assist public water supply well operators. Assistance may include providing inventories of potential contaminant sources, mapping and other GIS data, and providing input to WPA committees and plans.	Planning & Water Management Dept	Completed	Data is provided
71	Imp Strategy GW-3	Groundwater Management	Continue to operate the well sealing cost share program.	JAM	Completed	14 wells were sealed through the well sealing cost share program between 2011 and 2018.
72	Imp Strategy GW-4	Groundwater Management	Collaborate with the DNR and Metropolitan Council in efforts to plan for and monitor water appropriation and long term demand.	JAM	Completed	An updated Groundwater Plan for Carver County was adopted in 2016 incorporating monitoring efforts and coordination with the DNR and Metropolitan Council.
73	Imp Strategy GW-5	Groundwater Management	Include, as appropriate, water conservation efforts in the overall CCWMO Education Program.	Planning & Water Management Dept	Completed	The annual Education Workplan incorporates priorities identified in the Plan.
74	Imp Strategy GW-6	Groundwater Management	Consider updating the Groundwater Chapter of the Plan upon the completion of the Carver County Geologic Atlas (Part A was completed in January 2010, Part B is expected to be completed in 2011).	Planning & Water Management Dept	Completed	The updated Groundwater Plan was adopted in 2016.

Table D1. 2010 CCWMO Water Plan Implementation Strategy Evaluation

No.	Strategy ID	Major Issue/ Program Areas	Implementation Strategy	Responsible Parties	Status	Accomplishments (as of December 2018)
75	Imp Strategy SHW-1	Solid & Hazardous Waste	The CCWMO relies on the Carver County Solid and Hazardous Waste Program to regulate and enforce solid and hazardous waste generators. The Carver County Land and Water Services Division is responsible for the implementation of the program.	Planning & Water Management Dept	Completed	The Environmental Services Department regulates solid and hazardous waste generators. 300+ hazardous waste generators are licensed in the County and about a third are inspected by County staff every year.
76	Imp Strategy SHW-1	Solid & Hazardous Waste	Inventory and locate all potential contaminant sites. Using GIS and GPS, all known potential contaminant sites will be located by the County. Once known sites are inventoried and located, new sites will be added to the database.	Environmental Services	Not completed	MPCA database of contaminated sites and licensing system for hazardouse waste generators was determined to provide adequate coverage.
77	Imp Strategy SHW-1	Solid & Hazardous Waste	Implement the County Solid Waste Ordinance. The Ordinance regulates the handling and disposal of solid waste in Carver County.	Environmental Services	Completed	The Environmental Services Department continues to implement the County's Solid Waste Ordinance.
78	Imp Strategy SHW-1	Solid & Hazardous Waste	Continue the Hazardous Generator Licensing program. Licensing of hazardous waste generators will continue and is the most effective way at this time to monitor use of waste in the county. As new generators are identified, they will be licensed.	Environmental Services	Completed	The Environmental Services Department regulates solid and hazardous waste generators. 300+ hazardous waste generators are licensed in the County and about a third are inspected by County staff every year.
79	Imp Strategy SHW-1	Solid & Hazardous Waste	Continue the Recycling Program and Centers. Carver County Environmental Services administers the recycling program. Continuation of this program will be part of the implementation of this plan. Recycling centers will continue to operate in the county, along with the potential for enhanced collection opportunities.	Environmental Services	Completed	The Environmental Services Department operates the Carver County Recyling Center in Chaska.
80	Imp Strategy SHW-1	Solid & Hazardous Waste	Continue Household Hazardous Waste (HHW) program and collection sites. Carver County Environmental Services will continue to operate the HHW collection centers in the county, along with the potential for enhanced collection opportunities.	Environmental Services	Completed	The Environmental Services Department operates the Carver County Recyling Center in Chaska. In 2017, the program recycled 158 tons of household hazardous waste.

Table D1. 2010 CCWMO Water Plan Implementation Strategy Evaluation

No.	Strategy ID	Major Issue/ Program Areas	Implementation Strategy	Responsible Parties	Status	Accomplishments (as of December 2018)
81	Imp Strategy SHW-2	Solid & Hazardous Waste	Continue an education program. A large piece of the existing programs is education of residents and commercial/industrial operators. Current education efforts in these areas will be incorporated into a coordinated water education program.	Planning & Water Management Dept, Environmental Services	Completed	The annual Education Workplan incorporates priorities identified in the Plan.
82	Imp Strategy MON-1	Monitoring & Assessment	Bevens Creek Watershed - Maintain baseline water quality data for the lakes in the watershed, with priority given to those on the impaired waters list or that have completed TMDL Implementation Plans. - Establish and/or maintain any lake or stream sampling sites that are needed or have been established as part of a TMDL study or TMDL Implementation Plan. - Maintain current monitoring regimes or conform as dictated by TMDL studies or TMDL Implementation Plans for fecal coliform (or E.coli) bacteria. - Maintain all automated stream sampling sites (Tacoma, BE 9, BE 21, SI 2, Sibley) within the watershed, and ensure the Met Council sites are not abandoned. - Maintain bio-monitoring data at sampling sites as volunteers and funding dictate.	Planning & Water Management Dept	Completed	Data from the current year of lake and stream sampling is available on the County website via an interactive water quality web-based map. Similarly, information on water quality trends is also available on the County website via a web-based map. Did not have funding, nor volunteers, for bio-monitoring.Added rapid geomorphic assessment sampling points within the Bevens Creek Watershed to increase our knowledge of the system.
83	Imp Strategy MON-2	Monitoring & Assessment	Carver Creek Watershed - Maintain baseline water quality data for the lakes in the watershed, with priority given to those on the impaired waters list or that have completed TMDL Implementation Plans. - Establish or maintain any lake or stream sampling sites that are needed or have been established as part of a TMDL study or TMDL Implementation Plan. - Maintain current monitoring regimes or conform as dictated by TMDL studies or TMDL Implementation Plans for fecal coliform (or E.coli) bacteria. - Maintain all automated stream sampling sites (CA 8_7, CA 10_4, Bent Cr) within the watershed, and ensure not to abandon the Met Council site.	Planning & Water Management Dept	Completed	Added 1 new stream sites to increase the monitoring network. Data from the current year of lake and stream sampling is available on the County website via an interactive water quality web-based map. Similarly, information on water quality trends is also available on the County website via a web-based map. Did not have funding, nor volunteers, for bio-monitoring. Added rapid geomorphic assessment sampling points within

Table D1. 2010 CCWMO Water Plan Implementation Strategy Evaluation

No.	Strategy ID	Major Issue/ Program Areas	Implementation Strategy	Responsible Parties	Status	Accomplishments (as of December 2018)
			- Maintain bio-monitoring data at sampling sites as volunteers and funding dictate.			the Carver Creek Watershed to increase our knowledge of the system.
84	Imp Strategy MON-3	Monitoring & Assessment	Crow River Watershed - Maintain baseline water quality data for the lakes in the watershed, with priority given to those on the impaired waters list or that have completed TMDL Implementation Plans. - Establish or maintain any lake or stream sampling sites that are needed or have been established as part of a TMDL study or TMDL Implementation Plan. - Maintain current monitoring regimes or conform as dictated by TMDL studies or TMDL Implementation Plans for fecal coliform (or E.coli) bacteria. - Continue to partner with the Met Council to operate the automated WOMP station on the Crow River and ensure it is not abandoned. - Maintain bio-monitoring data at sampling sites as volunteers and funding dictate.	Planning & Water Management Dept	Completed	Added 9 new sites to the Crow River Watershed e.coli monitoring network. Data from the current year of lake and stream sampling is available on the County website via an interactive water quality web-based map. Similarly, information on water quality trends is also available on the County website via a web-based map.Did not have funding, nor volunteers, for bio-monitoring.Added rapid geomorphic assessment sampling points within the Crow River Watershed to increase our knowledge of the system.
85	Imp Strategy MON-4	Monitoring & Assessment	Chaska Creek - West Watershed - Maintain baseline water quality data for the lakes in the watershed, with priority give to those on the impaired waters list or that have completed TMDL Implementation Plans. - Establish or maintain any lake or stream sampling sites that are needed or have been established as part of a TMDL study or TMDL Implementation Plan. - Maintain current monitoring regimes or conform as dictated by TMDL studies or TMDL Implementation Plans for fecal coliform (or E.coli) bacteria. - Maintain all automated stream sampling sites (CH 1_0) within the watershed. - Maintain bio-monitoring data at sampling sites as volunteers and funding dictate.	Planning & Water Management Dept	Completed	Data from the current year of lake and stream sampling is available on the County website via an interactive water quality web-based map. Similarly, information on water quality trends is also available on the County website via a web-based map. Did not have funding, nor volunteers, for bio-monitoring. Added rapid geomorphic assessment sampling points within the Chaska Creek - West Watershed to increase our knowledge of the system.
86			Chaska Creek - East Watershed		Completed	

Table D1. 2010 CCWMO Water Plan Implementation Strategy Evaluation

No.	Strategy ID	Major Issue/ Program Areas	Implementation Strategy	Responsible Parties	Status	Accomplishments (as of December 2018)
	Imp Strategy MON-5	Monitoring & Assessment	- Maintain baseline water quality data for the lakes in the watershed, with priority give to those on the impaired waters list or that have completed TMDL Implementation Plans. - Establish or maintain any lake or stream sampling sites that are needed or have been established as part of a TMDL study or TMDL Implementation Plan. - Maintain all automated stream sampling sites (EC 1, EC 2, EC 3) within the watershed, and ensure the Met Council site is not abandoned. - Maintain current monitoring regimes or conform as dictated by TMDL studies or TMDL Implementation Plans for fecal coliform (or E.coli) bacteria. - Establish bio-monitoring data at sampling sites as volunteers and funding dictate.	Planning & Water Management Dept		Data from the current year of lake and stream sampling is available on the County website via an interactive water quality web-based map. Similarly, information on water quality trends is also available on the County website via a web-based map.Did not have funding, nor volunteers, for bio-monitoring.Added rapid geomorphic assessment sampling points within the Chaska Creek - East Watershed to increase our knowledge of the system.
87	Imp Strategy MON-6	Monitoring & Assessment	Carver County will continue to sample and test groundwater as funding allows.	Planning & Water Management Dept, Environmental Services	Completed	The MN DNR tested several wells in the county during the development of the Carver County Geologic Atlas.
88	Imp Strategy MON-7	Monitoring & Assessment	Groundwater samples will be tested for nitrate, nitrite, ammonia, chloride, sulfate, soluble phosphorus, silica, fluoride, and specific conductivity, arsenic and tritium. To determine if a representative sample from the aquifer has been collected, pH, temperature, dissolved oxygen, conductivity and oxidation-reduction potential will also be measured.	Planning & Water Management Dept, Environmental Services	Completed	The MN DNR tested several wells in the county during the development of the Carver County Geologic Atlas.
89	Imp Strategy MON-8	Monitoring & Assessment	State Testing. Additional testing may occur through the MDA, the MDH, or the MPCA. Data from these tests will be included with future County results.	MPCA, MDA, MDH	Completed	MDA completed additional testing of wells in San Francisco Township in 2018 to test for the presence of nitrate.

Table D1. 2010 CCWMO Water Plan Implementation Strategy Evaluation

No.	Strategy ID	Major Issue/ Program Areas	Implementation Strategy	Responsible Parties	Status	Accomplishments (as of December 2018)
90	Imp Strategy MON-9	Monitoring & Assessment	Carver County will continue to monitor stormwater best management practices as funding allows.	Planning & Water Management Dept, SWCD	Completed	BMPs are visually inspected by WMO staff 2, 5, and 10 years following installation. Water quality samples and other samples are taken at 1-5 BMPs annually. The annual Monitoring Workplan outlines the sites to be inspected and the type of information collected during the inspection.
91	Imp Strategy MON-10	Monitoring & Assessment	Prepare an annual monitoring water quality monitoring report.	Planning & Water Management	Completed	Information on lake and stream water quality trends is available on the County website via a web-based map.
92	Imp Strategy ED-1	Education	Stream Health Evaluation Program (SHEP) SHEP provides citizens with professional training on how to evaluated stream health by physical characteristics and bio-indicators (macro-invertebrates). Citizens get hands on opportunities to learn about the water resources around them, stream ecology, and importance and methods of monitoring.	Planning & Water Management Dept.	Completed	The SHEP program was conducted from 2009-2013. The program ended in 2013 due to challenges in recruiting and training volunteers.
93	Imp Strategy ED-2	Education	-Carver County Land & Water Services Online Newsletter Carver County's LWS online newsletter provides citizens and employees in the County with information on the Environmental Center, recycling, water quality and conservation, upcoming workshops, volunteer opportunities and more.	JAM	Ongoing	The online newsletter is released monthly.
94	Imp Strategy ED-3	Education	-Shoreline Restoration and Raingardens Seminars/Workshops Carver County provides seminars/workshops for homeowners on shoreline restorations and raingardens. These seminars and workshops may include background information and/or more in-depth information on methods of design, plants selection, site preparation, etc.	JAM	Ongoing	Workshops were held every 2-3 years and covered topics like raingarden, shoreline, and most recently sustainable yards.

Table D1. 2010 CCWMO Water Plan Implementation Strategy Evaluation

No.	Strategy ID	Major Issue/ Program Areas	Implementation Strategy	Responsible Parties	Status	Accomplishments (as of December 2018)
95	Imp Strategy ED-4	Education	Blue Thumb Planting for Clean Water. Carver County is a partner of the metro wide Blue Thumb organization which is an outreach program to educate homeowners on the importance and methods of construction of raingardens, shoreline stabilization projects and native gardens.	JAM	Ongoing	CCWMO continues to be a Blue Thumb partner, participate in meetings, benefit from resources, and volunteer at the State Fair Blue Thumb booth.
96	Imp Strategy ED-5	Education	Open Houses Open houses are used for Total Maximum Daily Loads (TMDLs), Comprehensive Plan 2030 and other topics to provide education to citizens. During open houses information is often presented in poster form and staff are present to answer questions.	JAM	Completed	Planning & Water Management staff held one open house for a turbidity TMDL.
97	Imp Strategy ED-6	Education	Brochures, Flyers & Pamphlets Brochures, flyers and pamphlets are available at the Carver County Land & Water Services office, expos, fairs and online containing information on a number of different topics including; Direct Discharge Elimination Program, Stream Health Evaluation Program, Raingardens, TMDLs, cost share, photo conests and more.	Planning & Water Management	Completed	CCWMO has created a number of informative flyers that cover topics like raingardens, cost share programs, low mow turf, and bee lawns. Flyers are available at CCWMO events and exhibits.
98	Imp Strategy ED-7	Education	Library displays Posters containing LWS information are often displayed in the libraries around the County. Past displays have included information on noxious weeds, volunteer opportunities and photo contests.	Planning & Water Management	Not completed	CCWMO staff shifted to using library displays and calendar to promote CCWMO events.
99	Imp Strategy ED-8	Education	-Fairs & Expos LWS has participated in a number of fairs and expos including Carver County Fair, Volksfest, Waterosity, Chanhassen Business Expo and Norwood Young America Business Expo. These fairs are used to distribute information on all LWS areas.	JAM	Completed	The Planning and Water Management Department and Environmental Services Department develop and staff a display at the Carver County Fair. Recent themes include sustainable turf, groundwater, and stormwater reuse.

Table D1. 2010 CCWMO Water Plan Implementation Strategy Evaluation

No.	Strategy ID	Major Issue/ Program Areas	Implementation Strategy	Responsible Parties	Status	Accomplishments (as of December 2018)
100	Imp Strategy ED-9	Education	Carver County's Stormwater Workshop This workshop is designed to education developers, local officials, planners, engineers and decision makers about stormwater management Best Management Practices (BMPs) and new methods and developments in stormwater research.	JAM	Completed	The Planning and Water Management Department has hosted the stormwater workshop annually since 2011.
101	Imp Strategy ED-10	Education	-Non-point Source Education for Municipal Officials (NEMO) NEMO is a nationally recognized program for decision makers that educated about the relationship between land use and water quality. The program uses tools including the Watershed Game, View from the Lake tour, presentations, workshops and more.	JAM	Completed	The Education Coordinator presented "linking land use to water quality" to most city councils in the CCWMO in 2012 and has coordinated 3 "On the Water" workshops in partnership with adjacent watershed districts.
102	Imp Strategy ED-11	Education	-Water, Environment & Natural Resources (WENR) Tour Each year Carver County Lane & Water Services takes the WENR Committee on a tour. The tour is designed to inform the committee on current, completed, and upcoming projects and provide education necessary to making informed decisions.	JAM	Completed	The tour for members of the citizen advisory committee has been held annually since 2008.
103	Imp Strategy ED-12	Education	STORMWATER U This University of Minnesota Extension Program has created a series of workshops designed to education and give hands on experience to public works staff, engineers, designers, planners, public officials, etc. on stormwater management methods. Workshops include topics of prevention, inventory, inspection, maintenance and management.	JAM	Completed	Planning & Water Management staff promoted, attended and hosted Stormwater U workshops.
104	Imp Strategy ED-13	Education	Carver County's Stormwater Workshop This workshop is designed to education developers, local officials, planners, engineers and decision makers about stormwater management Best Management Practices (BMPs) and new methods and developments in stormwater research.	JAM	Completed	The Planning and Water Management Department has hosted the stormwater workshop annually since 2011.

Table D1. 2010 CCWMO Water Plan Implementation Strategy Evaluation

No.	Strategy ID	Major Issue/ Program Areas	Implementation Strategy	Responsible Parties	Status	Accomplishments (as of December 2018)
105	Imp Strategy ED-14	Education	Wetlands Education Program (WEP) WEP is an annual program put on by Carver County Land & Water Services targeting 6th and 7th graders. The program takes place at the MN Landscape Arboretum and educates students on the importance, benefits, and function of wetlands.	JAM	Completed	The Wetlands Education program was held annually from 2008 to 2015. The program ended due to declining interest from area teachers.
106	Imp Strategy ED-15	Education	Metro Area Children's Water Festival (CWF) CWF is an annual program taking targeting 5th grade students and taking place at the MN State Fair Grounds. The program is a collaboration of the 7 metro counties and many state agencies and local watershed districts. CWF reaches 1200 students a year.	JAM	Ongoing	CWF continues to be held at the State Fair Grounds and now reaches 1700 students per year.
107	Imp Strategy ED-16	Education	Envirothon The Envirothon is a an annual two day event at the MN Landscape Arboretum, one day for Junior High students and one day for Senior High students. The Envirothon is a collaboration of MACDE Area IV staff. The program is an environmental knowledge bowl that leads the winning team in High School on to the State Competition.	JAM	Ongoing	Planning and Water Management Staff participated in in the Environthon from 2009-2011. The Carver County SWCD continues to participate in the program.
108	Imp Strategy ED-17	Education	-Volunteer Stream Monitoring Partnership (VSMP) VSMP gathers students together to do stream health monitoring looking at both the physical characteristics of the stream and bio-monitoring using macro-invertebrates. Students may then attend the annual River Summit at the Science Museum to present their results.	Planning & Water Management	Ongoing	Planning and Water Management Staff supported the VSMP program at Chaska High School from 2004-2011. The program ended due to declining interest from area teachers.
109	Imp Strategy ED-18	Education	Presentations Other presentations include Earth Day, Funky Minds, Carver Historical Society Family Camp Weekend and more. Topics include; water quality monitoring and bio-indicators, methods to management stormwater, common water pollutants. These presentation range in audience and number and are done upon request of an audience.	JAM	Ongoing	The Education Coordinator presents on a variety of water related topics, as requested by local groups.

Table D1. 2010 CCWMO Water Plan Implementation Strategy Evaluation

No.	Strategy ID	Major Issue/ Program Areas	Implementation Strategy	Responsible Parties	Status	Accomplishments (as of December 2018)
110	Imp Strategy ED-19	Education	Stormdrain Stenciling As part of the education component on stormwater management, Carver County has begun the Stormwater Stenciling program and is currently working with organizations around the county to have the message "Don't Dump: Drains to Stream (or river, lake, wetland) put on or near the stormdrains. Before each session, participants are given a lesson in stormwater, the stormdrain system, pollutants, and the message they are delivering by participating in the activity.	JAM	Completed	Completed one stenciling project in Watertown. Staff have moved away from this program due to other priorities.
111	Imp Strategy ED-20	Education	World Water Monitoring Day (WWMD) Teachers receive a WWMD kit that can be used at any age to test water quality. Participants then enter data from samples into a large online database.	Planning & Water Management	Completed	The Education Coordinator promoted this program to local teachers and provided monitoring kits as requested.
112	Imp Strategy ED-21	Education	Land & Water Services Website	JAM	Ongoing	The Education Coordinator updates the website as needed on a regular basis.
113	Imp Strategy ED-21	Education	Land & Water Services Online newsletter Released every 1-2 months the online newsletter shares information on Environmental Center hours, volunteer opportunity, tips for recycling, water conservation, etc., articles on projects, programs or other opportunities.	JAM	Ongoing	The online newsletter is released monthly.
114	Imp Strategy AD-1	Administration	Continue holding Water, Environment, and Natural Resources Committee meetings. The WENR Committee consists of citizens, city and township representatives, and agency representatives. The WENR Committee advises the CCWMO Board and staff on a variety of topics including implementation activity prioritization; plans, studies, and other documents developed by the CCWMO; cost share applications; etc. The WENR Committee will continue to meet bimonthly.	Planning & Water Management	Ongoing	Citizen Advisory committee meetings are held on average 10 times per year.

Table D1. 2010 CCWMO Water Plan Implementation Strategy Evaluation

No.	Strategy ID	Major Issue/ Program Areas	Implementation Strategy	Responsible Parties	Status	Accomplishments (as of December 2018)
115	Imp Strategy AD-2	Administration	Meet annually with city representatives and engineers to identify problems and projects that the CCWMO can partner with cities to address and to review local plan implementation.	Planning & Water Management	Completed	Planning and Water Management Staff meet with engineers for each city several times per year to coordinate on permit review. Planning and Water Management Staff meet on as needed basis with city representitives to discuss potential projects and other opportunities.
116	Imp Strategy AD-3	Administration	Local Plan Review and Adoption. Per MN Rule 8410.0160, Local Water Plan updates must be completed and approved by the CCWMO within two years of approval of the CCWMO Plan by the BWSR Board. The CCWMO will consider alternative local plan amendment and update schedule requests from LGUs and will try to be flexible on due dates to accommodate the update schedules of other WMOs when LGUs are within the jurisdiction of more than one WMO. All plan updates must be submitted to the WMO at least 120 days prior to the due date in order to provide time for review and approval. LGUs will not be eligible for WMO Cost Share Funds if a local plan is determined to be expired.	Planning & Water Management	Completed	Local Plans were reviewed and approved in 2013-2015.
117	Imp Strategy AD-4	Administration	Assess and review CCWMO programs (including cost share programs), implementation strategies, and proposed Capital Improvement projects through the CCWMO Annual Report and the Annual Water Quality Report. The CCWMO intends to use these reports to identify any necessary changes to the Plan. If the reports identify needed changes, the WMO will address the change through a plan amendment as described in Chapter 5, Section 4.2. The CCWMO anticipates completing plan amendments periodically during the life of the Plan.	Planning & Water Management	Completed	See 2011 - 2017 annual reports and water quality reports.

Table D1. 2010 CCWMO Water Plan Implementation Strategy Evaluation

No.	Strategy ID	Major Issue/ Program Areas	Implementation Strategy	Responsible Parties	Status	Accomplishments (as of December 2018)
118	Imp Strategy AD-5	Administration	Review the CCWMO Project list (Table 4.3) and CCWMO Potential Project list (Table 4.4) periodically for adjustments and potential amendments. As TMDL Studies, Implementation Plans, and other studies are completed, the CCWMO anticipates updating the project and potential project lists through a plan amendment.	Planning & Water Management	Completed	The CCWMO Project List was updated in 2015 to incorporate new projects from a variety of sources.
119	Imp Strategy AD-6	Administration	Complete periodic Progress Reports to assess progress towards CCWMO goals. The CCWMO will periodically review progress towards the goals identified in this plan through the use of short term and long term metrics described in Table 5.2. Progress Reports will be completed in conjunction with plan amendments and incorporated into the CCWMO Annual Report. Short term metrics are related to the accomplishment of activities (e.g. number of activities, number of participants, etc). Long term metrics generally involve resource based outcomes.	Planning & Water Management	Completed	See 2011 - 2017 annual reports.
120	Imp Strategy AD-7	Administration	Allocate staff resources and funding as needed to develop the next generation Comprehensive Watershed Management Plan.	Planning & Water Management	Ongoing	Draft 2019-2028 CCWMO Water Plan available January 2019.
121	Imp Strategy AD-8	Administration	Properly maintain BMPs, outlet structures, and other water related infrastructure owned and operated by the CCWMO. The CCWMO will utilize the MS4 Permit framework to inventory and assess infrastructure.	Planning & Water Management	Ongoing	Since 2014, the CCWMO has budgeted for maintenance for CCWMP owned infrastructure.

D.3. PROJECT IMPLEMENTATION EVALUATION.

Table D2 lists the projects that were completed or partially completed during the timeframe of the 2010 plan (2011 through 2018). 21 projects identified in the 2010 water plan have been completed or are currently underway.

Table D2. Projects Completed Since 2010

2010 Plan ID	2015 Plan ID	Project Description & Need	Subshed	Benefitted Waterbody	Project Type	Notes
1	-	**Barnes Lake Outlet Structure.** Coordinated with the DNR and landowners to install an outlet structure that maintains the Ordinary High Water level (OHW) of Barnes Lake.	Bevens Creek	Barnes Lake	Outlet Structure	Project completed in 2011
2	3	**Burandt Lake Sunset Blvd Stormwater Retrofits.** Incorporate BMPs along Sunset Blvd right-of-way in order to provide treatment for a currently untreated area and improve the quality of runoff reaching Burandt Lake.	Carver Creek	Burandt Lake	Stormwater Retrofit	Project completed in 2012.
3	6	**Wetland Restoration at Central Pond.** Collaborate with the City of Mayer to restore a wetland near Central Pond. The project will help meet the CCWMOs goal of improving the quantity and quality of wetlands in the watershed and increase flood storage in the watershed.	Crow River	Crow River	Wetland Restoration	Outlet Control Structure for Wetland was constructed in 2016. Management of wetland and upland vegetation is ongoing.
5	-	**Miller Lake Sediment Detention Structure Feasibility Study.** Feasibility Study completed in 2012 to study cost/feasibility of constructing a sediment detention structure at the inlet of Miller Lake.	Carver Creek	Miller Lake	Feasibility Study	Project completed in 2012
6	9	**Wetland Restoration Feasibility Study.** The study identified and prioritized potential wetland restoration sites in the CCWMO.	Watershed-wide	Watershed-wide	Feasibility Study	Project completed in 2018.
9	14	**Waconia City Hall - Fountain Park Pond Retrofits.** Partner with the City of Waconia to retrofit Fountain Park Pond and adjacent street(s) and stormwater facilities in order to enhance stormwater treatment and reduce pollutant loads to Lake Waconia.	Carver Creek	Lake Waconia	Stormwater Retrofit.	Project completed in 2016. BMPs installed at fountain park include rain gardens, permeable pavers, sand-iron filter, and expansion of the existing pond.

Table D2. Projects Completed Since 2010

2010 Plan ID	2015 Plan ID	Project Description & Need	Subshed	Benefitted Waterbody	Project Type	Notes
10	-	**SSTS Direct Discharge Incentives.** In 2007, the County Board established a cost share program to accelerate the elimination of direct discharge SSTS. The approved TMDL's for Carver and Bevens Creeks identified that some of the fecal Coliform entering those water bodies was from direct discharge (and failing) septic systems. The program offers direct incentives and low-interest loans to landowners to fix these systems.	Watershed wide	Watershed wide	SSTS Retrofit	Project completed. Between 2008 and 2017, the Direct Discharge Incentive Program has led to the replacement of 590 non-compliant SSTS, including 235 SSTS that discharged directly to a surface water.
P02	-	**Benton Lake Reclamation - Phase 1.** Installed a fish barrier at the outlet of Benton Lake to isolate the Benton Lake Watershed from possible downstream rough fish interactions and improve water quality.	Carver Creek	Benton Lake, Carver Creek	Lake Management	Project completed in 2014
P02	14	**Benton Lake Reclamation - Phase 2.** Reduce in-lake pollutant loads through removal of rough-fish, restoration of game fishery, sediment compaction and potential partial removal of sediment. Includes Lake Meuwissen.	Carver Creek	Benton Lake, Carver Creek	Lake Management	In progress. Removal of carp population occurred in 2017 and 2018 and will continue in 2019. Native fish were stocked and an aerator was installed in 2018.
P04	-	**Reitz Lake Run-off Structure and Wetland Restoration.**	Carver Creek	Reitz Lake	Wetland Restoration	Projects completed in 2012.
P06	-	**East Chaska Creek Chain of Lakes Carp Control.** Feasibility Study was completed in 2013 to identify methods to control carp populations in the East Creek Chain of Lakes (Hazeltine, Big Woods, McKnight, Jonathan, Grace) and improve water quality.	Chaska Creek	East Chaska Creek Chain of Lakes	Lake Management	Drawdown Feasibility study completed in 2013. Implementation of feasibility study is included in project list as "East Chaska Creek Chain of Lakes Reclamation."

Table D2. Projects Completed Since 2010

2010 Plan ID	2015 Plan ID	Project Description & Need	Subshed	Benefitted Waterbody	Project Type	Notes
P07	-	**East/West Chaska Creek Urban Stream Restoration.** Restored a degraded section of steeply sloped stream on East Chaska Creek. The project helps mitigate high volumes/flows that are degrading the stream channel.	Chaska Creek	Chaska Creek	Stream Restoration	Projects (Birdie Lane Ravine Restoration and Seminary Fen Ravine Restoration) funded in 2012 and 2013.
P16	19	**BE9 Lake Restoration Implementation.** Implement the design for restoring hydrology to a historic lake bed on Bevens Creek as identified in the Bevens Creek Restoration Feasibility Study. The project would help the CCWMO meet its goal of improving the quantity and quality of wetlands in the watershed, increase flood storage in the watershed, and improve water quality in Bevens Creek.	Bevens Creek	Bevens Creek	Wetland Restoration	Construction completed in 2018. Management of wetland and upland vegetation is ongoing.
-	24	**First Street Water Reuse.** Complete the final phase of the Burandt Water Reuse Project as detailed in construction plans.	Carver Creek	Burandt Lake	Stormwater Retrofit	Phase 1 (installation of a pretreatment tank and 1 storage tank) was completed in the fall of 2013. Phase 2 (installation of 3 additional storage tanks) was completed in 2015. The water reuse system removes an estimated 2.18 kg of phosphorus a year and keeps 950,884 gallons of stormwater out of the storm sewer and Lake Burandt.
-	27	**Community Partner Cost Share.** Areas that drain directly to Lake Waconia in the City of Waconia and the East Creek Chain of Lakes in the City of Chaska were targeted for potential stormwater retrofit projects.	Carver Creek, East Chaska Creek	Lake Waconia, Grace Lake	Stormwater Retrofit	Several projects were completed between 2015 and 2018 including porous pavement projects at two businesses in Waconia and a rain garden at the Kindergarten Center in Chaska.
-	28	**Fireman's Lake Gully Restoration.** Provided funding to the City of Chaska for stabilizing an active gully on the north side of Fireman's Lake.	West Chaska Creek	Fireman's Lake	Gully Stabilization	Project completed in 2016.

Table D2. Projects Completed Since 2010

2010 Plan ID	2015 Plan ID	Project Description & Need	Subshed	Benefitted Waterbody	Project Type	Notes
-	29	**Waconia Downtown LID.** Collaborate with the City of Waconia demonstrate alternative street designs for an existing downtown residential and commercial areas. The alternative design would reduce impervious surfaces and add stormwater treatment for currently untreated areas (e.g. street bump outs, rain gardens, etc) and improve the quality of stormwater runoff reaching Lake Waconia.	Carver Creek	Lake Waconia	Stormwater Retrofit	Project Completed in 2015 (street narrowing and bump outs, rain gardens, etc on Cedar, Maple, First Streets).
-	36	**Watertown Wetland Restoration.** Collaborated with the City of Watertown and the Public Works Department to restore 65 acres of wetland and associated upland habitat.	Crow River	Crow River	Wetland Restoration	In progress. Permitting and design work began in 2016. The outlet control structure will be constructed in 2019. Management of wetland and upland vegetation will be ongoing for the next several years.
-	38	**Lake Bavaria Pond Retrofit.** Partnered with the City of Victoria to retrofit an existing pond with a sand-iron filter (other other appropriate practice) in the Laketown Development to improve water quality in Lake Bavaria.	East Chaska Creek	Lake Bavaria	Stormwater Retrofit	In progress. Permitting and design work began in 2018. Construction is anticipated in 2019.
-	39	**Chaska Creek Urban Stream Restoration.** Restore approximately 1,000 linear feet of a degraded section of steeply sloped stream on East or West Chaska Creek. Provide a demonstration of a low-impact alternative to the current practice of regrading and piping water flow to reduce erosion. The project may involve a variety of alternative practices. The project will help mitigate high volumes/flows that are degrading stream channels.	West Chaska Creek	West Chaska Creek	Stream Restoration	In progress. Permitting and design work began in 2017. Construction is anticipated in 2019.

D.4. EVALUATION OF SHORT- AND LONG-TERM METRICS.

Table D3 lists the short- and long-term metrics identified in the 2010 plan as indicators of success or progress towards achieving the goals identified in the plan. Short-term metrics were summarized and presented in the CCWMO Annual Reports. Copies of the 2011-2017 Annual Reports can be found on the Carver County Website here: https://www.co.carver.mn.us/departments/public-services/planning-water-management/water-management/projects-reports.

Following Table D3 is a summary of the progress towards meeting short- and long-term metrics for each issue area. The discussion for each issue area includes the goal for the issue, 2011-2017 averages for each short-term metric, and a discussion of progress on long-term metrics.

Table D3. Short- and Long-term Metrics (2010 Plan)

Issue	Goal	Short-term Metrics	Long-term Metrics
Surface Water Management	Maintain or improve the physical, chemical, biological, and aesthetic condition of surface water resources in the CCWMO, taking into account the watershed context of each resource.	- Number of lakes/streams monitored	- Trends in water quality parameters as identified in monitoring reports - Achievement or maintenance of state water quality standards
Impaired Waters & TMDL Approach	Receive EPA approval for TMDLs for all listed impaired waters within the CCWMO	- Completion of TMDLs studies and Implementation Plans	- Delisting of impaired waters
Urban Stormwater Management	Minimize and mitigate the impacts of urban stormwater runoff on water resources.	- Number/type of practices approved and installed - Number of landowner cost share projects - Number of Stormwater BMPs monitored	- Delisting of impaired waters
Wetland Management	Manage and restore wetlands in the County to protect and maximize the values of wetland functions	- Number of WCA applications - Number/acreage of wetlands impacted - Number/acreage of wetlands protected, restored, or enhanced - Number of landowner contacts	- Same as short term metrics
Agricultural Practices (feedlots)	Manage feedlots so that the quality of surface water and groundwater is not impaired	- Number of feedlots licensed - Number of feedlots inspected	- Delisting of waters impaired by fecal coliform
Agricultural Practices	Encourage public and private landowners to implement conservation practices on the land they are responsible for	- Number/types of conservation practices installed	- Same as short term metrics

Table D3. Short- and Long-term Metrics (2010 Plan)

Issue	Goal	Short-term Metrics	Long-term Metrics
Sanitary Sewer Discharge (SSTS)	Ensure, to the extent possible, that all SSTS are properly designed, installed, operated, maintained and/or replaced in order to eliminate health hazards and discharges to surface water or groundwater.	- Number of systems replaced - Number of direct discharge systems replaced	- Delisting of waters impaired by fecal coliform
Sanitary Sewer Discharge (WWTP)	Ensure that urban waste water discharge meets water quality standards.	- TMDL wasteload allocations incorporated into WWTP permits	- Delisting of waters with WWTP discharges
Upland Natural Resources	Preserve and restore aquatic, wetland and associated upland habitats in a watershed context	- Number/acreage of natural areas preserved, restored, or enhanced	- Same as short term metrics
Groundwater Management	Protect groundwater quality and groundwater supplies.	- Number of wells sealed through the cost share program - Number of wells monitored - Monitoring results	- Trends in water quality parameters as identified in monitoring reports - State drinking water standards
Solid & Hazardous Waste	Prevent contamination of groundwater and surface water through proper disposal or handling of solid and hazardous waste	- Number of generators licensed - Number of inspections	- Same as short term metrics
Education	Provide those living, working, and recreating in Carver County with the knowledge, skills, and motivation required to assure protection and improvement of the county's surface water and groundwater resources	- Number/type of events and programs - Number of participants in events and programs - Number of volunteers	- Same as short term metrics
Monitoring & Assessment	Maintain a comprehensive, accurate assessment of surface and ground water quality trends	- Number of lake/streams monitored - Number of wells monitored - Completion of annual water quality monitoring report	- Same as short term metrics
Administration	Optimize the use of public resources in managing resources in the CCWMO	- Completion of administrative implementation strategies - Annual budget - Amount of grant funding received - Status of Local Plans	- Budget trends over time

SURFACE WATER MANAGEMENT MONITORING & ASSESSMENT

SURFACE WATER MANAGEMENT GOAL

Maintain or improve the physical, chemical, biological, and aesthetic condition of surface water resources in the CCWMO, taking into account the watershed context of each resource.

MONITORING & ASSESSMENT GOAL

Maintain a comprehensive, accurate assessment of surface and ground water quality trends over the long term and comply with all current and future TMDL's monitoring and assessment protocols. Data will used to compile trend analysis, assess BMP effectiveness, and complete TMDL studies.

SHORT-TERM METRICS SUMMARY (2011-2017 AVERAGES)

18 lakes monitored

6 stormwater BMPs intensively monitored

16 streams monitored for nutrients & TSS

13 wells monitored

22 streams monitored for E. coli

LONG-TERM METRICS SUMMARY

Information on water quality trends can be found on the Carver County website: https://www.co.carver.mn.us/departments/public-services/planning-water-management/water-management/water-quality

Of the 18 lakes regularly monitored in the watershed, 3 lakes have a downward trend (decrease in total phosphorus), 3 lakes have an upward trend (increase in total phosphorus), and 12 lakes show no trend.

IMPAIRED WATERS & TMDL APPROACH

GOAL

Receive EPA approval for TMDLs for all listed impaired waters within the CCWMO.

SHORT-TERM METRICS SUMMARY

TMDL Name	Status
Carver, Bevens and Silver Creeks Fecal Coliform TMDL	Approved March 2007 Implementation in progress
Carver, Bevens and Silver Creeks Turbidity TMDL	Approved September 2012 Implementation in progress
Burandt Lake Phosphorus TMDL	Approved December 2008 Implementation in progress
Reitz Lake Phosphorus TMDL	Approved October 2010 Implementation in progress
5 Lake Phosphorus TMDL	Approved October 2010 Implementation in progress
South Fork Crow River Lakes Phosphorus TMDL	Approved October 2010 Implementation in progress
Benton Lake Phosphorus TMDL	Approved May 2013 Implementation in progress
Maria Lake Phosphorus TMDL	3rd draft complete - awaiting MPCA Approval
Gaystock Lake Phosphorus TMDL	3rd draft complete - awaiting MPCA Approval
Hazeltine Lake Phosphorus TMDL	3rd draft complete - awaiting MPCA Approval
Grace Lake Phosphorus TMDL	3rd draft complete - awaiting MPCA Approval
Jonathan Lake Phosphorus TMDL	3rd draft complete - awaiting MPCA Approval
McKnight Lake Phosphorus TMDL	3rd draft complete - awaiting MPCA Approval

LONG-TERM METRICS SUMMARY

The 2010 plan identifies delisting of impaired waters as the long-term metric for this issue. To date, no impaired waters within the CCWMO have been delisted.

URBAN STORMWATER MANAGEMENT

GOAL

Minimize and mitigate the impacts of urban stormwater runoff on water resources.

SHORT-TERM METRICS SUMMARY (2011-2017 TOTALS)

341 water rules applications reviewed

13 landowner cost share projects installed

187 stormwater BMPs approved & installed

43 stormwater BMPs intensively monitored

1,156 erosion & sediment control inspections completed

393 stormwater BMPs monitored for general function

LONG-TERM METRICS SUMMARY

The 2010 plan identifies delisting of impaired waters as the long-term metric for this issue. To date, no impaired waters within the CCWMO have been delisted.

The Water Resource Management Ordinance (Water Rules) was amended twice during the life of the 2010 plan. Amendments included the addition of volume control requirements, wetland setbacks, and topsoil management, among other things.

In general, permit activity increased during the life of the plan; increasing from 36 permits in 2011 to 60 permits in 2017. A total of 187 stormwater best management practices (ponds, filtration practices, stormwater reuse, etc) were approved and installed between 2011 and 2017 as part of the water rules permit program. A total of 393 stormwater BMPs were inspected for general function.

WETLAND MANAGEMENT

GOAL

Manage and restore wetlands in the County to protect and maximize the values of wetland functions.

SHORT-TERM METRICS SUMMARY (2011-2017 TOTALS)

156 WCA applications reviewed

1,546 landowner contacts

7.1 acres of wetland impacted

898 acres of wetland protected/ enhanced/restored

LONG-TERM METRICS SUMMARY

The 2010 plan indicated that short-term metrics will also be used as long term-metrics for this issue.

In general, wetland permit activity increased during the life of the plan; increasing from 7 permits in 2011 to 40 permits in 2017. Permanent impacts to wetlands (as allowed under the exemptions of the Wetland Conservation Act) were outweighed by creation or restoration of wetland. 7.1 acres of wetland were permanently impacted between 2011 and 2017. Approximately 898 acres of wetland were restored through programs like Reinvest in Minnesota and the Wetland Reserve Program during the same time period.

The CCWMO partnered on three large wetland restoration projects during the life of the plan.

AGRICULTURAL PRACTICES - FEEDLOTS

GOAL

Manage feedlots so that the quality of surface water and groundwater is not impaired.

SHORT-TERM METRICS SUMMARY (2011-2017 TOTALS)

252 registered feedlots (annual average)

346 feedlot inspections between 2011-2017

LONG-TERM METRICS SUMMARY

The 2010 plan identifies delisting of waters listed for *E. coli* impairment as the long-term metric for this issue. To date, no impaired waters within the CCWMO have been delisted. On average, there are 252 feedlots registered within the CCWMO. A total of 326 feedlot inspections were conducted between 2011 and 2017.

AGRICULTURAL PRACTICES – CONSERVATION PRACTICES

GOAL

Encourage public and private landowners to implement conservation practices on the land they are responsible for.

SHORT-TERM METRICS SUMMARY (2011-2017 TOTALS)

28 critical area plantings completed

56 landowners rented the Truax Drill

48 grassed waterways installed

917 acres seeded with native prairie using the Truax Drill

LONG-TERM METRICS SUMMARY

The 2010 plan indicated that short-term metrics will also be used as long term-metrics for this issue.

SANITARY SEWER DISCHARGE – SUBSURFACE SEWAGE TREATMENT SYSTEMS

GOAL

Ensure, to the extent possible, that all SSTS are properly designed, installed, operated, maintained and/or replaced in order eliminate health hazards and discharges to surface water or groundwater.

SHORT-TERM METRICS SUMMARY (2008-2017 TOTALS)

590 non-compliant SSTS replaced

148 non-compliant SSTS replaced through loan program

139 direct discharge SSTS replaced in TMDL area

235 total direct discharge SSTS replaced

LONG-TERM METRICS SUMMARY

The 2010 plan identifies delisting of waters listed for *E. coli* impairment as the long-term metric for this issue. To date, no impaired waters within the CCWMO have been delisted.

The Direct Discharge Incentive Program for the Carver and Bevens Creek Subwatershed will be completed in 2019. Between 2008 (when the program began) and 2017, 590 non-compliant septic systems have been replaced, including 235 systems that previously discharged directly to a lake, stream, or wetland.

NATURAL RESOURCES

GOAL

Preserve and restore aquatic, wetland and associated upland habitats in a watershed context.

SHORT-TERM METRICS SUMMARY (2011-2017 TOTALS)

2,116 total acres of natural areas preserved, enhanced, restored, 2011-2017

LONG-TERM METRICS SUMMARY

The 2010 plan indicated that short-term metrics will also be used as long term-metrics for this issue.

GROUNDWATER MANAGEMENT

GOAL

Protect groundwater quality and groundwater supplies.

SHORT-TERM METRICS SUMMARY (2011-2017 TOTALS)

13 wells sealed through the cost share program

LONG-TERM METRICS SUMMARY

The 2010 plan indicated that trends in water quality parameters in monitoring reports and State drinking water standards would be used as long term-metrics for this issue. Data on groundwater quality was not collected so additional evaluation is not feasible. The number of groundwater wells monitored for water level increased from 17 in 2014 to 30 in 2017.

SOLID & HAZARDOUS WASTE

GOAL

Prevent contamination of surface water and groundwater through proper disposal or handling of solid and hazardous waste.

SHORT-TERM METRICS SUMMARY (2011-2017 TOTALS)

309 generators licensed (annual average)

678 generator inspections

2,113 tons of electronics recycled

22,669 appliances recycled

49,852 cubic yards of yard waste composted

1,440 tons of household hazardous waste recycled

159 tons of household hazardous waste recycled

LONG-TERM METRICS SUMMARY

The 2010 plan indicated that short-term metrics will also be used as long term-metrics for this issue.

EDUCATION

GOAL

Provide those living, working, and recreating in Carver County with the knowledge, skills, and motivation required to ensure protection and improvement of the county's surface water and groundwater resources.

SHORT-TERM METRICS SUMMARY (2011-2017)

23 educational programs offered (annual average)

20,347 people directly connected with educational programs

LONG-TERM METRICS SUMMARY

The 2010 plan indicated that short-term metrics will also be used as long term-metrics for this issue.

In general, the number of educational programs offered by the CCWMO increased during the life of the plan, from 21 programs in 2011 to 25 programs in 2017. Over 20,000 people participated in a CCWMO event or program between 2011 and 2017.

ADMINISTRATION

GOAL

Optimize the use of public resources in managing resources in the CCWMO.

SHORT-TERM METRICS SUMMARY (2011-2018)

- Citizen Advisory Committee maintained and meetings held
- Meetings held with City representatives as needed
- CCWMO Annual Report prepared and presented to County Board and BWSR

LONG-TERM METRICS SUMMARY

- The CCWMO received over $1.6 million dollars in grant funding between 2011 and 2018. The CCWMO provided over $570,000 in matching funds.
- Grants funding was received from a variety of sources, including MPCA, MN DNR, BWSR, and the Metropolitan Council

E. ACRONYM LIST & GLOSSARY

Acronym List

AU	Animal Units
BFE	Base Flood Elevation
BMP	Best Management Practice
BWSR	Board of Water & Soil Resources
CAMP	Citizen Assisted Monitoring Program
CCWMO	Carver County Watershed Management Organization
CDA	Community Development Agency
CIP	Capital Improvement Program
CREP	Conservation Reserve Enhancement Program
CRP	Conservation Reserve Program
CWA	Clean Water Act
CWF	Children's Water Festival
DWSMA	Drinking Water Supply Management Area
EQIP	Environmental Quality Incentives Program
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FIS	Flood Insurance Study
GIS	Geographic Information Systems
GPS	Global Positioning System
HHW	Household Hazardous Waste
LA	Load Allocation
LGU	Local Government Unit
LWP	Local Water Plan

MCBS	Minnesota County Biological Survey
MDA	Minnesota Department of Agriculture
MDH	Minnesota Department of Health
MGS	Minnesota Geological Society
MLCCS	Minnesota Land Cover Classification System
MN DNR	Minnesota Department of Natural Resources
MN DOT	Minnesota Department of Transportation
MOU	Memorandum of Understanding
MPCA	Minnsota Pollution Control Agency
MS4	Municipal Separate Storm Sewer System
MUSA	Metropolitan Urban Service Area
NCHF	North Central Hardwood Forest ecoregion
NEMO	Non-point Source Education for Municipal Officials
NFIP	National Flood Insurance Program
NPDES	National Pollutant Discharge Elimination System
NRA	Natural Resource Assessment
NRCS	Natural Resource Conservation Service
NTU	Nephelometric Turbidity Unit
NURP	National Urban Runoff Program
NWI	National Wetland Inventory
OHW	Ordinary High Water Level
RFPE	Regulatory Floodplain Elevation
RIM	Reinvest in Minnesota
SSTS	Subsurface Sewage Treatment Systems
SWCD	Soil Water Conservation District
SWPPP	Storm Water Pollution Prevention Plan
TEP	Technical Evaluation Panel
TMDL	Total Maximum Daily Load
TP	Total Phosphorus
TSS	Total Suspended Solids
US EPA	United States Environmental Protection Agency
US FWS	United States Fish & Wildlife Service
USDA	United States Department of Agriculture
VSMP	Volunteer Stream Monitoring Partnership

WCA	Wetland Conservation Act
WCBP	Western Corn Belt Plains ecoregion
WENR	Water, Environment, & Natural Resource Committee
WFVA	Wetland Function & Value Assessment
WLA	Waste Load Allocation
WMA	Wildlife Management Area
WMO	Watershed Management Organization
WOMP	Watershed Outlet Monitoring Program
WPA	Wellhead Protection Area
WWMD	Wold Water Monitoring Day
WWTP	Waste Water Treatment Plant

Glossary

A

aquifer — A permeable body of rock that both stores and transports groundwater and will yield a sufficient quantity of water to serve as a private or public water supply.

B

best management practice (BMP) — Recommendations regarding development and maintenance of varied land uses, aimed at limiting the effects of development, such as soil erosion and stormwater runoff, on the natural environment. See the Council's Urban Small Sites Best Management Practices Manual for specific examples of best management practices.

bioretention — A soil and plant–based stormwater management best management practice (BMP) used to filter runoff

Board of Water and Soil Resources (BWSR) — 12-member board that coordinates the water and soil resources planning activities of counties, soil and water conservation districts, watershed districts, watershed management organizations through approval of local plans and administration of state grants

buffer — A vegetative setback between development and streams, lakes, and wetlands whose aim is to physically protect and separate the resource from future disturbance or encroachment

C

Capital Improvement Program (CIP)

An itemized program for a five year prospective period, and any amendments thereto, subject to at least biennial review, setting forth the schedule, timing, and details of specific contemplated capital improvements by year, together with their estimated cost, the need for each improvement, financial sources, and the financial impact that the improvements will have on the local governmental unit or school district. (M.S. 473.852, Subd. 4)

cost-sharing

Contractual arrangement whereby a local unit of government or other governmental body enters into an agreement to pay for part of a physical facility or a service.

D

design storm

Streamflow from a storm event used as a standard for which performance of stormwater management practices are measured

E

easement

A grant or authorization by a property owner for the use of a designated part of his or her property, by the public, a corporation, or persons for a specific purpose such as the construction of utilities, drainage ways and roadways

erosion

The wearing down or washing away of the soil and land surface by the action of water, wind or ice

erosion control

Any efforts to prevent the wearing or washing away of the soil or land surface

eutrophication	Pertaining to a lake or other body of water characterized by large nutrient concentrations such as nitrogen and phosphorous and resulting high productivity. Such waters are often shallow, with algal blooms and periods of oxygen deficiency. Slightly or moderately eutrophic water can be healthful and support a complex web of plant and animal life. However, such waters are generally undesirable for drinking water and other needs. Eutrophication of a lake normally contributes to its slow evolution into a bog or marsh and ultimately to dry land. Eutrophication may be accelerated by human activities and thereby speed up the aging process.

F

failing system	System that discharges sewage to a seepage pit, cesspool, drywell, or leaching pit, and any system with less than three feet of soil or sand between the bottom of the distribution medium and the saturated soil level or bedrock. In addition, any system posing an imminent threat to public health or safety shall be considered failing
filtration	A series of processes that physically removes particles from water

G

groundwater	Supply of freshwater in an aquifer.

H

hydrograph	Graphical representation of stage or discharge at a point in a drainage as a function of time
hydrologic soil group	An NRCS designation to give different soil types to reflect their relative surface permeability and infiltrative capability. Rankings for from high infiltration rates in Group A to very low infiltration rates in Group D

I

impaired waters	Streams or lakes that do not meet their designated uses because of excess pollutants or identified stressors
impervious/ imperviousness	The portion of a sub-basin, sub-watershed, or watershed, expressed as a percentage, that is covered by surfaces such as rooftops, parking lots, sidewalks, driveways, streets, and highways. Impervious surfaces are important because they will not absorb rainfall and, therefore, cause almost all of the rainfall to appear as surface runoff.
infiltration	Flow of water from the land surface into the subsurface.

J

K

L

Local Government Unit (LGU)	Municipal units of government such as counties, cities and townships.
low impact development (LID)	Simple management and preservation technique used to restore aquatic, terrestrial and biologic natural resources.

M

Metropolitan Urban Service Area (MUSA)	Part of the metropolitan area, as defined by the Regional Development Framework, where the Metropolitan Council will provide regional services and facilities.

Municipal Separate Storm Sewer Systems (MS4)	A conveyance or system of conveyances, owned or operated by a state, city, town, county, district, association, or other public body having jurisdiction over disposal of sewage, industrial wastes, stormwater, or other wastes that discharges to waters of the United States. There are three categories of regulated small MS4s: mandatory, discretionary and petition. MS4s are required to develop and implement a Stormwater Pollution Prevention Program (SWPPP) which must cover six minimum control measures and identify best management practices (BMPs) and measurable goals associated with each of these minimum control measures.

N

National Pollutant Discharge Elimination System (NPDES)	A federal program to eliminate point source and stormwater discharges to receiving waters of the United States. The NPDES program is mandated in the federal Clean Water Act and is administered by the U.S. Environmental Protection Agency (EPA). EPA has been given authority to delegate the program to individual states.
National Wetlands Inventory (NWI)	A USFWS program to produce detailed maps of the characteristics and extent of wetland in the US. Maps are used by government and private organizations and have numerous applications including comprehensive resource management plans, impact assessments, facility and corridor siting, oil spill contingency plans, natural resource inventories, and habitat surveys.
Nationwide Urban Runoff Program (NURP)	From 1978 through 1983, the EPA conducted a comprehensive study of urban runoff called the Nationwide Urban Runoff Program (NURP). This study provided a better understanding of the nature of urban pollutants from various urban land uses. This study focused primarily on monitoring runoff from residential, commercial, and industrial land and clearly presents information on the magnitude and variety of pollutants encountered in the urban environment.

Natural Resources Inventory and Assessment (NRI/A)	Database that catalogs natural resources of regional importance, such as major water bodies, habitat areas, regional parks and aquifers.
nonpoint source pollution	Sources of pollution that are less definable and usually cover broad areas of land such as agricultural land with fertilizers or automobile pollution that are carried away by runoff. Discharge of waste cannot be located to a specific source.

O

ordinary high water level (OHW)	The boundary of public waters and wetlands which shall be an elevation delineating the highest water level which has been maintained for a sufficient period of time to leave evidence upon the landscape, commonly that point where the natural vegetation changes from predominantly aquatic to predominately terrestrial. For watercourses, the ordinary high water level is the elevation of the top of the bank of the channel. For reservoirs and flowages, the ordinary high water level is the operating elevation of the normal

P

peak flow	The highest discharge recorded over a specified period of time, usually a year but often a season. Often thought of in terms of spring snowmelt, summer, fall, and winter rainy season flow.
policy	Specific statement of guiding actions that expresses the general direction that the Metropolitan Council intends to follow in order to meet its goals.
presettlement	A time period prior to European settlement where land cover was either entirely forested, or prairie. An assumption used to calculate stormwater runoff from new development and increased impervious surface.

Q

R

rain garden	A landscaping feature that is planted with native perennial plants and is used to manage stormwater runoff from impervious surfaces such as roofs, sidewalks, and parking lots
rate control	Controlling the rate that stormwater is released from localized holding areas into larger conveyance systems
receiving water	A body of water such as a stream, river, or lake which receives stormwater and wastewater
recharge	The addition of water to an aquifer by natural infiltration or artificial means
retention	The permanent or temporary storage of stormwater to prevent it from leaving the development site
retrofit	The introduction of a new or improved stormwater management element where it either never existed or did not operate effectively
riparian areas	Areas adjacent to a water body acting as transition zones between terrestrial and aquatic systems
runoff	Rainfall, snowmelt, or irrigation water flow that has not evaporated or infiltrated into the soil, but flows over the ground surface.

S

sediment	Any particulate matter that can be transported by fluid flow
sediment control	Any efforts to prevent the deposition of particulate matter in a body of water
sedimentation	Deposition of particulate matter as a layer of solid particles on the bed or bottom of a body of water

shoreland	Land located within the following distance from public waters: 1,000 feet from the ordinary high water level of a lake, pond or flowage and 300 feet from a river or stream as shown on the Carver County Zoning Map; or the landward extent of a floodplain designated by ordinance of such a river or stream, whichever is greater. The practical limits of shorelands may be less than statutory limits wherever the waters involved are bounded by natural topographic divides which extend landward from the waters for lesser distances and when approved by the Commissioner of Natural Resources.
soil amendment	Tilling and composting of new lawns and open spaces within a development site to recover soil porosity, bulk density, and reduce runoff
storm sewer	A sewer that carries only surface runoff, street wash, and snow melt from the land. In a separated sewer system, storm sewers are completely separate from those that carry domestic and commercial wastewater (sanitary sewers)
stormwater	Surplus surface water generated by rainfall and snowmelt that does not seep into the earth but flows overland to rivers, lakes or streams.
stormwater pollution prevention plan (SWPPP)	A plan for preventing or minimizing pollution generated at construction sites
surface water	Water on the earth's surface exposed to the atmosphere such as rivers, lakes and creeks.

T

tile (drain tile)	A component of a drainage system constructed to drain water from property.
total phosphorus (TP)	A nutrient that can also be a contaminant because of its use by nuisance algae
total suspended solids (TSS)	A measure of the amount of particulate material in suspension in a water column

turbidity	The cloudy appearance of water caused by the presence of suspended and colloidal matter

U

V

volume control	Controlling the overall volume or amount of stormwater that is released from a site or localized holding area into the larger conveyance system

W

wastewater	Water carrying waste from homes and commercial and industrial facilities.
wastewater treatment plant	Facility designed for the collection, removal, treatment, and disposal of wastewater generated within a given service area.
watershed	An area of land that drains to a common point, usually a waterbody.
watershed management organization (WMO)	Watershed management organizations and watershed districts are special purpose units of local government whose boundaries generally follow those of a natural watershed. Watershed districts are local units of government that work to solve and prevent water-related problems. The functions of a watershed district may include development and implementation of a watershed management plan, review and approval of local water management plans, regulation of the use and development of land, and construction, repair, improvement, and management of drainage systems.

X Y Z

F. PLAN REVIEW PROCESS

F.1. PUBLIC COMMENT PERIOD

A 60-day public comment period on the draft water plan was held from April 22, 2019 to June 21, 2019. Forty-five comments were received from 13 organizations or individuals including 6 state agencies, 2 cities, 2 townships, 2 citizens, and 1 county staff member.

Thirty-two comments suggested a change or correction to the plan's text, 6 comments requested a change to a map, and 6 comments did not require a change or response. Twenty-three comments were addressed through changes to the text or a map, 16 comments were addressed through a written response but did not result in a change to the plan, and 6 comments did not require a change or response.

Comments and responses are shown in Table F1. The Carver County Board released the response to comments on September 3, 2019.

F.2. PUBLIC HEARING & FINAL STATE AGENCY REVIEW

A public hearing on the draft plan was held on October 1, 2019. No comments were received at the public hearing. On October 1, 2019, the Carver County Board approved releasing the draft plan for final state agency review.

The final state agency review period on the draft water plan was held from October 8, 2019 to November 15, 2019. The draft plan was presented to the Board of Water and Soil Resources (BWSR) Central Region Subcommittee on December 4, 2019; the subcommittee recommended approval of the draft plan to the full BWSR Board. The plan was approved by the Minnesota Board of Water and Soil Resources on December 18, 2019.

#	Name/Organization	Comment Date	Comment	Response2
1	Lori Cox / CAC Member	2/12/2019	**Figure 2.12** the Dahlgren annexation area southward into City of Carver 2040 plans has changed somewhat around the area of County 40 and County 11 (south towards Jordan). They were originally making it mixed use or single family. Now, some of those parcels are guided commercial. Their updated plan should reflect this, as of Dec.	Figure 2.12 has been updated to include the most current 2040 Land Use information.
2	Lori Cox / CAC Member	2/12/2019	**Figure 2.23** - Impaired Waters. Can the creeks please be labeled, just as you have them in **2.22**? completed	Figure 2.23 has been updated to include the names of creeks.
3	Lori Cox / CAC Member	2/12/2019	**Figure 2.25** - I was reading, but don't know if runoff is accounted for in this presentation, but only travel time due to soil type? Isn't topography in many areas headed south accounting for some of this sensitivity?	The pollution sensitivity model was developed by the Minnesota Department of Natural Resources. For the pollution sensitivity of the top of bedrock (Figure 2.25), it is based on depth to bedrock, and permeability of soil and surficial geologic units. Topography is not directly included in the model. The text has been updated to reflect these considerations.
4	Lori Cox / CAC Member	2/12/2019	**Reading under 3.4.1** - is there a map showing phosphorous discharge, or runoff? Are ditches monitored for this, or designated waterbodies only? Is that looked at or provided by MPCA? On the same note, are wind erosion events from open sources of fill/soil looked at by MPCA? I'm thinking about Muellers and their proximity to the creek, and how they continue to operate with wind erosion/sediment blowing on a number of days 4 seasons of the year.	The plan does not include a map of phosphorus discharge althougth the CCWMO collects water samples and analyses them for phosphorus in multiple locations. The most up to date information on phosphorus levels can be found in the CCWMO's interactive water quality maps, available online here: https://www.co.carver.mn.us/departments/public-services/planning-water-management/water-management/water-quality

#	Name/Organization	Comment Date	Comment	Response2
5	Lori Cox / CAC Member	2/12/2019	Under **Goals on 4.2**-are there measures by which the CCWMO is looking to achieve? Reduction by x%, or x points per year? **#6** looks like it begs for a number or quantifiable measure, so does **Policy 5** (Benefit), **Policy 8**, and **Policy 11, 14 and 20**. Those #'s would seem to feed the subsequent policies.	Table 6.2 includes a list of short and long term metrics used to measure progress towards meeting goals identified in the plan. The table has been updated with additional, more quantitative metrics for the permitting, monitoring, and project programs.
6	Lori Cox / CAC Member	2/12/2019	**Impl Strategies 39, 40, 41** would seem to have a larger reach if you continued to show up at city council and township meetings, more than once per year. These are many times recorded, and even though there may not be a huge live audience, these are watched online and are recorded for playback. The more you're seen & heard...	As part of the CCWMO's Annual Education Work Plan, the CCWMO evaluates and selects various outreach options, including outreach to city councils, depending on education priorities for the year. Strategies 39-41 currently allow the CCWMO the flexibility to increase, decrease, or select new outreach methods depending on education priorities. The CCWMO will continue to seek feedback on the Annual Education Work Plan through the Citizen Advisory Committee.
7	Lori Cox / CAC Member	2/12/2019	I would love to see the annual report simplified in a matrix format so that the public at large can appreciate helpful projects, and areas of the county that are impaired, and why. If that info isn't shared widely, annually, the public may not know why they should care.	The CCWMO works to present the annual report in a format that is engaging for the public but prefers not to proscribe a particular format in the plan. For the 2018 annual report, the CCWMO developed a website that presented the information in a simplified, straightforward manner. The report is available here: https://carver.maps.arcgis.com/apps/Cascade/index.html?appid=048ba56d766a4498a835bf33338fa3b9

#	Name/Organization	Comment Date	Comment	Response2
8	Lori Cox / CAC Member	2/12/2019	On **Program Activities** maybe you already do, but attend the MN School Gardens Conference (March), and different events held at the Arboretum having to do with environment study, etc. These are typically full of adults, children, teachers/educators.	The CCWMO regularly attends community events that reach different audiences. Examples include the Carver County Fair, city festivals and events, etc. Local events where residents are likely to be from the WMO are preferred.
9	Lori Cox / CAC Member	2/12/2019	On **Table 5.5**, will there be a column for '**Priority**'? Why separated out in **5.6**?	Table 5.6 lists the factors considered when the CCWMO prioritizes projects. In Table 5.5, for projects that benefit a specific waterbody, the waterbodies priority is listed in parentheses in the column labeled "Benefitted Waterbody."
10	Lori Cox / CAC Member	2/12/2019	Somewhere under **Administration 6** - is there a 50,000 ft view that denotes what accomplishments have been achieved as a % or # increase or decrease of water quality since 1996? Can there be a historical breakdown (by 5 yr or decade plans) showing deltas or changes as a result of all of this time & resource work on the public's behalf? Is this found in **C.2**?	Chapter 2 Land and Water Resource Inventory has been updated to include a summary of water quality trends.
11	Lori Cox / CAC Member	2/12/2019	**Table 6.2** would be enhanced greatly by measures, % or #'s.	Table 6.2 includes a list of short and long term metrics used to measure progress towards meeting goals identified in the plan. The table has been updated with additional, more quantitative metrics for the permitting, monitoring, and project programs.

#	Name/Organization	Comment Date	Comment	Response2
12	Timothy Schwarz / MPCA	5/28/2019	1. Goal setting. To the extent possible, we would like to see a quantitative accounting of what you intend/hope to accomplish over this 10-year plan cycle relative to what is ultimately needed or desired. Specifically, for several waterbodies you have Total Maximum Daily Loads (TMDLs) in which we have jointly invested much time and resources. In many cases these TMDLs (and perhaps your own studies) provide the overall load reduction needed (e.g., pounds of phosphorus) to reach water quality targets. Thus, it would be useful to specify how much of the total needed load reduction that you estimate will be addressed during the 10-year plan cycle. For example, how much of the overall phosphorus load reduction for Swede Lake will/may be addressed in the next 10 years? 100%? 25%? 2%? This information allows one to tell how effective the actions will be, how cost-effective the actions are and/or how long it will take to reach the ultimate targets. While some waterbodies may not have specific load reductions established, you may have other quantitative measures to use to gauge progress or to measure against, including water quality concentration, percentage of overall needed acres/stream miles restored, etc.	The CCWMO will work towards better quantitative accounting of intended and actual accomplishments. To that end, an implementation strategy has been added to Chapter 4 that states "Imp Strategy 49 Quantitative Measurement of Progress. The CCWMO will work towards developing tools and models to estimate overall load reductions needed to reach water quality targets for impaired and other waterbodies and to estimate load reductions achieved by proposed projects." Table 6.2 (short and long term metrics) has also been updated with additional, more quantitative metrics for the permitting, monitoring, and project programs.

#	Name/Organization	Comment Date	Comment	Response2
13	Timothy Schwarz / MPCA	5/28/2019	2. Progress tracking. On a related matter, given its leadership role in the watershed it would be appropriate for CCWMO to go beyond accounting for only its own initiated projects and also track the reductions done among all the parties subject to waste load allocations relative to the needed reductions. This need not be an involved undertaking as this may be accomplished with a spreadsheet or simple database approach. Further, MS4s should already be tracking their own progress for MPCA annual reporting purposes so it should mainly be a matter of requesting and managing this data.	Comment noted. The MPCA is already collecting and tracking TMDL load reductions for all entities with an MS4 permit.
14	Sam Paske / Metropolitan Council	5/31/2019	The Metropolitan Council has completed its review of Carver County Watershed Management Organization's (CCWMO) draft 2019 Water Management Plan. CCWMO has produced a strong plan that provides an excellent foundation for managing water resources in the watershed. The plan is consistent with Council policies and the Council's 2040 Water Resources Policy Plan. CCWMO held workshops, an anniversary outreach event, distributed a survey to residents, and met with staff from member Cities to identify issues for this update. Six over-arching issues were identified, and goal statements and policies were developed for each issue. Implementation will be carried out through six main program areas: Permitting, Projects, Monitoring, Education and Outreach, Planning and Research, and Administration.	Comment noted.

#	Name/Organization	Comment Date	Comment	Response2
15	Sam Paske / Metropolitan Council	5/31/2019	Other highlights of the plan include: - the County's Water Resource Management Ordinance, which underlies the WMO's permitting authority was adopted in 2001, and most recently updated in 2016. - CCWMO has established criteria and used them to prioritize all water bodes within the watershed. - CCWMO has also prioritized sites for wetland restoration within the watershed. - CCWMO will require local plans to include a map and discussion of areas that were urbanized with minimal or no stormwater treatment. - Table 6.1 lists CCWMO and LGU Roles for the Cities within the watershed and is very helpful. - Table 6.2 contains Short- and Long-Term Metrics to be used to evaluate implementation of this plan. - The plan includes an excellent evaluation of progress on implementing the previous (2010) plan. The Council commends CCWMO on their commitment to protect and restore the water resources in the County, and thanks them for the opportunity to comment on the plan. If you have any questions on these comments, please contact Joe Mulcahy, at 651-602-1104	Comment noted.
16	Stakeholder Meeting - Townships	6/12/2019	Impaired waters map - more details included for stream impairment (what they are impaired for)	Impaired lakes (Figure 2-23) and impaired streams (Figure 2-24) have been seperated onto different maps. The impaired streams map now shows each stream impairment in a different color. The impaired lakes map now references Tabl 2-10 (lake impairments) and the impaired streams map references Table 2-11 (stream impairments) so readers have an alternate way to review the information on impairments with the CCWMO.

#	Name/Organization	Comment Date	Comment	Response2
17	Stakeholder Meeting - Townships	6/12/2019	Impaired waters map - legend is confusing as lakes being red means something different than streams being red.	Impaired lakes (Figure 2-23) and impaired streams (Figure 2-24) have been seperated onto different maps to reduce confusion.
18	Stakeholder Meeting - Townships	6/12/2019	Several township representatives mentioned concerns relating to ditch cleanouts (projects not being permitted, projects not being stabilized properly, etc.)	The CCWMO currently permits ditch clean outs that require a wetland conservation act permit or disturb a watercourse with flows more than 10 cubic feet per second. As part of the permit, applicants are required to provide information about placement of spoil piles, stabilization of spoil piles, etc. Carver County SWCD staff are notified prior to the start of construction and conduct inspections as needed. The CCWMO can be notified of any work occuring without a permit at 952.361.1820.
19	Stakeholder Meeting - Townships	6/12/2019	Priority water map (Figure 5-1) - add stream segments downstream of first monitoring point (not shown on map and it makes it look like the streams disappear)	Figure 5-1 was been updated to include all major stream segments.
20	Dan Edgerton	6/19/2019	In Section 2.3.1 you refer to Minnesota County Biological Survey. It's now just Minnesota Biological Survey.	The plan has been updated to reflect the current name of the program (Minnesota Biological Survey).
21	Dan Edgerton / City of Chask	2/25/2019	The City has identified implementation priorities in a number of specific areas, as described below. 1. **Storm-related Damage.** Perform repair and restoration following stormwater-related damage to the system. In the recent past, this type of damage has included washed-out ponds and outlets, ravine and streambank failure, and flood damage to infrastructure and buildings.	An implementation strategy that supports addressing potential project opportunties that may arise when storm related damage occurs has been added to the plan. Potential project types include restorations, retrofits, and re-building infrastructure to enhance treatment.

#	Name/Organization	Comment Date	Comment	Response2
22	Dan Edgerton / City of Chaska	2/25/2019	2. **Stormwater System.** Maintain and improve the overall City stormwater system. Table 6-1 lists some specific stormwater system implementation priorities for the City. A tentative timetable is included with the table.	Comment noted
23	Dan Edgerton / City of Chaska	2/25/2019	3. **Lake Preservation.** Protect and restore the quality of lakes in the City. Section 4.8.1 identifies specific lake needs.	The CCWMO supports efforts to protect and restore lakes within the watershed. Several projects relating to lake preservation are included in the CCWMO plan, including the East Chaska Creek Chain of Lakes SWA Implemenation project (see Table 5-5, project IS 3) and the East Chaska Chain of Lakes Reclamation projects (see Table 5-5, project IDs 25 and 27).
24	Dan Edgerton / City of Chaska	2/25/2019	4. **Creek and Ravine Restoration**. Protect and restore the creeks and eroding ravines in the City. Section 4.7 and Table 4-10 identify some specific creek and ravine restoration priorities. These sites are shown on Map 2, Water Resource Map.	The CCWMO supports efforts to restore creeks and ravines. Several projects relating to Creek and Ravine Restoration are included in the CCWMO plan, including the stream restoration project (see Table 5-5, project ID 5) and the bank stabilization project (see Table 5-5, project ID 6).
25	Dan Edgerton / City of Chaska	2/25/2019	5. **Wetland Restoration.** Protect and restore wetlands in the City. Section 4.5 and Tables 4-4, 4-5, and 4-6 present wetland protection standards and priorities. Some specific wetland restoration/enhancement sites are shown on Map 2, Water Resource Map. Wetlands with high restoration potential are described in Appendix D.	The CCWMO supports efforts to protect and restore wetlands within the watershed (see Table 5-5, project ID 16).

#	Name/Organization	Comment Date	Comment	Response2
26	Dan Edgerton / City of Chaska	2/25/2019	6. **Natural Community Restoration.** Protect and restore the natural communities in the City. Section 4.6 and Table 4.7 and 4-8 identify some specific natural community restoration priorities. These sites are shown on Map 3, Natural Areas and Rare Features Map.	The CCWMO supports efforts to protect and restore natural communities when such projects provide protection to water resources.
27	Jeffrey Berg / Minnesota Department of Agriculture	6/20/2019	Page 2.57 - The township testing results paragraph can be updated with more current information. Use https://www.mda.state.mn.us/sites/default/files/inline-files/carver2018initial.pdf	Information added on pg. 2.57

#	Name/Organization	Comment Date	Comment	Response2
28	Jeffrey Berg / Minnesota Department of Agriculture	6/20/2019	Page 3.5: 3.43. Groundwater Resource Protection Groundwater protection can also include prevention of pollution from non - point sources as well. To address this for nitrate in groundwater from nitrogen fertilizer, the MDA developed the Minnesota Nitrogen Fertilizer Management Plan. The NFMP is the state's blueprint for preventing or minimizing the impacts of nitrogen fertilizer on groundwater. The primary goal of the NFMP is to involve local farmers and agronomists in problem-solving to address elevated levels of nitrate in groundwater. The Nitrogen Fertilizer Management Plan is available at: www.mda.state.mn.us/nfmp. The CCWMO Water Management Plan should consider including some more specific information and activities related to groundwater protection (In this section of the plan, in the goals & strategies in chapter 4 or activities in chapter 5). More details comments from MDA on groundwater protection from non-point sources of nitrate can be found in MDA's comments on the 2015 Carver County Groundwater Plan. How are proposed activities in the Carver County Water Management Organization Water Management Plan coordinated with the Carver County Groundwater Plan?	The CCWMO supports the County in the implementing the Carver County Groundwater Plan by providing funding, monitoring groundwater resources, and providing groundwater related education. Several implementation strategies reference groundwater related implementation (see Implementation Strategies 8 and 19). Many of the education related strategies do not reference specific issues but would include groundwater related education. Reference to the Carver County Groundwater Plan has been added to Implementation Strategies 8 and 19.

#	Name/Organization	Comment Date	Comment	Response2
29	Jeffrey Berg / Minnesota Department of Agriculture	6/20/2019	There are some areas within the Table 5-2. CCWMO Program Activities where more detail could be provided to provide clarity on what is intended with the activity. Page 5.7: Id #14 - Demonstration projects – In is unclear what kind of demonstration projects will be considered here? Are these on- farm projects? Here are some examples the MDA is involved with: https://www.mda.state.mn.us/environment-sustainability/farm-projects as well as; The AGRI Sustainable Agriculture Demonstration Grant supports innovative on-farm research and demonstrations. It funds projects that explore sustainable agriculture practices and systems that could make farming more profitable, resource efficient, and personally satisfying. Findings are published in the MDA's annual Greenbook. More information is available at www.mda.state.mn.us/sustagdemogrant.	Additional description of the types of demonstration projects the WMO has been involved with in the past has been added to the plan. Demonstration projects could include the project types described by the MDA.
30	Jeffrey Berg / Minnesota Department of Agriculture	6/20/2019	Page 5.10: Id#48 - BMP effectiveness – More detail should be provided here regarding what will be considered "research on BMP effectiveness". Does this mean monitoring of BMPs to determine pollutant(s) reduction, or perhaps 'applied research' such as how to effectively incorporate cover crops or improve soil health?	Additional information on the CCWMOs current approach to measuring BMP effectiveness has been added to the plan. Additional measures or methods of assessment may be considered as needs change.
31	Jeffrey Berg / Minnesota Department of Agriculture	6/20/2019	In addition to the link provided above, here is a list of MDA funded research project; several of which address BMP effectiveness: https://www.mda.state.mn.us/environment-sustainability/clean-water-research-program	Comment noted.

#	Name/Organization	Comment Date	Comment	Response2
32	Jeanne Daniels / Minnesota Department of Natural Resources	6/20/2019	Thank you for the opportunity to provide comments on the 2019 Carver County Water Management Plan. Our Area Hydrologist, Jennie Skancke, participated in the County's Technical Advisory Committee for this plan and feels that she was able to present feedback throughout the process that has been incorporated into the plan. Specifically, she noted that the County did a good job of identifying focus issues and criteria to prioritized projects. Thank you again for the opportunity to review and comment on the updated plan. We look forward to working with the Carver Co. Water Management Organization on implementation of the plan.	Comment noted.
33	Steve Christopher / BWSR	6/21/2019	BWSR Staff have completed the 60-day review of the Carver County Watershed Management Organization (CCWMO) draft of the Watershed Management Plan (plan) update. This review and comment is based upon the submittal received April 19, 2019. The CCWMO should be commended for an inclusive planning process and its accomplishments in its current plan. The plan is well organized with a focus on what can reasonably be accomplished with the existing capacity of the organization for the next ten years.	Comment noted.

#	Name/Organization	Comment Date	Comment	Response2
34	Steve Christopher / BWSR	6/21/2019	4. GOALS, POLICIES, AND IMPLEMENTATION STRATEGIES: 4.2 GOALS • The CCWMO has identified "To preserve and improve the water quality of surface water resources within the watershed". The CCWMO should identify a quantifiable improvement that it is striving toward overall/within the 10-year plan. If the State standard is the goal and is not be achievable within the timeframe of this Plan, the Plan should identify an interim goal. • The CCWMO lists groundwater resource protection as a major goal of the plan. The CCWMO should consider more specific implementation actions related to this effort, specifically where the Carver County Groundwater Plan can provide direction and have further integration.	**Water Quality:** Each impaired water has been assigned one of the following goals: - Impaired waters will show a stable or improving water quality trend, or; - Impaired water will be delisted during the life of the plan, or; - Unlisted lakes will show a stable or improving water quality trend Specific goals for each of the priority areas (untreated areas, wetland restoration, and priority water bodies) have also been added to the plan. **Groundwater:** The CCWMO supports the County in the implementing the Carver County Groundwater Plan by providing funding, monitoring groundwater resources, and providing groundwater related education. Several implementation strategies reference groundwater related implementation (see Implementation Strategies 8 and 19). Many of the education related strategies do not reference specific issues but would include groundwater
35	Steve Christopher / BWSR	6/21/2019	5. IMPLEMENTATION PLAN 5.3 CCWMO PRIORITY AREAS • We commend the CCWMO for developing a framework to provide a decision making tool and adding transparency to its prioritization process. • Additional discussion should be provided on the methodology for the prioritization of waterbodies, specifically related to impairment status. For example, is greater weight applied to those resources that are further degraded versus those 'close' to meeting standards? What is close to State standards defined as?	Additional information describing the waterbody prioritization process has been added to the plan, including additional description of the methodology used to assess impairment status. See section 5.3 for additional information.

#	Name/Organization	Comment Date	Comment	Response2
36	Steve Christopher / BWSR	6/21/2019	Table 5-5. CCWMO Projects • Many of the projects span the duration of the plan (short-, mid-, long-term). We suggest putting tighter timeframes on these projects to allow partners to better anticipate funding needs.	Timeframes listed in Table 5.5 have been adjusted to 5, 2-year time periods. As noted in the plan, some projects can only be pursued if grant funding is received.
37	Steve Christopher / BWSR	6/21/2019	6.8 PLAN EVALUATION • The CCWMO should consider tracking not only the number and type of BMPs installed through projects and permits, but also the modeled/assumed pollutant load reductions in order to assess its progress toward the water quality goals in the short term.	The CCWMO will work towards better quantitative accounting of intended and actual accomplishments. To that end, an implementation strategy has been added to Chapter 4 that states "Imp Strategy 49 Quantitative Measurement of Progress. The CCWMO will work towards developing tools and models to estimate overall load reductions needed to reach water quality targets for impaired and other waterbodies and to estimate load reductions achieved by proposed projects." Table 6.2 (short and long term metrics) has also been updated with additional, more quantitative metrics for the permitting, monitoring, and project programs.
38	Steve Christopher / BWSR	6/21/2019	I would like to recognize the excellent work that the CCWMO has done in its execution of projects, regulatory implementation, and education & outreach. We appreciate the opportunity to provide comments. I look forward to continuing to work with you through the rest of the plan development process. If you have any questions, please feel free to contact me at 651-249-7519, steve.christopher@state.mn.us	Comment noted.

#	Name/Organization	Comment Date	Comment	Response2
39	Mike Klingelhutz	6/21/2019	1. The reasons lakes and streams are impaired should be individually listed referring to them only as impaired is non specific. Listing what they are impaired for might spur some action and provides more information and transparency. I realize the politicians/administration might not like having a bunch of waters listed as impaired for fecal coliform and E-coli but if that is why they are impaired it should be transparently listed.	Specific impairments for each stream and lake are listed in Table 2-10 (lakes) and Table 2-11 (streams). Impaired lakes (Figure 2-23) and impaired streams (Figure 2-24) have been seperated onto different maps. The impaired streams map now shows each stream impairment in a different color. The impaired lakes map now references Table 2-10 (lake impairments) and the impaired streams map references Table 2-11 (stream impairments) so readers have an alternate way to review the information on impairments with the CCWMO.
40	Mike Klingelhutz	6/21/2019	2.There is nothing about manure application regulations being enforced or overseen. Manure applications can have a huge impact on receiving body water quality. Especially if the state regulations are not closely followed. With all the high intensity rainfalls we seem to be getting in the spring/early summer this will become an even bigger issue in the future.	Comment noted. Feedlot inspections and manure applications are regulated by the Carver County Environmental Services Department. The CCWMO supports the feedlot program with technical support and data and has partnered with the program to promote the use of manure management plans. Changes to feedlot regulations and any reporting requirements would be undertaken by the Environmental Services Department.

#	Name/Organization	Comment Date	Comment	Response2
41	Mike Klingelhutz	6/21/2019	3. The number of feedlot inspections are listed but no details are given. details such as numbers of citations, non compliances or outstanding compliance would provide valuable insight. Also there are no details about the various sizes of feedlots in the county and the permitting process or the reporting/inspection requirements. If this is a plan for the future, the number of inspections per year should be mentioned along with the county protocol for dealing with non compliance Issues when they are found. Except for glossing over the reasons for impairment and feedlot/manure issues the plan is very well done.	Comment noted. The Feedlot Program is operated by the Carver County Environmental Services Department. Additional information on feedlot inspections and enforcement can be requested from the Carver County Environmental Services Department.
42	Beth Neuendorf / MnDOT	6/21/2019	The only comment that I have on the plan is that the website link to the rule language did not work in Section 5.2.1 Permitting.	The website link to the rule language has been updated.
43	Andrew Budde / City of Watertown	6/24/2019	The City of Watertown would like the Crow River to be a Priority 1 Stream Ranking. In reviewing the scoring of Table B.2 the Crow River could be ranked higher in Impairment Status and other streams such as Bent Creek may be ranked too high with a score of 17.	Figure 5-1 has been updated to show the segment of the Crow River through the City of Watertown as a Priority 1 waterbody to reflect the importance of this reach of the river to the the City of Watertown.
44	Pete Parris / Laketown Township	6/25/2019	Manure application is important to water bodies, the township and the county. The Board expressed a concern to the feedlot inspector last fall about manure applications. We would like to see the county tighten up controls and reporting for these types of applications.	Comment noted. Feedlot inspections and manure applications are regulated by the Carver County Environmental Services Department. The CCWMO supports the feedlot program with technical support and data and has partnered with the program to promote the use of manure management plans. Changes to feedlot regulations and any reporting requirements would be undertaken by the Environmental Services Department.

#	Name/Organization	Comment Date	Comment	Response2
45	County Staff	6/22/2019	The County Strategic Plan identified reviewing watershed boundaries as a high priority and shifted planning responsibility to the CCWMO. The plan should include an implementation activity or project to review and identify appropriate updates to the boundaries between watersheds.	An implementation strategy has been added to the plan that reads " The CCWMO will work with the Lower Minnesota River Watershed District (LMRWD) to refine the boundary between the LMRWD and the CCWMO."

Kristen Larson

From: Kristen Larson
Sent: Friday, April 19, 2019 2:44 PM
To: Adriana Atcheson
Subject: FW: CCWMO Water Management Plan

Comments from Lori Cox (one of the CAC members) are below!

From: Lori Cox
Sent: Tuesday, February 12, 2019 10:09 AM
To:
Cc:
Subject: Re: CCWMO Water Management Plan

This email was received from outside of Carver County

Hi all,
Just a couple notes. Please realize I'm new to the group, and these may have been answered or discussed long ago, I just don't have the history.

Figure 2.12 the Dahlgren annexation area southward into City of Carver 2040 plans has changed somewhat around the area of County 40 and County 11 (south towards Jordan). They were originally making it mixed use or single family. Now, some of those parcels are guided commercial. Their updated plan should reflect this, as of Dec.

Figure 2.23 - Impaired Waters. Can the creeks please be labeled, just as you have them in **2.22**? completed

Figure 2.25 - I was reading, but don't know if runoff is accounted for in this presentation, but only travel time due to soil type? Isn't topography in many areas headed south accounting for some of this sensitivity?

Reading under 3.4.1 - is there a map showing phosphorous discharge, or runoff? Are ditches monitored for this, or designated waterbodies only? Is that looked at or provided by MPCA? On the same note, are wind erosion events from open sources of fill/soil looked at by MPCA? I'm thinking about Muellers and their proximity to the creek, and how they continue to operate with wind erosion/sediment blowing on a number of days 4 seasons of the year.

Under **Goals on 4.2**-are there measures by which the CCWMO is looking to achieve? Reduction by x%, or x points per year? **#6** looks like it begs for a number or quantifiable measure, so does **Policy 5** (Benefit), **Policy 8**, and **Policy 11, 14 and 20**. Those #'s would seem to feed the subsequent policies.

Impl Strategies 39, 40, 41 would seem to have a larger reach if you continued to show up at city council and township meetings, more than once per year. These are many times recorded, and even though there may not be a huge live audience, these are watched online and are recorded for playback. The more you're seen & heard...

I would love to see the annual report simplified in a matrix format so that the public at large can appreciate helpful projects, and areas of the county that are impaired, and why. If that info isn't shared widely, annually, the public may not know why they should care.

On **Program Activities** maybe you already do, but attend the MN School Gardens Conference (March), and different events held at the Arboretum having to do with environment study, etc. These are typically full of adults, children, teachers/educators.

On **Table 5.5**, will there be a column for '**Priority**'? Why separated out in **5.6**?

Somewhere under **Administration 6** - is there a 50,000 ft view that denotes what accomplishments have been achieved as a % or # increase or decrease of water quality since 1996? Can there be a historical breakdown (by 5 yr or decade plans) showing deltas or changes as a result of all of this time & resource work on the public's behalf? Is this found in **C.2**?

Table 6.2 would be enhanced greatly by measures, % or #'s.

Great job all!

Lori D. Cox

MINNESOTA POLLUTION CONTROL AGENCY

520 Lafayette Road North | St. Paul, Minnesota 55155-4194 | 651-296-6300
800-657-3864 | Use your preferred relay service | info.pca@state.mn.us | Equal Opportunity Employer

May 28, 2019

Adriana Atcheson, Planner
Carver County Water Management Organization
600 E 4th St
Chaska, MN 55318
952-361-1839
aatcheson@co.carver.mn.us

RE: Carver County Water Management Organization 60-day Review Period

Dear Adriana Atcheson:

The Minnesota Pollution Control Agency (MPCA) has reviewed your draft Carver County Water Management Organization (CCWMO) Watershed Plan (Plan) received on April 19, 2019, and we are providing the following comments as part of the official 60-day review and comment period.

The MPCA appreciates the opportunity to provide input throughout your Plan development process. As part of the agency's review, we are providing the following comments as part of the official 60-day Review and Comment Period.

1. Goal setting. To the extent possible, we would like to see a quantitative accounting of what you intend/hope to accomplish over this 10-year plan cycle *relative to what is ultimately needed or desired*. Specifically, for several waterbodies you have Total Maximum Daily Loads (TMDLs) in which we have jointly invested much time and resources. In many cases these TMDLs (and perhaps your own studies) provide the overall load reduction needed (e.g., pounds of phosphorus) to reach water quality targets. Thus, it would be useful to specify how much of the total needed load reduction that you estimate will be addressed during the 10-year plan cycle. For example, how much of the overall phosphorus load reduction for Swede Lake will/may be addressed in the next 10 years? 100%? 25%? 2%? This information allows one to tell how effective the actions will be, how cost-effective the actions are and/or how long it will take to reach the ultimate targets. While some waterbodies may not have specific load reductions established, you may have other quantitative measures to use to gauge progress or to measure against, including water quality concentration, percentage of overall needed acres/stream miles restored, etc.

2. Progress tracking. On a related matter, given its leadership role in the watershed it would be appropriate for CCWMO to go beyond accounting for only its own initiated projects and also track the reductions done among all the parties subject to wasteload allocations relative to the needed reductions. This need not be an involved undertaking as this may be accomplished with a spreadsheet or simple database approach. Further, MS4s should already be tracking their own progress for MPCA annual reporting purposes so it should mainly be a matter of requesting and managing this data.

Again, thank you for the opportunity to review and comment on the draft Plan. If we may be of further assistance, please contact Tim Schwarz at 651-757-2426 at the MPCA's St. Paul office.

Sincerely,

Suzanne Hanson

This document has been electronically signed.

Suzanne Hanson
Manager
Northeast & Twin Cities Section
Watershed Division

TS/SH:jdf

cc: Brian Livingston, MPCA
Katrina Kessler, MPCA
Steve Christopher, BWSR

May 31, 2019

Paul Moline
Carver County Water Management Organization
Government Center - Administration Building
600 East 4th Street
Chaska, Minnesota 55318-2102

RE: Carver County Watershed Management Organization draft 2019 Water Management Plan
Metropolitan Council Review File No. 22262-1

Dear Mr. Moline:

The Metropolitan Council has completed its review of Carver County Watershed Management Organization's (CCWMO) draft 2019 Water Management Plan. CCWMO has produced a strong plan that provides an excellent foundation for managing water resources in the watershed. The plan is consistent with Council policies and the Council's *2040 Water Resources Policy Plan.*

CCWMO held workshops, an anniversary outreach event, distributed a survey to residents, and met with staff from member Cities to identify issues for this update. Six over-arching issues were identified, and goal statements and policies were developed for each issue. Implementation will be carried out through six main program areas: Permitting, Projects, Monitoring, Education and Outreach, Planning and Research, and Administration.

Other highlights of the plan include:

- The County's Water Resource Management Ordinance, which underlies the WMO's permitting authority was adopted in 2001, and most recently updated in 2016.
- CCWMO has established criteria and used them to prioritize all water bodies within the watershed.
- CCWMO has also prioritized sites for wetland restoration within the watershed.
- CCWMO will require local plans to include a map and discussion of areas that were urbanized with minimal or no stormwater treatment.
- Table 6.1 lists CCWMO and LGU Roles for the Cities within the watershed and is very helpful.
- Table 6.2 contains Short- and Long-Term Metrics to be used to evaluate implementation of this plan.
- The plan includes an excellent evaluation of progress on implementing the previous (2010) plan.

390 Robert Street North | Saint Paul, MN 55101-1805
P. 651.602.1000 | F. 651.602.1550 | TTY. 651.291.0904 | metrocouncil.org
An Equal Opportunity Employer

METROPOLITAN COUNCIL

The Council commends CCWMO on their commitment to protect and restore the water resources in the County, and thanks them for the opportunity to comment on the plan. If you have any questions on these comments, please contact Joe Mulcahy, at 651-602-1104.

Sincerely,

Sam Paske
Assistant General Manager, Environmental Quality Assurance Department

cc: Steve Christopher, Board of Water and Soil Resources
Deb Barber, Metropolitan Council District 4
Angela Torres, Metropolitan Council Sector Representative
Peter Grafstrom, Metropolitan Council Community Relations Specialist
Raya Esmaeili, Metropolitan Council Reviews Coordinator
Joe Mulcahy, Water Resources Assessment Section

BOARD OF WATER AND SOIL RESOURCES

June 20, 2019

Adriana Atcheson
Carver County Planning & Water Management Department
600 East 4th Street
Chaska, MN 55318-2102

RE: Carver County Watershed Management Organization Comprehensive Plan Update: 60-day Comments

Dear Ms. Atcheson:

BWSR Staff have completed the 60-day review of the Carver County Watershed Management Organization (CCWMO) draft of the Watershed Management Plan (plan) update. This review and comment is based upon the submittal received April 19, 2019. The CCWMO should be commended for an inclusive planning process and its accomplishments in its current plan. The plan is well organized with a focus on what can reasonably be accomplished with the existing capacity of the organization for the next ten years.

4. GOALS, POLICIES, AND IMPLEMENTATION STRATEGIES:

4.2 GOALS

- The CCWMO has identified "To preserve and improve the water quality of surface water resources within the watershed". The CCWMO should identify a quantifiable improvement that it is striving toward overall/within the 10-year plan. If the State standard is the goal and is not be achievable within the timeframe of this Plan, the Plan should identify an interim goal.
- The CCWMO lists groundwater resource protection as a major goal of the plan. The CCWMO should consider more specific implementation actions related to this effort, specifically where the Carver County Groundwater Plan can provide direction and have further integration.

5. IMPLEMENTATION PLAN

5.3 CCWMO PRIORITY AREAS

- We commend the CCWMO for developing a framework to provide a decision making tool and adding transparency to its prioritization process.
- Additional discussion should be provided on the methodology for the prioritization of waterbodies, specifically related to impairment status. For example, is greater weight applied to those resources that are further degraded versus those 'close' to meeting standards? What is close to State standards defined as?

Table 5-5. CCWMO Projects

- Many of the projects span the duration of the plan (short-, mid-, long-term). We suggest putting tighter timeframes on these projects to allow partners to better anticipate funding needs.

6.8 PLAN EVALUATION

- The CCWMO should consider tracking not only the number and type of BMPs installed through projects and permits, but also the modeled/assumed pollutant load reductions in order to assess its progress toward the water quality goals in the short term.

I would like to recognize the excellent work that the CCWMO has done in its execution of projects, regulatory implementation, and education & outreach. We appreciate the opportunity to provide comments. I look forward to continuing to work with you through the rest of the plan development process. If you have any questions, please feel free to contact me at 651-249-7519, steve.christopher@state.mn.us

Sincerely,

Steve Christopher
Board Conservationist

Cc: Jeff Berg, MDA (via email)
Jeanne Daniels, DNR (via email)
Jennie Skancke, DNR (via email)
Judy Sventek, Met Council (via email)
Joe Mulcahy, Met Council (via email)
Karen Voz, MDH (via email)
Jeff Risberg, MPCA (via email)
Beth Neuendorf, MnDOT (via email)

Kristen Larson

From: Berg, Jeffrey (MDA) <jeffrey.berg@state.mn.us>
Sent: Thursday, June 20, 2019 4:39 PM
To: Adriana Atcheson
Cc: Christopher, Steve (BWSR)
Subject: DRAFT 2019 Carver County Water Management Organization (CCWMO) Water Management Plan

This email was received from outside of Carver County

Greetings Adriana,

Thanks for the opportunity to provide comments to the draft CCWMO Water Management Plan.

Below are a couple of comments from Minnesota Department of Agriculture regarding the draft 2019 of the CCWMO plan:

- Page 2.57 – The township testing results paragraph can be updated with more current information. Use https://www.mda.state.mn.us/sites/default/files/inline-files/carver2018initial.pdf
- Page 3.5: 3.4.3. Groundwater Resource Protection

Groundwater protection can also include prevention of pollution from non - point sources as well. To address this for nitrate in groundwater from nitrogen fertilizer, the MDA developed the Minnesota Nitrogen Fertilizer Management Plan. The NFMP is the state's blueprint for preventing or minimizing the impacts of nitrogen fertilizer on groundwater. The primary goal of the NFMP is to involve local farmers and agronomists in problem-solving to address elevated levels of nitrate in groundwater. The Nitrogen Fertilizer Management Plan is available at: www.mda.state.mn.us/nfmp. The
CCWMO Water Management Plan should consider including some more specific information and activities related to groundwater protection (In this section of the plan, in the goals & strategies in chapter 4 or activities in chapter 5).

More details comments from MDA on groundwater protection from non-point sources of nitrate can be found in MDA's comments on the 2015 Carver County Groundwater Plan. How are proposed activities in the Carver County Water Management Organization Water Management Plan coordinated with the Carver County Groundwater Plan?

- There are some areas within the Table 5-2. CCWMO Program Activities where more detail could be provided to provide clarity on what is intended with the activity.
    - Page 5.7: Id #14 -Demonstration projects – In is unclear what kind of demonstration projects will be considered here?

      Are these on- farm projects? Here are some examples the MDA is involved with: https://www.mda.state.mn.us/environment-sustainability/farm-projects as well as;
      The AGRI Sustainable Agriculture Demonstration Grant supports innovative on-farm research and demonstrations. It funds projects that explore sustainable agriculture practices and systems that could make farming more profitable, resource efficient, and personally satisfying. Findings are published in the MDA's annual *Greenbook*. More information is available at www.mda.state.mn.us/sustagdemogrant.

    - Page 5.10: Id#48 - BMP effectiveness – More detail should be provided here regarding what will be considered "research on BMP effectiveness". Does this mean monitoring of BMPs to determine pollutant(s) reduction, or perhaps 'applied research' such as how to effectively incorporate cover crops or improve soil health?

      In addition to the link provided above, here is a list of MDA funded research project; several of which address BMP effectiveness: https://www.mda.state.mn.us/environment-sustainability/clean-water-research-program

Let me know if you have any questions on the comments above.

Regards,

Jeff Berg

Water Policy Specialist
Minnesota Department of Agriculture
651 201 6338
DEPARTMENT OF AGRICULTURE
625 Robert Street North
St. Paul, MN 55155

Hi all-

The DRAFT 2019 Carver County Water Management Organization (CCWMO) Water Management Plan (plan) is now available for review and comment. The plan is available on the Carver County website for viewing and downloading: https://www.co.carver.mn.us/departments/public-services/planning-water-management/water-management/about-the-wmo/2019-water-management-plan-update

The 60-day public comment period begins April 22, 2019 and will close on June 21, 2019. **Written comments must be submitted by 4:30 PM Friday, June 21, 2019 to Adriana Atcheson:**

Email: aatcheson@co.carver.mn.us

On the web: https://www.co.carver.mn.us/departments/public-services/planning-water-management/water-management/about-the-wmo/2019-water-management-plan-update (scroll to the bottom of the page to provide comments)

Mail: Adriana Atcheson
Carver County Planning & Water Mgmt Dept
600 East 4th Street
Chaska, MN 55318-2102

For those of you who indicated a preference for a paper or CD copy of the plan, your preferred format will be arriving in the mail next week.

If you have any questions, please let me know. We look forward to hearing your feedback!

Kristen

Kristen Larson

Water Resources Program Specialist
klarson@co.carver.mn.us
D: 952.361.1824 | O: 952.361.1820 | F: 952.361.1828

www.co.carver.mn.us
Carver County Public Services Division
Planning & Water Management Department
Government Center, Admin. Bldg.
600 East 4th Street
Chaska, MN 55318-2102

Agency Plan Reviewers,
Please note that BWSR is in receipt of the 60-day draft of the Carver County WMO Water Resources Management Plan. Directions for comment are provided below with the comment period ending on June 21st.

Steve Christopher | Board Conservationist
Minnesota Board of Water and Soil Resources (BWSR)
520 Lafayette Road North
St. Paul, MN 55155
651-249-7519
Web | Twitter | Facebook

DEPARTMENT OF NATURAL RESOURCES

Minnesota Department of Natural Resources
Ecological and Water Resources Division
Central Region Headquarters
1200 Warner Road, St Paul MN 55106

Adriana Atcheson
Carver Co Planning & Water Mgmt Dept
600 East 4th St.
Chaska, MN 55318-2102

June 20, 2019

Re: 2019 Carver Co. Water Management Plan

Thank you for the opportunity to provide comments on the 2019 Carver County Water Management Plan. Our Area Hydrologist, Jennie Skancke, participated in the County's Technical Advisory Committee for this plan and feels that she was able to present feedback throughout the process that has been incorporated into the plan. Specifically, she noted that the County did a good job of identifying focus issues and criteria to prioritized projects.

Thank you again for the opportunity to review and comment on the updated plan. We look forward to working with the Carver Co. Water Management Organization on implementation of the plan.

Sincerely,

Jeanne M. Daniels

Jeanne Daniels, District Manager
Jeanne.daniels@state.mn.us
651-259-5784

Ec:.
Kristen Larson, Carver Co.
Steve Christofer, BWSR
Jennie Skancke, DNR
Dan Lais, DNR

Kristen Larson

From: Kristen Larson
Sent: Friday, June 21, 2019 2:03 PM
To: Adriana Atcheson
Subject: FW: WMO plan

Comments from Mike Klingelhutz are below

Kristen Larson

Water Resources Program Specialist
klarson@co.carver.mn.us
D: 952.361.1824 | O: 952.361.1820 | F: 952.361.1828

From: Michael Klingelhutz <mikeklingel@hotmail.com>
Sent: Friday, June 21, 2019 2:00 PM
To: Kristen Larson <klarson@co.carver.mn.us>
Subject: WMO plan

This email was received from outside of Carver County

Hi Kristen, I looked through the entire plan my comments are below.
1. The reasons lakes and streams are impaired should be individually listed referring to them only as impaired is non specific. Listing what they are impaired for might spur some action and provides more information and transparency. I realize the politicians/administration might not like having a bunch of waters listed as impaired for fecal coliform and E-coli but if that is why they are impaired it should be transparently listed.
2.There is nothing about manure application regulations being enforced or overseen. Manure applications can have a huge impact on receiving body water quality. Especially if the state regulations are not closely followed. With all the high intensity rainfalls we seem to be getting in the spring/early summer this will become an even bigger issue in the future.
3. The number of feedlot inspections are listed but no details are given. details such as numbers of citations, non compliances or outstanding compliance would provide valuable insight. Also there are no details about the various sizes of feedlots in the county and the permitting process or the reporting/inspection requirements. If this is a plan for the future, the number of inspections per year should be mentioned along with the county protocol for dealing with non compliance Issues when they are found.
Except for glossing over the reasons for impairment and feedlot/manure issues the plan is very well done.
Respectfully,
Mike Klingelhutz

Kristen Larson

From: Neuendorf, Beth (DOT) <beth.neuendorf@state.mn.us>
Sent: Friday, June 21, 2019 2:12 PM
To: Adriana Atcheson
Subject: Draft 2019 CCWMO Water Plan

This email was received from outside of Carver County

Adriana,

The only comment that I have on the plan is that the website link to the rule language did not work in Section 5.2.1 Permitting.

Beth

Beth D. Neuendorf, PE
District Water Resources Engineer
MnDOT Waters Edge
1500 W County Road B2
Roseville, MN 55113
(651)234-7520
(651)234-7608 (fax)
beth.neuendorf@state.mn.us

Kristen Larson

From: webmaster@co.carver.mn.us
Sent: Monday, June 24, 2019 11:23 AM
To: Adriana Atcheson
Subject: Carver County, MN : 2019 Water Plan Comment

This email was received from outside of Carver County

A new entry to a form/survey has been submitted.

Form Name:	2019 Water Plan Contact
Date & Time:	06/24/2019 11:22 AM
Response #:	1
Submitter ID:	15324
IP address:	63.137.120.66
Time to complete:	3 min. , 26 sec.

Survey Details

Page 1

Submit Your Comments on the DRAFT 2019 Water Management Plan

1. Comments:

The City of Watertown would like the Crow River to be a Priority 1 Stream Ranking. In reviewing the scoring of Table B.2 the Crow River could be ranked higher in Impairment Status and other stream such as Bent Creek may be ranked too high with a score of 17.

2. Your Information

Your Name	Andrew Budde
Email Address (Optional)	andrewbu@bolton-menk.com
Phone Number (Optional)	(612) 756-2486
City/Township/Agency (Optional)	Watertown

Thank you,
Carver County, MN

This is an automated message generated by the Vision Content Management System™. Please do not reply directly to this email.

Kristen Larson

From: webmaster@co.carver.mn.us
Sent: Tuesday, June 25, 2019 1:43 PM
To: Adriana Atcheson
Subject: Carver County, MN : 2019 Water Plan Comment

This email was received from outside of Carver County

A new entry to a form/survey has been submitted.

Form Name:	2019 Water Plan Contact
Date & Time:	06/25/2019 1:42 PM
Response #:	2
Submitter ID:	15344
IP address:	162.210.219.161
Time to complete:	31 min. , 14 sec.

Survey Details

Page 1

Submit Your Comments on the DRAFT 2019 Water Management Plan

1. Comments:

Manure application is important to water bodies, the township and the county. The Board expressed a concern to the feedlot inspector last fall about manure applications. We would like to see the county tighten up controls and reporting for these type of applications.

2. Your Information

Your Name	Pete Parris
Email Address (Optional)	laketowntownship@gmail.com
Phone Number (Optional)	Not answered
City/Township/Agency (Optional)	Laketown Township

Thank you,
Carver County, MN

This is an automated message generated by the Vision Content Management System™. Please do not reply directly to this email.

BOARD OF WATER AND SOIL RESOURCES

December 18, 2019

Carver County Watershed Management Organization
C/o Paul Moline, Manager
600 East 4th Street
Chaska, MN 55318

Dear Chair and Commissioners:

I am pleased to inform you that the Minnesota Board of Water and Soil Resources (Board) has approved the Carver County Watershed Management Organization (CCWMO) revised Watershed Management Plan (Plan) at its regular meeting held on December 18, 2019. For your records I have enclosed a copy of the signed Board Order that documents approval of the Plan. Please be advised that the CCWMO must adopt and implement the Plan within 120 days of the date of the Order, in accordance with MN Statutes 103B.231, Subd. 10.

The commissioners, staff, consultants, advisory committee members, and all others involved in the planning process are to be commended for developing a plan that clearly presents water management goals, actions, and priorities of the watershed. With continued implementation of your Plan, the protection and management of the water resources within the watershed will be greatly enhanced to the benefit of the residents. The Board looks forward to working with you as you implement this Plan and document its outcomes.

Please contact Steve Christopher of our staff at 651-249-7519, or at the central office address for further assistance in this matter.

Sincerely,

Gerald Van Amberg
Chair

Enclosure

cc's on next page

Bemidji Brainerd Detroit Lakes Duluth Mankato Marshall Rochester St. Cloud St. Paul
St. Paul HQ 520 Lafayette Road North St. Paul, MN 55155 Phone: (651) 296-3767
www.bwsr.state.mn.us TTY: (800) 627-3529 An equal opportunity employer

CC: Jeanne Daniels, DNR (via email)
Jeff Risberg, MPCA (via email)
Karen Voz, MDH (via email)
Jeff Berg, MDA (via email)
Judy Sventek, Met Council (via email)
Beth Neuendorf, MN DOT (via email)
Kristen Larson, CCWMO (via email)
Kevin Bigalke, BWSR (via email)
Steve Christopher, BWSR (via email)
File Copy

BOARD DECISION #19-70

Minnesota Board of Water and Soil Resources
520 Lafayette Road North
Saint Paul, Minnesota 55155

In the Matter of the review of the Watershed Management Plan for the Carver County Watershed Management Organization, pursuant to Minnesota Statutes Section 103B.231, Subdivision 9.	**ORDER APPROVING A WATERSHED MANAGEMENT PLAN**

Whereas, the Board of Commissioners of the Carver County Watershed Management Organization (CCWMO) submitted a Watershed Management Plan (Plan) dated September 2019 to the Minnesota Board of Water and Soil Resources (Board) pursuant to Minnesota Statutes Section 103B.231, Subd. 9, and;

Whereas, the Board has completed its review of the Plan;

Now Therefore, the Board hereby makes the following Findings of Fact, Conclusions and Order:

FINDINGS OF FACT

1. **Carver County Watershed Management Organization Establishment.** The CCWMO became necessary following the termination of five Joint Powers Agreement Water Management Organizations (WMOs) which had originally been established under the Metropolitan Surface Water Management Act. In October of 1996, the Board declared the Carver Creek, Bevens Creek, South Fork Crow River, Chaska Creek, and Hazeltine Bavaria Creek Joint Powers WMOs "non-implementing" and terminated the organizations. On October 30, 1996, the Board sent the Carver County Board of Commissioners a letter notifying them of its responsibility for water management pursuant to Minnesota Statute 103B.231 Subd. 3(b). The statute requires that the County assume all water management responsibilities in all areas of the county that were previously under the Joint Powers WMOs. The CCWMO adopted its first Watershed Management Plan in 2001 and the second plan was updated and adopted in 2010.

2. **Authority of Plan.** The Metropolitan Surface Water Management Act requires the preparation of a watershed management plan for the subject watershed area which meets the requirements of Minnesota Statutes Sections 103B.201 to 103B.251.

3. **Nature of the Watershed.** The CCWMO covers approximately 320 square miles on the southwestern edge of the Twin Cities Metropolitan Area. The watershed covers most of Carver County; draining an area approximately 23 miles from east to west and 23 miles from north to south. There are six major subwatersheds within the CCWMO. The Crow River subwatershed and the Pioneer Creek subwatershed drain to the South Fork of the Crow River. The Bevens Creek, Carver Creek, East Chaska Creek, and West Chaska Creek subwatersheds drain to the Minnesota River.

4. **Plan Development and Review.** The CCWMO initiated the planning process for the 2020-2029 Plan in 2016. As required by MR 8410, a specific process was followed to identify and assess priority issues. Stakeholders were identified, notices were sent to municipal, regional, and state agencies to solicit input for the upcoming Plan. From October 2016 to April 2017, a series of workshops were held with different stakeholder groups to gather input on issues. Separate meetings were held with the CCWMO's Citizen Advisory Committee (CAC), the CCWMO's Technical Advisory Committee (TAC), State Review Agencies, and Township Representatives. At the workshops, attendees were asked to share and write down their concerns about resources within the watershed. In March 2017, CCWMO staff met individually with staff from the cities within the watershed to discuss the plan update. Staff were asked to share their thoughts on what issues should be addressed in the Plan. In January 2017, the CCWMO held an event to celebrate the 20th Anniversary of the creation of the CCWMO. Attendees were able to discuss issues with staff and use an online mapping tool to locate and describe issues. In January 2017, a survey was distributed to approximately 400 residents interested in watershed issues via the CCWMO's newsletter list-serve. Respondents could respond to general questions about issues the CCWMO should address or use a map to locate and describe specific issues.

   The Plan was submitted for formal 60-day review on April 19, 2019. The CCWMO received 45 comments from 13 organizations or individuals including six state agencies, two cities, two townships, two citizens, and one county staff member. All comments on the draft Plan were addressed in writing. After formal review of the Plan, the CCWMO held a public hearing on the draft Plan on October 1, 2019. All additional comments received during the 90-day review period have been addressed. The final draft Plan and all required materials were submitted and officially received by the Board on October 8, 2019.

5. **Local Review.** The CCWMO distributed copies of the draft Plan to local units of government for their review pursuant to Minnesota Statutes Section 103B132, Subd. 7. Local written comments and edits were received from a CCWMO CAC member, a resident, the City of Chaska, the City of Watertown, and Laketown Township. The CCWMO responded to all comments.

6. **Metropolitan Council Review.** During the 60-day review, the Council noted the Plan is consistent with Council policies and the Council's Water Resources Policy Plan. The Council also commended the CCWMO for the framework and successful management of the watershed. The CCWMO noted the comments.

7. **Department of Agriculture (MDA) Review.** The MDA provided clarification and minor language changes to several sections. MDA also provided references to its information for inclusion. The CCWMO acknowledged the comments and made changes where necessary.

8. **Department of Health (MDH) Review.** No comments were received during the 60-day or 90-day final review period.

9. **Department of Natural Resources (DNR) Review.** The DNR noted the successful work the CCWMO has done. DNR staff provided comments throughout the process and noted typographical changes. CCWMO staff noted these and made changes where necessary to the Plan.

10. **Pollution Control Agency (PCA) Review.** PCA participated in TAC meetings and provided feedback throughout the plan development process. During the 60-day review, PCA requested further clarification on goal setting and progress tracking. The CCWMO added language to address the comments.

11. **Department of Transportation (DOT) Review.** A typographical correction was noted during the 60-day comment period. CCWMO updated the document.

12. **Board Review.** Board staff commended the CCWMO on a Plan that demonstrates a thorough and well thought out prioritization process as well as being inclusive to all partners. The Board requested clarification of several priorities and progress in the Plan. CCWMO staff thanked the Board for their comments and provided additional detail where necessary.

13. **Plan Summary.** The Plan focuses on priorities identified through a robust process with the CCWMO Board and its partners. The main issues that the Plan addresses are: Surface Water Quality, Surface Water Quantity, Groundwater Resource Protection, Awareness & Behavior, Coordination with Partners, and Evaluating Effectiveness & Progress.

The CCWMO will effectively address the issues above through permitting, projects, monitoring, education & outreach, planning & research, and administration.

To focus their efforts during the life of the Plan, the CCWMO has the following interim goals for improving water quality and aquatic life trends over the life of this plan: 1. Impaired waters that are close to the state standard will be delisted during the life of the plan. 2. Other impaired waters will show a stable or improving trend. 3. Unlisted lakes will show a stable or improving trend.

14. **Central Region Committee Meeting.** On December 4, 2019, the Board's Central Region Committee and staff met in St. Paul to review and discuss the final Plan. Those in attendance from the Board's committee were Nicole Blasing (via phone), Jill Crafton (via phone), Andrea Date (via phone), Chris Elvrum, Grant Wilson, and Joe Collins, chair. Board staff in attendance were Assistant Director Kevin Bigalke and Board Conservationist Steve Christopher. CCWMO Manger Paul Moline and Planner Kristen Larson were in attendance and provided highlights of the Plan and process. Board staff recommended approval of the Plan. After presentation and discussion, the committee unanimously voted to recommend the approval of the Plan to the full board.

CONCLUSIONS

1. All relevant substantive and procedural requirements of law and rule have been fulfilled.

2. The Board has proper jurisdiction in the matter of approving the Watershed Management Plan for the Carver County Watershed Management Organization (CCWMO) pursuant to Minnesota Statutes Section 103B.231, Subd. 9.

3. The CCWMO Watershed Management Plan, attached to this Order, defines the water and water-related problems within the CCWMO's boundaries, possible solutions thereto, and an implementation program through 2029.

4. The CCWMO Watershed Management Plan will be effective December 18, 2019 through December 18, 2029.

5. The attached Plan is in conformance with the requirements of Minnesota Statutes Sections 103B.201 to 103B.251.

ORDER

The Board hereby approves the attached Carver County Watershed Management Organization Watershed Management Plan dated September 2019.

Dated at Saint Paul, Minnesota this 18th day of December 2019.

MINNESOTA BOARD OF WATER AND SOIL RESOURCES

BY: Gerald Van Amburg, Chair