COON CREEK
WATERSHED DISTRICT

2024-2033
Comprehensive Watershed Management Plan

Adopted November 12, 2024

Cover Image: Bridge at Coon Rapids Dam Regional Park
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COON CREEK
WATERSHED DISTRICT

The mission of the Coon Creek Watershed District is to manage surface and groundwater systems and contributing land to provide for and balance the competing uses of development, drainage, flood prevention, and the protection and restoration of water quality and habitat for the benefit of our communities now and in the future.

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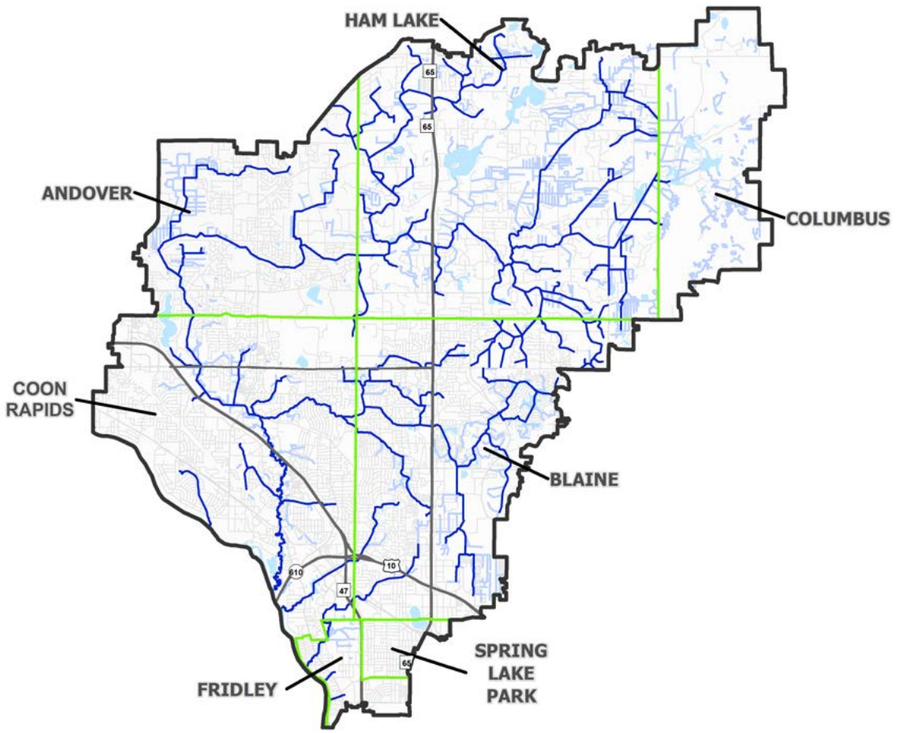


Reading Guide

Unsure where to start? CCWD has provided a variety of documents to meet the needs and interest areas of plan readers and reviwers.

More Simplified

More Detailed

- **Plan At A Glance**
  One page overview
- **Executive Summary**
  Twenty page summary
- **Plain Language Audit Summary (Appendix G)**
  Reference guide to § 8410 requirements
- **Full Plan**

The Plan At A Glance

The Coon Creek Watershed District (CCWD) was established in 1959 by citizen petition. The CCWD encompasses 107 square miles within central Anoka County and includes the cities of Andover, Blaine, Columbus, Coon Rapids, Fridley, Ham Lake, Spring Lake Park.

The 2024-2033 Comprehensive Watershed Management Plan (Plan) is designed to address water management challenges in the watershed. Authorized by Minnesota Statute 103B.231 and Rule 8410, the Plan intends to serve as the CCWD's strategic management plan and the platform for operational planning.

The Plan identifies priority issues through public and agency input. These priority issues include water quality impairments and groundwater and surface water interactions. The priority issue of groundwater and surface water interaction specifically involves the quality and quantity of shallow groundwater. The Plan also outlines the need for significant pollutant load (TMDLs) reductions by 2045 to address water quality impairments and issues such as shallow groundwater chloride pollution and potentially declining groundwater.

The Plan sets watershed-wide and resource-specific goals to address priority issues. The watershed-wide goals include fostering a watershed with moderate geomorphic, hydrologic, and biotic integrity relative to its natural potential condition, improving the stability of the drainage network, and fostering a watershed that exhibits physical, chemical, and biological conditions that suggest soil, riparian, and aquatic systems, while still at risk, show signs of marginal recovery in supporting beneficial uses. The resource-specific goals are discussed in more detail in the Plan.

Anticipating future trends, the CCWD expects increased conflicts over water management, resource scarcity, technological advancements in water monitoring, and external challenges like pandemics and political constraints. These trends underscore the importance of a strategic approach to managing water resources, including the protection of public health and ecological functions.

This Plan emphasizes a Multi-Domain Management strategic approach which enables disciplined decision-making by framing risk and continually assessing progress toward legislative goals. This approach focuses on merging the capabilities of collaborators, sharing a common understanding of the water management problems, and implementing programs that transform conflict, seek collaboration and unity of effort, maintain legitimacy, and build the capacity and capabilities to pursue those shared goals.

Sustainment and administration of the plan will require a substantial investment over the next 10 years, with revenue sources including grants, intergovernmental sources, and the CCWD tax levy. Collaboration with city engineers, public works directors, and various organizations is key to the Plan's implementation, alongside annual assessments to adjust priorities and methods. The CCWD faces significant risks and will seek to extend the EPA's 2045 deadline to meet TMDL pollutant reduction goals, increase funding levels, and reclassify impaired waters based on use attainability principles.

Table of Contents

List of Figures

List of Tables

Executive Summary

Authorization

The Comprehensive Plan is authorized and directed by Minnesota Statute 103B.231 and Minnesota Rule 8410. This statute applies only to the Seven-County Metropolitan Area.

The Coon Creek Watershed District (CCWD) is a special purpose unit of government authorized Minnesota Statute 103D. The CCWD's purpose is to implement the policies and goals of the State of Minnesota. The Water policy and goals of the Watershed District are directed by five state statutes and one Federal statute, the Clean Water Act). CCWD activities were also directed and limited by an addition 60 - 70 statutes, rules, manuals and guidance.

These legislative requirements are distilled and reflected in the CCWD's mission, which is to manage surface and groundwater systems and contributing land to provide for and balance the competing uses of development, drainage, flood prevention, and the protection and restoration of water quality and habitat for the benefit of our communities now and in the future.

This Comprehensive Plan intends to serve as the CCWD's strategic management plan and the platform for operational planning.

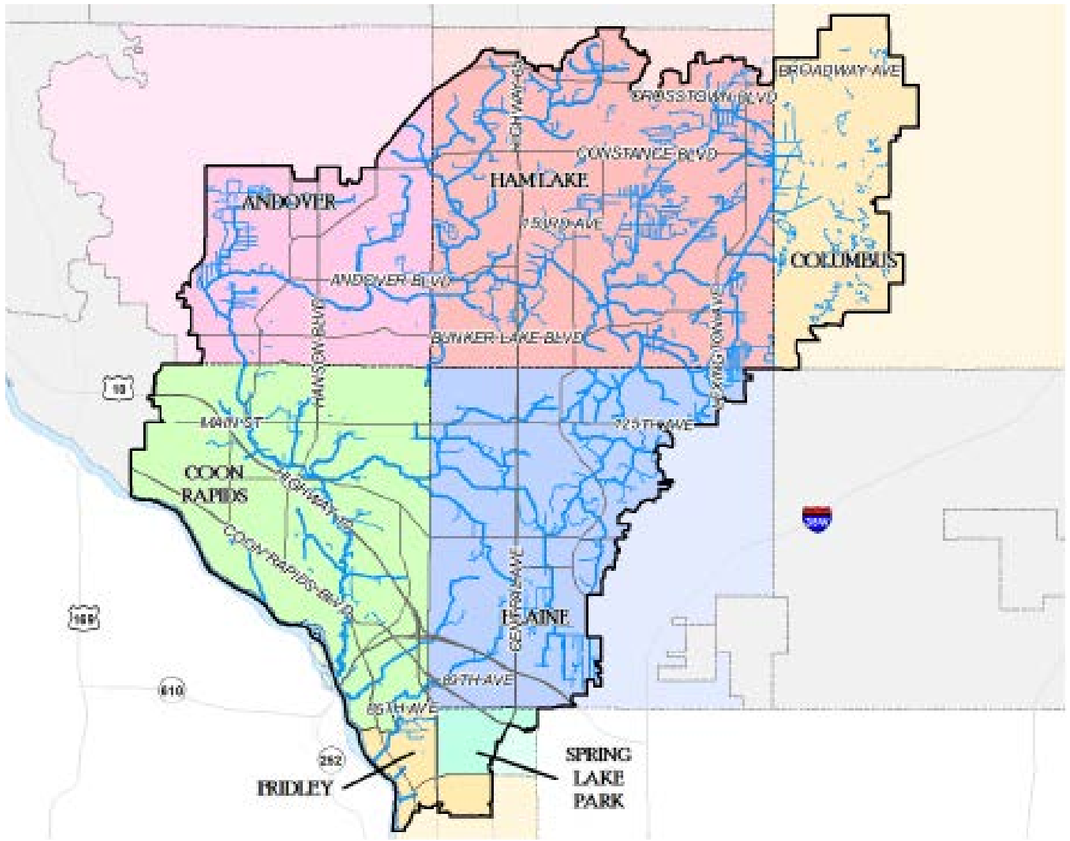


Figure I. Coon Creek Watershed District map

Background

The CCWD was established in 1959 by public petition in response to severe flooding in the 1950's. The primary focus of the CCWD from 1959 to 2005 was to balance the provision of established drainage rights in the upper portion of the watershed and flood impacts in the more developed lower portion of the watershed without impacting wetlands or water quality. The CCWD received its first water quality impairments in 2006 and now all four major streams in the CCWD (Coon Creek, Sand Creek, Pleasure Creek, and Springbrook Creek) are impaired for aquatic life and recreation. Three lakes in the CCWD are also impaired: Crooked Lake and Ham Lake for aquatic consumption, and Laddie Lake for aquatic life. The CCWD has four regional TMDLs for the major impaired streams in the CCWD to address their impairments that require pollutant load reductions.

The watershed is approximately 107 square miles and is located completely within Anoka County. The cities that are located partially or completely in the CCWD include Andover, Blaine, Columbus, Coon Rapids, Fridley, Ham Lake, and Spring Lake Park. The Coon Creek watershed is part of the Twin Cities portion of the Upper Mississippi River Watershed (UMRW). The UMRW includes the headwaters of the Mississippi River and its outlet is at its confluence with the Minnesota River. The Coon Creek watershed outlets to the Mississippi River approximately 21 miles upstream from where those rivers join.

The Coon Creek Watershed is included in a portion of the Anoka Sand Plain known as the Anoka Lake Plain. The Anoka Lake Plain is a near level to gently rolling lake plain formed by meltwater from the Grantsburg Sub-lobe. Some areas of the lake plain have been reworked by wind to form dunes. The soils are primarily fine sands with organic and loamy and hydric soils in depressions. The regional water table is very shallow, usually less than 17 feet below the surface with much of it exposed in the form of wetlands, lakes, and streams. Water management in the sand plain is of interest because (1) surface water and groundwater are essentially the same system expressed as base flows on surface waters and on the behavior of the hyporheic zone and hypolentic zones of surficial groundwater and (2) any beneficial use of surface or surficial groundwater is conjunctive involving combined or coordinated usage of surface and groundwater to meet the demand for beneficial use of the water resource.

Situational Assessment

As a watershed district and drainage authority in an area experiencing rapid urban sprawl, the CCWD must balance a multitude of demands and responsibilities. The CCWD must manage a drainage system that maintains established drainage rights, while also attempting to reduce potential flooding and improve or protect water quality and wetlands of those surface waters in the CCWD. On top of these responsibilities, the CCWD regulates development and land use change to protect water quality and biotic integrity and function. All of these demands and responsibilities aim to protect public health and safety and promote beneficial uses of the water resources and water-dependent resources in the CCWD. The CCWD manages these demands and responsibilities while facing aging infrastructure, labor shortages, and limited financial resources.

The watershed is currently in a fair to poor ecological condition on an absolute scale compared to a pristine, undeveloped watershed. But considering the urbanized environment and lack of water resource management before 1959, the watershed is in fair condition and continues to provide select beneficial uses to the public.

Priority Issues

The priority issues for this Comprehensive Plan were identified using input from the public and local and state agencies. The priority issues this Comprehensive Plan aims to address are water quality impairments and groundwater and surface water interactions.

- Water Quality Impairments: The CCWD manages eight streams and three lakes that are impaired for water quality. The specific composition and contributors or stressors contributing to the impairments are shown in Table 1.

Table I. Water quality impairments in the District.

Waterbody (AUID)	Year Listed or proposed	Impaired Beneficial Use	Impairment	Aquatic Life Stressor(s)
Coon Cr (07010206-530)	2006	Aquatic Life	Macroinvertebrates	TSS, TP, Poor habitat, Altered Hydrology, Low Dissolved Oxygen
	2022	Aquatic Life	Fish	
	2024	Aquatic Life	Total Suspd Solids	
	2024	Aquatic Life	Dissolved Oxygen	
	2014	Aquatic Recreation	E. coli	
Ditch 11 (-756)	2022	Aquatic Life	Macroinvertebrates	TSS, TP, Poor habitat, Altered Hydrology, Low Dissolved Oxygen
	2024	Aquatic Life	Dissolved Oxygen	
	2024	Aquatic Recreation	E. coli	
Ditch 58 (-636)	2024	Aquatic Recreation	E. coli	
Sand Cr (07010206-558)	2006	Aquatic Life	Macroinvertebrates	TSS, TP, Poor habitat, Altered Hydrology
	2024	Aquatic Life	Fish	
	2016	Aquatic Recreation	E. coli	
Ditch 41-4 (-765)	2024	Aquatic Recreation	E. coli	
Pleasure Cr (07010206-594)	2006	Aquatic Life	Macroinvertebrates	TSS, TP, Poor habitat, Chlorides
	2024	Aquatic Life	Chlorides	
	2014	Aquatic Recreation	E. coli	
Springbrook Cr (07010206-557)	2006	Aquatic Life	Macroinvertebrates	TP, Poor habitat, Altered Hydrology, Chlorides
	2024	Aquatic Life	Chlorides	
	2014	Aquatic Recreation	E. coli	
Crooked Lake (02-0084-00)	2008	Aquatic Consumption	Mercury	
Ham Lake (02-0053-00)	2008	Aquatic Consumption	Mercury	
Laddie Lake (02-0072-00)	2024	Aquatic Life	Chlorides	Chlorides
Mississippi River (07010206-805)	1998	Aquatic Consumption	Mercury	
	2002	Aquatic Consumption	PCBs	
	2006	Aquatic Recreation	Fecal coliform	
	2016	Aquatic Life	Nutrients	TP

The CCWD has four regional TMDL studies that require pollutant load reductions for Coon Creek, Sand Creek, Pleasure Creek, and Springbrook Creek. The TMDLs have a 2045 compliance deadline set by the EPA to meet water quality standards and a 2050 deadline set by the state (MS 114D.20 subd. 2).

Current forecasts conducted by the CCWD estimate it may cost more than $100 million to address the current TMDL pollutant reduction requirements by 2045.

- Groundwater and surface water interactions: The surficial aquifer is the principal source of water for most lakes and wetlands in the watershed as well as base flows to the flowages. Two interrelated issues have been traced to the surficial aquifer:
    - » Water Quantity Concern: Groundwater levels appear to be falling based on anecdotal reports of an increasing nu mber of seasonally dry channels, and the loss of wetlands. Certainly, compounded by the drought, the concerns appear to be exasperated and compounded by changes in precipitation, amounts and patterns and the subsurface drainage effect of the Mississippi River. The CCWD believes that there is a high probability that wetland loss is due to changes in the surficial aquifer from groundwater and surface water interactions
    - » Water Quality Concern: The CCWD has detected chloride levels during baseflow conditions that are mostly groundwater-fed exceed state standards, and are contributing to the pollution of surface waters. Chloride levels are peaking in waters in the southern portion of the CCWD in the summer and fall, which indicates that the groundwater is polluted with chloride and is contributing significantly to surface water impairments. The concern is that due to the high soil transmissivity of the sandy soil, the groundwater in the watershed may be polluted with other stressor pollutants that are contributing to surface water impairments. If this is the case, it would make achieving TMDL water quality standards even more challenging.

The surficial groundwater in the CCWD, or the water table, is generally at the surface of the land or within 5 to 10 feet of the surface. It is part of an unconfined aquifer whose boundaries extend beyond the CCWD. The aquifer is highly dynamic and fluctuates constantly both vertically and horizontally. In most areas of the CCWD, it is about 50 feet deep. This issue is composed of the very surface of the surficial groundwater table which fluctuates vertically five to 10 feet per year. This vertical fluctuation is due to multiple factors including recharge, precipitation, evapotranspiration, pumping, dewatering, and potentially others (Jiang, 2017) . It also moves horizontally toward the Mississippi River at a rate of 3 to 12.5 feet per day. It is subject to dewatering for construction and appropriation for irrigation and domestic water use.

Current and Expected Trends

The current and expected trends the CCWD is anticipating are categorized into the following areas: hydro-political, economic, technological, external, and management trends.

Table II. Current and expected trends.

Hydro-Political Trends	• Increase in inter-jurisdictional conflict, Institutional & economic fragility • Attempts to weaken water management efforts &/or reverse progress
Economic Trends	• Increased resource scarcity • Increased conflict over resources and marginal lands
Technological Trends	• Rapid advances in water monitoring and management technology • High Tech won't ensure success or clarify problems – Increased fog
External Trends	• Pandemics • Increased volatility in precipitation • Labor, expertise shortages • Change and constrain on state & local politics
Management Trends	• **Operating environment** characterized by contested norms and disorder • Increase in threats to public health & safety • Increase in gray-zone issues and protracted problems in contested environments

Key Terminology: Operating Environment

The operating environment consists of the many physical, social, political, and economic trends that influence the course and conduct of water management activities. Primarily including social, management, and hydrologic factors.

Plan Goals and Objectives

The goals and objectives of this Comprehensive Plan are intended to address the priority issues currently facing the CCWD. There are two types of goals established: watershed-wide goals and resource goals. Watershed-wide goals are overarching end-state outcomes for the entire watershed that are broad and intended to be tracked over time on a 5 to 10-year frequency. Resource goals are general, long-term desired outcomes for a given resource in the watershed that aims to achieve the CCWD Mission. Each resource goal has objectives that are specific, measurable actions to be taken to achieve a given resource goal that are described later in this Comprehensive Plan.

Watershed-Wide Goals

- Foster a watershed with moderate geomorphic, hydrologic, and biotic integrity relative to its natural potential condition.
- Improve the stability of the drainage network in the watershed.
- Foster a watershed that exhibits physical, chemical, and biological conditions that suggest that soil, riparian, and aquatic systems, while still at risk, exhibit signs of being marginally recovered in supporting beneficial uses.

Resource Goals

- Groundwater: To cooperatively manage surficial groundwater underlying the Coon Creek Watershed and promote long-term maintenance or restoration of groundwater-dependent ecosystems.
- Public Drainage: To provide sustainable drainage in a fiscally responsible manner for administration, protection, utilization, and enjoyment of the waters and related resources of the watershed consistent with the Comprehensive Watershed Management Plan.
- Water Quality: To protect and improve the physical, chemical, and biological quality of the water resource consistent with State and Federal water quality standards.
- Water Quantity: To restore and preserve desirable watershed conditions that will prevent or minimize flooding and minimum flows.
- Wetlands: To pursue the no net loss of the quantity, quality, and biological integrity of the CCWD wetlands.

Strategic Plan

The central strategic water management problem this Comprehensive Plan will address is how will the District sufficiently fund and staff the needed water management efforts to achieve the 2045 TMDL compliance deadline while effectively dealing with current problems and management responsibilities?

To meet the needs for water management over the next decade the CCWD must be able to adapt to changing conditions, manage antagonism and articulate and quantify public costs, address problems and restore capacity, pursue rehabilitation of resources, and enforce beneficial outcomes.

Approach – Multi-Domain Management

The CCWD will utilize an approach for managing the watershed over the next ten years called Multi-Domain Management (MDM). MDM seeks to solve the central water management problem within the framework of the Metropolitan Water Management Act by enabling disciplined decision-making by **framing risk** and continually assessing progress toward legislative goals.

Key Terminology: Risk Framing

The set of assumptions, constraints, risk tolerances, and priorities/trade-offs that shape an organization's approach for managing risk.

The CCWD's intent is to address the central water management problem, restore and sustain the resource and pursue a sustainable outcome within the framework of the existing laws. To accomplish this will require the CCWD and its collaborators to:

- Conduct the full spectrum of **shaping**, repair, restoration, protection, and civil-support projects and activities to achieve objectives, resolve problems, and protect and consolidate improvements.
- Merge the capabilities of the organizations involved through the Technical Advisory Committee, subwatershed planning and collaborative implementation of capital, maintenance, regulatory and public information, and engagement activities.
- Share a common understanding of the central water management problem as it evolves. We will accomplish this through regular reviews with collaborators.
- Adhere to the central idea of strategic discipline.
- Implement programs that transform conflict, seek collaboration and unity of effort, maintain legitimacy, and build the capacity and capabilities to pursue those shared goals.

Key Terminology: Shaping

Shaping is the construction of a more favorable operating environment by influencing characteristics of water management agencies, altering the relationships between them, or managing the behavior of collaborators and cooperators.

To serve the public and sustain the capacity and capability of the resource will also involve the following:

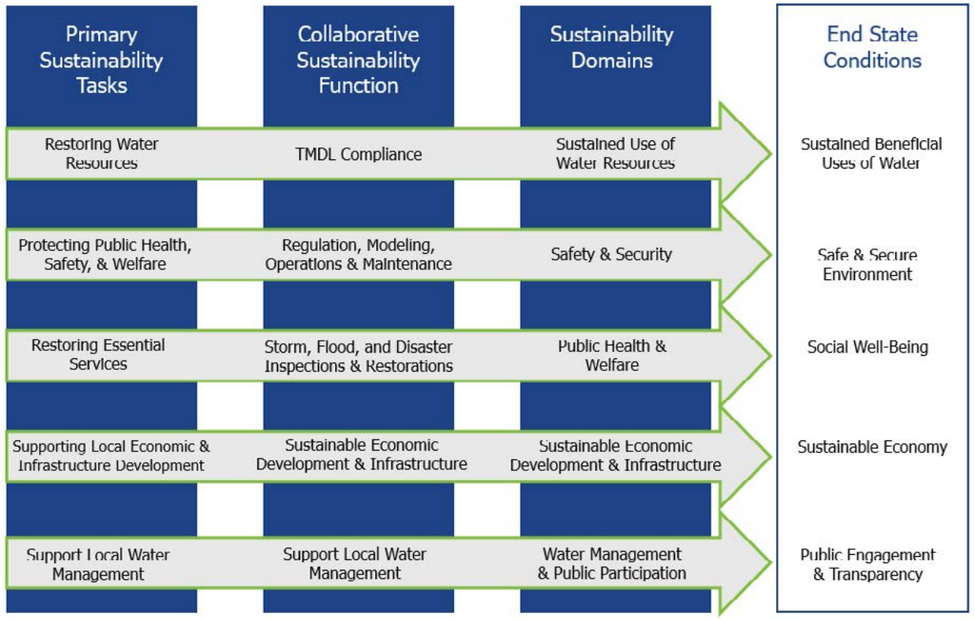


Figure II. Sustainment

Success in 2033 means:

- A significant reduction in portions of the watershed exhibiting signs of biogeochemical instability.
- A reduction in the risk of additional impairments
- An increase in the level of program and activity integration between and among collaborators, particularly MS4s

These conditions will be assessed qualitatively but supported through quantitative measures involving approved monitoring and condition measures such as loadings, IBIs, and other measures.

Implementation of Essential Tasks

The CCWD and its collaborators will address the strategic problem and pursue the watershed-wide and resource goals through Programs. The Programs are organized to reflect essential tasks that must take place.

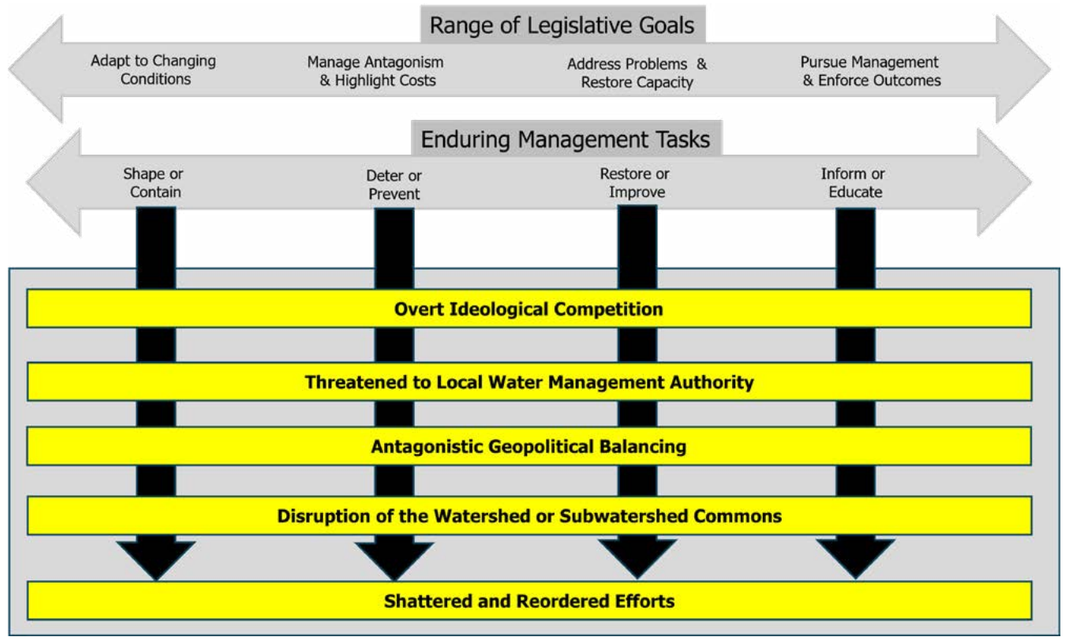


Figure III. Legislative Goals and Essential Tasks

Tasks and activities conducted by the CCWD and its collaborators under this Comprehensive Plan can be categorized into four areas: shaping, restoring, protecting, and stabilizing. A description of these areas is provided below.

- Shaping: Shaping involves influencing the public and partners to establish a more favorable environment through influence of other organizations, altering the relationships between them, or managing the behavior of partners.
- Restoring: Activities designed to restore and improve conditions needed for critical events to be successful.
- Protecting: Activities to protect the public health, safety and welfare and the hydrologic and ecological functioning that exists or has been restored that is vital to the production and provision of beneficial uses.
- Stabilizing: Activities to identify, target, and mitigate the root causes of risk and to set the conditions for sustained use of the water resource by building the capacity and capability of local government and non-government organizations involved in water management.

Data Collection and Intelligence

The goal of the CCWD data collection and **intelligence** efforts is to collect, analyze, and deliver information and intelligence to water managers and leaders so they can make sound decisions to manage the water resources efficiently and effectively within the CCWD.

The intent is to provide objective and accurate projections that guide the water management programs in how best to budget, equip and train staffs, and warn of potential crises. Inspection, monitoring and data collection and analysis support the employment of money, material and know-how across a broad continuum of operations, from disaster prevention and relief, to shaping, protection, and improvement projects and activities.

Key Terminology: Intelligence

Intelligence is the act of using information collection and analysis to provide guidance and direction to assist commanders in their decisions.

Capital Projects

Capital projects seek to address a problem or issue or achieve some larger strategic, operational, or tactical goal through the application of money, authority, and/or staff. Their intent to accomplish this is in support of the sustained production or provision of the beneficial uses of water within the watershed. Improvement projects and activities are conducted to restore, improve, or enhance the physical, chemical, or biological function of a water resource or to address or resolve catalysts, stressors, or factors contributing to other, often larger problems.

To do this the CCWD seeks to combine the condition and tendencies of the land and water resources of an area with the monetary, authority, and staff resources needed to achieve an objective.

The capital project plan (CIP) schedules over $103 million in capital investments over the next ten years to make reasonable headway toward achieving federal and state water quality goals. Priority investments are targeted for water quality impairments and flood prevention and minimization.

Seventy percent (70%) of investments are targeted toward water quality. These funds will go to projects involving the restorations, rehabilitations, enhancements, and improvements needed to achieve the 2045 deadline for load reductions under the water quality impairments and approved TMDLs. All capital improvement initiatives (projects, practices, studies, and plans) will be prioritized, targeted, and measurable.

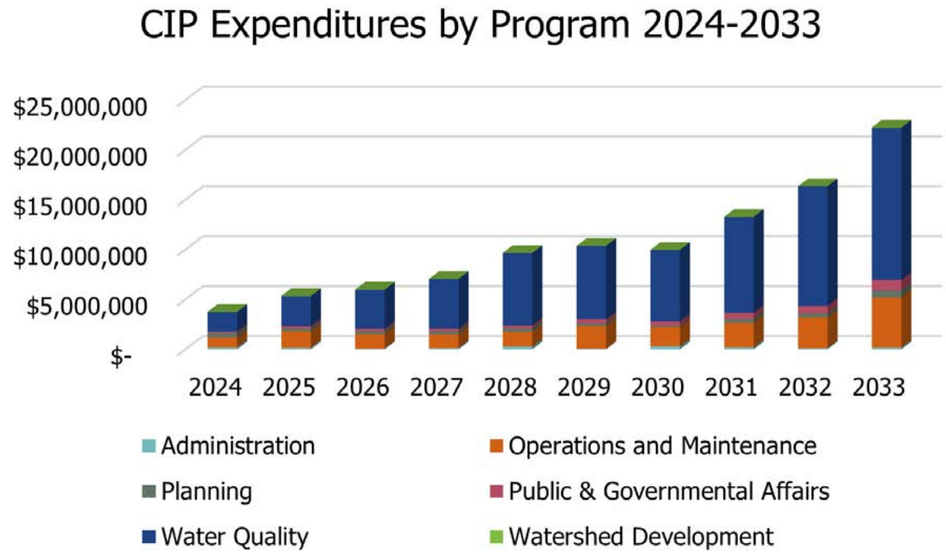


Figure IV. CIP expenditures by program from 2024-2033

Manage Growth and Protect the Resource

Managing growth (development) to prevent actions or circumstances and/or protecting the public health, safety and welfare and the productive, self-renewing relations and critical landscape and hydrologic functions is accomplished largely through the CCWD rule and the state wetland and storm water rules administered by the CCWD. The intent is to protect against natural or man-made changes to the landscape or water resources that are either unmitigated or reduce or prevent biogeochemical functioning.

The purpose of this essential task is to protect the public health and safety as well as the functional ability of the watershed to produce and provide beneficial uses. To do this requires the CCWD to work with landowners and developers to avoidance, minimize and mitigate the effects of land use changes on the structure and function of land and water resources through performance-based regulation of sensitive lands and circumstances affecting ground water, public drainage, water quality, water quantity and wetlands.

Continually Involve and Engage Public and Partners

Collaboration and intergovernmental coordination are vital to achieve the Federal and state goals. Our goal is to maximize resources, prevent wasted effort, and foster trust in local water management institutions. We intend to proceed in a collaborative manner focusing on common understanding and interests as much as possible. However, a few requirements will be placed on all public and private water management organizations to:

- Develop and implement Local Water Management strategies that are consistent with the Comprehensive Watershed Management Plan.
- Collaborate in developing subwatershed plans that address flood mitigation and TMDL achievement.
- Initiate and maintain intergovernmental/interagency coordination through membership in the Watershed District's Citizen Advisory Committee or Technical Advisory Committee.
- Provide administrative and operations support to all local water management efforts that pursue the water management goals presented in the Comprehensive Watershed Management Plan.

Inform and Educate

The goal of information operations is to collect field and program information and disseminate educational and other material in pursuit of improvements in water resources. This task aims to develop and convey messages and devise actions to influence select groups and promote themes to change those groups' attitudes and behaviors. civilian interference, minimize unintended consequences, and increase the population's support for operations. Target audiences of the CCWD and all water managers are:

- Municipal Separate Storm Water System (MS4) managers
- Public and Private Water Management organizations
- Citizens
- Elected officials.
- Select state agency and program managers.

Operations and Maintenance

This essential task intends to conduct coordinated water management projects and activities in response to developing situations. It also monitors all of the natural and hard infrastructure in the CCWD to evaluate their condition and maintenance needs and maintains the infrastructure that the CCWD is responsible for.

Restoration of Impaired Waters

This essential task intends to continually assess water quality and provide insights into the implications that guide water management in how best to "organize, train, and equip" water management efforts. This task will also address and support the allocation and use of public funds, authority and staffing across the broad continuum of operations. Lastly, this task will implement CCWD water restoration and protection strategies and TMDL compliance activities.

Subwatershed Planning

Subwatershed planning is a process used by the CCWD and its collaborators to identify specific goals, projects, and other implementation actions for a particular subwatershed in the CCWD. The CCWD is in the process of completing subwatershed plans for all 18 subwatersheds within the District. These plans model existing conditions, map pollutant-loading hot spots, identify areas of potential flooding, and identify and prioritize BMPs based on cost-effectiveness or other programs that will most cost-effectively address the priority issues and goals set for a particular subwatershed. Subwatershed plans are the primary vehicle the CCWD utilizes to identify capital projects to address water quality impairments and flooding issues. The schedule for subwatershed planning is located in the Capital Projects chapter of this Comprehensive Plan.

Resource Summary

There are five resources the CCWD manages that BWSR requires to be evaluated and goals be set in this Comprehensive Plan including groundwater, public drainage, water quality, water quantity, and wetlands. A brief description of the goal, current situation, and approach for these resources is provided below.

Groundwater

Goal	To cooperatively manage surficial groundwater underlying the Coon Creek Watershed and promote long-term maintenance or restoration of groundwater-dependent ecosystems.
Current Situation	It appears the surficial groundwater quality is adversely affecting surface waters.
Approach	• Establish shallow wells and monitor for 5 years to assess condition and trend • Assess data with stakeholders to determine value and intent of further intervention • Possibly revise CCWD Rules or withdraw wells and continue with legal obligations

Public Drainage

Goal	To provide sustainable drainage in a fiscally responsible manner for administration, protection, utilization, and enjoyment of the waters and related resources of the watershed
Current Situation	The CCWD manages 133 miles of "Public" drainage ditch built between 1888 and 1919. The system now serves multiple demands and is expected to provide and produce a variety services, some of which are conflicting.
Approach	Focus on maintaining drainage to those properties that are dependent on drainage for economic function.

Water Quality

Goal	To protect and improve the physical, chemical, and biological quality of the water resource consistent with State and Federal water quality standards.
Current Situation	The watershed includes 8 streams and 3 lakes whose water quality is "impaired". These impairments are to be rectified by 2045. The watershed also includes 15 Aquatic Invasive Species which the CCWD leads and/or assists in the prevention, detection and treatment or eradication.
Approach	• The CCWD will use an adaptive management approach where decision-making is based on the best available sound science and available resources. • Collect and share data on the condition and trends and their primary sources of pollutants and stressors. • Coordinate with local, regional, state, and federal partners and cooperators to plan for and fund water quality improvement initiatives. • Use monitoring results and best available data to identify, prioritize, and target applicable implementation strategies. • Implement resulting projects and practices that protect public health, safety, and welfare, address the root causes of impairments, and support use and enjoyment of water resources by the community. • Minimize public cost and impact by evaluating the feasibility and probability of success at meeting established targets prior to investments; identify areas where natural or other fixed constraints limit attainment of state and federal standards. • Regularly evaluate performance of water quality improvement projects and track progress towards achieving targets to inform course corrections when needed. • Find and advocate for creative solutions to balance water quality protection and restoration needs with economic growth and drainage demands.

Water Quantity

Goal	To closely monitor and model the CCWD's response and behavior to various hydrologic events, develop and regulate land use and infrastructure, and operate and maintain watershed components and functions that benefit the public health, safety, and welfare and reduce adverse effects.
Current Situation	Watershed hydrology is highly altered and combined with changes in precipitation occurrence the CCWD is experiencing both flooding and minimum flows. Both are required to be addressed and mitigated.
Approach	• Continually monitor precipitation and antecedent conditions relative to potential flood or low flows. • Monitor closely DNR issuances concerning minimum flows • Maintain and regularly update an accurate and reliable hydrology model for the watershed that assesses critical events, and 1% probability flows for risk management • Conduct channel maintenance to prevent property or crop damage from flood flows or low flows • Ensure adequate retention or detention to prevent the cumulative effects of flow volumes on drainage or flood occurrences. • Assist cities and citizens with information to prevent, minimize and mitigate damage from flood or low flows.

Wetlands

Goal	To pursue the no net loss of the quantity, quality, and biological integrity of the CCWD wetlands.
Current Situation	Over 30% of the watershed potentially qualifies as Jurisdictional Wetland. The District is the Local Governmental Unit, recognized by the State of Minnesota to administer the State Wetland Conservation Act.
Approach	• Conducting and supporting wetland delineation training. • Providing pre-delineation information such as water depth and precipitation. • Provide wetland hydrology monitoring data. • Conduct pre-application meetings for actions that may involve filling, draining or adversely impacting wetland. • Review wetland delineations with TEP. • Coordinate wetland delineations and reviews with cities, BWSR, DNR, and Corps of Engineers when warranted. • Review alternatives and sequencing analysis. • Require impact mitigation consistent with the law.

Sustainment & Administration

The **sustainment** or administration of this Comprehensive Plan will rely on three primary factors: funding, materials, and personnel. These factors will be facilitated, coordinated and addressed through an on-going annual planning, programming, budgeting, and execution process. This Comprehensive Plan and any subsequent amendments are administered by the Coon Creek Watershed District Board of Managers.

Key Terminology: Sustainment

Sustainment is the ongoing act of providing the resources required for maintaining and supporting operations of an organization.

Funding

To fund the Capital Improvement Plan (CIP) in this Comprehensive Plan, the CCWD will need in excess of $104 million from 2024-2033. Revenue to fund this 2024-2033 CIP is anticipated to come from the following sources: competitive grants, non-competitive grants, intergovernmental sources, and CCWD tax levy. Financing will be done according to the CCWD's financing policy and procedure, which is to seek to finance capital projects first through grant funding. Table III and Figure V show the currently planned revenue schedule for the 2024-2033 CIP.

Table III: Current planned revenue sources for 2024-2033 CIP

	CCWD Levy	Competitive Grants	Fund Balances	Inter-governmental	Non-competitive Grants	Special Assessment	Total
2024	$2,402,546	$500,000	$0	$708,408	$147,050	$0	$3,758,004
2025	$2,793,835	$500,000	$0	$1,649,743	$417,050	$0	$5,360,629
2026	$3,675,001	$500,000	$0	$1,675,508	$147,050	$0	$5,997,559
2027	$4,086,297	$500,000	$0	$2,322,745	$147,050	$0	$7,056,091
2028	$5,260,142	$500,000	$0	$3,769,559	$3,769,559	$0	$9,676,751
2029	$5,723,199	$500,000	$0	$3,736,203	$417,050	$0	$10,376,452
2030	$5,123,215	$500,000	$0	$4,199,143	$147,050	$0	$9,969,408
2031	$6,643,759	$500,000	$0	$5,998,896	$147,050	$0	$13,289,706
2032	$8,162,639	$500,000	$0	$7,548,963	$147,050	$0	$16,358,652
2033	$11,594,566	$500,000	$0	$9,737,742	$417,050	$0	$22,249,358
Total	$55,465,198	$5,000,000	$0	$41,346,910	$2,280,500	$0	$104,092,609

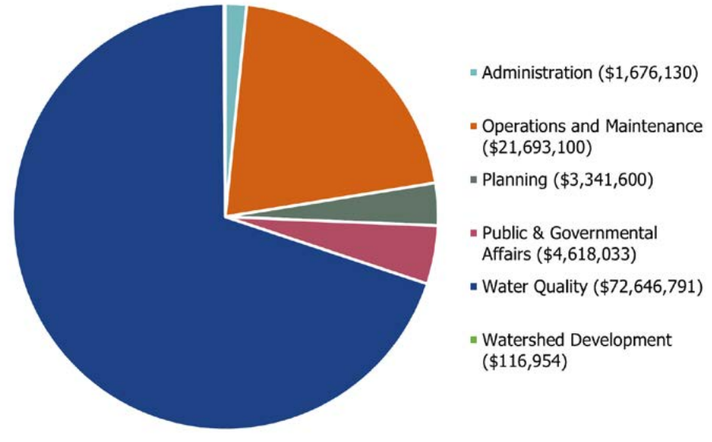


Figure V. CIP program expenditures for 2024-2033 CIP

A large portion of the funding for the 2024-2033 CIP comes from intergovernmental revenue. The projected revenue from this source is the estimated cost-sharing contributions from LGUs in the CCWD that are included in the categorical CCWD TMDL. Revenues were estimated based on the projected cost to achieve the interim CCWD TMDL 2033 pollutant reduction goals. Table VI shows the estimated revenue from intergovernmental sources.

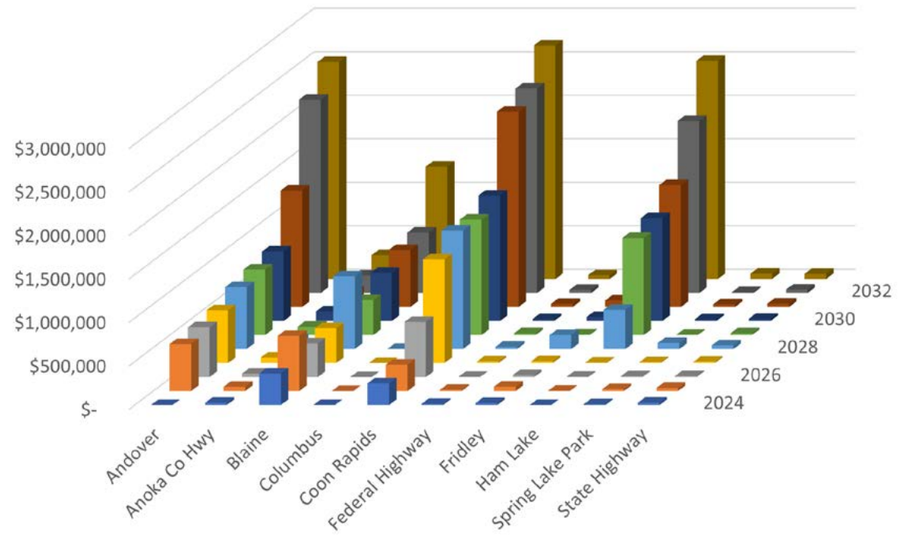


Figure VI. Estimated intergovernmental revenue source by year

Plan Amendments

This Comprehensive Plan will extend through the calendar year 2033, and further until such time as the CCWD Board adopts a new Comprehensive Plan to supersede it. Plan amendments will be needed if significant changes are required involving goals, policies, administrative procedures, funding, or if problems arise that are not addressed in the Plan. Plan amendments may be proposed by any agency, person, city, township, or county to the CCWD Board, but only the CCWD Board may initiate the amendment process. All plan amendments and minor changes will follow the procedures set forth in this section, or as required by MS 103B.231 and Rule 8410.0140 Subp. 5.

According to Rule 8410.0140, the following minor changes will not require a plan amendment:

- Formatting or reorganization of the plan.
- Revision of a procedure meant to streamline the administration of the plan.
- Clarification of existing plan goals or policies.
- Inclusion of additional data not requiring interpretation.
- Expansion of public process; or
- Adjustments to how an organization will carry out program activities within its discretion.

Control: Collaboration, Communication, Assessments and Risks

Collaboration

Implementation of this plan depends on the City Engineers, Public Works Directors, and staff of the MS4s involved in its development:

- Andover, City of
- Anoka Conservation District
- Anoka County Highways
- Blaine, City of
- Columbus, City of
- Coon Creek Watershed District
- Coon Rapids, City of
- Fridley, City of
- Ham Lake, City of
- Spring Lake Park, City of

It also depends on the vital input, feedback and involvement of:

- Citizens
- Citizen Advisory Committee, Coon Creek Watershed District
- Crooked Lake Area Association
- Ham Lake Lake Association

Communication

Formal communication and coordination will occur through a variety of plans, reports, and meetings. Plans and planning processes include Annual budgets, the Comprehensive Plan, Sub-watershed plans, Local water management plans and Special Area Management Plans such as Lake Management and other plans.

Reports include annual reports, TMDL reports, annual assessment and report, Annual budgets.

Meetings occurring regularly (monthly, quarterly & annually) include Citizen and Technical Advisory Committee meetings, subwatershed/TMDL-Flood mitigation work groups, preconstruction meetings, CCWD and city project and permit review committees and daily phone coordination.

Assessments

Assessment of progress towards Comprehensive Plan objects is conducted annually with the objectives of gaining further understanding of the resource problem and understanding the future requirements for resource management. The purpose of the annual assessment is to guide adjustments in priorities, objectives, and methods.

Risks

The watershed is at an inflection point and the doorstep of a very different and volatile decade. The achieve State and Federal goals will require all parties and stakeholders involved in water management. To succeed we must

- Adopt a multi scaled local to watershed wide integrated approach to shift risk across multiple timelines.
- Transfer risk away from water quality and ground water
- Become more tolerant of certain risks.

No party can address these problems, issues, and concerns alone. Risk management will depend on ongoing collective ability to adapt, innovate, remain strategically disciplined, and on our collective efforts. All of these will be accomplished or facilitated through:

- Ongoing monitoring and assessment of the operating environment and management situation
- The continued collaboration, communication and assessment actions identified.
- Multiscale and integrated planning, programming, budgeting and execution.

To reduce the risks the CCWD will seek to:

- Extend the TMDL deadline beyond 2045.
- Make considerably more money available to restore and replace natural and hard infrastructure.
- Differentiate or reclassify impaired water based on the principles of use attainability.

Plan Organization

The Comprehensive Plan is organized into two parts. Part 1 discusses the legislative authorization of the CCWD, the disclosures required by M.R. 8410, and a summary of past comprehensive plans the CCWD has implemented. Part 2 details the implementation plan of the Comprehensive Plan. This part of the Comprehensive Plan includes the following sections: (1) situational assessment, (2) strategic plan, (3) operational resource plans, (4) sustainment and administration, and (5) collaboration and controls.

The appendix of this Plan contains the Subwatershed Plans that have been completed by the CCWD, including (A) Oak Glen Creek, (B) Pleasure Creek, and (C) Springbrook Creek. Subwatershed Plans are operational and address the specific characteristics and conditions of a subwatershed, the levels of service expected from them, planned actions to ensure the assets are providing the expected level of service, and the specific financing and other support strategies to achieve the planned goals and objectives in a set period (Usually five years, reviewed annually). The Subwatershed Plans will be organized around the same five parts as the base plan. Subwatershed Plans provide a more detailed analysis of the projects and practices needed to restore impaired waters and reduce risk of flood damage and injury. The appendix also includes the current (D) CCWD Rules, the (E) public comments and responses from the notice of intent, (F) the CCWD public participation plan for the preparation of the Comprehensive Plan, and (G) Plain Language Audit Summary.

This report has been prepared on behalf of and with the assistance of the citizens of the CCWD. It is being accomplished with the involvement, support, and leadership of:

- Anoka County Highway Department
- City of Andover
- City of Blaine
- City of Coon Rapids
- City of Fridley
- City of Ham Lake
- City of Spring Lake Park
- Coon Creek Watershed District
- Anoka Conservation District
- Board of Water and Soil Resources
- Department of Natural Resources
- Metropolitan Council of the Twin Cities

Glossary

Aquifer: A geological formation or deposit that contains or transmits significant quantities of water (for example, to wells and springs). The term is usually restricted to those water-bearing geological units capable of yielding water sufficient to meet normal household needs.

Aquifer test: A field experiment, including a slug, packer, or pump test, designed to yield information on the in-situ hydraulic characteristics of an aquifer.

Artesian condition: Groundwater in an aquifer that is under pressure significantly greater than that of the atmosphere, due to the presence of an overlying confining unit, leading to a pressure sufficient to raise water in a well above the bottom of the overlying layer.

As-Built: A written report submitted by a licensed professional engineer or surveyor documenting that a water well or water pipeline has been constructed in compliance with the applicable engineering plans, special use authorization, and Federal, State, and local laws and regulations.

Confined aquifer: An aquifer that is bounded above and below by confining units.

Confining unit: A geological formation or deposit that does not contain or transmit significant quantities of water relative to the hydraulic characteristics of adjacent formations. A type of geological unit that is a confining unit in one area may be an aquifer in another.

Community water system: Defined under the Safe Drinking Water Act (SDWA) (33 U.S.C. § 300f(15)) as a public water system that serves 25 or more year-round residents or has 15 or more service connections used by year-round residents (40 CFR 141.2; FSM 7420.05).

Concerns: Are a diverse and dynamic combination of regular and irregular problems that are important. They tend to be difficult to define or quantify and serve as a source for worry or anxiety. They are often expressed in terms of unarticulated or unquantified risk and/or uncertainty. They lead an organization toward the right answer to the wrong problem and/or threaten the organization's ability to operate. Addressing concerns requires an accurate perception of the goal and operating environment; an ongoing comprehension of the situation (research, monitoring, inspections); a projection of the future (an adaptive plan) and the ability to adapt while still pursuing the goal.

Conjunctive use: Combined or coordinated usage of surface and groundwater to meet water supply needs.

Critical aquifer protection area: A sole source aquifer that a State may designate under a groundwater quality protection plan that has been approved by EPA under Section 208 of the CWA prior to June 19, 1986, or a sole or principal source aquifer for which a designation under the SDWA is pending before or has been approved by EPA (42 U.S.C. § 300h-6).

CCWD Rules: Established standards for managing stormwater runoff, construction best practices, and impacts to floodplains and wetlands.

Drinking Water Supply Management Area (DWSMA): The surface and subsurface area surrounding a public water supply well, including the wellhead protection area, that must be managed by the entity identified in a wellhead protection plan (MR 4720.5100).

End State: Set of required conditions that achieve the strategic objectives.

Flowpaths: Routes taken by groundwater, governed principally by the hydraulic gradient and the permeability of the geological media, as it moves through the subsurface from aquifer recharge areas, including injection wells and infiltration basins, to natural discharge areas or water production wells.

Gray-Zone: The space in between self-sustaining natural systems and capital-intensive efforts in which government and non-government actors engage in on-going, expensive temporary solutions.

Groundwater: Subsurface water contained in unconsolidated deposits and bedrock.

Groundwater-dependent ecosystems (GDEs): Communities of plants, animals, and other organisms whose existence and life processes depend on access to or discharge of groundwater, such as springs, fens, seeps, areas of shallow groundwater, hyporheic and hypolentic zones, and groundwater-fed lakes, streams, and wetlands.

Groundwater resources: The groundwater systems and the groundwater-dependent ecosystems linked to those systems that are associated with one or more parcels or units of land.

Hydraulic head: A measurement at a location within an aquifer or body of surface water of water pressure, or total energy per unit weight, above a datum, usually measured as a water surface elevation. The distribution of hydraulic head through an aquifer determines where groundwater will flow, with flow occurring from higher to lower head.

High-capacity well: A well that withdraws more than 10,000 gallons of water per day or 1 million gallons per year. High-capacity wells need an appropriation permit.

Hydraulic gradient: The ratio of the difference in the hydraulic head between two points and the distance between those points, typically determined through measurement of water-level elevations in two wells of a known separation distance.

Hydrology: The study of the distribution and movement of water both on and below the Earth's surface, as well as the impact of human activity on water availability and conditions.

Hydrogeology: The science that addresses subsurface waters and related geological aspects of surface waters.

Hyporheic zone and Hypolentic zone: The interface between the groundwater system and surface water bodies (in streams, referred to as hyporheic; in lakes and wetlands, referred to as hypolentic) where an active exchange of water, solutes, and colloids takes place and often consists of multiple flowpaths connecting surface waters and their groundwater catchments.

Intergovernmental: Existing or occurring between two or more governments or levels of government. (Local, state, or tribal)

Interventions: Actions taken by staff to implement the comprehensive, subwatershed and annual plan, including any treatments, procedures, or public information or education moments intended to improve the condition of the situation.

Issues: Are trends, forces or factors that are adversely affecting water resources or management assets through unconventional, or asymmetric means such as unauthorized fill, drainage, or pumping; persistent but irregular complaining or sniping by a persistent individual or group; ideologically based initiatives and/or debates. Irregular problems have diverse capabilities and

may change rapidly, outpacing what staff is accustomed to. They tend to be well defined, but the impact and importance of their consequences are not. They can eliminate or weaken the authority or function of an asset. They require continuous analysis to keep abreast of changes and the degree of impact and importance. They often have no answer but do have very clear consequences and their resolution is often colored by ambiguity and uncertainty that can be vigorously debated.

Karst: Terrain created by the chemical solution of the bedrock, including carbonate rocks, gypsum, and to a minor extent other rocks, and characterized by disrupted surface drainage, abundant enclosed depressions, and a well-developed system of underground drainage, which may include caves and epikarst.

Intelligence: Using information collection and analysis to provide guidance and direction to assist commanders in their decisions .

Local Water Management Plan: A written plan created by the 7 metro county area cities, as directed by legislature, to protect, preserve, and use natural surface and groundwater storage and retention systems; minimize public capital expenditures needed to correct flooding and water quality problems; identify and plan for means to effectively protect and improve surface and groundwater quality; establish more uniform local policies and official controls for surface and groundwater management; prevent erosion of soil into surface water systems; promote groundwater recharge; protect and enhance fish and wildlife habitat and water recreational facilities; and secure the other benefits associated with the proper management of surface and groundwater.

Monitoring: All procedures used to collect samples, data, and information on CCWD resources, including groundwater and surface water.

Municipal supply watershed: A watershed that serves a public water system as that term is defined in the SDWA (42 U.S.C. § 300f(4)), as amended, or as defined in state safe drinking water statutes or regulations (FSM 2542.05).

Operating Environment: An operating environment is an overarching term that encompasses the many trends that influence the course and conduct of water management activities, which primarily include social, management, and hydrologic factors. An understanding of the operating environment is central to our ability to engage effectively with any of the existing or emerging water resource-based problems, issues, and concerns.

Problems: Are any indication, circumstance, or event with the potential to degrade, cause loss of damage water management assets. They tend to be tangible and controllable. They are directly related to an existing facility or water resource and can reduce the ability or functioning of those assets. They tend to be well defined conditions or situations with clear consequences. When analyzing regular problems, it is important to understand the complexities of the operating environment. Regular problems almost always have answers.

Publicly accessible water supply: A water supply that is used to provide drinking water or water of potable or near-potable quality to a business or organization; to a water distribution system that serves more than one property, facility, or lease; or to a governmental facility, and that is not to be confused with a "public water system" as defined in FSM 7420 and the SDWA.

Qualified groundwater personnel: CCWD staff or contractors with appropriate education, training, and experience in groundwater science to satisfy project needs and, if applicable, licensed or registered to practice geology, hydrology, soil science, or engineering, as appropriate, in the State in which the project is located.

Recharge: The infiltration of water into the groundwater from the ground surface, the bottom of a surface water body, or a man-made feature, such as a storage pond.

Risk Framing: The set of assumptions, constraints, risk tolerances, and priorities/trade-offs that shape an organization's approach for managing risk.

Saturated zone: Layers of unconsolidated deposits or bedrock in which all of the voids are filled with water.

Shaping: To influence the characteristics of individuals and organizations.

Source water protection area: A contributing area surrounding a public water system supply intake that is designed to protect the integrity of the water source and that has been formally designated under the SDWA (42 U.S.C. §§ 300h-6, 300h-7, and 300j-13), the CWA, or State equivalent, such as critical aquifer or wellhead protection areas.

Spring: The area on the surface of the land where a localized flow of groundwater emerges to become surface water. including seeps, limited areas within many fens, and other groundwater-fed wetlands.

Strategic Discipline: 4.1 combines the essential priorities you need to focus on, with metrics to measure your achievement, along with disciplined meeting rhythms that review progress and make corrections.

Sustainment: Providing the resources required for maintaining and supporting operations of an organization.

Sustainable use: The rate of groundwater usage that can be maintained indefinitely without substantial adverse consequence to groundwater resources.

Task Force: A unit or group of individuals specially organized to complete a specific task.

Timing: The availability of water at any specific place for a particular purpose, which is temporally variable and affected by seasonality, storm frequency, and upstream or upgradient water uses (both natural and anthropogenic).

Unconfined aquifer: An aquifer that is bounded below by a confining unit, but is open to the atmosphere above.

Unsaturated zone, vadose zone, or zone of aeration: Layers of unconsolidated deposits or bedrock that typically extend upward from a saturated zone to the surface of the land and in which the voids are filled with a combination of air and water, where the water is at less than atmospheric pressure.

Water production well: A well that is used to remove water from the subsurface and that is not associated with the extraction of hydrocarbons.

Water table: The upper surface of an unconfined aquifer where the water in the voids is at atmospheric pressure, and which is typically identified by mapping the elevations of the water levels in shallow wells extending a few feet into the zone of saturation and measuring the water level in those wells.

Well: Any drillhole, borehole, or other excavation or opening deeper than it is wide that extends more than 3 feet into the ground and that is constructed for the purpose of accessing or injecting liquids.

Wellhead protection area: The surface and subsurface area surrounding a water well or wellfield which supplies a public water system and through which contaminants are reasonably likely to reach that water well or wellfield (SDWA, 42 U.S.C. § 300h-7(e)).

Acronyms

AIS – Aquatic Invasive Species

ACD – Anoka Conservation District

BMP – Best Management Practice

BRA – Business Risk Analysis

BWSR – Board of Water and Soil Resources

CAC – Citizens Advisory Committee

CCWD – Coon Creek Watershed District

CIP – Capitol Improvement Project Plan

COE – Army Corps of Engineers

CoF – Consequence of Failure

CWA – Clean Water Act

DNR – Department of Natural Resources

DWSMA – Drinking Water Supply Management Area

EPA – Environmental Protection Agency

EQuIS - Environmental Quality Information System

FEMA – Federal Emergency Management Agency

FLMA – Federal Land Management Act

GW - Groundwater

IESF – Iron-enhanced Sand Filter

IO – Information Operation

LGU – Local Government Unit

MDM – Multi-Domain Management

MnDNR – Minnesota Department of Natural Resources

MPCA – Minnesota Pollution Control Agency

MOE – Measures of Effectiveness

MOP – Measures of Performance

MR – Minnesota Rule

MS – Minnesota Statute

MS4 – Municipal Separate Storm Sewer Systems

NPDES – National Pollutant Discharge Elimination System

NRCS – Natural Resource Conservation Service

NWI – National Wetlands Inventory

PoF – Probability of Failure

PPBE – Planning, Programming, Budgeting, and Execution

SOP – Standard Operating Procedure

SPOC – Single Point of Contact

SWPP – Stormwater Pollution Prevention Plan

TAC – Technical Advisory Committee

TALU – Tiered Aquatic Life Use

TMDL – Total Maximum Daily Load

TP – Total Phosphorus

TSS – Total Suspended Solids

TST – Time Sensitive Targets

UMRW – Upper Mississippi River Watershed

USDA – United States Department of Agriculture

USFS – United States Forest Service

USGS – United States Geological Survey

VUCA – Volatility, Uncertainty, Complexity, Ambiguity

WCA – Wetland Conservation Act

WD – Watershed District

WMO – Water Management Organization

WoG – Whole of Government

WRAPS – Watershed Restoration and Protection Strategy

WQS – Water Quality Standards

PART ONE:
BACKGROUND & DISCLOSURES

Background

The Coon Creek Watershed District (CCWD) is a special purpose unit of government whose political boundaries are defined by the drainage area of Coon Creek and other adjacent streams that discharge into the Mississippi River. The CCWD is a public body established by the State of Minnesota Water Resources Board (Now the Board of Water and Soil Resources) on May 28th, 1959, under Minnesota Statute 103D. The CCWD is organized pursuant to the Watershed Law, Minnesota Statute (MS) 103D.

The laws that influence its activities determine the basic purposes of the CCWD. The Watershed District Act (MS103D) and the Metropolitan Water Management Act (MS 103B) and the CCWD's designation as a Special Municipal Separate Storm Sewer System (MS4) provide the most basic authorities for the CCWD. Several other statutes influence the CCWD's operation and priorities. All these statutes emphasize a comprehensive approach to the wise use, preservation, and protection of water and related land resources for public health, safety, and welfare. While the statutes address almost all water resource features, they emphasize flood control and the protection of the soil and water quality.

To achieve the mission and goals, CCWD has the authority to tax and issue special assessment, regulate property and activities to guide landuse, and to budget and invest in people, projects, and programs.

The 2024 Comprehensive Plan (Plan) will govern the CCWD's goals, priorities, and actions from 2024-2033. The purpose of the Plan is both a strategic management and operational plan. The strategic management portion of the Plan sets the direction and the approach the CCWD will take in pursuing its mission and goals. The Plan also serves as a guide for management of water resources within the CCWD. The operational (implementation) portion of the plan lays out how the CCWD will achieve its mission and goals through annual planning, programming, budgeting, and execution. It provides policy, guidance, and information to direct programs in performing the projects and activities required to run the CCWD and pursue mission and goals.

A legislative analysis identified the District's most basic objectives are:

- To protect the health and safety of the present and future people that live, and will live, within the watershed.
- To provide for opportunities and uses of the water and related natural resources of the watershed which are demanded and appropriate for the area.
- To prevent unacceptable damage to the water and related natural resources of the watershed.
- To develop and implement a uniform program for water and related land management within the watershed of Coon Creek.

The Coon Creek Watershed District is a special purpose unit of government authorized and established by the State of Minnesota. As such the CCWD is a creature of the state whose purpose is to implement the policies and goals of the State of Minnesota.

The Water policy and goals of Minnesota are contained in several statutes. Minnesota Statute 103A states that these statues must be considered as a whole to systematically administer water policy for the public welfare (103A.211). State water policy and goals that appear contradictory in a specific situation or circumstance should be discussed in a public forum where the conflict surrounding a specific public interest can be presented and, by consideration of the whole body of water law, the controlling policy can be determined, and apparent inconsistencies resolved.

For development and implementation of this plan, public forums are identified as:

- Public engagement
- Initial planning meeting
- Public and State Agency review
- Board of Water and Soil Resources
- The Board of Managers regularly scheduled meetings
- BWSR Dispute Resolution Committee
- Court

Authorization and Mission

The CCWD is required by legislation in Minnesota statute to do the following:

- To conserve and use water resources in the best interests of the people, and to promote the public health, safety, and welfare (103A.201)
- To preserve the wetlands of the state to conserve surface waters, maintain and improve water quality, preserve wildlife habitat, reduce runoff, provide for floodwater retention, reduce stream sedimentation, contribute to improved subsurface moisture, enhance the natural beauty of the landscape, and promote comprehensive and total water management planning (103A.202)
- To reduce flood damages through floodplain management, stressing nonstructural measures such as floodplain zoning and floodproofing, and flood warning practices (103A.207)
- To plan and manage groundwater and surface water resources from the perspective of aquifers and watersheds to achieve protection, preservation, enhancement, and restoration of valuable groundwater and surface water resources. (MS 103A.212)
- To provide for the sustained use of our natural resources through direct and coordinated actions with other agencies and parties. (MS 103A)
- To conserve the natural resources for the protection of the public health, safety, and welfare and the provident use of the natural resources. (MS 103D)
- To protect, enhance, and restore water quality in lakes, rivers, and streams and to protect groundwater from degradation (114D.10)
- To achieve and maintain water quality standards for groundwater and surface waters, including the standards required by section 303(d) of the federal Clean Water Act, United States Code, title 33, section 1313(d) (114D.10)
- To broker requests and petitions for repair and improvement of the public ditch system (103E)

To achieve the legislative requirements, the legislature authorizes the CCWD to:

- Tax and specially assess to fund actions to achieve those goals.
- Regulate property to guide land use actions to operate in harmony with and synchronized with their landscape and to prevent uses that would harm or damage the public health, safety or welfare or the resource's ability to provide beneficial uses now or in the future.
- To budget and invest in people, projects, programs, and actions.

The reason the legislature has stated these requirements and provided the CCWD with taxing and regulatory authority is to:

- Protect the public health, safety, and welfare (103A.211, & 103D.201)
- Protect the watershed's capacity to continue to produce and provide beneficial uses (103D.201)

- Operate and maintain those natural and manmade structures and functions necessary for the ongoing provision of beneficial uses. (103B, 103D & 103E)
- Restore adverse changes to the most sustainable productive capacity the resource can attain. (103B, 114D, 33 U.S.C §§ 1251 et seq.)
- Minimize capital costs associated with repair, replacement, or restoration of property and or water resources (103B.201)

To achieve the above goals, objectives, intentions and effects, the legislature prescribed a set of hierarchical plans to discover, disclose and address the needs for comprehensive water management and prevent costly problems and issues. The hierarchy is driven at the:

- State level by the laws and rules identified in the reference section above.
- Watershed level by comprehensive watershed management plans developed to address those goals as they relate to local hydrologic conditions.
- The municipal level through local water plans that further refined and operationalize the objectives of the watershed plan.

Consistency, a reflection of local tastes and preferences, and a broadened perspective are intended through required engagement and documentation with public and private stakeholders and are further assured through formal review and comment by those stakeholders and approval of the Comprehensive Plan by the Board of Water and Soil Resources.

Local water plans are assured consistency with watershed plans through watershed organization approval and review by the Metropolitan Council. Additional compliance and consistency are achieved by the Municipal Local water plans also being consistent with the stormwater chapters of the city comprehensive plans that are reviewed and approved by the Metropolitan Council. This system is intended to reflect local natural resources and their condition; and be consistent with metropolitan and state policies and priorities.

The legislative requirements from rule and statute are distilled and reflected in the CCWD's mission, which is to manage surface and groundwater systems and contributing land to provide for and balance the competing uses of development, drainage, flood prevention, and the protection and restoration of water quality and habitat for the benefit of our communities now and in the future.

Evaluation of Previous Comprehensive Watershed Management Plans

In August 2023, the current Comprehensive Plan for the Coon Creek Watershed District will expire. Upon conclusion of the 2013 – 2023 Comprehensive Plan, the CCWD will have clearly arrived in the "water quality era". While public drainage and enforcement of the Wetland Conservation Act remain central themes in management, water quality concerns have now taken center stage.

The CCWD currently contains 11 impaired waters. Seven of those waters are creeks and ditches impaired for aquatic life and recreation. Two of those waters are lakes impaired for aquatic consumption due to high mercury levels in fish. One of the waters, Laddie Lake, is impaired for aquatic life due to excess chlorides. The final impaired water is the Mississippi River which is the CCWD's western border and a major receiving water. The Mississippi River is impaired for aquatic consumption due to mercury and PCBs, aquatic recreation due to fecal contamination, and aquatic life due to excess phosphorus. Information on mercury in fish consumption guidelines can be found here: Fish Consumption Guidance - MN Department of Health (state.mn.us).

The stressors contributing to these impairments include suspended solids, phosphorus, poor habitat, altered hydrology, chloride levels, low dissolved oxygen levels and E. coli.

The most significant emerging issue is the potential lowering of the water table. This issue is currently based on anecdotal evidence but could have negative effects to water resources if true. This uppermost part of the surficial aquifer provides an estimated 100% to 50% of the water to the lakes, streams, and wetlands within the watershed . It is also showing signs of high chloride levels and is discharging that pollutant to streams, contributing to impairment of surface water resources.

Added to these natural conditions the CCWD is faced with aging infrastructure, labor shortages, and limited financial resources. The CCWD is already making efforts to further optimize its management processes and practices. A key approach is to increase integration of its planning, programming, budgeting, and implementation efforts, particularly flood risk management and water quality protection and restoration.

To put the 2013-2023 Comprehensive Plan in context, a summary of the first three CCWD Comprehensive Plans is provided below.

1959-1987

- The CCWD was established in 1959 in response to the promises offered by Federal Law PL-566 and the potential increase in the efficiency and effectiveness of agricultural production. The focus was on money for improved drainage. Those funds were never realized, and the CCWD relied in the assessment process provided through the drainage law to repair the system. The period between 1960 and 1987 was characterized by legal and political controversy and challenges surrounding the conduct of the CCWD and the equity of its cost apportionments.

1987-2003

- In 1987, the CCWD completed its first Comprehensive Plan under the Metropolitan Water Management Act. At that time the CCWD was largely rural. The landscape was dominated by farms growing shallow rooted crops, and seasonally flooded wetlands. The developed areas in the lower portion of the watershed were experiencing flooding. The watershed management focus was on catch-up, mitigating and balancing the provision of both established drainage rights up stream and flood control downstream in a financially equitable way.
- In 1991, the Wetland Conservation Act placed the CCWD at ground zero of the competition and conflict between drainage, development, and the preservation of wetlands. From 1991 to 2003 (The wetland era), the CCWD was immersed in reviewing, managing, and balancing the effects of urban growth in one of the fastest growing areas of the state and nation. The CCWD's response was to adopt a management strategy based on the principles of "Growth Management" and "Sensitive Lands" land use management strategies. The CCWD's management strategy could be summarized by the following themes:
    - The law and the principles of established use or right (or first in time).
    - The wetland delineation requirement of Normal Circumstances (not normal conditions) as described and litigated at the Federal Level though Regulatory Guidance Letter 90-07.
    - Recognition that 98% of all wetlands in the CCWD needed to be evaluated as either problem and/or disturbed (new atypical) conditions under the 1987 Federal Delineation manual.
    - A commitment to advocate solving development, agriculture, natural resource management problems.
    - Reliance on a finding of facts and an acceptance that the result "is what it is".

2003-2013

- In 2003, the CCWD developed its second Comprehensive Plan anticipating a future focus on water quality. In 2004, the CCWD was recognized as a special Municipal Separate Storm Sewer System (MS4) under the National Pollution Discharge Elimination System (NPDES), ushering in the "Water Quality Era". The CCWD completed a minor amendment to its rules and standards to address "non-degradation" of the CCWD's receiving waters. In 2006, the CCWD also saw its first water quality impairments (Coon, Sand, Pleasure, and Springbrook Creeks for Aquatic Life) on the state and federal 303(d) list.
- The "Water Quality Era" has increased program responsibilities 50%, increased required tasks 83% and staffing needs almost 200%. The CCWD has evolved from being an organization primarily responsible for ditch maintenance and wetland preservation, to an organization responsible for drainage, water quality, flood risk management systems, and aquatic wildlife habitat management.

- The recession that began in 2006 emphasized a need for certainty in decision making and cost control by a constituency that prizes thrift, practicality, and minimum government involvement. The tightened fiscal operating environment made investing in natural resource concerns extremely challenging because of their long term, less tangible, and non-utilitarian nature.
- After 2006, the CCWD began to formally transition toward a 'natural infrastructure' asset-based management approach. This approach was founded on a sensitive lands /geologic sensitivity view of the resource which emphasized ecological function, the value as natural infrastructure, and the public out-of-pocket cost to mitigate the consequences of imbalanced decision making. This effort remains supported by well-defined legislative requirements and enforcement. The CCWD also began moving to a more formal planning, programming, and budgeting management framework. In this new management framework, the CCWD focused on the costs and consequences of mismanagement along with connecting the planning, programming, budgeting and implementation of systems and activities.

2013-2023

- In 2013, the CCWD developed and adopted its third Comprehensive Plan. In 2014, the CCWD began developing an asset management program for all its activities and continued to adhere to the doctrine adopted in 1991. The asset management approach defined each program and activity the CCWD needed to meet the legislative requirements or through the expectations of citizens.
- The approach has provided a clear relationship between the provision of the beneficial uses of the CCWD's water resources and investments in the prevention and protection people and property from natural catastrophes or expensive unintended consequences provided by the CCWD. This combination of asset management and sensitive lands management allows the CCWD to make more defendable and compelling investments and provides needed transparency for elected and appointed officials and citizens.
- The CCWD's mission statement during this time was: to manage groundwater and the surface water drainage system to prevent property damage, maintain hydrologic balance and protect water quality for the safety and enjoyment of citizens, and the preservation and enhancement of wildlife habitat.

Lessons Learned

The planning and management approach adopted in 2013 needs updating and continual evolution to enable the CCWD and its collaborators to adapt and succeed through and beyond 2033. The following lessons will be incorporated into the fabric of the 2024-2033 Comprehensive Plan:

1. Water management involves the continual combination, recombination and evolution of physical, social, and political/economic factors and trends. These factors combine at multiple scales to influence water resource decision making, even when they originate from the resource itself or the actions of non-government groups.

2. The physical, social and management factors and trends, are 'open' systems, available to constant inputs creating an operating environment characterized by volatility, uncertainty, complexity, and ambiguity (VUCA). The result is often a profound sense of struggle on the part of local managers.

3. Short and long-term water management is characterized by a fog and friction created from the risk and uncertainty in the physical, social, and management domains. The risk and uncertainty are the product of human perception and chance. These two variables tend to distort, cloak, and twist the course of events, regardless of the advances in science, technology, or computing power.

4. Planning and the planning process are more important than ever. Committing to a rigid schedule of projects and activities has proven unrealistic and impractical. The value of planning is facilitating and communicating common understands of problems, identifying available options and their consequences, and facilitating unified action.

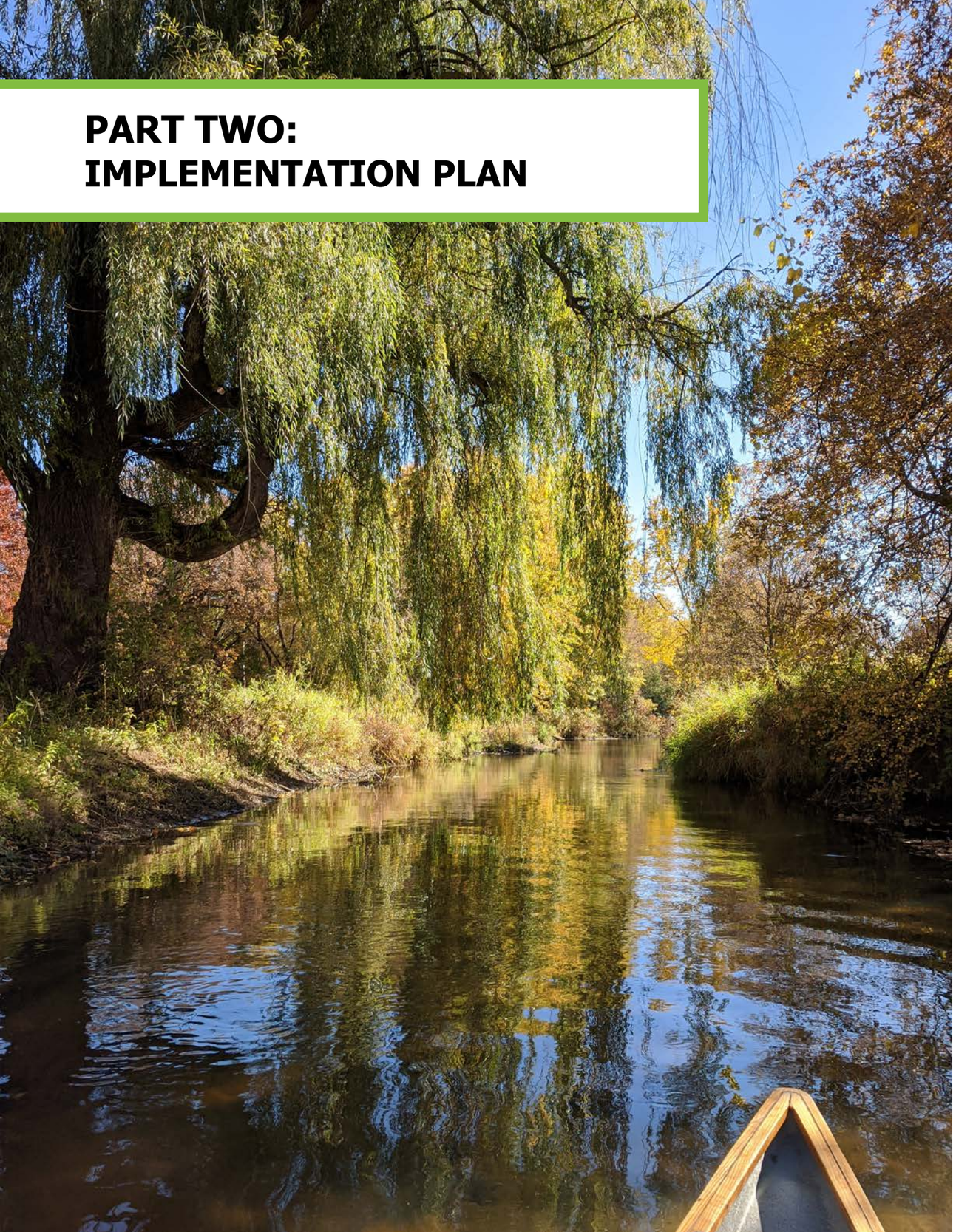
5. Management actions need to be practical and relevant to those financially affected. The reliance on a proactive, multiple-use, utilitarian management approach that focuses on physical consequences is more effective than the traditional defensive-based conservation "just say no" strategy that increasingly dominates environmental debates.

6. Where you are going is more important than where you are at. The performance, evolution, and potential of physical, social, and management systems is more important than their current condition.

The implications of these lessons learned are:

- Fulfillment of the responsibilities for drainage, flood prevention, wetland conservation and water quality restoration will be challenging.
- It isn't possible to predict what kinds of specific water management problems, issues, or concerns, or for what purposes or priorities other land and water management organizations will be engaged in over the next ten years.
- One can only speculate about potential and probable problems and issues, how they might occur and the costs they may cause to either prevent, mitigate, or recover from their effects.
- The fundamental foundation and nature of water management within the Coon Creek Watershed will not change in sense that the mix of political and economic aims, pressures, and hesitations will continue to condition water management operations.
- The likely result will be an operating environment characterized by:
    - » Volatility, uncertainty, complexity, and ambiguity (VUCA) in the physical, social and political economic environments in which it operates.
    - » Increasing pressure to meet water quality targets, anticipate flood risk, and account for the effects of changes in precipitation.
    - » A growing obligation and need to manage aging infrastructure within limited budgets and resources.

The 2024-2033 Comprehensive Plan provides an opportunity to further adapt and transform the collective water management organization into one that can adapt and sustainably manage storm water quality and drainage in a transparent and cost-effective manner, that justifies funding requirements and management decisions. It will require the CCWD and its collaborators to continually evaluate programs to develop and refine its core mission, goals, objectives, levels of service, and measures of performance and effectiveness.



PART TWO: IMPLEMENTATION PLAN

1. Situational Assessment

This section describes the physical, social, and management conditions of the operational environment that impact the CCWD and collaborator's programs, projects and activities. Its purpose is to provide a snapshot in the ongoing process of acquiring knowledge and gaining an understanding of a complex, dynamic environment. This knowledge is utilized to make assessments of collaborators, resource problems and issues and other factors within the watershed that affect decision making.

Note: Many figures in this Plan are created from internal GIS data. This internal GIS data is sourced from multiple sources including: CCWD inspection results, internal analyses, US Census data, city asset inventories, Anoka County parcel data, Anoka County Geologic Atlas, and various others from the Minnesota Geospatial Commons.

Context Reminder: Central Water Management Problem

How do local water management authorities sufficiently fund, and staff the needed water management efforts in the next ten years and beyond while continuing to effectively deal with today's problems?

1.1 Area of Interest: Coon Creek Watershed District

The CCWD's area of interest is the geographic area where the demands on and for water resources, and the physical, social, and political and economic environment impact successful water management is approximately 107 square miles in size. The area has four principal components of interest:

1. **Area** - The watershed is approximately 107 square miles in size. Since 2013 the CCWD boundary has been amended.

   Table 1.01. Summary of boundary amendments

Year	WMO	Acres involved
2013	Lower Rum River WMO	290.3
2020	Rice Creek WD	946.0
2023	Sunrise River WMO – Petitioned	44.4

   Note: The maps in this plan do not reflect the petitioned change in acreage with the Sunrise WMO

2. **Location and Urban Proximity** - The watershed is in Anoka County, Minnesota on the norther edge of the Minneapolis-St. Paul metropolitan area. It is bisected by the Metropolitan Urban Service Area that enables access to sanitary sewer that allows for high density development. Its proximity and increasingly easy access to the urban core has contributed to record growth over the past four years.

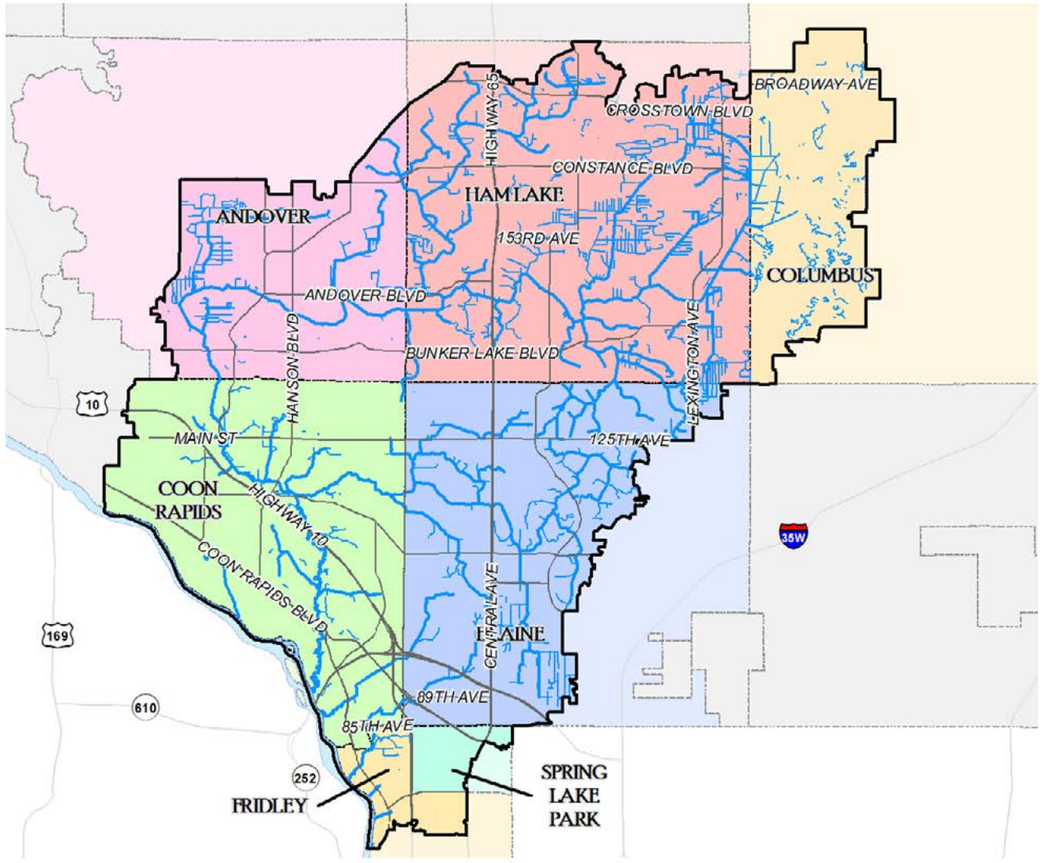


Figure 1.01. Coon Creek Watershed District including Cities

Table 1.02. Cities' area within the watershed

City	Sq Miles	% of CCWD Area	% of City in CCWD
Andover	15	14%	43%
Blaine	22	21%	64%
Columbus	11	10%	23%
Coon Rapids	22	21%	100%
Fridley	2	2%	21%
Ham Lake	33	30%	90%
Spring Lake Park	2	2%	68%
Total	107	100%	NA

3. **Major Watershed** - The Coon Creek watershed is part of the Twin Cities portion of the Upper Mississippi River Watershed (UMRW). The UMRW includes the headwaters of the Mississippi River and its outlet is at its confluence with the Minnesota River. The Coon Creek Watershed outlets to the Mississippi River approximately 21 miles upstream from where those rivers join. The Mississippi River is of interest for three reasons:

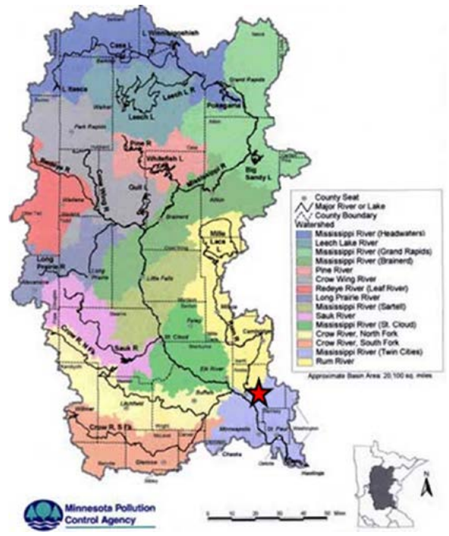


Figure 1.02. Mississippi watershed map

a. The hydrology of the river influences the lands and waters of the lower portions of those streams that outlet to the Mississippi river (Coon Creek. Pleasure Creek, Springbrook Creek, Stoneybrook Creek and Oak Glen Creek).

b. The impairments that pertain to the Mississippi River influence the costs of managing Coon Creek by establishing restraints and constraints on both monitoring and potential courses of action.

c. The Minneapolis and St. Paul Priority Areas and drinking water intakes are located here. The Coon Creek Watershed drains to these intakes. There is only a 1-4 hour travel time between the outfall of Coon Creek into the Mississippi River and these drinking water intakes.

4. **Geomorphic Setting** - The Coon Creek Watershed is included in a portion of the Anoka Sand Plain known as the Anoka Lake Plain. The Anoka Lake Plain is a near level to gently rolling lake plain formed by melt water from the Grantsburg Sub-lobe. Some areas of the lake plain have been reworked by wind to form dunes. The soils are primarily fine sands with organic and loamy and hemic hydric soils in depressions. The regional water table is very shallow, usually less than 17 feet below the surface with much of it exposed in the form of wetlands, lakes, and streams. Water management in the sand plain is of interest for the following reasons; (1) surface water and groundwater are essentially the same system expressed as base flows on surface waters and on the behavior of the hyporheic zone and hypolentic zones of surficial ground water and (2) any beneficial use of surface or surficial groundwater is conjunctive involving combined or coordinated usage of surface and groundwater to meet the demand for beneficial use of the water resource.

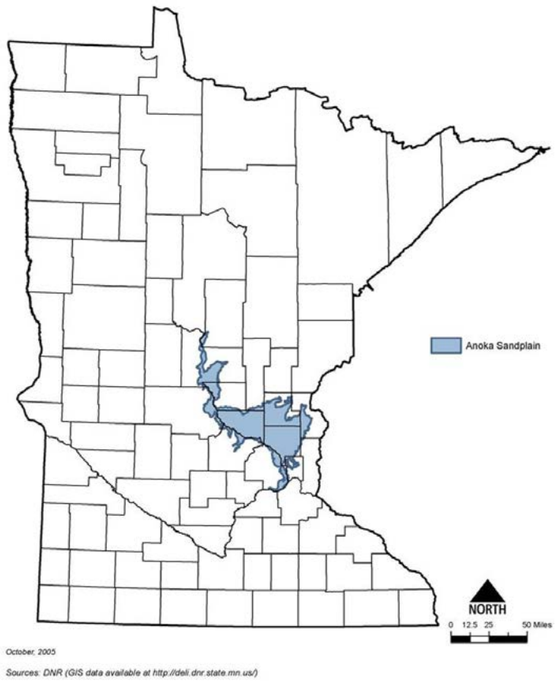


Figure 1.03. Anoka Sand Plain in Minnesota (DNR)

d. Topography: The CCWD is generally flat to slightly sloping. The flat topography affects grade (an average of 0.01% in the upper 75% of the watershed) which in turn affects the movement, retention, and retention of water.

e. Soils: Soils within the watershed are predominantly sands. In the western third of the watershed, along and within the Mississippi River terraces the sands become more loamy and coarse. The eastern two-thirds, which lie within the glacial lake basins tend to be fine sands mixed with sand loams and tills and interspersed with extensive areas of peat and muck. The areas of organic soils become dominant features in the eastern third and head waters of the watershed where groundwater is at or near the surface of the land. These areas occur most commonly is ice-block melt-outs and in former melt-water channels and can be associated with silts and clays depending on the quiescence of the water resource.

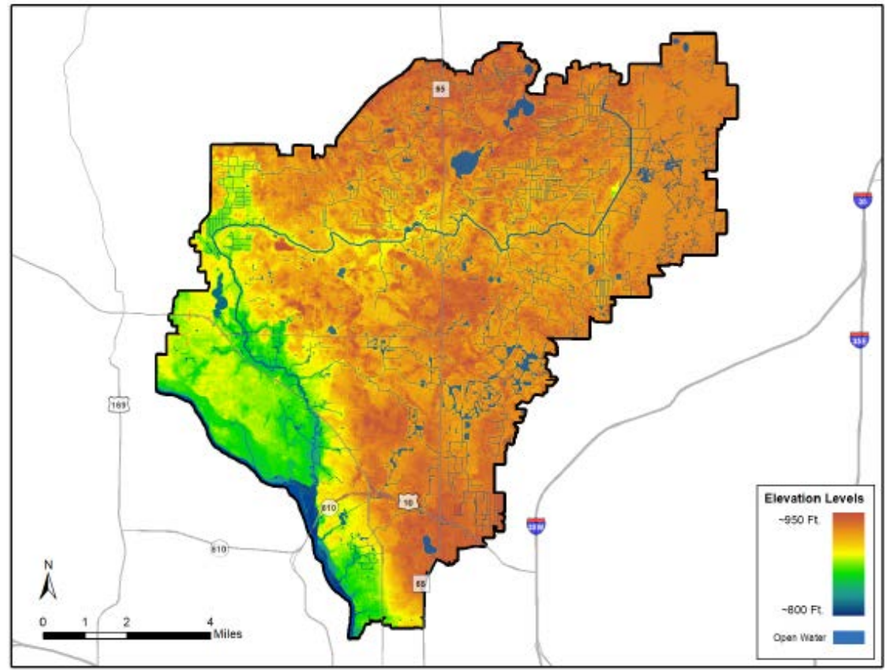


Figure 1.04. Topography of the watershed

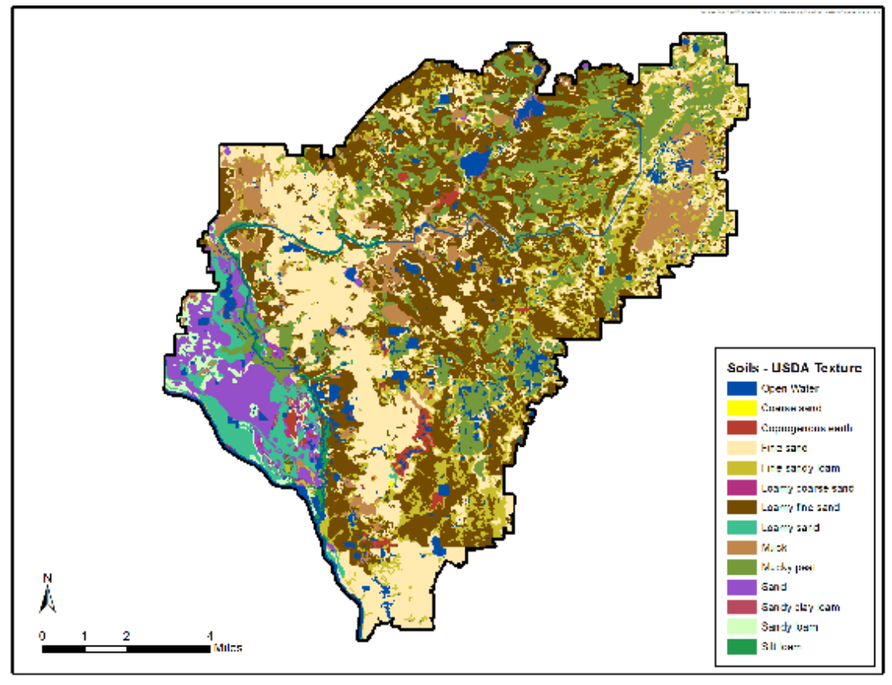


Figure 1.05. USDA soils of the watershed

f. Surficial Geology: According to the Anoka County Geologic Atlas, the surficial geology (upper 150 to 300 feet) is comprised of fine sand, gravel, and sandy and silty till intersperse with deposits of silt and clay determined to be remnants of glacial streams and lakes respectfully.

The Mississippi River terrace and river bluffs are areas where the fine sands of the glacial lake basin have been eroded, exposing coarser sands and tills and providing areas where the surficial groundwater becomes exposed and available to surface water resources. This area also contains a buried valley and increased occurrences of clay and silt deposits indicating the presence of glacial lakes and streams.

Soils are derived primarily from fine the sands of the sandy plain. Most of these sandy soils are droughty, upland soils (Psamments), but there are organic soils (Hemists) in the ice block depressions and tunnel valleys, and poorly drained prairie soils (Aquolls) along the Mississippi River (Cummins and Grigal 1981). 70-80% of the soils are excessively well drained sands and another 20% are very poorly drained.

g. Precipitation: In 2013, the CCWD adopted Atlas 14 as the best available information for planning and design. Atlas 14 and the Minnesota Climate Center indicate annual precipitation, due to more records and more accurate records is actually about two inches more per year in the 100-yr event. Analysis of Atlas 14 supporting data indicate that the increase in precipitation is not the result of climate change but the result of more and more accurate rain gages, more accurate regional topographic information (Bonnin, Geoff, NOAA presentation). The result is a revised average annual precipitation in the watershed of approximately 32 inches.

Approximately 70 percent of the annual precipitation (22.4 inches) falls between April and September. About 6 inches of precipitation occurs during the spring groundwater recharge period of April and May.

h. Surface Waters: Within the watershed there are approximately 180 miles of open channel comprising approximately 7,700 acres. Approximately 134 (74%) miles of the drainage system were improved between 1890 and 1920 and are maintained as part of the public drainage system.

There are 10 natural and manmade lakes within the watershed. The natural lakes are shallow lakes usually associated with type 4 & 5 wetland.

Crooked Lake, East Twin Lake, and Ham Lake, Coon Creek, Springbrook Creek, and the Mississippi River are also on the Metropolitan Council's priority water's list for various reasons found here: Priority Waters List - Metropolitan Council (metrocouncil.org).

i. Water Quality and Quantity: Water Quantity: The watershed contains approximately 17,287 acres of floodplain (25% of the watershed). The 100-year event (1% annual probability) is 7.3 inches in 24 hours. That event would adversely affect an estimated 41,334 people, 9,458 parcels of land and result in an estimated $5.1 billion in damages. There are also approximately 4,228 parcel that can be adversely affected by flooding from high ground water at an estimated damage of $1.6 billion.

Water Quality: The CCWD contains 11 impaired waters comprising approximately 46.1 miles of impaired stream and 1,383 acres of lake. Stream impairments are for aquatic life and recreation. Two of the lakes are impaired for aquatic consumption due to high

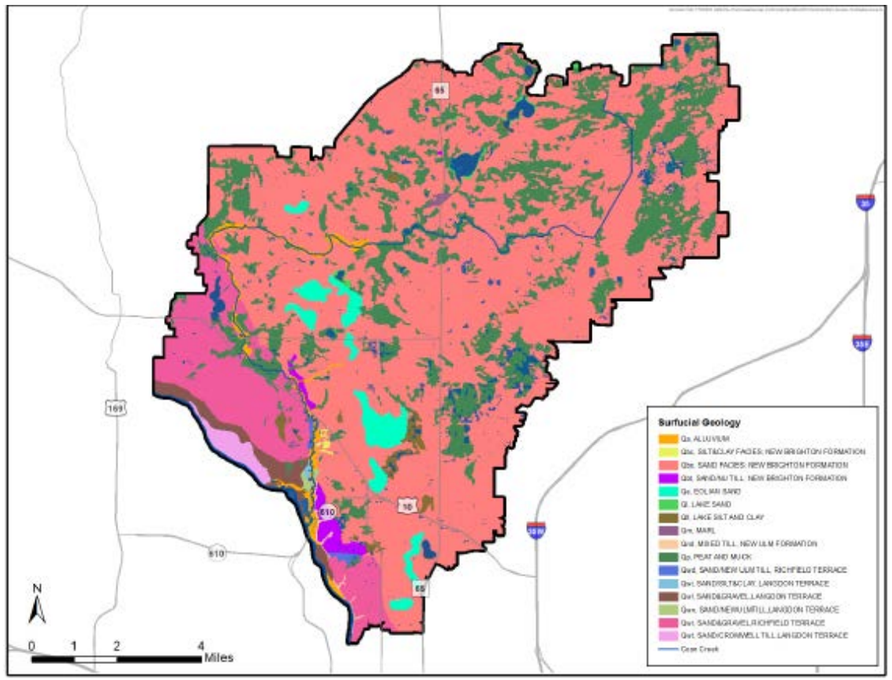


Figure 1.06. Surficial geology of the watershed (Anoka Co. Geologic Atlas)

PDS-based precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.358** (0.277-0.462)	**0.421** (0.325-0.544)	**0.526** (0.406-0.681)	**0.616** (0.473-0.799)	**0.742** (0.556-0.987)	**0.842** (0.619-1.13)	**0.944** (0.675-1.29)	**1.05** (0.728-1.46)	**1.19** (0.803-1.69)	**1.30** (0.859-1.87)
10-min	**0.524** (0.406-0.677)	**0.616** (0.477-0.796)	**0.770** (0.594-0.997)	**0.901** (0.692-1.17)	**1.09** (0.814-1.45)	**1.23** (0.907-1.65)	**1.38** (0.990-1.89)	**1.54** (1.07-2.14)	**1.75** (1.18-2.48)	**1.91** (1.26-2.73)
15-min	**0.639** (0.495-0.826)	**0.752** (0.581-0.971)	**0.940** (0.724-1.22)	**1.10** (0.844-1.43)	**1.33** (0.993-1.76)	**1.50** (1.11-2.02)	**1.69** (1.21-2.30)	**1.87** (1.30-2.61)	**2.13** (1.43-3.02)	**2.33** (1.54-3.33)
30-min	**0.908** (0.702-1.17)	**1.07** (0.830-1.39)	**1.35** (1.04-1.75)	**1.58** (1.21-2.05)	**1.90** (1.43-2.53)	**2.16** (1.59-2.90)	**2.42** (1.73-3.30)	**2.68** (1.86-3.73)	**3.04** (2.05-4.31)	**3.32** (2.19-4.74)
60-min	**1.18** (0.913-1.52)	**1.39** (1.07-1.79)	**1.75** (1.35-2.26)	**2.07** (1.59-2.68)	**2.53** (1.91-3.40)	**2.92** (2.15-3.94)	**3.32** (2.39-4.56)	**3.75** (2.61-5.24)	**4.35** (2.94-6.20)	**4.83** (3.19-6.92)
2-hr	**1.45** (1.13-1.86)	**1.70** (1.33-2.18)	**2.15** (1.67-2.75)	**2.55** (1.98-3.28)	**3.16** (2.41-4.23)	**3.68** (2.74-4.94)	**4.22** (3.07-5.77)	**4.82** (3.39-6.71)	**5.67** (3.86-8.03)	**6.35** (4.22-9.03)
3-hr	**1.61** (1.26-2.06)	**1.88** (1.47-2.40)	**2.37** (1.86-3.03)	**2.84** (2.21-3.64)	**3.57** (2.75-4.77)	**4.19** (3.15-5.63)	**4.87** (3.56-6.65)	**5.62** (3.98-7.81)	**6.69** (4.59-9.47)	**7.58** (5.06-10.7)
6-hr	**1.88** (1.49-2.37)	**2.19** (1.73-2.76)	**2.78** (2.19-3.51)	**3.34** (2.62-4.24)	**4.23** (3.30-5.64)	**5.01** (3.81-6.70)	**5.87** (4.34-7.98)	**6.82** (4.88-9.44)	**8.21** (5.68-11.6)	**9.35** (6.28-13.2)
12-hr	**2.14** (1.71-2.68)	**2.51** (2.00-3.14)	**3.19** (2.53-4.00)	**3.83** (3.03-4.82)	**4.83** (3.79-6.37)	**5.70** (4.36-7.54)	**6.64** (4.94-8.94)	**7.68** (5.53-10.5)	**9.19** (6.40-12.8)	**10.4** (7.05-14.6)
24-hr	**2.46** (1.98-3.05)	**2.84** (2.29-3.53)	**3.56** (2.86-4.43)	**4.24** (3.39-5.29)	**5.29** (4.18-6.90)	**6.19** (4.77-8.12)	**7.18** (5.38-9.57)	**8.26** (5.98-11.2)	**9.82** (6.89-13.6)	**11.1** (7.57-15.4)
2-day	**2.88** (2.34-3.55)	**3.23** (2.62-3.98)	**3.91** (3.16-4.82)	**4.57** (3.68-5.65)	**5.62** (4.48-7.29)	**6.54** (5.09-8.52)	**7.56** (5.72-10.0)	**8.70** (6.37-11.8)	**10.4** (7.34-14.3)	**11.7** (8.07-16.2)
3-day	**3.17** (2.59-3.88)	**3.52** (2.87-4.31)	**4.19** (3.41-5.14)	**4.85** (3.93-5.97)	**5.90** (4.74-7.61)	**6.83** (5.35-8.86)	**7.86** (5.98-10.4)	**9.02** (6.63-12.1)	**10.7** (7.61-14.7)	**12.1** (8.35-16.6)
4-day	**3.39** (2.78-4.13)	**3.76** (3.08-4.59)	**4.47** (3.65-5.46)	**5.14** (4.18-6.31)	**6.22** (5.00-7.97)	**7.15** (5.61-9.23)	**8.19** (6.24-10.8)	**9.33** (6.88-12.5)	**11.0** (7.84-15.0)	**12.4** (8.57-16.9)
7-day	**3.90** (3.22-4.72)	**4.39** (3.62-5.32)	**5.26** (4.33-6.38)	**6.03** (4.94-7.34)	**7.19** (5.77-9.06)	**8.15** (6.40-10.4)	**9.16** (7.00-11.9)	**10.3** (7.58-13.6)	**11.8** (8.44-16.0)	**13.0** (9.09-17.8)
10-day	**4.39** (3.64-5.28)	**4.97** (4.12-5.98)	**5.95** (4.92-7.18)	**6.80** (5.59-8.24)	**8.02** (6.44-10.0)	**9.00** (7.09-11.3)	**10.0** (7.67-12.9)	**11.1** (8.20-14.6)	**12.5** (8.99-16.9)	**13.7** (9.58-18.6)
20-day	**5.96** (4.99-7.11)	**6.68** (5.59-7.98)	**7.86** (6.56-9.41)	**8.85** (7.35-10.6)	**10.2** (8.24-12.6)	**11.3** (8.92-14.0)	**12.3** (9.48-15.6)	**13.4** (9.96-17.4)	**14.8** (10.7-19.7)	**15.9** (11.2-21.4)
30-day	**7.37** (6.20-8.74)	**8.21** (6.91-9.75)	**9.57** (8.03-11.4)	**10.7** (8.92-12.8)	**12.2** (9.87-14.9)	**13.3** (10.6-16.4)	**14.4** (11.1-18.2)	**15.5** (11.6-20.0)	**16.9** (12.3-22.4)	**18.0** (12.8-24.2)
45-day	**9.20** (7.78-10.9)	**10.3** (8.67-12.1)	**11.9** (10.0-14.1)	**13.2** (11.1-15.7)	**15.0** (12.1-18.1)	**16.2** (12.9-19.9)	**17.4** (13.5-21.8)	**18.5** (13.9-23.8)	**20.0** (14.5-26.2)	**20.9** (14.9-28.0)
60-day	**10.8** (9.16-12.7)	**12.1** (10.2-14.2)	**14.1** (11.9-16.6)	**15.6** (13.1-18.4)	**17.5** (14.3-21.1)	**18.9** (15.1-23.0)	**20.2** (15.7-25.1)	**21.4** (16.0-27.2)	**22.7** (16.5-29.7)	**23.6** (16.9-31.5)

Table 1.03. Atlas 14 precipitation in the watershed

mercury levels in fish tissue. The impairments directly affect approximately 6,868 people and 996 parcels of land valued at $622 million.

j. Surficial Groundwater: The surficial aquifer is unconfined and is about 70 feet thick within the CCWD. It has an average grade of approximately 0.47% (0.47 ft/ft) towards the Mississippi River. Almost one third of the CCWD is characterized by groundwater within 5 feet of the land's surface which supplies between 50% and 100% of the water to the lakes, streams, and wetlands throughout the watershed. The highest contributions occur in the northeast or upper part of the watershed. The areas with the greatest separation between groundwater and the land's surface (30 feet) are near the Mississippi River.

   The surficial aquifer is characterized as a highly dynamic system with annual vertical fluctuations of 3 to 10 feet, and lateral movement towards the Mississippi River at rates averaging 12 feet per day below 10 feet. Shallower flows tend to be towards areas of lower elevation or potential.

k. Stormwater Systems: The watershed contains approximately 500 miles of storm sewer and open channels that convey runoff to the public ditch system. These systems are ostensibly maintained by the cities they are located.

   There are also approximately 1,700 retention and detention ponds. While most of these are maintained by the cities, some are maintained by Homeowner Associations. 263 of these ponds are designed to retain water to reduce the volume of discharge and pollutants and/or encourage infiltration to groundwater. 293 ponds are designed to detain water in order to delay or alter the timing and volume of flows in select areas.

   The watershed also includes 55 raingardens. These exist predominantly on private property and in select areas have proven to provide efficient and effective treatment and pollutant reduction prior to discharge into surface waters. The CCWD has also implemented a variety of stormwater ponds, bioinfiltration basins, and iron-enhanced sand filters across the CCWD.

l. Regulated Pollutant Sources: The MPCA's "What's in my neighborhood" website shows information on known potential pollutant sources in the state. The location of these sources is most often along major transportation corridors including TH 65, CR 10 NE, and Coon Rapids Blvd NW. Fewer pollutant sources exist in the northeast portion of the watershed. Please refer to the "What's in my neighborhood" website for further detail on potential pollutant sources within the CCWD. There are no wastewater systems that discharge into surface waters in the watershed.

m. Fish and Wildlife Habitat and Rare and Endangered Species: The watershed contains 53 species classified as rare, threatened or endangered. These "occurrences" are generally located in approximately 147 individual settings comprising 36,000 acres 52% of the total watershed.

   The MS 84.0895 (Protection of Threatened and Endangered Species) and associated MN Rule 6134 impose a variety of restrictions, a permit program, and several exemptions pertaining to species designated as Endangered or Threatened. There are

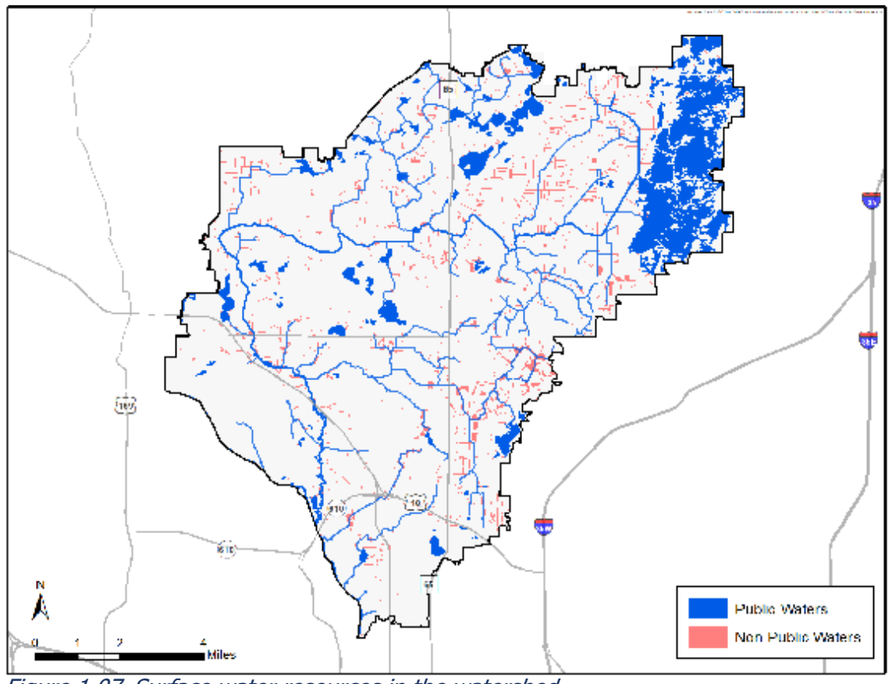


Figure 1.07. Surface water resources in the watershed

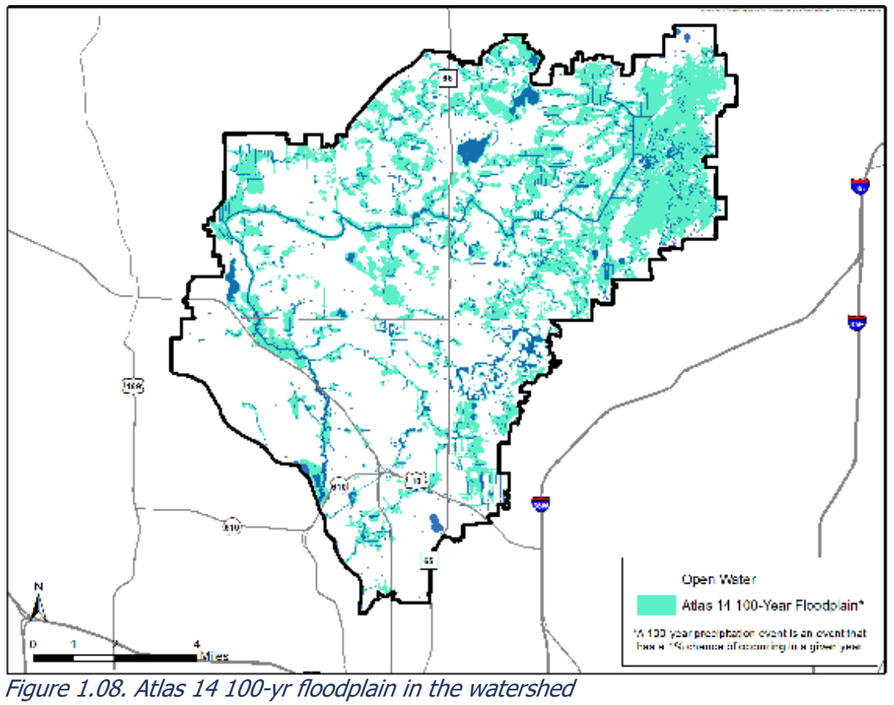


Figure 1.08. Atlas 14 100-yr floodplain in the watershed

no restrictions to species listed as Special Concern or Watchlist, however these populations are closely monitored, and their status may be upgraded to Endangered or Threatened by the DNR.

n. Water-Based Recreation Areas: Multiple types of water-based recreation areas exist within the watershed including, but not limited to lake public access points, shoreline fishing, pier fishing, beaches, canoe/kayak launch sites, and public trails along the creek and water features.

   The CCWD contains two County Parks: Bunker Hills Regional Park and Coon Rapids Dam Regional Park. Coon Rapids Regional Dam Park contains public fishing opportunities, beaches, and a public boat launch. Additionally, the park also a walking path above the Coon Rapids Dam. Bunker Hills Regional Park offers wetland boardwalks for visitors, providing viewing points for waterfowl and natural surroundings.

   There are also 49 city-managed parks within the CCWD operated by Andover, Blaine, Coon Rapids, Fridley, and Ham Lake that abut a publicly maintained ditch or lake. There are boat launches located at Ham Lake, Lake Netta, Crooked Lake, and the Coon Rapids Regional Park Dam. There are public fishing piers at Crooked Lake and Lake Cenakio. Springbrook Nature Center also has a boardwalk for natural observation of wetlands. Waterfowl hunting opportunities are available within the Carlos Avery Wildlife Management Area.

   Public swimming beaches are located on Crooked Lake and Sunrise Lake. Kayak launch/take out sites are also located at Coon Creek Park in Andover and Lions Coon Creek park in Coon Rapids.

o. Land Use: The most common type of development within the watershed is single family detached residential. Single Family residential comprises approximately 23,000 acres (33.5%) of the watershed. The areas with the highest concentration of single family residential are in the southern and western portions of the watershed. Apart from residences, there are approximately 2,100 acres (3%) of commercial land.

p. Priority Wetland Areas: Figure 1.16 on page 66 shows the current NWI wetlands in the CCWD. Figure 1.31 shows the areas of wetland relative to groundwater depth. Areas of easily restorable wetlands were identified as NWI wetland area where groundwater is less than 5 feet from the surface. All potential wetland creation or restoration projects will be evaluated on a case-by-case basis.

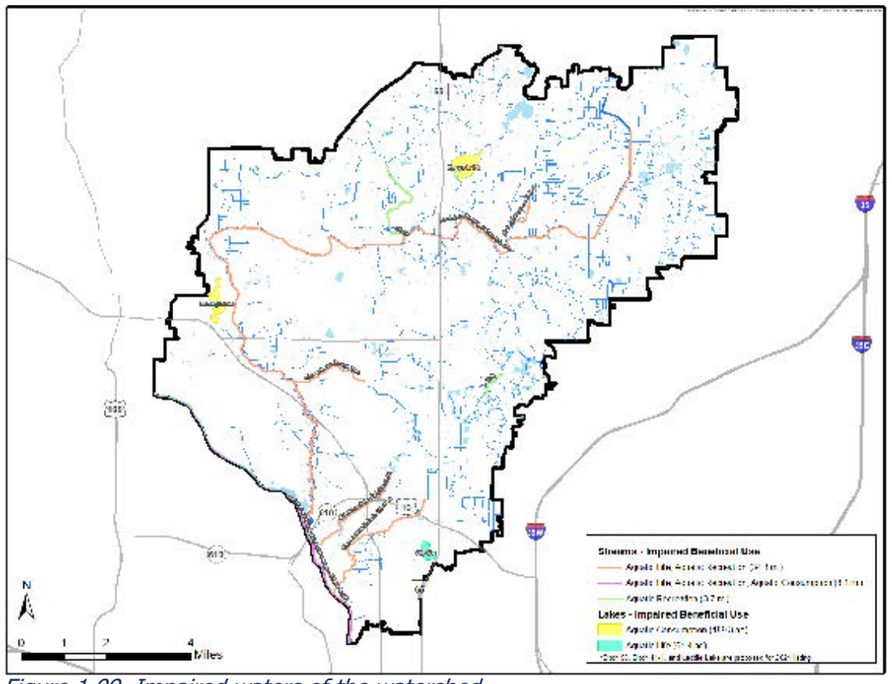


Figure 1.09. Impaired waters of the watershed

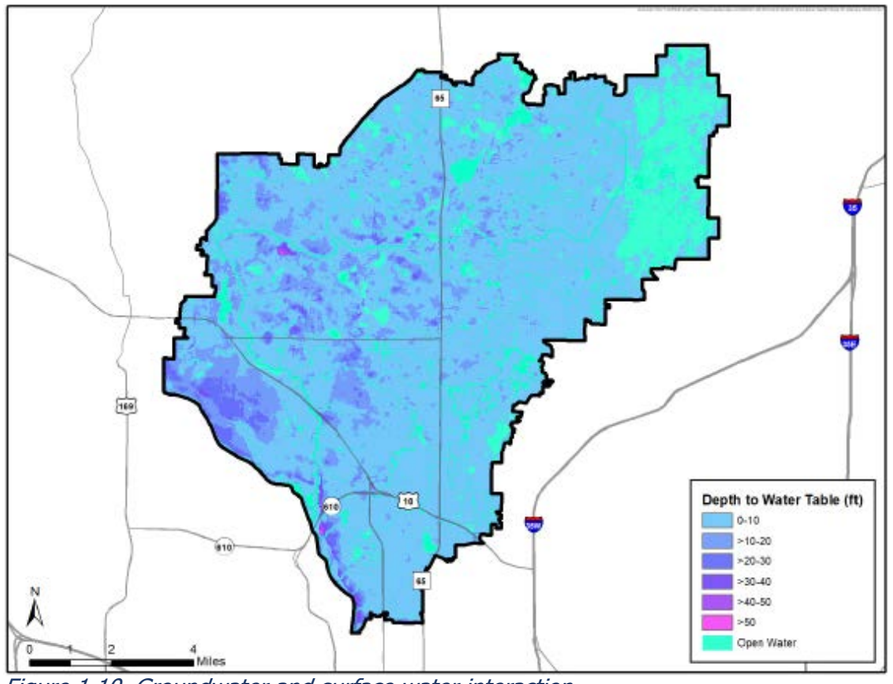


Figure 1.10. Groundwater and surface water interaction

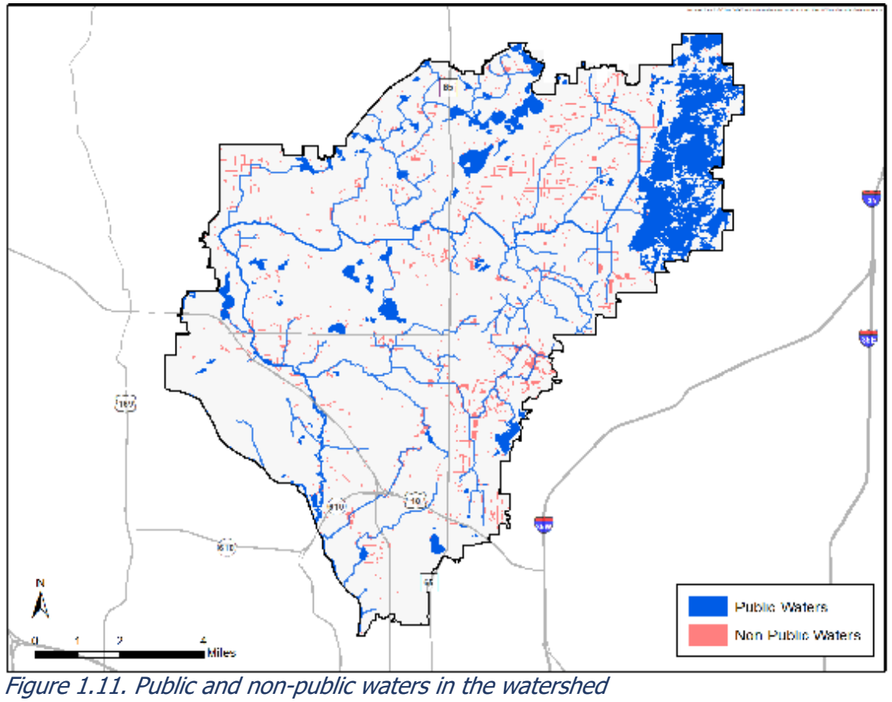


Figure 1.11. Public and non-public waters in the watershed

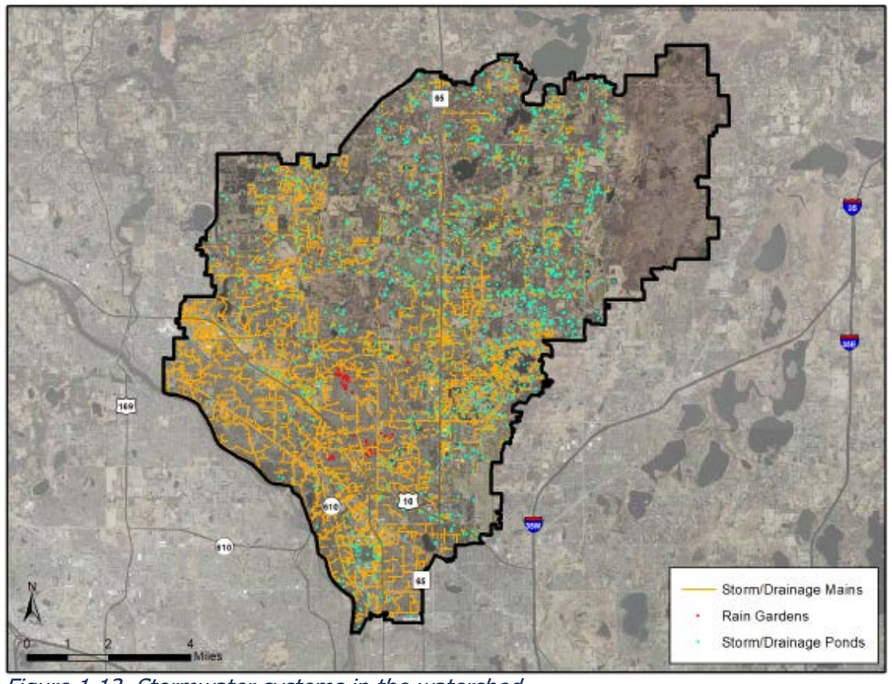


Figure 1.12. Stormwater systems in the watershed

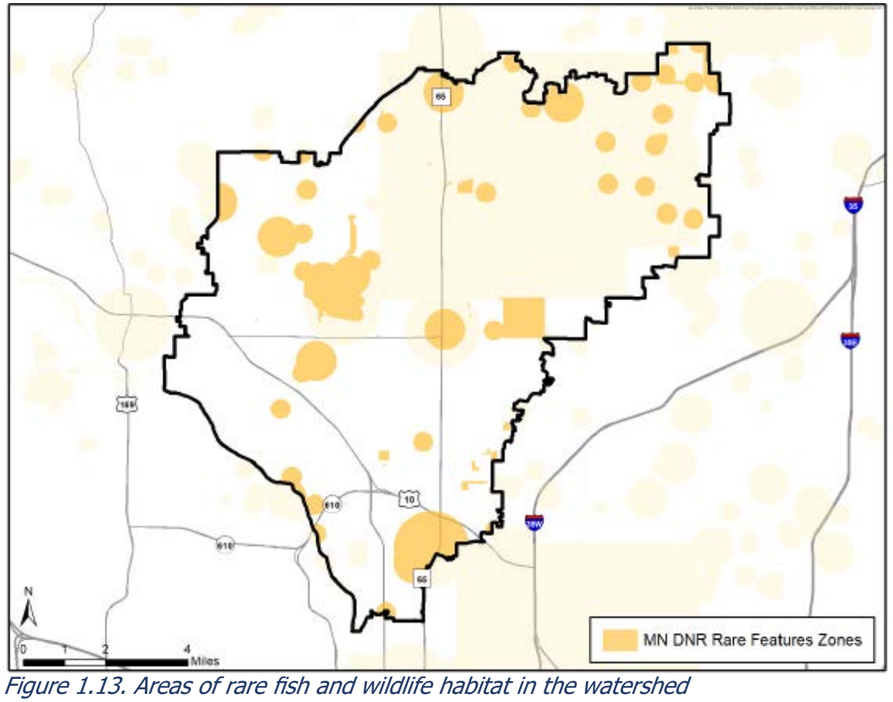


Figure 1.13. Areas of rare fish and wildlife habitat in the watershed

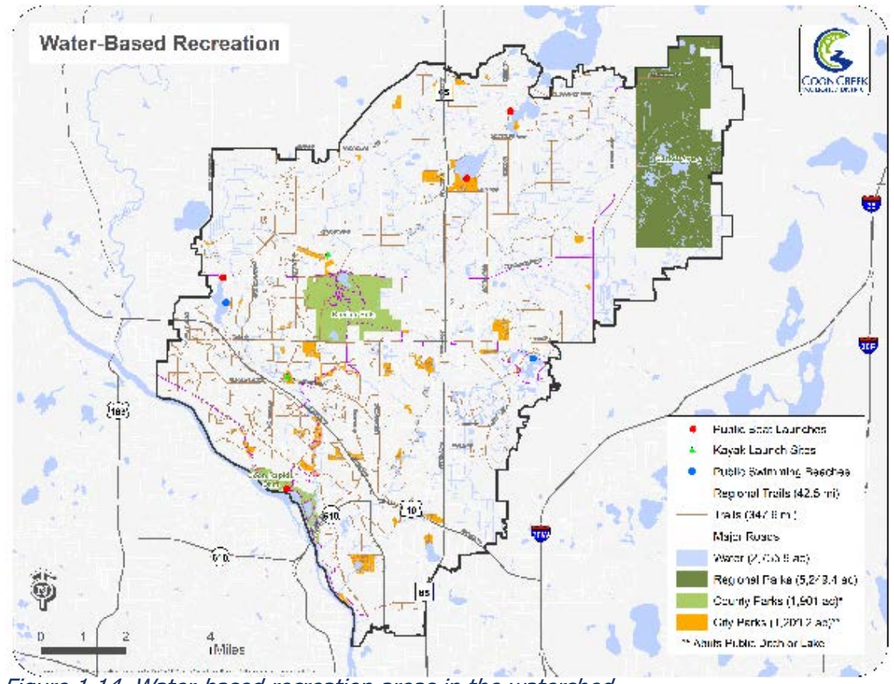


Figure 1.14. Water-based recreation areas in the watershed

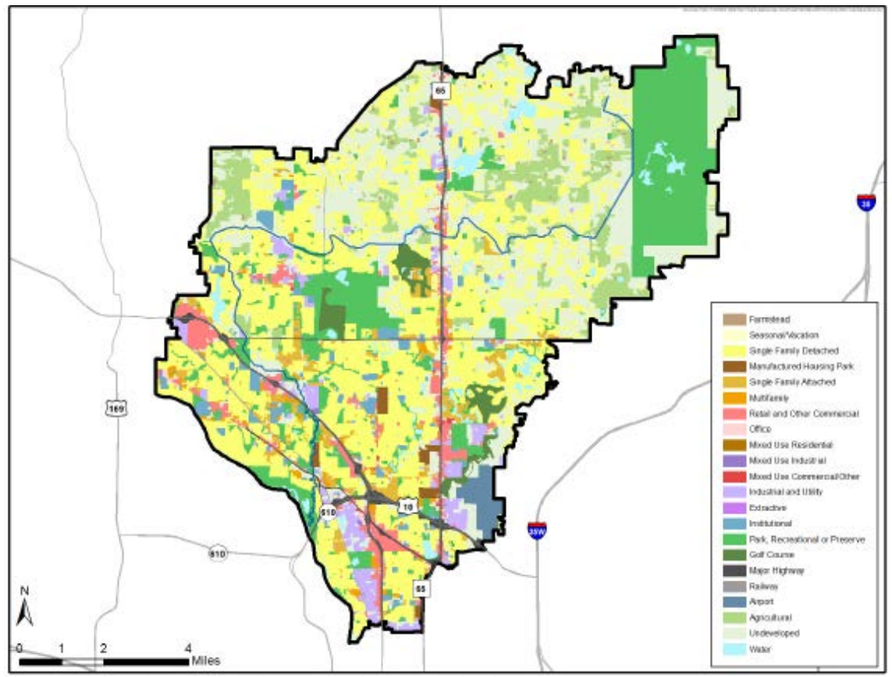


Figure 1.15. Current land uses in the watershed

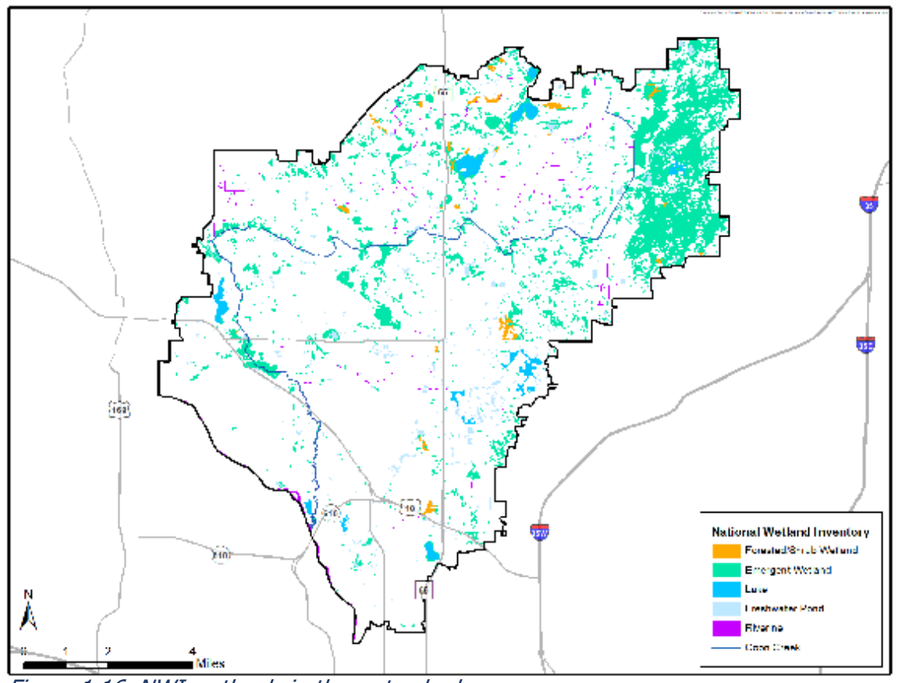


Figure 1.16. NWI wetlands in the watershed

1.2 Trends Affecting the Operational Environment

This section identifies a wide range of trends that define the local water management operating environment and have the greatest potential to shape or influence current and future water and related resource management activities within the watershed. The result is a framework for considering trends in the future operating environment that will influence individual and joint operations with a focus on the operating environment in the next 5 to 10 years.

Trend analysis is the most fragile element of forecasting. In the next 5 to 25 years, the watershed will experience enormous disruptions and surprises in the physical, social, political, and economic domains that affect watershed management. These disruptions and many other contiguous forces can easily change the trajectory of any single trend.

This assessment recognizes that many, if not all, of the trends and trajectories of the future are non-linear. For the purpose of analysis, a traditional approach that utilized conservative estimates was used to examine many of the trends. The analysis drew on over thirty forecasts and meetings with local engineering, planning staff, and citizens. The trends below are those identified by at least two to three sources.

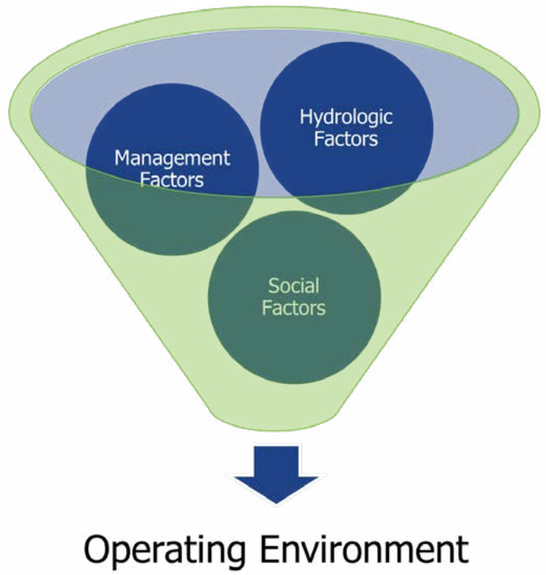


Figure 1.17. Operating Environment

1.2.1 Methodology

Trends at the Federal, state and local level were identified using brainstorming by advisory groups, industry and professional literature and state and federal forecasts. To be considered significant and included in this analysis, trends needed to be identified by at least three different sources. The trends identified are organized around three domains (physical, social, management) and clustered around seven variables (physical environment, social, political, economic, management, information, and infrastructure). The variables are accepted standards in operational planning.

- Physical Domain
  - » Physical environment - Includes the geography and man-made structures as well as the climate and weather in the area of operations. This also includes but is not limited to the requirements listed in MR 8410.0060.
- Social Domain
  - » Social -Describes the cultural, goals, values and beliefs within an operational environment and the customs, and behaviors of society members.
  - » Political - Describes the distribution of responsibility and power at all levels of governance — formally constituted authorities, as well as informal or covert political powers.
  - » Economic - Encompasses individual and group behaviors related to producing, distributing, and consuming resources.
- Management Domain
  - » Management - Exposes the management and/or field capabilities of all relevant actors in each operational environment.
  - » Information - Describe the nature, scope, characteristics, and effects of individuals, organizations, and systems that collect, process, manipulate, disseminate, or act on information.
  - » Infrastructure - Comprises the basic facilities, services, and installations needed to manage water and related resources to keep the community functioning.

The expected trends that resulted from the trend analysis are the product of synthesizing published forecasts by the state of Minnesota and 13 state and national water resource organizations for the next 10 to 25 years; 12 formal and informal discussion, workshops and comments on the future held with the CCWD's Technical Advisory Committee, 11 meetings with the Citizen Advisory Committee, five individual meetings with the planning and community development staff of those cities that have them, the wetland Technical Evaluation Meetings, five public contact and engagement events held during the summer of 2022, innumerable conversations, discussion and debates with staff, city engineers and public works directors and select staff from the BWSR, DNR, and Metropolitan Council. Trends and tendencies had to be corroborated at least three times to be included in the compilations which were then distilled into the statements presented here. These reports and publications included; City financial reports and budgets, Anoka County financial reports and budgets, the Director of National Intelligence Global Trends 2040 reports, "What three polls tell us about Minnesota's political trends" article by Steven Schier, U.S. Water Policy: Trends and Future Directions report by Adam Reimer, Understanding Public Spending Trends for Infrastructure in Developing Counties report by Vivien Foster, Minnesota Department of Employment and Economic Development 2022 economic trends reports, Minnesota Chamber of Commerce 2022 key issues report, 2021 Emerging Trends in Infrastructure report by KPMG, The Global Forces Shaping the Future of Infrastructure report by PWC.

In this analysis the value of the trends lies not in the accuracy of the prediction, but in intuiting how they might be combined in different ways to form more enduring contexts for future management. Trend analysis can also help in identifying some indicators or "signposts" that one can use to "check" the path that the operating environment takes into the future and adjust as necessary. Nevertheless, the resource and strategic implications of even a conservative and linear rate of increase possess consequences that management should be made aware.

1.2.2 Expected Trends

Physical Domain

Precipitation

Table 1.04. Precipitation trends in the watershed

Month	Monthly Average (in)	3 years in 10 Less Than (in)	3 years in 10 More Than (in)
January	1.2	1.1	1.3
February	0.9	0.8	0.9
March	1.8	1.7	2.0
April	2.8	2.6	3.0
May	3.8	3.6	4.0
June	4.6	4.3	4.9
July	4.3	4.0	4.5
August	4.3	4.0	4.6
September	3.2	3.0	3.5
October	2.5	2.4	2.7
November	2.1	1.9	2.2
December	1.1	1.1	1.2
Annual	32.6	30.4	34.7

- Expected Trends:
  - » A general increase in annual precipitation.
  - » An increase in high intensity rain events usually of short duration.
  - » Periods of excessively dry conditions (drought).
  - » Decrease in infiltration due to rain intensities exceeding infiltration capacity.
  - » Increase in local ponding and increase loss to evaporation.
  - » Decrease in groundwater recharge due to increase loss to evapotranspiration and runoff.
  - » Historically wet areas begin to grow dry and headwater streams become perennial in nature.

- » Longer summers and shorter winters will influence:
  - ○ Increased occurrence and colonization of invasive species.
  - ○ Shifts in fish and wildlife populations.
  - ○ Plant cover (sustaining existing plant cover will require increased water likely through irrigation).

Topography

- Expected Trends:
  - » Increased ponding of water.
  - » Vertical fluctuations of water levels in lakes, wetlands, and ponds.
  - » In wetlands, the hydrologic boundary (the boundary of prolonged saturation and inundation) occurring lower than the hydric soil boundary indicating annual fluctuations and or long terms drops in static water levels.
  - » Slow horizontal movement of water due to an average slope of 1% across the upper three quarters of the watershed indicating that the placement of culverts and other crossing along a system becomes a detailed exercise in inches.
  - » Large areas affected by small obstructions to flow due to the flat grades. Obstructions can back water up in some cases as much as 3 miles, potentially causing flooding and having a significant adverse effect on the lateral movement of water through the soil and root zone.
  - » Flat terrain means that small changes in vertical elevation can have profound horizontal effects.

Surficial Geology and Soils

- Expected Trends:
  - » The general continuity of the surficial geology and soils leads to a hypothesis that surface water and surficial groundwater influence and are influenced by each other indicating that as surficial groundwater trends so too do surface water quantity and quality.
  - » The coarse substrate contributes to high transmissivity rates averaging 12 feet per day and ranging from 6 inches to 15 feet per day in select areas.
  - » Coarse substrate facilitates rapid infiltration of water that makes it through the root zone and is not lost to plant uptake and evapotranspiration.
  - » The changes in soil make modeling shallow groundwater flows an exercise in caution.

Land Use

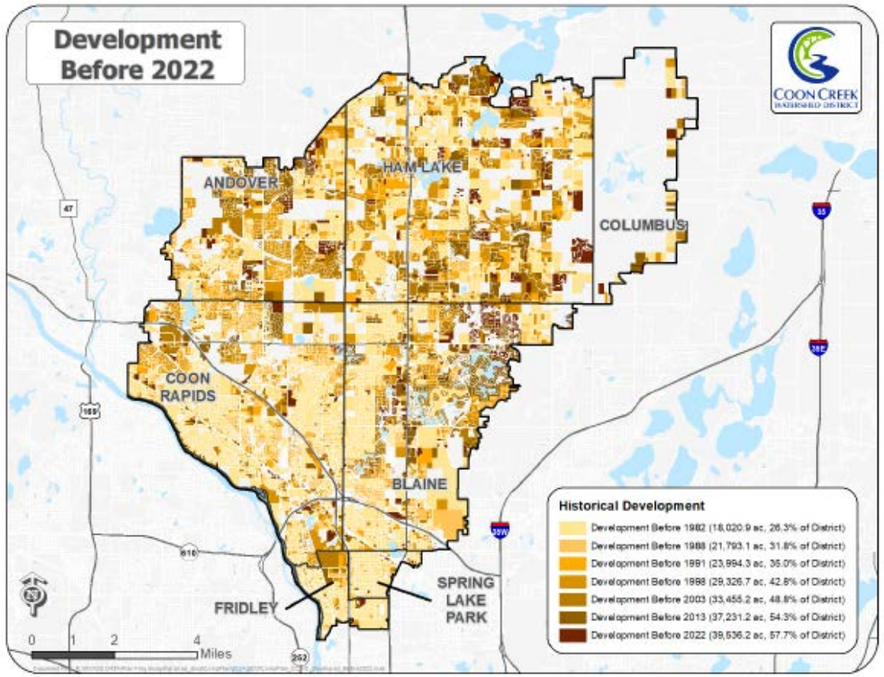


Figure 1.18. Age of Plats in the CCWD

Table 1.05. Portion of watershed developed under development rules

				Cumulative	
Year of Development	**Legal Context**	**Acres**	**% of CCWD**	**Tot Acres**	**% of CCWD**
Prior to 1988	Prior to Plan #1 and adoption of CCWD rule	21,793	32%	21,793	32%
1988 to 1991	Prior to Wetland Conservation Act Rule	2,201	3%	23,994	35%
1991 to 1998	Prior to Plan #2 and adoption of drainage sensitive uses rule	5,332	8%	29,326	43%
1998 to 2013	Prior to Plan #3 & NPDES Rules	7,905	12%	37,231	54%
2013 to 2023	Prior to Plan #4	2,305	3%	39,536	58%
	Land Developed under WCA Rule	15,542	23%		
	Land Developed Under more Stringent Rate Control	10,210	15%		
	Land Developed Under NPDES Requirements	2,305	3%		

Shallow Groundwater

- Expected Trends:
  - » Lowering of surficial ground water table.
  - » Degradation of organic soils due to oxidation.
  - » Former jurisdictional wetlands no longer able to meet the hydrologic criteria required to be considered wetland under WCA standards.

Social Domain

Economics

Increased demands to improve local economies will require adequate and sustainable water supplies and resulting scarcity for water resources. This condition will likely magnify conflicts between social and political groups, industries, and cities.

- Expected Trend:
  - » A decrease in public confidence.
  - » An increase in the risk caused by political instability.
  - » Decision making driven by expediency and convenience.

Population

The current CCWD population is approximately 163,000. Projections predict a 2034 population of 205,000 (Table 8). Residents of the CCWD have historically tended to be fiscally prudent and value directness, practicality, and utility in public investments.

The demand for housing of different product types and the need to repair and upgrade the local, county and state road networks have contributed to a rapid development with high political volatility and multiple demands on the CCWD's water resources.

- Expected Trends:
  - » Increasing skepticism of institutions-especially government by the general public.
  - » Increase in public activism through multiple channels.
  - » Changing societal conditions portend greater public action.
  - » A feeling and belief that government responses are not addressing underlying grievances.
  - » Greater responsiveness but diminishing policy coherence, increasing factionalism.
  - » Increased focus and concern on water quality and sustainable drinking water.
  - » An increase in public concern about drinking water supply, water quality and flooding will be dominant issues over next 10 years.
  - » An increase in public activism that will involve more direct public action. Demands will likely involve higher expectations of elected officials to directly and immediately address demands, risking societal divisions, broader enforcement, and less coherent policies.
  - » Responses are likely to be characterized by decisions founded on either appeasement of public demands or by actively cutting off or eliminating avenues for activism.
  - » Increased use of groundwater to meet community needs due to population growth.
- Implications:
  - » The CCWD will add approximately 1,930 people each year and reach an estimated 200 - 218 thousand by 2033.
  - » Water is a key ingredient for top-priority issues—but it is less understood as a top-priority issue in its own right.
  - » Perceptions of impact and importance of water management are limited and inconsistent.
  - » Information sources fragmented by constituencies have the potential to perpetuate inconsistent perceptions.
  - » Existing water policy narratives and frames are heavily weighted toward economics.
  - » The watershed is part of the "10,000 Lakes" identity of the state making water management concerns and water policy agendas more narrowly focused.
  - » Expanding the base of stakeholders who see clean water as part of their success offers the greatest opportunity for de-escalating water politics and advancing statewide clean water policy.

Coon Creek Watershed District recognizes that the communities we serve are diverse and ever changing. Coon Creek Watershed District is committed to engaging with, and providing services to, all people within our jurisdiction in a manner that is inclusive, respectful, and equitable.

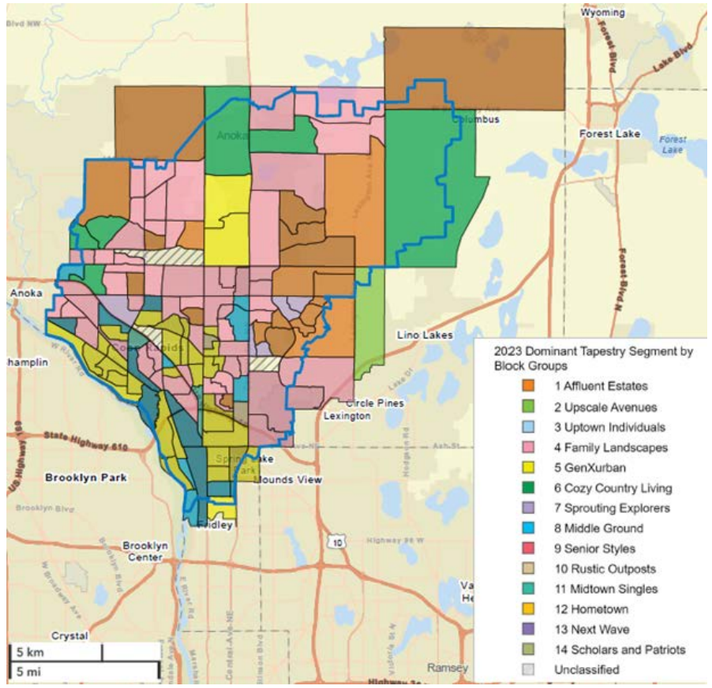


Figure 1.19. 2023 Dominant Neighborhood Types based on socioeconomic and demographic composition. (Source: US Census Bureau)

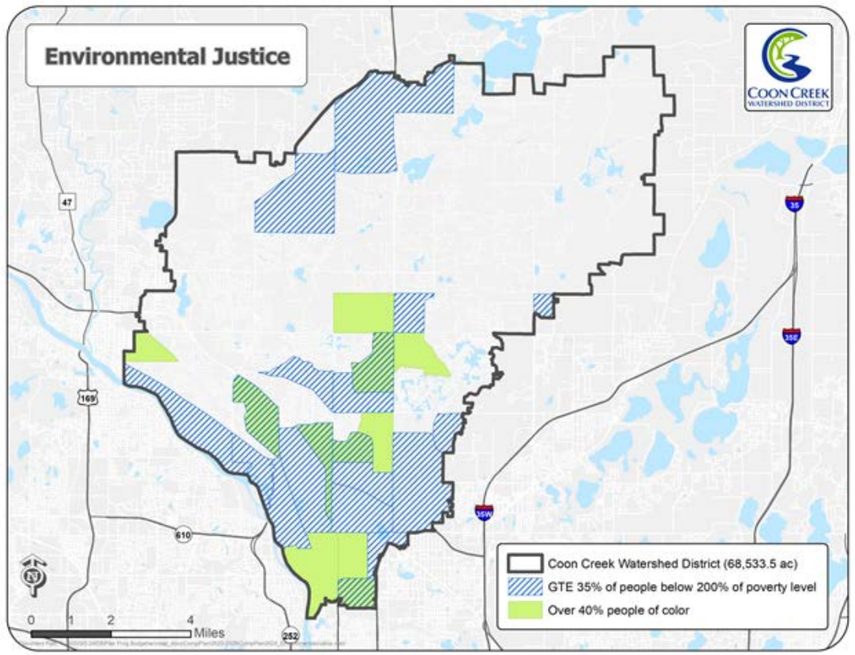


Figure 1.20. Areas of Environmental Justice Concern within the Coon Creek Watershed District. (Source: MPCA)

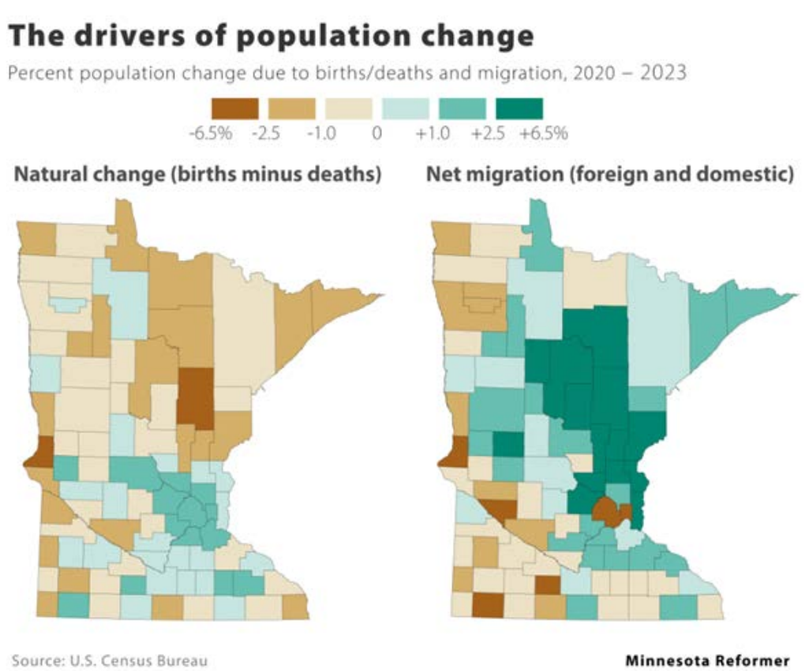


Figure 1.21. Percent population change across the state of Minnesota due to births/deaths and migration between 2020 and 2023. (Source: US Census Bureau)

Table 1.06. Anoka County Population Forecast (Source: Metropolitan Council)

Thrive MSP 2040 - Forecasts as of January 1, 2023

Forecasts are periodically revised through Council action. This table includes all revisions through December 2022. Regional and local forecasts are revised separately. The sum of all local forecasts will not equal the regional forecast.

(pt) denotes part of a city that straddles a county boundary.
= SMSC forecasts are accounted separate from non-tribal balance of Prior Lake and Shakopee.
As a result, numbers presented here will differ from Prior Lake and Shakopee totals found in Decennial Census.

"2020 Actual" columns are Met Council population estimates and Minnesota DEED employment counts
* = Forecast revised by Council action, August 2015-December 2021
** = Forecast revised by Council action, January 2022-December 2022

	Population				Households				Employment			
ANOKA COUNTY	2020 Actual	2020 Proj.	2030	2040	2020 Actual	2020 Proj.	2030	2040	2020 Actual	2020 Proj.	2030	2040
Andover *	32,601	33,500	36,500	39,800	10,782	10,800	12,150	13,500	5,609	6,300	6,700	7,100
Anoka	17,921	18,700	20,000	21,200	7,578	7,900	8,400	8,900	13,415	13,800	14,200	14,400
Bethel	476	480	520	550	186	190	220	230	215	130	150	180
Blaine (pt)	70,222	66,300	76,700	87,300	25,172	25,100	29,200	33,300	20,908	24,800	27,300	29,900
Centerville *	3,896	4,100	4,200	4,330	1,411	1,400	1,450	1,500	434	540	560	590
Circle Pines *	5,025	5,030	5,120	5,280	2,037	2,040	2,090	2,180	399	750	750	800
Columbia Heights	21,973	20,500	21,800	23,100	8,777	8,400	8,900	9,300	3,790	4,280	4,440	4,600
Columbus	4,159	4,220	4,950	5,500	1,553	1,600	1,930	2,200	1,114	1,500	1,670	1,800
Coon Rapids	63,599	64,800	68,400	72,100	24,518	25,500	27,500	29,300	23,206	27,100	28,900	30,900
East Bethel	11,786	12,400	15,400	18,400	4,262	4,700	6,000	7,400	1,323	1,700	1,950	2,200
Fridley *	29,590	29,300	31,600	32,500	11,695	12,200	13,300	13,600	22,305	23,700	24,900	26,100
Ham Lake *	16,464	16,170	17,670	18,670	5,718	5,800	6,600	7,100	3,509	4,030	4,300	4,600
Hilltop	958	840	960	1,090	391	450	500	550	697	460	480	500
Lexington	2,248	2,100	2,270	2,430	916	820	880	950	464	600	630	640
Lino Lakes *	21,399	22,300	26,100	31,100	6,957	7,000	8,600	10,600	3,786	4,700	5,300	6,000
Linwood Township *	5,334	5,390	5,400	5,300	1,993	2,000	2,090	2,100	340	330	390	430
Nowthen	4,536	4,590	5,100	5,500	1,510	1,600	1,860	2,100	602	500	590	680
Oak Grove	8,929	8,600	9,500	10,400	3,078	3,100	3,600	4,100	870	920	980	1,000
Ramsey *	27,646	27,550	33,350	39,150	9,591	9,600	11,500	13,500	6,345	6,900	7,800	8,400
Spring Lake Park (pt)*	6,983	6,510	6,790	7,170	2,877	2,800	2,900	3,100	2,481	3,200	3,350	3,500
St. Francis	8,142	8,200	10,400	12,600	2,877	3,100	4,100	5,100	1,409	2,200	2,550	2,900
Anoka County Total	**363,887**	**361,580**	**402,730**	**443,470**	**133,879**	**136,100**	**153,770**	**170,610**	**113,221**	**128,440**	**137,890**	**147,220**

Politics

The investment in storm water in 2021 is estimated to be approximately 1.2% (~$3.2 million) of a total governmental investment of $262,956,503 in providing storm water services to the public within the watershed. Most of that $3.2 million investment goes to repair and replacement of storm water conveyance infrastructure. Historically the watershed population tends to lean conservative politically.

- Expected Trends:
  - » Increased demands for specific water resources and beneficial uses combined with increased demands for certainty and control.
  - » Increase techno-enthusiasm in emergent political movements that is shaped by the perception that networks and social media empower the individual and "democratize" services.
  - » Increased interest in the Economics of Water: water security/scarcity is one of the most fundamental expressions of the social contract binding citizens and the state. Its value to society is not embedded in the water resource itself but, rather, in the infrastructure and institutions that deliver reliable supplies of water.
  - » Increasing interest in environmental protection.
  - » Water security requires a systemic approach, in which the environment serves a fundamental function.
  - » Increasingly Contested Norms: Increasingly diverse actors with divergent interests and goals are increasingly competing for public office and the opportunity to promote or shape institutional norms and priorities on a range of issues, creating the greatest challenges to water resource management since the 1960's.
  - » Environmental Justice iniaitives will become more common in water resource management.

- Implications:
  - » Increased detail and prescriptive policies and procedures on local government.
  - » Increased challenges to the existing local water management model catalyzing a reshaping of local water management.
  - » Increased competition for influence may limit the effectiveness of multiagency collaborative efforts to address watershed challenges and increase the risk of conflict between cities or cities and state agencies, although larger cities will likely uphold norms in mutually beneficial ways.
  - » Difficult Multilateral Norm-Setting in Traditional Venues: Establishing new norms to deal with long-standing or emerging issues will be more complicated and time consuming that it has been in the past because of competing normative visions and the lengthy negotiation process.
  - » Fragmenting to localized or tribal norms: Some actors will work to shift norms-setting discussions away from consensus-based discussions intergovernmental efforts to majority-vote formats, or alternatively to regional or non-state actor-led organizations.
  - » Less Collective Action on Regional Challenges: Eroding consensus among certain governments and political factions on the need to respect certain foundational principles of water management will complicate or even stymie regional or watershed cooperation on water problems, issues, or concerns.
  - » Paradigm Change: The old centrist agenda does not appear to adequately manage the complexity of water security.
  - » Rise of geopolitical water politics at the local level. In the age of increasing volatility in weather and climate, water issues will likely become a geopolitical issue between cities and/or regions.
  - » Selective adherence to rules and norms: A broader range of influential actors with divergent interests and goals will further complicate efforts to maintain and monitor commitments to established water management rules.
  - » Environmental Justice Areas of Concern (MPCA) will be considered during the prioritization process of future projects, outreach, and education activities (Figure 1.19).

Management Domain

Information

There will be changes in the way water management is conducted. New technologies, applications, and doctrines will emerge as additional actors gain access to these capabilities. The combination of improved sensors, automation, artificial intelligence, and other advanced technologies will produce more accurate data, and more effective practices and treatment devices. These will primarily be available to the most advanced organizations but some within reach of smaller city and non-governmental actors.

The proliferation of these systems will also make these assets vulnerable, heighten the risk of problems due to equipment failure, and make water management more complex and involved, though not necessarily more effective.

- Expected Trends:
  - » The pace of technological change is accelerating almost exponentially.
  - » Mobile news consumption is rising rapidly.
  - » Technology is driving workplace changes.
  - » Demographics and pandemic accelerating new work practices.
  - » Pandemic response leading to new ways and locations for working.
- Implications:
  - » Changes to the nature, location, and compensation structure of work will further reshape people's identities and sense of self-worth.
  - » Increased ability to collaborate.
  - » Technological innovations—including automation, online collaboration tools, artificial intelligence, and additive manufacturing—will reshape some fundamental aspects of how and where people work.
  - » The future workplace is likely to be increasingly flexible but also increasingly insecure as organizations demand new skill sets while no longer providing employees with traditional benefits.
  - » A key uncertainty is whether the labor force will adjust quickly enough to meet the demands of the new working world.
  - » Technological innovations will eliminate many jobs, they will also create new ones as firms shift labor into complementary tasks.

Infrastructure

There are 310 miles of open channel conveyance in the form of ditches and streams, 708 miles of storm sewers, and 2,172 stormwater assets across the watershed. 12.2 miles of storm sewer and 736 structures of unknown age and older than 75 years and considered by the Army Corps of Engineers (COE) and EPA as aging infrastructure. Many of the watershed's legacy stormwater systems, such as those in Fridley, Spring Lake Park, southwest Blaine, and southern Coon Rapids are now struggling with the high cost of retrofits that are needed to accommodate these changes. Upgrading large networks of aging systems that are now underneath densely populated areas carries significant costs and engineering challenges.

There is currently not a good estimate of annual investment that needs to be made through 2033 to maintain growth and ensure that that growth and the water resources that support and maintain that growth are sustainable.

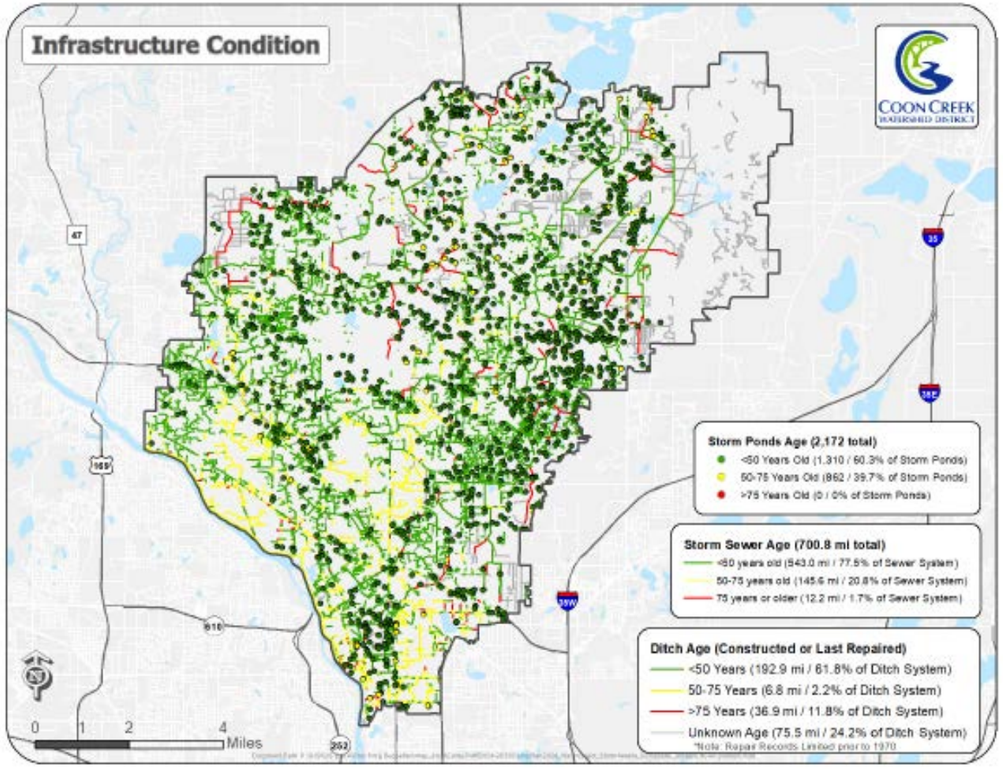


Figure 1.22. Condition analysis of stormwater infrastructure in watershed

- Expected Trends:
  - » 145.6 miles of pipe and channel and an addition 126 structures will be considered aging infrastructure by 2033.
  - » Increased uncertainty and complexity in capital planning.
  - » New financing options are coming to the infrastructure market.
  - » Increased assurance of resilience that includes:
    - ○ Increased changes in demand for infrastructure
    - ○ Operational resilience
    - ○ Technology adoption
    - ○ Affordability
    - ○ Sustainability
  - » Increase in the gap between the demand and supply for capital investment.
  - » Increasing repurposing of existing infrastructure.

- Implications:
  - » Required reporting on asset climate risk exposure.
  - » A shift from decisions made solely on probability and expected cost to ensuring essential services continue to operate under all scenarios.
  - » Waiting for certainty is not a viable option. Choosing the best direction and actions for the future will require strong practical vision, leadership, and consensus.
  - » Expect to see planning, programming, and budgeting approaches that enable a much more agile and adaptive planning, development, and delivery.
  - » Expect a focus on "enhancing" asset utilization and optimizing performance to better "sweat" existing assets.
  - » Expect to see new infrastructure financial vehicles that provide sustainable inflation protected long-term annuity returns, particularly if treasury rates remain low.
  - » Expect owners, planners, and regulators to start asking difficult questions about the resilience of storm water assets in the broadest sense. Those without resilience plans should expect a grilling.

Management

The CCWD includes all or parts of seven cities. Five of those cities are MS4s. A central component of local water management's posture and positioning is its significant technical involvement and ability to get things done on the ground. This power is predicated on a financially viable, water resource connected economy. Should this central feature of management power be weakened, it is highly likely that water management capabilities will be diminished or otherwise degraded.

Funding for water management in the CCWD is limited and comes from multiple sources such as local revenue, state and federal grants and financing, and non-traditional sources. Citizens of the CCWD pay approximately $25/yr on average for water management from City and CCWD payments combined. Approximately 3% of all Clean Water Funds have gone toward stormwater and similar types of projects.

The labor market is in uncharted territory with unemployment at or near record lows. At present there are an estimated 26 FTEs located across 10 different agencies whose work pertains directly to water resources within the CCWD. 25% of those are civil engineers. Another 25% serve as technicians or field personnel. The remaining 50% are specialists in topics such as hydrology, water quality, wetlands, and public affairs. In addition, the local water management employees employ an estimated 10 consultants that work primarily on modeling and design but also assist with field work. Two lake Associations (Crooked Lake and Ham Lake) have active members can mobilize 5 to 10 volunteers to conduct lake surveys or monitoring as well as engage in removal of AIS.

- Expected Trends:
  - » Increasing Mismatches between Supply and Demand for Water from dewatering and irrigation.
  - » Increased prioritization and blame deflection: "it's not that water is not important, it just we have other more pressing needs".
  - » Increased inappropriate use of "climate change" as the primary cause of water scar-

city and security, usually to cover for the failures of resource permitting or to gain or maintain a position of power.
  - Increased demand to improve local through adequate and sustainable water supplies.
  - Waiting for certainty will not be a viable option. Choosing the best direction and actions for the future will require strong practical vision, leadership, and consensus.
  - Funding for day-to-day operations and capital projects will continue to be limited. The future of dedicated revenue sources, such as the Clean Water Fund, will become more uncertain and burdened with requirements and procedures to provide certainty and control to their sponsors. Revenue increases from property taxes and utility fees will become increasingly influenced by the need for certainty and control in the short term potentially compromising the long-term nature of restoring water resources.
  - Increasing need and pressure to raise storm water utility rates.
  - Increasing technologies could change and potentially revolutionize water management.
  - Increased field deployment of new physical assets and technologies.
  - Increased employment of new technologies and management art and science.
  - Decreasing ability to attract and retain qualified labor force.
  - The increased complexity of the legal and financial environments, combined with a scarcity of qualified and dedicated staff will heighten the risk of miscalculation that could result in an acceleration of adverse conditions.
  - Water conflicts will, most likely be driven by historically prompted problems, issues and concerns ranging from resource protection, economic or regulatory disparities, and ideological differences to the pursuit of power and influence.
  - Increased demand on land and water resources is playing a significant role creating rapidly increasing economic scarcity and magnifying the conflicts relating to competing demands at the local and state levels.
  - Scarcity will be more apparent and the insistence of State agencies to address economic problems with ecological solutions versus ecological, economic solutions is compounding problems. These are management problems, not scientific research problems. They require decisions under uncertainty, leadership by the state and definitive decisive action on the part of local resource managers.
  - Communities that share a single water source are likely to feel increasing pressure to claim a right over a quantity or the use of that resource over their neighbors.
  - The Clean Water Fund will be sunsetting.

- Implications:
  - The need for increased funding will confront the public's need for tangible projects with immediate tangible results.
  - Hardware and software will be available to detect and locate problems and coordinate work.
  - Assess effectiveness of new practices.
  - Apply robotics and artificial intelligence.
  - Facilitate funding, logistics and training.

1.2.3 Conclusions

The previous discussion outlined some of the trends that are likely to influence the water management environment over the next five to twenty-five years. These individual trends may combine in ways to form broader contexts that that will define the operating environment in which collaborative management of water resources will occur in the future. By understanding the trends and resultant contexts, water managers have a way to appreciate their implications and to identify some key indicators to watch along the way. They provide a means of assessing our assumptions and predictions, and our progress towards building and operating a collaborative effort to meet the future demands.

1.3 Prioritization Analysis

Purpose

The purpose is to identify areas of higher and lower priority regarding all water resource problems, issues, and concerns in the CCWD. This section will assist asset managers in decision making based on performing a systematic assessment of the level of business risk exposure a local water management organization faces from potential failures of its water resource assets.

Background

This section presents the watershed activity prioritization process for each subwatershed in a step-by-step approach. This prioritization process is a tool for the water managers to identify the priority problems, issues, and concerns, and targeted areas within the watershed. The outcomes of each step provide the managers with the basis for the development of a scaled program and activity implementation strategy. Because the outcomes provide a ranking of the problems, issues, concerns, and subwatershed, the implementation of subwatershed activities is readily scalable and can be targeted towards the highest ranked priorities.

Subwatershed activities can be implemented in a phased manner depending on available resources, data gaps and need for effectiveness assessments. Implementation can target higher ranked priorities in the initially; and, then as data gaps on sources and effectiveness of best management practices (BMPs) are addressed, the program can then address lower ranked priorities.

The scalability of this tool provides the manager with the flexibility to ramp up implementation as needed without having to revise the overall implementation strategy. The contents of Section 2 include each of the five steps of the subwatershed activity prioritization process for each of the subwatersheds. The flow chart for each step is provided followed by the data used as the basis for the outcome of each step. The specific outcome of each step is then presented.

Process Overview

The CCWD is using an integrated approach to subwatershed activity implementation. The integrated approach consists of considering all the water management priorities for a subwatershed that include both current and anticipated future priority water quality problems. This approach requires a greater timeframe to implement but is the most cost effective in that BMPs will not require retrofitting to address additional pollutants in the future.

The outcomes of the process identifies priority subwatersheds within the watershed. The priority subwatersheds consist of a single or multiple sub-subwatersheds that are ranked from highest to lowest priority. This prioritization provides a tool for the manager in the implementation of subwatershed activities to reduce pollutant loads in urban runoff. For example, the manager may choose to target the higher priority subwatersheds or catchments for implementation of phased subwatershed activities to achieve state and federal goals in the subwatershed. Figure 1.23 provides a summary of the overall subwatershed activity prioritization process.

Key Inputs	Steps	Key Outputs
• Aquatic physical characteristics • Aquatic biological characteristics • Upland physical characteristics • Upland biological characteristics	**STEP 1: Physical Setting** Assess watershed Condition and Capability	• Identification and prioritization of watershed and subwatershed condition and capability
• Public comments, tastes and preferences • Agency comment, tastes and preferences	**STEP 2: Social Setting** Public Input	• Size, composition and character of demands & needs • Size and location of public problems, issues and concerns
• Legislative Requirements • Alignment of demands & needs with legislative goals • Alignment of size and location of problems with current management focus	**STEP 3: Management Setting** Alignment of demands with legislative goals and requirements	• Required levels of service and measures of effectiveness
• Resource condition and reliability in providing benefits and services • Triple bottom line analysis	**STEP 4: Risk Analysis** Operating Risk and Exposure	• Identification of critical problems, issues and concerns
• Review and assess subwatersheds considering flooding and water quality issues • Review natural resources within watershed especially high value habitat, open space and opportunities for restoration • Assess opportunities for integration of flood mitigation, water quality improvement and habitat restoration to achieve a sustainable subwatershed goals	**STEP 5: Identify Land Use and Restoration Opportunities**	• Identification of land uses and higher priority sub-subwatersheds considering flooding, water quality issues and habitat restoration. • Identify natural resources within subwatersheds especially natural heritage elements, open space and opportunities for restoration • Identify opportunities for integration of flood mitigation, water quality improvement projects and habitat restoration to achieve a sustainable subwatershed
• Based on the outcomes of the previous steps, prioritize subwatersheds for implementation of phase I subwatershed activities • Develop a map showing sub-subwatershed	**STEP 6: Identify high priority sub-watersheds for intervention**	• Map showing a prioritization of the sub-subwatersheds using the concept of

Figure 1.23. Summary of Subwatershed Activity Prioritization process

1.3.1 Step 1: Physical Setting

Key Inputs:

In 2022, the CCWD assessed the condition of the Coon Creek Watershed. The Assessment analyzed the relative physical and biological characteristics and ecological processes within the watershed on a subwatershed basis. These affect the hydrologic and soil functions that support the quantity, quality, and behavior of water resources within the watershed.

Key Outputs:

- Some of the initial criteria offered by the United States Forest Service (USFS) were not useful or helpful in dealing with the particulars of urban or urbanizing watersheds.
- In general, ecological condition was fair to good in headwater subwatersheds and fair to poor in the southern, urbanized portion of the watershed.

Condition of Subwatersheds:

- Orange to Red (Ranking #13-18)
  - » Exhibit low geomorphic, hydrologic, and biotic integrity relative to neighboring subwatersheds and their natural potential condition.
  - » A majority of the drainage network may remain unstable but less so than 2022 and more so should the break in the drought be characterized the high intensity damaging storms.
  - » Physical, chemical, and biologic conditions will likely show limited and select signs of supporting beneficial uses over the subwatershed, However, they exhibit significant improvement if stressors are effectively dealt with.
  - » Regular investment is made to repair and restore portions of the resource, usually to prevent further damage or prevent other problems.
- Yellow (Ranking #7-12)
  - » Exhibit moderate geomorphic, hydrologic, and biotic integrity relative to neighboring subwatershed and their natural potential condition, but still remain at risk.
  - » The drainage network in these areas will likely exhibit unstable characteristics resulting from intensive land use and land disturbance activities such as urban development or agricultural drainage modifications.
  - » Physical, chemical, and biologic conditions do not support or are at risk of not being able to support beneficial uses. The restoration potential is high.
  - » Semi-regular investments of money, material and/or expertise will be required to maintain or improve these conditions and address pending and probable impairments.
- Green (Ranking #1-6)
  - » Exhibit high geomorphic, hydrologic, and biotic integrity relative to neighboring subwatershed and their natural potential condition.
  - » The drainage network in these areas will likely exhibit stable characteristics.
  - » Physical, chemical, and biologic conditions are generally supportive of beneficial uses although some impairments exist in some reaches. Natural wetland and soil conditions also preclude attainment of select standards.
  - » Periodic investments of money, material and/or expertise will be required to maintain or protect these conditions.

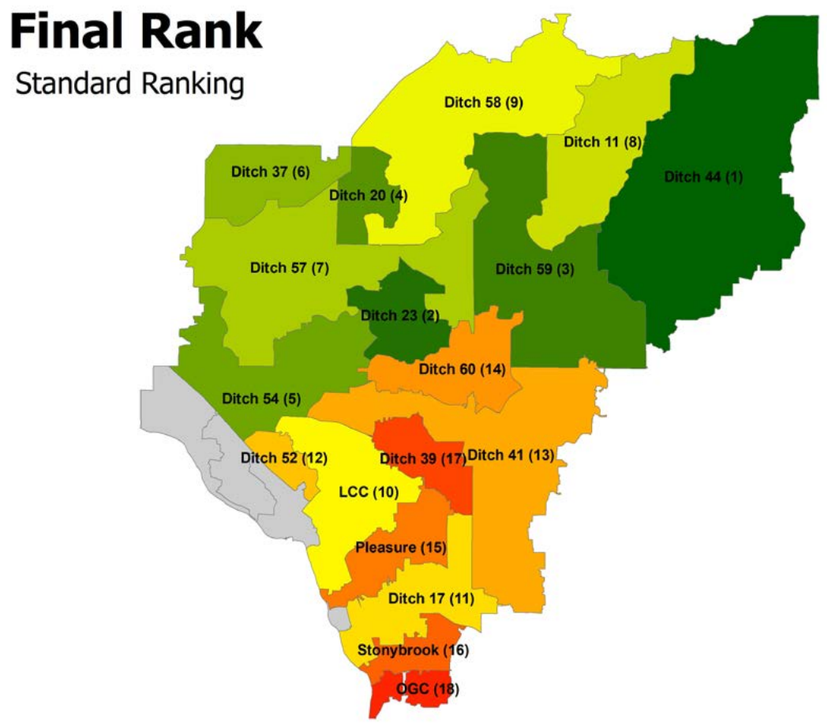


Figure 1.24. Subwatershed physical setting ranking with ranking in parentheses

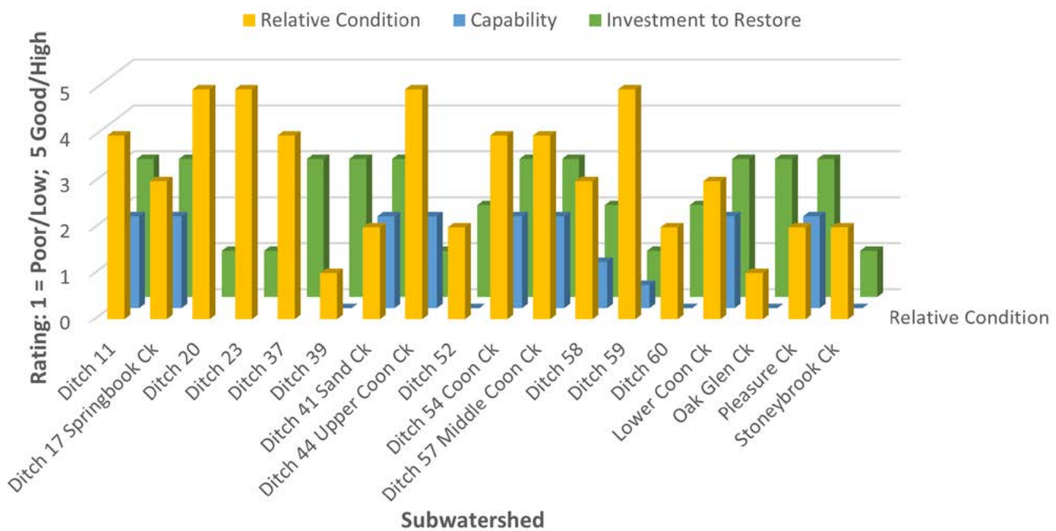


Figure 1.25. Subwatershed combined rankings

1.3.2 Step 2: Social Setting

Key Inputs:

In May 2022 the CCWD published its Notice of Intent to Amend and Update its Comprehensive Plan. The CCWD received over 90 comments and suggestions. In addition, the CCWD held 69 meetings with the CCWD Advisory and Technical Committees, citizens, and individual city departments to continue to surface, define, clarify, and refine problems, issues and concerns and potential approaches for their resolution.

Review of the required and implied legislative tasks, and the comments from the public, agencies and collaborators identified eighty problems, issues, and concerns to be evaluated. Comments and requirements were organized and grouped by water resource category.

Key Outputs:

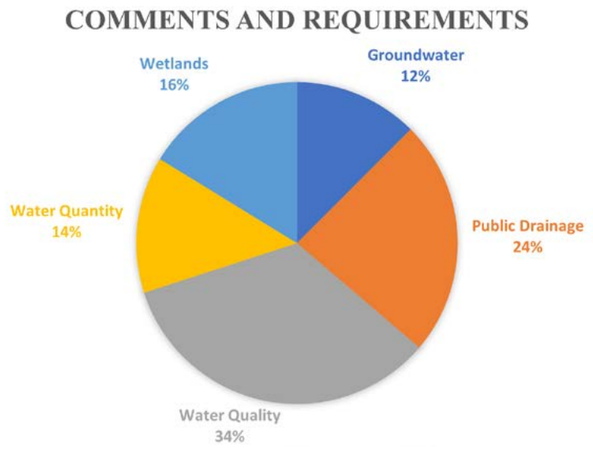


Figure 1.26. Summary of comments and requirements received from public/stakeholder input

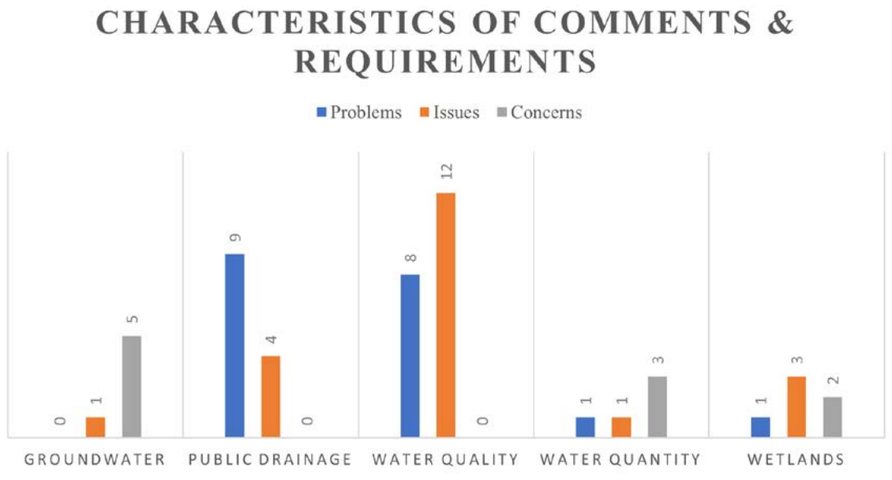


Figure 1.27. Summary of the characteristics of the results from public and stakeholder input

Table 1.07. Summary of results from public and stakeholder input

Domain	Problems	Issues	Concerns
Groundwater		• Source water protection	• Ground water - Surface water Interactions • Precipitation changes (Intensity) • Drinking Water – Size of reserves • Groundwater • Water Supply • Wetlands
Public Drainage	• Ditch maintenance • Obstructions to flow • Channel vegetation • Flow velocity & rate • Channel alignment • Poor Habitat • Channel Restoration • Cross sectional geometry • Channel irregularity	• Riparian areas • Stage and discharge • Detritus & vegetative debris • Stream substrate	
Water Quality	• Bank stabilization • Channel alignment • Channel irregularity • Channel Restoration • Channel size and shape • Poor Habitat • Silting and scouring • Suspended Solids	• AIS • Altered Hydrology • Aquatic Life • Chloride • Contaminants of Emerging Concern • Dissolved Oxygen • E. coli • Fisheries • Lake Health • Phosphorus • Riparian areas • Water Quality	
Water Quantity	• Flooding	• Stage and discharge	• Ground water - Surface water Interactions • Precipitation changes (Intensity) • Seasonal change
Wetlands	• Wetland Identification/ Delineation	• AIS • Riparian areas • Threatened and Endangered Species	• Ground water - Surface water Interactions • Precipitation changes (Intensity) • Seasonal change

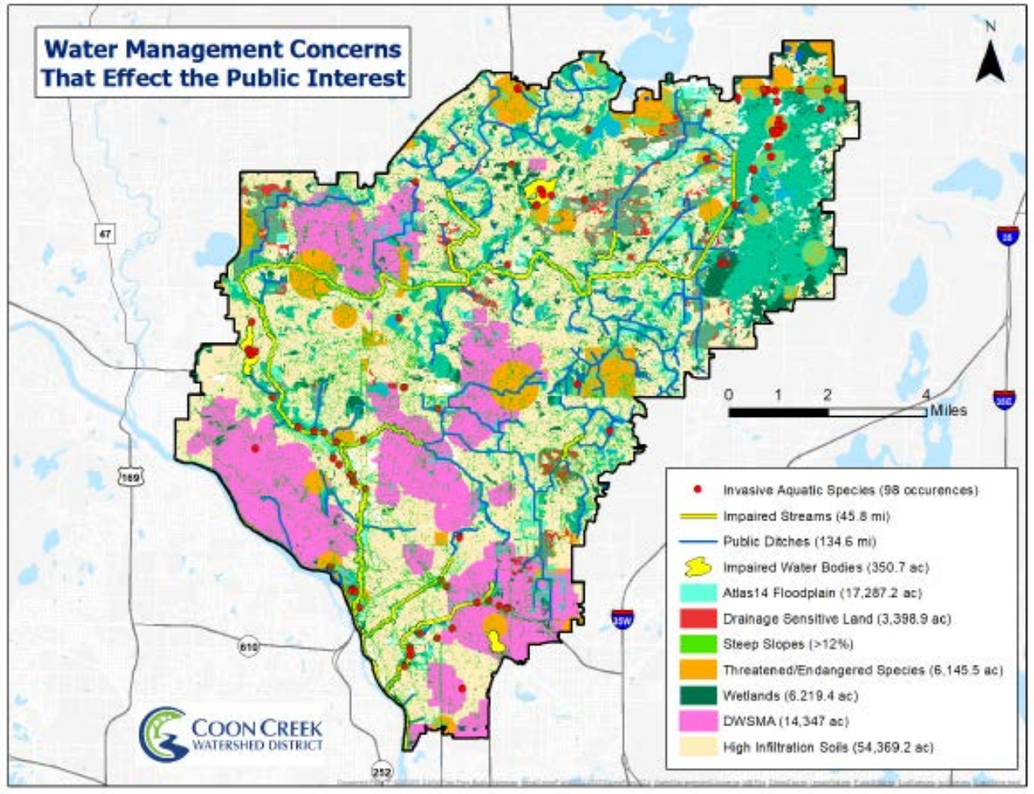


Figure 1.28. Locations of water management problems, issues, and concerns

1.3.3 Step 3: Management Setting

Key Inputs:

The CCWD's Mission and Legislative Goals are discussed in section 1.1 of the Comprehensive Plan. The review of the natural, hard and soft assets advanced the idea that each asset group functions to meet one or more the Legislative goals. They are critical to CCWD and city efforts to protect the public health, safety, and welfare, provide for the wise use of the natural resources, and minimize the public costs associated with repair, replacement, or restoration of property and water resources.

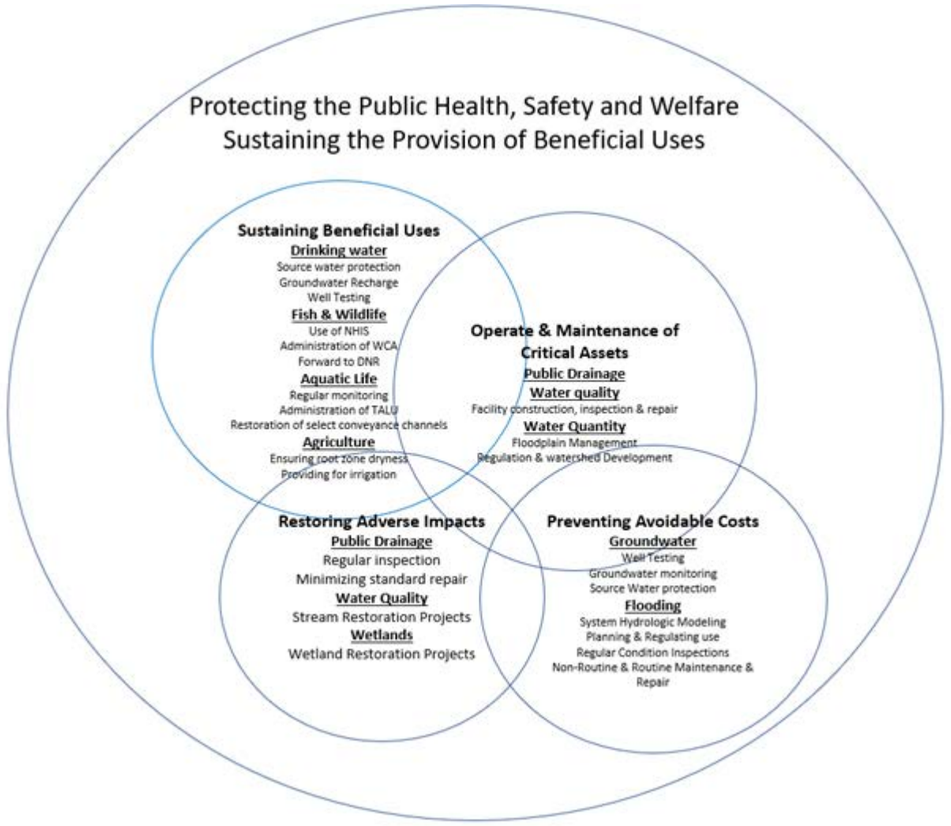


Figure 1.29. Alignment of legislative goals and physical and programmatic assets

Figure 1.29 shows that multiple legislative goals are met by certain programmatic assets. For example, ditch inspections provide invaluable information on more than the physical condition of the channel and the potential need for non-routine maintenance or repair, but an opportunity to assess channel integrity, fish, and wildlife habitat. Ditch inspections also provide a close-up look at outfalls and illicit discharges.

Similarly, ditch, CCWD construction, and permit inspections provide essential information to technical studies, structure BMP maintenance, and projects and enhancements to further flood protection and water quality restoration. Outreach events and public information encourage part-

nerships with the public and protect safe, clean water by engaging the public to help in reducing pollution. Capital improvement planning and management, watershed asset management, and integrated planning framework, are all programmatic assets that the CCWD maintains towards flood control and water quality goals. Programs that support early coordination, regulatory review and policy development, post construction stormwater control, compliance monitoring program and special studies enable all the MS4s to advance the goal of providing safe clean water.

Key Outputs: Floodplain management and water quality requirements

The alignment of the seven cities within the watershed and the CCWD's assets for floodplain and water quality management provide restraints and constraints in the joint implementation of projects and programs to address the water quality enhancements needed to address the TMDLs within the watershed.

The relationship between the seven cities within the watershed and the watershed district concerning floodplain and water quality management is bound together by mutual interests, technical sophistication, and complimentary knowledge, skills and abilities that are needed to address problems, issues, and concerns that have impacts beyond municipal boundaries.

Minnesota Statute 103F states that it is the policy of the state is to:

Reduce flood damages through floodplain management, stressing nonstructural measures such as floodplain zoning and floodproofing, flood warning practices, and other indemnification programs that reduce public liability and expense for flood damages.

The state program requires cities to adopt floodplain ordinances as an incentive for enrollment into the National Flood Insurance Program. The CCWD (through M.S. 103B and D) is also directed to address flooding, particularly where and when it serves as the ditch authority.

The purpose of floodplain management within the Coon Creek Watershed has been to fulfill the requirements of the statute. The CCWD's role has been to support the cities through regulation and modeling that protect people and property. The CCWD's role has also been to facilitate the transition to increased precision and accuracy of information that will protect property and functions from the adverse effects of the use and development of floodplain lands.

For the MS4s within the watershed, water quality management has focused on addressing the TMDLs of the impaired waters and preventing any further degradation from occurring and protecting the unimpaired waters.

In response to impairment designation, workgroups have been formed around the subwatersheds of the impaired streams and those streams which contribute major loadings and stressors to the impaired waters. In 2016, the Watershed Restoration and Protection Strategy was completed for Coon Creek watershed. The CCWD and the affected MS4s agreed to pursue addressing the impairments as categorical TMDLs, working jointly on a subwatershed basis. The goal of the subwatershed plans has been to quantify discharge and pollutant loadings to assess flooding more precisely in order to protect, preserve, enhance, and restore the water quality and designated beneficial uses of waters of the state. This goal is accomplished through an adaptive planning and management process that identifies the highest priority water quality conditions within a subwatershed and implements strategies through the CCWD's and cities operating and capital improvement budgets.

1.3.4 Step 4: Risk Analysis

Key Inputs:

The criticality of any problem, issues or concern is a measure of the risk to the public health, safety, and welfare and/or productivity capacity of the watershed in the event of failure. The more critical the problem, issue, or concern, the higher the risk to which the Cities and the CCWD are exposed. This risk may come in the form of flooding, reduced access to clean water, and impairment of water bodies in the case of:

- Natural assets such as drinking water or floodplain
- Physical assets such as pipes, BMPs, etc.

The risk in the case of programmatic assets is different, but significant regardless. This risk may manifest in the form of permit violations, illicit discharges, or non-routine maintenance that become a cumbersome and expensive liability. It is important to understand which problems, issues and concerns are critical to address; this involves an examination of the origin, development, likelihood of occurrence, the cost to repair, and the consequence of failure.

- Variables used in evaluating the probability of failure (PoF) include:
  - » Number of times problem/issue/concern has been raised and/or dealt with in the past 10 years.
  - » General condition of the asset(s) involved.
  - » Severity: Rate at which use is causing or creating problems or issues.
  - » Reliability of past intervention methods: Time between issues.
  - » Corrective maintenance of intervention: Number and types of problems/issues/concerns (Impact/Import).
  - » Number of significant corrective events.
  - » Cost of correction/mitigation.
- Variables used in evaluating the consequence of failure (CoF) involved the physical, social, and economic impacts of the problem/issues/concern:
  - » The effect on Public Health and Safety
  - » Regulatory and Legal consequences
  - » Problem Complexity
  - » Control: Ability/Inability to isolate and recover
  - » Number of people affected.
  - » Mitigation cost
  - » Emergency repair cost
  - » Loss of public relations

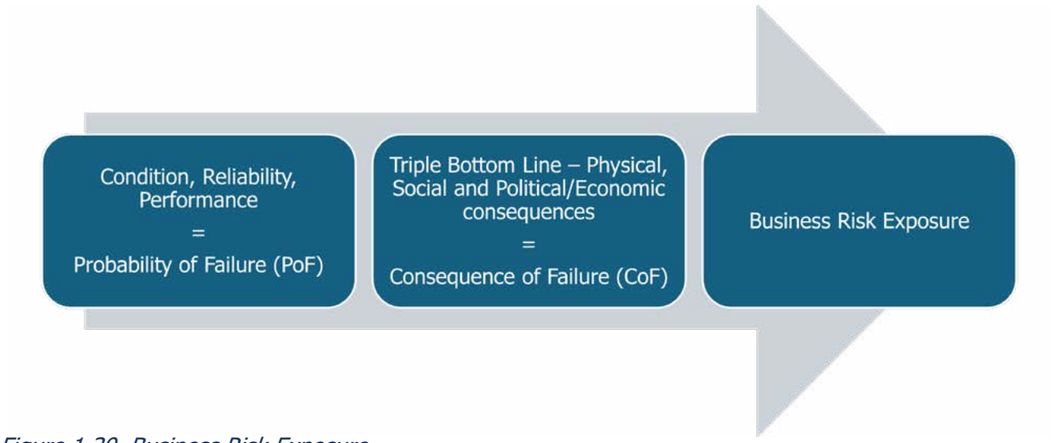


Figure 1.30. Business Risk Exposure

Key Outputs:

The Business Risk Analysis (BRA) plots each problem, issue, and concern according to their PoF and CoF. The results of this analysis are presented in figure 1.27 and table 1.10, below.

High risk problems, issues and concerns need immediate attention, and as such, resources should be prioritized accordingly. Resources can be diverted from low risk assets in the because of the low consequence of failure.

Table 1.08. Risk analysis results of problems, issues, and concerns

Priority Problem/Issue/Concerns	Risk Level	Type
Wetlands	High	Problem
Water Quality	High	Issue
Chloride	High	Issue
Ground water - Surface water Interactions	High	Concern
Drinking water	High	Concern
Obstructions to flow	Medium	Problem
Flow velocity and rate	Medium	Problem
Ditch maintenance	Medium	Problem
Suspended Solids	Medium	Problem
Flooding	Medium	Problem
Altered Hydrology	Medium	Issue
Threatened and Endangered Species	Medium	Issue
Stage and discharge	Medium	Issue
Aquatic Life	Medium	Issue
Dissolved Oxygen	Medium	Issue
Fisheries	Medium	Issue
Phosphorus	Medium	Issue
E. coli	Medium	Issue
Groundwater	Medium	Concern
Water Supply	Medium	Concern
Poor Habitat	Low	Problem
Silting and scouring	Low	Problem
Channel vegetation	Low	Problem
Channel Restoration	Low	Problem
Bank stabilization	Low	Problem
Channel size and shape	Low	Problem
Channel irregularity	Low	Problem
Channel alignment	Low	Problem
Cross sectional geometry	Low	Problem
Impact on Parks	Low	Problem
Land Use	Low	Problem
Lake Health	Low	Issue
Riparian areas	Low	Issue
Contaminants of Emerging Concern	Low	Issue
AIS	Low	Issue
Stream substrate	Low	Issue
Source water protection	Low	Issue
Detritus & vegetative debris	Low	Issue
Precipitation changes (Intensity)	Low	Concern
Seasonal change	Low	Concern

Discussion of high-risk priorities:

The common sources of the high-risk priorities include: groundwater interaction with surface water and its relation to water supply to surface water resources and contribution to water quality impairments, water quality impairments, especially chloride, and the CCWD's approach to operations and maintenance.

Surficial Groundwater and Surface Water Interactions

The surficial aquifer is the principal source of water for most lakes and wetlands in the watershed as well as base flows to the flowages. Two interrelated issues have been traced to the surficial aquifer:

- Water Quantity Concern: Groundwater levels appear to be falling based on anecdotal reports of an increasing number of seasonally dry channels, and the loss of wetlands . Certainly, compounded by the drought that the watershed has experienced during much of the growing season since in 2021, the concerns appear to be exasperated and compounded by changes in precipitation, amounts and patterns and the subsurface drainage effect of the Mississippi River. The CCWD believes that there is a high probability that wetland loss is due to changes in the surficial aquifer from groundwater and surface water interactions.
- Water Quality Concern: As a major contributor to base flows, the CCWD has detected chloride levels that exceed state standards, and which are contributing to the pollution of surface waters.

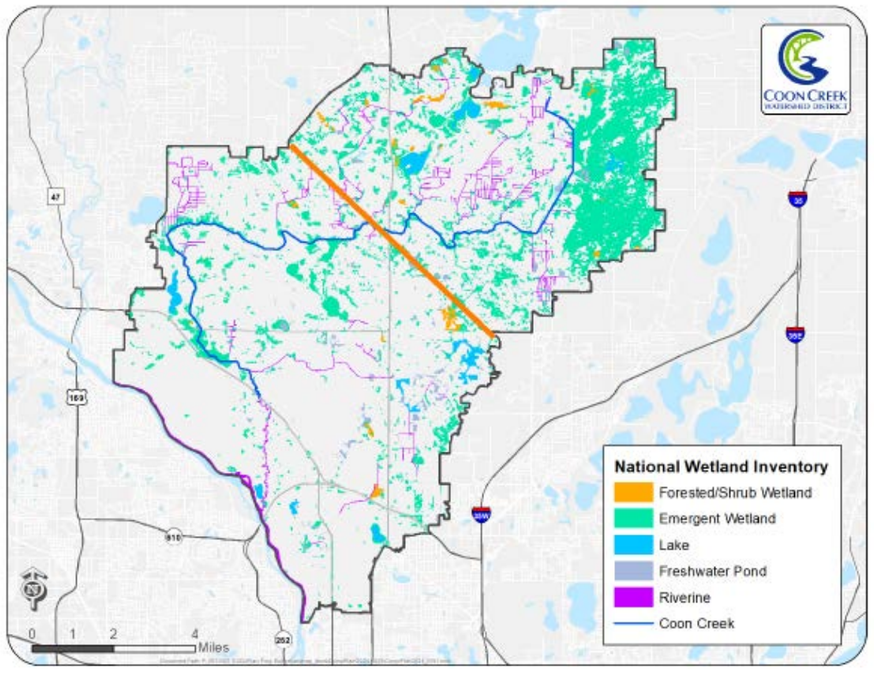


Figure 1.31. Wetland loss analysis

The surficial ground water in the watershed, or the water table, is generally at the surface of the land or within 5 to 10 feet of the surface. It is part of an unconfined aquifer whose boundaries extend beyond the watershed. The aquifer is highly dynamic and fluctuates constantly vertically. In most areas of the watershed it is about 50-70 feet deep.

The surficial aquifer appears relatively intact in Ham Lake, northern Blaine and eastern Andover.

This issue is composed of the very surface of the surficial groundwater table which fluctuates vertically five to 10 feet per year. This vertical fluctuation is due to multiple factors including recharge, precipitation, evapotranspiration , pumping, dewatering, and potentially others (Jiang, 2017). Groundwater also moves horizontally toward the Mississippi River at a rate of 3 to 12.5 feet per day. It is subject to dewatering for construction and appropriation for irrigation and domestic water use.

Wetland loss is composed of those jurisdictional wetlands and wetland mitigation sites that have lost hydrology and no longer meet the technical criteria of jurisdictional wetlands.

These wetlands are mostly classified as seasonally flooded or saturated typically by surficial groundwater. The hydrology of eighty percent of these wetlands have been modified or shortened by agricultural drainage. However, twenty percent are outside or beyond the scope and lateral effect of ditches and streams. Most of the effected wetlands occur southwest of the line shown in figure 1.30. This line correlates with the following physical features:

- Depth of groundwater: Northeast of the line surficial ground water is typically within 5 feet of the surface.
- A Change In Soil Texture and Transmissivity: Northeast of the line, the landscape is dominated by deep organic beds and loamy fine sands. Transmissivity is typically less than ten feet per day. Southwest of the line the soil landscape is dominated by loamy sands and fine sands over coarse sands and gravels. Transmissivity is typically greater than 12 to 15 feet per day.

Water Quality Impairments

The District manages eight streams and three lakes that are impaired for water quality (figure 1.09). The specific composition and contributors or stressors contributing to the impairments are as follows:

Table 1.09. Impaired waters of the CCWD

Waterbody (AUID)	Year Listed or Proposed	Impaired Beneficial Use	Impairment	Aquatic Life Stressor(s)
Coon Creek (07010206-530)	2006	Aquatic Life	Macroinvertebrates	TSS, TP, Poor Habitat, Altered Hydrology, DO
	2022	Aquatic Life	Fish	
	2024	Aquatic Life	Total Suspended Solids	
	2024	Aquatic Life	Dissolved Oxygen	
	2014	Aquatic Recreation	*E. coli*	
Ditch 11 (07010206-756)	2022	Aquatic Life	Macroinvertebrates	TP, Poor Habitat, Altered Hydrology, DO
	2024	Aquatic Life	Dissolved Oxygen	
	2024	Aquatic Recreation	*E. coli*	
Ditch 58 (07010206-636)	2024	Aquatic Recreation	*E. coli*	
Sand Creek (07010206-558)	2006	Aquatic Life	Macroinvertebrates	TSS, TP, Poor Habitat, Altered Hydrology
	2024	Aquatic Life	Fish	
	2016	Aquatic Recreation	*E. coli*	
Ditch 41-4 (07010206-765)	2024	Aquatic Recreation	*E. coli*	
Pleasure Creek (07010206-594)	2006	Aquatic Life	Macroinvertebrates	TSS, TP, Poor Habitat, Chlorides
	2024	Aquatic Life	Chlorides	
	2014	Aquatic Recreation	*E. coli*	
Springbrook Creek (07010206-557)	2006	Aquatic Life	Macroinvertebrates	TP, Poor Habitat, Altered Hydrology, Chlorides
	2024	Aquatic Life	Chlorides	
	2014	Aquatic Recreation	*E. coli*	
Mississippi River (07010206-805)	1998	Aquatic Consumption	Mercury in fish tissue	
	2002	Aquatic Consumption	PCBs in fish tissue	
	2006	Aquatic Recreation	Fecal coliform	
	2016	Aquatic Life	Nutrients (TP)	TP
Crooked Lake (02-0084-00)	2008	Aquatic Consumption	Mercury in fish tissue	
Ham Lake (02-0053-00)	2008	Aquatic Consumption	Mercury in fish tissue	
Laddie Lake (02-0072-00)	2024	Aquatic Life	Chlorides	Chlorides

Some stressors and impairments respond easily to filtration and other best management practices. Other impairments such as altered hydrology and poor habitat will require considerable time to evolve and replace infrastructure and land uses to truly address the landscape process contributing to the problem. Chloride and contaminants of emerging concerns present unique problems. Currently, no one at the Federal, state or local levels has identified an efficient or effective approach to either mitigate or eliminate that stressor.

The stressors and impairments affecting the biological impairments of aquatic life and fisheries are the primary reasons why the CCWD ranks low in watershed condition when all functions are considered equally. Biological function will be difficult to cost effectively improve to a self-sustaining landscape process and an inexpensive beneficial use to sustain.

The cumulative number of impairments applicable to the CCWD has grown steadily from one in 1998 to 26 in 2024. The recent increase in impairments since 2020 is primarily due to the adoption and implementation of Tiered Aquatic Life Use (TALU) standards for modified systems by the MPCA starting in 2016 and the availability of additional chloride data. The CCWD anticipates additional impairments, required TMDL studies, and required pollutant reduction targets as the TALU framework is applied to additional modified stream/ditch reaches within the watershed. Additional impairments and requirements may also arise due to increasing concentrations of chlorides. The concentrations of other pollutant stressors (E. coli, TSS, TP) are stable or improving. Formal assessment of waters within the Mississippi River-Twin Cities watershed occurs on a 10-year rotating schedule, with the next assessment planned in 2030.

Chloride Pollution

Chloride pollution, largely from de-icing activities, threatens local freshwater ecosystems and groundwater resources due to its toxicity to aquatic life and persistence in the environment. As part of the 2016 Twin Cities Metropolitan Area Chloride Total Maximum Daily Load study, three streams within the watershed were found to be at high-risk for a chloride impairment, but the extent and severity of chloride pollution was unknown given the scarcity of monitoring data, particularly in winter and early spring. In 2019, the CCWD completed a winter chloride monitoring study and added chlorides to the list of parameters annually monitored during the growing season. New data from these efforts indicate clear exceedances of both the chronic and acute water quality standards for chlorides in the southern third of the watershed. This data is consistent with the proposed 2024 impairment listings for Pleasure Creek, Springbrook Creek, and Laddie Lake. Sand Creek presently meets water quality standards but is at high risk for impairment given sampling results within 10% of the chronic standard and an increasing trend in chloride concentrations.

Most lakes in the watershed meet the state chloride standards and need protection efforts to maintain favorable conditions. Laddie Lake is an exception, with four exceedances of the chronic standard during winter/spring of 2019. Laddie Lake generally meet standards during the growing season which indicates a high rate of flushing. Of the six streams monitored for chlorides within the watershed, only Coon Creek and Sand Creek have concentrations below the state chronic standard at all sites monitored. Regular exceedances of the chronic standard are observed in Pleasure, Springbrook, Stonybrook, and Oak Glen creeks, with three exceedances of the acute toxicity standard measured in March 2019 in Springbrook and Oak Glen Creeks. Results from Sand Creek indicate this system is at high risk of a future impairment.

Notably, except for samples taken during snowmelt, chloride concentrations are greater during baseflow than during storm events, indicating widespread contamination of the shallow groundwater that feeds streams. Given that a detailed source assessment has not yet been conducted, the magnitude of contributions from municipal and private winter maintenance activities, groundwater inputs, and other sources is unclear. Regardless, given the permanent nature of chloride pollution, water quality improvements can only be realized via source reduction (applying less salt) and dilution over time. Desalination technologies such as reverse osmosis exist but are too costly and impractical to employ for widespread environmental remediation purposes. There are competing demands between public safety, citizen expectations, and aquatic life that will require innovative technologies, policy and behavior change, and acceptance to find an agreeable solution.

As a result of these competing demands, the MPCA has established a Smart Salting program that provides commercial, public, and private applicators with best practices to reduce the amount of excess salt used on roadways and sidewalks. More information on training is found here: Smart Salting training | Minnesota Pollution Control Agency (state.mn.us).

1.3.5 Step 5: Identify Land Use and Restoration Opportunities

Key Inputs:

The following figures summarize the review of flooding and water quality issues and natural resources in subwatersheds in the watershed.

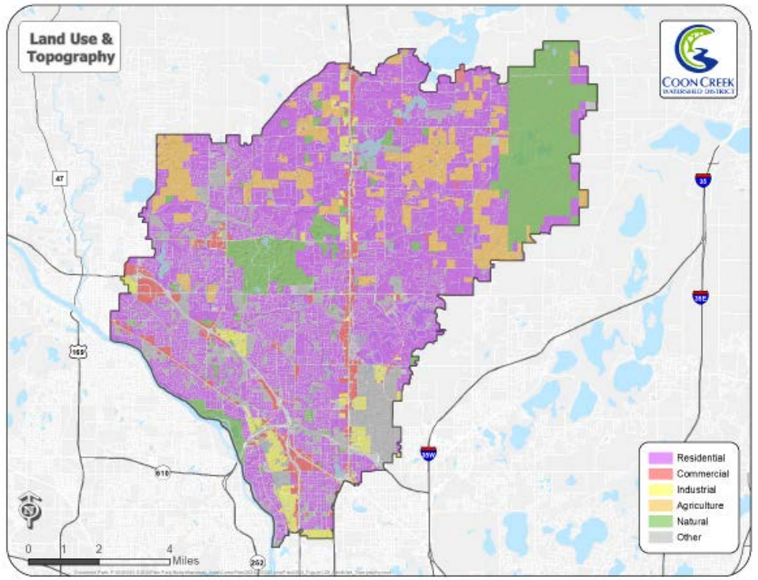


Figure 1.32. Land use and topography in the watershed

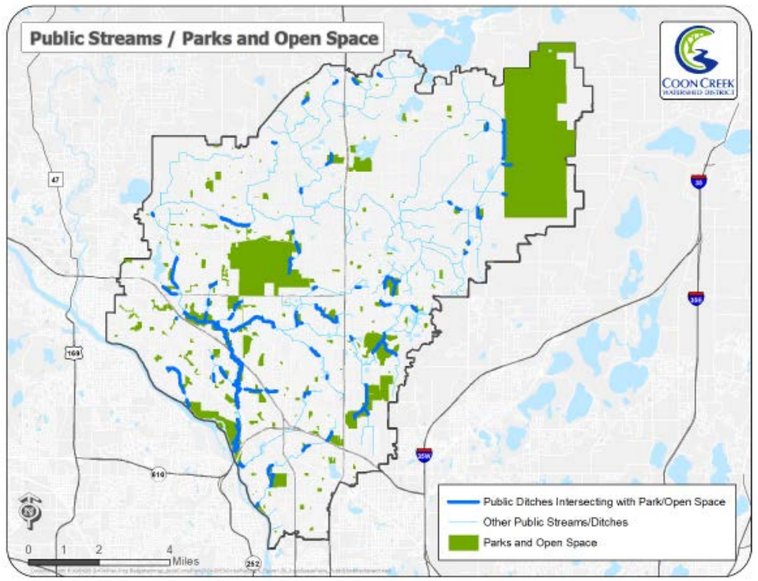


Figure 1.33. Public ditch location relative to park and open spaces in the watershed

Key Outputs:

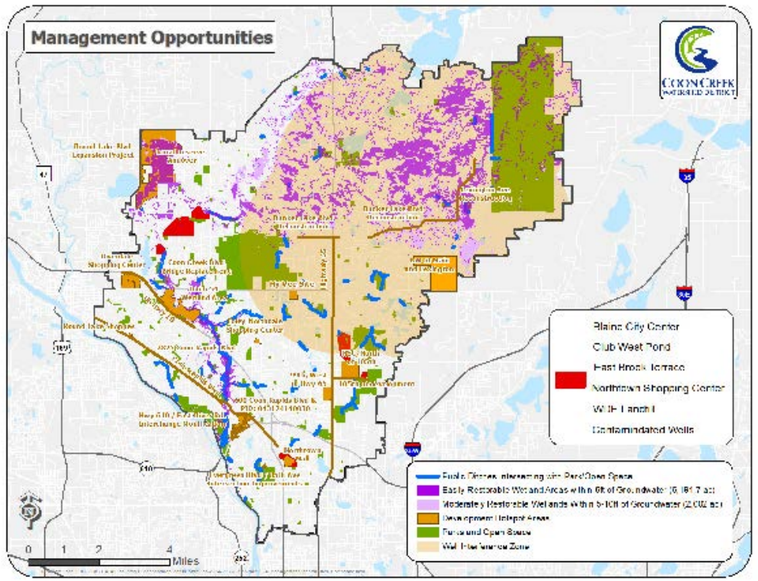


Figure 1.34. Areas of management opportunities in the watershed

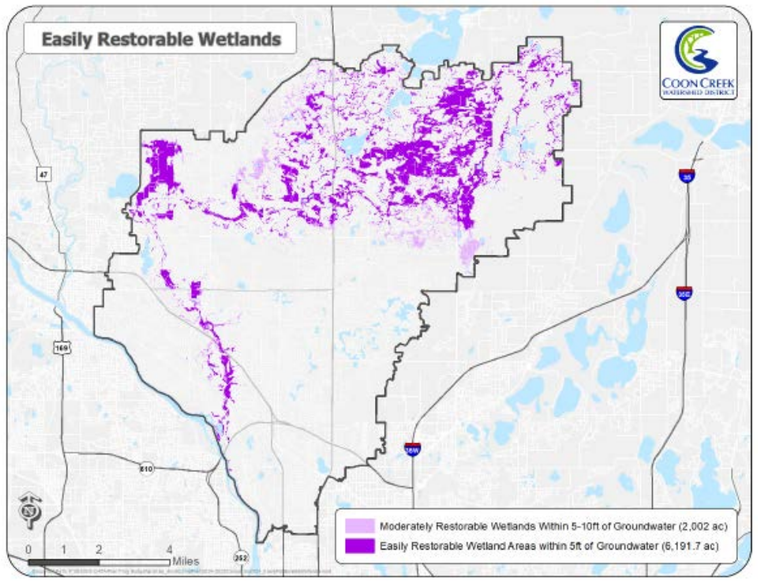


Figure 1.35. Restorable wetlands in the watershed

1.3.6 Step 6: Identify High Priority Sub-Watersheds

Key Inputs:

Prioritization is the process of selecting subwatersheds, water management problems, or issues to be addressed. Prioritization responds to the mission, goals, and objectives which are being collectively pursued by the CCWD and collaborators and must be part of a dynamic process. Prioritization systematically analyzes and prioritizes targets and matches appropriate actions to those subwaters of problems to create specific desired effects. These effects will aim to achieve the state and federal objectives, account for operational requirements, capabilities, and the results of previous assessments.

The emphasis of this final step is on identifying subwatersheds or problem areas that:

- Once addressed will have greater benefits on improving problems or issues downstream.
- Create or contribute to water management problems or issues.

A subset of these areas are: subwatersheds, conditions and/or locations which must be addressed to achieve the CCWD's mission, goals, and objectives. Prioritization links the desired effects to actions and tasks. The prioritization process can be generally grouped into two categories:

- Deliberate Prioritization: addresses anticipated or known areas, circumstances or problems within the watershed and timeframe (2024-2033). This process normally supports the CCWD and collaborator budgeting and annual planning efforts and is consistent with the Comprehensive Plan. (M.S 103B and 103D and M.R. 8410 focus on actions within the ten-year period of an adopted plan).
- Dynamic Prioritization: pursues priorities that were not included in the deliberate targeting process, possibly because they were not known, were poorly understood, or not initially selected. Dynamic prioritization is normally employed in current operations planning because the nature and time frame associated with current operations (usually the current budget year) typically requires more immediate responsiveness compared to deliberate targeting.

The process used by the CCWD involves four steps:

1. **High Value:** The District operates under a multiple use approach where all beneficial uses of water a given equal weight in decision making. However, while all uses are equal, some uses are more preferred by the public and professional water managers in the watershed. The survey results of preferred beneficial uses is listed in table 1.10.

Table 1.10. Surveyed preference of beneficial uses of water resources in the watershed

Ensure Provision of	Ensure Protection from
Protection of drinking water supplies	Flooding
Fish & wildlife habitat	Impacts due to high infiltration rates
Aquatic life	Landslides & mass wasting
Agriculture	Steep slopes
Aesthetic enjoyment	
Recreational use	
Industrial use	
Navigation	

2. **Detect:** Is what has been presented through most this chapter

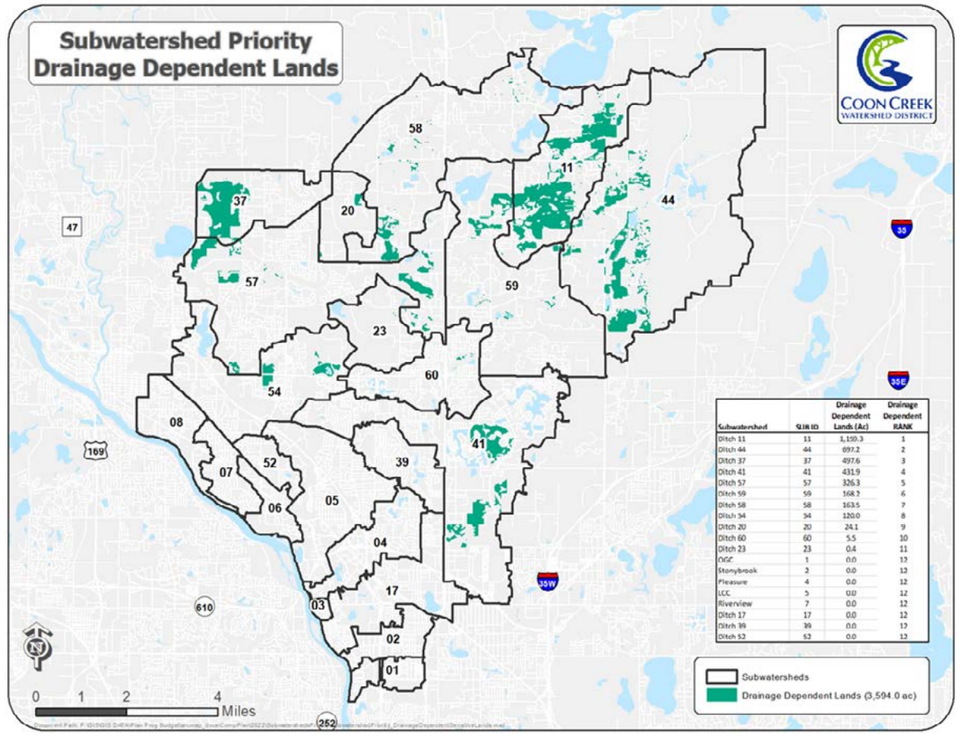


Figure 1.36. Drainage dependent lands in the watershed

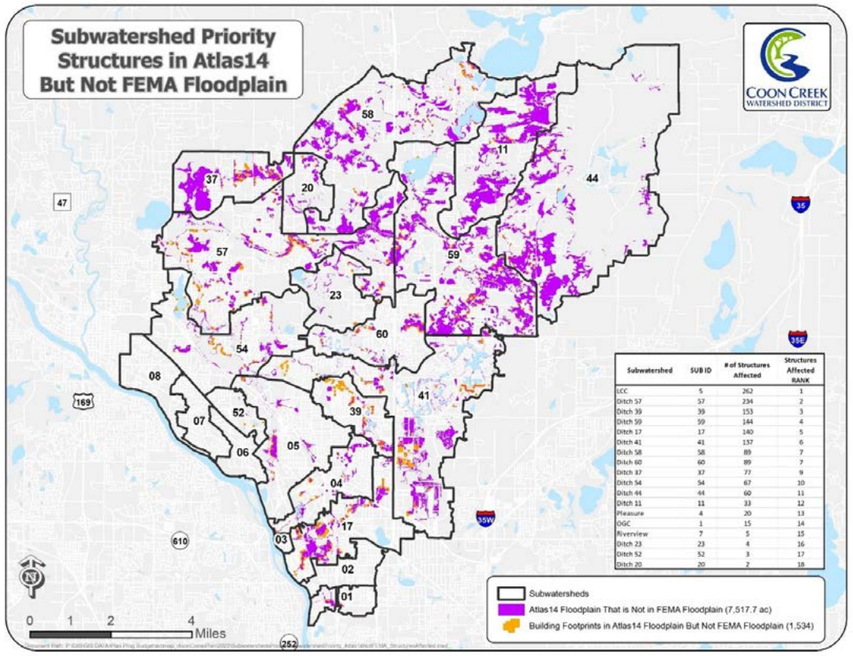


Figure 1.37. Structures modeled in Atlas-14 updated floodplain

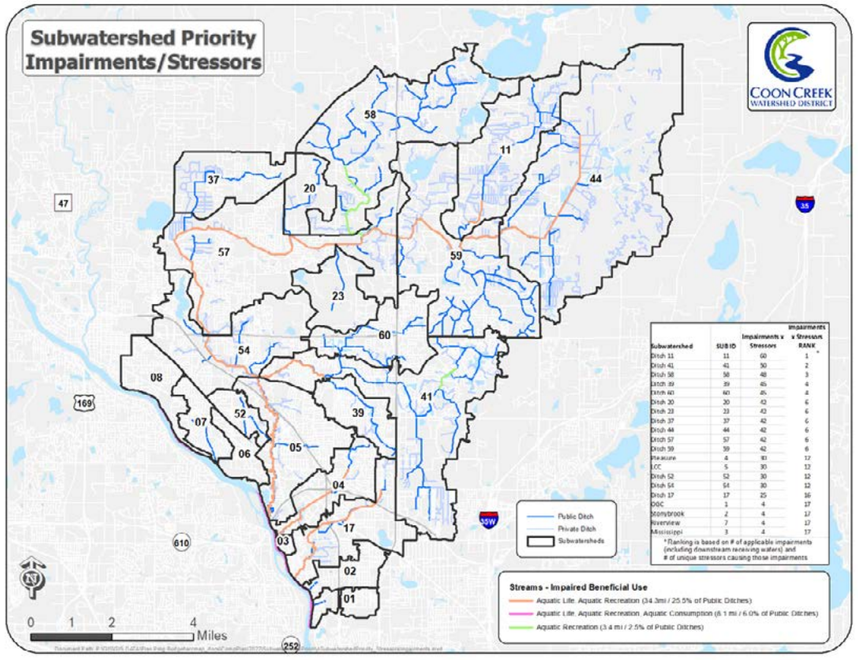


Figure 1.38. Subwatersheds mapped with impairments and identified stressors

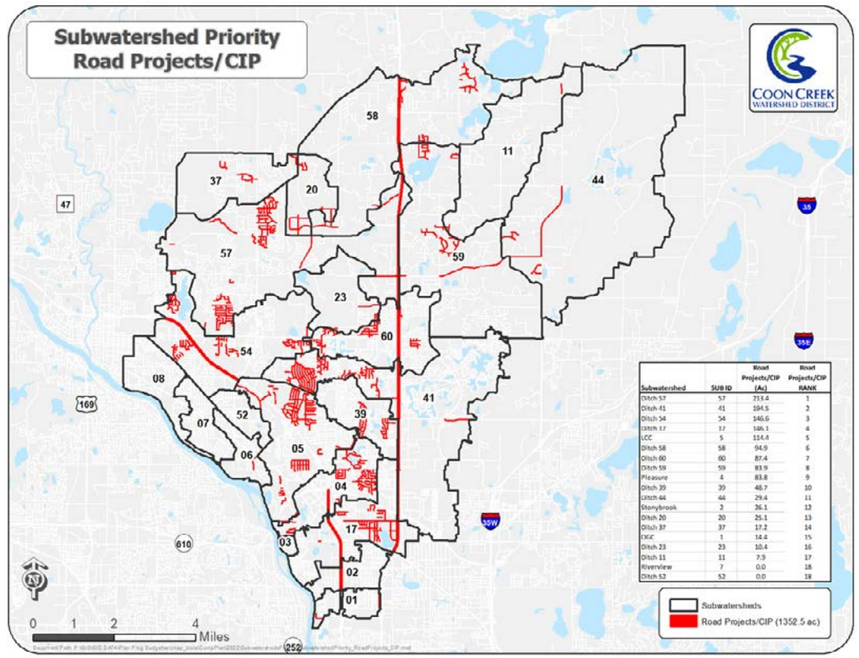


Figure 1.39. Road project opportunities listed in Cities' CIPs

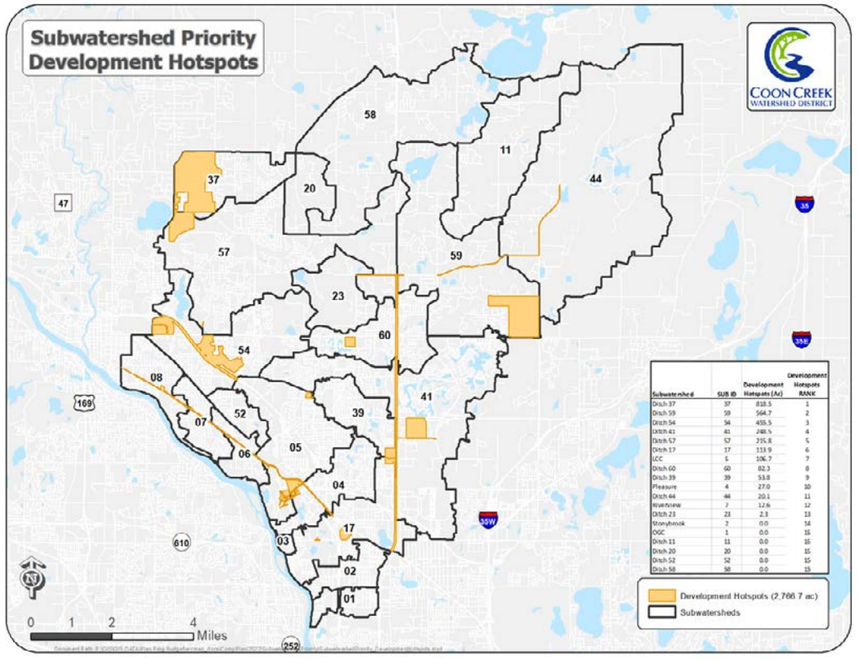


Figure 1.40. Active and anticipated development hotspots in the watershed

Table 1.11 represents the output of the subwatershed prioritization analysis discussed in this section. More detailed subwatershed plans will be conducted for each subwatershed in the CCWD beginning with the highest priority subwatershed first that are not already completed. The Springbrook, Pleasure, and Oak Glen Creek subwatershed plans have already been completed. The subwatershed plans will be revisited approximately every 10 years for a major update.

Table 1.11. Estimated Subwatershed Plan Schedule Based on Priority of Subwatershed.

Subwatershed	Estimated year of Subwatershed Plan Initiation	LGUs Involved									
		Andover	ACHD	Blaine	CCWD	Columbus	Coon Rapids	Fridley	Ham Lake	SLP	State Highway
Ditch 37	2024	x	x		x						
Ditch 39	2024		x	x	x		x				x
Ditch 60	2024		x	x	x		x		x		x
Ditch 41	2024-2025		x	x	x		x				x
Stonybrook	2024-2025		x	x	x			x		x	x
Ditch 52	2025		x		x		x				
Lower CC	2026		x	x	x		x				x
Ditch 58	2027	x	x		x				x		x
Ditch 57	2028-2030	x	x	x	x		x		x		x
Ditch 11	2028		x		x				x		
Ditch 54	2029-2030	x	x		x		x				x
Ditch 20	2031	x			x						
Ditch 59	2031		x		x				x		x
Ditch 23	2032		x	x			x		x		
Ditch 44	2032		x	x	x	x			x		
Ditch 39	2033			x	x		x				x
Oak Glen	2033	x	x		x			x			x
Pleasure	2033		x	x	x		x				x
Springbrook	2033		x	x	x		x	x		x	x

1.4 Strategic Contexts of Future Management

Water and water management in 2024-2034 cannot be understood by the simple identification of a set of individual trends and conditions. Instead, the intersection and interaction of many discrete trends will ultimately change the character of future problems, issues, and concerns and highlight the reason why water resource managers may be called upon to address them. Water management in 2024-2034 is likely to be driven by five contexts that are combinations of the trends and conditions previously discussed. Each of these future strategic contexts creates a troubling problem space for water managers. These future strategic contexts were adapted from a Joint Chiefs of Staff report titled "Joint Operating Environment 2035". They include:

- Ideological Competition: Irreconcilable ideas communicated and promoted by identity networks through overt and disruptive actions.
- Threats to Local Water Management Authority: Encroachment, erosion or disregard of laws, rules and investments that provide the context and medium on which the state and local economies operate through coercion.
- Antagonistic Geopolitical Balancing: Increasingly ambitious governmental and nongovernmental units maximizing their own influence while actively limiting the ability to manage and protect the water resource.
- Disruption of the Watershed or Subwatershed Commons: Denial or compulsion of access to resources that are essentially unregulated but available to all.
- Shattered and Reordered Efforts: Agencies, groups unable to cope with internal political fractures, environmental stressors, or deliberate external interference.

Each future strategic context includes elements of contested norms and persistent disorder. Their relative importance will vary depending on the impact and risk of the problems, issues and concerns. Dissatisfaction with the current set of federal and state rules, priorities, and requirements will cause revisionist actors to make and enforce their own. Meanwhile, the loss of legitimacy or capability by state agencies will permit actors to effectively use political coercion in pursuit of power or to further their beliefs.

Future strategic contexts should not be viewed in isolation. The CCWD and other local water management agencies will continue to operate across multiple contexts at any given time. Additionally, they are likely to encounter escalating situations characterized by sudden rapid transitions between contexts. Together, the contexts support the development of integrated operational approaches to specific water management problems – particularly as actual problems, issues, and concerns develop and pose challenges across several contexts.

The challenges described above are not necessarily preferred nor are they inevitable. Through information, outreach, engagement and education, the CCWD can actively and sometimes inadvertently, influence how trends and conditions unfold. Therefore successful application of water management money, authority, and experience will be closely linked to the collaborative ability to understand the impact of CCWD management priorities, projects and programs in the evolving environment. The future strategic contexts will be explained in more detail below.

1.4.1 Ideological Competition

Ideologies are a set of principles upon which a group legitimizes its claim to power, combined with the goals (societal, philosophical, economic) they purport to pursue. Ideologies become a strategic matter for the watershed when specific ideas are paired with disruptive tactics and coercion against a resource's capability and capacity for sustained use. The purpose of conducting policy and management through disruptive means is:

- To contest rival approaches and priority sets for legitimacy.
- To contend for other allegiances of local populations
- To motivate like-minded followers to participate in political action – sometimes, but not always disruptively.
- To construct new political arrangements

By 2034, the CCWD and other local managers will confront identity networks that are constructed largely online, reach beyond the CCWD boundary, and are capable of challenging federal and state authority over water resources.

Within the context, challenges and conflict are likely to occur as identity networks communicate and promote irreconcilable ideas through non-participation and/or refusal to engage in collective problem solving. Although politics always contains an ideological component, the expansion of groups motivated by like-minded individuals who are willing to engage local government as a disruptive force to further a shared cause will amplify the intensity and scope of ideological competition by 2034. Identity networks will become increasingly more capable of reaching out locally and regionally to express diverse beliefs, including economic or environmental consciousness and social change. This will be achieved through disruption and or grid lock of governing and administrative systems.

Using an array of multimedia capabilities and broad access to the internet, groups will be able to mobilize, connect, and coordinate over wider, non-contiguous areas. The same information environment that allows ideas to be shared widely will also permit groups to form, plan, and conduct campaigns more rapidly, and in more coherent and sustained ways. Furthermore, new means to encrypt communications will securely connect large numbers of people to respond and rally around an issue.

Extreme ideological competition at all levels will likely involve distributed identity networks and selectively mirroring their governance or management function such as taxation or regulation. Some identity networks may not seek elected office of government administration, but to avoid it – making their operating environment safe from illegal activities such as pollution.

Future local water management will confront a range of water management problems, issues and concerns that will surface or illicit strongly held ideas and beliefs through passionate and forceful means. The most probable resistance will continue to be centered on identity networks advocating simple but radically different interpretations of law, social, or "American" or "environmental" norms. The identity networks will reject established practices and programs, be opposed to continued state or Federal agency involvement in the issue, and pursue an undefined ideal. These groups will rely on the political activation of both middle-class professionals and disaffected youth and individuals.

The future operational environment may also witness the emergence of appeals to violence. Extreme libertarians, separatists, local isolationists, or environmental groups may embrace direct or violent action in concert with computer network attacks or other disruptions in support of radical political or social change.

This context also has an agency level component, as several organizations and programs guide and direct identity networks, including proxies such as advocacy groups, to further their own interests and avoid overt legal or political engagement. Many prescriptive, rule driven efforts can also perceive the array of technical, social and political organizations that are part of the operating environment as complicating, destabilizing and threatening. Each appears to fear being changed or influenced through outside evidence, both peaceful or advocacy based, and often seem to believe that other organizations are engaging in ideological competition and pose a threat to the stability of their program.

Water management within this context will need to focus on the ability of identity networks to use ideas to coherently manipulate public perceptions, emotions, feelings, behaviors and the decisions of their target audiences. These ideas will be transmitted and reinforced through a combination of narratives, strategic communication techniques, propaganda, and the tailored application of political ambushes, turn outs and protests and other overt and covert political activity. The purpose of these efforts is to change the behavior of these target audiences, to isolate them from outside support and information, and deter the involvement of water resource managers through combined or collaborative effort.

The asymmetry at play in this context is that while identity networks have few visible targets to defend, water managers have expensive and hard-to-replace infrastructure and culturally or politically important programs that can easily be attacked or disrupted. As such, it can be difficult to deter adversaries in a political arena. Additionally, these networks may be able to force water managers to allow or accommodate a use or dedicate increasingly scares resources on expensive management or mitigation measures, rather than manage toward a sustainable condition.

1.4.2 Threats to Local Water Management Authority

By 2034 local water managers will confront an increasing number of state and non-state actors with the motivation and capabilities to adversely use and affect the water resource and/or the progress made in restoring multiple beneficial uses through political or economic coercion.

The CCWD consists of all or parts of 7 municipalities; 6 Municipal Separate Strom Sewer Systems (MS4s); 3 Housing and Redevelopment Authorities; 2 special districts and the Anoka County Highway Department. The watershed has experienced heavy use and modification and has worked hard for approximately 130 years to provide opportunities for agricultural livelihoods and later light industry and single-family homes. All these factors underscore the enduring need for water management and operational approaches to physically defend and protect both the public health, safety and welfare and the water and related resources against a wide variety of direct and indirect activities.

Within this context, legal and political conflict are likely to occur as groups and individuals become increasingly capable and willing to de-fund, reallocate, or disregard existing and established services as well as the diversity of tastes, preferences and needs of the public. Today, managing water resources focuses on placing treatments and mitigation as close as possible

to "Keep water on the land", to reassure the public, provide a layered defense of the water resource, monitoring condition and performance and establish credible deterrence from mistakes and externalities. Furthermore, it also includes support for public authorities in case of natural disaster response and clean up.

Local water managers face a future water management environment in which it must maintain the capacity to do these things while also preparing for problems, issues and concerns that will emerge that place the public at risk. Within this context, the CCWD and other water managers must simultaneously protect against an increasing range of potential new threats and impacts to improvements made over the past 10 to 20 years, while also encouraging the greatest degree of autonomy within the Federal and state water management. Federal and state water management often perceives freedom and autonomy of individuals and organizations as a threat.

Future local water management will confront a range of problems, issues and concerns that will either originate or extend beyond the CCWD's boundaries. Over the next two decades, there will be a significant increase in both groundwater driven issues and issues and concerns about the Mississippi River. EPA and MPCA will update the NPDES permits .

The purpose of state involvement in water planning and program development is to influence key resources and processes at the local level that present a source of conflict or a risk to the greater public health, safety, and welfare. Although the risk to public health and safety or critical economic resources through depletion, externalities, or protection is often addressed through actions at the Federal, state, and local levels the potential threats have not gone away. More powerful storms and antecedent conditions, such as land use or infrastructure, may devastate specific areas resulting in larger economic and service consequences.

The collaborative efforts of MS4s and others will need an array of capabilities to counter the "testing" strategies of those opposing a comprehensive approach to water resource management. These will include legislative awareness and a layered regulatory response that is clearly and closely connected to the physical consequences and costs of misuse of the resource. Creating these capabilities will naturally increase the incentives for local water managers to divert scarce resources away from their own watershed wide restoration efforts to focus on defense and protection measures.

Adversaries or political opponents may also attempt to disrupt the ability of the CCWD to conduct projects and programs by seeking to limit its financial or regulatory authority or its freedom to act through additional notification, disclosure, and review requirements.

In the future, water managers may find themselves confronting political and economic extremists operating within the watershed enabled by select local politics or refusal to intervene. This allows those interests to self-generate efforts, overwhelm local staff, and perhaps sustain small-scall efforts to defund, repeal, or not enforce essential activities and programs.

The basic asymmetry at play is that adversaries or ideologically driven opponents may be able to credibly threaten, reverse, delay and or increase the cost of water management. Adversaries will threaten the watershed, not with physical harm or system degradation, but rather to change the decision process of leaders or the public's appetite for water management. These efforts may appear or be purposely ambiguous in nature to intentionally complicate the collaborative ability to effectively respond.

No single agency controls or directs all water resource concerns. Even large and powerful agencies like the Environmental Protection Agency cannot entirely control or dictate the course of water resource management. Historically, powerful agencies have always encountered resistance to their strategic objectives and attempts to restrict the scope of their authority and means of action. This resistance may include the fielding of deterrent capabilities, such as information, lobbyists, or the development of alternative alliances or partnerships. Resistance may also take the form of initiatives such as drilling more wells, development of critical or sensitive lands, ideological shifts or claims rooted in propaganda. By 2034, water managers could find themselves confronted by governmental or non-governmental organizations with diverging, conflicting, or opposing interests who may form coalitions to coordinate resistance to the increasing requirements, costs, and scarcity of water resource management concerns.

Increasingly ambitious governmental and nongovernmental units maximizing their own influence while actively limiting the ability to manage and protect the water resource.

The management operating space here will be marked by encounters in a zone between regulation and intergovernmental coordination. Local water managers must be able to conduct many different types of programs and projects within that zone. Non-collaborators are likely to employ strategies using a confusing combination of direct and indirect approaches to contest water management interests. These approaches will be designed to avoid overt commitment to water management operations, minimize the risk of escalation, provide plausible deniability, and avoid the costs of direct involvement. These approaches may be characterized by:

- Credible issues or concerns about key or other resources within or near their jurisdiction.
- An intensification of uncooperating by proxy.
- The employment of new or other technologically advanced management capabilities.

Further, these conflicts will feature financial or legal deterrence in support of conventional management operations and a desire to build 'off ramps' to avoid escalation with a state or Federal agency.

Several opponents of state or Federal efforts will be able to threaten and quickly exploit key resources, such as ground water, or sensitive lands near their areas of interest using conventional methods spearheaded by specialized consultants or staff. Once they are in control or have access to a resource, these entities will then use sophisticated and layered corporate legal defenses, legislative lobbying, and positioning to hold and protect these lands or accesses while simultaneously keeping the managing agencies at a distance.

1.4.3 Disrupted Common Resources

The economic prosperity of the watershed has depended on two largely uncontested abilities. The first is the drainage system and the ability to "get water off the land" so that it could be farmed and later developed for housing. The second is the easy and convenient access to ground water which enabled human settlement to occur away from urban services relatively inexpensively. Relatively open and accessible supply of water and the management of that water to prevent or reduce flooding is the foundation of the current economy. By 2034, local water managers will find themselves challenged in repairing channels for drainage, flood prevention and flood mitigation, and access to drinking water. This will occur as regional and state agencies increase standards, lengthening planning and preparation time and increasing uncertainty.

Denial or compulsion of access to resources that are essentially unregulated but available to all.

By 2034, access to and management of "common resources" such as ground water, will translate into a significant economic advantage, and the ability to access and utilize these resources will be central to the design of local governmental organizations. The cumulative effect of broader access into the common resources may be to slow, hinder, or erode their use by cities adjacent to other water supplies, such as the Mississippi River for economic and political purposes. In the future, access to the common resources may be disrupted by a combination of:

- active opposition to existing norms
- the maturation of anti-access and area denial capabilities
- the development or revitalization of new authorities or enforcement directions to control and manage these resources

The implications of increasing abilities to both see and utilize common property resources will be particularly acute in ground water. Local water managers can expect outside groups or other cities to increasingly challenge applications for wells and appropriations. In similar circumstances, applications and approvals were accompanied by water conservation measures, modifications to plumbing and/or allotments or allocations. Additionally, some users may position advanced facilities or allocations to both secure future options and deny actions or allocations of others.

The near-uncontested access to groundwater has provided cities with a high degree of freedom to grow and provide reliable and inexpensive water for domestic, agricultural, and commercial use. However, the dynamic nature and yields of both the surficial and bed rock aquifers make it very unlikely that future appropriations will occur uncontested. The next two decades will see increased challenges from increasingly sophisticated oppositions.

Like sanitary capacity and quotas, access and inexpensive use of common resources is central to influencing economic development. Conflicts over common resources will feature repeated attempts by adversaries to mutually disrupt one another's access or ability to access to water.

1.4.4 Shattered and Reordered Efforts

The inability of agencies, programs, and groups to address water resource problems, issues and concerns for the long run or provide stable water resource management will continue to be a significant hindrance and cause of conflict in the future. Stressed by the pace of economic, technical, regulatory, geographic change, and insufficient margins, these organizations may be unable to take advantage of funding or regulatory opportunities within the water resource sector. A lack of education, infrastructure, and political or philosophical disposition may preclude participation in some cases. Authoritarian or rigid thinking governments may purposely attempt to isolate its people from external influence. Furthermore, local populations will able to readily contrast the failure of their agencies, programs, or groups, with economic opportunities or actions. By 2034, local water management will confront a steady decline in the legitimacy of some authorities unable or unwilling to address water resource concerns within their scope of authority.

Agencies, groups unable to cope with internal political fractures, environmental stressors, or deliberate external interference.

A wide range of dissenters, opponents, isolationists, and other organizations are likely to exploit failures by state and Federal agencies. This environment will include a shifting array of alliances featuring trans-local political groups (left and right), cyber activist networks, private consulting firms, and super-empowered individuals. New forms of "shadow" governance will likely emerge where activities that water management agencies see as illegal or poor stewardship begin to fulfill citizens' needs, and problematically, are seen as legitimate by the local population. Further adversely affecting the efforts of the water management agencies.

Areas who identify with a laissez-faire perspective may become a source of power for these groups by linking them to wider networks as they seek to seize control. Minimum or ungoverned zones are likely to permit the development of new or expanded water and land use, including untreated storm water flows or unregulated groundwater appropriation. In some cases, open intervention, including intervention by the state or the courts may occur and lead to large-scale, intergovernmental conflict.

Local water managers must be prepared to assist in developing the capacity of partner organizations that are most likely to be dissuaded or redirected by variant perspectives so that watershed or state agency efforts do not have to respond to every crisis. If and when conflict occurs between a partner LGU other local water managers are not likely to initially engage or allocate significant resources. In these situations, the combined efforts of affected water managers will be called upon to assist the struggling organization by working to contain overcome depreciative efforts. Facilitating the local capacity to legitimately manage water and be resilient in the face of external and internal shocks and demands will require long-term, clearly understood commitments.

1.4.5 Summary

This section described five individual Contexts of Future management. Each context illustrates an aspect of water management in 2034, the nature of potential problems, and the likely management operating space. Looking across the contexts strongly suggests the local water managers within the CCWD will engage in simultaneous, trans-boundary problems, issues, and concerns involving a broad range of actors. Many problems, issues, and concerns will selectively contest or support state and federal rules and norms while also encouraging or disrupting social, economic, and political order based on the scope of their strategic interests and cultural perspectives. Moreover, these problems, issues and concerns are likely to involve and require advanced monitoring and analysis that could potentially lead to increased limitations and regulations.

These large and connected problem sets featuring more pervasive and utilitarian uses will place difficult demands on water managers. The collaborative management will be challenged to both protect the productive capacity of the resource as currently conceived and to resist the spread and intensification of political and social disorder. The application and enforcement of current accepted rules, norms, best practices, and support for a structured program will be dependent on popular perceptions, attitudes, and broad acceptance of their legitimacy. Across all contexts, the ability to engage with ideas and link direct management to national priorities and good governance will determine the effectiveness and sustainability of collaborative operations.

Individual contexts are not sufficient to fully understand the missions the collaborative local water management will need to conduct in the future. For this reason, the next section describes the full range of likely missions, programs, and activities by linking each context to four enduring strategic goals and four associated high-level management tasks. The intersection of each context with the pairing of strategic goal and supporting task results in a discrete mission that describes what the collaborative management effort may need to do given a specific situation. In reality, the future will not present itself in such an orderly way. Local water management will remain uncertain, variable, and intertwined. Attributes of more than one context may be in play at any given time. However, the linkage of contexts to strategic goals and supporting tasks provides a comprehensive view of the range of local water management missions and how they are likely to evolve through 2034.

1.5 Implications for Local Water Management

The Coon Creek Watershed District will face a wide range of emerging – and often unforeseen – challenges in the future water environment featuring both contested norms and persistent disorder. Legislative and program objectives to address these challenges will be multi-faceted and tailored to a set of circumstances or generalized over the entire state. The CCWD relies on a range of strategic goals to describe the overall terms of State and local financial commitments and articulate an acceptable end state for any strategic water resource initiative, including:

- Adapt to changing conditions: Ensure local water managers can adequately cope with emerging changes in the water resource environment.
- Manage antagonism and articulate and quantify public costs: Discourage changes to the water resource operating environment that are unfavorable to local water management within the watershed.
- Address problems, issues, and concerns and restore capacity: Block and undo changes in the landscape and operating environment that are dangerous or disruptive to the public health, safety, and welfare and decreases the capacity of the watershed to continue to provide beneficial uses.
- Pursue management, rehabilitation, and enforce outcomes: Introduce desired changes to the operating environment that are favorable to the public and the water resource.

These legislative goals suggest differing levels of engagement, commitment, or overall posture by the CCWD and other local water managers. These goals also represent a continuum and may change over time as circumstances or issues evolve. At the low end of this continuum, the CCWD or other local water managers might reactively manage threats to the public or the resource and respond to the consequences of natural disasters. At the high end, the CCWD or other local water managers might proactively solve a problem by imposing standards or requirements.

The role of the CCWD or other local water managers is to apply financial and regulatory power to support the achievement of legislative goals in concert with other elements of governmental power. To effectively pursue this range of goals, the CCWD and other local water managers must conduct four types of management activities, including:

1. Shaping - to assist local water managers with coping and adapting to changed watershed management conditions. To employ efforts to influence the course of events or to mitigate the negative effects of these initiatives or actions. To employ efforts to check the spread of those changes contrary to the local water management mission and control or halt the negative consequences of those changes.
2. Preventing – to prevent the adverse conditions and actions of people or organizations or to impose direct or indirect costs on people or organizations engaged in actions adverse to legislative and watershed goals.
3. Restoring – to improve actions adverse to system function that threaten the public health, safety, or welfare.
4. Informing - to encourage desired changes to the water and related resources and subsequently enforce those outcomes.

To appreciate the breadth and depth of evolving local water management activities, the range of legislative goals and associated water management tasks must be examined across the contexts of the future. The set of evolving legislative goals found in the remainder of this section is specifically derived by examining the intersection of legislative goals and their required and implied tasks identified in the Mission Analysis, The Priorities And Scope identified previously, and the Contexts of Future Management.

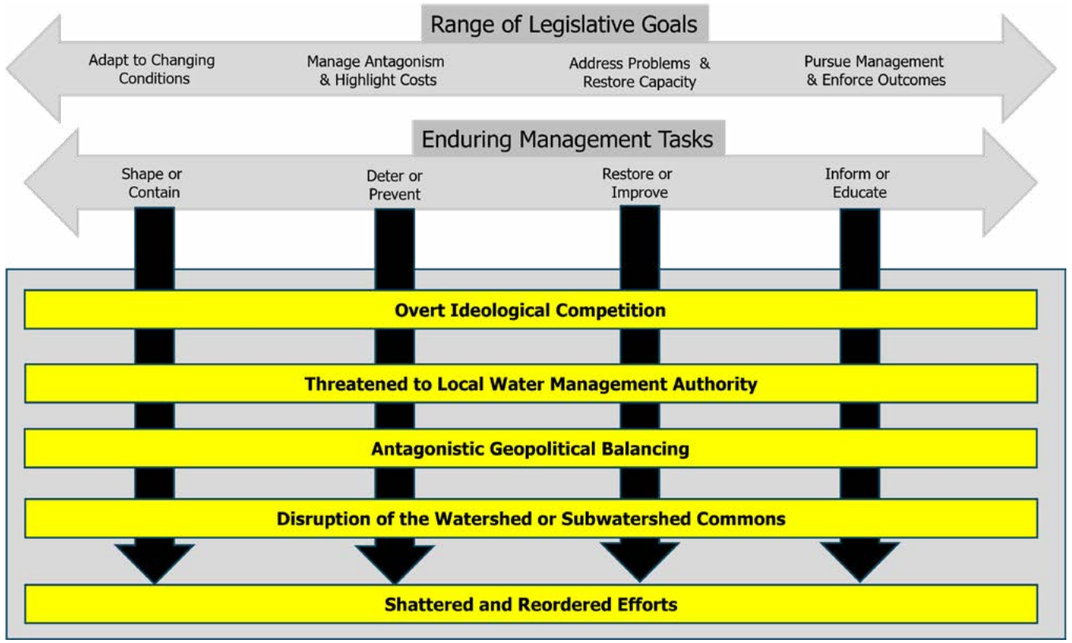


Figure 1.41. Range of essential management tasks across future management contexts

These goals and tasks are not prioritized, nor do they indicate the likelihood that the CCWD and the other local water management organizations will conduct any one of them. However, as a set, the missions provide a basis for a more detailed discussion of operational approaches and capabilities that future of collaborative water resource may require to successfully address contested norms and persistent disorder within the future water management environment.

1.6 Strategic Alternatives

Through the initial public and agency comment the CCWD received and identified five approaches to addressing water resource problems, issues, and concerns:

- Sustainable Management
- Scientific Land Management
- Multiple Use Management
- Integrated Resource Management
- Adaptive Management

Strategy is the practice of reducing a problem or issues' physical capacity and capability to regenerate, and continuing until the goal is achieved. The strategy of a governmental organization is generally based on meeting its legislative obligations and goals. In turn, operations are determined by the needs of the major stakeholders both inside and outside the CCWD.

Strategic alternatives are options that CCWD considers for its direction to achieve its obligations and goals. When setting the organizational direction, capital, materials, and required staff expertise will be considered. Goals will be set based on the availability of resources.

The analysis of strategic alternatives considers the following guidelines that represent operational management considerations in the practice of program and field management of natural and water resources.

- Legitimacy: To maintain legal and moral authority in the conduct of operations. Legitimacy is based on the actual and perceived legality, morality, and rightness of the actions from the perspectives of various stakeholders.
- Goal: Direct every management operation toward a clearly defined, and attainable objective. The ultimate purpose of water resource management is the sustainment of the resource's ability to provide beneficial uses.
- Intent: Is the desired outcome of the approach.
- Operational Approach: Operational approach or concept of operation describes a proposed system concept and how that concept would probably operate within the watershed's operating environment now and over the next ten years. Effective operational approaches allow the CCWD and its collaborators to maximize the use of their financial and human resources by addressing problems, issues, and concerns at a faster pace than they can develop or emerge. It is used to pursue successes, to preserve organizational agility and adaptability, and to reduce risk.

The strategic alternatives were evaluated using the following criteria:

- Feasibility: Alternative accomplishes the goal and goals within the established time, space, and resource limitations.
- Acceptability: Alternative balances the cost and risk with the advantages gained.
- Suitability: Accomplishes the goal and essential tasks within the legislative intent and planning guidance.
- Distinguishability: The approach is clear, tailored to the situation, differs significantly from other alternatives in terms of lines of organization, lines of effort, phasing, and use of financial reserves and water resource resilience.
- Completeness: The approach addresses the following information:

1.6.1 Sustainable Management:

Legitimacy: The comments from the DNR appeared to advocate a sustainable management approach.

Goal: The goal is to use water in a way that meets current ecological, social, and economic needs without compromising the ability to meet those needs in the future.

Intent: The intent is to improve economies of scale through scaled harmonization and thus reduce dependence on environmental subsidies such as flood control structure, fertilizer.

Operational Approach: Under sustainable management, in its purest form, the focus of watershed management would be on the preservation of the environment and ensuring the optimal functioning of the ecosystem that is the watershed. Sustainment would occur when the resource becomes largely self-perpetuating. Beneficial use would be that margin above or extra not needed for autopoiesis of the natural system.

Table 1.12. Analysis - sustainable management

Implementation	
Advantages	**Disadvantages**
• Seek to convert program costs to revenue sources and/or improved cost control. • Ultimately it would result in an improvement in the volume of operation and improved economies of scale.	• Small degree of compatibility with federal and state strategies • Increased risk due to extension of CCWD operations
Analysis	
Advantages	**Disadvantages**
• Promotes a healthy and functionally balanced watershed. • Protects natural resources from degradation and the inability to regenerate. • Can strengthen community bonds. • Ensures a better life for present and future generations. • Helps in achieving long term economic growth.	• It is focused on the long term where perceived risks and uncertainties are compounded by the indirect, intangible and abstract nature of environmental and water resource goods and services. • It results in higher operating costs than the cost of non-environmentally friendly operations. • In the short term, the commitment to manage sustainably has been fragile and is easily derailed by the realities of physical, social, political or economic emergencies and disasters where decisions are driven by expediency and convenience. • Managing sustainably requires a change mentally in how problems and options are perceived and addressed. • In the short term, it has been linked to higher unemployment, at least in the variable short term.

Table 1.13. Evaluation - sustainable management

Criteria	Evaluation	Reason
Feasible	No	• Getting there would not be feasible due to cost • Public image of being too "environmental."
Acceptable	No	• Politically vulnerable and unacceptable over next ten years. • The short-term financial and political costs are perceived to be too great.
Suitable	Yes	• Sustaining goods and services has been a natural resource management principle since the 1960's. However, as a management framework it is poor at differentiating identifiable goods and services or addressing the required and essential tasks of the legislature.
Distinguishable	Yes	• While the vision of sustainability is clear, the strategic management tools needed to practically account, budget and make tradeoffs remain in their infancy leaving the approach perceived as more philosophical than practiced approach.
Complete	No	• The approach is vulnerable to not being able to complete critical projects because of differences in doctrine or philosophy. • In addition, sustainment is easily interrupted due to changes in funding and staff (expertise & morale)

1.6.2 Scientific Land Management

Legitimacy: Comments from both the public and the advisory committees indicated a desire for the CCWD to approach watershed management through scientific land management.

Goal: The goal under scientific land management is to maximize efficiency, increase production and repeatability.

Intent: The intent is to concentrate on a single product or service line and do it well.

Operational Approach: Under scientific land management the focus tends to be on increasing or ensuring productivity and profits. It is the origin of most management science and the dominant management paradigm of Federal land management agencies through the 1950's. It is the dominant perspective of agencies such as the Natural Resource Conservation Service (NRCS). Under this approach, water and related resources and facilities are managed, built, or maintained for a single and/or dominant purpose, goal, or function (drainage, retention, detention, conveyances).

Table 1.14. Analysis - scientific land management

Implementation	
Advantages	**Disadvantages**
• Relies on established strengths and competencies. • Relies on increased efficiency with specialization. • Relies on image and reputation among select group or market.	• Vulnerable to demand and product or use life cycle.
Analysis	
Advantages	**Disadvantages**
• Enhanced production. • Ability to account and control. • Reduced cost of production or provision.	• Exploitive in nature and generates externalities (unintended consequences). • Depersonalized/Unsocial/Undemocratic. • Unrealistic. • Expensive-Is reactionary in nature and capital intensive.

Table 1.15. Evaluation - scientific land management

Criteria	Evaluation	Reason
Feasible	No	• Vulnerable to demand and product or use life cycle. • Inconsistent with current state and federal program emphasis • Inconsistent with changes demand and inland use
Acceptable	No	• Tends to be single purpose focused and does not address the integrated nature or complexity of providing or protecting beneficial uses or the landscape processes that the provide those uses or contribute to threats to public health and safety.
Suitable	No	• Focus is single use and Federal & state legislation is multiple use and benefit oriented legislation.
Distinguishable	Yes	• The current management system is deeply influenced by this approach. • Organizational charts of water management organizations and MS4s show clear lines of organization and lines of effort in the form of division, programs and activities. • Current accounting and programming, planning and budgeting schemes provide further distinct identification.
Complete	No	This approach does not adequately or completely address the multiple and integrated nature of either: • The multiple beneficial uses that may exist and be provided in each water resource • The complexity and dynamic nature of a healthy self-referencing water resource system, particularly the physical, chemical and biological interactions account for required preventive, protective, stability and public support the tasks to be performed and conditions to be achieved.

1.6.3 Multiple Use Management

Legitimacy: Multiple use management is an approach that the CCWD has adopted and used in the past. The approach continues to strongly influence CCWD thought and strategy for connecting short-term needs with long-term conservation goals.

Goal: The goal under multiple use management is to manage the resource and its various physical, social, and psychological values so that they are utilized in the combination that will best meet the present and future needs of stakeholders, the citizens of the watershed and downstream.

Intent: The intent is to broaden the management focus while reducing the pressure to collaborate, provide leadership on key issues, and spread risk.

Operational Approach: Multiple use management is the harmonious and coordinated provision of a combination of balanced and diverse resource uses. It considers the long-term needs of future generations and the use of those resources without permanent impairment to landscape processes or the productivity of the land, resource quality, while considering the relative value of the resources and the combination of the use that will provide the greatest overall economic return or greatest output.

Table 1.16. Analysis - multiple use management

Implementation	
Advantages	**Disadvantages**
• Utilization of grant resources. • Spreading risk over several organizations. • Increased revenue streams.	• Organizational behavior and implementation challenges. • Spreading the CCWD too thin and in too many directions, thus stretching both financial and human resources and expertise.
Analysis	
Advantages	**Disadvantages**
• Involves practices that promote a variety of benefits such as water quality, flood control, agricultural drainage, fish and wildlife habitat and recreation.	• Easy to not consider all landscape processes. • Can provide excuses and receive criticisms from varying interests leading to conflict of varying degrees. • Not agile/adaptive: Requires "retooling" both the resource and management programs as other demands and requirements for additional multiple uses are made.

Table 1.17. Evaluation - multiple use management

Criteria	Evaluation	Reason
Feasible	Yes	• Can accomplish the 10-year goal and goals and is responsive to resource limitations because of its short-term scientific land management-based management by objective.
Acceptable	Yes	• It relatively easily accommodates and adapts to various demands, particularly demands for protecting public, health, safety and welfare.
Suitable	Yes	• This approach has had a proven track record of being able to accomplish the legislative mission and perform the essential tasks.
Distinguishable	Yes	• Lines of operation and effort to achieve objectives are clear and easily differentiated from other approaches. While there is a close connection between multiple use management and integrated resource management the lines of effort differ on the reason and expected outcome or effect of management practices.
Complete	Yes	• Utilization of grant resources. • Spreading risk over several organizations. • Increased revenue streams.

1.6.4 Integrated Resource Management

Legitimacy: The approach emerged as one alternative to addressing the requirements of the Federal Land Management Act (FLMA) and is addressed here as a midpoint between sustainable management and multiple use management as defined and described here.

Goal: The goal under integrated resource management is to develop a path forward that meets the renewable resource goals and water quality loading reduction targets.

Intent: The intent is to address the whole and gain economies of scale.

Operational Approach: Integrated resource management emphasizes how different natural components interact with human demands. This system dynamic approach recognizes the watershed as a complex, dynamic system with emergent properties that cannot be measured or rationally evaluated and therefore requires the system be managed as an integrated and undifferentiated whole.

Table 1.18. Analysis - integrated resource management

Implementation	
Advantages	**Disadvantages**
• Improve long-run average cost curve. • Improve economies of scale through integrated public-private programs and activities. • Possible synergy from concentration of subject areas, technologies and service delivery.	• Does not differentiate services provided. • Centralizes technical authority potentially decreasing responsiveness to specific site needs.
Analysis	
Advantages	**Disadvantages**
• Addresses the larger operating context. • Fosters economic growth and sustainable development. • Promotes public participation in governance and management. • Efficiency of financial, material and staff inputs are inherent in the system.	• Management tends to be structurally focused. • Less focus on the intra social relationships, livelihood and local public especially on issues involving collective action. • Participatory bias exists at the policy and legislative levels. • Macro focus on expense of local operations and economy. • Focuses on allocative efficiency at expense of externalities. • Tendency to overlook management externalities and unintended physical, social and managerial consequences.

Table 1.19. Evaluation - integrated resource management

Criteria	Evaluation	Reason
Feasible	Yes	• Addresses larger synergy between management efforts. • Centralizes technical authority potentially decreasing responsiveness to specific site needs.
Acceptable	Yes	• Fosters economic growth. • Promotes public participation in governance and management. • Improve long-run average cost curve. • Improve economies of scale through integrated public-private programs and activities. • Possible synergy from concentration of subject areas, technologies and service delivery.
Suitable	Yes	• This approach provides for accomplishing legislative goals and essential tasks although in practice it is heavily. • Improve long-run average cost curve.
Distinguishable	No	• Lines of effort relative to prioritized, targeted and measurable outcomes are inefficient and ineffective.
Complete	Yes	• Fosters economic growth and sustainable development. • Promotes public participation in governance and management. • Efficiency of financial, material and staff inputs are inherent in the system.

1.6.5 Adaptive Management

Legitimacy: This approach is considered because it is referenced in both federal and state requirements and because the CCWD currently uses a variation of adaptive management.

Goal: The goal under adaptive management is to improve understanding of how the natural resource and the operating environment work to achieve management objectives.

Intent: The intent is to reduce or spread risk and cultivate synergy in understanding and action.

Operational Approach: Adaptive management makes use of situational awareness and assessment, management interventions, and follow up monitoring to promote understanding and improve subsequent decision making. Adaptive management involves the continual learning and adapting through situational awareness and partnerships with other managers, scientists, the public and other stakeholders who continually refine and adapt approaches based on knowledge or changing circumstance.

Table 1.20. Analysis - adaptive management

Implementation	
Advantages	**Disadvantages**
• Relies on collaboration and common understanding. • Possibility of large-scale projects and undertakings whose scope and financial requirements are beyond a single organization. • Provides complimentary benefit of compensating for collaborator strengths and weaknesses. • Political factors.	• Long term, thorough understanding of complete arrangement and contingencies that are likely to impact collaborative effort is needed.
Analysis	
Advantages	**Disadvantages**
• Supported by a science feedback loop so intelligence is defendable, and bias is minimized. • Assists decision makers in meeting their goals by anticipating and adapting to situations, planning restoration, and reducing the risks of setbacks and therefore increasing probability of success.	• Adaptive management is a poor fit for solving problems of intricate complexity, high external influences, long time spas, high structural uncertainty and with low confidence in assessments due to situational dynamics.

Table 1.21. Evaluation - adaptive management

Criteria	Evaluation	Reason
Feasible	Yes	• Supported by a science feedback loop so intelligence is defendable, and bias is minimized. • Assists decision makers in meeting their goals by anticipating and adapting to situations, planning restoration, and reducing the risks of setbacks and therefore increasing probability of success.
Acceptable	Yes	• Relies on collaboration and common understanding.
Suitable	Yes	• Can accomplish legislative goals and essential tasks provided it is anticipatorily focused.
Distinguishable	Yes	• Lines of operation and effort to achieve objectives are clear and easily differentiated from other approaches. While there is a close connection between multiple use management and integrated resource management the lines of effort differ on the reason and expected outcome or effect of management practices.
Complete	Yes	• Utilization of grant resources. • Spreading risk over several organizations. • Increased revenue streams.

1.6.6 Summary of Strategic Alternatives

Table 1.22. Evaluation summary of strategic alternatives.

Strategic Alternative	Evaluation Criteria*					Scoring (Yes=1, No=0)
	Feasible	Acceptable	Suitable	Distinguish	Complete	
Sustainable Management	No	No	Yes	Yes	No	2
Scientific Land Management	No	No	No	Yes	No	1
Multiple Use Management	Yes	Yes	Yes	Yes	Yes	5
Integrated Resource Management	Yes	Yes	Yes	No	Yes	4
Adaptive Management	Yes	Yes	Yes	Yes	Yes	5

*Evaluation criteria are defined under section 3.1

1.7 Funding Alternatives

1.7.1 Government Funding

Federal

- The 1987 amendments to the Clean Water Act (CWA) established the Section 319 Nonpoint Source Management Program Section 319 addresses the need for greater federal leadership to help focus state and local nonpoint source efforts. Under Section 319, the CCWD has received grant money that supports a wide variety of activities including technical assistance, financial assistance, education, training, technology transfer, demonstration projects and monitoring to assess the success of specific nonpoint source implementation projects. 319(h) (Small Watershed) funds are provided to designated agencies for total maximum daily load (TMDL) and implementation projects for watershed restoration and protection strategies (WRAPS).

State:

- Clean Water Grants: In 2008, Minnesota voters approved the Clean Water, Land & Legacy Amendment to protect drinking water sources; protect, enhance, and restore wetlands, prairies, forests, and fish, game, and wildlife habitat; preserve arts and cultural heritage; support parks and trails; and protect, enhance, and restore lakes, rivers, streams, and groundwater. The Amendment increased the sales and use tax rate by three-eighths of one percent on taxable sales, starting July 1, 2009, continuing through 2034. Those dollars are dedicated to four funds: Outdoor Heritage Fund, Clean Water Fund, Parks and Trails Fund, and Arts and Cultural Heritage Fund.
- Wetland Conservation Act Administration Grant: State grant funds, distributed through the Anoka Conservation District, to reimburse costs for administering the Wetland Conservation Act (WCA).

Municipalities:

- All Cities are required to address stormwater by the Metropolitan Council. MS4s are required to address storm water by the Minnesota Pollution Control Agency if they are an MS4. The City of Columbus is the only city in the CCWD that is not an MS4.

Table 1.23. Municipal funding summary

Municipality	% of city	% of CCWD	% of CCWD Tax Base	Preliminary 2023 Levy Increase
Andover	42.5%	13.8%	13%	TBD
Blaine	64.9%	20.5%	34%	<5%
Columbus	22.9%	10.4%	0.0014%	-
Coon Rapids	100.0%	21.2%	36%	5 – 8%
Fridley	23.0%	2.2%	4%	TBD
Ham Lake	90.2%	30.1%	11%	TBD
Spring Lake Park	71.1%	1.4%	2%	~5%

1.7.2 Interagency, Intergovernmental, & Nongovernmental Funding

Subwatershed Funding

- These funds come from MS4s and/or cities that contribute water and pollutants to select subwatersheds that have a completed Subwatershed Plan. Priority subwatersheds are drainage areas that drain to impaired waters and have an approved TMDL. To address TMDL as well as flooding issues, each MS4/City will pay the percent total cost calculated by the percent runoff originating from their jurisdiction. Each MS4 will decide on the source of funds to pay their share. Grants received for the reduction of loadings or to address flooding will be used to reduce the total balance owed by the MS4s.

Table 1.24. Example of project funding

Project Estimate (Pond retrofit project)	$140,000
Watershed-Based Implementation Fund Grant	$60,000
Subwatershed Task Force (intergovernmental)	$80,000
Anoka County Highway Dpt.	$0
Andover	$0
Blaine	$20,000
Columbus	$0
Coon Creek Watershed District	$20,000
Coon Rapids	$40,000
Fridley	$0
Ham Lake	$0
Spring Lake Park	$0

1.8 Operational Alternatives

Four types of operations will be required to achieve the legislative requirements and essential tasks. This section will summarize them.

Table 1.25. Summary of operational alternatives to meet legislative requirements

Operation	Definition	Examples of Projects and Activities
Mitigative	Mitigative operations involve projects and actions to address a problem, issue, or concern. Their objective is to achieve a specific outcome or effect.	• Treatment of problems and issues to prevent or stop the spread of those problems or issues. • Construction of capital projects or programs whose objective is to: » investigate or treat physical or chemical conditions » alter biogeochemical structures » improve overall function » remove or repair dysfunctional hydrologic structures or functions » remove obstructions » restore structures, including channels, to a more advantages state • Diagnostic monitoring to detect the presence and extent of a problem and its outlook. • Control of chronic problems such as AIS or phosphorus to minimize symptoms, improve the quality of the water resource and prevent unnecessary inconveniences.
Preventative	Preventive or defensive operations involve projects, programs and activities designed to prevent a problem or issue, buy time, economize effort, or develop conditions favorable for offensive operations. Examples of preventative operations:	• Goodwill & credibility interventions to: » reinforce the CCWD's legitimacy and need. » prepare people before they encounter mis or disinformation on water resources. • Information interventions that build resilience to mis and dis-information. • Stewardship activities that promote the optimal use of assets, including the decision to use them, BMP choice, size, route, and duration of administration. • Education & behavior change activities that affect the actions that individuals take regarding water and related resources through: » Education by increasing knowledge or understanding. » Persuasion using communication to induce positive or negative feelings or stimulate action. » Restriction by using rules to reduce the opportunity to engage in the target behavior. » Modeling by providing an example for people to aspire to or imitate.

		» Enablement by increasing means/reducing barriers to increase capability or opportunity through grants or technical assistance. • Environmental alterations to meet public needs and help them feel more comfortable with what is happening in their environment. • Preventing biological, physical or chemical damage to prevent physical damage to the structure or function of a physical or natural asset or to reduce or eliminate exposure to risks that might decrease or degrade the structure or function of a natural or physical asset.
Stability	Stability operations involve activities conducted with collaborators to maintain or re-establish a safe and healthy environment. Their objective is to remove the underlying source, catalyst or stressor creating instability and create opportunities for a safer and more stable environment.	• Protect public health, safety and welfare. • Support and assist local water managers and government. • Support economic and infrastructure development. • Restoration of essential services when needed. • Flood prevention
Support	Support operations involve aiding the public, collaborators and CCWD programs to increase productivity and enhance customer experiences. Their objective is to provide the environment, tools, technologies, processes, and policies to help the public and staff.	• Design and construction management assistance • Assistance in inspecting construction sites • Assistance in reporting for water quality purposes • Collaboration and assistance in developing and producing public outreach events and information and education material.

1.9 Supportability Analysis

Supportability refers to the inherent characteristics of the system and the enabling system elements that allow effective and efficient sustainment (including maintenance and other support functions) throughout the system's life cycle. Supportability refers to the degree to which the characteristics, design, and functions of products or services meet the standards of a particular system or organization. This may involve maintaining, overhauling, and repairing assets to ensure it is operating at optimum function.

The output of the supportability analysis is the defined requirements as specified by the elements . A supportability analysis is a method that delivers a basis for decision making regarding measures that reduce maintenance cost and increase availability by optimizing the support system or influencing system or equipment design. The goal is to reduce maintenance costs and increase availability by optimizing the support system and influencing the system design. The analysis defines the requirements for system support and provides a clear basis for decision making where cost driving factors and factors that affect availability are clarified during the system lifecycle. Supportability is determined by three major criteria:

- Cost
- Equipment readiness
- Human resources and personnel constraints.

1.9.1 Costs

Initial Funding Requirements

The largest anticipated expense in the next 10 years is water quality. The CCWD and collaborating MS4s need to address 18 separate impairments on 11 water resources. Starting in 2024 this group must begin to annually report progress towards achieving the total maximum daily loads (TMDLs) that indicate resolution of the impairments. To reverse 130 years of intensive single use management and restore the system to achieve the TMDLs will require a combination of prevention, restoration of stream and ditch channels, construction, and enhancement of existing best management practices and storm water treatment facilities. The work and projects to achieve this goal was researched and identified by CCWD staff.

Inputs: Estimating Costs

The initial estimated cost to achieve the TMDLs that are in existence on March 2023 is $103 million dollars over the next 21 years. Costs were estimated based on:

- Pollutant reductions achieved to date.
- Remaining pollutant reductions needed.
- Historic costs for pollutant removal adjusted for inflation.

Assumptions

The CCWD analyzed three alternative scenarios to achieve the TMDL goal, assuming the following:

- The goal is achievement of the TMDL by 2045 (Note: on 4/17/23 the Minnesota House adopted language moving compliance date up to 2050)
- Total phosphorus and total suspended solids reduction costs are calculated separately.
- Current operations of the CCWD and Cities would continue.
- Revenue does not include:
  - » Grants
  - » Reduction in total costs due to combined, leveraged or compounding results which would reduce need and costs.
- Percent Contributions/Payments across the watershed
  - » Each storm water authority would pay based on the percent of land to affected water resources.
  - » The Watershed District's contribution is the percent based on the sum of the surface area of all water resources within the watershed (which was deducted from the municipal acreage)
- Investment would begin in 2024.
- There would be a three-year lag between the completion of projects and realization of a measurable benefit and its contribution to achieving the TMDL.
  - » Benefit is calculated based on the additive percent of the total investment to date.
- A critical mass of 80% of infrastructure or scheduled changes is needed to see results.
- No additional impairments are added in the CCWD.

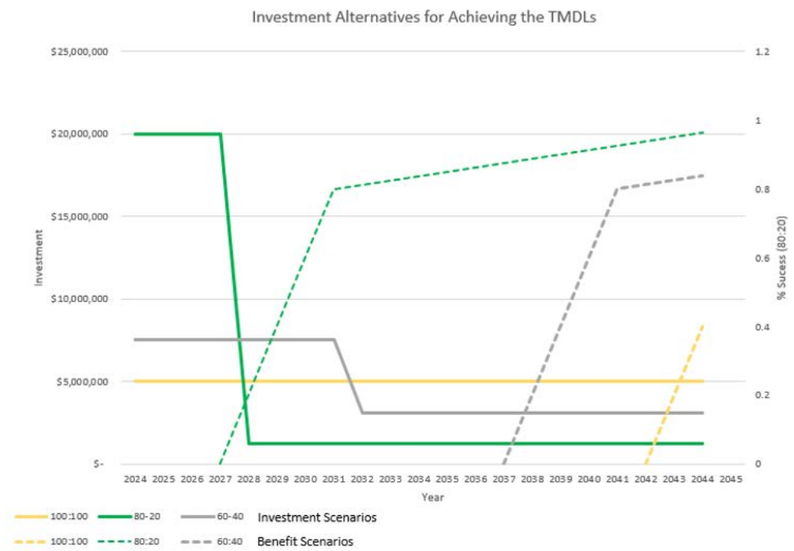


Figure 1.42. Investment Alternatives for achieving the TMDLs

Evaluation

Table 1.26. Evaluation of Investment Alternatives

Criteria	Scenario 1	Scenario 2: 60:40	Scenario 3: 80:20
Feasible: Accomplishes Task within available time	40%	80%	100%
Acceptable: Worth the cost	No Feedback	No	No
Suitable: Accomplishes the task & purpose	Yes	Yes	Yes
Distinguishable: Alternatives differ from each other	Yes	Yes	Yes
Complete: Addresses all required tasks	Yes	Yes	Yes

1.9.2 Human Resources and Personnel Constraints

Table 1.27. Staff capability analysis by program

Field Operational Function	Ground Water	Public Drainage	Water Quality	Water Quantity	Wetlands	Current FTEs	Need	Surplus/ (Deficit)
Administration	0.2	0.2	0.2	0.2	0.2	1	1	-
Operations & Maintenance	0	1.5	1	0.5	0	3	3	-
Planning	0.2	0.2	0.2	0.2	0.2	1	1	-
Public Information & Engagement	0.2	0.1	1.4	0.2	0.1	2	3	(-1)
Support & Sustain Effort	0.1	0.7	0.8	0.8	0.7	3	3	-
Water Quality	0.1	0	1.7	0.2	0	2	2	-
Watershed Development & Regulation	0	0.5	0.9	0.9	0.8	3	3	-
Total	0.8	3	6	3	2	15	16	-2

Table 1.28. CCWD collaborator capability analysis

Collaborator	Ground Water	Public Drainage	Water Quality	Water Quantity	Wetlands	Total FTEs
Andover	0.1		0.5	0.5		1.1
Anoka Conservation District			2		1	3
Anoka County Highways	0	0	1	0	0	1
Blaine	0.1		0.5	1.5		2.1
Columbus				1		1
Coon Rapids	0.1		0.5	1.5		2.1
Fridley	0.1		0.5	1.5		2.1
Ham Lake				1		1
Spring Lake Park	0.1			1		1.1
Total	0.5	0	5	8	1	14.5

Table 1.29. Supplementary and Special Expertise Analysis.

Functions	Source
Organize and Conduct Program Interventions	• Anoka Conservation District • Private Contractors
Conduct Program Intelligence, Monitoring, and Inspections	• Anoka Conservation District: » Wetland delineation inspections & » Water quality monitoring » Wetland monitoring • Private Contractors: » Permit review » Construction inspection » Wetland evaluation » Hydrologic modeling
Implement Program Authorities and Activities	• Private contractors » Construction and restoration
Providing Program Financial and Personnel Support	• Private contractors » Accounting » Human Resources » Audit
Provide Program Leadership and Control	• State Agencies » NPDES – MPCA » WCA – BWSR » Floodplain modeling – DNR
Providing Protection to the Productive Capacity of The Water Resource	• Wetlands » BWSR » Anoka Conservation District » DNR » Corps of Engineers • Water Quality » MPCA » EPA

1.9.3 Conclusions

The CCWD and other local water management agencies possess most, but not all the required resources to undertake the full goal for which they are directed, organized and designed.

Table 1.30. Summary of factor conditions

Factor	Condition
Physical, programmatic & Natural Assets	The CCWD possesses the required resources to undertake most of its legislative goal for which it is organized or designed.
Equipment	
Staffing	The CCWD possesses the required staff and is trained to achieve the mission for which it was organized and designed. If additional staff or resources are required to meet the goals of this Plan, those needs will be evaluated and pursued.
Sustaining and Funding	The CCWD is evaluating the capital costs to restore and repair the impaired waters and is not prepared or potentially financially capable, at this time, to undertake the investment required to achieve the legislative goal for which it is organized or designed.
Training	The CCWD currently possesses the required training to undertake the full goal for which it is organized or designed.

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2. Strategic Plan

Intent

Our intent is to solve the central water management problem within the framework of the existing state and federal programs through an informed theory of success that enables disciplined decision-making by framing risk and assessing progress toward strategic objectives.

Our priority focus will be shifting the biogeochemical integrity of the watershed from a poor to a moderate condition by 2033 in pursuing local, state, and federal goals.

To reverse the condition and trends of the watershed and make meaningful progress toward the 2045 water quality requirements will require the CCWD and other local water managers to:

- Exercise strategic discipline.
- To orchestrate a whole government approach to ensure common understanding of each management entity's problems, constraints and restraints and facilitate efficiencies in reducing the cost and conduct of work.
- To maintain legitimacy of intent in the eyes of Local, state, and federal policymakers and agencies.
- To fuse the direct and indirect capabilities of local water management entities to change, or maintain the physical, social, and/or political-economic conditions of the watershed.
- Continue to build organizational capability and capacity in comprehensive water resource management technology and leadership.

In 2033 this strategy will be successful if:

- We foster a watershed with moderate geomorphic, hydrologic, and biotic integrity relative to its natural potential condition.
- We improve the stability of the drainage network in the watershed.
- We foster a watershed that exhibits physical, chemical, and biological conditions that suggest that soil, riparian, and aquatic systems, while still at risk, exhibit signs of being marginally recovered in supporting beneficial uses.
- Intergovernmental collaboration of water management efforts are increasingly integrated and rooted in defined water problems, issues and concerns of the watershed.

Context Reminder: Central Water Management Problem

How do local water management authorities sufficiently fund, and staff the needed water management efforts in the next ten years and beyond while continuing to effectively deal with today's problems?

Strategic Approach: Multi-Domain Management

The principal approach for managing the watershed over the next ten years is Multi-Domain Management (MDM). MDM seeks to solve the central water management problem within the framework of the Metropolitan Water Management Act through an informed theory of success that enables disciplined decision-making by framing risk and continually assessing progress toward legislative goals.

The goal of the MDM approach is to develop a path towards Federal and state goals that are reflective of, and responsive to, the continual changes in the operating environment and the acquisition of new information by creating windows of advantage that can be used by another domain.

MDM's intent is to conduct the full spectrum of operations (projects and activities) through combinations of four elements: shaping, restoration, protection, and stability or civil-support operations across all water management organizations to achieve objectives, resolve problems, and protect and consolidate improvements in restoring water quality impairments and protecting the public health, safety, and welfare.

MDM requires converging political and operational capabilities across organizations and resource concerns to create windows of opportunity to pursue objectives, capitalize on opportunities, or prevent or discourage missteps. This is ambitious in the current operating environment, but necessity is the mother of invention. To accomplish the level of collaboration required under MDM will require local water managers to:

1. Integrate leadership and control across the water resource management domains.
2. Sharing a common understanding of the central water management problem
3. Develop and pursue common legislative goals
4. Adhering to the central idea of strategic discipline.
5. Implementing programs that transform conflict, seek collaboration and unity of effort, maintain legitimacy, and build the capacity and capabilities to pursue those shared goals.
6. Conduct specific collaborative tasks

The success of MDM is measured by the exercise of strategic discipline and continuously assessing, adjusting and calibrating collaborative efforts between long range objectives and short term capabilities and capacity to prevent problems now and reduce future.

Central Water Management Problem

The water management problem facing the Coon Creek watershed is:

How do local water management authorities sufficiently fund, and staff the needed water management efforts in the next ten years and beyond while continuing to effectively deal with today's problems considering:

- The 2045 deadline for addressing water quality impairments and achieving Total Maximum Daily Loads (TMDLs).
- The potentially more than $100 million cost of addressing those impairments by 2045.
- The risk, uncertainty and cost associated with random damaging weather events.
- The unknowns and risks to groundwater dependent surface waters.
- The continual change, amendment, addition and increasingly prescriptive nature of state rules and requirements.

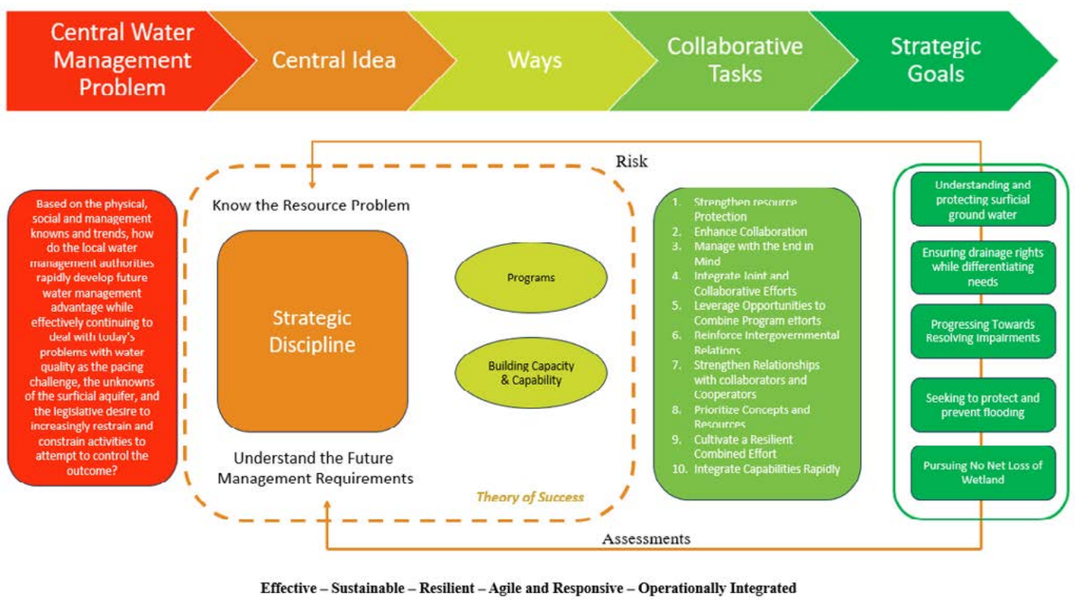

Figure 2.01. The CCWDs strategic approach using MDM

Central Idea

Knowing The Resource Management Problem

A full understanding of the central water management problem involves continual assessment and appraisal of the risks involved.

During the next ten years the overriding water resource problems, issues and concerns will most likely revolve around:

1. The water quality impairment of select surface waters (TMDLs, Chlorides and 'Forever chemicals')
2. Ground water (Drinking water supplies, Ground water - Surface water interactions
3. Flooding and property damage caused by an increase in high intensity-short duration storms.

The implications of not addressing these resource concerns are a general decrease in economic productivity, which in turn will cause a decline in economic growth in the area and region where they occur. Specifically, the loss of capital assets and infrastructure such as roads, bridges, infrastructure, and private property. Public health and safety are also affected due to the loss of life and the destruction of sanitary infrastructure. In addition, the cost of remediation of the situation can involve substantial public costs that can result in condemnation and public ownership or severely damaged or despoiled land.

The time and cost to address the three priority problems are:

1. **Water Quality Impairments**

   The 2045 deadline for addressing water quality impairments and achieving Total Maximum Daily Loads (TMDLs),

   The current estimate to construct the practices, and physically restore select resources in the next ten years is estimated to be approximately $50 million. To fully achieve the reductions needed by the 2045 Federal compliance date is estimated to be potentially more than $100 million.

2. **Ground Water**

   The unknowns and risks to groundwater dependent surface waters.

3. **Flooding**

   The risk, uncertainty and cost associated with random damaging weather events.

   The continual change, amendment, addition and increasingly prescriptive nature of state rules and requirements.

   Addressing these problems is required to occur under the following:

   - Cost to organizations that have historically been extremely prudent in their investments, seeking short term tangible benefits.
   - Resource scarcity (greater demand than productive capacity)
   - Demand for economic development and the reduction of risk and uncertainty.
   - Ideological differences

Understanding the Future Water Management Requirements

Industry trade and professional publications like to talk about how the future of water and stormwater management will be different, but key changes have already started to occur. Since 2020 the trend elements of "contested norms" and "persistent disorder or flux" and the beginnings of major shifts in the character of water management have been increasingly visible in places such as Congress, the legislature and select city councils. Section 1.2 described five individual contexts affecting water management within the watershed, state, and nation.

1. **Overt Ideological Competition**: Irreconcilable ideas communicated and promoted by identity networks through overt and disruptive actions.
2. **Threatened to Local Water Management Authority**: Encroachment, erosion or disregard of laws, rules and investments that provide the context and medium on which the state and local economies operate through coercion.
3. **Antagonistic Geopolitical Balancing:** Increasingly ambitious governmental and non-governmental units maximizing their own influence while actively limiting the ability to manage and protect the water resource.
4. **Disruption of the Watershed or Subwatershed Commons:** Denial or compulsion of access to resources that are essentially unregulated but available to all.
5. **Shattered and Reordered Efforts:** Agencies, groups unable to cope with internal political fractures, environmental stressors, or deliberate external interference.

Looking across the "Contexts of the Future" strongly suggests the local water managers will:

- Engage in multiple, simultaneous, and multi-domain problems, involving a broad range of actors.
- Some of those actors will selectively contest or support state and federal water regulations and norms while also encouraging or disrupting social, economic, and political order based on the scope of their interests.
- Moreover, these problems, issues and concerns are likely to involve and require advanced monitoring and analysis leading to potentially increased limitations, regulations, and restrictions.
- Together, these large and connected problem sets featuring more pervasive and utilitarian demands for and on the water resource will place additional difficult demands on local water managers.
- The collaborative management effort will be challenged to both protect the productive capacity of the resource as currently conceived and to resist or discourage the spread and intensification of political and social disorder occurring.
- The application and enforcement of current and broadly accepted rules, norms and best practices and support for a structured orderly program will be highly dependent on popular perceptions, attitudes, and broad acceptance of their legitimacy.

- Across all contexts, the ability to engage with ideas and to link the application of direct management to state and national priorities and good governance will determine the effectiveness and sustainability of collaborative operations.

Individual contexts, however, are not sufficient to fully understand the objectives and tasks that collaborative local water management will need to conduct in the future. The future will not present itself in such an orderly way. Local water management will remain uncertain, variable, and intertwined, and attributes of more than one context may be in play at any given time. However, as a set, the linkage of contexts to strategic goals and water management tasks provides a comprehensive view of the range of local water management roles and goals and how they are likely to evolve through 2033..

Exercising Strategic Discipline

The central idea of Multi-Domain Management is strategic discipline. Strategic discipline is based on common understanding that is continually informed through acute situational awareness. It is executed through existing programs but places an emphasis on the continual building of organizational capacity and capability through adaptiveness, learning, agility and competence.

Strategic Discipline is enabled by the robust understanding of the physical, social and management operating environment, including a deep awareness of the problems, issues and concerns and the capacity and capability of the CCWD and local water management partners, and the future character and trends in water resource management within the Anoka Sand Plain.

This understanding is enhanced by annual strategic assessments that enable risk decisions to bias toward decreasing future risk and augmented by regular "all parties" briefings and assessments of the management situation. This approach provides the CCWD and other water resource management agencies the agility to focus on enduring priorities and generate management options for emerging problems, issues, and concerns

WAYS: Whole-of-Government Approach

Whole of Government (WoG) emphasizes the need for greater collaboration and coordination across jurisdiction and departmental boundaries to eliminate duplication, optimize resources, create synergies among agencies, and deliver seamless services to the public.

The goal of a Whole of Government approach to operations is to provide a common solution to problems or issues. The intent is to fuse organizational capabilities through the creation of comprehensive shared resources that deliver seamless service, encompassing communication, information sharing and decision-making processes.

To accomplish this requires:

> The recognition that programs and work units are how work gets done, problems are resolved, issues are prevented, and legislative objectives are addressed across the spectrum of public and water resource domains.
>
> Recognition that this includes work in the gray zone (the continuum between self-sustaining natural systems and maintenance and capital-intensive efforts in which government and non-government actors engage in on-going programs and activities.

Specifically, the CCWD and its collaborators need to

1. Determine the baseline conditions which allow for collaboration, across and between departments, through institutional arrangements so that the ensuing system is holistic, synergistic and coordinated in the delivery of public services.
2. Bring representatives from interagency entities together for realistic training with their counterparts before they are forced to work together under new or stressful conditions.
3. Develop Interagency Lines of Effort.

Undertaking a Whole of Government approach is ambitious and will occupy a significant portion of the organizational development and growth over the next 10 years. However, it is a very natural next step to the existing collaborative management occurring within the watershed and will offer. As the next 10 to 20 years unfolds, WoG will be seen as an imperative mechanism for delivering coherent and integrated policies in an efficient and effective manner, including effective alignment with Federal and state policies. In facilitating, organizing, and training fusion teams, the CCWD and collaborators will need to remain centered on four characteristics:

- Transforming conflict
- Collaboration and unity of effort
- Legitimacy of effort
- Building partner capacity

Transforming Conflict

Conflict transformation is the process of reducing the means and motivations for opposition while developing viable, sustainable alternatives for the competitive pursuit of political and socioeconomic aspirations.

The goal is to build constructive change from the energy created by differences. The intent is to envision and respond to the ebb and flow of social differences and priorities about water and to use the as life-giving opportunities for creating constructive change processes that reduce opposition and increase informed awareness through direct interaction and social structures and respond to real-life problems in human relationships. Its objective is to focus on root causes for not prioritizing, funding, staffing water management efforts.

To do this requires

- Recognizing that conflict is a normal and continuous social dynamic in need of an effective constructive means of resolution.
- Understanding the dynamics of conflict and a detailed understanding of underlying relational, social, and cultural patterns.
- Reducing sources of instability and strengthening mitigators across the stability factors of:
    - » Ensuring water resource asset resiliency, efficiency, and quality
    - » Protecting public health and safety
    - » Ensuring essential services of food, water, sanitation and transportation

    - » Supporting local water management
    - » Supporting local economic and infrastructure development
    - » Building partner and collaborator capacity to manage political and economic competition through sustainable means.
- Highlighting the short term and long term financial and economic costs of decisions that do not account for water and related sensitive resources.
- Continually assessing and analyzing the conditions of the CCWD's operational environment, including how water management operations affect the situation on the ground and how locals perceive the conditions.
- Sometimes organizations need an active and robust presence in the form of an external organization, who is also a partner or collaborator with a sizable local and/or state presence to help shape the environment and reduce the drivers of violent conflict.

For water management within the Coon Creek Watershed, it involves overcoming the conflict associated with time, cost, and the intangible nature of results.

Successful conflict transformation will be measured by the frequency and intensity of conflicts or complaints such as well interference, the level of satisfaction and trust among the parties, the quality and timeliness of deliverables or outputs, the degree of collaboration and cooperation among the parties, and the extent of learning and improvement from the experience.

Collaboration and Unity of Effort

Collaboration and unity of effort is the coordination and cooperation toward common objectives, even if the participants are not necessarily part of the same work unit or organization, the product of successful unified action. Unity of effort is fundamental to successfully incorporating all the instruments of local power and authority in a collaborative approach when conducting water management projects and activities.

The goal of collaboration and unity of effort is to identify opportunities amongst stakeholders within the watershed for improved coordination and synchronization, thereby focusing similar efforts toward achieving local, state and national goals and objectives.

The intent is coordination and cooperation in conducting work and other activities to achieve the mission, goals and objectives articulated in the comprehensive plan, even if the participants are not necessarily part of the same organization. Achieving unity of effort requires:

- Sharing a common understanding of the condition and trend of the water resource and the common needs, benefits and costs provided by that resource.
- Actors participating at their own discretion or present in the operational area but not acting as a member of a multiagency coalition.
- Integrating the capabilities and capacity of the CCWD, cities, and state agencies, as well as nongovernmental organizations, and the private sector.
- A willingness and ability to share information and resources among local water management agencies and organizations while working toward a common goal.
- The application of a comprehensive approach that includes coordination, consensus building, cooperation, collaboration, compromise, consultation, and deconfliction among all the stakeholders toward an objective.
- Balancing activities in time and resources through regular meetings, formal agreements, assignment of coordinators or liaison staff, or even developing common communication or information technology platforms, integrated plans, or joint secretariats. Further, leaders must maintain strong working relationships that enable collaboration and sharing, based upon mutual trust and shared goals.
- A nuanced, cooperative effort. Leaders forge a comprehensive approach, leveraging the capabilities of the disparate actors, to achieve broad conflict transformation goals and attain a sustainable effort.
- Leaders support the activities and goals of other actors by sharing resources.

Successful collaborative operations will be determined by three primary factors: trust, reciprocity and mutuality. It will be measured by the degree of success of four required elements:

1. A common understanding of the situation
2. A common vision or goals for the reconstruction and stabilization mission
3. Coordination of efforts to ensure continued coherency.
4. Common measures of progress and ability to change course if necessary.

NOTE: Collaborators often use certain terms of interactions: coordination, consensus, cooperation, collaboration, and compromise. No common interorganizational agreement exists on these terms. Other stakeholders often use these terms interchangeably or with varying definitions.

- **Coordination** is the process of organizing a complex enterprise in which numerous organizations are involved and bring their contributions together to form a coherent or efficient whole. It implies formal structures, relationships, and processes.
- **Consensus** is a general or collective agreement, accord, or position reached by a group. It implies a serious treatment of every group member's considered position.
- **Cooperation** is the process of acting together for a common purpose or mutual benefit. It involves working in harmony, side by side, and implies an association between organizations. It is the alternative to working separately in competition. Cooperation with other agencies does not mean giving up authority, autonomy, or becoming subordinated to the direction of others.
- **Collaboration** is a process where organizations work together to attain common goals by sharing knowledge, learning, and building consensus. Some organizations attribute a negative meaning to the term collaboration as if referring to those who betray others by willingly assisting an enemy of one's country, especially an occupying force.
- **Compromise** is a settlement of differences by mutual concessions without violation of core values; an agreement reached by adjustment of conflicting or opposing positions, by reciprocal modification of an original position. Compromise should not be regarded in the context of win or lose.

Legitimacy of Effort

Legitimacy is a condition that is based upon the public perception of the legality, morality, propriety, or rightness of a set of water management actions., Legitimacy enables local water management by building and keeping the trust and confidence among the people. The principle of legitimacy impacts every aspect of operations from every conceivable perspective.

The goal of legitimacy of effort is to create trust. Its intent is to establish and enhance public trust and to increase the people's willingness to support and expend effort towards water management because they feel confident that others will do the same, their efforts will be recognized, and that they will be treated fairly.

Establishing and maintaining credibility, confidence and trust in local water management efforts will require the CCWD and other local water managers to:

1. Ensure that the results of a project or action will bring about a change that will be beneficial to the water resource system, and that the benefits will be shared equally as the costs.
2. Act in accordance with the law but to emphasize the need and reason the law was developed.
3. Treat people and organizations with dignity and respect
4. Give people and organizations voice during encounters.
5. remain neutral and transparent in decision making.
6. Convey trustworthy motives.
7. Ensure and protect the District's capability to execute its mandate.

Success of these efforts is determined by:

- Capitalization on stake holder participation and support.
- The degree to which government actions are rooted in the history, culture, legal framework, and institutions dominant in the situation.

Building The Water Management Capacity and Capability of Partners

Organizational capacity and capability are driving forces in addressing and making progress in meeting public and legislative demands through programs and activities. Building local water management capability and capacity requires deliberate investment in developing leaders, concepts, and capabilities through direct and indirect solutions geared toward achieving legislative objectives.

The goal of building organizational capacity and capability in water management is to effectively manage water resources in a way that synchronizes with watershed level goals and objectives.

The intent is to improve or enhance the interorganizational activities, programs, and water management projects that repair, maintain, and improve the water resource.

Building partner capacity will require organizational development efforts to focus on long-term technical assistance programs, which may include:

- Understanding what processes, the partner has in place and the sustainability of changes introduced by "building" and organizational development activities.
- Co-development of mutually beneficial capabilities and capacities to address shared interests.
- Unified action is an indispensable feature of building partner capacity.
- Support for partner leadership or build on existing capacities to achieve decisive results sooner.

The successful result of these activities is an increase in partner capacity. Success is characterized by:

- Collaborative action to enhance the ability of partners for protection, management, economic development, essential services, performance-based regulation, and other critical government functions.
- An environment that fosters institutional development, community participation, human resources development, and strengthened managerial systems.
- Building capacity is a long-term, continuing process, in which all actors contribute to enhancing the host nation's human, technological, organizational, institutional, and resource capabilities.

Essential Tasks

Essential tasks are specified or implied tasks that an organization or effort unit must perform to accomplish the mission. There are:

1. Organization and intervention
2. Intelligence: Research, Inspection, and Monitoring
3. Capital Projects
4. Protecting the Public and Resource Capacity and Capability
5. Information Operations
6. Stability

These essential tasks will be described later in Section 2.

2.1 Essential Task: Organization and Intervention

Organization

The District is organized into six program areas which mirror and serve as essential field operating systems.

Figure 2.02. Organizational structure of the CCWD

Table 2.01. Program roles in achieving critical events and actions

Program	Program Purpose
Engagement	To engage and leverage the public and civil component (people, organizations, and capabilities) to enhance situational understanding, mitigate threats, problems and issues to people, property, and the resource, and consolidate and stabilize gains and improvements made in support of legislative objectives.
Information & Public Affairs	To keep the Administrator, public and water management staff informed, and to help establish the conditions that lead to confidence in the CCWD and it collaborators and our readiness to conduct projects and programs to address the short and long term needs of the people now and in the future.
Operations & Maintenance	To conduct coordinated water management projects and activities in response to developing situations.
Planning	To frame water resource management problems, create shared understanding and facilitate unified courses of action to shape and address those problems, protect against their adverse effects and stabilize the situation afterward.
Water Quality	To continually assess water quality, provide insights into the implications that guide water management in how best to "organize, train, and equip" water management efforts. Finally, to address and support the allocation and use of public funds, authority and staffing across the broad continuum of operations. Implement CCWD waters restoration and protection strategies.
Watershed Development	To manage growth and gain, sustain, and exercise regulatory control over water and related land resources to the extent it adversely affects water and related resources to ensure continued function and performance of the watershed.

2.1.1 Implementing Multi-Domain Management Strategy

Programs are how the Coon Creek Watershed District and its collaborators implement day-to-day activities, initiatives and develops conditions to prevent problems, resolve issues, accomplish legislative objectives and successfully address and resolve problems and threats to the water resource and the public health, safety and welfare across the spectrum of problems and issues, to include the Gray-Zone (the space in between self-sustaining natural systems and capital intensive efforts in which government and non-government actors engage in on-going, expensive temporary solutions).

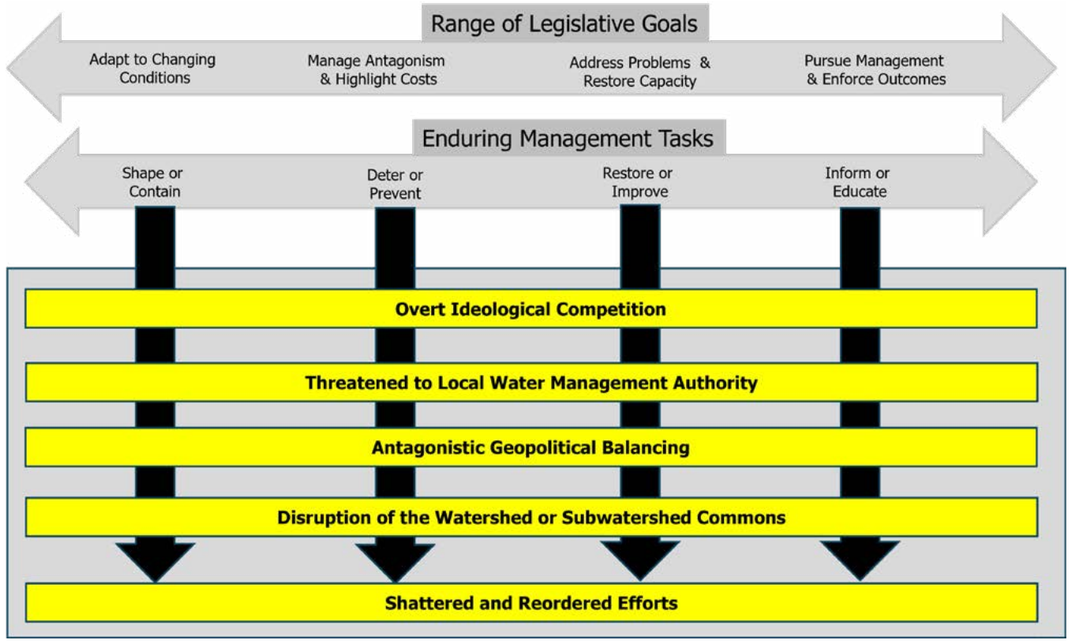

Figure 2.03. How MDM will be implemented by the CCWD

2.1.2 Shaping the Environment for Critical Events and Actions

Shaping involves influencing the public and partners to establish a more favorable environment through influence of other organizations, altering the relationships between them, or managing the behavior of partners.

The goal of shaping is to construct a more favorable operating environment. It is most often accomplished through the indirect effects on the priorities and problem solving of key stakeholders by increasing awareness and or demonstrating or making available more efficient, or more effective alternatives.

The intent of shaping is to influence the characteristics of individuals and organizations managing water. To accomplish this requires:

1. Assembling all that has been learned so far, usually to act quickly,
2. Knowing and continually understanding the management situation.
3. Altering the relationships and/or characteristics between the physical, social, or managerial factors in play.
4. Managing the behavior of collaborators.

Successful shaping of field problems and needs facilitates program operations through problem framing, addressing the underlying factors driving the problem, and arranging the conditions needed for efficient and effective project or program implementation.

Between 2024 and 2023 the CCWD will conduct five types of shaping activities. Shaping activities at any level of operation creates, furthers, or preserves the conditions needed for success of the decisive events and actions. Primary shaping tasks are described on the next page.

Table 2.02. Primary shaping tasks for the CCWD

Shaping Activity	Purpose and Intent
Data Collection	• To facilitate informed decision making through the collection, analysis, and distribution of information, as well as the forecasting and/or modeling of scenarios under various conditions that are relevant to decision making. To accomplish this requires inspections, monitoring and surveys to assess conditions, trends, threats, and opportunities. Data collection efforts are successful if they facilitate management planning and informed decision making.
Incentives	• To motivate behavior and actions that are consistent with water management goals. • The intent is to offset or reduce the cost of a desired action through monetary compensation. To accomplish this requires the District to induce an individual or organization to adopt, perform or continue to perform better. Success is determined through the long-lasting effect on their performance.
Information and Education	• To facilitate informed decision making through the development of rational, informed individuals and organizations. • The intent is to enable the public and water management organizations to acquire knowledge and skills that will help them to make informed decisions relative to the use and effect on water resources. To achieve this requires the establishment and maintenance of good relationships between the public, elected officials, and water managers (target audiences). Efforts are successful if the quality of understanding, consideration, and awareness of consequences of water resources decision making is observed.
Modeling	• To predict responses of hydrologic systems to changing stresses, as well as to predict the fate and movement of solutes and contaminants in water. • The intent is to gain further understanding of the interactions between different components of the water cycle, grasp the driving forces of major hydrological changes, and predict hydrological changes under different land-use (and climate) scenarios.
Planning	• The purpose is to frame water resource problems and create a shared understanding of the problems and actions needed to achieve common goals. • The intent is to plot a course towards achieving objectives through common understanding and thinking through various scenarios based on the capability and capacity of the resources available and the stakeholder involved. Success lies in the planning process and accurate identification of the future consequences of potential decisions and the contingencies needed to achieve objectives.

2.1.3 Restoring, and Improving Conditions

The District will conduct 3 basic types of activities designed to restore and improve conditions needed for the critical events to be successful.

Table 2.03. Primary restoration activities

Restoring & Improving Activity	Tasks
Grants & Cost Sharing	• Purpose: to reduce the direct cost to the project sponsor. The intent is to provide an inducement to adopt or address a water management need above and beyond the minimum requirements or resources available through the provision of additional funds. • Link to Comprehensive Plan Goals: This incentive program aims to assist the CCWD and collaborating LGUs in meeting the overall CCWD goal to improve the watershed condition and the resource goals by helping fund projects that will meet these objectives.
Improvements	• To improve the condition or situation beyond the current state. The intent is to enhance the overall function or performance by improving the physical structures, systems, and facilities that retain, detain, treat or convey water. The are successful if monitoring shows an improvement in conditions.
Restorations	• To return a physical or natural asset to a functional and productive condition. To achieve this condition involves restoring or renovating used or impaired physical and natural assets.

2.1.4 Protecting What We Have and What We Have Accomplished.

The CCWD will conduct three types of activities to protect the public health, safety and welfare and the hydrologic and ecological functioning that exists or has been restored that is vital to the production and provision of beneficial uses.

Table 2.04. Primary protection activities

Protective Activity	Type of Protection
Operations & Maintenance	• To maintain the functional capability and capacity of water resource assets to the maximum extent possible for the benefit of the facility users. • The intent is to maintain or extend the biogeochemical function of the asset before significant condition or performance issues arise. To do this requires tasks such as inspections, cleaning, minor part replacement, and performance monitoring. Successful operation and maintenance results in reduced time where the asset is either not performing or functioning, extended asset life and minimized repair time when asset is impaired.
Rapid Response Funding	• To immediately assess and treat an issue or concern with the goal of preventing more expensive and intensive repair or rehabilitation work. • To rapidly identify and treat these issues requires inspection within 72 hours of initial discovery, the ability to accurately assess the presence, extent and implications of the problem and the ability to immediately schedule the work that is needed to, at a minimum, restore function or performance to an acceptable level. A raid response is successful if the restoration of performance or function occurs prior to other more damaging or expensive problems such as flood damage or spread of an invasive species.
Regulation	• The purpose is to promote public health, safety and welfare, protect the structure and function of the biogeochemical processes that produce beneficial uses and reduce risk from natural catastrophes and hazards. • The intent is to avoid and to improve the performance of individual and organizational behavior relative to the land and water resource in ways that reduce risk to the concerns list above. To do this requires a fair and open process, established principles and standards rationally related to the water resource, and equal application of those principles and standards. Successful regulation avoids conflicts, reduces public costs and ensures the public health and safety in addition to efficient and effective functioning of the biogeochemical processes of the watershed.

2.1.5 The Role of Stability in Accomplishing Critical Events and Actions

The purpose of stability projects and activities is to identify, target, and mitigate the root causes of risk and to set the conditions for sustained use of the water resource by building the capacity and capability of local government and non-government organizations involved in water management. The intent is to focus on the root causes and processes contributing to water resource:

1. Resiliency issues stemming from water related disaster, risks and vulnerabilities.
2. Efficiency issues involving leakage, monitoring and measurement, continuity of coverage and the charges and financing.
3. Quality issues involving health and sanitation, pollution and related biological, physical and chemical effects.

Accomplishing this will require local water managers to:

- Transform conflict.
- Pursue common understanding of water resources capacity, capability and problems and facilitate unity of effort and purpose in their resolution.
- Legitimacy of purpose and intent
- Building collaborator capacity and capability
- Acceptance, but also involvement in federal and state policy

The success of stability activities rests upon whether water managers at all levels can create conditions for sustained resource function and economic development.

2.1.6 Response and Intervention Plan

Goal To gain an advantageous position in addressing problems, issues, and concerns.

Response is the necessary assignment of program staff, activities, and projects to address or intervene in the problems and issues.

Interventions are actions taken by staff to implement the comprehensive, subwatershed and annual plan, including any treatments, procedures, or public information or education moments intended to improve the condition of the situation.

Intent To identify the tasks and systems related to moving and employing program staff to constructively address the resource problems and issues requires the following lead program response and interventions.

Table 2.05. Response and intervention tasks

Resource	Lead Program Response	Priority Interventions
Ground Water	• Planning	• Protecting public health, safety, and welfare • Rapid and timely assessment of condition • Promoting best management practices
Public Drainage	• Operations & Maintenance	• Personal care and assistance • Protecting economic welfare • Promoting best management practices
Water Quality	• Water Quality Monitoring	• Protecting public health, safety and welfare • Promoting best management practices • Post project or event support and assistance • Technical support and assistance
Water Quantity	• Operations and Maintenance	• Protecting public health, safety and welfare • Creating a safe environment • Promoting best management practices • Post project or event support and assistance • Technical support and assistance
Wetlands	• Watershed Development	• Personal care and assistance • Promoting best management practices

2.2 Essential Task: Intelligence – Inspections, Monitoring, & Modeling

District intelligence activities involve five basic activities:

1. Inspections provide early detection to prevent or minimize outbreaks of AIS, construction or delineation errors or practices, assessment of asset condition, including illicit discharges.
2. Annual monitoring and information collection activities including surveys
3. Operational information and data
    a. Routine condition monitoring
    b. Performance monitoring
    c. Diagnostic monitoring/ special investigations
4. Processing and dissemination of collected data and information
5. Integrate operational information

The CCWD will collect the information and data necessary to manage water and related resources within the watershed. In addition to providing timely intelligence for internal operations and to partners, information will also be synthesized and shared widely with water resource professionals to promote technology transfer and avoid duplication of efforts.

Priority Information requirements are:

1. Legislative, agency or legal initiatives affecting funding, responsibilities, authorities or staffing.
2. Flooding: changes and trends in precipitation, conveyance, storage, infiltration, or evaporation.
3. Water Quality: Condition and trends of physical, chemical or biological factors or the stressors affecting impaired waters.
4. Social: beliefs, preferences, and other input from target audiences

2.2.1 Primary Intervention Tasks

Annually Organize & Plan Monitoring and Information Collection Activities

The District Administrator, Director of Operations, Operations and Maintenance manager and the Public and Governmental Affairs, Water Quality and Watershed Development Coordinators will meet annually to determine changes to the information to be collected and to identify priority information requirements (PIRs) prior to work planning for the following field season. Data collection activities conducted by other agencies will be evaluated prior to undertaking new efforts to avoid duplication. Below is a summary of information currently being collected; additional information may be required in future years:

Table 2.06. Summary of information and data collection activities

Field Operating Program: Inspections			
Primary Interventions	**Purpose**	**Locations**	**Frequency**
AIS Early Detection Inspections	To provide early detection of colonization or expansion of invasive species.	All lakes and in vicinity of other known populations	Semiannually
Construction Site Inspections	To assess and potentially correct if construction sites being built according to the approved plan and are using and properly maintaining adequate erosion, sediment, and waste control measures during construction.	Varies	Varies for high and low-priority sites (MS4 General Permit 19.7-19.9)
Ditch Condition Inspections	To assess level of needed performance and provide data for determining preventive maintenance, management, reporting, and analysis.	All established systems	20% of the system annually. Schedule provided below
Illicit discharge Inspections	To maintain fishable, swimmable, and drinkable water and prevent pollution from entering our waterbodies.	Varies	Varies until source of any illicit discharges are located and mitigated
Wetland Delineation Inspections	To verify the accuracy of a jurisdictionally delineated wetland boundary.	Sites with submitted applications for land use change	Prior to permit review

Field Operating Program: Monitoring			
Primary Interventions	**Purpose**	**Locations**	**Frequency**
AIS Response Inspections	Monitor Effectiveness of treatments	All managed populations	Annually for at least 3 years post treatment
BMP Performance Monitoring	Verify pollutant reductions & Treatment Volumes	All District owned or operated	Variable; Per individual O&M agreements
Groundwater Monitoring	Water levels and behavior	TBD as part of groundwater roadmap 2024	Continuous
Illicit discharge Inspections	Identification and Source tracking for mitigation or enforcement intervention	As needed	As needed
Lake Monitoring	Water levels, Water quality	Bunker, Crooked, Ham, Laddie, Netta, & Sunrise Lakes	Continuous, Ice-free season
Lake Quality-TP, OP, Chl-a, Secchi, Sonde profile	Condition over time	All Lakes	Semimonthly; May-Sept. Rotating schedule at least 3x per 5 year period
Precipitation	To measure and understand the kind, amount, extent and intensity of precipitation	District Office	Continuous via all-season Davis Weather Station; Storm totals
		Districtwide	Continuous/ archival via existing monitoring networks including Anoka Co Emergency Services, CoCoRaHS, volunteers, and doppler estimated raster dataset.

Field Operating Program: Monitoring (Cont.)			
Primary Interventions	**Purpose**	**Locations**	**Frequency**
Stream Discharge	To assess discharge variability for flood and drought management.	All stream sites	Continuous at core outlets; paired with grabs at other sites; portable equipment available for large event response.
Stream Level Monitoring	To measure hydrologic condition and changes	Core stream and municipal outlets; rotating subwatershed outlets.	Continuous, Ice-free season
Stream Quality-TSS, TP, E. coli, Paired sonde	To track condition of receiving waters and major tributaries over time	All stream sites	Monthly Apr-Oct plus 4 event-based samples
Stream Quality-OP, Chlorides		Core and municipal outlet sites	Monthly, Apr-Oct plus 4 event-based samples. Winter chloride sampling every 5 yrs
Water levels, Peak- Floodplain	To accurately assess problems, watershed project planning, assessment of treatment needs, targeting source areas, design of management measures, and project evaluation.	6 stream sites as detailed in Flood Response Plan; additional sites as needed for model calibration	Crest gages deployed each spring
Wetland Hydrology Monitoring	To measure the depth and duration of inundation and saturation relative to the growing season	7 long term wetland reference sites within the watershed	Monthly Apr-Oct. continuous monitoring

Field Operating Program: Modeling			
Primary Interventions	**Purpose**	**Locations**	**Frequency**
Hydraulic Modeling	To analyze the behavior of water	Districtwide	Annual updates as needed
Hydrologic Modeling	To predict responses of hydrologic systems to changing stresses, as well as to predict the fate and movement of solutes and contaminants in water.	Districtwide	Annual updates as needed

Collect and Share Operational Information and Data

Routine Condition Monitoring:

The CCWD will annually monitor 100% of its core, long-term sites including representative wetlands, lake levels, impaired stream outlets, and select municipal boundaries. Subwatershed stream outlets and lake water quality will be monitored on a rotating basis, at least once per five-year period as outlined below. On average, approximately 60% of watershed's waters are monitored any given year. Data collection needs beyond the capacity of internal CCWD staff will be coordinated with partners and volunteers including USGS, ACD, and local lakeshore residents. All routine data will be submitted to the state's Environmental Quality Information System (EQuIS) database and reported annually in the Anoka Water Almanac available for download online. Schedule is subject to change, but coverage is anticipated to remain comparable.

Table 2.07. Routine stream and lake monitoring estimated schedule

Monitoring Site	**2024**	**2025**	**2026**	**2027**	**2028**
	2029	**2030**	**2031**	**2032**	**2033**
D11	X		X		X
D17 (Springbrook Creek)	X	X	X	X	X
D20				X	
D23		X			
D37					X
D39 (Knoll Creek)					X
D41 (Sand Creek)	X	X	X	X	X
D44 (Coon Creek)	X	X	X	X	X
D52 (Epiphany Creek)				X	
D54 (Coon Creek)	X	X	X	X	X
D57 (Coon Creek)	X	X	X	X	X
D58			X	X	X
D59 (Coon Creek)	X	X	X	X	X
D60					X
Oak Glen creek	X				
Lower Coon creek	X	X	X	X	X
Pleasure Creek	X	X	X	X	X
Stonybrook Creek	X				
Woodcrest Creek		X			
Cenaiko Lake	X		X	X	
Crooked Lake	X	X	X	X	X
Ham Lake	X	X	X	X	X
Laddie Lake		X	X		X
Netta Lake			X	X	X
Sunrise Lake	X	X			X
Pct of Total System	60%	56%	60%	60%	72%

Performance Monitoring:

The CCWD will conduct regular inspections and performance monitoring of select BMPs owned or operated by the CCWD according to established Operations and Maintenance agreements and schedules. These include all structural BMPs funded by Clean Water Fund grants. Additionally, the CCWD may be contracted to monitor additional public or privately-owned BMPs where there is a mutual interest in evaluating performance. Results will be included in annual summary reports as part of NPDES MS4 General Permit compliance.

Table 2.08. District BMP estimated inspection schedule

BMP	`24	`25	`26	`27	`28	`29	`30	`31	`32	`33
Woodcrest Filter	X	X					X			
Pleasure Creek N Filter	X	X					X			
Pleasure Creek S Filter	X	X	X	X					X	
Epiphany Creek Filter	X	X	X	X					X	
Oak Glen Creek Filter			X			X				
Aurelia Pond/ Bench	X	X	X					X		
Future BMP(s)		TBD								

Diagnostic monitoring/ Special Investigations:

The CCWD will conduct specialized, intensive monitoring activities as needed to fill important data gaps that inform management decisions such as pollutant source tracking or model calibration. Data will be compiled in summary reports and shared with all interested parties or by request. Timing may be adjusted to align with related planning and implementation efforts.

Table 2.09. CCWD special studies estimated schedule.

Description	Est. Timing
Districtwide Winter/Spring Chloride Monitoring	2024, 2029
Contaminants of Emerging Concern Pilot with USGS- Biochar Filtration	2024
Street Sweepings Contaminant Testing	2024
Groundwater Chloride Assessment for pending 2024 impairments	2024-2027
Biomonitoring at all established MPCA sites and restored reaches	2025
Districtwide Regional Infiltration Feasibility Study	2026
Districtwide Storm Pond Leaching Study	2027
Leaky Sanitary Sewer Investigative Monitoring	2028
High Resolution Discharge Monitoring to update flow and load duration curves	2028, 2033
Districtwide Bacterial Source Tracking 10-yr follow up	2032
Stonybrook subwatershed; high resolution for model calibration/ focused plan	2024
Ditch 41 subwatershed; high resolution for model calibration/ focused plan	2024
Ditch 52 subwatershed; high resolution for model calibration/ focused plan	2025
Lower Coon Cr subwatershed; high resolution for model calibration/ focused plan	2025
Ditch 58 subwatershed; high resolution for model calibration/ focused plan	2026
Ditch 11 subwatershed; high resolution for model calibration/ focused plan	2027
Ditch 57 subwatershed; high resolution for model calibration/ focused plan	2027
Ditch 54 subwatershed; high resolution for model calibration/ focused plan	2028
Ditch 20 subwatershed; high resolution for model calibration/ focused plan	2029
Ditch 59 subwatershed; high resolution for model calibration/ focused plan	2030
Ditch 23 subwatershed; high resolution for model calibration/ focused plan	2031
Ditch 44 subwatershed; high resolution for model calibration/ focused plan	2032
Other as needed (subwatershed plan updates, focal development areas, etc)	TBD
Aquatic life reintroduction	TBD
Aquatic organism passage	TBD
Bacteria source and mitigation	TBD
Biomonitoring	TBD
Channel sediment transport	TBD
Chloride use, prevention, monitoring, and mitigation	TBD
Contaminants of emerging concern	TBD
Creek Restoration	TBD
Economic water resource	TBD
Emergency response	TBD
Flood modeling, mitigation, insurance, storage	TBD
Groundwater	TBD
Habitat	TBD
Home Owners Association Education Technical Assistance Pilot	TBD
Individual Action for Pollutant Reduction	TBD
Infiltration	TBD
Infrastructure	TBD
Innovative technologies	TBD
Land acquisition	TBD
Leaky Sanitary Sewer	TBD
Life-cycle & Replacement Cost	TBD

Description	Est. Timing
Maximum extent practicable	TBD
Natural background conditions	TBD
Opportunistic BMPs	TBD
Policy	TBD
Precipitation	TBD
Private BMP maintenance	TBD
Recreation	TBD
Regional storage	TBD
Resiliency	TBD
Resource value	TBD
Storm pond leaching	TBD
Storm pond performance	TBD
Street diet	TBD
Street sweeping	TBD
Threatened, endangered, and special concern species	TBD
Volume reduction	TBD
Well/flood contamination	TBD
Wetland restoration and enhancement	TBD
Hazard Mitigation Planning	TBD

Processing and Dissemination of Collected Data and Information

CCWD staff will organize, QA/QC, analyze, and interpret the collected data into forms that can be readily used by internal staff and interested parties. Annual hydrographs will be created from all continuous level data and compared against long-term minimums, medians, and maximums. Growing-season averages of target pollutants (TSS, TP, E. coli) will be calculated annually from routine samples for lakes and streams and used to update trend analyses. Rating curves will be developed and updated based on stage-discharge relationships. Pollutant loading curves will be updated every five years based on pollutant concentrations across flow regimes.

Raw data will be available for download in a public-facing database hosted by Anoka Conservation District (ACD). Summarized data and figures along with narrative explanations will be published annually in the Anoka Water Almanac. All routine lake and stream water quality data suitable for formal assessments will be formatted using the required MPCA LAB_MN format and submitted annually to EQuIS. Additionally, select time-sensitive data such as precipitation totals and Coon Creek stage and Discharge will be hosted online for viewing in real-time.

The CCWD will also support two-way technology transfer by attending and participating in forums for local water resource managers to share new developments, threats, and outcomes such as the University of MN's Water Resource Conference, SAFL Stormwater Research Seminar Series, Annual MN Salt Symposium, BWSR Academy, and the MN AIS Research Center's Annual Showcase. Staff will serve as a technical liaison for relevant local and regional efforts as appropriate.

Integrate Operational Information

Provide operational information, in a timely way, and in an appropriate form, to program coordinators, city engineering, public works, planning staff, and the Board of Managers. Ensure the information is understood and considered in decision-making. Operational Information to be considered includes:

a. Changes in water elevations or flows indicating abnormal drawdown or discharge.
b. Significant deviations from modeled flood elevations indicating review needs.
c. Evidence of new point sources of pollutants including illicit connections or discharge
d. Changes in BMP function indicate deteriorating or failing conditions.
e. Detections of new infestations of AIS
f. Detections of new contaminants of emerging concern
g. Detections of any conditions posing an imminent threat to human health and safety
h. Annual running averages of pollutant concentrations by subwatershed for prioritization and targeting efforts.
i. 5-year pollutant loading assessments for TMDL progress tracking

2.3 Essential Task: Capital Improvement Projects

Capital projects seek to address a problem or issue or achieve some larger strategic, operational, or goal through the application of money, authority, and/or staff. Their intent to accomplish this is in support of the sustained production or provision of the beneficial uses of water resources within the watershed. Improvement projects and activities are conducted to restore, improve, or enhance the physical, chemical, or biological function of a water resource or to address or resolve catalysts, stressors, or factors contributing to other, often larger problems.

The main purpose of improvements is to resolve, eliminate, or neutralize a specific problem or issue. Improvement projects and programs are designed to achieve legislative and program goals and objectives at the least cost. To do this improvement projects combine the condition and tendencies of the land and water resources of an area with the monetary, authority, and staff resources needed to achieve an objective. For this plan, there will be four general types of improvement operations:

- Response, investigate, and resolve
- Direct maintenance, repair, construction, restoration
- Management by opportunity
- Tracking or pursuing the source

The success of improvement projects and activities is measured by the progress made toward the CCWD's goals and objectives.

2.3.1 Summary of Expenditures

The capital improvement project plan (CIP) schedules over $104 million in capital investments over the next ten years to make reasonable headway toward achieving federal and state water quality goals. Priority investments are targeted for.

- Water quality – To achieve the 2045 deadline for TMDL compliance.
- Flood prevention and minimization and the operations and maintenance and watershed development actions needed to ensure existing flood elevations and mitigate changes to the landscape.

Seventy percent (70%) of investments are targeted toward water quality. These funds will go to projects involving the restorations, rehabilitations, enhancements, and improvements needed to achieve the 2045 deadline for load reductions under the water quality impairments and approved TMDLs. All capital improvement initiatives (projects, practices, studies, and plans) will be prioritized, targeted, and measurable. Figures 2.04 and 2.05 and Table 2.10 contain summaries of expenditures for the 2024-2033 Capital Improvement Project plan.

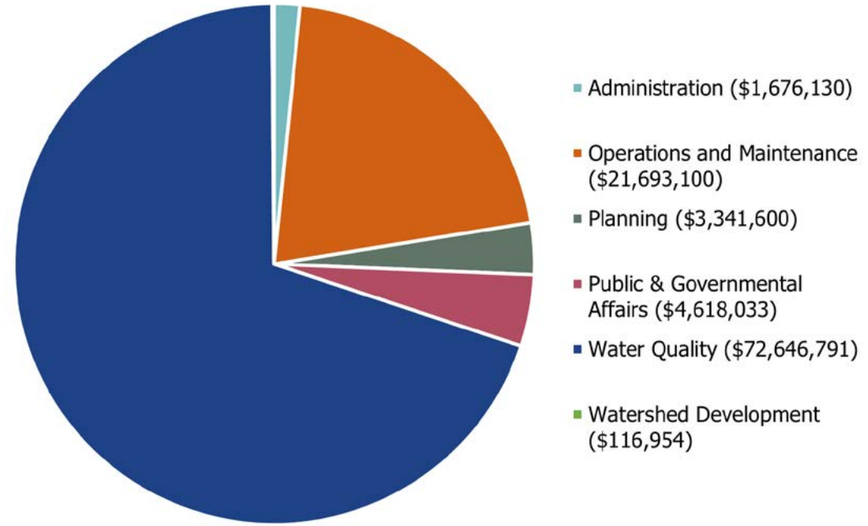

Figure 2.04. CIP Expenditures by Program 2024-2033

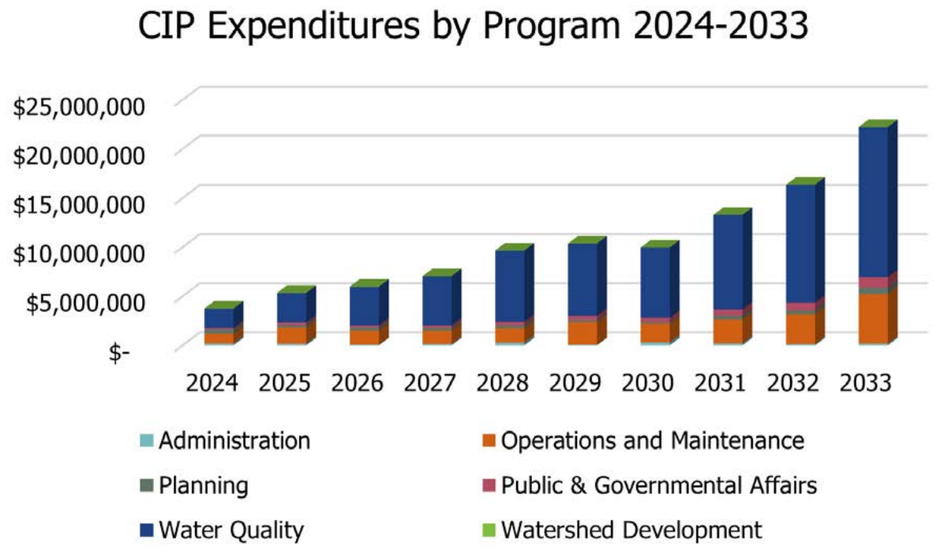

Figure 2.05. CIP Expenditures by program by year

Table 2.10. Summary of capital expenses by program by year

Year	Administration	Operations & Maintenance	Planning	Public & Gov.Affairs	Water Quality	Watershed Development	Total
2024	$182,950	$997,610	$433,000	$153,667	$1,975,777	$15,000	$3,758,004
2025	$160,272	$1,643,124	$259,170	$256,773	$3,009,808	$31,482	$5,360,629
2026	$69,326	$1,452,966	$291,012	$228,285	$3,930,407	$25,562	$5,997,559
2027	$131,250	$1,377,264	$273,933	$253,129	$5,020,514	$0	$7,056,091
2028	$272,190	$1,457,936	$308,676	$350,372	$7,268,008	$19,568	$9,676,751
2029	$59,150	$2,281,486	$231,513	$434,540	$7,369,763	$0	$10,376,452
2030	$299,378	$1,926,149	$134,760	$441,888	$7,167,232	$0	$9,969,408
2031	$194,269	$2,460,689	$367,638	$635,364	$9,631,746	$0	$13,289,706
2032	$128,345	$3,057,240	$374,554	$794,915	$12,003,599	$0	$16,358,652
2033	$179,000	$5,038,634	$667,344	$1,069,101	$15,269,936	$25,342	$22,249,358
Total	$1,676,130	$21,693,100	$3,341,600	$4,618,033	$72,646,791	$116,954	$104,092,609

2.3.2 Summary of Revenues

Revenue to fund this 2024-2033 CIP is anticipated to come from the following sources: competitive grants, non-competitive grants, intergovernmental sources, and CCWD tax levy.

Competitive Grants:

The projected revenue from competitive grants is based on the average revenue from these grants over recent years and projected forward assuming the amounts will remain the same. This revenue source has the potential to increase over the next 10 years as more CCWD projects become eligible and additional grant opportunities are identified by the CCWD of LGU partners. This revenue source also has the potential to decrease over the next 10 years as BWSR moves more money from competitive to non-competitive grants.

Non-Competitive Grants:

The projected revenue from non-competitive grants includes the current BWSR Watershed-Based Implementation Funding (WBIF) and federal Nine-Key Element (NKE) plan funding projected forward over 10 years. $294,100 is allocated every biennium in WBIF to the Coon Creek allocation area and $270,000 every four years from NKE funding (from 2021 - 2037). The averages of these current grants were spread over each year in the CIP revenue projection. This revenue source has the potential to increase over the next 10 years as BWSR moves more money from competitive to non-competitive grants. WBIF funding amounts can vary with each biennium, and the funding is allocated to all eligible entities within each allocation area. Eligible entities utilize a collaborative decision-making process to identify projects to fund.

Intergovernmental:

The projected revenue from this source is the estimated cost-sharing contributions from LGUs in the CCWD that are included in the categorical CCWD TMDL. Revenues were estimated based on the projected cost to achieve the interim CCWD TMDL 2033 pollutant reduction goals. Cost estimates to achieve these interim targets were extrapolated from average costs of past CCWD water quality improvement projects implemented from 2009-2023. Average cost estimates were calculated individually for TSS and TP reductions for both TMDL Wasteload Allocations versus Load Allocations. For subwatershed planning areas where specific TMDL implementation projects have not yet been identified, cost estimates for achieving interim TMDL targets were divided evenly across scheduled planning areas and years for each impaired stream. The projected revenue contribution for each LGU was based on the LGU's percentage of land within the subwatersheds in the drainage area of the impaired streams that have a pollutant reduction goal in the watershed. CCWD's percentage of land in this scenario includes all ditches, lakes, and wetlands. The projected revenue for the LGUs currently follows the subwatershed plan implementation schedule (Table 4). The revenue from this source has the potential to vary greatly because the estimated costs to achieve the interim 2033 TMDL pollutant reduction goals are based on multiple large assumptions. See section 1.9 of this Comprehensive Plan for a full discussion of the assumptions made for the cost estimate to meet TMDL pollutant reduction goals.

Table 2.11. Estimated Subwatershed Plan Schedule

Subwatershed	Estimated year of Subwatershed Plan Initiation	LGUs Involved									
		Andover	ACHD	Blaine	CCWD	Columbus	Coon Rapids	Fridley	Ham Lake	SLP	State Highway
Ditch 37	2024	x	x		x						
Ditch 39	2024		x	x	x		x				x
Ditch 60	2024		x	x	x		x		x		x
Ditch 41	2024-2025		x	x	x		x				x
Stonybrook	2024-2025		x	x	x			x		x	x
Ditch 52	2025		x		x		x				
Lower CC	2026		x	x	x		x				x
Ditch 58	2027	x	x		x				x		x
Ditch 57	2028-2030	x	x	x	x		x		x		x
Ditch 11	2028		x		x				x		
Ditch 54	2029-2030	x	x		x		x				x
Ditch 20	2031	x			x						
Ditch 59	2031		x		x				x		x
Ditch 23	2032		x	x			x		x		
Ditch 44	2032		x	x	x	x			x		
Ditch 39	2033			x	x		x				x
Oak Glen	2033	x	x		x			x			x
Pleasure	2033		x	x	x		x				x
Springbrook	2033		x	x	x		x	x		x	x

CCWD Levy:

This revenue source will account for the rest of the revenue required to fund the capital expenditures. The CCWD portion of intergovernmental revenue is also accounted for under this source.

The summaries of these revenue sources are contained in Table 2.12 and Figure 2.06.

Table 2.12. Current Planned Revenue Sources

	CCWD Levy	Competitive Grants	Fund Balances	Intergovernmental	Non-competitive Grants	Special Assessment	Total
2024	$2,402,546	$500,000	$0	$708,408	$147,050	$0	$3,758,004
2025	$2,793,835	$500,000	$0	$1,649,743	$417,050	$0	$5,360,629
2026	$3,675,001	$500,000	$0	$1,675,508	$147,050	$0	$5,997,559
2027	$4,086,297	$500,000	$0	$2,322,745	$147,050	$0	$7,056,091
2028	$5,260,142	$500,000	$0	$3,769,559	$3,769,559	$0	$9,676,751
2029	$5,723,199	$500,000	$0	$3,736,203	$417,050	$0	$10,376,452
2030	$5,123,215	$500,000	$0	$4,199,143	$147,050	$0	$9,969,408
2031	$6,643,759	$500,000	$0	$5,998,896	$147,050	$0	$13,289,706
2032	$8,162,639	$500,000	$0	$7,548,963	$147,050	$0	$16,358,652
2033	$11,594,566	$500,000	$0	$9,737,742	$417,050	$0	$22,249,358
Total	$55,465,198	$5,000,000	$0	$41,346,910	$2,280,500	$0	$104,092,609

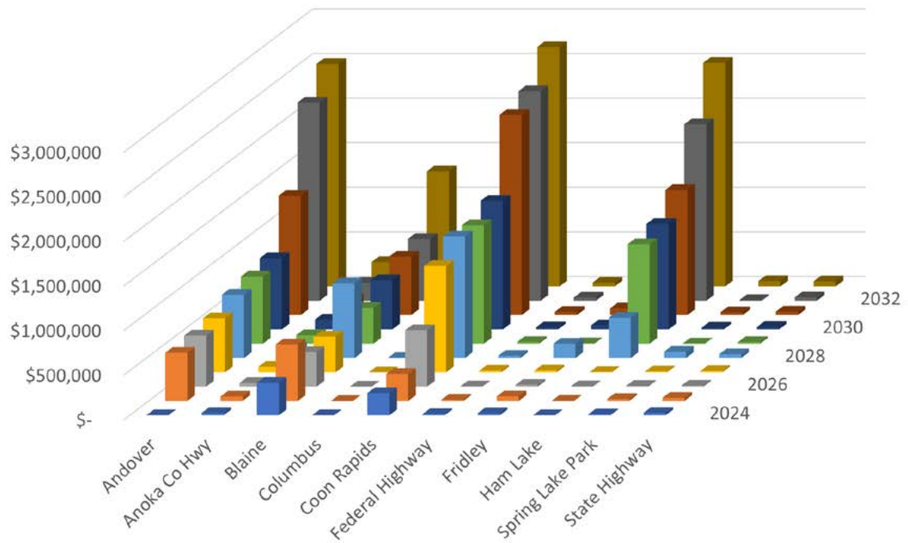

Figure 2.06. Estimated Intergovernmental Revenue Source by Year

Methodology:

For CIP projects related to meeting the CCWD TMDLs, interim load reduction targets were calculated for each pollutant and each impaired stream by subtracting all pollutant reductions achieved through 2023 from the cumulative reductions needed to achieve compliance by the 2045 target year. The balance of needed reductions was then divided across the amount of time remaining until 2045 (21 years) and then multiplied by ten to represent the 10-year plan duration. Cost estimates to achieve these interim targets were extrapolated from average costs of past CCWD water quality improvement projects implemented from 2009-2023. Average cost estimates were calculated individually for mass of TSS and TP reduced for both TMDL Waste-load Allocations versus Load Allocations. For subwatershed planning areas where specific TMDL implementation projects have not yet been identified, these cost estimates for achieving interim TMDL targets were divided evenly across scheduled planning areas and years for each impaired stream. CCWD contribution to Subwatershed Plan TMDL implementation ($13,788,364) included in CCWD levy revenue.

2.3.3 Method for Prioritization, Targeting, Measurement

All capital improvement initiatives (projects, practices, studies, and plans) will be prioritized, targeted, and measurable. Projects refer to all types of construction-type activities that typically include heavy equipment and land disturbance. Practices refer to non-structural activities such as street sweeping or turf maintenance. Studies examine issues and identify alternatives and potential costs. Plans develop strategies to create a course of action to achieve a goal or set of objectives. Ultimately all initiatives are intended to be prioritized, targeted, and measurable.

Prioritization:

All proposed capital initiatives address one or more of the priority problems, issues, concerns (PICs), or resources identified and detailed in each chapter of this Comprehensive Plan. Priorities are further reflected in the scheduling of projects (the earlier, the higher the current priority).

Priority PICs are discussed in section 2.3 of this Comprehensive Plan.

Priority resources for protection efforts include waters that are currently meeting state water quality standards and have high recreational or ecological value: Crooked Lake, Ham Lake, Lake Netta, Sunrise Lake, and Lake Cenaiko.

Priority resources for restoration efforts include all impaired streams (Coon, Sand, Pleasure, Springbrook), ditches (11, 58, 41-4), the Mississippi River, and contributing tributaries.

Targeting:

All proposed capital initiatives will be targeted. The targeting process optimizes the selection of capital initiatives to address a particular priority resource or PIC by considering the root source of the PIC, the type of initiative, the timing, and location. The CCWD conducts the targeting process in two main ways: planned targeting and opportunistic targeting.

- Planned Targeting: This is primarily done through the subwatershed planning process. The CCWD is in the process of completing subwatershed plans for all 18 subwatersheds that make up the watershed. Subwatershed plans model existing conditions, map pollutant loading hot spots, identify areas of potential flooding, and identify and prioritize BMPs

based on cost-effectiveness. Each subwatershed plan identifies capital initiatives that will most cost-effectively address the priority PICs and resources in that subwatershed.

- Opportunistic Targeting: This targeting is conducted outside of the subwatershed planning process. It occurs when priorities or initiatives are identified too late to be included in the budgeting cycle. Examples of opportunistic budgeting are typically new AIS infestations or time-sensitive municipal reconstruction projects that would be candidates for oversizing of BMPs.

Measurement:

Water quality improvement initiatives are to be measured in mass of pollutant reduced or prevented whenever possible. Runoff volumes reduced or treated is also acceptable as these can be translated into mass reductions using established literature values. Stream habitat/ connectivity improvement projects are to be measured using the Minnesota Stream Habitat Assessment tool (MSHA), Minnesota Stream Quantification Tool and Debit Calculator (MNSQT), and CCWD Aquatic Organism Passage (AOP) index. Flood prevention and minimization initiatives can be measured in multiple ways. These include the number of structures removed from the floodplain, the floodplain elevation lowered in a given reach, or storage added in a given reach.

Figure 2.07. Planned/Opportunistic Targets

2.3.4 Evaluation of Capital Projects

The success of capital projects will be evaluated by the progress toward the goals and objectives of the CCWD. The main objective that will be evaluated is progress toward the CCWD's 2045 TMDL goal. Interim TMDL goals for 2033 were calculated by subtracting all pollutant reductions achieved through 2023 from the total reductions required to achieve the Coon Creek TMDL. The balance was distributed evenly across the remaining time until the target year (22 years until 2045) and then multiplied by ten to represent the 10-year plan duration. The Wasteload Allocations (WLAs) include all regulated stormwater discharges covered under the NPDES MS4 general permit; it is the joint responsibility of all MS4s within the CCWD to achieve categorical WLAs. The Load Allocations (LAs) include unregulated discharges such as runoff from agricultural activities, stream bank and bed erosion, and other non-point sources including natural sources. Although attainment of LAs is required to meet TMDL reductions, implementation strategies are often voluntary in nature and rely on education and incentives to drive behavior change. TMDL loading allocations and interim goals for 2033 are summarized below for each impaired receiving water:

Table 2.13. CCWD TMDL Reduction Goals

Stressor (unit)	Reductions required by 2045 per CCWD TMDL (WLA+LA=Total Load)	Reductions achieved as of 2023 (WLA+LA)	2033 interim goals (WLA+LA)
TSS (tons/yr)	Coon: 930+824=1754	28+2999	410+0
	Sand: 32+4=36	17+642	7+0
	Pleasure: 72+1=73	0+101	33+0
TP (lbs/yr)	Coon: 7715+6842=14557	240+2549	3398+1951
	Sand: 979+109=1088	83+545	407+0
	Pleasure: 29+1=30	26+40	2+0
	Springbrook: 458+5=463	31+44	194+0
E. coli (billion organisms/yr)	Coon: 24785+21979=46764	10813+0	6351+9991
	Sand: 81428+9048=90475	7388+0	33654+4113
	Pleasure: 9981+101=10082	2366+0	3461+46
	Springbrook: 15580+157=15738	1239+0	6519+72
Chloride (% removal)	Pleasure: 33%	NA	Decreasing Trend
	Springbrook Cr/ Laddie Lake: 56%	NA	Decreasing Trend
	Coon Cr, Sand Cr, Lakes: 0% (Protection)	NA	Stable
Dissolved Oxygen (mg/L)	Coon Creek, upstream of Lions Coon Creek Park (>5 mg/L daily min)	Stable Trend	Increasing trend
Poor habitat/ Connectivity (index scores)	Improved MSHA, MNSQT, AOP scores	No Change	Improving Scores
Altered hydrology (volume)	Volume/rate reductions for Coon, Sand, and Springbrook Creeks	1,790,364 cf	Targets determined via subwatershed modeling

2.3.5 Capital Project Implementation Cycle

The collaborative targeting cycle is a six-phase iterative process shown in the following figure:

1. End State and Legislative Objectives
2. Target Development & Prioritization
3. Capabilities Analysis
4. Collaborator & Board Decision & Agency Assignment
5. Project Planning and Execution
6. Assessment

Outside of the Annual budgeting and capital improvement planning processes, the process is not time-constrained nor rigidly sequential. Steps may occur concurrently, but it provides an essential framework to describe steps that must be satisfied to conduct Collaborative/collaborative targeting successfully. The deliberate and dynamic nature of the collaborative targeting cycle supports collaborative planning and operations, providing the depth and flexibility required to support implementation of the Comprehensive Plan and Legislative intent as opportunities arise and plans change.

Figure 2.08. Collaborative Targeting Cycle

Phase 1: January-February - End State Evaluation and Legislative Objectives

Understanding the water management end state and the Legislature's intent, centers of gravity, objectives, desired effects, and required tasks developed during operational planning provides the initial impetus for the targeting process. Understanding the State and Federal Agency guidance, and intent is the most important and first activity of Collaborative targeting because they document the set of outcomes relevant to the present situation and set the course for all that follows. Objectives are the basis for developing the desired effects and scope of target development, and are coordinated among strategists, planners, and intelligence analysts for approval by the Administrator and/or Board of Managers.

Phase 2: March-April - Target Development and Prioritization

Target development is the analysis, assessment, and documentation processes to identify and characterize potential targets that, when successfully engaged, support the achievement of the water management objectives. Phase 2 is comprised of three steps:

- Target system analysis.
- Entity-level target development
- Target list management.

Phase 3: May–June - Capabilities Analysis

This phase of the Collaborative targeting cycle involves evaluating all available capabilities against targets 'critical elements to determine the appropriate options available to address the problem or issue while highlighting the best possible solution under given circumstances. Capabilities analysis is comprised of four steps:

1. Target vulnerability analysis,
2. Capabilities assignment,
3. Feasibility assessment
4. Effects estimate.

Phase 4: June-July - Collaborator Decision and Agency Assignment

The Agency assignment process integrates previous phases of Collaborative targeting and fuses capabilities analysis with available Agency funding and staff capability and capacity systems. The process of resourcing Initial Priority Target List targets with available Agency or systems and intelligence, inspections and monitoring assets lies at the heart of Agency assignment. This process links theoretical planning to actual operations. Once the Technical Advisory Committee or Subwater Watershed Work Groups have approved the Initial Priority Target List, either entirely or in part, Project specifications are prepared and released to the stakeholders and agencies involved. The decision of water managers in phase 4 is to either approve the draft Initial Priority Target List, approve targets to be added to or removed from the Initial Priority Target List, or approves a particular way or ways of engaging a particular target or targets.

Phase 5: June-July - Project Planning and Implementation

Upon budget approval, detailed planning must be performed for the execution of projects and activities. During execution, the operational environment changes because of other water resource conditions, circumstances, and management actions. The Collaborative targeting process monitors these changes to allow water managers to use collaborative capabilities to seize and maintain the initiative.

Phase 6: July-August - Targeting Assessment

The targeting assessment phase is a continuous process that assesses the effectiveness of the activities that occurred during the first five phases of the Collaborative targeting cycle. The targeting assessment process helps the water managers and staff determine if the ends, ways, and means of collaborative targeting have resulted in progress toward accomplishing a task, creating an effect, or achieving an objective.

Time Sensitive Target Considerations

The Comprehensive and Local Water Plan objectives and guidance shape the basic procedural framework for components to expedite engagement of Time Sensitive Targets (TSTs). Additionally, the Technical Advisory Committee shares guidance on procedures for coordination, deconfliction, and synchronization among components. Once this guidance is provided, the components establish planned and reactive procedures for engaging the prioritized TSTs.

A critical aspect of successful TST engagement is to understand the level of risk acceptable to the TAC. Items to be considered in the risk assessment include risk to the public, collaborating organizations forces, and individual citizens; possible collateral damage; and the disruption incurred by diverting assets from their deliberately planned projects.

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Table 2.14. Capital Projects and Equipment by Program

Program: Administration														
#	**Project Name**	**2024**	**2025**	**2026**	**2027**	**2028**		**2029**	**2030**	**2031**	**2032**	**2033**	**Total**	**Cities Involved or Affected**
2	Website	$15,000	$5,300	$5,618	$5,955	$6,312		$6,691	$7,093	$7,518	$7,969	$8,447	$75,904	N/A
3	Software (Abdo, MS4 Front, LaserFiche…)	$34,600	$20,352	$21,573	$22,868	$24,240		$25,694	$27,236	$28,870	$30,602	$32,438	$268,471	N/A
4	MN Stormwater research Council-Partner Funding	$10,000	$10,600	$11,236	$11,910	$12,625		$13,382	$14,185	$15,036	$15,938	$16,895	$131,808	N/A
6	Conference Room Furniture	$16,000										$0	$16,000	N/A
11	Vehicles				$78,607	$83,323			$93,622				$255,553	N/A
15	Facilities Repairs & Improvements	$10,000	$10,600	$11,236	$11,910	$12,625		$13,382	$14,185	$15,036	$15,938	$16,895	$131,808	N/A
16	Parking Lot Netting	$9,350											$9,350	N/A
17	H/C ADA Compliant Doors	$11,100											$11,100	N/A
18	Keyless Entry-Rekey	$20,900											$20,900	N/A
19	Hex Pave Additional Parking	$21,000											$21,000	N/A
20	Rear Paving & drain tank move	$35,000											$35,000	N/A
21	Mill/overlay/drainage main parking		$113,420										$113,420	N/A
22	Landscape Design & Phase 1, 2, 3, 4			$9,551		$6,817			$8,298		$10,081		$34,747	N/A
23	Window Well Covers			$10,112									$10,112	N/A
24	Roof and Vents					$126,248							$126,248	N/A
25	Septic System Replacement								$28,370				$28,370	N/A
26	Windows								$106,389	$112,772			$219,161	N/A
27	Garage Doors & Openers									$15,036			$15,036	N/A
28	Flooring, carpet replacement										$47,815		$47,815	N/A
29	Cisterns											$21,963	$21,963	N/A
30	Rain Garden Demos											$48,573	$48,573	N/A
31	Van Buren Repaving											$33,790	$33,790	N/A
	Totals:	$182,950	$160,272	$69,326	$131,250	$272,190		$59,150	$299,378	$194,269	$128,345	$179,000	$1,676,130	

Program: Operations & Maintenance														
#	**Project Name**	**2024**	**2025**	**2026**	**2027**	**2028**		**2029**	**2030**	**2031**	**2032**	**2033**	**Total**	**Cities Involved or Affected**
1	Field Equipment repair & replacement	$2,650	$2,809	$2,978	$3,156	$3,346		$3,546	$3,759	$3,985	$4,224	$4,477	$34,929	NA
9	GNSS Survey Equipment		$40,280						$58,159				$98,439	NA
34	Feasibility Study	$30,000	$31,800	$33,708	$35,730	$37,874		$40,147	$42,556	$45,109	$47,815	$50,684	$395,424	All
37	AOP phase 2 Plan	$75,000											$75,000	CR
45	Drainage Atlas		$7,950										$7,950	All
48	Asset Registry			$8,427									$8,427	All
67	Springbrook Creek Subwatershed Plan Implementation (Flooding and O&M)	$48,960	$323,454	$434,271	$9,111	$11,678		$0	$0	$0	$0	$337,896	$1,165,370	B, CR, F, SLP, ACHD
68	Non-Routine Maintenance	$96,000	$101,760	$107,866	$114,338	$121,198		$128,470	$136,178	$144,349	$153,009	$162,190	$1,265,356	All
69	Routine Ditch and Channel Repair	$100,000	$106,000	$112,360	$119,102	$126,248		$133,823	$141,852	$150,363	$159,385	$168,948	$1,318,079	All
70	Pleasure Creek Subwatershed Plan Implementation (Flooding and O&M)	$645,000	$742,000	$84,270	$11,910	$31,562		$13,382	$35,463	$15,036	$39,846	$16,895	$1,635,365	B, CR, ACHD
71	Ditch 39 Subwatershed Plan Implementation (Flooding and O&M)		$51,622	$54,720	$58,003	$61,483		$65,172	$69,082	$73,227	$77,621	$82,278	$593,209	B, CR, ACHD
72	Ditch 37 Subwatershed Plan Implementation (Flooding and O&M)		$83,086	$88,071	$93,355	$98,956		$104,894	$111,187	$117,859	$124,930	$132,426	$954,764	A
73	Ditch 60 Subwatershed Plan Implementation (Flooding and O&M)		$84,579	$89,654	$95,033	$100,735		$106,779	$113,186	$119,977	$127,176	$134,806	$971,925	B, CR, HL, ACHD
74	Existing BMP Revitalization		$9,540		$32,157	$26,512		$44,161	$76,600				$188,971	CR
75	Ditch 41 Subwatershed Plan Implementation (Flooding and O&M)			$264,889	$280,783	$297,630		$315,487	$334,417	$354,482	$375,750	$398,296	$2,621,733	CR, B, ACHD
76	Ditch 52 Subwatershed Plan Implementation (Flooding and O&M)			$25,745	$27,289	$28,927		$30,662	$32,502	$34,452	$36,519	$38,711	$254,808	CR, ACHD
77	Ditch 60 Repair			$84,270									$84,270	B
78	Lower Coon Creek Subwatershed Plan Implementation (Flooding and O&M)				$134,100	$142,146		$150,675	$159,715	$169,298	$179,456	$190,223	$1,125,612	B, CR, ACHD
79	Flood Mitigation				$297,754								$297,754	All

Program: Operations & Maintenance (cont.)														
#	**Project Name**	**2024**	**2025**	**2026**	**2027**	**2028**		**2029**	**2030**	**2031**	**2032**	**2033**	**Total**	**Cities Involved or Affected**
80	Ditch 58 Subwatershed Plan Implementation (Flooding and O&M)					$300,273		$318,289	$337,387	$357,630	$379,088	$401,833	$2,094,499	A, HL, ACHD
81	Ditch 11 Subwatershed Plan Implementation (Flooding and O&M)							$185,059	$196,163	$207,933	$220,409	$233,633	$1,043,197	HL, ACHD
82	Filtration BMP media replacement							$567,408				$625,107	$1,192,515	CR
83	Ditch 54 Subwatershed Plan Implementation (Flooding and O&M)									$212,015	$224,735	$238,220	$674,970	A, CR, ACHD
84	Ditch 57 Subwatershed Plan Implementation (Flooding and O&M)									$372,356	$394,698	$418,379	$1,185,433	A, B, CR, HL, ACHD
86	Ditch 59 Subwatershed Plan Implementation (Flooding and O&M)										$361,200	$382,872	$744,072	B, HL, ACHD
87	Ditch 23 Subwatershed Plan Implementation (Flooding and O&M)											$99,069	$99,069	A, B, CR, HL, ACHD
88	Ditch 44 Subwatershed Plan Implementation (Flooding and O&M)											$693,651	$693,651	B, C, HL, ACHD
89	Crooked lake dam replacement											$67,579	$67,579	CR
90	Oak Glen Creek Subwatershed Plan Implementation (Flooding and O&M)		$24,418	$25,883	$27,436	$29,082		$30,827	$32,676	$34,637	$36,715	$38,918	$280,590	F, ACHD
91	Stonybrook Creek Subwatershed Plan Implementation (Flooding and O&M)		$33,826	$35,856	$38,007	$40,288		$42,705	$45,267	$47,983	$50,862	$53,914	$388,708	B, F, SLP, ACHD
174	Channel sediment transport													NA
177	Creek Restoration													NA
190	Life-cycle & Replacement Cost													NA
196	Private BMP maintenance													NA
	Totals:	$997,610	$1,643,124	$1,452,966	$1,377,264	$1,457,936		$2,281,486	$1,926,149	$2,460,689	$3,057,240	$5,038,634	$21,693,100	

Program: Planning														
#	Project Name	2024	2025	2026	2027	2028		2029	2030	2031	2032	2033	Total	Cities Involved or Affected
32	Routine Model Updates	$50,000	$53,000	$56,180	$59,551	$63,124		$66,911	$70,926	$75,182	$79,692	$84,474	$659,040	All
33	Inventory Source Water Protection and Influence area and Interim Ground Water Protection and Management	$5,000	$10,600	$5,618	$5,955	$6,312		$10,706	$7,093	$7,518	$7,969	$8,447	$75,219	All
36	Surficial Groundwater Conference		$7,420										$7,420	All
38	Ditch 37 Subwatershed Plan	$76,500											$76,500	A
39	Ditch 60 Subwatershed Plan	$76,500											$76,500	CR, HL, ACHD
40	Economic water resource study	$125,000											$125,000	All
41	Ditch 41 Subwatershed Plan	$37,500	$39,750										$77,250	CR, B, ACHD
42	Stonybrook Creek Subwatershed Plan	$37,500	$39,750										$77,250	B, F, SLP, ACHD
43	Watershed Assessment		$2,650			$3,156				$3,759			$9,565	All
46	Ditch 52 Subwatershed Plan		$79,500										$79,500	CR, ACHD
47	Comprehensive Plan Review			$4,494		$8,837				$10,525		$16,895	$40,752	All
50	Lower Coon Creek Subwatershed Plan			$84,270									$84,270	B, CR, ACHD
52	Lifecycle & Replacement Cost Study				$29,775								$29,775	All
53	Ditch 58 Subwatershed Plan				$89,326								$89,326	A, HL, ACHD
55	Ditch 57 Subwatershed Plan					$75,749		$13,382	$7,093				$96,223	A, B, CR, HL, ACHD
56	Ditch 11 Subwatershed Plan					$94,686							$94,686	HL, ACHD
58	Ditch 54 Subwatershed Plan							$93,676	$7,093				$100,768	A, CR, ACHD
59	Ditch 20 Subwatershed Plan									$112,772			$112,772	A, ACHD
60	Ditch 59 Subwatershed Plan									$112,772			$112,772	B, HL, ACHD
61	Ditch 23 Subwatershed Plan										$119,539		$119,539	A, B, CR, HL, ACHD
62	Ditch 44 Subwatershed Plan										$119,539		$119,539	B, C, HL, ACHD
63	Ditch 39 Subwatershed Plan											$126,711	$126,711	B, CR, ACHD
64	Oak Glen Creek Subwatershed Plan											$126,711	$126,711	F, ACHD
65	Pleasure Creek Subwatershed Plan											$126,711	$126,711	B, CR, F, ACHD
66	Springbrook Creek Subwatershed Plan											$126,711	$126,711	B, CR, F, SLP, ACHD
166	Hydraulic and hydrologic model upgrade			$112,360	$59,551	$25,250		$13,382	$7,093	$7,518	$7,969	$8,447	$241,570	NA

Program: Planning (cont.)														
#	**Project Name**	**2024**	**2025**	**2026**	**2027**	**2028**		**2029**	**2030**	**2031**	**2032**	**2033**	**Total**	**Cities Involved or Affected**
167	Water Quantity Special studies	$25,000	$26,500	$28,090	$29,775	$31,562		$33,456	$35,463	$37,591	$39,846	$42,237	$329,520	NA
169	Groundwater Modeling	$0	$0	$0	$0	$0							$0	All
178	Economic water resource													All
179	Emergency response													All
180	Flood modeling, mitigation, insurance, storage													All
181	Groundwater													All
185	Infiltration													All
186	Infrastructure													All
187	Innovative technologies													All
188	Land acquisition													All
189	Leaky Sanitary Sewer													All
194	Policy													All
195	Precipitation													All
197	Recreation													All
198	Regional storage													All
199	Resiliency													All
200	Resource value													All
203	Street diets													All
207	Well/flood contamination													All
209	Hazard Mitigation Planning													
	Totals	$433,000	$259,170	$291,012	$273,933	$308,676		$231,513	$134,760	$367,638	$374,554	$667,344	$3,341,600	

Program: Public & Government Affairs														
#	Project Name	2024	2025	2026	2027	2028		2029	2030	2031	2032	2033	Total	MS4 Involved or Affected
92	Water Education Grants	$3,867	$4,099	$4,345	$4,606	$4,882		$5,175	$5,485	$5,815	$6,163	$6,533	$50,970	All
93	Creek Signage	$11,000	$1,060	$1,124	$1,191	$1,262		$19,003	$1,419	$1,504	$1,594	$1,689	$40,845	All
94	Subwatershed Community Survey	$29,000	$30,740	$32,584	$34,539	$36,612		$38,809	$41,137	$43,605	$46,222	$48,995	$382,243	All
95	Shallow Ground Water awareness		$2,120	$2,247	$2,382	$2,525							$9,274	All
96	Pleasure Creek Communications and Engagement Plan and Implementation	$19,900	$51,336	$26,781	$6,503	$1,294							$105,814	B, CR, F, SLP, ACHD
97	Springbrook Creek Communications and Engagement Plan and Implementation	$69,900	$25,265	$6,135	$1,221								$102,521	B, CR, F, SLP, ACHD
98	Coon Creek Communications and Engagement Plan and Implementation		$62,653	$149,451	$196,732	$294,328		$364,862	$386,754	$576,922	$732,967	$1,003,436	$3,768,107	A, B, C, CR, HL, ACHD
99	NKE Sand Creek Trail Audience survey	$15,000											$15,000	B, CR, ACHD
100	HOA Education TA Pilot Study		$31,800										$31,800	TBD
101	Individual Action for Pollutant Reduction Study		$42,400										$42,400	All
102	Diversify the source & use of groundwater					$3,156							$3,156	All
168	HUC 8 Public engagement	$5,000	$5,300	$5,618	$5,955	$6,312		$6,691	$7,093	$7,518	$7,969	$8,447	$65,903	All
183	Home Owners Association Education Technical Assistance Pilot													All
184	Individual Action for Pollutant Reduction													All
	Totals:	$153,667	$256,773	$228,285	$253,129	$350,372		$434,540	$441,888	$635,364	$794,915	$1,069,101	$4,618,033	

	Program: Water Quality													
#	Project Name	2024	2025	2026	2027	2028		2029	2030	2031	2032	2033	Total	MS4 Involved or Affected
5	Flow meters	$14,000				$10,100			$21,278			$40,547	$85,925	NA
7	Data Management Software		$106,000	$22,472	$23,820	$25,250		$26,765	$28,370	$30,073	$31,877	$33,790	$328,416	NA
8	Backpack electrofisher		$12,720										$12,720	NA
10	Multiparameter sonde			$11,236						$15,036			$26,272	NA
12	LSPIV Setup					$22,220							$22,220	NA
13	Auto sampler x 2					$30,299							$30,299	NA
14	Boat motor											$8,447	$8,447	NA
35	Districtwide Enhanced Street Sweeping Implementation Plan													All
44	Crooked Lake Comprehensive Lake Management Plan; 3rd Edition		$5,300										$5,300	A, CR
49	Districtwide Regional Infiltration Feasibility Study			$39,326									$39,326	All
51	CCWD Chloride Reduction Plan/ TMDL implementation plan				$89,326								$89,326	All
54	Ham Lake Comprehensive Lake Management Plan; 2nd Edition					$6,312							$6,312	HL
57	Sanitary Sewer Infiltration & Exfiltration Mitigation Plan							$100,367					$100,367	All
103	Districtwide Winter/Spring Chloride Monitoring													All
104	Groundwater Chloride Assessment													NA
105	Shallow Ground Water Monitoring	$2,000	$2,120	$2,247	$2,382	$2,525							$11,274	All
106	Winter Chloride Monitoring- 5 year update	$6,000						$8,029					$14,029	All
107	Street Sweepings Contaminant Testing	$15,000											$15,000	All
108	AIS Rapid Response Fund	$20,000	$21,200	$22,472	$23,820	$25,250		$26,765	$28,370	$30,073	$31,877	$33,790	$263,616	All
109	Groundwater-Surface Water Chlorides Budget Pilot	$35,000	$6,360					$8,029					$49,389	All
110	Special Studies Contaminants of Emerging Concern	$50,000											$50,000	All
111	Monitoring	$110,489	$117,130	$124,158	$131,607	$139,504		$147,874	$156,746	$166,151	$176,120	$186,687	$1,456,467	All

Program: Water Quality (cont.)														
#	Project Name	2024	2025	2026	2027	2028		2029	2030	2031	2032	2033	Total	MS4 Involved or Affected
112	Storm Pond Performance Study		$10,600		$17,865								$28,465	All
113	Buffers functions and values assessment		$15,900										$15,900	All
114	Districtwide Biomonitoring at all established MPCA sites and restored reaches		$34,980										$34,980	All
115	High Resolution Discharge Monitoring to update flow and load duration curves					$12,625						$16,895	$29,520	NA
116	Leaky Sanitary Sewer Investigative Monitoring					$94,686							$94,686	All
117	Districtwide Bacterial Source Tracking 10-yr follow up										$79,692		$79,692	TBD
118	Ditch 39 Subwatershed Plan Implementation (WQ)		$124,904	$132,399	$140,342	$148,763		$157,689	$167,150	$177,179	$187,810	$199,078	$1,435,314	All
119	Lake Plan Implementation	$5,000	$5,300	$5,618	$5,955	$6,312		$6,691	$7,093	$7,518	$7,969	$8,447	$65,904	B, CR, ACHD
120	Adopt-a-drain program	$6,000	$6,360	$6,742	$7,146	$7,575		$8,029	$8,511	$9,022	$9,563	$10,137	$79,085	TBD
121	Pet Waste Disposal Stations and Servicing	$10,288	$10,600	$11,236	$17,865	$18,937		$20,073	$21,278	$22,554	$23,908	$25,342	$182,082	All
122	Optimized Street Sweeping Cost Share	$100,000	$106,000	$112,360	$119,102	$126,248		$133,823	$141,852	$150,363	$159,385	$168,948	$1,318,079	NA
123	WQ Cost Share Program	$100,000	$106,000	$112,360	$119,102	$126,248		$133,823	$141,852	$150,363	$159,385	$168,948	$1,318,079	All
124	AOP crossing enhancement	$115,000	$79,500	$112,360		$376,218							$683,078	All
125	Springbrook Creek Subwatershed Plan Implementation (WQ)	$138,500	$305,015	$122,753	$117,613	$968,951		$30,110	$276,611	$451,089	$119,539	$844,739	$3,374,921	All
126	SBNC outlet modification	$22,500	$106,000	$11,236	$11,910	$12,625		$13,382	$14,185	$15,036	$15,938	$16,895	$239,708	B, CR, F, SLP, ACHD
127	Routine Bank Stabilization	$125,000	$152,375	$161,518	$171,209	$181,481		$192,370	$203,912	$216,147	$229,116	$242,863	$1,875,989	F
128	Technical assistance and cost share for partner-led joint projects	$15,000	$15,900	$16,854	$17,865	$18,937		$20,073	$21,278	$22,554	$23,908	$25,342	$197,712	All
129	CRDRP Stream Corridor Restoration	$440,000											$440,000	All
130	Pleasure Creek Subwatershed Plan Implementation (WQ)	$625,000	$636,000	$73,034	$0	$18,937		$0	$21,278	$0	$23,908	$0	$1,398,157	ACHD, CR
131	Pleasure Creek MnDOT Pond at RR outlet modification	$21,000	$106,000	$11,236	$11,910	$12,625		$13,382	$14,185	$15,036	$15,938	$16,895	$238,208	B, CR, F, ACHD
132	Ditch 37 Subwatershed Plan Implementation (WQ)		$607,139	$643,567	$682,181	$723,112		$766,499	$812,489	$861,238	$912,913	$967,687	$6,976,826	CR

Program: Water Quality (cont.)														
#	**Project Name**	**2024**	**2025**	**2026**	**2027**	**2028**		**2029**	**2030**	**2031**	**2032**	**2033**	**Total**	**MS4 Involved or Affected**
133	Ditch 60 Subwatershed Plan Implementation (WQ)		$124,904	$132,399	$140,342	$148,763		$157,689	$167,150	$177,179	$187,810	$199,078	$1,435,314	A
134	MN SQT Pilot		$79,500										$79,500	B, CR, HL, ACHD
135	Coon Creek Corridor Restoration		$106,000	$1,123,600	$1,191,016	$1,262,477		$1,338,226	$1,418,519	$1,503,630	$1,593,848	$1,689,479	$11,226,795	All
136	Ditch 41 Subwatershed Plan Implementation (WQ)			$132,399	$140,342	$148,763		$157,689	$167,150	$177,179	$187,810	$199,078	$1,310,410	CR, A, ACHD
137	Ditch 52 Subwatershed Plan Implementation (WQ)			$643,567	$682,181	$723,112		$766,499	$812,489	$861,238	$912,913	$967,687	$6,369,687	CR, B, ACHD
138	Field Scale Demo Applications of Emerging BMPs			$16,854	$119,102				$21,278	$150,363			$307,596	CR, ACHD
139	internal P loading mitigation project			$16,854	$119,102								$135,956	All
140	Coon Creek Headwaters Low DO Mitigation pilot project			$25,281	$178,652								$203,933	All
141	Sanitary Sewer inspection and leak mitigation			$84,270									$84,270	HL, C
142	Lower Coon Creek Subwatershed Plan Implementation (WQ)				$682,181	$723,112		$766,499	$812,489	$861,238	$912,913	$967,687	$5,726,120	TBD
143	Enhanced riparian buffers				$11,910	$12,625		$13,382	$14,185	$15,036	$15,938	$16,895	$99,972	B, CR, ACHD
144	Regional infiltration project				$44,663	$315,619				$56,386	$458,231	$422,370	$1,297,270	All
145	Ditch 58 Subwatershed Plan Implementation (WQ)					$723,112		$766,499	$812,489	$861,238	$912,913	$967,687	$5,043,939	All
146	Convert Marginal Ag land to water storage, treatment and/or wetland restoration					$94,686		$669,113					$763,799	A, HL, ACHD
147	Ditch 11 Subwatershed Plan Implementation (WQ)							$766,499	$812,489	$861,238	$912,913	$967,687	$4,320,826	A, B, CR, HL
148	Upper Coon Creek Ag E. coli Reduction Project							$153,896					$153,896	HL, ACHD
149	SSTS pollution abatement incentive program								$42,556	$45,109	$47,815	$50,684	$186,164	A, HL
150	Ditch 54 Subwatershed Plan Implementation (WQ)									$861,238	$912,913	$967,687	$2,741,838	All
151	Ditch 57 Subwatershed Plan Implementation (WQ)									$861,238	$912,913	$967,687	$2,741,838	A, CR, ACHD
152	Ditch 20 Subwatershed Plan Implementation (WQ)										$912,913	$967,687	$1,880,600	A, B, CR, HL, ACHD

Program: Water Quality (cont.)														
#	**Project Name**	**2024**	**2025**	**2026**	**2027**	**2028**		**2029**	**2030**	**2031**	**2032**	**2033**	**Total**	**MS4 Involved or Affected**
153	Ditch 59 Subwatershed Plan Implementation (WQ)										$912,913	$967,687	$1,880,600	A, ACHD
154	Oak Glen Creek Subwatershed Plan Implementation (WQ)											$0	$0	B, HL, ACHD
155	Stonybrook Creek Subwatershed Plan Implementation (WQ)											$0	$0	F, ACHD
156	Ditch 23 Subwatershed Plan Implementation (WQ)											$967,687	$967,687	B, CR, F, SLP, ACHD
157	Ditch 44 Subwatershed Plan Implementation (WQ)											$967,687	$967,687	A, B, HL, ACHD
163	Opportunistic Projects													B, C, HL, ACHD
164	Margin of Safety Retention													All
165	Relative Value of Wetlands as Water Retention Features													All
192	Natural background conditions													All
193	Opportunistic BMPs													All
201	Storm pond leaching													All
202	Storm pond performance													All
204	Street sweeping													All
206	Volume reduction													All
208	Wetland restoration and enhancement													All
	Totals:	$1,975,777	$3,009,808	$3,930,407	$5,020,514	$7,268,008		$7,369,763	$7,167,232	$9,631,746	$12,003,599	$15,269,936	$72,646,791	

Program: Watershed Development														
#	**Project Name**	**2024**	**2025**	**2026**	**2027**	**2028**		**2029**	**2030**	**2031**	**2032**	**2033**	**Total**	**MS4 Involved or Affected**
158	Engineering Activity Evaluation Standards		$13,250										$13,250	All
159	Develop Standard Project Specifications			$14,326									$14,326	All
160	Groundwater-Surface Water Borrow Pit impacts	$15,000											$15,000	All
161	Stormwater Treatment Standards		$2,332	$11,236		$631							$14,199	All
162	District Rule Amendment		$15,900			$18,937						$25,342	$60,179	All
191	Maximum extent practicable													All
205	Threatened, endangered, and special concern species													All
	Totals:	$15,000	$31,482	$25,562	$0	$19,568		$0	$0	$0	$0	$25,342	$116,954	

** further detail on CIP items can be found in the Resource Management Plans of this Comprehensive Plan.

MS4 Abbreviation Key

Abbreviation	MS4	Abbreviation	MS4
A	Andover	CR	Coon Rapids
ACHD	Anoka County Highway Dept.	F	Fridley
B	Blaine	HL	Ham Lake
C	Columbus	SLP	Spring Lake Park

Table 2.15. Capital Equipment by Program

Program: Administration													
#	**Type**	**Item Name**	**2024**	**2025**	**2026**		**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**Total**
2	Equipment	Website	$15,000	$5,300	$5,618		$5,955	$6,312	$6,691	$7,093	$7,518	$7,969	$8,447	$75,904
3	Equipment	Software (Abdo, MS4 Front, LaserFiche…)	$34,600	$20,352	$21,573		$22,868	$24,240	$25,694	$27,236	$28,870	$30,602	$32,438	$268,471
4	Equipment	MN Stormwater research Council-Partner Funding	$10,000	$10,600	$11,236		$11,910	$12,625	$13,382	$14,185	$15,036	$15,938	$16,895	$131,808
6	Equipment	Conf Room Furniture	$16,000										$0	$16,000
11	Equipment	Vehicles					$78,607	$83,323		$93,622				$255,553
15	Facility R&M	Facilities Repairs & Improvements	$10,000	$10,600	$11,236		$11,910	$12,625	$13,382	$14,185	$15,036	$15,938	$16,895	$131,808
16	Facility R&M	Parking Lot Netting	$9,350											$9,350
17	Facility R&M	H/C ADA Compliant Doors	$11,100											$11,100
18	Facility R&M	Keyless Entry-Rekey	$20,900											$20,900
19	Facility R&M	Hex Pave Addl Parking	$21,000											$21,000
20	Facility R&M	Rear Paving & drain tank move	$35,000											$35,000
21	Facility R&M	Mill/overlay/drainage main parking		$113,420										$113,420
22	Facility R&M	Landscape Design & Ph 1, 2, 3, 4			$9,551			$6,817		$8,298		$10,081		$34,747
23	Facility R&M	Window Well Covers			$10,112									$10,112
24	Facility R&M	Roof, Vents, and Solar						$126,248						$126,248
25	Facility R&M	Septic System Replacement								$28,370				$28,370
26	Facility R&M	Windows								$106,389	$112,772			$219,161
27	Facility R&M	Garage Doors & Openers									$15,036			$15,036
28	Facility R&M	Flooring, carpet replacement										$47,815		$47,815
29	Facility R&M	Cisterns											$21,963	$21,963
30	Facility R&M	Rain Garden Demos											$48,573	$48,573
31	Facility R&M	Van Buren Repaving											$33,790	$33,790
	Totals:		$182,950	$160,272	$69,326		$131,250	$272,190	$59,150	$299,378	$194,269	$128,345	$179,000	$1,676,130

Program: Operations & Maintenance													
#	**Type**	**Item Name**	**2024**	**2025**	**2026**		**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**Total**
1	Equipment	Field Equipment repair & replacement	$2,650	$2,809	$2,978		$3,156	$3,346	$3,546	$3,759	$3,985	$4,224	$4,477	$34,929
9	Equipment	GNSS Survey Equipment		$40,280						$58,159				$98,439
	Totals:		$2,650	$43,089	$2,978		$3,156	$3,346	$3,546	$61,918	$3,985	$4,224	$4,477	$133,368

Program: Water Quality													
#	**Type**	**Item Name**	**2024**	**2025**	**2026**		**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**Total**
5	Equipment	Flow meters	$14,000					$10,100		$21,278			$40,547	$85,925
7	Equipment	Data Management Software		$106,000	$22,472		$23,820	$25,250	$26,765	$28,370	$30,073	$31,877	$33,790	$328,416
8	Equipment	Backpack electrofisher		$12,720										$12,720
10	Equipment	Multiparameter sonde			$11,236						$15,036			$26,272
12	Equipment	LSPIV Setup						$22,220						$22,220
13	Equipment	Auto sampler x 2						$30,299						$30,299
14	Equipment	Boat motor											$8,447	$8,447
	Totals:		$14,000	$118,720	$33,708		$23,820	$87,868	$26,765	$49,648	$45,109	$31,877	$82,784	$514,300

** further detail on CIP items can be found in the Resource Management Plans of this Comprehensive Plan.

2.4 Essential Task: Protecting the Public,Resource Capacity & Capability

2.4.1 Background

Past unregulated development which converted natural land cover to impervious surfaces, reduced depressional storage, and created new conveyances has significantly altered the natural hydrology of the area, increased the volume and rate of runoff, and degraded the conditions of receiving waters.

Future development activities have the potential to undo some of the past impacts, but only if water quality storage and treatment objectives go beyond non-degradation and result in pollutant loading reductions. The CCWD plans to update its Rules for development in the near future to achieve needed pollutant reductions for the watershed's impaired waters.

2.4.2 The Role of Protection and Prevention

Protection/prevention are the means of preventing actions or circumstances and/or protecting the public health, safety and welfare and the productive, self-renewing relations and critical landscape and hydrologic functions. Prevention/protection involves the ability to protect against natural or man-made changes to the landscape or water resources that are either unmitigated or reduce or prevent biogeochemical functioning.

The purpose of protection and prevention is to protect the public health and safety and the functional ability of the watershed to produce and provide beneficial uses by using existing capabilities and resources to assist in both normal and catastrophic or emergency situations. To accomplish this requires local water managers to use the principles of sequencing and hydrologic, chemical, biological under a version of "do no harm."

- Avoidance,
- Minimization
- Treatment

Successful protection and prevention are aggressive; they use direct, and indirect methods, information operations; and field projects and activities to address the problem. They maximize the use of available resources, protection, and response and intervention to address the problem. Best management practices and mobile elements, such as inspections and enforcement, combine to prevent the problem from gaining momentum. Prevention and protection contain the problem and the protection/prevention water manager seeks every opportunity to transition to the improving the situation.

2.4.3 Operational Approach

Given the demands for land and limited legal authorities, the CCWD has adopted a growth management and sensitive lands regulatory approach to protect the public health and safety and the functional ability of the watershed to produce and provide beneficial uses. Most protective and preventive efforts are administered through the Watershed Development Program in the form of local, state, and federal regulations and standards that are tailored to local hydrologic conditions.

Growth management refers to an approach to land use planning and regulation that influences the type, intensity, location, and timing of new development or changes to the landscape. Sensitive lands are geologic or natural resource-based conditions or processes capable of causing either harm to the public health, safety, or welfare through direct impact or through the size and public costs involved to repair or mitigate conditions and/or effects. This approach rationally and scientifically allows for and applies water management science in addressing and regulating land use and property rights in a manner that is legally defendable and provides grounds for mitigating adverse impacts through cost effective innovative design and the application of BMPs and technology.

2.4.4 Coordination and Collaboration

The Watershed Development program administers and enforces the CCWD Rules which establish standards for managing stormwater runoff, construction best practices, and impacts to floodplains and wetlands. Ensuring that development, redevelopment, and other activities are carried out in a manner that is protective of water resources and essential hydrologic processes is essential to sound water resource management.

The Watershed Development program works closely with the engineering and community development departments of all cities within the watershed and performs the above duties concurrently with municipal review of grading, drainage and erosion control plan review and approval. All cities within the watershed require Watershed District concurrence and approval before final approval is granted by the city council. Likewise, The CCWD Board will not approve a project that has not gained either approval or concurrence on those portions of a development that has not received city approval.

2.4.5 Status of Existing Local Controls

The CCWD currently administers and implements the CCWD Rules for the entire watershed. The CCWD is also the WCA local governmental unit that administers WCA regulations for the entire watershed. Other local regulatory controls are in place for cities within CCWD. Six of the seven cities (Andover, Blaine, Coon Rapids, Fridley, Ham Lake, and Spring Lake Park) within CCWD are also considered MS4s and are required to implement regulatory stormwater controls consistent with the MS4 permit under the NPDES program. Table 2.16 includes a summary of the current municipal local controls whether through ordinance or regulation, policy, delegation to CCWD, or another entity. N/A means the information was unavailable for the community.

Table 2.16. Review of existing local controls

City	Stormwater Management	Wetland Management	Floodplain Management	Erosion & Sediment Control Management
Andover	Ordinance	Ordinance/Delegate	Ordinance	Ordinance
Blaine	Ordinance	Ordinance/Delegate	Ordinance	Ordinance
Columbus	Ordinance	Ordinance/Delegate	Ordinance	Ordinance
Coon Rapids*	Ordinance	Ordinance/Delegate	Ordinance	Ordinance
Fridley	Ordinance	Ordinance/Delegate	Ordinance	Ordinance
Ham Lake	Ordinance	Delegate	N/A	Ordinance
Spring Lake Park	Ordinance	Delegate	Ordinance	Ordinance

* City is entirely within the CCWD Boundary. CCWD Rules aply to the entire city.

The CCWD has not identified any deficiencies or redundancies of local controls related to attaining the goals and objectives set in the Plan.

2.4.6 Priorities for Protection

Priorities for protection and prevention are determined through biannual surveys of the public and water management staff on threats and management priorities and equally by state and federal regulatory requirements and programs administered within the watershed:

1. Drainage interference
2. Floodplain management
3. Water quality

2.4.7 District Rules and Enforcement

Purpose:

The Purpose of these rules is to enable the CCWD to evaluate, permit and monitor activities affecting the water and related land resources of the watershed in an orderly and informed fashion. The enforcement process of the CCWD encourage voluntary rule compliance by providing residents, property owners, and tenants the opportunity, with sufficient notice and information, to comply with the Coon Creek Watershed District Rule and other applicable laws and requirements.

Intent:

The intent of these rules is to:

1. Manage the watershed's water and related land resources for water quality and biotic integrity and functionality.
2. Prevent public health and safety hazards.
3. Prevent property damage.
4. Promote beneficial uses.
5. Reduce the discharge of pollutants from stormwater to the maximum extent practicable (MEP).
6. Identify waterways, floodplains and wetlands in which land disturbance activity should be restricted, and, in appropriate cases, prohibited.
7. Give due consideration to alternatives and creative solutions in planning and using the water and related land resources of the watershed to encourage and pursue low impact development.

Where no feasible and prudent alternative exists, the use shall be accomplished in a manner which assures the protection and safety of persons and property, public and private and which as nearly as possible:

1. Preserves and protects the natural environment; and
2. Will not result in the degradation of waterways, floodplains, and wetlands.

Enforcement actions of the CCWD intend to obtain voluntary compliance with the regulatory provisions of the CCWD.

Approach:

The current CCWD Rules were approved by the CCWD Board of Managers on October 10th, 2022, and were effective as of January 1st, 2023. The Rules are included in Appendix D. The MS4s within the CCWD including Andover, Blaine, Coon Rapids, Fridley, Ham Lake, and Spring Lake Park have their own local official controls. The current CCWD Rules will remain in effect until amended or updated. The CCWD's enforcement manual was adopted by the CCWD Board of Managers on November 9th, 2009.

The general enforcement procedures of the CCWD are to first evaluate the priority of the violation.

- High Priority: Violations that constitute an immediate or readily apparent threat to health, safety, or the environment (e.g., prohibited discharges).
- Medium Priority: Violations that do not constitute an immediate or readily apparent threat to health, safety, or the environment, but have the potential to do so if left uncorrected (e.g., unlawful encroachments).
- Low Priority: All other violations.

Following the priority determination of a violation, the following steps are taken until the violation is resolved and the permittee comes into compliance with CCWD Rules.

Step 1: Report of Violation

The enforcement process begins when the staff becomes aware of a violation. The staff may discover the violation themselves, or it may be reported by another official or local resident.

Step 2: Initial Investigation & Inspection

Once a complaint has been received by the CCWD, the Regulatory Coordinator shall conduct an initial inspection on the property within 5 days, in accordance with the Enforcement Priorities, to identify the existence of any violation(s).

Step 3: Preliminary Enforcement: Notification of Inspection, Notification of Apparent Violation, or Warning

If a rule violation does exist, then the following enforcement steps must inform the property owner of the violation so that it can be corrected. This can be done through either informal contact or by issuing a Notice of Apparent Violation.

Step 4: Violator's Alternatives

Hopefully, upon informal contact and notification of the rule violation, the landowner will revise his plans to conform to the rule law.

The type of corrective action which a Regulatory Coordinator may pursue to eliminate a violation depends primarily on the nature of the violation and the language of the rule or statute being violated. Some common examples include:

- Apply for a Permit After-the-Fact: When the violation involves a failure to secure a necessary permit, but the project is otherwise in conformance with the law, the Regulatory Coordinator should encourage the property owner to apply for a permit after-the-fact. Such an application would involve the normal review procedures, and there is no guarantee that the permit will be approved. If the permit is granted, it should be dated from the time of the decision to issue it, rather than "back dated" to the time the work was actually done.
- Apply for a Variance: The landowner may wish to apply for a variance. These tests for a variance are established in Section 14 of the CCWD Rule.
- Monitoring and Report: The landowner may wish to monitor (in cooperation with the CCWD) the conditions under question.
- Elimination of the Illicit Discharge: The landowner may volunteer to cease or eliminate all discharges to the drainage system except "rain down the drain".
- Elimination of the Illicit Connection: The landowner may volunteer to remove the illicit connection.
- Cease & Desist Activities or Practices in Question: The landowner may choose to voluntarily stop the activities at question and if needed restore the site.
- Removal or Reconstruction: If the project involves other violations, such as inadequate setback, undersized lot, improper drainage or use of unsafe building materials, the Regulatory Coordinator may need to order seemingly harsh corrective measures, such as removal of the illegal structure or its reconstruction or relocation in conformance with ordinance requirements. To obtain relief from the Regulatory Coordinator order, the property owner must appeal the Regulatory Coordinator order to the Board of Managers.
- Restoration of Affected Property: If a wetland area was cleared too heavily in violation of the Wetland Conservation Act, the landowner can reseed the area in a manner which will achieve the required vegetative density.

Step 5: Follow Up Inspection

Within five working days of the correction date specified by the Regulatory Coordinator, CCWD staff shall re-inspect the property for compliance.

Step 6: Notice of Violation -Order to Remedy

When the CCWD determines that an activity is not being carried out in accordance with the requirements of these rules, the CCWD shall issue a written 'Notice of Violation' to the owner of the property or permittee.

Step 7: The Violator's Alternatives

The landowner does have four other legal alternatives. The landowner can

- Apply for a Waiver from the requirements of the CCWD Rule in whole or in part (CCWD Rule Section 14.1)
- Apply to the Board of Managers for a rule interpretation
- Apply to the Board of Managers for a variance (CCWD Section 14.2)
- Appeal the Notice of Violation (CCWD Section 15.4).

Step 8: Final Inspection and Stop Work Order

Within five working days of the correction date specified in the "Notice of Violation", CCWD staff shall re-inspect the property for compliance.

- If the violation has been corrected, the file is closed.
- If the responsible party is making a good faith effort to comply and substantial progress has been made to correct the violation, the Regulatory Coordinator may grant a reasonable extension of the compliance date.

Step 9: Judicial Enforcement

When attempts to abate a rule violation using administrative powers have failed, the CCWD can seek judicial enforcement. Enforcement may be by criminal or civil proceedings. However, judicial enforcement of watershed district rules should only be used only when the informal efforts have failed and administrative remedies have been exhausted.

2.5 Essential Task: Information Operations

Information operations are the integrated use, during water management projects and activities, of information-related capabilities in concert with other lines of operation to influence, facilitate, or increase transparency of the decision-making of citizens and groups while protecting and pursuing the CCWD's mission and state and federal goals. Information Operations (IO) is a concept that involves both the information and operational environments use and management of information and technology in pursuit of the CCWD's mission and goals.

In today's dynamic and changing world, the CCWD must fully understand the dimensions of the Information Environment to plan and master operations within it; and these efforts must nest within a broader water management understanding of how citizens, organizations and others will use that environment to pursue personal or organizational objectives.

Goal

To collect field and program information and disseminate educational and other material in pursuit of improvements in water resources.

Intent

The purpose of information operations is to inform select audiences to influence those audiences to act, or not act, in a manner that supports the local water management mission.

Information operations involve the integrated use of:

- Target Audience Analysis
- Management clarity
- Operational support
- Website operation
- Social media efforts

End State

Through operations, actions, and activities in the information environment, to affect the decision-making and behavior of individuals and organizations to be aware of and consider the consequences on the water resource across the range of water management activities.

2.5.1 Main Tasks

Conduct Watershed-Wide Information Operations (IO)

Objective:

To enable, enhance, and protect the Board's and Administrator's decision-making cycle while influencing detractors.

Intent:

To conduct project and protection-oriented information activities that support implementation of Federal, state, and CCWD water management strategies, policies, objectives, and operations at the watershed level.

Accomplishing this will involve:

- Planning
- Synchronization and use of operations and maintenance, water quality and watershed development and protection information
- Management information.
- Public education.
- Website
- social media resources.
- Physical improvement

These activities are mutually supported by inspection, monitoring and research to influence, improve or restore water resource problems, issues and concerns; and to protect collaborator information.

Success is reflected in the Administrator's and program coordinator's understanding of the CCWD's current operating environment and the contribution to informed decision-making.

Coordinate Information Operations (IO)

Objective:

To facilitate understanding, influence and enhance public information and understanding, information-based processes and information systems.

Intent:

To coordinate public understanding efforts requires the use of:

- program authorities and resources
- project information
- target audience information
- social media
- outreach and physical involvement

Successfully coordinated efforts result in unity of action and synchronization between groups and individuals.

Establish, Organize and Operate a Collaborative Advisory Forum

Intent:

To establish, organize and operate forums for the shaping, management, control and evaluation of joint and individual projects and programs related to the CCWD. This duty includes the establishment of both the Citizen Advisory Committee and the Technical Advisory Committee. This task applies to all levels of management and collaborative efforts.

a. Develop a Collaborative Management and Evaluation Structure: To establish an organizational structure for coordination, collaboration, evaluation, and control of cooperative and collaborative efforts. This duty includes coordinating or facilitating the scaled range of responsibilities for various Boards, committees and associations that aid the CCWD in pursuing its mission.
b. Establish or Participate in Task Forces: To establish or participate in a functional or agency task force established to achieve specific limited objectives. This task force may be single or multi-agency. (eg. Subwatershed work groups)

Develop and Provide Public Affairs in the Watershed

Intent:

Develop and provide the Administrator and collaborators a program for telling the water management and collaborative management story to audiences within and outside the watershed District. This duty includes preparing information for internal and external release, facilitating access to field projects and programs and personnel for news media where appropriate. This task further includes developing PA advice for program coordinators, Administrator and Board of Managers. Related tasks include providing media support and assisting in the development and provision of information. This task also includes recommending public affairs guidance for submission to the District Administrator and developing approved guidance to staff for execution.

a. Plan and Provide for External Media Support and Operations: Plan and execute a media program directed toward CCWD public media and the media agencies that are both proactive and reactive to the demands of the media in order to fulfill our obligations and provide timely and accurate information to the CCWD's public. The program will include the development of public affairs guidance, press releases, and plans to provide information, and to meet requests of media for information on all CCWD programs, projects and activities as appropriate. Plans may include briefings and media availability by selected individuals from the Federal, state, Administration, media opportunities for coverage and releases of information.
b. Coordinate Administration/Internal Information Programs: Coordination with subordinate and component directions will be effected to ensure that internal information requirements are being addressed. This includes arranging for publication in local news letters and papers within the watershed. In addition, coordination for the production of Administrative information products.
c. Plan and Conduct Community Relations Program: Within the watershed, plan and execute public and community relations programs in coordination with outreach efforts that support direct communication with local and watershed-wide publics, as applicable. This effort requires close coordination with other CCWD programs. Plans may include appearances, speaking engagements by senior CCWD officials and Board members.

Public Information Management:

Intent:

To plan, organize, coordinate, and produce communication that is publicly accessible, timely, and factual and effectively contributes to the CCWD mission.

This activity provides the Administrator with expertise on the public and social components of the operating environment. The goal of the information management process is to continually monitor actions, decisions, and discussions across the range of CCWD operations and scales and develop timely and accurate social & political information which is critical to the Administrator's understanding and planning for both collaborative and resistant environments.

2.5.2 Responsibilities

- General
  - » To support the targeting, prioritizing, budgeting and capital improvement planning, regulation, and public information and outreach and planning activities of the CCWD and our collaborators.
- Advertising and Promotion
  - » Coordinate and supervise use of banners, signage and handouts used in Engagement activities.
  - » Provide informational support to Program Coordinators.
- Audio Visual
  - » Coordinate the development of CCWD photo library
  - » Develop and produce videos promoting CCWD projects, events with District Administrator's approval.
- Emergency Communication
  - » Assist with communications in a disaster and perform assigned duties.
- Media Relations
  - » Assist in preparation of news releases, clear release and information with Administrator.
- Newsletter
  - » Oversee the preparation of the CCWD newsletter, including content development and

management, layout, editing and publication.

- Presentations
  - » Advise and assist in development Program Coordinators and staff on CCWD education, training and CCWD sponsored presentations.
- Publishing
  - » Advise Program Coordinators and staff of publishing, printing assistance that is available.
- Web and social media
  - » Write copy and messaging for social media, website, YouTube channel and others in accordance with CCWD mission, Watershed Management Plan.

2.5.3 Enduring Information Operation Tasks:

- Improve the capability of the CCWD to monitor, analyze, characterize, assess, forecast, and visualize the Information Environment.
- Update joint concepts to address the challenges and opportunities of the Information Environment.
- Train, educate, and prepare the CCWD and Collaborators as a whole for operations in the Information Environment.
- Train, educate, and manage public information professionals and practitioners.
- Establish policy and implement authorities Information Environments, coupled with policies and procedures, techniques, and procedures, which maintain the agility of the collaborative effort in the Information Environment, including the capability to adapt as the Information Environment changes.
- Acquire and maintain sufficient capability and capacity of resources focused on operations in the Information Environment.
- Integrate and synchronize CCWD efforts for operations in the information environment with other water management activities.
- Foster the credibility, legitimacy, and sustainment of CCWD and local water management operations, actions, and activities.
- Establish and maintain enduring and situational partnerships.

2.6 Essential Task: Stability

Stability projects and activities are an overarching term encompassing various water resource goals, projects, and activities in coordination with other local, state and federal organizations to maintain or re-establish sustainable functioning of the watershed and ensure the ongoing public health, safety and welfare.

Goal

To identify, target, and mitigate the root causes of problems and issues and to set the conditions for long-term development by building the capacity and capability of both the resource and local government and non-government water management organizations.

Intent

To provide the assurances, investments and support needed to resolve, repair, or restore the watershed and sustain the beneficial uses on which present and future economic activity depends.

Key Tasks

Achieving sustainable conditions depends on the operating environment and management situations within the watershed and those in turn influence the funding, the number of staff, and the combination of tasks that can be completed.

- When effective local water management organizations exist, CCWD staff can work with and through those organizations to accomplish objectives. Together they provide an adaptive order and dynamic equilibrium that fosters sustainable use of the water resource. In this scenario, the number of staff and the scope of the mission is more limited.
- However, in a worst-case scenario, when the water management environment is fragmented, and local water management is conducted in a laissez-faire manner, local water managers must focus on essential tasks that focus on and emphasize the public health, safety and welfare and those water resource factors that directly support beneficial uses of water. Accomplishing this requires a staff capable of understanding the hydrology of the watershed, regulating activities that pose a risk to either the public health, safety, and welfare or the functioning of or provision of beneficial uses, ensuring essential services, and setting conditions within the watershed that enable the success of other actors.

End State

Successful efforts require an overarching framework that serves as a guide to develop strategy in pursuit of broader state and national goals. The end state conditions include:

- A safe and secure environment
- Established rule of law
- Social well-being
- Stable governance
- A sustainable economy

2.6.1 Essential Stabilization And Restoration Tasks Matrix

The Coon Creek Watershed District is designated to coordinate comprehensive water management efforts in stabilization restoration and sustainment at the watershed level. To that end, the CCWD coordinated a list of stability-focused, and restoration essential tasks (hereafter referred to as the essential stability task matrix). As an evolving interagency document, the essential stability task matrix helps program managers identify specific requirements to support cities and nongovernmental water-interested organizations to prevent degradation, pursue sustained beneficial use of water resources or restore impaired waters.

The matrix is designed as a starting point to help frame analysis of stabilization and restoration efforts, not as a checklist or as a comprehensive analysis tool. Effective planning in a stabilization environment begins with robust analysis of the underlying drivers of goals, values and beliefs and tastes and preferences of the parties involved. Not all the tasks outlined in the matrix work for every situation, and many situations may have key or critical dynamics not captured by the matrix.

The essential stability task matrix divides the tasks conducted during operations and their relative time frame for execution across five broad technical areas. These areas, often referred to as stability sectors, may be involved in an intervention:

- Ensuring water resource asset resiliency, efficiency, and quality
- Protecting Public Health and Safety
- Restoring Essential Services
- Supporting Local Economic and Infrastructure Development
- Supporting Local Water Management

The matrix serves to leverage functional knowledge and systemic thinking into planning, preparation, execution, and assessment and ensures that:

- The execution of tasks focuses on achieving the desired end state.
- Tasks executed by actors outside the watershed are highlighted and responsibility for these tasks within the greater water management community are identified.
- Technical specialists understand the diversity of tasks in other domains and the interdependence among the domains.

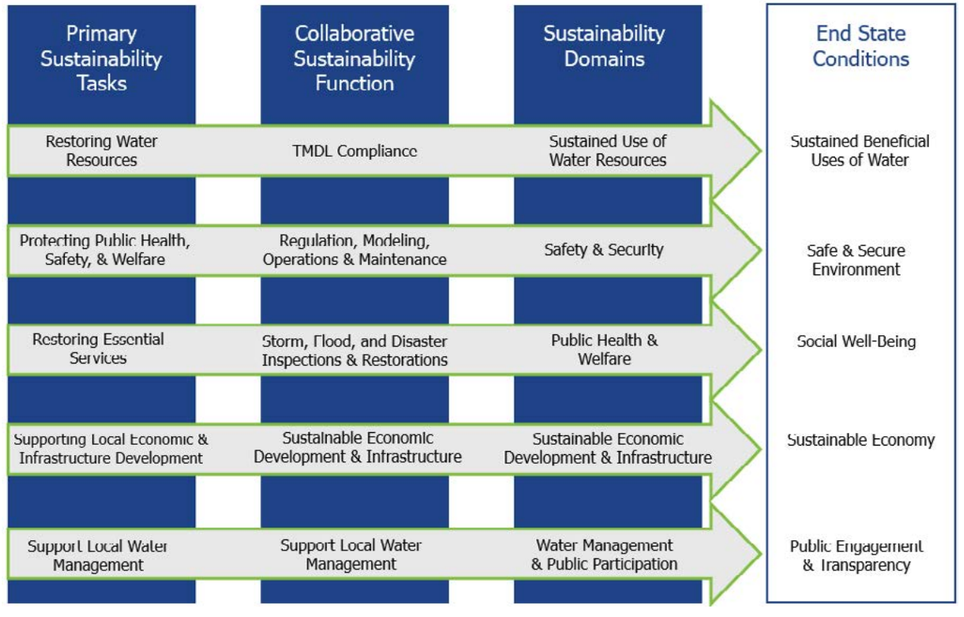

Figure 2.09. Essential stabilization and restoration task matrix

The assignment of specific projects and activities, and prioritization among the domains depends on the conditions of the operational environment during budgeting and the management situation throughout the year. The essential stability task matrix facilitates visualizing the conduct of a project or activity, sequencing necessary tasks within them, and developing appropriate priorities for those activities and resource allocation. Depending on the scope, scale, and context of the project or activity, those priorities help to deconflict activities, focus limited resources, and delineate specific responsibilities.

2.6.2 Pursuing Stability with Collaborators and other Organizations

Stability activities aim to create conditions so that collaborators and the public (people, groups and organizations) regard the maintenance, regulation and restoration of water resources as legitimate, acceptable, and predictable. Stability first aims to lessen the level of risk and uncertainty. It aims to enable the functioning of governmental, economic, and societal institutions. Lastly, stability encourages the general adherence to local laws, rules, and norms of behavior. Sources of instability manifest themselves at the local level.

To provide support and address accomplish this the CCWD must collaborate with partners:

- To support collaborator water management efforts that are consistent with the Comprehensive Plan.
- After a natural or man-made disaster as part of a limited intervention.
- During local water planning to assist in complying with state and federal water resource laws.
- To support MS4s in addressing TMDLs.
- During major construction and development projects to establish conditions that facilitate post-project activities.

To accomplish this the CCWD will support collaborators in four strategic roles:

1. Shaping operational environments
2. Preventing conflict
3. Conduct large-water management and restoration projects.
4. Consolidating gains

Ideally, stability tasks are performed by property owners or another water management organization. Typically, these tasks have a preventative or restorative component. However, the CCWD or other water management organization sometimes provides technical, financial, or administrative support to enable success of individuals or organizations. These tasks generally fall into one of three categories, representing the collective effort associated with stability efforts:

1. Tasks for which water managers retain primary responsibility.
2. Tasks for which non-governmental agencies conduct, but the District or other water management group is prepared to conduct.
3. Tasks for which citizens and non-governmental organizations retain primary responsibility.

Table 2.17. Primary stability tasks

Primary Stability Task: Ensuring water resource asset resiliency, efficiency, and quality	
Program	**Activity**
Operations and Maintenance	• Ensure that utilitarian based modifications only to the extent enabled by law or are needed to perform and provide the benefit sought. • Ensure that hard and natural assets are resilient and adaptable to extremes. • Prepare for water related disaster risk. • Monitor flood risk
Planning	• Encourage green space adjacent to water resources. • Monitor water balance and reserves. • Assess and monitor the economics and value of water and the service delivery platforms within the watershed.
Public Engagement & Information	• Engage the public, decision makers and professionals.
Water Quality	• Monitor and inspect to continue to develop accurate and dynamic picture of the trends and tendencies of water resources and system stress. • Monitor surface and surficial ground water for water borne pathogens. • Monitor, confirm and locate suspected leakages. • Assess the benefits, costs and potential for wastewater reuse within the watershed. • Monitor for threatened and invasive species • Cities will monitor the efficiency and quality of drinking water.
Watershed Development	• Review site and development design for landscape performance • Review alternative best management practices. • Ensure discharge rates and volumes are nondamaging and emulate predevelopment conditions to the maximum extent practical. • Ensure protection of source waters and all water supplies

Primary Stability Task: Protecting Public Health and Safety	
Program	**Activity**
Operations and Maintenance	• Flood protection • Finding and fixing hazards
Planning	• Development of a technical package of a limited number of high-priority, evidence-based interventions that together will have a major impact. • Political commitment to obtain resources and support for effective action. • Flood modeling
Public Engagement & Information	• Partnerships and coalitions with public- and private-sector organizations • Communication of accurate and timely information to the water resource and health communities, decision makers, and the public to effect behavior change and engage civil society.
Water Quality	• Develop the evidence base for action. • Effective performance management, especially through rigorous, real-time monitoring, evaluation, and program improvement
Watershed Development	• Hazard Prevention and Control

Primary Stability Task: Restoring Essential Services	
Program	**Activity**
Operations and Maintenance	• Assess initial and lifeline components interfacing with water resources. • Establish incident priorities around lifelines. • Organize priority responses around essential services and response.
Planning	• Develop action plan focusing on assessing condition and need of the essential services and lifelines of: » Public safety and security » Water supply and waste management » Infrastructure and service providers for medical care and public health. » Power infrastructure » Communications » Transportation and access » Hazardous materials
Public Engagement & Information	• Provide and serve as information and communication coordination for CCWD operations. • Provide public updates as needed and capable.
Water Quality	• Detailed to operations and maintenance to assess hazardous waste potential and water pollution mitigation needs.
Watershed Development	• Detailed to operation and maintenance for damage and needs assessment. • Early identification of developing problems provides a means to focus additional tasks and available resources to support the appropriate authority.

Primary Stability Task: Supporting Local Water Management	
Program	**Activity**
Engagement	• Establish conditions enabling interagency and local water management actions to succeed. • Continue engagement with local officials and the population
Operations and Maintenance	• Transfer operation and maintenance responsibility for select BMPs to a legitimate local authority according to the desired end state
Planning	• Establish conditions enabling interagency and local water management actions to succeed. • Monitor the efficacy of programs, policies, and procedures • Early identification of developing problems provides a means to focus additional tasks and available resources to support the appropriate authority
Public Information	• Continue to provide information to local officials and the population
Water Quality	• Support external agencies with needed data and intelligence nested with higher efforts. • Continue inspections and monitoring of identified and needed factors.
Watershed Development	• Continue resource and public protection activities to provide a safe and secure environment. • Continue inspections and monitoring of land changes and disturbance.

Primary Stability Task: Supporting Local Economic and Infrastructure Development	
Program	**Activity**
Engagement	• Assist local water management organizations develop capability and capacity in sustainable water infrastructure and development. • Provide direct and indirect technical assistance to local, state, and national water management entities. • Provide support to economic and infrastructure development that focuses primarily on restoring and sustaining water resources in order to provide a safe and secure environment that allows these agencies to leverage their capabilities.
Operations and Maintenance	
Planning	
Public Information	
Water Quality	
Watershed Development	

2.7 Assessment

Background

Assessment is a key component of the quarterly and annual decision cycles, helping to determine the results of project and program activities within the context of overall mission objectives and providing potential recommendations for the refinement of annual and the Comprehensive Plan. These assessments will guide iterative adjustments in the implementation of the watershed management plan priorities and the legislative objectives.

Goal

To support the Committee's and Administrator's decision-making by enriching our understanding of the operating environment and depicting progress toward accomplishing a task, creating a condition, or achieving an objective.

Intent

The purpose of these assessments is to gauge the progress of operations (programs, projects and activities) toward established annual objectives and the comprehensive management goals and mission. The assessment process is continuous; it precedes, adjusts, and guides every program, project and activity and concludes each operation or phase of an operation with lessons learned. Broadly, assessment consists of, but is not limited to, the following activities:

- Monitoring the current situation to collect relevant information.
- Evaluating progress toward attaining end-state conditions, achieving objectives, and performing tasks.
- Identifying lessons learned
- Recommending or directing action for improvement.

A successful assessment should provide:

- Updated assessment products
- Recommended adjustments to the assessment and information collection plans
- Assessment reports to state and federal agencies

2.7.1 Scheme for Operational Assessment

Comprehensive Plan assessments will be done by various Work Groups and Committees of the CCWD on a quarterly and annual basis. Three types of assessments will be conducted: Board and Administrator updates, assessment work group, and operations assessment.

Assessment Method

Assessment involves deliberately comparing forecasted outcomes with actual events to determine the overall effectiveness of our efforts. More specifically, assessment helps managers to determine progress toward attaining the desired end, achieve objectives, and perform projects and tasks. It also involves continuously monitoring and evaluating the operational environment to determine what changes may affect the conduct of operations.

Table 2.18. Summary of assessments conducted by the CCWD

Assessment Type: Board & Administrator			
Purpose	**Inputs**	**Process**	**Products**
To provide the Board and Administrator with an assessment of current operations and review upcoming events in next 45 days.	• Running estimates/ Measures of Performance • Situational Assessment • Operational Graphics • Significant Activities in last month/week • Critical Information Requirements • Decision Support Matrix	1. Review monitoring, data and inspections 2. Review current operations. 3. Program Updates ○ Staff capacity & capability ○ Intelligence Assessment ○ Operating Assessment ○ Issues, Concerns and Recommendations 4. Guidance 5. Recommended changes to annual plan and budget	• Board or Administrator's Guidance • Recommended Changes to Annual Plan & Budget as needed
Assessment Type: Assessment Work Group			
Purpose	**Inputs**	**Process**	**Products**
To assess progress of operations toward mid- to long-range planning horizons	• Assessment Plan • State, Program, & Collaborator Assessments	1. Review annual and comprehensive plan 2. Assess Programs 3. Assess Collaborators 4. Review and discuss assessment relative to approved plans. 5. Summarize Assessment Summary	• Updated assessment products • Recommended adjustments to the assessment and information collection plans • Assessment reports to higher agencies

Assessment Type: Operations Assessment			
Purpose	**Inputs**	**Process**	**Products**
To provide the public, State Agencies, Collaborators, the Board and Administrator an assessment of operations progress toward obtaining annual and mission goals	• Assessment Plan • Running estimates/ Measures of Performance • Assessment work group products (Mission analysis, trend analysis, etc.)	1. Review comprehensive and annual plans & Assessment Framework 2. Review consolidated Staff Assessments 3. Review Collaborator Assessments	• Board or Administrator's Guidance • Changes to Comprehensive Plan

Throughout the annual implementation process, program managers integrate their own assessments with those of their staff, other programs, and collaborators. Primary tools for assessing progress of operations include:

- The comprehensive plan
- The common operational picture
- Personal observations
- Running estimates and Measures of Performance (MoPs)
- The assessment plan, which includes
  - » measures of effectiveness
  - » measures of performance
  - » reframing criteria

The Board's and Administrator's visualization forms the basis for the Administrator's personal assessment of progress. Running estimates provide information, conclusions, and recommendations from the perspective of each staff section.

Depending on the situation, particularly in multi-year projects or on-going operations, managers may develop a formal assessment plan to assist them in assessing the overall progress of the operations in achieving the state and Federal goals. Whereas the Administrator's update briefing focus on assessing current operations, the operations assessment Committee focuses on providing an assessment of the progress of operations for the mid- to long-range planning horizons. Areas of assessment include progress toward transitioning to the next phase of operations, achieving objectives, or obtaining end state conditions.

Chaired by the Administrator, representatives of each program, local water management agency, and other organizations meet to assess the overall progress of operations. In addition to assessing progress, the Committee discusses what is working, what is not working, and how to improve operations.

Based on the assessment, the Administrator may provide planning guidance at the end of the

meeting or spend some time to think about the assessment before providing planning guidance. Key outputs from this meeting may include changes to the annual or comprehensive plan resulting in an amendment of those plans.

Short- and Mid-Range Assessment frameworks will be based on criteria that aid in evaluating progress. Those criteria will be in the forms of

- Measures of effectiveness (MOEs) help determine if a task is achieving its intended results.
- Measures of performance (MOPs) help determine if a task is completed properly.

MOEs and MOPs are simply criteria—they do not represent the assessment itself. MOEs and MOPs require relevant information in the form of indicators for evaluation.

A measure of effectiveness is a criterion used to assess changes in system behavior, capability, or operational environment that is tied to measuring the attainment of an end state, achievement of an objective, or creation of an effect.

- MOEs help measure changes in conditions, both positive and negative.
- MOEs are commonly found and tracked in formal assessment plans.
- MOEs help to answer the question "Are we doing the right things?"

A measure of performance is a criterion used to assess actions that are tied to measuring task accomplishment. MOPs help answer questions such as "Was the action taken?" or "Were the tasks completed to standard?"

- MOPs confirm or deny that a task has been properly performed.
- MOPs are commonly found and tracked at all echelons in execution matrixes.
- MOPs are also commonly used to evaluate training.
- MOPs help to answer the question "Are we doing things right?"

There is no direct hierarchical relationship between MOPs to MOEs. Measures of performance do not feed MOEs or combine in any way to produce MOEs—MOPs simply measure the performance of a task.

In the context of assessment, an indicator is an item of information that provides insight into a measure of effectiveness or measure of performance.

- Indicators take the form of reports from subordinates, surveys and polls, and information requirements.
- Indicators help to answer the question "What is the current status of this MOE or MOP?"

Priorities for Assessment

1. Protecting the public health, safety and welfare
2. Protecting and improving the capacity and capability of the watershed to sustain provision of select beneficial uses of water.
3. Succeeding in the collaboration and teamwork required for whole-of government multi-domain management of the water resource.

Ensuring Nesting and Consistency with State and Federal Intent

All assessment should begin with a sequential review of the following:

- Federal and State legislative goals and Intent.
- CCWD
  - » Mission
  - » Comprehensive plan goals
  - » Annual plan and budget objectives
- Review of Operating Environment and Management Situation
- Any relevant assessment products produced by citizen or government organizations.
- Identification of potential data sources

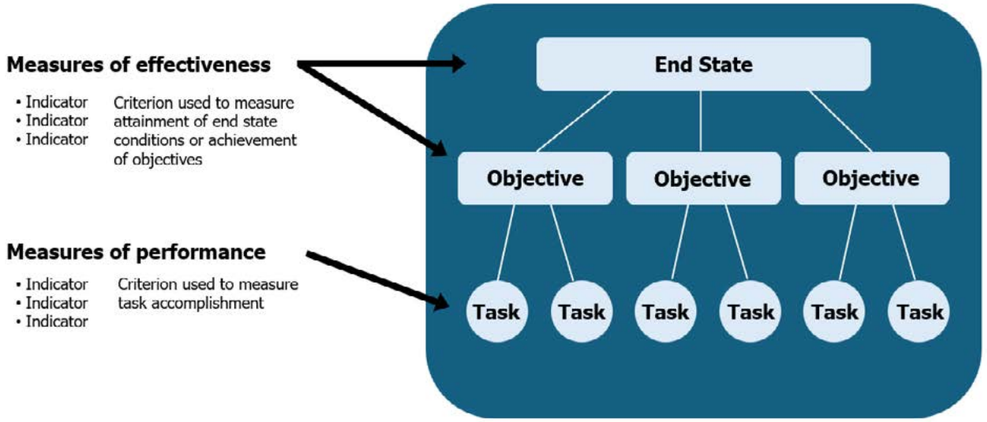

Figure 2.10. MOE and MOP

Priority Information requirements are:

1. Legislative, agency or legal initiatives affecting funding, responsibilities, authorities or staffing.
2. Flooding: changes and trends in precipitation, conveyance, storage, infiltration, or evaporation.
3. Water Quality: Condition and trends of physical, chemical or biological factors or the stressors affecting impaired waters.

Table 2.19. Watershed-wide Goal Assessment Framework

Watershed-wide Goal	MOEs	Indicators		Measures
(1) Foster a watershed with moderate geomorphic, hydrologic, and biotic integrity relative to its natural potential condition.	(1.1) Geomorphic Integrity	(1.1.1) Conformance to CCWD development rules		(M.1.1.1) % of CCWD developed under "new" stormwater rules
	(1.2) Hydrologic Integrity	(1.2.1) Peak flows (1.2.2) Floodplain connectivity (1.2.3) Base flow Condition		(M-1.2.1) % reduction of modeled storm peaks (M-1.2.2) % channel where 3-yr event overtops banks (M-1.2.3) % of channel with flowage under drought conditions (only for aq. Life impaired reaches)
	(1.3) Biotic Integrity	(1.3.1) Macroinvertebrate IBI (1.3.2) Fish IBI (1.3.3) MSHA Scores		(M-1.3.1) % attainment of applicable threshold (M-1.3.2) % attainment of applicable threshold (M-1.3.3) Trend in MSHA scores
(2) Improve the stability of the drainage network in the watershed.	(2.1) Stability of Drainage Network	(2.1.1) Bank/bed erosion (2.1.2) Soil erosion (2.1.3) Channel stability		(M-2.1.1) Ditch inspection scores (M-2.1.2) Construction site compliance (M-2.1.3) % of channel experiencing aggradation or degradation
(3) Foster a watershed with physical, chemical, and biological conditions that suggest that soil, riparian, and aquatic systems, while still at risk, exhibit signs of being marginally recovered in supporting beneficial uses.	(3.1) Flooding	(3.1.1) Flood prevention		(M-3.1.1) # of habitable structures removed from 1% floodplain
	(3.2) Aquatic life	(3.2.1) Aquatic life impairment (3.2.2) Aquatic consumption impairments		(M-3.2.1 & M-3.2.2) 10-yr rolling average (mean) pollutant conc. & percent exceedance rate of water quality standards (WQS)
	(3.3) Recreation	(3.3.1) Recreation impairment		(M-3.3.1) 10-yr rolling average (geomean) *E.coli* conc. & percent exceedance rate of WQS

Table 2.20. Resource goals and objectives.

Resource: Groundwater			
Goal	**Objectives**		**Measures**
(GW) To cooperatively manage surficial groundwater underlying the Coon Creek Watershed and promote long-term maintenance or restoration of groundwater-dependent ecosystems.	(GW-1) Install and collect data from shallow GW well network for at least 5 years.		(GW-1.1) # of years of data collected from GW well network.
	(GW-2) Complete GW data collection to sufficiently inform the current nature, structure, and function of the surficial GW zone.		(GW-2.1) Is data collected sufficient to inform nature, structure, and function of surficial GW? (yes/no)
	(GW-3) Plan and host the first Anoka Sand Plain Surficial Groundwater Conference.		(GW-3.1) # of ASP Surficial GW Conferences held. (GW-3.2) # of agencies attending conference.
	(GW-4) Revise WD rules and Plan to restore and protect surficial GW quantity and quality more effectively.		(GW-4.1) # of rule amendments made for surficial GW restoration/protection. (GW-4.2) % of permits that triggered new surficial GW rules.

Resource: Public Drainage			
Goal	**Objectives**		**Measures**
(PD) To provide sustainable drainage in a fiscally responsible manner for administration, protection, utilization, and enjoyment of the waters and related resources of the watershed consistent with the Comprehensive Watershed Management Plan.	(PD-1) Inspect 100% of drainage network under District's control every 5 years.		(PD-1.1) % of District's drainage network inspected over 5-year period.
	(PD-2) Conduct annual condition assessment of all the District's hard assets that support public drainage.		(PD-2.1) % of District's hard assets that support public drainage included in annual condition assessment.
	(PD-3) Minimize public cost and impact by minimizing the sections of the ditch requiring regular maintenance and repair and increasing the amount of drainage network with restored or multiple-use stream segments.		(PD-3.1) % of the drainage system requiring regular maintenance. (PD-3.2) % of the drainage system that is "restored" or modified for "multiple-use".

Resource: Water Quality			
Goal	**Objectives**		**Measures**
(WQ) To protect and improve the physical, chemical, and biological quality of the water resource consistent with State and Federal water quality standards.	(WQ-1) Meet 2033 Interim TMDL stressor goals (Table 2.19).		(WQ-1.1) % of progress towards meeting individual TMDL TSS, TP, and E. coli loading allocations. (WQ-1.2) Trend of dissolved oxygen in Coon Creek. (WQ-1.3) Trend of AOP scores; # of remaining significant barriers (WQ-1.4) Trend of MSHA/MNSQT scores. (WQ-1.5) Trend in peak flows in hydrology-limited reaches. (WQ-1.6) % of impairments for which progress was made (WQ-1.7) Protection of unimpaired priority waters/ # new impairments based on declining conditions
	(WQ-2) Collect data of adequate quantity and quality for assessing the condition and trends of District's receiving waters, identifying pollutant sources and hotspots, and evaluating BMP performance.		(WQ-3.1) % of eligible WQ project planning and implementation costs covered by outside grants. (WQ- 3.2) % of available CCWD Water Quality Cost Share Funds utilized by local partners.
	(WQ-3) Leverage local water quality improvement project investments with at least 50% grant funding.		(WQ-3.1) % of eligible WQ project planning and implementation costs covered by outside grants. (WQ- 3.2) % of available CCWD Water Quality Cost Share Funds utilized by local partners.
	(WQ-4) Provide community co-benefits in at least 75% of water quality improvement projects.		(WQ-4.1) % of water quality improvement projects implemented with community co-benefits such as habitat, aesthetics, recreation, drainage, flood mitigation, etc.
	(WQ-5) Minimize public costs by conducting feasibility studies and critically evaluating the appropriateness of standards for each water quality project implemented.		(WQ-5.1) % of WQ projects that had a feasibility study conducted. (WQ-5.2) % of projects failing to achieve modeled performance due to unforeseen constraints. (WQ-5.3) Success rate of petitions for revised WQS due to natural/pre-existing conditions.
	(WQ-6) Complete all remaining subwatershed plans and begin implementation of at least 75% of subwatershed plans.		(WQ-6.1) % of subwatershed plans completed in District. (WQ-6.2) % of subwatershed plans that have started implementation.
	(WQ-7) Conduct annual condition assessment of all the District's hard assets that support water quality.		(WQ-7.1) % of District's hard assets that support water quality included in annual condition assessment.

Resource: Water Quantity			
Goal	**Objectives**		**Measures**
(WQT) To closely monitor and model the District's response and behavior to various hydrologic events, develop and regulate land use and infrastructure, and operate and maintain watershed components and functions that benefit the public health, safety, and welfare and reduce adverse effects.	(WQT-1) Refine District floodplain model for the entire District through subwatershed planning process by 2033.		(WQT-1.1) % of District with refined floodplain model.
	(WQT-2) Maintain or reduce the % of District stormwater infrastructure in "poor" condition relative to 2023 baseline.		(WQT-2.1) % of District stormwater infrastructure in "poor" condition.
	(WQT-3) Increase the % of land in the District developed under current stormwater regulations (2023 baseline).		(WQT-3.1) % of watershed developed under current stormwater regulations.
	(WQT-4) Reduce # of habitable structures at risk of flooding in the 1% storm (2023 baseline).		(WQT-4.1) # of habitable structures at risk of flooding in the 1% rain event.

Resource: Wetlands			
Goal	**Objectives**		**Measures**
(WL) To pursue the no net loss of the quantity, quality, and biological integrity of the District wetlands.	(WL-1) Achieve no net loss of wetland through permitted activity.		(WL-1.1) # of acres of wetland lost/gained each year through permitted activity.

Table 2.21. TMDL pollutant reductions required

Stressor (unit)	Reudctions required by 2045 per CCWD TMDL (WLA+LA=Total Load)	Reductions achieved as of 2023 (WLA+LA)	2023 interim goals (WLA+LA)
TSS (tons/yr)	Coon: 930+824=1754	28+2999	410+0
	Sand: 32+4=36	17+642	7+0
	Pleasure: 72+1=73	0+101	33+0
TP (lbs/yr)	Coon: 7715+6842=14557	240+2549	3398+1951
	Sand: 979+109=1088	83+545	407+0
	Pleasure: 29+1=30	26+40	2+0
	Springbrook: 458+5=463	31+44	194+0
E. coli (billion organisms/yr)	Coon: 24785+21979=46764	10813+0	6351+9991
	Sand: 81428+9048=90475	7388+0	33654+4113
	Pleasure: 9981+101=10082	2366+0	3461+46
	Springbrook: 15580+157=15738	1239+0	6519+72
Chloride (% removal)	Pleasure: 33%	NA	Decreasing Trend
	Springbrook Cr/ Laddie Lake: 56%	NA	Decreasing Trend
	Coon Cr, Sand Cr, Lakes: 0% (Protection)	NA	Stable
Dissolved Oxygen (mg/L)	Coon Creek, upstream of Lions Coon Creek Park (>5 mg/L daily min)	Stable Trend	Increasing trend
Poor habitat/ Connectivity (index scores)	Improved MSHA, MNSQT, AOP scores	No Change	Improving Scores
Altered hydrology (volume)	Volume/rate reductions for Coon, Sand, and Springbrook Creeks	1,790,364 cf	Targets determined via subwatershed modeling

2.7.2 Reframing Criteria

Framing is the act of intentionally setting the stage for problem solving. Framing the problem identifies obstacles impeding progress towards achieving the identified Federal, State and local goals and objectives. Framing activities help managers' frame a problem including reviewing how we perceive and define:

- The operating environment
- Management situation
- Identifying problems and mapping out their relationships, and
- Using a narrative, maps and graphics to capture and communicate the problem, needs and goals.

The purpose of problem framing, or reframing is to determine which obstacles are impeding the end state or goal achievement. The environmental frame encompasses the current and future state of the operating environment.

The planning and management approach used in this plan enables water managers and staff to frame an operational environment, recognize problems, and create solutions. This approach and the assessment process promotes continuous assessment of the operating environment and management situation and the continual framing and reframing of problems, issues and concerns, ensuring leaders and managers think critically and creatively.

Criteria and triggers for immediate reframing of the water management problem are:

1. Congress and/or the State of Minnesota make sufficient funding available to achieve the TMDL by 2045
2. The U.S. Environmental Protection Agency extends the 2045 deadline for TMDL achievement.
3. The Minnesota Pollution Control Agency evaluates the use attainability of the impaired waters within the Coon Creek watershed.
4. Changes in operating environment and or trends contributing to either contested norms or persistent disorder.

2.7.3 Communicating Assessment Recommendations to Boards, Councils and Managers

Short-, Medium-, and Long Range assessments are targeted to The following audiences.

Table 2.22. Audience and medium of the assessment communications

Assessment type	Purpose	Frequency	Audience	Medium
Board & Administrator Update	To provide the Board and Administrator as assessment of current operations and decisions in the next 45 days.	Monthly	• Board of Managers • District Administrator	• Administrator's Report
Assessment Work Group	To assess the progress of projects and programs toward mid- to long-range horizons	Quarterly	• District Administrator • Local Water Managers	• Quarterly Assessment Memo
Operations Assessment	To provide the Board with an assessment of CCWD operations and progress toward achieving end state conditions and state and federal goals	Annually	• Board of Managers • State Agencies	• Annual Report

2.8 Risks

To implement the 2024-2033 Comprehensive Watershed Management Plan effectively, the CCWD, cities and other water management entities must take a watershed-wide integrated approach to risk while thinking across multiple time horizons of the next 10 and 20 years. Boards, Councils, and water managers must consider transferring risk away from priority water resource concerns and subwatersheds and be more risk tolerant in the present to reduce future risk to the resource and the public health, safety, and economic welfare.

The watershed is at an inflection point and the doorstep of a very different and volatile decade. To achieve State and Federal goals will require all parties and stakeholders involved in water management. To succeed we must:

- Adopt a multi-scaled local to watershed-wide integrated approach to shift risk across multiple timelines.
- Transfer risk away from water quality and groundwater
- Become more tolerant of certain risks.

No party can address these problems, issues, and concerns alone. Risk management will depend on ongoing collective ability to adapt, innovate, remain strategically disciplined, and on our collective efforts. All of these will be accomplished or facilitated through:

- Ongoing monitoring and assessment of the operating environment and management situation
- The continued collaboration, communication and assessment actions identified.
- Multiscale and integrated planning, programming, budgeting and execution.

To reduce the risks the CCWD will seek to:

- Extend the TMDL deadline beyond 2045.
- Make considerably more money available to restore and replace natural and hard infrastructure.
- Differentiate or reclassify impaired water based on the principles of use attainability.

2.9 Incentive Program

The CCWD's incentive program is intended to support the goals and objectives of this Comprehensive Plan. The CCWD currently has two separate cost-share grants in the incentive program – the Water Quality Cost-Share Grant and the Water Education Grant. The CCWD reserves the right to add grants to this program or change funding amounts or sources if needed during this Comprehensive Plan.

2.9.1 Water Quality Cost-Share Grant

Purpose: The purpose of this cost-share program is to support projects and practices that improve water quality consistent with the CCWD Total Maximum Daily Load study (TMDL) and Watershed Restoration and Protection Strategy Report (WRAPS). This grant is intended to operate and support projects through at least 2033.

Key Tasks: The key tasks to meet the purpose of this grant include advertising the grant to eligible partners, releasing RFPs annually, ensuring funding of the grant meets the demand for the grant, and reviewing and approving eligible applications.

Success Indicators: This program will be successful if LGU partners leverage this grant funding to implement projects that improve water quality above and beyond NPDES standards, demand for the grant program grows, and the grant program supports efforts to meet the goals and objectives of this Comprehensive Plan.

Scope

In 2024, $215,000 is available to assist local partners in implementing eligible projects, up to $75,000 per project or 50% of eligible costs (whichever is less).

There are three categories for cost-share funding:

1. Water Quality Improvement Projects & Practices ($100,000)
2. Street Sweeping Enhancements ($100,000)
3. Water Quality Improvement planning ($15,000)

Funding Source

This cost-share grant program is currently funded by the CCWD's general levy.

Eligibility

Projects must be located within the Coon Creek Watershed District's legal boundaries.

The following entities may apply for cost-share assistance under this program:

- Entities jointly responsible for achieving CCWD TMDL pollutant loading targets including member cities, Anoka County, and MnDOT
- The Anoka Conservation District
- Local units of government may act as a grantee for joint projects on behalf of private individuals or entities with prior approval of CCWD staff

The CCWD Board of Managers reserves the right to deny applications that do not meet substantial scoring criteria or fund a portion of an eligible application.

Eligible projects include:

1. Projects intended to address beneficial use impairments in CCWD's waters:

Table 2.23. Projects intended to address beneficial use impairments

Receiving Water	Impairment	Pollutant or Stressor
Coon Creek	Aquatic Life, Recreation	TSS, TP, DO, habitat, altered hydrology, E. coli
Sand Creek	Aquatic Life, Recreation	TSS, TP, habitat, altered hydrology, E. coli
Springbrook Creek	Aquatic Life, Recreation	TP, habitat, altered hydrology, chlorides, E. coli
Pleasure Creek	Aquatic Life, Recreation	TSS, TP, habitat, chlorides, E. coli
Mississippi Rv	Aquatic Life, Recreation	TSS, TP, E. coli

2. Projects intended to reduce chlorides in District waters
3. Projects intended to protect high-quality unimpaired resources consistent with the CCWD WRAPS (e.g. Crooked Lake, Ham Lake, Lake Netta, Cenaiko Lake)
4. Projects in conjunction with planned municipal construction, redevelopment, or retrofit projects that meet the above criteria and exceed permit requirements are encouraged.

Ineligible Projects include:

1. Projects intended to meet the minimum requirements of CCWD Rules or other mandates.
2. Projects already completed.
3. Repeated proposals by the same applicant exceeding a total lifetime award of $50,000 or within 18 months of a similar award with the exception of enhanced street sweeping activities.

Eligible Costs include:

1. Contractors, Services, and Equipment including, but not limited to:
    - » Construction services
    - » Engineering services
    - » Laboratory and geotechnical analyses
    - » Signage
    - » Materials and supplies, including freight charges
    - » Capital equipment
2. Actual project costs; grantees may not inflate contractor or materials costs

Ineligible Costs include:

1. Staff time: Staff time is not reimbursable under this cost-share grant and may not be used to satisfy match requirements with the exception of street sweeping operators.
2. Maintenance costs: costs associated with maintenance of existing practices or maintenance of proposed project elements.

Examples of Eligible Projects

WQ improvement projects and practices examples:

- Oversizing stormwater volume or treatment BMPs as part of development/redevelopment work
- Retrofitting existing BMPs to increase performance
- Construction of new structural stormwater BMPs
- Implementation of non-structural BMPs (pet waste, goose control, incentive programs, etc.)
- Equipment upgrades (de-icing, smart irrigation controllers, sanitary I&E televising, etc.)
- Stream crossing enhancements for aquatic organism passage

Street sweeping enhancements examples:

- Equipment purchase/upgrades (e.g., regenerative air sweepers, leaf vacuums, trommel screener)
- Increased in-house sweeping effort
- Targeted contract sweeping
- Beneficial reuse of sweepings that increase program capacity

WQ improvement planning examples:

- Modeling BMP construction scenarios
- Development of concept designs
- Feasibility analyses
- Geotechnical analyses

Timing

A competitive RFP is released each year with applications accepted on a rolling basis. Proposals are scored and awarded semiannually until all funds are depleted. Deadlines are at 4:30 PM on the 4th Friday of January and July. If surplus cost-share funds remain in any grant category after the second round of awards, CCWD reserves the right to reallocate dollars between cost-share categories to fund additional proposals.

Applications will be scored by CCWD staff and the CCWD Engineer. Recommendations will be brought before the CCWD Board of Managers for formal approval at the second regular meeting after each deadline. Applications are considered complete when all sections are filled out, including any required attachments, and signed.

Submit completed applications to: jdauphinais@cooncreekwd.org

Applicants are strongly encouraged to contact Justine Dauphinais, CCWD Water Quality Coordinator, with any questions or to schedule a pre-application meeting to discuss potential projects. Applicants will be notified when all funds are expended for the given calendar year.

2.9.2 Water Education Grant

Purpose: The purpose of this grant is to provide funds for public or private groups, programs, or projects that support or pursue the continued planning and management of CCWD and are responsive to the needs and concerns of an informed public. This grant is intended to operate and support projects through at least 2033.

Key Tasks: The key tasks to meet the purpose of this grant include advertising the grant to eligible partners, releasing RFPs annually, ensuring funding of the grant meets the demand for the grant, and reviewing and approving eligible applications.

Success Indicators: This program will be successful if eligible parties leverage this grant funding to provide informational, educational, or volunteer opportunities to the public, demand for the grant program grows, and the grant program supports efforts to meet the goals and objectives of this Comprehensive Plan.

Scope

In 2024, $3,867 are available to fund projects that meet eligibility criteria and are selected by the District.

Funding Source

This cost-share grant program is currently funded by the CCWD's general levy.

Eligibility

Eligible Applicants Include:

- Public and Private Schools including those that draw a significant amount of the student body from within CCWD
- Not-for-profit or Religious organizations located within CCWD
- Government agencies located within CCWD

- Businesses or corporations located within CCWD

Eligible Projects Include:

- Projects that provide information to the public and decision-makers regarding;
  - » The watershed or watershed district
  - » Compatible uses of its water resources
  - » How individuals can assist in water resource management
  - » Ways to improve water quality
- Projects that provide opportunities for the public to participate in water quality activities or to volunteer.
- Projects that support education opportunities for K-12 students concerning awareness of water quality or the impact of land-use on water quality.

Eligible Expenses

- All or a portion of an eligible application may be funded.

Ineligible Projects Include:

- Incomplete applications will not be referred to the Board for consideration or projects already completed or in progress when approved.

Examples of Eligible Projects

- Transportation to Water Fair
- Purchase of water analysis kits

Timing

Applications are considered year-round until funds are depleted.

- Complete applications are reviewed by staff and the CCWD Board.
- Grants are awarded by the Board in increments of approximately $500.
- Applications not funded within a fiscal year must reapply for consideration.

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3. Operational Resource Plans

The intent of the operational resource plans is for each major resource; groundwater, public drainage, water quality, water quantity, and wetlands, to describe the current situation, goals and objectives, and the essential tasks that must be conducted to achieve those goals and objectives.

Context Reminder: Central Water Management Problem

How do local water management authorities sufficiently fund, and staff the needed water management efforts in the next ten years and beyond while continuing to effectively deal with today's problems?

3.1 Plan Goals and Objectives

3.1.1 Watershed-wide Goals

Definition: Overarching end-state outcomes for the entire watershed that are broad and intended to be tracked over time on a 5 to 10-year frequency.

1. Foster a watershed with moderate geomorphic, hydrologic, and biotic integrity relative to its natural potential condition.
2. Improve the stability of the drainage network in the watershed.
3. Foster a watershed that exhibits physical, chemical, and biological conditions that suggest that soil, riparian, and aquatic systems, while still at risk, exhibit signs of being marginally recovered in supporting beneficial uses.

3.1.2 Resource Goals and Objectives

Definition: Resource Goals are general, long-term desired outcomes for a given resource in the watershed that aims to achieve the CCWD Mission. Resource Objectives are specific, measurable actions to be taken to achieve a given resource goal.

Table 3.01. Comprehensive Plan's Resource Goals and Objectives

Resource	Goal	Objectives
Groundwater	(GW) To cooperatively manage surficial groundwater underlying the Coon Creek Watershed and promote long-term maintenance or restoration of groundwater-dependent ecosystems.	(GW-1) Install and collect data from shallow GW well network for at least 5 years.
		(GW-2) Complete GW data collection to sufficiently inform the current nature, structure, and function of the surficial GW zone.
		(GW-3) Plan and host the first Anoka Sand Plain Surficial Groundwater Conference.
		(GW-4) Revise WD rules and Plan to restore and protect surficial GW quantity and quality more effectively.

Resource	Goal	Objectives
Public Drainage	(PD) To provide sustainable drainage in a fiscally responsible manner for administration, protection, utilization, and enjoyment of the waters and related resources of the watershed consistent with the Comprehensive Watershed Management Plan.	(PD-1) Inspect 100% of drainage network under CCWD's control every 5 years.
		(PD-2) Conduct annual condition assessment of all the CCWD's hard assets that support public drainage.
		(PD-3) Minimize public cost and impact by minimizing the sections of the ditch requiring regular maintenance and repair and increasing the amount of drainage network with restored or multiple-use stream segments.

Resource	Goal	Objectives
Water Quality	(WQ) To protect and improve the physical, chemical, and biological quality of the water resource consistent with State and Federal water quality standards.	(WQ-1) Meet 2033 Interim TMDL stressor goals (Table 2.21).
		(WQ-2) Collect data of adequate quantity and quality for assessing the condition and trends of CCWD's receiving waters, identifying pollutant sources and hotspots, and evaluating BMP performance.
		(WQ-3) Leverage local water quality improvement project investments with at least 50% grant funding.
		(WQ-4) Provide community co-benefits in at least 75% of water quality improvement projects.
		(WQ-5) Minimize public costs by conducting feasibility studies and critically evaluating the appropriateness of standards for each water quality project implemented.
		(WQ-6) Complete all remaining subwatershed plans and begin implementation of at least 75% of subwatershed plans.
		(WQ-7) Conduct annual condition assessment of all the CCWD's hard assets that support water quality.

Resource	Goal	Objectives
Water Quantity	(WQT) To closely monitor and model the District's response and behavior to various hydrologic events, develop and regulate land use and infrastructure, and operate and maintain watershed components and functions that benefit the public health, safety, and welfare and reduce adverse effects.	(WQT-1) Refine CCWD floodplain model for the entire District through subwatershed planning process by 2033.
		(WQT-2) Maintain or reduce the % of CCWD stormwater infrastructure in "poor" condition relative to 2023 baseline.
		(WQT-3) Increase the % of land in the CCWD developed under current stormwater regulations (2023 baseline).
		(WQT-4) Reduce # of habitable structures at risk of flooding in the 1% storm (2023 baseline).

Resource	Goal	Objectives
Wetlands	(WL) To pursue the no net loss of the quantity, quality, and biological integrity of the District wetlands.	(WL-1) Achieve no net loss of wetland through permitted activity.

3.2 Ground Water Resource Plan

Authority

A number of state statutes authorize direct the Coon Creek Watershed District to address and manage groundwater resources.

- MS 103D
- MS 103B
- MR 8410

References:

- Coon Creek Watershed District. 2013. Comprehensive Watershed Management Plan 2013 – 2023
- Coon Creek Watershed District 2023. 2024–2034 Comprehensive Watershed Management Plan Scope and Priority Issues

Time Period

2024 - 2034

Task Organization

Table 3.02. Groundwater resource plan task organization

Required Tasks:
Identify priority issues (MR 8410.0045 Subp. 1)
Assess issues identified by stakeholders in comments to the NOI (MR 8410.0045 Subp 7
Assess the success of implementing the 2013 to 2023 comprehensive plan in relation to priority issue identification (MR 8410.0045 Subp. 7)
Assess groundwater issues in the watershed identified in the Twin Cities Metropolitan Area Master Water Supply Plan, or the Metropolitan Council's subsequent equivalent (MR 8410.0080 Subpart 7)
Assess groundwater issues in the watershed identified in source water protection plans (MR 8410.0080 Subpart 7)
Present information on the hydrologic system (MS 103B.231 Subd 6 (2))
Assess conflicts between the watershed plan and existing local water plans
Implied Tasks:
Develop a statement of the current and desired 2033 condition of the resource
Define the problem set
Facilitate consensus on the broad collaborative operational approach
Assess centers of gravity catalyzing both problems and response capacity
Articulate assumptions and limitations
Identify critical information requirements.
The commissioner of natural resources shall, in consultation with the Minnesota Geological Survey, identify the location of sensitive areas by mapping and other appropriate methods after consulting the Minnesota Geological Survey, soil and water conservation districts, and local water planning authorities.
Concerns Identified By Stakeholders:
BWSR: We encourage the CCWD to work collaboratively with partners to plan for potential challenges related to groundwater quantity and quality in the next ten years.
DNR: We encourage the CCWD to maintain and enhance aquifer recharge.
DNR: Maintain and enhance the quality of water recharging aquifers.
DNR: To increase communication about the risks of overuse and degradation of groundwater resources and promote water conservation.
DNR: Increase coordination of communication activities between organizations with water management responsibilities
DNR: Increase coordination of monitoring activities between organizations with water management responsibilities, including monitoring water level trends using water level measurements from member communities.
DNR: Watershed management plan should contain some key ground water objectives and actions in the plan.

Situation

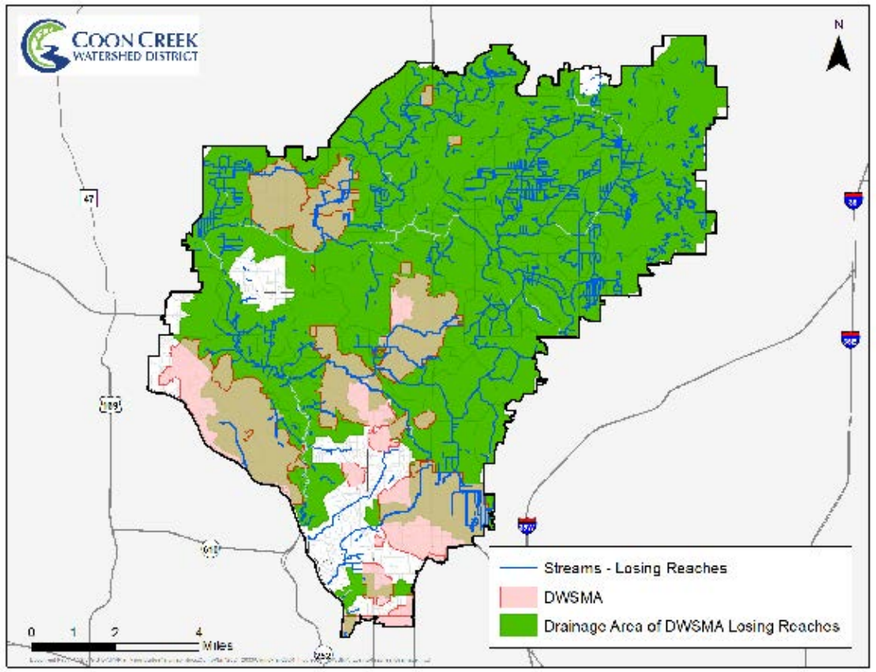
In Winter 2023 the DistrictCCWD published its priorities and scope for the 2024-2034 Comprehensive Plan.

This assessment focused on the unconfined, surficial aquifer that is part and parcel to the surface water resources for which MS 103B and 103D and the NPDES programs focus. To this end, the DistrictCCWD is concerned about the source of surficial ground water.

The surficial aquifer is comprised largely of sand and gravel. According to the Anoka County Geologic Atlas, it is about 50 feet below the surface within the watershed. It is highly conductive of water and pollutants both vertically and horizontally. Regional flows and water movement below 10 feet generally flows towards the Mississippi River at an average rate of 12 feet per day. Locally and at shallower depths, water will flow towards areas of lower elevation or potential.

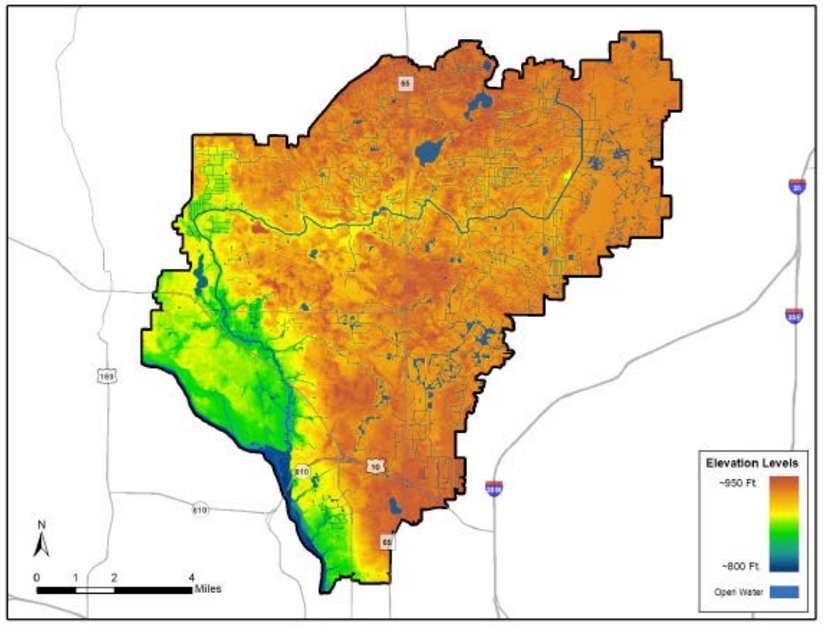
Area of Interest and Operations

Figure 3.01. Estimated losing stream reaches of the watershed



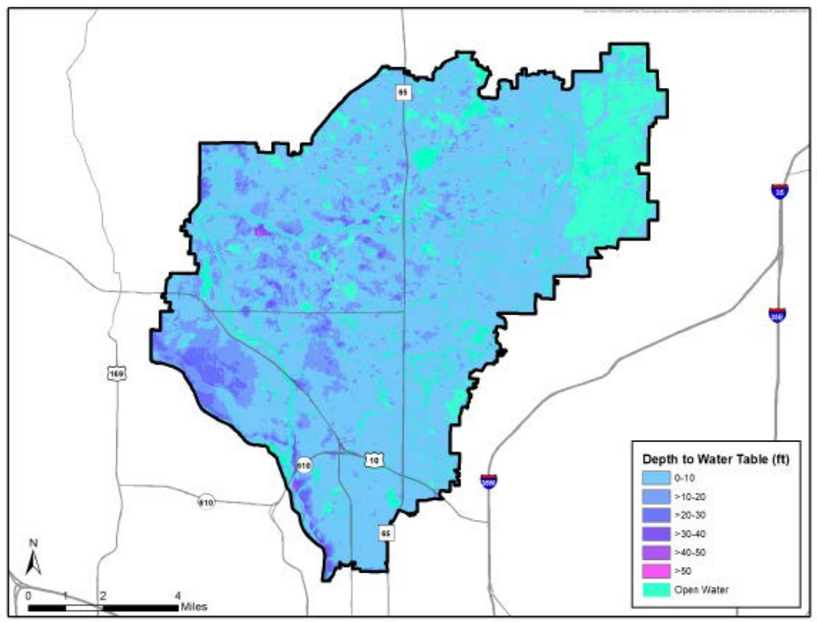
Topography and Direction of Flow

Figure 3.02. CCWD topography



Hydrology

Figure 3.03. Depth to water table in the watershed



3.2.1 Problems, Issues and Concerns

1. Drinking Water Supply Management Area (DWSMAs)

   Protection of Drinking Water quality from

   - Improperly disposed of chemicals
   - Animal wastes
   - Pesticides Human threats
   - Wastes injected underground
   - Naturally occurring substances

2. Ground Water Dependent Surface Water Resources

   Loss or decrease in the supply of groundwater which acts as the sole or principal water source for surface water resources such as lakes, streams, and wetlands.

3. Ground Water Quality Problem

   Chloride has been measured at levels above the state standard during drought conditions in the summer in streams in the watershed, indicating that surficial groundwater is a potential contributor to surface water chloride impairments.

4. Surface Water Impairment

   Where ground water breeches or contributes to surface water, poor ground water quality can contribute to impairment of surface waters through additional pollutants or concentrations.

5. Ground Water Surface Water Interactions

   Concern has both a water quantity and water quality dimension involving:

   - Supply of water to surface Water Resources that rely upon groundwater for a significant portion of their water budget.
   - Quality of the water passing from one to the other.

6. Groundwater Recharge & Pollution Sensitivity

   The CCWD intends to make efforts to replenish ground water through the unsaturated zone after infiltration and percolation following any storm rainfall event to replace water appropriated or discharged from the system.

   This issue takes place in an area where natural geologic factors create a significant risk of groundwater degradation through the migration of waterborne contaminants.

Other Collaborative Efforts

Table 3.03. Groundwater collaborative efforts

Agency	Mission/Goal	Activities
State		
State Legislature	To maintain ground water in its natural condition, free from any degradation caused by human activities. (MS 103H)	• Legislation • State budget
Department of Health	Protecting, maintaining and improving the health of all Minnesotans	Administers • Federal Safe Drinking Water Act and Standards • Minn Well Code
Department of Natural Resources	To work with Minnesotans to conserve and manage the state's natural resources, to provide outdoor recreation opportunities, and to provide for commercial uses of natural resources in a way that creates a sustainable quality of life.	Administers • Ground water appropriation permits. • Ob-well program: Monitors static water table • Monitors well construction efforts • Mapping of Groundwater & Aquifers
Pollution Control Agency	To protect and improve the environment and human health.	Administers • State water quality standards • Ambient groundwater monitoring (quality)
Regional		
Metropolitan Council	To foster efficient economic growth for a prosperous metropolitan region.	• Management of Metropolitan Systems • Review of Watershed Plans • Review and approval of City Comprehensive Plans including stormwater.
Local		
Cities – Public Water Suppliers • Andover • Blaine • Coon Rapids • Fridley • Spring Lake Park	To provide water to the public in a safe, reliable, environmentally sensitive, and financially responsible manner.	• Flood prevention through storm water management • Provide drinking water where demanded. • Protecting drinking water source and implement Wellhead Protection Plan • Provide for sewage disposal. • Address non-point source pollution as a Municipal Separate Storm Sewer System

Interagency Efforts

- Private Well Task force

3.2.2 Ground Water Goal

To manage groundwater underlying the Coon Creek Watershed cooperatively with the cities and the involved state agencies to promote long-term maintenance or restoration of groundwater systems and their groundwater-dependent ecosystems, including springs, lakes, ponds, streams, riparian areas, and wetlands.

3.2.3 Implementation

Intent

- To restore and sustain surficial groundwater in the watershed will require the CCWD and all affected agencies:
- To gather and make available information on shallow groundwater resources within the watershed on a more frequent and complete basis.
- To use that information for informed decisions during local and state planning and development and implementation of water management projects.
- To consider the effects on groundwater resources from all proposed activities on and uses of lands within the watershed and to avoid, minimize, or mitigate adverse effects to the extent practical or as required by law.
- By 2033, we should have slowed the quantitative and qualitative decline of the unconfined aquifer and have a clearer vision of the requirements to fully restore and sustain the surficial aquifer and have a better understanding of the trend in water table levels.

Approach

The CCWD will remain present and active in all groundwater management activities that influence surface waters, particularly chloride and other water quality concerns and with appropriations that may affect wetlands and other surface waters.

The focus of the CCWD's groundwater resource management will be on those portions of the groundwater system that if depleted or contaminated would have adverse effects on surface water resources or present threats to future uses of groundwater.

The CCWD will manage surface and groundwater resources as hydraulically interconnected in the unconfined aquifer and consider them interconnected in all planning and evaluation activities unless it can be demonstrated otherwise by using site specific information.

The CCWD will also evaluate and manage the surface-groundwater hydrologic system on an appropriate spatial scale, taking into account surface and groundwater watersheds, which may not be identical or relevant to aquifer systems.

Unless otherwise required by law, the CCWD will prevent, minimize, or mitigate, to the maximum extent practical, adverse impacts from land and hydrologic disturbance on groundwater resources and ground-water dependent ecosystems within the watershed.

The CCWD will support:

- Cities who have more direct interests such as drinking water supply and
- State agencies who have authority over groundwater quality and quantity.

This support will be provided primarily through regulatory protection of source waters and water quality monitoring.

Restoration, Maintenance and Protection

Restoration, Maintenance, and Protection of surficial groundwater will involve 3 phases. The three phases are.

1. Problem Shaping and Framing:
    a. Programs: This phase is led by the Planning program. The phase is supported by the Engagement, Public Affairs and Information, and Water Quality programs.
    b. Objective: To collect and gather data and information on the nature, structure and function of the Hyporheic and hypolentic zones within the watershed and the development of a common understanding of its behavior amongst State and local agencies
    c. Effect: Considering the effects from the combined use of surface and groundwater and the effects of one upon the other, including but not limited to quantity, quality, timing, and spatial distribution.
    d. Time: Phase 1 will occur from 2024 to 2029, although, if shown to be valuable, the data collection will continue through the scope of this plan.
    e. Purpose: To collaborate in supporting and sustaining the availability and usability of groundwater over the long term through the use of conventional and innovative approaches.
2. Validation
    a. Programs: This phase is led by planning and supported by Public and Governmental Relations, Water Quality, and Watershed Development.
    b. Objective: To facilitate a common understanding of the structure and dynamics of the problems and identify options for intervention by the CCWD and other state and local units of government.
    c. Scope: Where conjunctive uses are proposed, evaluate groundwater, surface water, and watershed issues, including potential effects on groundwater-dependent ecosystems, by conducting appropriate hydrological assessments of the geographic area, and avoiding, minimizing or mitigating uses that effect those resources.
    d. Time: Timing will parallel phase 1 (2024-29), and will revolve around three milestones:
        » A multiagency surficial groundwater conference to introduce and assess organizational capabilities, opportunities, problems, issues and concerns
        » Review of the Comprehensive plan at the 25% point to determine progress and needed adjustments,
        » 2029 review, evaluation and amendment of the Comprehensive Plan.

e. Purpose: To consider conjunctive uses (combined use of surface and groundwater to meet water supply needs) of surface and ground waters; artificial recharge of groundwater, such as infiltration ponds; and appropriate use of recycled and reclaimed water where those approaches also protect the quality of the receiving water and affected water-dependent ecosystems.

3. Revising Rules and Plan

   a. Programs: This phase is led by Watershed Development with close support by Planning.

   b. Objective: The objective is to revise and develop management and regulatory standards that can be used to more precisely intervene and effectively restore and protect surficial groundwater quantity and quality through direct unified action and regulation.

   c. Scope: The CCWD will play both a lead and supportive role in groundwater management efforts.

   d. Time: Implementation will begin 2030 or when there is substantial effective agreement by the public and policy makers that government intervention is needed to protect the public health and welfare.

   e. Purpose: To protect local groundwater resources, encourage utilization of one or more of the following conventional strategies where impacts on surface and groundwater resources are deemed acceptable:

      » Modify the rates, timing, or spatial patterns of groundwater withdrawal.
      » Use sources of water other than local groundwater or import surface or groundwater from outside the basin where laws, water quality, and hydrological conditions in both the source and receiving areas allow.
      » Conservation of groundwater and the matching of water quality to use.

3.2.4 Essential Tasks

Organize, Respond and Conduct Program Interventions

The CCWD will use its regulatory authority to protect the public health from pollutants such as Chlorides and Chemicals of Emerging Concern such as PFAS, 1-4 Dioxane, and to protect the public welfare from the cost of mitigation and potential remediation of both ground water and surface waters.

CCWD programs involved in ground water management:

- Planning
- Public and Governmental Relations
- Water Quality
- Watershed Development and Protection

Interventions will occur under the CCWD's authorities as a watershed district and MS4 in the form of:

- Permit review
- Comment on State appropriation
- Monitoring of shallow ground water
- Monitoring of surface waters, particularly in known and suspected gaining reaches
- Outreach and public engagement events

Operationally significant areas for CCWD intervention include:

- Ground Water Sensitive Areas: Areas of high infiltration soils
- Surface waters in areas of high ground water
- Well construction into the unconfined aquifer

Intelligence: Inspection, Monitoring and Data Collection

At the first interagency conference determine:

- Priority Information Requirements and the data collection needs
- Protection – Related to health & welfare
- Restoration – response and recovery rates and quantity needs
- Collaborator

Gather information on:

- The quantity of water utilized for all public drinking water systems that appropriate water from the unconfined aquifer and that are classified as community water systems under the SDWA.
- The quantity of water utilized for all groundwater withdrawals from the unconfined aquifer.
- Analyze the collected data and organize it into forms that can be readily used by

  » Water quality
  » Watershed Development and Protection

Establish a schedule for reporting collected data and/or operational implications.

Actions: Capital Improvements, Projects, and Initiatives

Annually review priorities and identify and select targets that directly benefit either the understanding of shallow ground water within the watershed or directly restore or improves the quantity or quality of surficial groundwater.

Projects

Table 3.04. Anticipated projects in groundwater area

Year	Program	Project	Objective	Est. Cost
2024 - 2029	O&M/Water Quality	Shallow Ground Water Monitoring	To collect and gather data and information on the nature, structure and function of the Hyporheic and hypolentic zones within the watershed and the development of a common understanding of its behavior amongst State and local agencies.	$10,000
2024 - 2029	Planning/ PGA/ Watershed Development	Shallow Ground Water awareness	To identify introduce and notify ground water sensitive areas and areas with ground water <10 feet from surface.	$8,000
2029	Watershed Development	Interim Ground Water Protection and Management	Identify ground water sensitive and shallow groundwater areas and suggest BMPs to ensure protection and sustainment	$3,000
2029	PGA	Diversify the source & use	To encourage water managers to employ new treatment technology to meet water supply needs when existing water quality degrades.	$2,500
2024	Planning	Inventory Source Water Protection and Influence area	To work with MDH and public water suppliers to protect drinking water systems located within the Watershed.	$5,000
2024	Planning	Surficial Groundwater Conference	To facilitate a common understanding of the structure and dynamics of the problems and identify options for intervention by the CCWD and other state and local units of government.	$7,000
2025	Watershed Development	CCWD Rule Amendment	Amend rule to address ground water problems, Issues and concerns.	$15,000
2026	Planning	Comprehensive Plan	Review and assess plan progress	$4,000
2028	Planning	Comprehensive Plan Review	To determine progress and needed adjustments.	$7,000
2028	Watershed Development	CCWD Rule Amendment	Amend & implement ground water management rules.	$15,000
2031	Planning	Comprehensive Plan Review	To determine progress and needed adjustments.	$7,000
2033	Planning	Comprehensive Plan Review	To determine progress and needed adjustments.	$10,000

Operations and Maintenance

Actions: Projects, Permits & Studies

- Efficiently use groundwater needed to meet CCWD purposes, especially in water-scarce areas or during periods of drought.
- Since groundwater sources generally have more stable water quality and quantity than surface water sources, favor the development of suitable and available groundwater sources rather than surface water sources for drinking water.
- Require implementation of water conservation strategies in administration and permitting uses. Ensure incorporation of water conservation strategies in operating plans for new and reissued special use authorizations involving groundwater withdrawals from high-capacity wells and new and reissued special use authorizations for public drinking water systems.

Planning

- Include in Comprehensive Plan revisions and amendments appropriate provisions for the long-term protection and sustainable use of groundwater resources involving ground-water dependent ecosystems and the hyporheic and hypolentic zones.
- Protect groundwater resources within the watershed that are critically important to surface water resources or natural features, ecosystems, or organisms. Where threatened and endangered species and ground water dependent ecosystems are located within the watershed, consult with the District Administrator and DNR Natural Heritage program.
- Develop a research program to address groundwater issues, as appropriate to their jurisdiction.
- Use appropriate science, technology, models, information, and expertise to address groundwater resources when revising or amending applicable land management plans and evaluating project alternatives.

Public and Governmental Affairs

- Coordinate the use of information, audience analysis, the internet and social media and direct assistance supported by intelligence, to encourage, inform, influence, facilitate and create information, and information systems, information-based processes to protect ground water against degradation and adverse impacts.
- Coordinate with the cities and state agencies to ensure cooperation and mutual support, a consistent effort and mutual understanding of the groundwater management priorities, support requirements, concept, intent and approach, and objectives.
- Advise and assist the Administrator and Technical Advisory Committee members in telling the CCWD's story to both internal and external audiences, by originating and assisting news media in originating both print and broadcast news material and assisting with community relations projects
- Manage groundwater quantity and quality within the Watershed District in cooperation with appropriate local and State agencies.
- Collaborate with other local, state and Federal agencies, the University of Minnesota, consulting firms and industry and other appropriate organizations when locating, investigating, or assessing the hydrogeology and groundwater resources of the watershed.
- Provide comments on proposed activities either within or outside the watershed that may adversely affect groundwater resources within the watershed to the proponents and to State, or other entities that have the authority to regulate those activities.
- Assist public water suppliers in managing their DWSMAs and/or inner wellhead management zones.
- Encourage installation of appropriate water conservation equipment and use of suitable water conservation practices at publicly owned facilities.
- Where the exercise of CCWD authority may not be appropriate, work with Anoka County and MPCA or other state agencies under other applicable authorities such as RCRA, SMCRA, or CWA, or work with States under applicable State authority to clean up contaminated groundwater or otherwise respond to a potential threat of contamination resulting from a release or threatened release of a hazardous substance, as defined in 42 U.S.C. § 9601(14), a pollutant or contaminant, as defined in 42 U.S.C. § 9601(33), or petroleum or petroleum products excluded from the definition of "hazardous substance" in 42 U.S.C. § 9601(14).

Water Quality: Restoration of Impaired Waters

- Use appropriate procedures to respond to contaminated groundwater or a potential threat of contamination of groundwater. Notify Contact MPCA duty officer
- Where the exercise of CCWD authority may not be appropriate, work with Anoka County and MPCA or other state agencies under other applicable authorities such as RCRA, SMCRA, or CWA, or work with States under applicable State authority to clean up contaminated groundwater or otherwise respond to a potential threat of contamination resulting from a release or threatened release of a hazardous substance, a pollutant or contaminant, or petroleum or petroleum products excluded from the definition of "hazardous substance".

Watershed Development and Protection

- To conserve groundwater's potential so that it may be available and of sufficient quality for supply to surface waters and for potable use, when needed.
- To protect groundwater from impacts from over appropriation, prevention of infiltration and pollution by first guiding development and land use planning towards alternative practices that emulate natural processes to avoid impact; second by prescribing performance standards that influence the structure and function of infiltration to minimize impact on ground water; third deny, or require duplication of the quantity and quality of infiltration and ground water function and structure either on site or upgradient and within the same subwatershed.
- To safeguard the public health, safety and welfare by reducing or avoiding the effects of dewatering or other appropriation. This task involves commenting on DNR dewatering and other appropriation permits.
- To inform, educate, and provide dewatering contractors, development engineers and developers with a true and accurate picture of the structure and function of the surficial aquifer and provide them with the information and resources to prepare, adapt and innovate methods to efficiently, effectively and sustainably proceed with construction
- To enhance the functional capability of shallow ground water by identifying and reducing obstructions and construction management practices through inspection and enforcement.
- Consider the effects of proposed actions on groundwater quantity, quality, and timing before approving a proposed use or implementing a CCWD activity.
- Require that permit holders provide all groundwater monitoring data and information they collect in compliance with local, state, or other federal requirements. Appropriately use the data and information while evaluating the effects on groundwater resources from ongoing activities and proposed actions.
- Require that monitoring and mitigation appropriate to the scale and nature of potential effects is conducted, evaluated, and reported when authorizing a proposed use or CCWD project that has a significant potential to adversely affect groundwater resources.
- Prevent groundwater contamination from all land-disturbing activities involving transporting, storing, mixing, and applying pesticides and other potentially toxic or hazardous materials; cleaning, repairing, and fueling equipment; and disposing of fuels, lubricants, pesticides, or other potentially toxic or hazardous materials by following applicable Federal, State, and local requirements and applying best management practices.
- For all CCWD activities authorized or to be authorized involving water wells (including monitoring wells), require compliance with applicable Federal, State, or local standards or, as applicable, American Society for Testing and Materials (ASTM), American Water Works Association (AWWA), National Ground Water Association (NGWA), or other water well industry standards for the design, construction, and abandonment of wells and MR 4725. Include this requirement in existing and new written authorizations for affected water wells.
- Manage groundwater resources in municipal supply watersheds per the SDWA.

3.2.5 Assessment and Evaluation

Table 3.05. Groundwater resource goal, objectives, and measures.

Resource	Goal	Objectives	Measures
Groundwater	(GW) To cooperatively manage surficial groundwater underlying the Coon Creek Watershed and promote long-term maintenance or restoration of groundwater-dependent ecosystems.	(GW-1) Install and collect data from shallow GW well network for at least 5 years.	(GW-1.1) # of years of data collected from GW well network.
		(GW-2) Complete GW data collection to sufficiently inform the current nature, structure, and function of the surficial GW zone.	(GW-2.1) Is data collected sufficient to inform nature, structure, and function of surficial GW? (yes/no)
		(GW-3) Plan and host the first Anoka Sand Plain Surficial Groundwater Conference.	(GW-3.1) # of ASP Surficial GW Conferences held. (GW-3.2) # of agencies attending conference.
		(GW-4) Revise WD rules and Plan to restore and protect surficial GW quantity and quality more effectively.	(GW-4.1) # of rule amendments made for surficial GW restoration/protection. (GW-4.2) % of permits that triggered new surficial GW rules.

To gather and make available information on groundwater resources within the watershed and their uses to provide for informed decisions during local and state planning and development and implementation of water management projects.

Measures of Performance		
P1	Number	Of wells in shallow well net work
P2	Number	Of organizations to which data is reported
Measures of Effectiveness		
E1	Percent	Of affected local water plans reflecting shallow ground water data
E2	Percent	Of local budgets/CIPs addressing shallow ground water

To consider the effects on groundwater resources from all proposed activities on and uses of lands within the watershed and to avoid, minimize, or mitigate adverse effects to the extent practical or as required by law.

Measures of Performance		
P1	Number	Permit applications and other proposals reviewed
Measures of Effectiveness		
E1	Percent	Projects where sequencing changed the proposed project

Collaborate with local, State, and other Federal agencies to support and sustain the availability and usability of groundwater over the long term through the use of conventional and innovative approaches.

Measures of Performance		
P1	Number	Of agencies consulted for each project review
Measures of Effectiveness		
E1	Percent	Contacted as part of SOP
E2	Percent	Contacted through innovative approaches

Consider conjunctive use (combined use of surface and groundwater to meet water supply needs) of surface and ground waters; artificial recharge of groundwater, such as infiltration ponds; and appropriate use of recycled and reclaimed water where those approaches also protect the quality of the receiving water and affected water-dependent ecosystems.

Measures of Performance		
P1	Number	Permit applications and other proposals reviewed
Measures of Effectiveness		
E1	Percent	Projects reviewed where conjunctive use accommodation led to increased efficient and effective use of ground water

To protect local groundwater resources, encourage utilization of one or more of the following conventional strategies where impacts on surface and groundwater resources are deemed acceptable:

- Modify the rates, timing, or spatial patterns of groundwater withdrawal.

Use sources of water other than local groundwater or import surface or groundwater from outside the basin where laws, water quality, and hydrological conditions in both the source and receiving areas allow.

Measures of Performance		
P1	Number	Permit applications and other proposals reviewed
Measures of Effectiveness		
E1	Percent	Projects where modifications were required

Coordinating Instructions (Local Water Planning)

Coordination Times & Conditions

- The CCWD will use its regular staff meeting and Technical Advisory Committee to obtain and convey routine operational information and emerging, critical issues pertaining to ground water.
- Staff meeting will be held the Tuesdays following meeting by the Board of Managers.
- Technical Advisory Committee meeting will be scheduled for the second Thursday of each month.

Table 3.06. Groundwater plan coordinating instructions

Agency	Action	Time Due	Location or Condition	Purpose
All Cities	Require implementation of water conservation strategies in administration and permitting uses	2026	operating plans for new and reissued special use authorizations involving groundwater withdrawals and reissued special use authorizations for public drinking water systems.	To ensure water conservation strategies

Critical Information Requirements

1. Elevation of surficial ground water
2. Trends in surficial groundwater elevation
3. Dewatering and appropriations last more than 5 days
4. Events effecting porosity
5. Changes in specific yield (storage coefficient or effective porosity) of surficial aquifer
6. Change or impacts effecting hydraulic conductivity for actual water volume calculations.

Essential Collaborator Capability Information

Status of changes in

- Council disposition and/or priorities
- Critical personnel
- Equipment
- Maintenance Shortfalls

3.2.6 Sustainment and Support

Funding

The CCWD will annually coordinate the provision of funds, equipment, and material.

Table 3.07. Funding required for anticipated groundwater projects

	2024	2025	2026	2027	2028		2029	2030	2031	2032	2033	Total
Staff					120,000							120,000
O&M												**-**
												-
Plan												**-**
Inventory Source Water Protection and Influence area	5,000											5,000
Interim Ground Water Protection and Management							3,000					3,000
Surficial Groundwater Conference	7,000											7,000
Comprehensive Plan assessment/ Amendment			4,000		7,000				4,000		10,000	25,000
												-
PGA												-
Shallow Ground Water awareness		2,000	2,000	2,000	2,000							8,000
Diversify the source & use					2,000							2,000
WQ												**-**
Shallow Ground Water Monitoring	2,000	2,000	2,000	2,000	2,000							10,000
												-
WD&P												**-**
CCWD Rule Amendment			15,000				15,000				15,000	45,000
Interim Ground Water Protection and Management	5,000	5,000	5,000	5,000	5,000		5,000	5,000	5,000	5,000	5,000	50,000
TOTAL	**19,000**	**9,000**	**28,000**	**9,000**	**138,000**		**23,000**	**5,000**	**9,000**	**5,000**	**30,000**	**275,000**

- The CCWD will provide assistance to cities and other agencies and groups that support the goals of the comprehensive plan of the watershed.
- The CCWD will formally assess and evaluate the operational situation on a quarterly and annual basis through reports and personal observations on the general situation within the watershed and conduct of the annual and comprehensive plans or major projects or initiatives.
- As part of its annual planning and budgeting, the CCWD will make detailed plans, staff estimates, and decision for implementing the ground water plan and associated activities.
- The Administrator will organize and promulgate the interrelated responsibilities between programs, as well as, the roles and goals of those programs.

Authority

- No additional authority should be required.

Staffing

- Hydrogeologist who can review and advise on regulatory, water quality and operations and maintenance needs and provide outreach and technical advice to private water suppliers.
- Need to be evaluated in 2027

Training

Table 3.08. Training required for groundwater plan

Audience	Subject	Reason
General field Staff	Basic orientation to geology and hydrogeology of the watershed	Basic familiarization and appreciation for total hydrologic function of the watershed
Licensed geologist or engineer experienced in groundwater analysis & Regulatory Staff	Condition and trends in surface and ground water quantity and quality	Development of a common working framework & operational paradigm
General Staff	Groundwater: Public Outreach Messages	Consistency in messaging

3.2.7 Management and Communication

Management

- Primary management responsibility is the District Administrator
- Secondary management responsibility is the Director of Operations

Control

- Primary control for phases is as follows:
  a. Phase 1: Problem shaping and framing
  b. Phase 2: Validation
  c. Phase 3: Development Rules and Plan updates

3.3 Public Drainage and Conveyance Resource Management Plan

Authority

A number of state statutes authorize direct the Coon Creek Watershed District to manage public drainage, storm water conveyance and storm water infrastructure.

- MS 103B
- MS 103D
- MS 103E
- MS 115
- MS 116
- MR 7050
- MR 8410
- MR 7090

References:

- Coon Creek Watershed District. 2013. Comprehensive Watershed Management Plan 2013 – 2023
- Coon Creek Watershed District 2023. 2024–2034 Comprehensive Watershed Management Plan Scope and Priority Issues
- Minnesota Department of Natural Resources. 1991. Minnesota Public drainage Manual
- Minnesota Pollution Control Agency. Minnesota Stormwater Manual. https://stormwater.pca.state.mn.us/index.php?title=Main_Page
- U.S. Environmental Protection Agency. National Menu of Best Management Practices (BMPs) for Stormwater. https://www.epa.gov/npdes/national-menu-best-management-practices-bmps-stormwater

Time Period

2024 - 2033

Task Organization:

Table 3.09. Public drainage plan task organization.

Required Tasks
Identify priority issues (MR 8410.0045 Subp. 1)
Assess issues identified by stakeholders in comments to the NOI (MR 8410.0045 Subp 7
Assess the success of implementing the 2013 to 2023 comprehensive plan in relation to priority issue identification (MR 8410.0045 Subp. 7)
To control or alleviate damage from floodwaters (MS 103D.201)
To improve stream channels for drainage (MS 103D.201)
Maintain drainage systems (MS 103E.011)
Determine the advantages of managing the drainage systems under the Metropolitan Water Management Act or through transferring the drainage authority according to Minnesota Statutes, section 103E.812,
Determine whether drainage maintenance activities have the potential of adversely impacting any goal of the organization. (MS 103E.015)
To consider each of the following criteria prior to establishing a drainage project:
private and public benefits and costs of the proposed drainage project;
alternative measures, including measures identified in applicable state-approved and locally adopted water management plans, to:
conserve, allocate, and use drainage waters for agriculture, stream flow augmentation, or other beneficial uses;
reduce downstream peak flows and flooding;
provide adequate drainage system capacity;
reduce erosion and sedimentation; and
protect or improve water quality;
the present and anticipated land use within the drainage project or system, including compatibility of the project with local land use plans;
current and potential flooding characteristics of property in the drainage project or system and downstream for 5-, 10-, 25-, and 50-year flood events, including adequacy of the outlet for the drainage project;
the effects of the proposed drainage project on wetlands;
the effects of the proposed drainage project on water quality;
the effects of the proposed drainage project on fish and wildlife resources;
the effects of the proposed drainage project on shallow groundwater availability, distribution, and use; and
the overall environmental impact of all the above criteria.

Implied Tasks
Develop a statement of the current and desired 2033 condition of the resource
Define the problem set
Facilitate consensus on the broad collaborative operational approach
Assess centers of gravity catalyzing both problems and response capacity
Articulate assumptions and limitations
Identify critical information requirements
Essential Tasks
Assess current operating environment and management situation
Describe desired state achievable by 2033
Articulate broad operational approach
Initially assess the supportability of that approach
Facilitate common understanding and goal(s) with key collaborators
Articulate management intent for agreed goal
Develop guidance for developing and evaluating alternative courses of action over the next 10 years
Issues & Concerns Identified By Stakeholders:
DNR: (Concern) It will be very difficult for the District to achieve water quality and habitat goals of the TMDL if the public ditch system is managed in the traditional manner.
DNR: (Opportunity) As the watershed continues to develop, additional opportunities for conservation drainage approaches should increase as land use changes and as other bmp opportunities arise.
DNR: (Recommendation) Increased emphasis on conservation drainage approaches and natural channel design principals.
DNR: (Recommendation) We recommend the District position itself to take advantage of these potential opportunities.

Situation

In Winter 2023 the District published its priorities and scope for the 2024-2034 Comprehensive Plan. The assessment for the scoping and prioritization exercise included an assessment of ground water.

Area of Interest

The public drainage system is comprised of approximately 133 miles of straightened and constructed streams and ditches. In addition to draining approximately 8,300 acres of drainage dependent farmland, these streams drain 13 subwatersheds. The District is interested in three functions and services provided by the public drainage system.

1. Agricultural drainage
2. Storm water conveyance and flood control
3. Water quality

Agricultural Drainage: The Public drainage system was developed between 1890 and 1920 to facilitate European settlement. The drainage system is comprised of straightened streams and constructed channels, designed to remove water from the land and root zone within 24 hours to prevent soil saturation or flooding and resulting stress on crops.

Storm Water Conveyance and Flood Control: Since post world war II the entire system has experienced increasing development and because of grades, and cost has been required to accommodate storm water. During the 1990's and the peak of the development boom, cumulative peak flows from upstream and adjacent development began to short circuit the lateral effect of the ditches providing drainage functions. Regulations were adopted to balance discharge rates and volumes to balance storm water discharge, drainage and flood control..

Water Quality: Between 2006 and 2022, seven ditch systems have been found to be impaired and do not meet water quality standards for aquatic life and recreation. Two of the 'stressors' contributing to these impairments (total suspended solids and poor habitat) directly involve the channels that convey water and, because of the flat grades of the system, have required on-going maintenance to remove obstructions such as downed trees, sand bars and beaver dams which prevent or alter the timing of discharge, leading to flooding.

Area of Operations

As the drainage authority, the CCWD manages 133 miles public ditch that are part of 13 drainage systems established between 1890 and 1920 under MS 103E.

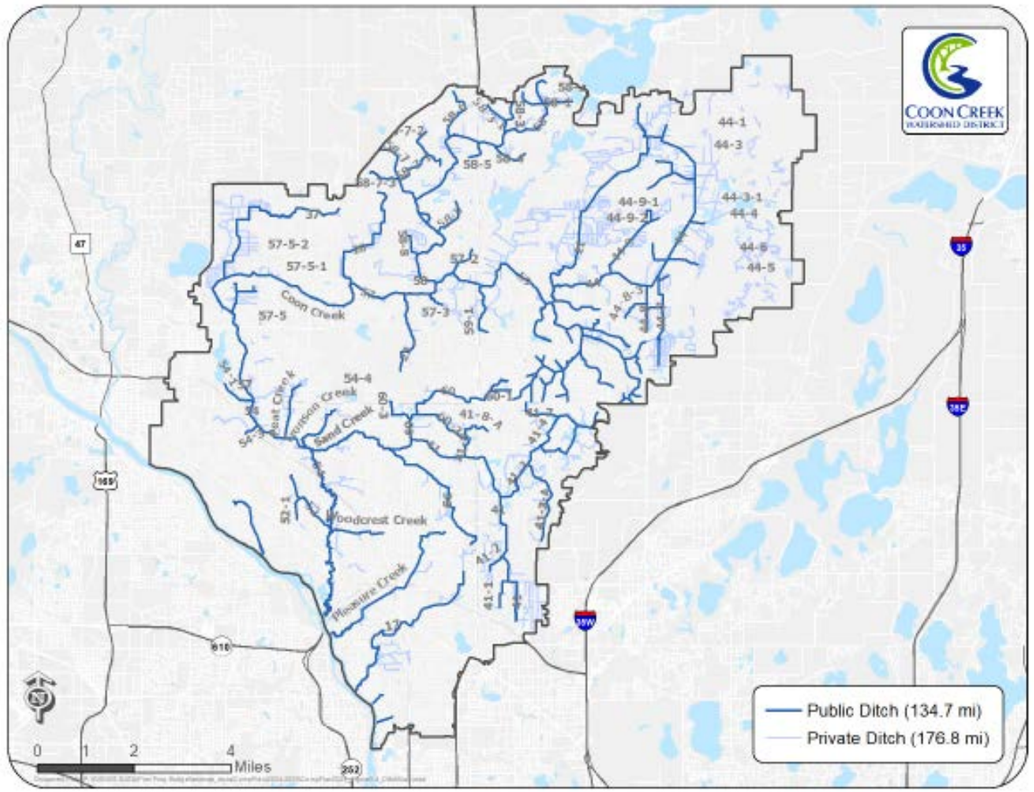


Figure 3.04. Drainage system of the watershed

Current Asset Condition

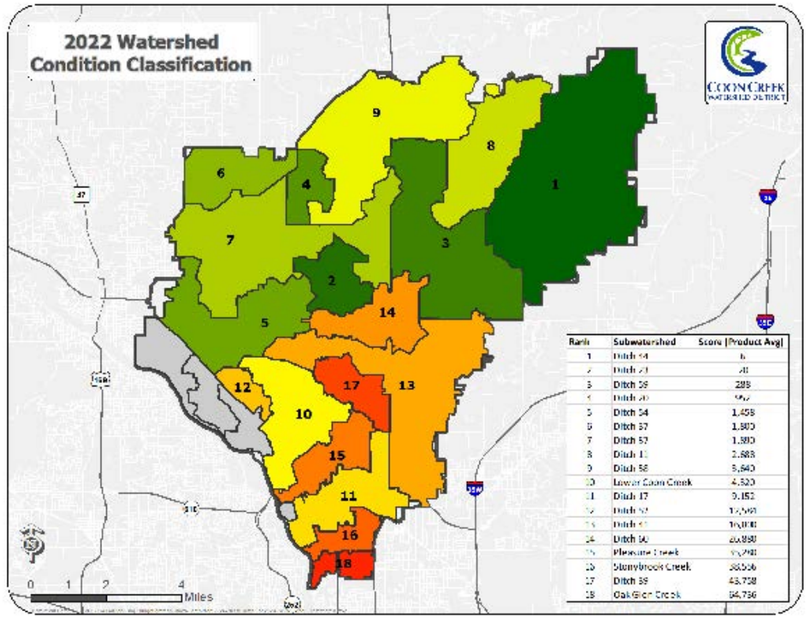


Figure 3.05. Condition assessment of subwatersheds

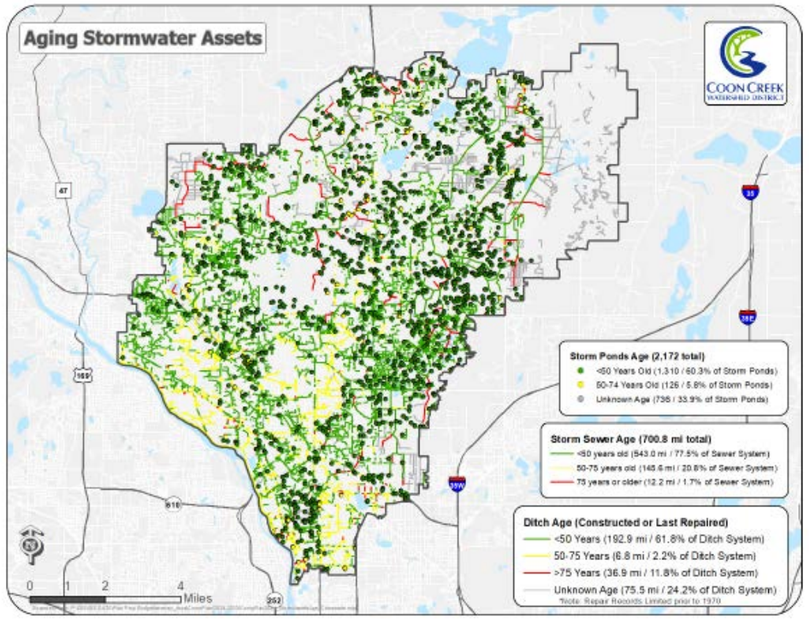


Figure 3.06. Stormwater asset inventory

2022 Ditch Condition

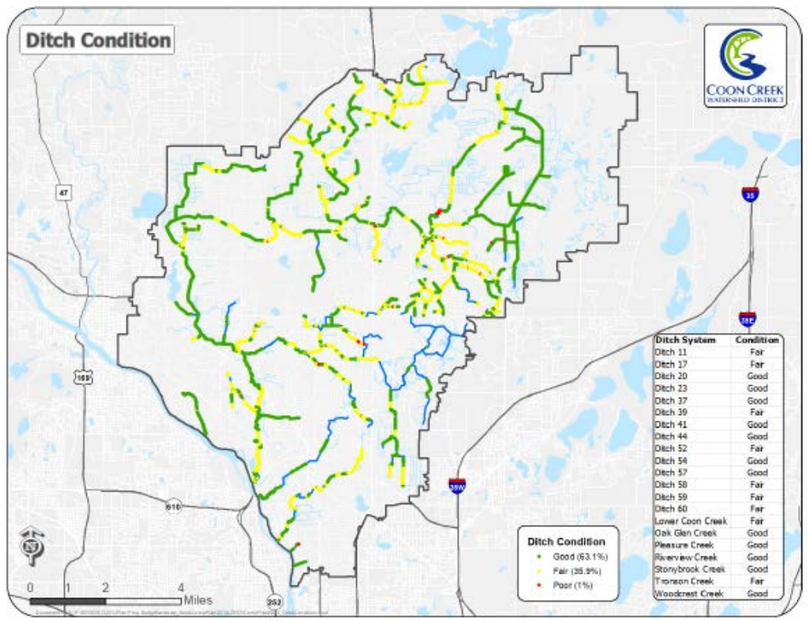


Figure 3.07. 2022 ditch condition assessment scoring

3.3.1 Problems, Issues and Concerns

To manage sustainably the established tangible short-term demands and requirements of drainage and flood control with the more long-term, less tangible requirements of water quality is the challenge over the next ten years.

There are three major challenges facing the public drainage system over the next 10 years.

1. Fulfilling our responsibilities to landowners with established drainage rights to operate and maintain the ditch to provide the drainage benefits identified upon establishment of the ditch.
2. To ensure that storm water from newly developed or changed land uses is reasonably and adequately controlled so as not to cause or contribute to flooding or water quality degradation.
3. To address, to the maximum extent practicable, those stressors, and functions contributing to the impairment and TMDL

The drainage system runs on gravity. The watershed's system exists in a landscape generally characterized by high water table (<5 ft from the surface) and low grades (<0.5%). It's function (to remove water from the adjacent soil profile) and effectiveness is extremely sensitive to changes in water elevation within the ditch indicating that peak flows or changes in static water elevation can short circuit the drainage effect by reducing or preventing the flow of water towards the ditch and reducing the lateral effect of the ditch.

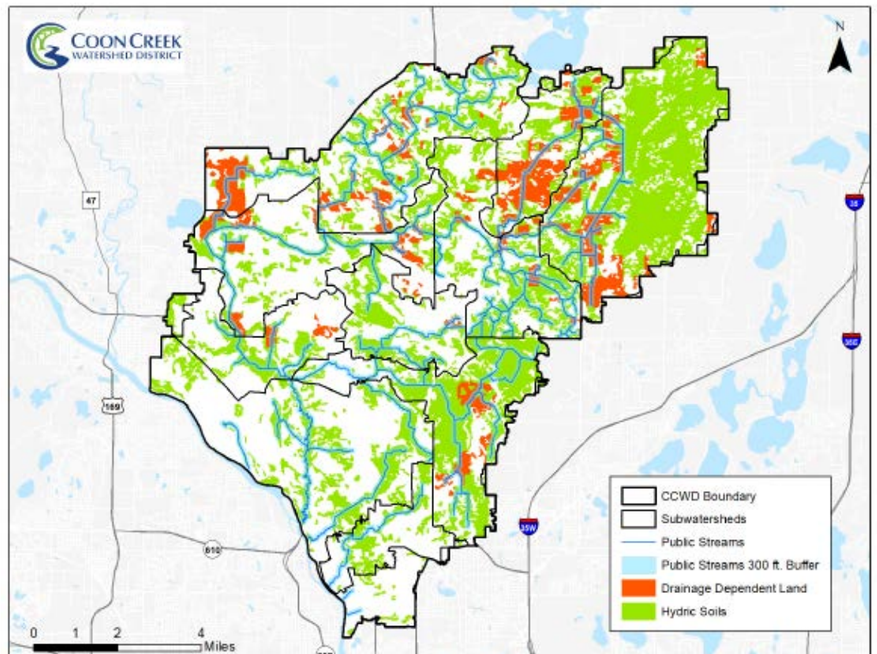


Figure 3.08. District drainage system summary

At present, approximately 4,686 acres of land (~54%) of the original benefited areas with established drainage rights remain. Most of the land has been converted to residential development. In a significant number of areas, ground water elevations have dropped to a point where the sensitivity to changes in the local hydrology has become less of a concern.

This change and conversion is expected to increase in the headwaters area which occurs just beyond the developing fringe of the metro area and is outside the urban services area. In addition, the size and depth of the organic soil deposits in this area, and the lack of access to sanitary sewer and public water supplies have decreased densities and made the land, except for the sandy uplands, too expensive to develop.

Other Efforts

Table 3.10. Other efforts in the public drainage plan

Agency	Mission/Goal	Activities
Federal		
U.S. Army Corps of Engineers	To regulate the discharge of dredged or fill material into waters of the United States, including wetlands.	Implementation of Section 404 of the CWA Evaluates • The accuracy of wetland delineations • Potential adverse impact from proposals on waters & wetlands • Adequacy of sequencing for proposed impacts • Probable success of wetland mitigation
State		
State of Minnesota	To provide a process and framework that enables multiple landowners to collectively construct, improve and repair drainage systems across property boundaries and governmental boundaries to the extent needed to maintain the beneficial use of their land while protecting the public health, safety and welfare and sustaining the beneficial use of water and related resources.	Establishment of MS 103E
Board of Water & Soil Resources	To improve and protect Minnesota's water and soil resources by working in partnership with local organizations and private landowners.	Administers • Buffer Law » Buffer establishment guidelines » Buffer Enforcement • Dispute Resolution Committee • Metropolitan Water Management Act » MR 8410 » Plan review » Plan approval • Wetland Conservation Act » MR 8420 » Technical Evaluation Panel » Delineation review » Sequencing evaluation » Training
Department of Natural Resources	To work with Minnesotans to conserve and manage the state's natural resources, to provide outdoor recreation opportunities, and to provide for commercial uses of natural resources in a way that creates a sustainable quality of life.	For projects conducted under MS 103E • Regulates impact to protected waters • Administers review and permission to » (1) remove, construct, or alter a dam affecting public waters; » (2) establish, raise, or lower the level of public waters; or » (3) drain any portion of a public water. • Make a preliminary advisory report on the adequacy of the preliminary survey report. • Examine the detailed survey report and make a final advisory report to the drainage authority stating findings on the proposed project.

Interagency Efforts

- Drainage Work Group

3.3.2 Public Drainage Mission and Goals

To provide sustainable drainage in a fiscally responsible manner from watershed lands for administration, protection, utilization, and enjoyment of the waters and related resources of the District.

3.3.3 Implementation

District Intent

To provide sustainable drainage, the CCWD will need to:

1. Operate and maintain a system that both achieves the desired conditions for holders of drainage rights and do so within the environmental capabilities of the land.
2. Provide an appropriate range of conservation and utility-based opportunities to minimize conflicts among uses within the watershed.
3. Manage the public drainage system to address public safety and efficiency of land operations in an environmentally responsible manner and, where needed, to restore ditch segments within the limits of current and anticipated funding levels.
4. Coordinate water planning and analysis within the watershed with Federal, State, county, and other local governmental entities and to allow the public to participate in the resto-

ration of stream segments for recreational use.

5. Minimize public cost and impact by minimizing the sections of ditch requiring regular maintenance and repair to achieve the above purposes.

In the end there will be a tapestry of management efforts throughout the drainage system whose approach will range in service from the paved to the pristine.

Approach

To manage drainage so that it is sustainable, the CCWD will focus on six essential task groups:

1. Organization & Intervention
2. Operational Intelligence: Inspection, Monitoring and Data Collection
3. Capital improvements and projects
4. Operations and maintenance of the system
5. Planning: subwatershed planning and analysis
6. Public and governmental affairs
7. Review and regulation of changes to the system

Organization and Intervention

Involves arranging the roles and goals of the CCWD and the other collaborators and cooperators in managing water resources within the watershed on an operational level. The purpose is to conduct programs, projects and activities by assembling either preventing problems and issues from occurring or by capitalizing on the knowledge, authorities and/or abilities to achieve operational or strategic results. This activity includes applying money and authority for operational advantage within the watershed and conducting both repair and restoration work as well as prevention and protection efforts. It also involves enhancing the capacity and capability of collaborators and remaining intimately involved in all water and related resource management. Operational efforts are composed of program, division or section staff and activities working to achieve the goals of the Comprehensive Plan and state and federal goals.

Operational Intelligence: Inspection, Monitoring and Data Collection

This task group produces the intelligence required to accomplish the objectives within the watershed. They include planning and conducting subordinate efforts and major research undertakings. Operational intelligence includes determining size, nature and significance of problems, issues and concerns as well as the rate of degradation and urgency. Operational intelligence addresses problems, issues and concerns across the range of organizations and activities involved in water management within the watershed. Operational inspection and monitoring are included in this task group. It also includes intelligence support to cooperators and collaborators and groups.

Capital Improvement Projects

Involves direct and indirect means to address and resolve water resource problems, issues and concerns, and to maintain the ability to continue to respond and intervene. Capital projects, by their very nature, cost more than state auditor's reporting threshold (currently $5,000) and are typically multiagency and collaborative projects. Capability refers to the delivery of all types pf projects to include, construction, repair, restoration, enhancement as well as studies, assessments and plans that support operational efforts.

Operation & Maintenance

Operation and maintenance provide a systematic process to manage the drainage system efficiently and effectively. The operations and maintenance system sets priorities, plans, budgets and schedules, performs, inspects, and monitors and evaluates the CCWD drainage system. It will do this by segmenting and differentiating both operation and maintenance such that both operation and maintenance will be consistent with select maintenance levels that are consistent with ditch operation and maintenance criteria. The objectives of operation and maintenance are:

- To ensure safe and efficient drainage.
- To ensure access for the administration, utilization, and protection of drainage rights and water resources; and
- To protect the environment, adjacent water resources, and public investment.

Maintenance of the public drainage system is an activity that covers an extended time horizon. It is a comprehensive and continuous process focused on assessing the value and condition of assets with the goal of minimizing the total lifecycle cost of ownership while providing a defined level of service and pursuing the multiple use management and restoration of other water resource beneficial uses.

Planning: Subwatershed Planning

Subwatershed planning will focus on the development of subwatershed plans throughout the watershed and the continual analysis and planning of drainage and conveyance needs and issues; determine the minimum improved system needed for efficient drainage and for protecting the public health and safety, administer the documentation and record keeping requisite with a public drainage system. The objectives of subwatershed planning are to:

- Provide drainage and management which ensures public health, safety and welfare.
- Provides for orderly changes to and management in the watershed and the decisions affecting the system.
- Determining the minimum management needed to sustain resource function and address public and private needs; address public safety and ensure efficiency of operations in an environmentally sensitive manner within current and anticipated funding levels.
- Determine appropriate use and classification of affected waters.

Public and Governmental Affairs

This task group works with the public and primarily the cities and other watershed organizations in the accomplishment of the CCWD's mission. These tasks provide information and guidance to stakeholder consistent with the strategy and links the programmatic and applied action. The CCWD relies on single programs to multiagency efforts to accomplish goals and objectives. This task group is applicable across the range of water management operations and includes acquiring and communicating operational level information, assessing the operational situation, preparing plans, operate and maintain the citizen and technical advisory committees as as forums

for collaborative management, coordinating information operations, coordinating and integrating collaborative and multiagency support, and providing public affairs services.

Review and Protection

This task group conserves the functional capacity of the landscape, natural and hard assets so that they can continue to function and or contribute to the restoration of the stream or the mitigation of potential adverse impact to the water and related resources. This activity involves regulatory and enforcement actions to counter and/or mitigate the effects of landscape or hydrologic changes by avoiding, modifying or mitigating these changes through design. construction, operation and/or maintenance practices. This task set includes protecting groundwater, conveyance and stormwater infrastructure, water quality treatment, flood protection and prevention and wetland conservation. This task also pertains to protection of collaborator staff, equipment, and infrastructure as well as protecting the public health, safety and welfare.

Review and development focus is on the policies and requirements for preconstruction, permitting and construction associated with the development of facilities which may affect the course, current, cross section or quality of the drainage and conveyance systems of the watershed. The objective of review and development is to:

- Locate and construct facilities that provide the function, stability and durability appropriate for their intended service life and use

Review and development of drainage and storm water facilities will be guided the following:

- To develop and use standards that permit the maximum economy while meeting the management direction for resource and environmental protection, development and management of tributary lands and utilization of the resource.
- To follow the policies and standards throughout MS 103 in the review and development of additional drainage and conveyance facilities
- When standards are higher, or irreconcilable with the provision of MS 103 in its entirety, use standards developed by other drainage and stormwater organizations to the extent they comply with laws applicable to the watershed district system and that are compatible with management direction.

3.3.4 Essential Tasks

Organize, Respond and Conduct Program Interventions

The CCWD will act as the Drainage Authority under MS 103E for all public ditches and will be responsible for all open channel streams and ditches the are not private or directly managed by an individual, city, or association.

CCWD programs involved in drainage management will be:

- » Operations and Maintenance
- » Planning
- » Water Quality and Watershed Development

Interventions will occur under the CCWD's authorities as a drainage authority, watershed district and MS4.

Operationally significant areas for CCWD involvement include:

- The channel efficiency/inefficiency
- Ditch and stream banks
- Volume and rate control

Intelligence: Providing Operational Information, Data, and Investigations

The CCWD will collect the information and data to manage the public drainage system to address public safety and efficiency of land operations in an environmentally responsible manner and, where needed, to operate and maintain the drainage system.

Annually Organize & Plan Inspection and Information Collection Activities

The District Administrator, Director of Operations, operations and maintenance manager and the Public and Governmental Affairs, Water Quality and Watershed Development Coordinators will meet annually to determine changes to the information to be collected and to identify priority information requirements (PIRs) prior to work planning for the following field season. Current information collected as part of annual inspection efforts is as follows:

Table 3.11. Data collection for public drainage.

Data	Location	Collection Frequency
Elevation	Channel Center Line	Every 100 feet
Elevations	Channel Cross-Section	Every 500 feet
Feet	Width of defined channel	Every 100 feet
Feet	Depth of flow	Every 100 feet
Elevations & size	Inverts: Upstream and down stream	As needed
Elevation	Top of road	As needed
Percent density	Channel vegetation	As needed
Condition	Outfalls	As needed

Collect and Share Operational Information and Data

- Annual Inspections: The CCWD will inspect 20% of the drainage system under its control annually. The results of these inspections are reported to the Board of Managers, the affected cities and citizens and are made available to the general public. Annual inspections will be conducted according to the following schedule:

Table 3.12. Estimated inspection schedule for ditches.

	2024	2025	2026	2027	2028
Ditch System	**2029**	**2030**	**2031**	**2032**	**2033**
11			5.4		
17 (Springbrook Creek)			6.4		
20					3.0
23				1.9	
37	4.2				
39		4.9			
41 (Sand Creek)		33.7			
44			16.2		
52 (Epiphany Creek)				2.4	
54					12.4
57	14.8				
58					18.5
59				20.9	
60	7.9				
Glen creek	.4				
Lower Coon creek		10.2			
Pleasure Creek				4.2	
Riverview Creek	1.7				
Stonybrook Creek					.1
Tronson Creek					1.3
Woodcrest Creek	1.2				
Total Miles	29.3	35.4	29.8	32.3	
Pct of Total System	19%	23%	19%	21%	

- Annual Condition Assessment: The CCWD will conduct an annual assessment of the condition of the CCWD's hard assets as part of its annual review and reporting cycle. The purpose of the assessment is to identify and determine maintenance or remedial work to preserve an asset's value and extend its useful life. The results of these inspections are reported to the Board of Managers, the affected cities and citizens and are made available to the general public. The condition assessment will consider potential for failure to determine the most appropriate investment strategies relevant to the asset. Principle failure modes used will be:

Table 3.13. Asset condition assessment.

Failure Mode	Description & Drivers	Assessment Techniques	Investment Strategies
Physical Mortality	• Aset deterioration (wear & tear) reduces performance below an acceptable level • Age, usage, operational stresses, acts of nature	Condition • Level 1: Staff knowledge (Delphi) • Level 2: Visual/ Physical inspection • Level 3: Physical/ Chemical Testing	• Renewal/ Rehabilitation • Restoration • O&M Optimization
Capacity	• Demand exceeds design capacity. • Growth & system expansion	Capacity • Level 1: Staff knowledge (Delphi) • Level 2: Desktop capacity modeling • Level 3: capacity modeling with field data	• Redesign
Level of Service	• Functional & reliability requirements exceed design capacity • Regulations, quality, safety, client service, noise, treatment level	Function • Level 1: Staff knowledge (Delphi) • Level 2: Process assessment • Level 3: Strategic planning Reliability • Level 1: Staff knowledge (Delphi) • Level 2: Desktop analysis • Level 3: issue and repair history (number and mean time between interventions	• Redesign • O&M Optimization
Financial Efficiency	• Cost of operation exceeds feasible alternatives. • New technology, wear & tear, spare parts	Efficiency • Level 1: Staff knowledge (Delphi) • Level 2: Desktop life cycle cost analysis (LCCA) • Level 3: issue and repair history (number)	• Replace

- Process and use Collected Data and Information

  The CCWD staff will analyze and organize the collected data into forms that can be readily used by program coordinators and the Board of Managers.

- Disseminate and Integrate Operational Information

  Provide operational information, in a timely way, and in an appropriate form, to program coordinators, city engineering, public works and planning and ensure the information is understood and considered. Operational Information to be considered includes:

  - » Changes in center line elevations indicating unpermitted excavation.
  - » Changes in culvert elevations in size indicating settling or unpermitted replacement.
  - » Percent channel vegetation indicating, either inefficiency in channel conveyance or progress in channel restoration.
  - » Bank vegetation or debris indicating dumping & illicit discharge.
  - » Outfall staining or smell indicating illicit discharge.

- Disseminate and Integrate Operational Information

  Provide operational information, in a timely way and appropriate form to affected staff, collaborators, landowners in a manner that is understood and considered. This may take the following forms:

  - » Telephone call
  - » Notice of apparent violation
  - » Notice of Obstruction
  - » Informational briefing

Capital Improvements, Projects, and Initiatives

The intent of capital improvements, projects, and initiatives is to conduct projects, studies and develop plans to address water resource problems, issues and concerns. These projects by their nature are primarily a multi-agency activity. Projects refer to all types of construction type activities that typically include heavy equipment and land disturbance. Studies examine issues identify alternatives and potential costs. Plans developing strategies to create a course of action to achieve a goal or set of objectives. Ultimately all projects are intended to be prioritized, targeted and measurable.

- Priorities are reflected in the scheduling of projects (The earlier the year, the higher the current priority)
- Targeting: The term target is used in its broadest sense to include interests other than direct intervention with the water resource, such as target audiences as part of public engagement activities. There are two broad categories of targets: planned and immediate.

  - » Planned targets are targets that are known to exist within the watershed and are scheduled to be addressed.
  - » Immediate targets are either unplanned, or unanticipated, and have been identified too late to be included in the comprehensive planning capital improvement plan, and therefore have not been scheduled.

The District will annually use a six-phase targeting process and cycle:

1. State, Board, or Administrative guidance
2. Target/Project development
3. Planning & Budgeting
4. Project Bid
5. Execution
6. Project assessment

Conduct Collaborative Project Targeting

The CCWD will annually meet and coordinate with collaborators to identify and select targets that impact comprehensive water management, flood control and water quality and match targets to appropriate joint or multiagency funding and implementation systems. Every two years the capital improvement plan will be reviewed with the intent of updating and amending the plan.

Conduct Projects and Studies

Priorities and targets from 2024 to 2033 are presented as follows:

Table 3.14. Anticipated projects and studies for public drainage plan.

Year	Program	Project	Objective	Cost
2025 - 2033				
2025 – 2033	Operations and Maintenance	Bank Repair & Stabilization	To prevent or reduce soil erosion associated with mass bank failures and scour of streambanks associated with saturated conditions and flowing water associated with runoff and/or flow in a channel such as a stream or ditch.	$143,750 Average Annual
2025 – 2033	Operations and Maintenance	Non-Routine Maintenance	To respond to and address problems and issues identified through complaint, routine inspection. Its purpose is to protect the public health, safety, and welfare by addressing those unanticipated and random occurrences that may obstruct or deflect flow.	$126,036 Average Annual
2025 – 2033	Operations and Maintenance	Routine Ditch and Channel Repair	To improve asset lifespan. It decreases the chance of unexpected failures, ensures that assets remain in good working order. Specifically, to address sediment accumulation, excess in-channel vegetation, excess stream bank vegetation, trees downed and in channel of leaning that are or would obstruct or divert flows in areas that could create of compound flood damage or present a clear danger to the public health and safety	$131,808 Average Annual
2024				
2024	Planning	Complete Ditch 60 Subwatershed Plan	To jointly assess flooding and water quality problems, issues and concerns and develop a structured set of actions aimed at improving water management	$25,000
2024	Planning	Stonybrook Creek Subwatershed Plan		$25,000
2024	Planning	Sand Creek Subwatershed Plan		$25,000
2025				
2025	Operations & Maintenance	Drainage Classification Maps	Develop maps that display: • All open channel surface water conveyances including streams and public and private ditches. • All storm sewer ≤ 12 inches in diameter • Outfalls • Storm water BMPs • designate the primary functions	$7,500
2025	Planning	Drainage Atlas	To guide watershed and stormwater management in the restoration of watersheds and protect the quality of lakes, rivers, streams, and wetlands in each subwatershed.	$7,500
2025 2028 2031 2034	Planning	Watershed Assessment	To evaluate the physical, biological and chemical elements of the watershed, on a subwatershed basis to assist the District in focusing efforts in a consistent and accountable manner and facilitate new investments in watershed restoration that will provide economic and environmental benefits to local communities.	$10,000
2025	Planning	Sand Creek Subwatershed Plan	To jointly assess flooding and water quality problems, issues and concerns and develop a structured set of actions aimed at improving water management	$25,000
2025	Planning	Ditch 52 Epiphany Creek Subwatershed Plan		$25,000
2025	Watershed Development	Engineering Activity Evaluation Standards	To review and evaluate the effectiveness, efficiency and adherence to Federal and state laws, regulations, and policies of constructed assets.	$12,500

Year	Program	Project	Objective	Cost
2026				
2026	Operations & Maintenance	Develop Standard Project Specifications	Develop standard project specifications for repetitive watershed-wide use that routinely replace standard construction specifications	$12,750
2026	Planning	Asset Registry	To enable the District and other MS4s the status, construction date, location, cost, condition, and current value of each asset.	$7,500
2026	Planning	Lower Coon Creek Subwatershed Plan	To jointly assess flooding and water quality problems, issues and concerns and develop a structured set of actions aimed at improving water management	$25,000
2026	Watershed Development	Rule Amendment	Prepare and update District construction specifications for conveyance and treatment facilities and the policy for their use	$20,000
2027				
2027	Planning	Life-cycle & Replacement Cost Study	To estimate the overall costs of treatment, asset, project alternatives and to select the alternative that ensures the asset will provide the lowest overall cost of ownership consistent with its quality and function.	$25,000
2027	Planning	Ditch 58 Subwatershed Plan	To jointly assess flooding and water quality problems, issues and concerns and develop a structured set of actions aimed at improving water management	$25,000
2028				
2028	Planning	Ditch 11 Subwatershed Plan	To jointly assess flooding and water quality problems, issues and concerns and develop a structured set of actions aimed at improving water management	$25,000
2028	Planning	Ditch 57 Subwatershed Plan	To jointly assess flooding and water quality problems, issues and concerns and develop a structured set of actions aimed at improving water management	$25,000

Year	Program	Project	Objective	Cost
2029				
2029	Planning	Ditch 57 Subwatershed Plan	To jointly assess flooding and water quality problems, issues and concerns and develop a structured set of actions aimed at improving water management	$25,000
2029	Planning	Ditch 54 Subwatershed Plan	To jointly assess flooding and water quality problems, issues and concerns and develop a structured set of actions aimed at improving water management	$25,000
2030				
2030	Planning	Ditch 54 Subwatershed Plan	To jointly assess flooding and water quality problems, issues and concerns and develop a structured set of actions aimed at improving water management	$25,000
2031				
2031	Planning	Ditch 20 Subwatershed Plan	To jointly assess flooding and water quality problems, issues and concerns and develop a structured set of actions aimed at improving water management	$25,000
2031	Planning	Ditch 59 Subwatershed Plan	To jointly assess flooding and water quality problems, issues and concerns and develop a structured set of actions aimed at improving water management.	$25,000
2032				
2032	Planning	Ditch 23 Subwatershed Plan	To jointly assess flooding and water quality problems, issues and concerns and develop a structured set of actions aimed at improving water management	$25,000
2032	Planning	Ditch 44 Subwatershed Plan	To jointly assess flooding and water quality problems, issues and concerns and develop a structured set of actions aimed at improving water management.	$25,000

Conduct landowner engagement operations.

Conduct engagement activities in project areas where property or land disturbance is involved. These engagements are intended to preserve, maintain resolve or restore public relations.

Conduct Precision Non-Routine Operations

Conduct intervention designed to address the effects of tie, weather or circumstance that adversely affect the public health, safety or welfare through the function of the system or the CCWD's ability to address targeted problems, issues or concerns.

Operations and Maintenance

Annually Determine/Review Residual Life of CCWD drainage and Storm Water Assets:

In collaboration with planning and finance, the program will annually review the condition in relation to its effective asset life. Effective asset life is the shortest expected life for a selected asset given its operating environment where that life is derived from a determination of the most imminent trigger among the triggers affecting asset life (service level life, capacity life, physical life, economic life).

Develop and Annually Review and Reissue Functional Classification Map:

Use the following categories to identify ditch segments management classes. Ditches and conveyances are classified according to: (1) stream order; (2) Their ability to function in draining lands with drainage rights.

Table 3.15. District functional classification map

Functional Classification	Characteristics	Coon Creek WD Example
Principal Arterial	• Fifth order stream • Open channel • Primary flowage • Serves most, if not all of watershed • Conveyance with highest flow volume • Longest flow length	• Coon Creek
Minor Arterial	• Fourth and third order streams • Open channel • Principal tributaries to fifth order/Main stream • Interconnects/ flows between cities • Major tributaries to main flowage • Outlet the majority of the subwatersheds within the District.	• Sand Creek • Springbrook Creek
Major Collector	• Third order stream • Open channel • Typically drains across municipal boundaries. • Serves as critical outlet for agricultural drainage. • Serves both drainage and storm water conveyance. • Large enough to ne impaired under Sec 303 of the Clean Water Act • Receives flow from ditch laterals and branches as well as storm water. • Outlets and receives water from urban land uses over substantial distance.	• Deer Creek (59-4) • Knoll Creek (39)
Minor Collector	• Third to second order streams • Typically, perennial flow but may grow dry in select areas during dry periods or drought. • Open channel though can be piped. • May drain across municipal boundaries. • Serves both drainage and storm water conveyance. • Often too small to be impaired under section 303 of the Clean Water Act • Receives water from directly or from local outlets such as storm sewer, lateral or branch ditches. • Can occur in residential neighborhoods. • Spacing and density typically related to drainage needs prior to 1920.	• Epiphany Creek • Oak Glen Creek
Local	• Second and first order streams • Flow characteristics vary on ground water elevation, precipitation and storage in the watershed. • Either Open channel or piped. • Constructed to serve adjacent property	• Field ditches • Curb flow • Storm sewer

Develop Standard Project Specifications:

Develop standard project specifications for repetitive watershed-wide use that routinely replace standard construction specifications.

Construction Costs:

Annually review, update and brief Administrator on construction costs

Maintenance Citeria:

Develop, and regularly review maintenance criteria that includes:

- Requirements for the protection of adjacent water and related resources such as wetlands, riparian lands, vegetation, and facilities.
- Ensure that the channel maintains the degree of efficiency or inefficiency required for desired operating objective is maintained.

- The acceptability of channel and bank vegetation
- Seasonal flow and peak flow variations
- Current and future maintenance strategies

The CCWD will continually review and update information to ensure that maintenance criteria remain consistent with management direction, resource management needs, and management objectives, and available resources. Line and collaborating agency staff involvement in this process are essential

Maintenance Plans:

The CCWD will prepare an annual maintenance plan as part of its annual budgeting and program planning.

The CCWD will maintain ditches and conveyances to accommodate their intended use consistent with the limitations inherent in their original design.

Planning

Asset Inventory:

The CCWD will develop and maintain an asset registry of all hard and natural assets to enable the CCWD and other MS4s the status, construction date, location, cost, condition, and current value of each asset and to easily identify an asset when required.

- Hard Assets: Physical or tangible assets that hold value and are typically held for the long term. (e.g. Pond, filter, infiltration basin)
- Natural Assets: Anything not human-built providing services to or impacting the mission of the District or other MS4s. (e.g. Ground water, water quality, floodplain, wetland, fish and wildlife habitat)
- Soft Assets: Intangible asset that does not have a physical form and is difficult to quantify. (e.g. Programs, reputation, relationships)

Information will be organized on a subwatershed scale, drainage atlas and subwatershed plan which shall be available to the public.

Watershed Condition Assessment:

Commencing in 2025, and every three years after, or as needed, evaluate the physical, biological and chemical elements of the watershed, on a subwatershed basis to assist the CCWD in focusing efforts in a consistent and accountable manner and facilitate new investments in watershed restoration that will provide economic and environmental benefits to local communities.

The emphasis is on the aquatic and terrestrial processes and conditions that the CCWD and other local water management activities can influence. The approach is designed to foster:

- Integrated ecosystem-based watershed assessments.
- Target programs of work in watersheds that have been identified for restoration.
- Enhance communication and coordination with external agencies and partners.
- Improve watershed-scale reporting and monitoring of program accomplishments.

Determine Life-cycle & Replacement Costs:

The CCWD will conduct and regularly update a study to estimate the overall costs of all assets &/or project alternatives to facilitate the selection of alternatives that ensure that portfolio of hard, natural and soft assets that will provide the lowest overall cost of ownership consistent with the needed quality and function.

Subwatershed Analysis and Planning:

The CCWD will develop subwatershed plans for all principle subwatersheds within the CCWD. The objectives are to jointly assess each subwatersheds with the other MS4s and stormwater authorities involved to:

- Identify flooding/drainage and water quality problems, issues and concerns
- Assesses the benefits, problems, and risks to inform decisions related to identification of the optimal drainage system per and designation and management of streams, ditches, lakes, wetlands and shallow ground water.
- Develop a structured set of actions aimed at improving management of storm water and the infrastructure that supports its management. The schedule for subwatershed plan development is as follows:

Table 3.16. CCWD subwatershed planning schedule

Year	Subwatershed
2024	• Ditch 60 – complete – started in 2023 • Stonybrook Creek • Sand Creek
2025	• Sand Creek • Ditch 52 – Epiphany Creek
2026	• Lower Coon Creek
2027	• Ditch 58
2028	• Ditch 11 • Ditch 57 – Middle Coon Creek – Andover
2029	• Ditch 57 – Middle Coon Creek – Andover • Ditch 54 – Coon Creek Coon Rapids
2030	• Ditch 54 – Coon Creek Coon Rapids
2031	• Ditch 20 • Ditch 59
2032	• Ditch 23 • Ditch 44 – Upper Coon Creek – Ham Lake

- Subwatershed plans will be guided by the following:
    - » Determination of the minimum drainage and conveyance system needed for safe and efficient conveyance of water and for administration, operation and maintenance using sound science and hydrologically based analysis.
        - ○ Determine the need for drainage from the public drainage system.
        - ○ Identify the infrastructure required to provide and ensure drainage where it is needed.
        - ○ Consider and minimize the effects of operation, maintenance, repair, or restoration on natural heritage elements, ecological processes and ecosystem health, diversity, and productivity.
        - ○ Provide drainage that facilitates land management activities and growth in a way that furthers the objectives of the CCWD and MS4s.
    - » Ensure that subwatershed and drainage decisions are informed by hydrologic analysis and modeling.
    - » Use appropriate scale of hydrologic analysis, modeling and environmental analysis when making drainage management decisions.
    - » Coordinate with federal, state, and local government when identifying and designating drainage resource uses.
    - » Involve the public, including user groups and adjacent landowners in use designations.

Hydrologic Analysis and Modeling:

Hydrologic analysis and modeling assesses the critical assets of the current drainage and hydrologic system.

Public and Governmental Affairs

- Establish, organize, and operate subwatershed task forces under the authority of the Watershed District. The task forces will be composed primarily of Technical Advisory Committee members and/or staff or consultants with special knowledge or expertise that can assist in developing and implementing the management effort. The subwatershed task forces are charged with establishing a common understanding of the problems, issues and concerns occurring within the subwatershed and identifying actions that each or the collective whole can take to pursue and achieve management objectives. These task forces will meet at least once per year to review, and assess the current management situation. They will meet at least monthly during development of the subwatershed plans. and be composed of members of the Technical Advisory Committee. The task involves establishing and maintaining a communications structure between elements of the task force at all levels of operations to ensure mutual and common understanding of problems and to facilitate unity of purpose and action.
- Coordinate information operations involving the use of public resources to facilitate information and involvement; a common understanding of the problem; influence, mutual supportive action in support of the CCWD's mission and objectives.
- Coordinate with elements of collaborating agencies and other governmental agencies to ensure cooperation and mutual support, a consistent effort and a mutual understanding of the management priorities, support requirements, concept and intent and objectives.
- Advise and assist the Administrator and collaborating partners in telling the water management story to both internal and external audiences, by originating and assisting news media in originating both print and broadcast news material and assisting with community relations projects.

Watershed Development

- Use design standards and a portfolio of treatments and practices that permit the maximum economy while meeting management direction for development, resource and environmental protection and management of tributary lands and utilization of water and related land resources.
- Follow the policies and standards set forth in the PCA storm water manual, EPA National BMP Menu, supporting storm water and erosion control manuals and best professional practice.
- Prepare and update CCWD construction specifications for conveyance and treatment facilities and the policy for their use
- Establish and maintain engineering activity evaluation standards to serve as a tool for reviewing the effectiveness, efficiency and adherence to Federal and state laws, regulations, and policies.

Coordinating Instructions (Local Water Planning)

Table 3.17. Public drainage plan coordinating instructions

Agency	Action	Time Due	Location or Condition	Purpose
Andover, Blaine, Ham Lake	Encourage development of suitable and available groundwater sources rather than surface water sources for drinking water	2026	New well construction	Bedrock/Confined groundwater sources generally have more stable water quality and quantity than surface water sources
All Cities	Recommend implementation of water conservation strategies in administration and permitting uses	2026	Operating plans for new and reissued special use authorizations involving groundwater withdrawals and reissued special use authorizations for public drinking water systems.	To ensure water conservation strategies

3.3.5 Assessment and Evaluation

Table 3.18. Public drainage goal, objectives, and measures

Resource	Goal	Objectives	Measures
Public Drainage	(PD) To provide sustainable drainage in a fiscally responsible manner for administration, protection, utilization, and enjoyment of the waters and related resources of the watershed consistent with the Comprehensive Watershed Management Plan.	(PD-1) Inspect 100% of drainage network under District's control every 5 years.	(PD-1.1) % of District's drainage network inspected over 5-year period.
		(PD-2) Conduct annual condition assessment of all the District's hard assets that support public drainage.	(PD-2.1) % of District's hard assets that support public drainage included in annual condition assessment.
		(PD-3) Minimize public cost and impact by minimizing the sections of the ditch requiring regular maintenance and repair and increasing the amount of drainage network with restored or multiple-use stream segments.	(PD-3.1) % of the drainage system requiring regular maintenance. (PD-3.2) % of the drainage system that is "restored" or modified for "multiple-use".

Operate and maintain a system that both achieves the desired conditions for holders of drainage rights and do so within the environmental capabilities of the land.

Measures of Performance		
P1	Number	Of maintenance and repair project conducted
P2	Number	Of nonroutine maintenance projects investigated, including beaver
Measures of Effectiveness		
E1	Percent	Of routine and non-routine maintenance and repair benefiting drainage dependent/sensitive land uses
E2	Percent	Of routine and non-routine projects not done or modified to protect or ensure broader ecological function

Provide an appropriate range of conservation and utility-based opportunities to minimize conflicts among uses within the watershed.

Measures of Performance		
P1	Number	Of resource based complaints and issues
P2	Y/N	Development of management objectives addressing operating and maintenance need for the range of land uses within the watershed
Measures of Effectiveness		
E1	Percent	Issues and complaints rooted in conflict or competition over water

Manage the public drainage system to address public safety and efficiency of land operations in an environmentally responsible manner and, where needed, to restore ditch segments within the limits of current and anticipated funding levels.

Measures of Performance		
P1	Percent	Of annual maintenance and repair projects targeting public safety
P2	Percent	Of permit reviews mitigating land use practices
Measures of Effectiveness		
E1	Number	Of environmental concerns
E2	Percent	Variance in routine and nonroutine annual budgets

Coordinate subwatershed planning and analysis within the watershed with Federal, State, county, and other local governmental entities and to allow the public to participate in the restoration of stream segments for recreational use.

Measures of Performance		
P1	Number	Private parcels affected by subwatershed planning project
P2	Number	Local, state and federal stakeholders in subwatershed planning project
Measures of Effectiveness		
E1	Percent	Of citizen engaging in planning process through attendance or comment
E2	Percent	Of government stakeholders participating more than 80%

Minimize public cost and impact by minimizing the sections of ditch requiring regular maintenance and repair to achieve the above purposes.

Measures of Performance		
P1	Percent	Of drainage natural or "improved" drainage system managed for multiple use
Measures of Effectiveness		
E1	TBD	TBD
E2	TBD	TBD

Organize

Measures of Performance		
P1	Days	Delay in commencing operations due to insufficient staffing or equipment.
P2	Percent	Of staff allocated to significant areas and issues
P3	Days	To resolve physical, social, political or financial barriers
P4	Percent	Of operationally significant areas managed by collaborative organizations
Measures of Effectiveness		
E1	Percent	Of District programs ready on or before project commencement
E2	Days	To reassign staff to new projects and activities
E3	Percent	Of efforts and actions to provide ability to intervene
E4	Percent	Of operationally significant areas not under collaborative or supportive management

Intelligence

Measures of Performance		
P1	Percent	Of PIRs collected and information requirements fulfilled
P2	Percent	Of PIRs collected prior to project or activity
P3	Percent	Of collected information correctly gathered and prepared for analysis
P4	Percent	Of required geospatial information and services provided within planned timeframe
P5	Number	Of Notices and briefings provided
Measures of Effectiveness		
E1	Percent	Of PIRs identified during program or project execution
E2	Percent	Of time operational decisions supported by information covered in collection plan
E3	Percent	Of collected information which can be processed in-house
E4	Days	To prepare and/or pass information to Administrator, Director of operations and affected stakeholder
E5	Days	To prepare and deliver notices and briefings

Capital Projects

Measures of Performance		
P1	Months	To implement targeted project or study after budget approval
P2	Number	Of meetings with collaborators to address high priority targets (HPTs)
P3	Percent	Of budgeted projects completed
P4	TBD	TBD
P5	Number	Of unplanned interventions
Measures of Effectiveness		
E1	Percent	Of high priority targets (HPTs) addressed
E2	Percent	Of desired results achieved
E3	Percent	Of projects conducted that achieved targeted objectives
E4	TBD	TBD

3.4 Water Quality Resource Plan

Authority
A number of state and federal statutes authorize and direct the Coon Creek Watershed District to manage water quality in surface and groundwater systems

- MS 103A, B, D
- MS 114D
- MS 115
- MS 116
- MR 7050
- MR 8410
- MR 7090
- 40 CFR section 122.34; NPDES Permit Sections 12.8, 12.9, 12.10, 22.3, 22.4, 25.3
- 33 U.S.C. 1251

References:

- Coon Creek Watershed District. 2013. Comprehensive Watershed Management Plan 2013 – 2023
- Coon Creek Watershed District 2023. 2024–2033 Comprehensive Watershed Management Plan Scope and Priority Issues
- Coon Creek Watershed District 2023. Appendix E: 2024 – 2033 Comprehensive Watershed Management Plan Scope and Priority Issues
- Coon Creek Watershed District. 2021. Coon Creek Watershed Nine Key Element Document for Coon and Sand Creeks
- Coon Creek Watershed District. 2018. Ham Lake Lake Management Plan.
- Coon Creek Watershed District. 2016a. Coon Creek Watershed District Total Maximum Daily Load (TMDL)
- Coon Creek Watershed District. 2016b. Coon Creek Watershed District Watershed Restoration and Protection Strategy Report (WRAPS)
- Coon Creek Watershed District. 2014. Biotic Stressor Identification Report
- Coon Creek Watershed District. 2014. Crooked Lake Lake Management Plan
- Minnesota Pollution Control Agency. 2021. Lake Pepin and Mississippi River Eutrophication Total Maximum Daily Load Report
- Minnesota Pollution Control Agency. 2016. Twin Cities Metropolitan Area Chloride Management Plan
- Minnesota Pollution Control Agency. 2015. South Metro Mississippi River Total Suspended Solids Total Maximum Daily Load
- Minnesota Pollution Control Agency. 2014. Upper Mississippi River Bacteria TMDL Study & Protection Plan

Time Period

2024 - 2033

Task Organization:

Table 3.19. Water quality plan task organization

Required Tasks
Identify priority issues (MR 8410.0045 Subp. 1)
Assess issues identified by stakeholders in comments to the NOI (MR 8410.0045 Subp 7
Identify high priority areas for wetland preservation, enhancement, restoration, and establishment and describe any conflicts with wetlands and land use in these areas (MS 103B.231 Subd. 6)
Present information on the hydrologic system (MS 103B.231 Subd 6 (2))
Determine the effects of drainage projects on wetlands (MS 103E.015)
Implied Tasks
Develop a statement of the current and desired 2033 condition of the resource
Define the problem set
Facilitate consensus on the broad collaborative operational approach
Assess centers of gravity catalyzing both problems and response capacity
Articulate assumptions and limitations
Identify critical information requirements
Implement a restoration and protection program for waters that are impaired or need to be protected.
Essential Tasks
Collect and share data on the condition and trends of CCWD receiving waters and their primary sources of pollutants and stressors
Coordinate with local, regional, state, and federal partners and cooperators to plan for and fund water quality improvement initiatives
Use monitoring results and best available data to identify, prioritize, and target applicable implementation strategies
Implement resulting projects and practices that protect public health, safety, and welfare, address the root causes of impairments, and support use and enjoyment of water resources by the community.
Minimize public cost and impact by evaluating the feasibility and probability of success at meeting established targets prior to investments; identify areas where natural or other fixed constraints limit attainment of state and federal standards
Regularly evaluate performance of water quality improvement projects and track progress towards achieving targets to inform course corrections when needed
Find and advocate for creative solutions to balance water quality protection and restoration needs with economic growth and drainage demands.
Collect and share data on the condition and trends of CCWD receiving waters and their primary sources of pollutants and stressors
Coordinate with local, regional, state, and federal partners and cooperators to plan for and fund water quality improvement initiatives

Situation

In Winter 2023 the CCWD published its priorities and scope for the 2024-2033 Comprehensive Plan. The assessment for the scoping and prioritization exercise included an assessment of water quality.

Since the publication of the CCWD's last Comprehensive Water Management Plan in 2013, there have been many local developments in the realm of water quality. The most impactful of which were completion of a Districtwide stressor identification study and TMDL in 2016. Additionally, four regional TMDLs applicable to CCWD have since been completed (see MPCA 2014, 2015, 2016, & 2021). Combined, these TMDL studies put forth required pollutant load reductions for sediment, phosphorus, bacteria, and chlorides and also trigger required progress tracking and reporting under MN's NPDES MS4 General Permit. Together with our partners, CCWD completed a Districtwide WRAPS and supplemental Nine Key Elements Document for Coon and Sand Creeks that outline implementation strategies to meet required pollutant reductions for all impaired waters, protection strategies for additional priority waters that are currently meeting standards, and monitoring activities to track progress. Two staff positions, a Water Quality Coordinator and Water Quality Specialist, were created and filled to implement the work. The CCWD's Water Quality program is described herein.

Area of Interest

The primary areas of interest are the physical, chemical, and biological attributes of the surface water systems within the CCWD boundaries, their contributing lands, and undefined area of shallow groundwater influence. Also of interest are the proximate and distant receiving waters to which the watershed drains, contributing runoff volume and associated pollutants. These include reaches of the Mississippi River from the City of Anoka to Lake Pepin for which CCWD has been assigned pollutant reductions as part of regional TMDL studies. Of particular importance are the municipal drinking water intakes for the Cities of St Paul and Minneapolis which are located immediately downstream, within 1-4 hours travel time from the confluence of Coon Creek. All CCWD streams outlet to the Mississippi River within the Priority A source water protection areas for the twin cities water supply. These geographical areas of interest are all impacted by the various processes that comprise the hydrologic cycle. Of particular interest are predicted changes in future precipitation patterns which may impact infiltration and runoff fractions and volumes.

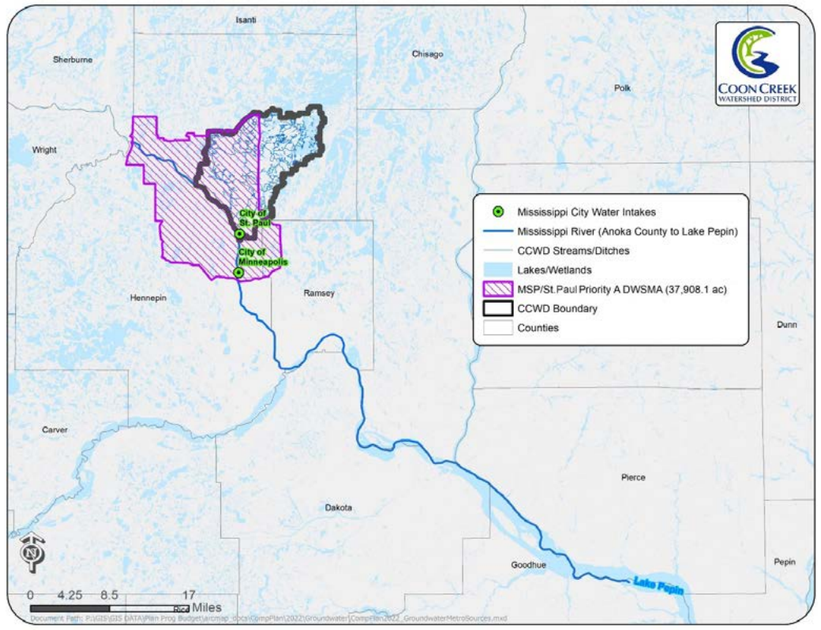


Figure 3.09. Location of CCWD relative to regional resources and DWSMAs

The Hydrologic Cycle & Changing Precipitation Patterns

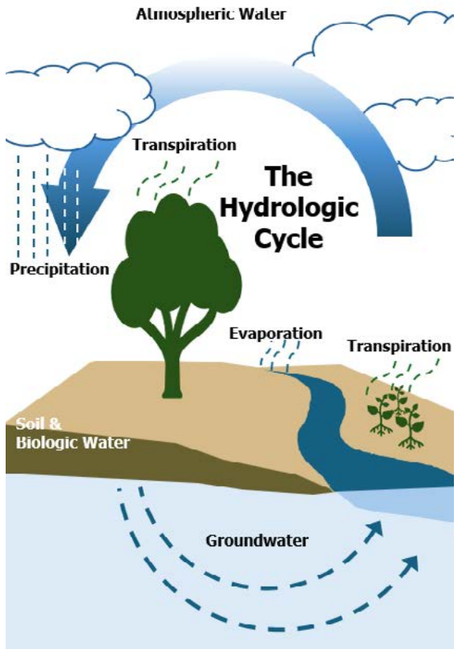


Figure 3.10. Hydrologic water cycle

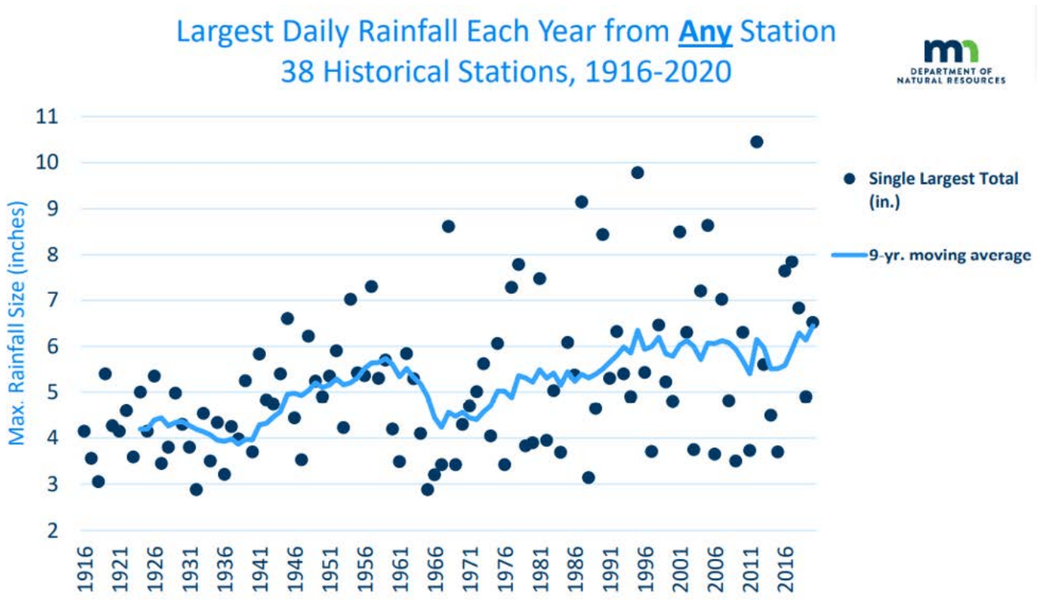


Figure 3.11. Historic increase in heavy precipitation events (Blumenfeld, 2002).

Heavy rains are now more common in Minnesota and more intense than at any time on record. Long-term observation sites have seen dramatic increases in rain events >1" and the size of the heaviest rainfall of the year (see Figure 3.11; Blumenfeld 2002). Climate projections for Anoka County by the US Environmental Protection Agency indicate large, intense rain events will continue increasing into the future, with a 3-14% increase in 100-yr event by 2035 from roughly 7.2" to 7.8". The new 100-yr event will be closer to the current 200-yr event under Atlas 14. Large rainfall events are problematic for water quality because they often overwhelm stormwater best management practices, causing increased runoff volumes, velocities, and shear stress which all exacerbate pollutant-loading and can create inhospitable conditions for aquatic biota.

Area of Operations

Lakes, ponds, and watercourses within the watershed and their drainage areas. Waterbodies with current or pending impairments are highlighted as priority areas for management intervention.

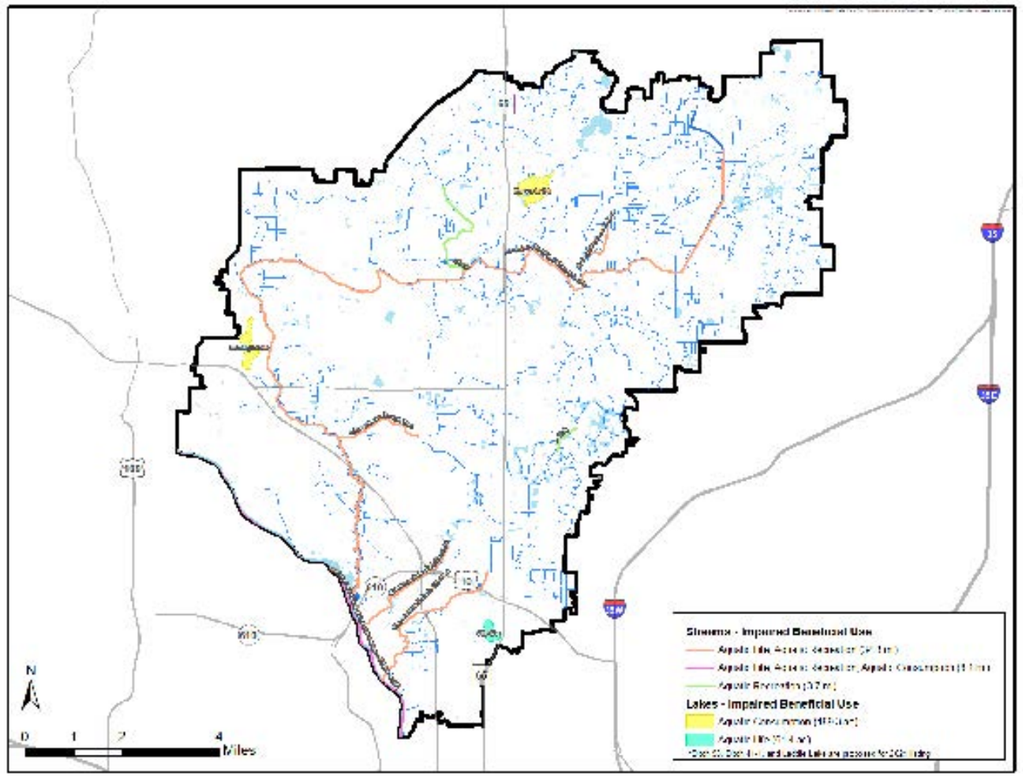


Figure 3.12. Impaired waters of the District

Topography and Direction of Flow

The majority of the watershed is incredibly flat aside from the Mississippi River terrace. The low gradient headwater systems are susceptible to natural wetland influences including elevated phosphorus levels and low dissolved oxygen. The grade increases along the gradient of development, leading to increased volumes, velocities, and shear stress on channel beds and banks as water flows downstream.

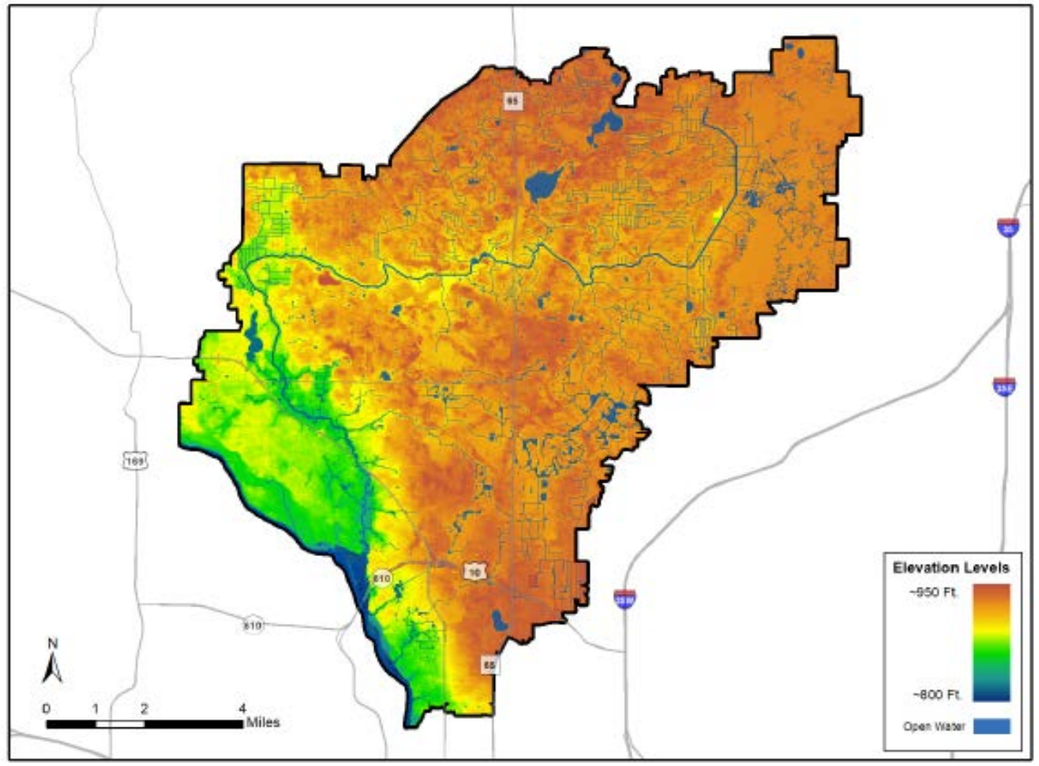


Figure 3.13. CCWD topography

Hydrology

The depth to groundwater and surficial geology is variable across the watershed leading to a mixture of gaining and losing reaches. There are significant surface water-ground water interactions with implications for both water quantity and quality.

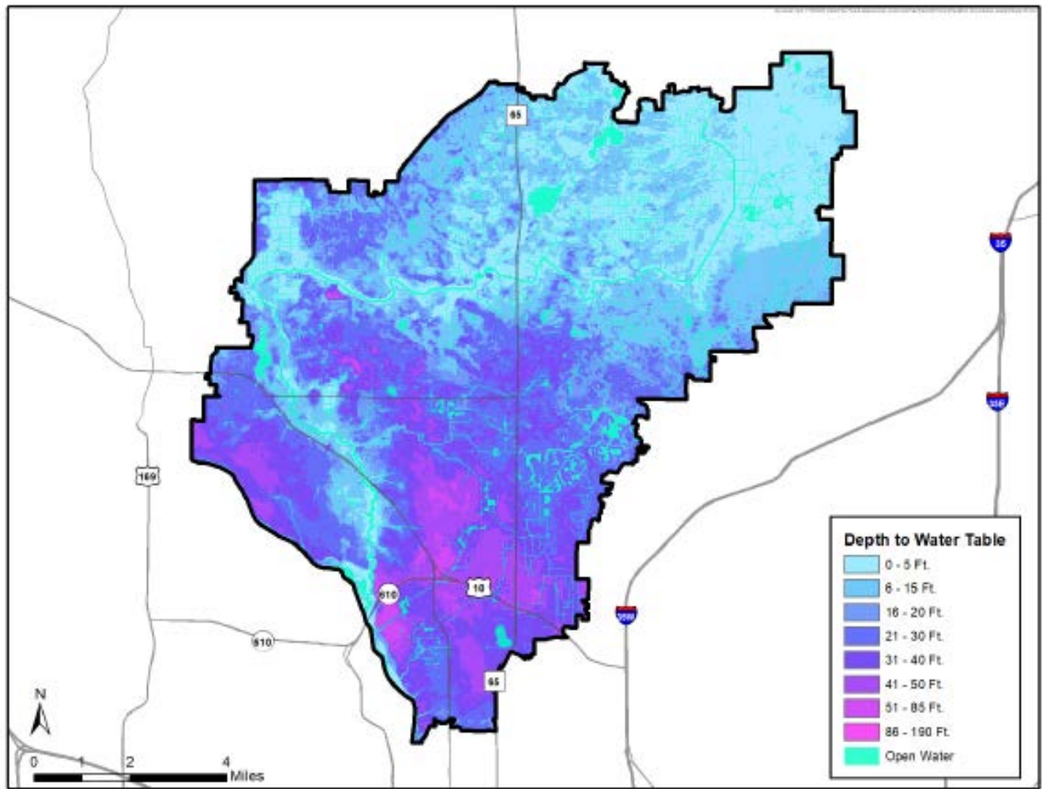


Figure 3.14. District hydrology

Stormwater Infrastructure

In addition to CCWD lakes and watercourses, managing the stormwater conveyance and treatment infrastructure is critically important to protecting and restoring water quality given its influence on runoff volumes, rates, and pollutant concentrations. Stormwater BMPs that are part of the conveyance system may have unintended adverse impacts if they are not functioning as designed or are in need of maintenance.

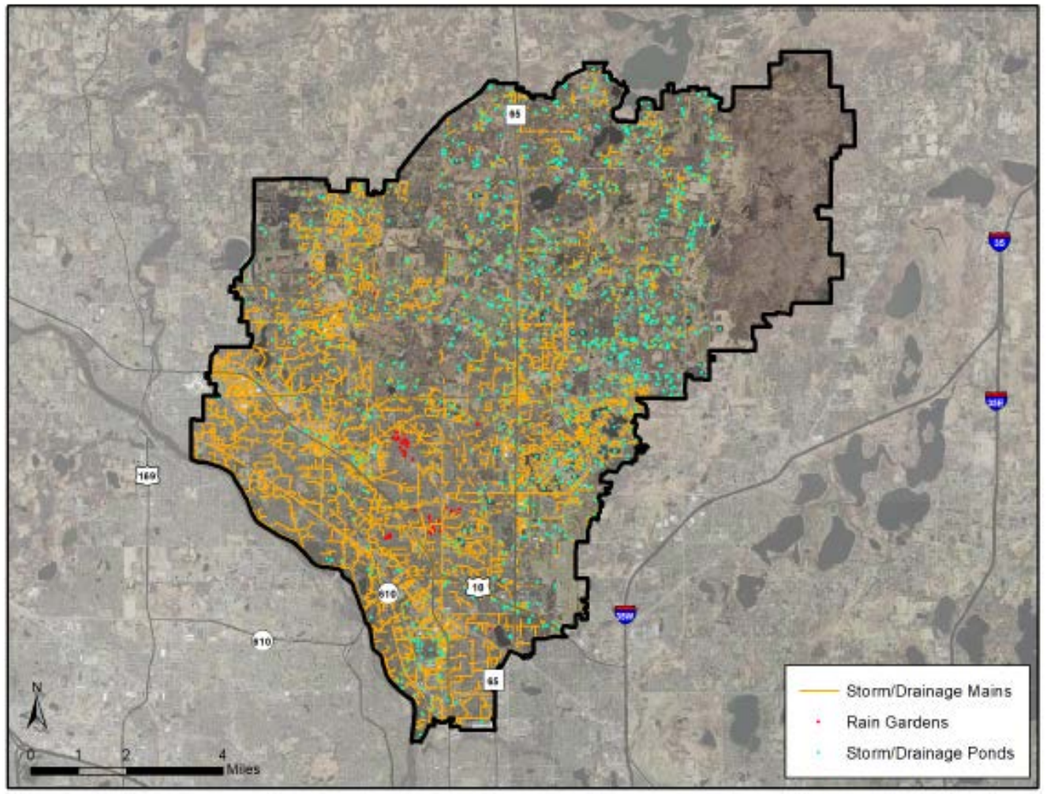


Figure 3.15. Stormwater assets of the CCWD

Age of Development

Parcels developed prior to stormwater management rules are likely runoff and pollutant-loading hot spots given lack of structural best management practices. These areas represent priority areas for implementing water quality improvement projects and practices such as street sweeping, retrofitting existing undersized or under-performing BMPs, or constructing new BMPs as part of reconstruction activities. Timing of development is shown in relation to the following significant regulatory timelines:

Table 3.20. Major changes in development rules

Year	Rule Change
1982	Passage of Metropolitan Water Management Act (MWMA)
1988	Local adoption of MWMA Comp Plan and Rules
1991	Passage of Wetland Conservation Act
1998	CCWD adopts volume reduction rule to address flood prevention
2003	CCWD becomes and MS4
2013	CCWD Comprehensive Water Management Plan
2022	CCWD Rules update

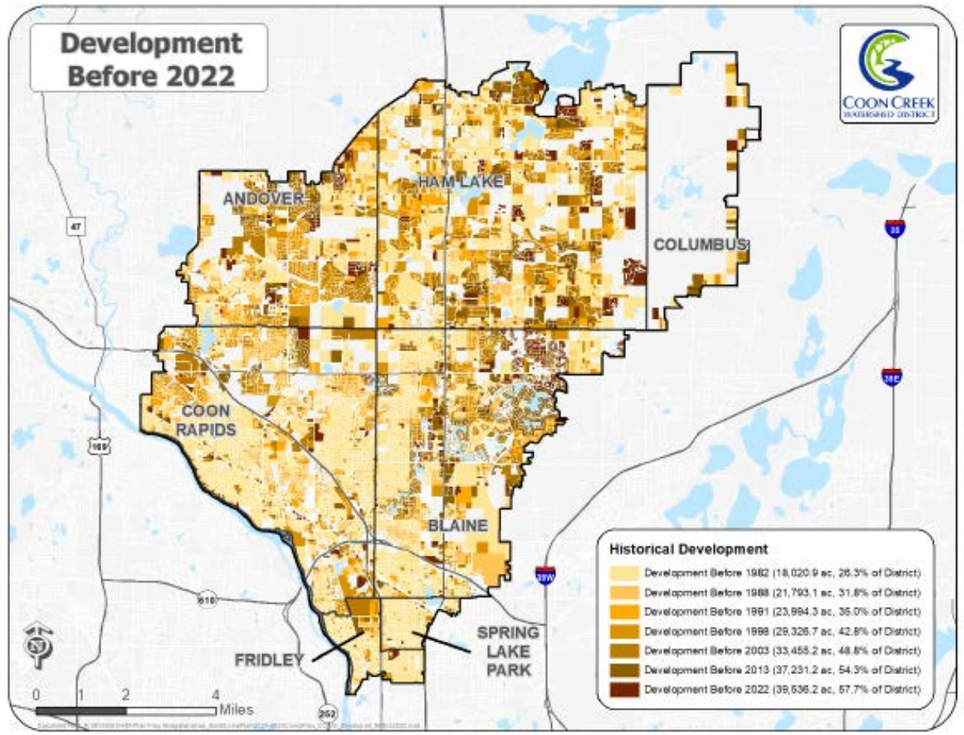


Figure 3.16. Age of developments in the CCWD

Biotic condition by assessment reach

All four major streams within the watershed are impaired for aquatic life due to a variety of identified stressors shown in the table below. Few assessment reaches are supportive of healthy macroinvertebrate and fish assemblages given index of biotic integrity results compared against standards for general and modified uses for Class 2Bd streams in this region. Presently, CCWD streams are held to general use standards, but may be reclassified pending the results of use attainability analyses.

Figure 3.17. Impaired reaches of the CCWD for macroinvertebrates and fish

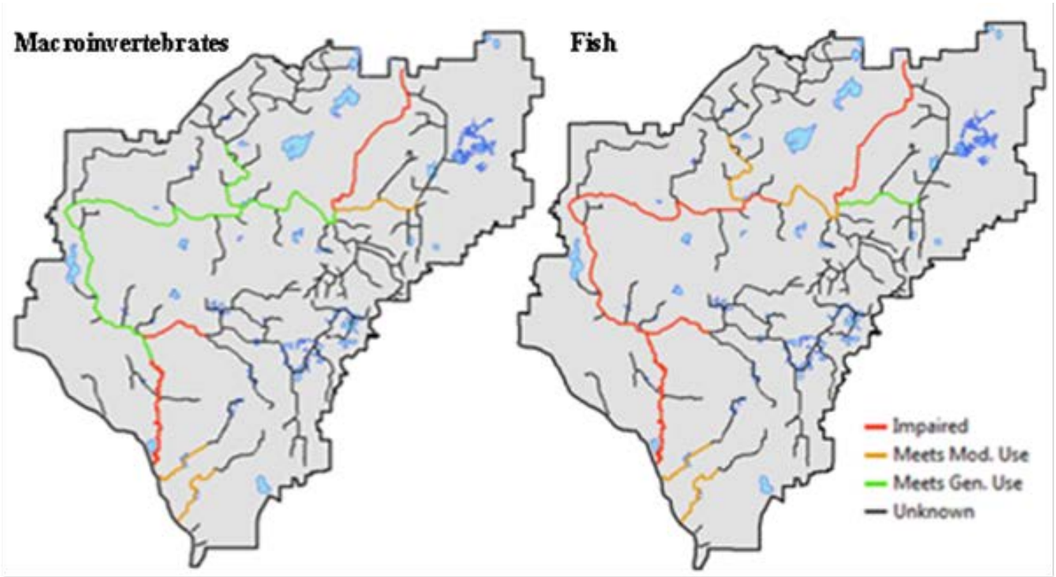


Table 3.21. Stressor contributions to impairments of the CCWD

Stream	TP	TSS	Alt. Hab	Alt. Hyd	D.O.	Cl	NH3	Temp	pH
Coon	H	H	M	M	L				
Sand	H	H	M	M		/			
Pleasure	M	H	M			/			
Springbrook	H		M	M		/			

Level of importance of various stressors: H= High, M= moderate, L= low, **/** = inconclusive

Pollutants of interest

The primary pollutants of interest with direct impacts on both aquatic life and recreation-based impairments are total suspended sediments (TSS), total phosphorus (TP), E. coli, and chlorides. Exceedances of water quality standards for these parameters based on 2010-2020 data are widespread.

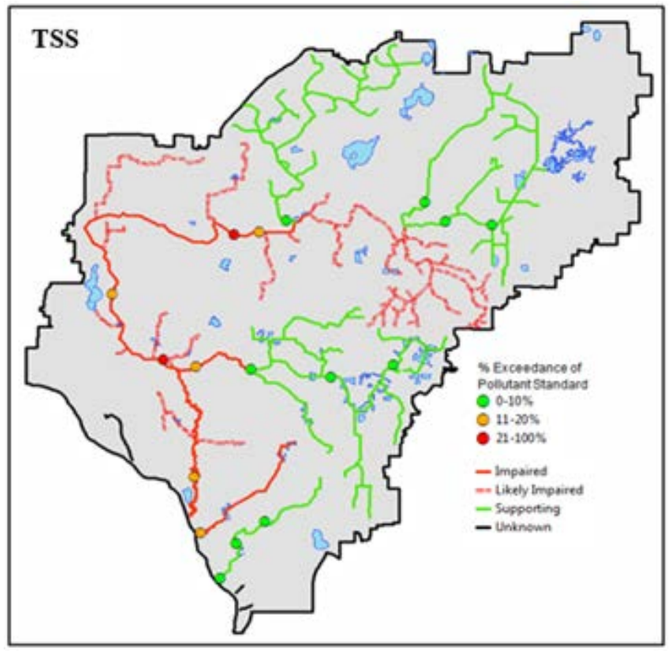


Figure 3.18. TSS water quality data

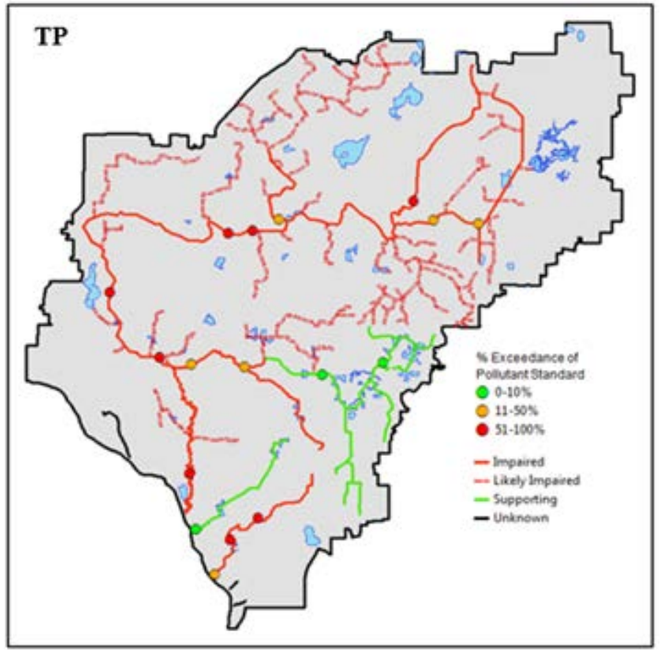


Figure 3.19. TP water quality data

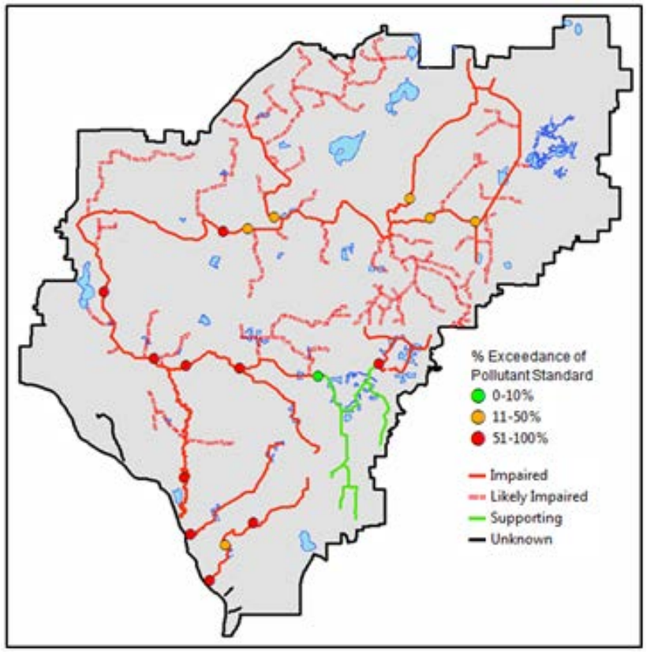


Figure 3.20. E. coli water quality data

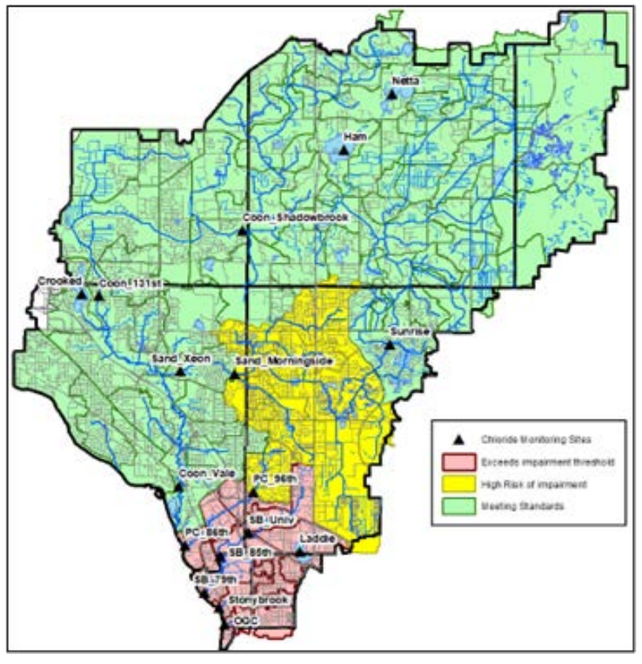


Figure 3.21. Chloride water quality data

Active erosion

Stream bank and bed erosion is a primary source of TSS and other particle-bound pollutants in CCWD streams and downstream receiving waters. The CCWD keeps an up-to-date inventory of all sites of active erosion; data through 2023 are shown below. Each year, sites are prioritized for stabilization efforts based on estimates of sediment loss calculated using the NRCS direct volume method. Previously stabilized sites are also mapped below.

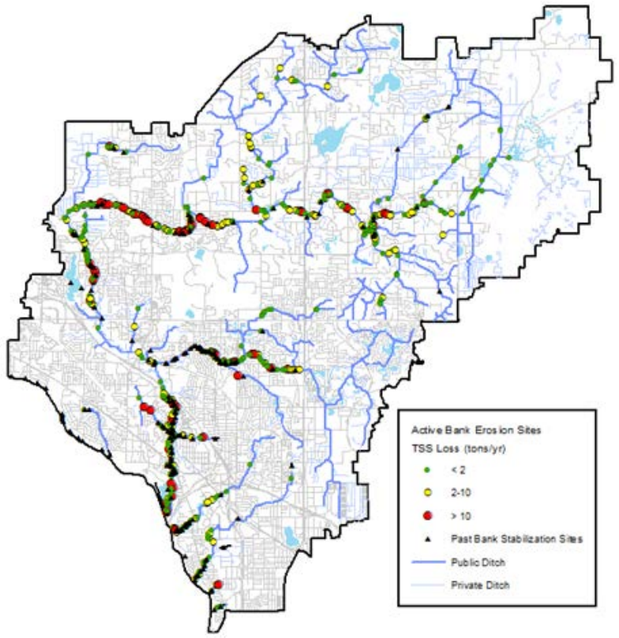


Figure 3.22. Areas of stream bank and bed erosion in the CCWD

Aquatic Invasive Species

Various aquatic invasive species (AIS) threaten the physical, chemical, or biological integrity of CCWD waters, interfere with human recreation, and/or impact property values. Of primary management interest to the CCWD are AIS that clog drainageways or inhibit access such as phragmites and cattails, exacerbate nutrient release such as curlyleaf pondweed and common carp, or threaten native food webs or habitat value in priority areas. It should be noted that invasive cattail are pervasive throughout the watershed and are not shown on the map below.

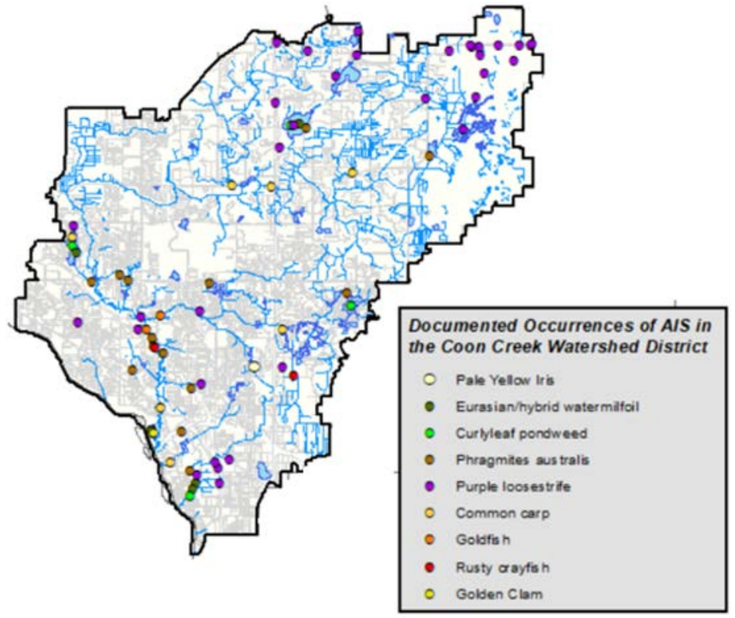


Figure 3.23. AIS occurrences in the CCWD

Groundwater vulnerability to pollution

In addition to surface water impairments, the shallow groundwater in the watershed is vulnerable to contamination. Vulnerability depends on a variety of factors including location of possible contaminants, depth to groundwater, and soil type. Advocating for infiltration as a stormwater management best practice may exacerbate groundwater contamination under certain circumstances, but is important for aquifer recharge. There are direct, but ill-defined links between the shallow unconfined aquifer (water table) and the shallow confined aquifer that supplies some drinking water in the watershed (Blaine-Ham Lake Area Well Interference Investigation Report, DNR, 2023.

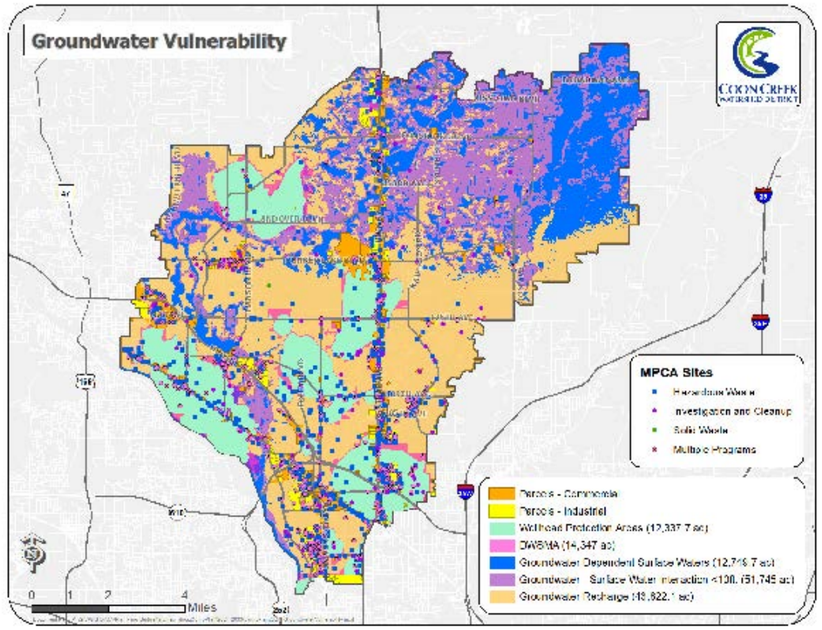


Figure 3.24. Groundwater pollution vulnerability

3.4.1 Problems, Issues, and Concerns

A major challenge over the next ten years will be to balance and fund the growing water quality protection and restoration needs with the competing demands of drainage, flood control, and development. Significant problems, issues, and concerns to be addressed in 2024-2033 are outlined below. Additional details can be found in the 2023 scoping and prioritization exercise for water quality.

1. Ensuring adequate management of stormwater runoff from new development and redevelopment, above-and-beyond non-degradation standards.
    - » Protection of unimpaired waters
    - » Pursuing TSS, TP, and E. coli reductions consistent with TMDL loading allocations
    - » Pursuing volume and rate reductions to minimize sheer stress on channel beds and banks
    - » Seeking out and incentivizing redevelopment opportunities with potential for targeted stormwater management retrofits
    - » Consideration of modeled future precipitation patterns in BMP sizing and design decisions
2. Ensuring adequate inspection, monitoring, maintenance, and repair of aging stormwater infrastructure to maintain performance at or above design standards for critical assets
    - » Fully develop and utilize asset inventory and management framework
    - » Rehabilitation or equal replacement of BMPs at their end of life
    - » Providing educational materials and trainings, technical assistance, and enforcement of operations and maintenance agreements for privately-owned BMPs
    - » Evaluating BMP design adequacy and performance under changing precipitation patterns
3. Promoting, sustaining, and optimizing non-structural best management practices (soft assets) for managing stormwater runoff
    - » Ensure no net decrease in level of effort since TMDL baseline year(s) and seek and incentivize opportunities to optimize large-scale operations such as municipal street sweeping and de-icing activities
    - » Foster public awareness, behavior change, and acceptance of best practices for small scale activities with cumulative impacts on the quantity and quality of stormwater runoff such as irrigation, fertilization, and winter salting
4. Undertaking deliberate targeted water quality restoration efforts to address, to the maximum extent practicable, the stressors contributing to impairments will require a sizeable investment in time and money by the District and applicable MS4s
    - » Filling data gaps to better understand the root causes and primary sources of all stressors to inform natural background influences, use attainability, and targeted implementation strategies with high probabilities of success
    - » In addition to meeting pollutant reduction targets, it will be imperative to address non-pollutant stressors to aquatic biota such as hydrological alteration and habitat degradation
    - » Ensuring participation in water quality improvement initiatives from all MS4s and other partners to increase local capacity for implementation
    - » Seeking and securing state and federal grant funding
    - » Evaluating cost-benefit of restoration work and managing expectations
    - » Ensuring BMPs meet project objectives and design targets
5. Undertaking channel maintenance activities in a manner that minimizes impacts to aquatic biota and habitat
    - » Consider suspension of maintenance activities or abandonment of select reaches as demands for drainage shift
    - » Addressing the root cause of channel instability whenever feasible versus spot-armoring; consider incorporating elements of natural channel design to the maximum extent practicable
6. Addressing emerging water quality issues including, but not limited to:
    - » New or impending impairments such as chlorides
    - » Contaminants of Emerging Concern in stormwater and/or groundwater such as PFAS, 1,4-dioxane, pesticides, pharmaceuticals
    - » Unintended consequences of past BMPs or lack of maintenance such as: storm ponds leaching phosphorus, infiltration of chlorides, and leaky sanitary sewer infrastructure
    - » New or expanding populations of aquatic invasive species (AIS) threatening drainage, nutrient cycling, food webs, recreation, or habitat value.
    - » New or expanding populations of terrestrial invasive species impacting the function of sensitive riparian areas such as shading out the understory and exacerbating erosion.
7. Tracking and documenting progress towards achieving water quality protection and restoration goals and requirements
    - » Maintaining up-to-date asset inventory including measures of performance
    - » Quantifying and tracking results of soft assets
    - » Accounting for changes in land use, land cover, and precipitation over time
    - » Pairing modeled reductions based on BMPs implemented with field-collected data on receiving water response
    - » Measuring and documenting long term improvements given interannual variation and lag times
    - » Compiling, summarizing, and reporting on activities of all MS4s jointly responsible for achieving CCWD TMDLs

At present, all major streams within the District, three tributary ditches, and three lakes are impaired or pending impairment for one or more uses due to a variety of stressors. The reach of the Mississippi River to which the District drains is also impaired:

Table 3.22. CCWD Impairments

Waterbody (AUID)	Year Listed or proposed	Impaired Beneficial Use	Impairment	Aquatic Life Stressor(s)
Coon Creek (07010206-530)	2006	Aquatic Life	Macroinvertebrates	TSS, TP, Poor habitat, Altered Hydrology, Low Dissolved Oxygen
	2022	Aquatic Life	Fish	
	2024	Aquatic Life	Total Suspd Solids	
	2024	Aquatic Life	Dissolved Oxygen	
	2014	Aquatic Recreation	E. coli	
Ditch 11 (-756)	2022	Aquatic Life	Macroinvertebrates	TSS, TP, Poor habitat, Altered Hydrology, Low Dissolved Oxygen
	2024	Aquatic Life	Dissolved Oxygen	
	2024	Aquatic Recreation	E. coli	
Ditch 58 (-636)	2024	Aquatic Recreation	E. coli	
Sand Creek (07010206-558)	2006	Aquatic Life	Macroinvertebrates	TSS, TP, Poor habitat, Altered Hydrology
	2024	Aquatic Life	Fish	
	2016	Aquatic Recreation	E. coli	
Ditch 41-4 (-765)	2024	Aquatic Recreation	E. coli	
Pleasure Creek (07010206-594)	2006	Aquatic Life	Macroinvertebrates	TSS, TP, Poor habitat, Chlorides
	2024	Aquatic Life	Chlorides	
	2014	Aquatic Recreation	E. coli	
Springbrook Creek (07010206-557)	2006	Aquatic Life	Macroinvertebrates	TP, Poor habitat, Altered Hydrology, Chlorides
	2024	Aquatic Life	Chlorides	
	2014	Aquatic Recreation	E. coli	
Crooked Lake (02-0084-00)	2008	Aquatic Consumption	Mercury	
Ham Lake (02-0053-00)	2008	Aquatic Consumption	Mercury	
Laddie Lake (02-0072-00)	2024	Aquatic Life	Chlorides	Chlorides
Mississippi River (07010206-805)	1998	Aquatic Consumption	Mercury	
	2002	Aquatic Consumption	PCBs	
	2006	Aquatic Recreation	Fecal coliform	
	2016	Aquatic Life	Nutrients	TP

In addition to reducing pollutant stressors including TSS, TP, E. coli and chlorides, addressing non-pollutant stressors such as poor habitat and altered hydrology will be equally important for making progress towards supporting healthy fish and macroinvertebrate assemblages. Although attempts will be made to address all impairments, it is anticipated that progress will be slow to negligible in some areas due to natural background influences (native soils and wetlands releasing TP, low dissolved oxygen in groundwater-dominated reaches, natural sources and recycling of E. coli) and past anthropogenic activities where mitigation is infeasible or will require long time horizons (ditching, groundwater contamination from de-icing activities, urban development prior to stormwater regulations).

Other Water Quality Management Efforts

Table 3.23. Other efforts in the water quality plan

Agency	Mission/Goal	Activities
Federal		
U.S. Army Corps of Engineers	To regulate the discharge of dredged or fill material into waters of the United States, including wetlands.	Implementation of Section 404 of the CWA including authorizing bank stabilization and stream restoration work and crediting
U.S. Environmental Protection Agency	To protect human health and the environment.	Approval of TMDLs, WRAPS, NKE plans. Implementation of Section 319 program
U.S. Geological Survey	To provide reliable scientific information to describe and understand the Earth; minimize loss of life and property from natural disasters; manage water, biological, energy, and mineral resources; and enhance and protect our quality of life.	Hydrology monitoring at Coon Creek outlet site and other select rotating locations
State		
Minnesota Pollution Control Agency	To prevent, limit and remediate pollution caused by businesses, organizations and individuals to protect human health and the environment.	Administers: • Intensive watershed monitoring program and assessment determinations • TMDL/WRAPS development • NPDES permit programs • 319 and Clean Water Partnerships grants, loans • MN Stormwater manual
Board of Water & Soil Resources	To improve and protect Minnesota's water and soil resources by working in partnership with local organizations and private landowners.	Administers: • Clean Water Fund grants for water quality projects and practices • Buffer Law • Metropolitan Water Management Act » MR 8410 » Plan review/approval • BWSR Academy trainings • MN WCA TEP member
Department of Natural Resources	To work with Minnesotans to conserve and manage the state's natural resources, to provide outdoor recreation opportunities, and to provide for commercial uses of natural resources in a way that creates a sustainable quality of life.	Administers: • Pass-through Legacy grants for water quality and habitat improvement projects • Aquatic plant management permit program • Public Waters Work permit program • Cooperative well and lake level monitoring • Lake aquatic life assessments • Technical assistance from Clean Water Specialist group

Agency	Mission/Goal	Activities
University of Minnesota	…world-class education, groundbreaking research, and community-engaged outreach… to serve Minnesota.	Applied research and technology transfer related to water resource management (Water Resources Center, SAFL, MAISRC, UMN Extension, MN Sea Grant)
Local		
Anoka Conservation District	To holistically conserve and enhance Anoka County's natural resources for the benefit of current and future generations through partnerships and innovation.	• Contracted monitoring services • Publishes annual Anoka Water Almanac • Implementation of improvement projects • Technical assistance • Noxious weed management • WMO representation/liaison • MN WCA TEP member
Anoka County Parks	To positively impact the quality of life in Anoka County by providing parks, outdoor recreation, and leisure services for the public.	• AIS Prevention Program • Implementation of water quality improvement projects within parklands
Anoka County Highway Department	To enhance and protect life by providing safe roads and eliminating traffic congestion	• SWPPP implementation • TMDL compliance
Cities (Columbus, Ham Lake, Andover, Blaine, Coon Rapids, Spring Lake Park, Fridley)	See LSWMPs	• SWPPP implementation • TMDL compliance • Supplemental monitoring • Public engagement • Drinking water supply and protection
Lake Associations: Crooked Lake, Ham Lake, Lakes of Radisson HOA	Protection and enhancement of local lakes	Lead/assist with lake management activities and promote responsible stewardship through public education and engagement

Interagency Efforts

- Minnesota Stormwater Research Council
- Metro Watershed Partners
- Adopt-a-Drain

3.4.2 Mission, Goals, and Objectives

Mission

To protect and improve the physical, chemical, and biological quality of the CCWD's water resources consistent with State and Federal water quality standards.

3.4.3 Implementation

Intent

To protect and restore water quality, the District will need to:

1. Collect and share data on the condition and trends of District receiving waters and their primary sources of pollutants and stressors
2. Coordinate with local, regional, state, and federal partners and cooperators to plan for and fund water quality improvement initiatives
3. Use monitoring results and best available data to identify, prioritize, and target applicable implementation strategies
4. Implement resulting projects and practices that protect public health, safety, and welfare, address the root causes of impairments, and support use and enjoyment of water resources by the community.
5. Minimize public cost and impact by evaluating the feasibility and probability of success at meeting established targets prior to investments; identify areas where natural or other fixed constraints limit attainment of state and federal standards
6. Regularly evaluate performance of water quality improvement projects and track progress towards achieving targets to inform course corrections when needed
7. Find and advocate for creative solutions to balance water quality protection and restoration needs with economic growth and drainage demands.

By 2033, significant progress should be made in addressing impairments, on track for meeting water quality standards by the established CCWD TMDL target year of 2045 and state deadline of 2050 (MS 114D.20 subd. 2). Reaches where standards are not attainable due to natural or fiscal constraints will be identified; alternative targets and schedules will be outlined along with supporting evidence.

Approach

The CCWD will use a multi-domain, adaptive management approach where decision-making is based on the best available sound science and available resources. This is an iterative process where outcomes are continually monitored and evaluated to inform adjustments based on what has been learned and achieved to date, thereby reducing uncertainty, and improving efficacy over time. Given the complexity and dynamic nature of the built and natural environments, the CCWD will rely on maintaining a robust, up-to-date asset inventory coupled with extensive modeling efforts to represent watershed processes for evaluation of water quality management intervention scenarios. An asset management framework is used to track and prioritize inspection and maintenance activities that influence stormwater volumes, rates, and pollutant concentrations.

Water quality management efforts can be categorized under seven essential task groups:

1. Organization & Intervention
2. Operational Intelligence: Inspection, Monitoring and Data Collection
3. Capital Improvements and Projects
4. Operations and Maintenance
5. Planning
6. Public and Governmental Affairs
7. Review and Regulation of changes to the system

Organization and Intervention

Involves arranging the roles and goals of the CCWD and the other collaborators and cooperators in managing water resources within the watershed on an operational level. The purpose is to conduct programs, projects and activities preventing problems and issues from occurring or by capitalizing on the knowledge, authorities, and/or abilities to achieve operational or strategic results. This activity includes applying money and authority for operational advantage within the watershed and conducting both repair and restoration work as well as prevention and protection efforts. It also involves enhancing the capacity and capability of collaborators, and remaining intimately involved in all water and related resource management. Operational efforts are composed of program, division, or section staff and activities working to achieve the goals of the Comprehensive Plan and state and federal goals.

Operational Intelligence: Inspection, Monitoring and Data Collection

This task group produces the intelligence required to accomplish the objectives within the watershed. They include planning and research undertakings. Operational intelligence includes determining size, nature and significance of problems, issues and concerns as well as the rate of degradation and urgency. Operational intelligence addresses problems, issues and concerns across the range of organizations and activities involved in water management within the watershed. Operational inspection and monitoring are included in this task group. It also includes intelligence support to cooperators and collaborators and groups.

Capital Improvement Projects

Involves direct and indirect means to address and resolve water resource problems, issues and concerns, and to maintain the ability to continue to respond and intervene. Capital projects, by their very nature, cost more than the state auditor's reporting threshold (currently $5,000) and are typically multiagency and collaborative projects. Capability refers to the delivery of all types of projects to include, construction, repair, restoration, enhancement as well as studies, assessments, strategies, and plans that support operational efforts.

Operation & Maintenance

Operation and maintenance involves a systematic process to manage the drainage and stormwater conveyance and treatment system efficiently and effectively to protect water resources and public investments. The operations and maintenance system sets priorities, plans, budgets, schedules, performs, inspects, monitors, and evaluates the CCWD drainage system. Operation and maintenance activities are segmented and differentiated by select criteria depending on established uses and demands. The program is a comprehensive and continuous process focused on assessing the value and condition of assets with the goal of minimizing the total lifecycle cost of ownership while providing a defined level of service and pursuing multiple use management and restoration of all applicable beneficial uses.

Planning

Water quality management involves planning activities across multiple levels and with varying scopes from statewide, long-range plans to those focused on a single issue or single resource. The role of CCWD staff ranges from minimal participation such as providing initial input or concurrence, to serving as a technical liaison, to spearheading and leading planning efforts. A primary planning activity to support water quality protection and restoration is development of special area management plans such as detailed subwatershed assessments and comprehensive lake management plans. These focused plans identify and prioritize targeted implementation strategies and specific projects to meet defined and measurable goals and are incorporated into this Comprehensive Plan by reference.

Public and Governmental Affairs

This Program works with the public, the cities, and other watershed and related organizations in the accomplishment of the CCWD mission and goals. Staff provide information, guidance, and involvement opportunities to stakeholders consistent with CCWD goals and objectives to meet state and federal requirements by linking programmatic and applied actions. This Program is applicable across the range of water management operations and includes acquiring and communicating operational level information, assessing the operational situation, preparing plans, administering the citizen and technical advisory committees as forums for collaborative management, coordinating information & involvement operations, coordinating and integrating collaborative and multiagency support, and providing other public affairs services.

Review and Protection

This task group within the Watershed Development program conserves the functional capacity of the landscape, natural and hard assets, and mitigates potential adverse impacts to the water and related resources. This activity involves regulatory and enforcement actions to avoid, counter, or mitigate the effects of landscape or hydrologic changes through design, construction, and

operation and maintenance practices. Tasks involve protecting groundwater, conveyance and stormwater infrastructure, water quality treatment, flood protection and prevention, and wetland conservation. This task also pertains to protection of collaborator interests, equipment, and infrastructure as well as protecting the public health, safety, and welfare.

Review is focused on the policies and requirements for permitting development and redevelopment activities including during construction and post construction controls consistent with state and federal requirements. Also of interest are any activities that may affect the course, current, cross section, or quality of the drainage and conveyance systems of the watershed. It is the CCWD's intent to facilitate maximum economic benefits while meeting the management direction for resource and environmental protection and utilization of the resource.

3.4.4 Essential Tasks

Organization and Intervention

1. As a non-traditional MS4 focused on watershed management with overlapping boundaries with seven other MS4s (Ham Lake, Andover, Blaine, Coon Rapids, Spring Lake Park, Anoka County Highways, MnDOT), the CCWD will act as the lead for ensuring and tracking progress towards the required categorical pollutant load reductions in the CCWD TMDL and future applicable TMDLs. The CCWD will coordinate implementation of joint water quality protection and restoration projects and practices included in this Comprehensive Plan and consistent with the strategies detailed in the CCWD WRAPS and NKE Document.
2. District programs involved in water quality management will be:
    - » Water Quality
    - » Watershed Development
    - » Planning
    - » Operations and Maintenance
    - » Public and Governmental Affairs
3. Interventions will occur under the District's authorities as a watershed district and MS4.
4. Operationally significant areas for District involvement include:
    - » Stormwater runoff volume and rate control
    - » TMDL Wasteload Allocations and nonpoint source Load Allocations
    - » Lake Management
    - » Ditch and stream banks and beds
    - » Aquatic and riparian habitat quality and connectivity
    - » Public engagement

Intelligence: Providing Operational Information, Data, and Investigations

The CCWD will collect the information and data necessary to manage water quality within the watershed including conducting routine condition and pollutant loading assessments, regular performance monitoring to evaluate the efficacy of various management interventions, and diagnostic and other special investigations as needed. In addition to providing timely intelligence for internal operations and to partners, information will also be synthesized and shared widely with water resource professionals to promote technology transfer and avoid duplication of efforts.

Annually Organize & Plan Monitoring and Information Collection Activities

The District Administrator, Director of Operations, Operations and Maintenance manager and the Public and Governmental Affairs, Water Quality and Watershed Development Coordinators will meet annually to determine changes to the information to be collected and to identify priority information requirements (PIRs) prior to work planning for the following field season. Data collection activities conducted by other agencies will be evaluated prior to undertaking new efforts to avoid duplication. Below is a summary of current information collected:

Table 3.24. Data and information collection activities

Data	Location	Collection Frequency
Precipitation	District office	Continuous via all-season Davis Weather Station; Storm totals
Precipitation	Districtwide	Continuous/archival via existing monitoring networks including Anoka Co Emergency Services, CoCoRaHS, volunteers, and doppler estimated raster dataset
Water Levels-Wetlands and lakes	7 long term wetland reference sites; Crooked, Ham, Laddie, Netta, & Sunrise Lakes	Continuous, Ice-free season
Water Levels-Groundwater	Districtwide; MN DNR network and supplemental sites TBD	Continuous
Water levels-Streams	Core stream and municipal outlets; rotating subwatershed outlets	Continuous, Ice-free season
Water levels, Peak-Floodplain	6 stream sites as detailed in Flood Response Plan; additional sites as needed for model calibration	Crest gages deployed each spring
Stream Discharge	All stream sites	Continuous at core outlets; paired with grabs at other sites; portable equipment available for large event response
Lake Quality- TP, OP, Chl-a, Secchi, Sonde profile	All Lakes	Semimonthly; May-Sept
Stream Quality-TSS, TP, E. coli, Paired sonde	All stream sites	Monthly Apr-Oct plus 4 event-based samples
Stream Quality- OP, Chlorides	Core and municipal outlet sites	Monthly Apr-Oct plus 4 event-based samples
AIS Early Detection	All Lakes	Semiannually
AIS Response	All managed populations	Annually for at least 3 years post treatment
BMP Performance-target pollutants & treatment volumes	All District owned or operated	Variable; Per individual O&M agreements
Illicit Discharge Detection and Elimination	Based on reports	Immediate

Collect and Share Operational Information and Data

- Routine Condition Monitoring: The CCWD will annually monitor 100% of its core, long-term sites including representative wetlands, lake levels, impaired stream outlets, and select municipal boundaries. Subwatershed stream outlets and lake water quality will be monitored on a rotating basis, at least once per five-year period as outlined below. On average, approximately 60% of CCWD waters are monitored any given year. Data collection needs beyond the capacity of internal CCWD staff will be coordinated with partners and volunteers including USGS, ACD, and local lakeshore residents. All routine monitoring data will be submitted to the state's Environmental Quality Information System (EQuIS) database and reported annually in the Anoka Water Almanac available for download online.

Table 3.25. Estimated monitoring schedule

Monitoring Site	2024	2025	2026	2027	2028
	2029	2030	2031	2032	2033
D11	X		X		X
D17 (Springbrook Creek)	X	X	X	X	X
D20				X	
D23		X			
D37					X
D39 (Knoll Creek)					X
D41 (Sand Creek)	X	X	X	X	X
D44 (Coon Creek)	X	X	X	X	X
D52 (Epiphany Creek)				X	
D54 (Coon Creek)	X	X	X	X	X
D57 (Coon Creek)	X	X	X	X	X
D58			X	X	X
D59 (Coon Creek)	X	X	X	X	X
D60					X
Oak Glen creek	X				
Lower Coon creek	X	X	X	X	X
Pleasure Creek	X	X	X	X	X
Stonybrook Creek	X				
Woodcrest Creek		X			
Cenaiko Lake	X		X	X	
Crooked Lake	X	X	X	X	X
Ham Lake	X	X	X	X	X
Laddie Lake		X	X		X
Netta Lake			X	X	X
Sunrise Lake	X	X			X
Pct of Total System	60%	56%	60%	60%	72%

- Performance Monitoring: The CCWD will conduct regular inspections and performance monitoring of select BMPs owned or operated by the CCWD according to established Operations and Maintenance agreements and schedules. These include all structural BMPs funded by Clean Water Fund grants. Additionally, the CCWD may be contracted to monitor additional public or privately-owned BMPs where there is a mutual interest in evaluating performance. Results will be included in annual summary reports as part of NPDES MS4 General Permit compliance.

Table 3.26. CCWD BMP performance monitoring schedule

BMP	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Woodcrest Filter	X	X					X			
Pleasure Creek N Filter	X	X					X			
Pleasure Creek S Filter	X	X	X	X					X	
Epiphany Creek Filter	X	X	X	X					X	
Oak Glen Creek Filter			X			X			X	
Aurelia Pond/ Bench	X	X	X					X		
Future BMP(s)		TBD								

- Diagnostic monitoring/ Special Investigations: The CCWD will conduct specialized, intensive monitoring activities as needed to fill important data gaps that inform management decisions such as pollutant source tracking or model calibration. Data will be compiled in summary reports and shared with all interested parties or by request. Timing may be adjusted to align with related planning and implementation efforts.

Table 3.27. CCWD special studies schedule

Description	Est. Timing
Districtwide Winter/Spring Chloride Monitoring	2024, 2029
Contaminants of Emerging Concern Pilot with USGS- Biochar Filtration	2024
Street Sweepings Contaminant Testing	2024
Groundwater Chloride Assessment for pending 2024 impairments	2024-2027
Biomonitoring at all established MPCA sites and restored reaches	2025
Districtwide Regional Infiltration Feasibility Study	2026
Districtwide Storm Pond Leaching Study	2027
Leaky Sanitary Sewer Investigative Monitoring	2028
High Resolution Discharge Monitoring to update flow and load duration curves	2028, 2033
Districtwide Bacterial Source Tracking 10-yr follow up	2032
Stonybrook subwatershed; high resolution for model calibration/ focused plan	2024
Ditch 41 subwatershed; high resolution for model calibration/ focused plan	2024
Ditch 52 subwatershed; high resolution for model calibration/ focused plan	2025
Lower Coon Cr subwatershed; high resolution for model calibration/ focused plan	2025
Ditch 58 subwatershed; high resolution for model calibration/ focused plan	2026
Ditch 11 subwatershed; high resolution for model calibration/ focused plan	2027
Ditch 57 subwatershed; high resolution for model calibration/ focused plan	2027
Ditch 54 subwatershed; high resolution for model calibration/ focused plan	2028
Ditch 20 subwatershed; high resolution for model calibration/ focused plan	2029
Ditch 59 subwatershed; high resolution for model calibration/ focused plan	2030
Ditch 23 subwatershed; high resolution for model calibration/ focused plan	2031
Ditch 44 subwatershed; high resolution for model calibration/ focused plan	2032
Other as needed (subwatershed plan updates, focal development areas, etc)	TBD
Aquatic life reintroduction	TBD
Aquatic organism passage	TBD
Bacteria source and mitigation	TBD
Biomonitoring	TBD
Channel sediment transport	TBD

Description	Est. Timing
Chloride use, prevention, monitoring, and mitigation	TBD
Contaminants of emerging concern	TBD
Creek Restoration	TBD
Economic water resource	TBD
Emergency response	TBD
Flood modeling, mitigation, insurance, storage	TBD
Groundwater	TBD
Habitat	TBD
Home Owners Association Education Technical Assistance Pilot	TBD
Individual Action for Pollutant Reduction	TBD
Infiltration	TBD
Infrastructure	TBD
Innovative technologies	TBD
Land acquisition	TBD
Leaky Sanitary Sewer	TBD
Life-cycle & Replacement Cost	TBD
Maximum extent practicable	TBD
Natural background conditions	TBD
Opportunistic BMPs	TBD
Policy	TBD
Precipitation	TBD
Private BMP maintenance	TBD
Recreation	TBD
Regional storage	TBD
Resiliency	TBD
Resource value	TBD
Storm pond leaching	TBD
Storm pond performance	TBD
Street diet	TBD
Street sweeping	TBD
Threatened, endangered, and special concern species	TBD
Volume reduction	TBD
Well/flood contamination	TBD
Wetland restoration and enhancement	TBD
Hazard Mitigation Planning	TBD

Processing and Dissemination of Collected Data and Information

CCWD staff will organize, QA/QC, analyze, and interpret the collected data into forms that can be readily used by internal staff and interested parties. Annual hydrographs will be created from all continuous level data and compared against long-term minimums, medians, and maximums. Growing-season averages will be calculated annually from routine samples for lakes and streams and used to update trend analyses. Rating curves will be developed and updated based on stage-discharge relationships. Pollutant loading curves will be updated every five years based on pollutant concentrations across flow regimes.

Raw data will be available for download in a public-facing database hosted by ACD. Summarized data and figures along with narrative explanations will be published annually in the Anoka Water Almanac. All routine lake and stream water quality data suitable for formal assessments will be formatted using the required MPCA LAB_MN format and annually submitted to EQuIS. Additionally, select time-sensitive data such as precipitation totals and Coon Creek stage and Discharge will be hosted online for viewing in real-time.

The CCWD will also support two-way technology transfer by attending and participating in forums for local water resource managers to share new developments, threats, and outcomes such as the University of MN's Water Resource Conference, SAFL Stormwater Research Seminar Series, Annual MN Salt Symposium, BWSR Academy, and the MN AIS Research Center's Annual Showcase. Staff will serve as a technical liaison for relevant local and regional efforts as appropriate.

Integrate Operational Information

Provide operational information, in a timely way, and in an appropriate form, to program coordinators, city engineering, public works, planning staff, and the Board of Managers. Ensure the information is understood and considered in decision-making. Operational Information to be considered includes:

1. Changes in water elevations or flows indicating abnormal drawdown or discharge
2. Significant deviations from modeled flood elevations indicating review needs
3. Evidence of new point sources of pollutants including illicit connections or discharge
4. Changes in BMP function indicating deteriorating or failing conditions
5. Detections of new infestations of AIS
6. Detections of new contaminants of emerging concern
7. Detections of any conditions posing imminent threat to human health and safety
8. Annual running averages of pollutant concentrations by subwatershed for prioritization and targeting efforts
9. 5-year pollutant loading assessments for TMDL progress tracking

Capital Improvements, Projects, and Initiatives

The intent of capital improvements, projects, and initiatives is to conduct projects, practices, studies, and develop plans to address water resource problems, issues and concerns. These activities, by their nature, typically involve one or more partners. Projects refer to all types of construction-type activities that typically include heavy equipment and land disturbance. Practices refer to non-structural activities such as street sweeping or turf maintenance. Studies examine issues and identify alternatives and potential costs. Plans develop strategies to create a course of action to achieve a goal or set of objectives. Ultimately all initiatives are intended to be prioritized, targeted, and measurable.

Prioritization

All proposed capital initiatives address one or more of the priority problems, issue, or concerns identified and detailed in each chapter of this Comprehensive Plan. Priorities are further reflected in the scheduling of projects (the earlier, the higher the current priority).

- Priority waters for protection efforts include waters that are currently meeting state water quality standards and have high recreational or ecological value: Crooked Lake, Ham Lake, Lake Netta, Sunrise Lake, and Lake Cenaiko. Reducing chloride loading to surface waters and shallow groundwater Districtwide is also a priority for protection.
- Priority waters for restoration efforts include all impaired streams (Coon, Sand, Pleasure, Springbrook), ditches (11, 58, 41-4), the Mississippi River, and contributing tributaries.

Targeting

The term target is used in its broadest sense to include interests other than direct intervention with the water resource, such as target audiences as part of public engagement activities. There are two broad categories of targets: planned and immediate.

- Planned targets are targets that are known to exist within the watershed and are scheduled to be addressed.

  The primary targets to be addressed for water quality protection and restoration are the pollutant and non-pollutant stressors contributing to water quality impairments: TSS, TP, E. coli, DO, Cl, altered hydrology, poor habitat/connectivity.

  Priority is given in the following order:

  1. Strategies that prevent or mitigate pollutants prior to entering the stormwater conveyance system, receiving waters, or groundwater
  2. Strategies that reduce volume as these also reduce pollutants and flows
  3. Strategies that address multiple stressors including non-pollutant sources (e.g. stream restoration)
  4. Strategies that address TSS as these typically result in reductions in other particle-bound pollutants such as TP, bacteria, and metals
  5. Strategies that addressed dissolved phosphorus, the nutrient that drives plant and algae growth in local receiving waters
  6. Strategies that address anthropogenic sources of bacteria, particularly human sewage inputs
  7. Strategies that improve dissolved oxygen
  8. Strategies that address other sources of E. coli in areas with contact recreation

  Spatial targeting of projects and practices depends on the nature of the stressor. This process is informed by subwatershed planning efforts which model existing conditions, map pollutant loading hot spots, and identify and prioritize BMPs based on the scale of loading reductions and cost effectiveness. The CCWD also relies heavily on a robust inspection, monitoring, and asset inventory program that characterizes the condition of the drainage system and all critical stormwater infrastructure on a rotating schedule and annually identifies top-ranking maintenance needs.

- Immediate targets are either unplanned or unanticipated and have been identified too late to be included in the comprehensive planning capital improvement plan

  - Potential immediate targets that may need to be addressed for water quality protection and restoration during this planning cycle include new detections of contaminants of emerging concern or AIS.
  - The District also strives to take advantage of limited-time opportunities as they arise, such as during municipal reconstruction or infrastructure replacement projects that might occur only once in a 25+ year period.

Measurement

Water quality improvement initiatives are to be measured in mass of pollutant reduced or prevented whenever possible. Runoff volumes reduced or treated is also acceptable as these can be translated into mass reductions using established literature values. Stream habitat/ connectivity improvement projects are to be measured using the Minnesota Stream Habitat Assessment tool (MSHA), Minnesota Stream Quantification Tool and Debit Calculator (MNSQT), and CCWD Aquatic Organism Passage (AOP) index. The CCWD maintains a spreadsheet-based project ranking tool.

Evaluation

The pollutant reductions needed during the period from 2024-2033 were calculated by subtracting all pollutant reductions achieved through 2023 from those required by the CCWD TMDL. The balance was distributed evenly across the remaining time until the target year (22 years until 2045) and then multiplied by ten to represent the 10-year plan duration. The Wasteload Allocations (WLAs) include all regulated stormwater discharges covered under the NPDES MS4 general permit; it is the joint responsibility of all MS4s within the CCWD to achieve categorical WLAs. There are individual WLAs assigned to Anoka County Highways and MnDOT. The Load Allocations (LAs) include unregulated discharges such as runoff from agricultural activities, stream bank and bed erosion, and other non-point sources including natural sources. Although attainment of LAs is required to meet TMDL reductions, implementation strategies are often voluntary in nature and rely on education and incentives to drive behavior change. TMDL loading allocations and interim goals for 2033 are summarized below for each impaired receiving water:

Table 3.28. Required TMDL pollutant reductions in the CCWD

Stressor (unit)	Reductions required by 2045 per CCWD TMDL (WLA+LA=Total Load)	Reductions achieved as of 2023 (WLA+LA)	2033 interim goals (WLA+LA)
TSS (tons/yr)	Coon: 930+824=1754	28+2999	410+0
	Sand: 32+4=36	17+642	7+0
	Pleasure: 72+1=73	0+101	33+0
TP (lbs/yr)	Coon: 7715+6842=14557	240+2549	3398+1951
	Sand: 979+109=1088	83+545	407+0
	Pleasure: 29+1=30	26+40	2+0
	Springbrook: 458+5=463	31+44	194+0
E. coli (billion organisms/yr)	Coon: 24785+21979=46764	10813+0	6351+9991
	Sand: 81428+9048=90475	7388+0	33654+4113
	Pleasure: 9981+101=10082	2366+0	3461+46
	Springbrook: 15580+157=15738	1239+0	6519+72
Chloride (% removal)	Pleasure: 33%	NA	Decreasing Trend
	Springbrook Cr/ Laddie Lake: 56%	NA	Decreasing Trend
	Coon Cr, Sand Cr, Lakes: 0% (Protection)	NA	Stable
Dissolved Oxygen (mg/L)	Coon Creek, upstream of Lions Coon Creek Park (>5 mg/L daily min)	Stable Trend	Increasing trend
Poor habitat/ Connectivity (index scores)	Improved MSHA, MNSQT, AOP scores	No Change	Improving Scores
Altered hydrology (volume)	Volume/rate reductions for Coon, Sand, and Springbrook Creeks	1,790,364 cf	Targets determined via subwatershed modeling

Implementation

The CCWD will annually use a six-phase targeting and implementation process:

1. State, Board, or Administrative guidance
2. Target/Project development
3. Planning & Budgeting
4. Project Bid
5. Execution
6. Project Assessment

The CCWD will annually meet and coordinate with collaborators involved in comprehensive water management, flood control, and water quality protection and restoration to review and prioritize targets and identify and select projects. Identified projects will then be matched to appropriate joint or multiagency funding and implementation systems. Every two years the capital improvement plan will be reviewed with the intent of updating and amending the plan.

It is the intent of the CCWD to make measurable progress towards addressing all impairments during the course of the 10-year plan cycle, albeit with differing levels of effort. This is to be accomplished by a multi-pronged approach that includes pollution prevention and source reduction strategies, runoff volume reduction, strategies to capture and reduce particles and attached pollutants, strategies to address dissolved constituents, and strategies to address non-pollutant stressors. To address the current priority targets for water quality protection and restoration, projects are to be consistent with the following broad strategies:

Table 3.29. CCWD strategies to combat TMDL stressors

Stressor(s)	Strategy
TSS, TP, E. coli	Expand or improve municipal source reduction practices (street sweeping, sump cleaning, turf maintenance, pet waste disposal stations) to meet WLAs
TSS, TP, E. coli	Stabilize active erosion via routine, individual bank stabilization projects informed by annual ditch inspection results to meet LAs
TSS, TP, E. coli, Poor habitat, Altered hydrology	Implement stream corridor restoration projects to stabilize active erosion of multiple localized banks, improve in-stream and riparian habitat, and mitigate altered hydrology when feasible
TSS, TP, E. coli, Altered hydrology	Implement stormwater retrofits from subwatershed plans to meet WLAs. BMPs include infiltration (basins, tree trenches, impervious disconnect, permeable pavement), particle settling (pond construction, expansion, & maintenance; hydrodynamic separators; baffles; sumps), and filtration (vegetated buffers, media basins, cartridges) practices
TSS, TP, E. coli, Altered hydrology	Promote and support oversizing new BMPs as part of permitted development/ redevelopment activities
Altered Hydrology, select pollutants	Implement volume reduction, water storage, and re-use projects identified in subwatershed plans

TSS, TP, E. coli, Altered hydrology	Promote and support implementation of voluntary agricultural BMPs by private landowners to meet LAs
Altered Hydrology, select pollutants	Facilitate conversion of marginal agricultural lands for water storage and treatment purposes including wetland restoration
Altered Hydrology, Poor Habitat	Incorporate Natural Channel Design principles in stream restorations when feasible to lengthen channels, reduce slope, re-size cross sections, and improve floodplain connection
Poor Habitat	Improve connectivity by addressing barriers to aquatic organism passage
Poor Habitat	Improve near shore habitat by promoting or planting native riparian buffers (tree thinning, invasive species control, plantings)
TP	Reduce Internal TP loading to address LAs through inactivation (alum, Fe, Phoslock), aeration, or rough fish control
DO	Increase aeration by increasing velocity and turbulence
DO	Reduce DO flux by increasing shade and reducing BOD including nuisance vegetation
Chlorides	Implement strategies included in TCMA TMDL Implementation Plan
ALL	Implement innovative BMPs and technologies such as smart outlet technology synched with weather forecasting, new filter media mixtures, or adapting technologies from other fields such as wastewater treatment
ALL	Administer cost share program for accelerated implementation of all above strategies
ALL	Districtwide education & engagement on behaviors that have cumulative adverse impacts on water quality (salting, irrigating, fertilizing, pet waste, SSTS maintenance, etc.)
ALL	Data Acquisition; implement special studies to fill information gaps to inform decision-making (pollutant source tracking and budgets, piloting new BMP technologies, etc.)

Proposed 2024-2033 capital projects for water quality protection and restoration are presented below. Costs and timing are approximate and subject to change:

Table 3.30. Anticipated projects and studies for water quality plan

Year	Program	Project/Practice	Description	Cost x $1000
2024-2033	WQ	AIS Rapid Response Fund	To respond to new or worsening AIS infestations impacting beneficial uses	$20
2024-2033	WQ	Lake Plan Implementation	Implement strategies identified in Comprehensive Lake Management Plans	$7
2024-2033	WQ	Monitoring	Routine, Diagnositic, & Performance monitoirng to evaluate condition and trends (incl contracts w/ USGS, ACD)	$146
2024-2033	WQ	WQ Cost Share Program	Annual competitive cost share program for water quality improvement projects led by partners including enhancements to non-structural practices	$215
2024-2033	OM	Bank Repair & Stabilization Program	Stabilization of top-ranking actively eroding sites based on rolling inspection results	$165
2024-2033	OM	Non Routine Maintenance Program	Address non-routine issues including maintenance needs of critical BMPs	$127
2024-2033	PGR	Pet Waste Disposal Stations and Servicing	Contracted pet waste removal services and supplies for District-sponsored stations	$30
2024-2033	PLAN	Modeling improvements	Districtwide hydrology and water quality modeling refinements and improvements (integration of new LIDAR, High res 3-D models, integration)	$75
2024-2033	PLAN	Technical assistance and cost share for partner-led joint projects	District share of joint, partner-led projects implemented under subwatershed plans. 2024 projects include: AC Parks LCC culvert replacement for AOP, Blaine's oversized infiltraiton basins in PC subwatershed, D17 storage and conveyance enhancements	$175
2024, 2029	WQ	Winter Chloride Monitoring- 5 year update	Supplemental spring/winter data collection for trend analysis every 5 years	$6
2024	OM	AOP phase 2	Feasibility/design to address next 3 top priority crossings from 2023 aquatic organism passage study	$75
2024	WQ	Contaminants of Emerging Concern Pilot	In partnership with USGS, identify CECs in urban stormwater and the ability of CCWD filtration BMPs to provide treatment	$50
2024	WQ	CRDRP Stream Corridor Restoration	Bank stabilization, backwater pools, habitat features, native buffers within CRDRP paired with County AOP project	$440
2024	PLAN	Ditch 39 Plan Implementation: Project 1	Top-ranking water quality improvement project from 2023 subwatershed plan	$230
2024	PLAN	Ditch 60 Subwatershed Plan	To jointly assess flooding and water quality problems, issues and concerns and develop a structured set of actions aimed at improving water management	$50
2024	WD	Groundwater-Surface Water Borrow Pit impacts	To understand short-term dewatering and long-term rebound impacts that borrow pits and mining operations have on surficial groundwater and wetlands	$15

Year	Program	Project/Practice	Description	Cost x $1000
2024	PLAN	Sand Creek (Ditch 41) Subwatershed Plan	To jointly assess flooding and water quality problems, issues and concerns and develop a structured set of actions aimed at improving water management	$50
2024	WQ	Sand Creek AOP Crossing Enhancement at Xeon Blvd	Enhance aquatic organism passage at Xeon Blvd in Sand Creek by installing step pool to raise the downstream water level to eliminate perched culvert	$115
2024	PLAN	Stonybrook Creek Subwatershed Plan	To jointly assess flooding and water quality problems, issues and concerns and develop a structured set of actions aimed at improving water management	$50
2024	WQ	Street Sweepings Contaminant Testing	Partner with District MS4s to test street sweepings for particle size distribution, moisture, organic, and P content, volume:mass, etc. seasonally and by select land use types to develop local metrics to maximize water quality crediting for TMDL compliance	$15
2024	PGR	Targeted edu/social marketing campaign for smart salting	Chloride prevention campaign for businesses/commercial development/ large employers with materials, pre and post surveys, training workshops	$39
2024-2025	PGR	HOA Education TA Pilot Study	Districtwide study/survey to determine feasibility & scope of proposed formal HOA TA and incentive program	$30
2024-2025	WQ	PC MnDOT Pond at RR outlet modification	PC subwatershed plan project; optimize rate control pond for improved discharge timing and pollutant removal; consider smart outlet	$171
2024-2025	WQ	SBNC outlet modificaiton	D17 subwatershed plan project; optimize reservoir for rate control, flood mitigation, and enhanced pollutant removal	$183
2024-2027	WQ	Groundwater-Surface Water Chlroides Budget Pilot	Understand seasonal chloride dynamics in shallow groundwater and their impacts on at-risk surface waters	$35
2025	WQ	Aquatore Park Detention and Treatment	D17 subwatershed plan project: Modify channel and area to west to increase storage	$280

Year	Program	Project/Practice	Description	Cost x $1000
2025	WD	Buffers functions and values assessment	To evaluate health of existing riparian areas, potential opportinities and benefits of adding or enhancing buffers, and alternatives to improve water quality, habitat, and riparian health	$15
2025	WQ	Coon Cr AOP crossing enhancement- Priority Site #2	Address 2nd priority crossing from 2023 AOP study or other limited time opportunity of high ranking crossing	$75
2025	WQ	Districtwide Biomonitoring	contracted biomonitoring/ IBI calculation midway between MPCA assessment cycles	$33
2025	PLAN	Ditch 37 Plan Implementation: Project 1	Top ranking water quality improvement project from 2023 subwatershed plan	$230
2025	PLAN	Ditch 41 Plan Implementation: Project 1	Top ranking water quality improvement project from 2025 subwatershed plan	$230
2025	PLAN	Ditch 60 Plan Implementation: Project 1	Top ranking water quality improvement project from 2023 subwatershed plan	$230
2025	PLAN	Economic water resource study	Develop understanding of valuation, willingness to pay, financing mechanisms for local water resource management	$100
2025	PLAN	Epiphany Creek (Ditch 52) Subwatershed Plan	To jointly assess flooding and water quality problems, issues and concerns and develop a structured set of actions aimed at improving water management	$50
2025	WQ	MN SQT Pilot	Evaluation of D54 open space for creek/ wetland restoration project using new MN SQT tool for credit banking	$75
2025	PLAN	Stonybrook Plan Implementation: Project 1	Top ranking water quality improvement project from 2024 subwatershed plan	$230
2025-2027	WQ	Coon Creek D57 Corridor Restoration 131st to Main St	Bank Stabilization, habitat features, native buffers, possible flooplain reconnection in conjuction with planned CR trail work	$1,150
2026	WQ	Districtwide Regional Infiltration Feasiblity Study	Districtwide evaluation of infiltration potentional on public lands for targeting regional practices (e.g. see City of Blaine 2021 study)	$35
2026	PLAN	Ditch 37 Plan Implementation: Project 2	Top ranking water quality improvement project from 2023 subwatershed plan	$460
2026	PLAN	Ditch 39 Plan Implementation: Project 2	Top ranking water quality improvement project from 2023 subwatershed plan	$460
2026	PLAN	Ditch 52 Plan Implementation: Project 1	Top ranking water quality improvement project from 2026 subwatershed plan	$230

Year	Program	Project/Practice	Description	Cost x $1000
2026	WQ	Field Scale Demo Applications of Emerging BMPs	E.g., smart sw infrastructure, permeable concrete lanes, heated pavement, new filtration media etc.	$165
2026	WQ	Habitat enhancement near East River Road	PC plan project; Evaluate and address habitat limitations for aquatic biota	$5
2026	PGR	Individual Action for Pollutant Reduction Study	A subwatershed targeted study into motivating individuals to take action to reduce non-point-source pollution of 1 pollutant as determined by technical staff. This would use results from the Subwatershed Community surveys to determine action(s). A follow-up survey to determine effectiveness is budgeted for 2 years after implementation	$40
2026	PLAN	Lower Coon Creek Subwatershed Plan	To jointly assess flooding and water quality problems, issues and concerns and develop a structured set of actions aimed at improving water management	$50
2026	WQ	Regional infiltration project 1	Site determined as part of Districtwide 2025 infiltration feasiblity study	$288
2026	WD	Rule Amendment	Prepare and update District specifications	$20
2026	WQ	Sand Cr AOP crossing enhancement- Priority Site #2	Address 2nd priority crossing from 2023 AOP study or limited time opportunity of high ranking crossing	$100
2026-2028	WQ	Coon Creek D54 Open Space Corridor Restoration	Bank stab, floodplain reconnection, possible remeander, habitat features, native buffers in Open Space US of Northdale	$2,300
2027	WQ	Coon Creek Headwaters Low DO Mitigation pilot project	Add habitat features or modify channel dimensions/crossing elevations to promote increased O2 in priority demo reach	$173
2027	PLAN	Ditch 11 Subwatershed Plan	To jointly assess flooding and water quality problems, issues and concerns and develop a structured set of actions aimed at improving water management	$50
2027	PLAN	Ditch 58 Subwatershed Plan	To jointly assess flooding and water quality problems, issues and concerns and develop a structured set of actions aimed at improving water management	$50
2027	PLAN	Ditch 60 Plan Implementation: Project 2	Top ranking water quality improvement project from 2024 subwatershed plan	$460
2027	WQ	Enhanced riparian buffers	ID top-ranking reaches and implement in conjunction with channel work or invasive species control projects	$70
2027	OM	Existing BMP Revitalization Program	Repair/replace select rain gardens at end of life Districtwide (possible new cost share category)	$210
2027	PLAN	LCC Plan Implementation: Project 1	Top ranking water quality improvement project from 2025 subwatershed plan	$230
2027	WQ	Lower Springbrook Regional Filtration Project	D17 plan project: potential sites in vicinity of 85th Ave and Evergreen Blvd	$690
2027	WQ	Storm Pond Performance Study	Evaluation of perfomance of select critical storm ponds to ID any problematic internal loading	$15
2027-2029	WQ	Coon Creek D57 WDE Corridor Restoration	Bank Stabilization, habitat features, native buffers, possible flooplain reconnection in vicinity of WDE site	$1,150
2028	WQ	Coon Cr AOP crossing enhancement- Priority Site #3	Address 3rd priority crossing from 2023 AOP study/ 2024 design or limited time opportunity of high ranking crossing	$125
2028	PLAN	Ditch 11 Plan Implementation: Project 1	Top ranking water quality improvement project from 2028 subwatershed plan	$230
2028	PLAN	Ditch 41 Plan Implementation: Project 2	Top ranking water quality improvement project from 2025 subwatershed plan	$460
2028	PLAN	Ditch 52 Plan Implementation: Project 2	Top ranking water quality improvement project from 2026 subwatershed plan	$460
2028	PLAN	Ditch 57 Subwatershed Plan	To jointly assess flooding and water quality problems, issues and concerns and develop a structured set of actions aimed at improving water management	$50
2028	PLAN	Ditch 58 Plan Implementation: Project 1	Top ranking water quality improvement project from 2028 subwatershed plan	$230
2028	WQ	Leaky Sanitary Sewer Investigative Monitoring	Work with Cities to televise pipes where human sewage detected in 2023 BST study, collect additional BST samples as needed	$75
2028	WQ	Sand Cr AOP crossing enhancement- Priority Site #3	Address 3rd priority crossing from 2023 AOP study or limited time opportunity of high ranking crossing	$173
2028	WQ	Upper Springbrook water storage and reuse	D17 plan project: potential sites include Aquatore park, Westwood School, Aurelia Park	$165

Year	Program	Project/Practice	Description	Cost x $1000
2028, 2033	WQ	Update Flow and Load Duration Curves	Update curves with last 10 years of data to evaluate progress towards meeting TMDL requirements	$10
2029	WQ	Convert Marginal Ag land to water storage/ treatment	Pursue opportunistic land conservation or purchase; consider wetland resto/banking	$575
2029	PLAN	Ditch 54 Subwatershed Plan	To jointly assess flooding and water quality problems, issues and concerns and develop a structured set of actions aimed at improving water management	$50
2029	PLAN	Ditch 57 Plan Implementation: Project 1	Top ranking water quality improvement project from 2027 subwatershed plan	$230
2029	PLAN	LCC Plan Implementation: Project 2	Top ranking water quality improvement project from 2027 subwatershed plan	$460
2029	WQ	Polk St Detention and Treatment	D17 plan project: Modify channel and existing ponding area for optimized storage/treatment	$173
2029	WQ	Upper Coon Creek Ag E. coli Reduction Project	Work with willing agricultural landowners to reduce manure pollution (hobby farms, manure spreading)	$115
2030	PLAN	Ditch 11 Plan Implementation: Project 2	Top ranking water quality improvement project from 2028 subwatershed plan	$460
2030	PLAN	Ditch 20 Subwatershed Plan	To jointly assess flooding and water quality problems, issues and concerns and develop a structured set of actions aimed at improving water management	$50
2030	PLAN	Ditch 54 Plan Implementation: Project 1	Top ranking water quality improvement project from 2028 subwatershed plan	$230
2030	PLAN	Ditch 58 Plan Implementation: Project 2	Top ranking water quality improvement project from 2028 subwatershed plan	$460
2030	PLAN	Ditch 59 Plan Implementation: Project 1	Top ranking water quality improvement project from 2028 subwatershed plan	$230
2030	WQ	LCC-Medtronic Corridor Restoration	Bank Stab, habitat features, native buffers, possible floodplain reconnection in vicinity of Medtronic campus	$863
2030	WQ	SSTS pollution abatement incentive program	Develop and implement cost share for non compliant or failing SSTS	$120
2031	PLAN	Ditch 20 Plan Implementation: Project 1	Top ranking water quality improvement project from 2028 subwatershed plan	$230
2031	PLAN	Ditch 57 Plan Implementation: Project 2	Top ranking water quality improvement project from 2025 subwatershed plan	$460
2031	PLAN	Ditch 59 Subwatershed Plan	To jointly assess flooding and water quality problems, issues and concerns and develop a structured set of actions aimed at improving water management	$50
2031	WQ	Existing Pond maintenance/expansion/ retrofit	D17 plan project: in-line ponds within and upstream of SBNC	$345
2031	WQ	Regional infiltration project 2	Site determined as part of Districtwide 2025 infiltration feasiblity study	$288
2032	WQ	Districtwide Bacterial Source Tracking 10-yr follow up	Districtwide Bacterial Source Tracking follow up to 2022 sampling to evaluate progress	$50
2032	PLAN	Ditch 23 Subwatershed Plan	To jointly assess flooding and water quality problems, issues and concerns and develop a structured set of actions aimed at improving water management	$50
2032	PLAN	Ditch 44 Subwatershed Plan	To jointly assess flooding and water quality problems, issues and concerns and develop a structured set of actions aimed at improving water management	$50
2032	PLAN	Ditch 54 Plan Implementation: Project 2	Top ranking water quality improvement project from 2028 subwatershed plan	$460
2032	PLAN	Ditch 59 Plan Implementation: Project 2	Top ranking water quality improvement project from 2028 subwatershed plan	$460
2032	PLAN	Northtown Mall Redevelopment improvements	D17 plan project: reduce peak flows and improve treatment though channel and ponding modifications	$575
2032	WQ	Regional infiltration project 3	Site determined as part of Districtwide 2025 infiltration feasibility study	$288
2033	PLAN	Ditch 20 Plan Implementation: Project 2	Top ranking water quality improvement project from 2028 subwatershed plan	$460
2033	PLAN	Ditch 23 Plan Implementation: Project 1	Top ranking water quality improvement project from 2028 subwatershed plan	$230
2033	PLAN	Ditch 44 Plan Implementation: Project 1	Top ranking water quality improvement project from 2028 subwatershed plan	$230

In order to accomplish the projects and practices listed above, the CCWD and partners will need to seek out and apply for outside grant funding to increase local capacity for water quality protection and restoration work. The measurable targets outlined above are based on the premise that linear effort will result in linear progress, but there will likely be hysteresis and significant lag times resulting in slower progress than anticipated for several stressors or locations.

Operations and Maintenance

Progress towards protection and restoration of water quality within the CCWD will be heavily influenced by operation and maintenance of the CCWD's public drainage and stormwater conveyance/treatment systems. It is imperative that the implementation strategies included in this Plan are informed by results of annual ditch and asset inspections and condition assessments. The primary vehicles for synching these efforts are the Districtwide asset inventory which generates annual lists of maintenance and repair needs and subwatershed planning efforts which outline implementation schedules for this work and other targeted projects.

Planning

Multiple active planning efforts are integral for supporting protection and restoration of water quality within the watershed: CCWD's ongoing asset inventory, triennial watershed condition assessments, focused subwatershed analyses and plans (including development of water quality models and implementation schedules). Water quality management is woven into all CCWD programming as implementation strategies must be consistent with competing demands such as drainage, conveyance, and development.

Additional planning activities led by Water Quality program staff include single-issue or sole-resource plans that provide a deeper understanding of a particular problem or resource along with targeted implementation strategies. Examples of these include comprehensive lake management plans for individual lakes or mitigation strategies for a specific pollutant in a defined area. The implementation activities identified in these focused planning efforts are incorporated into this Comprehensive Plan and annual work plans by reference. Relevant plans to be developed or updated during 2024-2033 include:

Table 3.31. Anticipated water quality planning schedule

Proposed Plan	Estimated Timing
Sunrise Lake Comprehensive Lake Management Plan	2024
Districtwide Enhanced Street Sweeping Implementation Plan	2024
Crooked Lake Comprehensive Lake Management Plan; 3rd Edition	2025
Nine Key Elements Plan for Coon and Sand Creek; Phase 2 Workplan Update	2026
Districtwide Regional Infiltration Feasibility Study	2026
CCWD Chloride Reduction Plan/ TMDL implementation plan	2027
Ham Lake Comprehensive Lake Management Plan; 2nd Edition	2028
Sanitary Sewer Infiltration & Exfiltration Mitigation Plan	2029
Nine Key Elements Plan for Coon and Sand Creek; Phase 3 Workplan Update	2030
Other as needed	TBD

Planning efforts led by partners or cooperators may also require or support additional local water quality protection and restoration strategies. These include regional scale TMDLs/WRAPS, drinking water protection plans, and other critical area plans.

Public and Governmental Affairs

In addition to meeting MCM 1 & MCM 2 of the MS4 NPDES permit, the Public and Governmental Affairs program also supports all other CCWD programming. Support needed for water quality protection and restoration efforts includes:

1. Establishing, organizing, and administering working groups including the Community Advisory Committee, Technical Advisory Committee, and Subwatershed Task Forces, Ensuring open lines of communication, a common understanding of problems, issues, and concerns, and seeking input from diverse perspectives on agreeable solutions and strategies.
2. Informing internal and external audiences of water quality management issues and actions by developing and disseminating information across multiple media types including digital and print content.
3. Developing, expanding, and adapting communication tools for improved accessibility, comprehension, and engagement (e.g., website and social media updates, translation of materials, video production, story-telling mechanisms, and interactive displays).
4. Supporting capital project buy-in and implementation by hosting public meetings, developing and disseminating project-specific content such as webpages, newsletters, handouts, and interpretive signs, leading pre and post-project tours, and fulfilling press requests.
5. Designing and implementing targeted education and engagement campaigns to foster awareness and behavior change related to practices where individual actions have significant cumulative impacts on water quality such as deicing, lawn care, irrigation, and pet waste disposal practices.
6. Building and fostering community capacity and involvement by participating in local outreach events and sponsoring or promoting community engagement programs such as Adopt-a-Drain, storm drain stenciling, Rain Gage Network, SaltWatch citizen science, MN Water Stewards, AIS Detectors, Lawns to Legumes, public art, and faith-based environmental stewardship.
7. Hosting local training workshops for individuals, organizations, and contractors to learn best practices for water quality protection (e.g. Smart Salting, Turf Maintenance, Resilient Landscapes, SSTS Maintenance, etc.)
8. Supporting K-12 water resource education through administration of a Water Education Grant program and providing ideas and technical assistance with lesson plan development such as incorporation of Project WET and Connect the Drops.

Watershed Development

The Watershed Development program administers and enforces the CCWD Rules which establish standards for managing stormwater runoff, construction best practices, and impacts to floodplains and wetlands. Ensuring that development, redevelopment, and other activities are carried out in a manner that is protective of water resources is essential to water quality protection and restoration. Past unregulated development which converted natural land cover to impervious surfaces, reduced depressional storage, and created new conveyances has significantly altered the natural hydrology of the area, increasing the volume and rate of runoff and degrading the conditions of receiving waters. Future development activities have the potential to undo some of the past impacts, but only if water quality storage and treatment objectives go beyond non-degradation and result in pollutant loading reductions. One mechanism for achieving these reductions is to encourage and/or incentivize practices that reduce runoff volumes beyond the 1.1-inch standard or provide higher levels of treatment than required in the Rules such as oversized BMPs, impervious conversion/disconnection, or stormwater reuse. Another mechanism would be the development and implementation of site-specific standards, such as more stringent pollutant reduction requirements for projects draining to impaired streams consistent with TMDL WLAs. Creative solutions such as water quality credit trading programs should also be explored, particularly for large-scale linear projects which often fall short of meeting standards despite treatment to the maximum extent practicable onsite.

In addition to pre-construction review and permitting activities, inspection and enforcement actions during and after construction are also critical for protecting water quality. It is imperative that the CCWD maintains its robust construction site inspection program to mitigate potential point sources of pollutants. Over the next 10 years, it will also become increasingly important to develop a formal process for enforcing Operations and Maintenance agreements to ensure permitted post construction controls continue to function as they were designed.

Coordinating Instructions (Local Water Plan)

Table 3.32. Coordinating instructions for water quality plan

Agency	Action	Time Due	Location or Condition	Purpose
MS4s (cities and road authorities)	SWPPP implementation Plan, budget for, implement, and track water quality restoration projects and practices to satisfy TMDL WLAs	Annually 2045	Drainage areas for all impaired streams: Coon Creek, Sand Creek, Pleasure Creek, Springbrook Creek	Support of beneficial uses; NPDES MS4 General Permit Compliance
Ham Lake, Andover, Anoka County	Administration of Subsurface Sewage Treatment System (SSTS) Rules	Ongoing	Unsewered areas of the District	Ensure non-compliant and failing systems are upgraded to reduce sewage contamination

3.4.5 Assessment and Evaluation

Table 3.33. Water Quality Goals, Objectives, and Measures

Goal	Objective/Measure
(WQ-1) Meet 2033 Interim TMDL stressor goals (Table 2.21).	(WQ-1.1) % of progress towards meeting individual TMDL TSS, TP, and E. coli loading allocations. (WQ-1.2) Trend of dissolved oxygen in Coon Creek. (WQ-1.3) Trend of AOP scores; # of remaining significant barriers (WQ-1.4) Trend of MSHA/MNSQT scores. (WQ-1.5) Trend in peak flows in hydrology-limited reaches. (WQ-1.6) % of impairments for which progress was made (WQ-1.7) Protection of unimpaired priority waters/ # new impairments based on declining conditions.
(WQ-2) Collect data of adequate quantity and quality for assessing the condition and trends of District's receiving waters, identifying pollutant sources and hotspots, and evaluating BMP performance.	(WQ-2.1) % of annual planned samples collected (i.e., adherence to routine, diagnostic, and BMP performance monitoring plans) (WQ-2.2) % of lakes and subwatershed outlets with current monitoring data collected in last 5 years (WQ-2.32) % of core receiving waters (lakes, major streams) with sufficient data to calculate statistically significant trends. (WQ-2.4) % of implemented BMPs with baseline monitoring data collected prior to construction (WQ-2.5) % of implemented BMPs with modeled or measured performance outcomes. (WQ 2.6) % of new water quality models calibrated or verified with field-collected data
(WQ-3) Leverage local water quality improvement project investments with at least 50% grant funding.	(WQ-3.1) % of eligible WQ project planning and implementation costs covered by outside grants. (WQ- 3.2) % of available CCWD Water Quality Cost Share Funds utilized by local partners.
(WQ-4) Provide community co-benefits in at least 75% of water quality improvement projects.	(WQ-4.1) % of water quality improvement projects implemented with community co-benefits such as habitat, aesthetics, recreation, drainage, flood mitigation, etc.
(WQ-5) Minimize public costs by conducting feasibility studies and critically evaluating the appropriateness of standards for each water quality project implemented.	(WQ-5.1) % of WQ projects that had a feasibility study conducted. (WQ-5.2) % of projects failing to achieve modeled performance due to unforeseen constraints.(WQ-5.3) Success rate of petitions for revised WQS due to natural/ pre-existing conditions.

Goal	Objective/Measure
(WQ-6) Complete all remaining subwatershed plans and begin implementation of at least 75% of subwatershed plans.	(WQ-6.1) % of subwatershed plans completed in District. (WQ-6.2) % of subwatershed plans that have started implementation.
(WQ-7) Conduct annual condition assessment of all the District's hard assets that support water quality.	(WQ-7.1) % of District's hard assets that support water quality included in annual condition assessment.

Measures of performance and effectiveness are outlined below for each of the program's major objectives:

Collect and share data on the condition and trends of District receiving waters and their primary sources of pollutants and stressors

Measures of Performance		
P1.1	Number	Of sites/parameters monitored
P1.2	Percent	Of planned samples collected
P1.3	Number	Of data requests fulfilled
Measures of Effectiveness		
E1.1	Percent	Of District waters with monitoring data from last 3 years
E1.2	Percent	Of core sites with sufficient data for calculation of statistically significant trends

Coordinate with local, regional, state, and federal partners and cooperators to plan for and fund water quality improvement initiatives

Measures of Performance		
P2.1	Number	Of unique partners involved in joint WQ improvement planning efforts
P2.2	Percent	Of available District WQ Cost Share Funds utilized by partners
Measures of Effectiveness		
E2.1	Percent	Of relevant stakeholders participating in planning efforts
E2.2	Number	Total outside grant funding applied for and secured

Use monitoring results and best available data to identify, prioritize, and target applicable implementation strategies

Measures of Performance		
P3.1	Percent	Of PIRs collected prior to project or activity
P3.2	Number	Of new projects identified or altered based on annual monitoring results
Measures of Effectiveness		
E3.1	Percent	Of diagnostic and special studies resulting in changes to annual work plans
E3.2	Percent	Of data points unusable

Implement resulting projects and practices that protect public health, safety, and welfare, address the root causes of impairments, and support use and enjoyment of water resources by the community

Measures of Performance		
P4.1	Number	Of unique stressors addressed by projects and practices
P4.2	Percent	Of budgeted projects completed
Measures of Effectiveness		
E4.1	Percent	Of projects conducted that achieved targeted objectives
E4.2	Percent	Of total impairments for which progress was made

Minimize public cost and impact by evaluating the feasibility and probability of success at meeting established targets prior to investments; identify areas where natural or other fixed constraints limit attainment of state and federal standards

Measures of Performance		
P5.1	Number	Of proposed projects canceled or altered due to results of feasibility analyses
P5.2	Number	Average cost ($/mass) for pollutant reductions realized via implemented projects
Measures of Effectiveness		
E5.1	Percent	Of projects failing to meet specified targets due to unforeseen natural constraints
E5.2	Y/N	Data collected resulted in revised WQS due to natural/pre-existing conditions

Regularly evaluate performance of water quality improvement projects and track progress towards achieving targets to inform course corrections when needed

Measures of Performance		
P6.1	Percent	Of implemented BMPs with modeled or measured performance data
P6.2	Mass	Sum of pollutant load reductions achieved
Measures of Effectiveness		
E6.1	Percent	Of projects and practices meeting design specifications
E6.2	Percent	Of progress towards meeting TMDL load allocations compared to time elapsed since baseline year to 2045 target year

Find and advocate for creative solutions to balance water quality protection and restoration needs with economic growth and drainage demands.

Measures of Performance		
P7.1	Y/N	Staff up-to-date on stormwater management innovations via participation in local and regional seminars and conferences and applied research?
P7.2	Number	Of WQ improvement projects that negatively impacted drainage or flooding
P7.3	Number	Of development applications rescinded due to District WQ requirements

Measures of Effectiveness		
E7.1	Percent	Of routine and non-routine projects not done or modified to protect or ensure broader ecological function
E7.2	Percent	Of projects implemented with multiple benefits for water quality/habitat and flood mitigation
E7.3	Percent	Of activities permitted by the District that exceeded the minimum volume/TP reduction requirements of the Rules

3.4.6 Sustainment

Funding

CCWD Levy

The CCWD levy is anticipated to be the primary source for funding water quality protection and improvement efforts.

Grants

The CCWD will seek to supplement local funding with outside grants for eligible capital projects. Because most grants are competitive in nature, it is difficult to reliably forecast revenue. One exception is BWSR's Watershed Based Implementation Funding Program which provides dedicated funding to select LGUs for high priority projects and practices included in approved watershed plans each biennium. In addition to this anticipated source of state Clean Water Funds, the CCWD has also been selected as one of thirty-five LGUs to receive dedicated federal grant funding through 2036 to mitigate nonpoint source pollution for Coon and Sand Creeks as part of the pilot 319 Small Watershed Focus Program.

Approximate non-competitive grant funding anticipated (in thousands of dollars):

Table 3.34. Approximate non-competitive grant funding anticipated (in thousands of dollars)

	2024	2025	2026	2027	2028	2029	2030	2031	2032	2034
CWF WBIF	$147	$147	$147	$147	$147	$147	$147	$147	$147	$147
Federal 319	$80	$80	$80	$80	$80	$80	$80	$80	$80	$80

In addition to the non-competitive grant funds listed above, CCWD has secured an average of $507,865 in competitive grant funding each year since 2017. It is unknown if this level of supplemental funding is achievable over the next 10 years, but efforts will be made to apply for applicable opportunities. Possible sources of funding that will be pursued include, but are not limited to:

- Agriculture BMP Loan Program (Minnesota Department of Agriculture)
- Building Resilient Infrastructure and Communities grants (FEMA)
- Clean Water Fund Competitive Grants (BWSR)
- Clean Water Partnership Grants and Loans (MPCA)
- Clean Water Revolving Fund Loans (MPCA)
- Community Planning grants for stormwater, wastewater, and community resilience (MPCA)
- Environment and Natural Resources Trust Fund Grants (Legislative-Citizen Commission on Minnesota Resources)
- Environmental Assistance Grants Program (MPCA)
- Habitat Enhancement Landscape Pilot (BWSR)
- Groundwater Protection Initiative Accelerated Implementation Grant (MDH)
- Lawns to legumes Demonstration Grants (BWSR)
- Minnesota Stormwater Research Council (UMN WRC)
- Point Source Implementation Grants (MPCA)
- Source Water Protection Grant Program (MDH)
- Stormwater Research and Technology Transfer Program Grants (UMN)
- Surface Water Assessment Grants (MPCA)
- TMDL Grant Program (Minnesota Public Facilities Authority)
- Conservation Partners Legacy Grant Program (MN DNR)
- Environmental Quality Incentives Program (NRCS)
- Conservation Reserve Program (USDA)
- Water Infrastructure Fund Grants and Loans (MPCA)
- Water Resources Research Act Program Grants (USGS)
- Water Quality and Storage Pilot Program Grants (BWSR)
- Water Quality grants (Met Council)
- Wellhead Protection Partner Grants (BWSR)

Other Revenue

Select capital projects related to TMDL implementation will be jointly funded by various MS4s through the subwatershed task force program established in 2022. A breakdown and schedule of anticipated costs can be found in the implementation section of each comprehensive subwatershed plan.

Authority

No additional authority should be required.

Staffing

- Water Quality Program Coordinator, Fulltime
- Water Quality Monitoring Specialist, Fulltime
- Seasonal Technician or Intern, Parttime

Training

- Environmental sampling and equipment SOPs
- Water quality and quantity models and statistical analyses
- Aquatic Pesticide Use
- Grant Administration
- Project Management

3.5 Water Quantity Resource Plan

Authority

A number of state statutes authorize direct the Coon Creek Watershed District to manage water quantity.

- MS 103A
- MS 103B
- MS 103D
- MS 103E
- MS 103F
- MS 103G

References:

- Coon Creek Watershed District. 2013. Comprehensive Watershed Management Plan 2013 – 2023
- Coon Creek Watershed District 2023. 2024–2034 Comprehensive Watershed Management Plan Scope and Priority Issues
- FEMA Flood map service center
- Anoka County Water Almanac
- National Flood Insurance Program (NFIP). 2022 Flood insurance Manual.
- MN DNR. 2022. Floodplain management Quick Guide.
- Impacts, Adaptation and Vulnerability Working Group II. 2022. Contribution to the IPCC Sixth Assessment Report
- Anoka County. 2019. Multi-Jurisdictional All Hazards Mitigation Plan
- MN DNR. 2019. Guidelines for Suspension of Surface Water Appropriation Permits
- NOAA. 2013. Atlas 14 Precipitation-Frequency Atlas of the United States Volume 8 Version 2.0 Midwestern States
- System-Wide Low-Flow Management Plan Mississippi River above St. Paul. 2015. Mississippi Low flow Plan
- Minnesota Division of Homeland Security and Emergency Management. 2011. Minnesota All-Hazard Mitigation Plan Update
- MN DNR Drought Plan. 2009. Minnesota Statewide Drought Plan

Time Period:

2024-2033

Task Organization:

Table 3.35. Water quantity plan task organization

Required Tasks:
To conserve the natural resources of the state by land use planning, flood control, and other conservation projects by using sound scientific principles for the protection of the public health and welfare and the provident use of the natural resources (MS 103D.201 Subd 1)
To control or alleviate damage from flood waters, provide a water supply for irrigation, regulate the flow of streams and conserve the streams' water, and provide or conserve water supply for domestic, industrial, recreational, agricultural, or other public use (MS 103D.201 Subd 2)
Identify priority issues (MR 8410.0045 Subp. 1)
Assess issues identified by stakeholders in comments to the notice of intent (MR 8410.0045 Subp 7
Analysis of water quality and quantity including trends of key locations and 100-year flood levels and discharges (MR 8410.0060 Subp. 1 F.)
Water quantity goals must be established to address priority issues, at a minimum, considering volume, peak rate, base flow, and imperviousness. The goals must recognize current trend direction and the fundamental relationship between water quantity and land use (MR 8410.0080 Subp 7)
Address whether established water quantity monitoring programs are capable of producing an accurate evaluation of the progress being made toward the goals (MR 8410.0105 Subp 5)
Regulatory program controls or performance standards considered to address flood impacts (MR 8410.0105Sub 6. B. C.)
Present information on the hydrologic system and its components, including drainage systems previously constructed under chapter 103E, and existing and potential problems related thereto (MS 103B.231 Subd 6 (2))
Set forth a management plan, including the hydrologic and water quality conditions that will be sought and significant opportunities for improvement (MS 103B.231 Subd 6 (2))
Address the issues identified by stakeholders in comments to the notice of intent (MS 103B.312)
Minimization of public capital expenditures needed to correct flooding and water quality problems (MS 103B.691 Subd 4 iii)
Consider current and potential flooding characteristics and reduction in downstream peak flows and flooding before drainage work is done (MS 103E.015)

Implied Tasks
Prepare a floodplain map of the lands of the watershed district that are in the floodplain of lakes and watercourses (MS 103D.335 Subd 18)
Construct necessary dams, structures, and improvements and maintain them to impound and release floodwater to prevent damage. (MS 103E.011 Subd 4)
To provide coordination with the state and assistance to local government units in floodplain management (MS 103A.207 and MS 103F.105)
Coordinate with state and local agencies to establish and implement a plan to drought related emergencies (MS 103G.293)
Coordinate with state and local agencies to maintain the amount of water required in watercourses to accommodate instream needs such as water-based recreation, navigation, aesthetics, fish and wildlife habitat, water quality, and needs by downstream higher priority users (MN Rule 6115.0630 Subp. 12)
Manage for full spectrum of water quantity conditions from minimum to flood flows and changing intensity, duration, and frequency of precipitation events.
Manage for multiple uses.
Plan for all subwatersheds comprising the watershed
Describe the existing physical environment, land use, and development in the area and the environment, land use, and development proposed in existing local and metropolitan comprehensive plans
Model watershed and subwatershed response and behavior to various hydrologic conditions to assess volume, peak flow, base flow and current trends
Status and condition of floodplain information and condition
Develop contingency plans for both flood and drought/minimum flow conditions
Assess hydrologic alteration
Essential Tasks:
Address aging infrastructure.
Address climate resiliency.
Assess hydrologic alteration.
Contingency plans for both flood and drought/minimum flow conditions.
Describe the existing physical environment, land use, and development in the area and the environment, land use, and development proposed in existing local and metropolitan comprehensive plans.
Hydrologic conditions that will be sought.
Planning for more extreme weather and continued changes in precipitation patterns.
Status and condition of floodplain information and condition.

Stakeholder Issues and Concerns:
BWSR: We encourage the CCWD to work with partner municipalities and others to address climate resiliency, including aging infrastructure and continued changes in precipitation patterns.
DNR: Increase coordination of communication activities between organizations with water management responsibilities
DNR: Increase coordination of monitoring activities between organizations with water management responsibilities, including monitoring water level trends using water level measurements from member communities.
CAC: How do we plan for more extreme weather?

Situation

The Coon Creek Watershed District (CCWD) has been successfully addressing water quantity issues by managing stormwater since the agency was formed by public petition in 1959. The CCWD has been mandated over time to prioritize and manage for additional water resource issues. The CCWD must maintain or improve water quantity management efforts while stretching limited resources to address other management priorities with competing interests.

Area of Interest

On average 67% of the 23.4-38.6 inches of annual precipitation returns to the atmosphere through evapotranspiration.

2022 MN State Climatology Office indicates the region has gotten much wetter and warmer, driven by more frequent heavy precipitation and warmer winters. Projections indicate both trends will continue. Warm/cool and wet/dry variability will continue. Drought will remain a fixture of our climate.

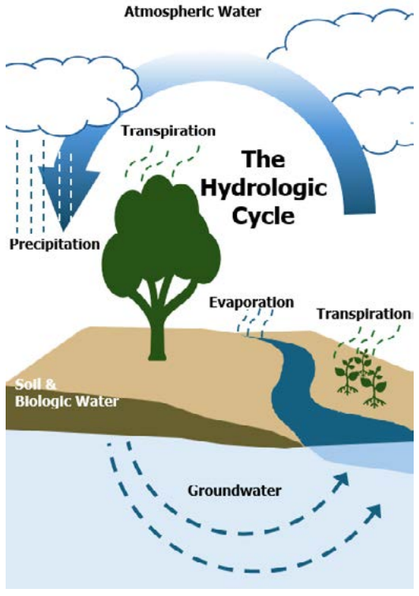


Figure 3.25. Hydrologic water cycle

General water balance is represented by the equation:

$P = ET + R + \Delta SMS + \Delta GMS + \Delta DS + GWF$

Variable	Definition
P	Total precipitation input
ET	Total evapotranspiration loss
R	Total stream flow
ΔSMS	Change in soil moisture storage
ΔGMS	Change in groundwater storage
ΔDS	Change in depression storage
GWF	Groundwater flux (groundwater flow into or out of the drainage basin)

Area of Operations

In the early to mid-1800's much of the watershed was described as wilderness that was predominantly wetlands with some interconnecting natural creeks making the natural landscape difficult to farm or develop. Between 1890-1920 an elaborate public ditch system was designed and successfully established throughout the watershed to improve drainage and bring land into production. The success of the public ditch system enabled the expansion of agriculture and development throughout the watershed. Many of the agricultural practices further modified the landscape and established private lateral ditches to drain into the public ditch system. Most of the development discharged stormwater runoff from new impervious surfaces directly into the public ditch system. These modifications to the landscape were legal and reasonable for the time but altered the natural hydrology of the area.

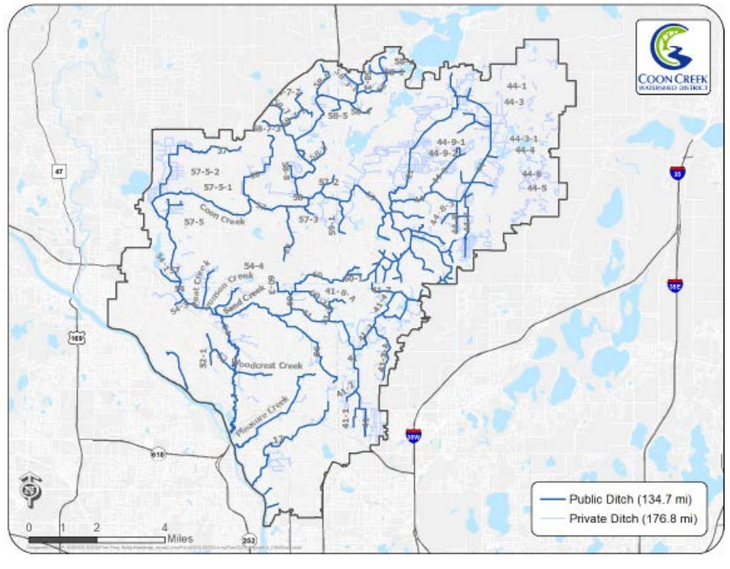


Figure 3.26. Drainage system of the CCWD

By 1959, the public ditch system had become deteriorated and overwhelmed. The public ditch maintenance and repair process was costly, time consuming, and cumbersome resulting in a backlog of maintenance needs and a deteriorating ditch system. The public ditches that had been designed to bring land into production were not necessarily designed to accommodate all stormwater runoff from developed impervious surfaces resulting in more frequent and extreme flooding. This led the public to petition to form the CCWD to address and manage these issues. Anoka County transferred the public Drainage Authority to the CCWD.

Between the 1960s-80s the CCWD successfully facilitated public ditch maintenance and repairs to restore and improve the function of the public ditch system as needed to address water quantity issues. The CCWD began reviewing development proposals and advising developers and communities on best practices for drainage and water quantity considerations as there were few requirements for infrastructure to address stormwater or water quantity issues at the time.

Since the 1980s the CCWD has continued facilitating ditch maintenance. The CCWD expanded the development review process by adopting and applying CCWD stormwater rules to all land disturbing activities in the watershed. The CCWD also developed monitoring, planning, capital project, public education, and outreach programs. Combined these efforts have been successful at addressing most water quantity issues within the watershed. Some notable successes are preventing thousands of homes from being built within high flood risk areas, implementing projects and efforts to identify and reduce flood and drought risk, managing the public drainage system for multiple uses, and ensuring best management practices are installed to lessen the impacts of imperviousness and altered hydrology.

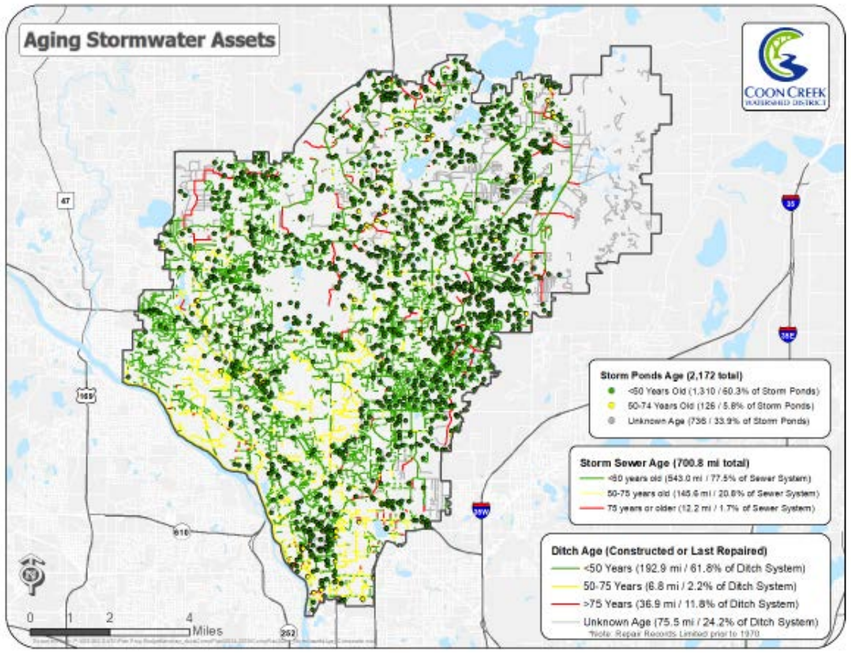


Figure 3.27. Stormwater assets in the CCWD

Terrain

The ground surface elevation ranges approximately 150 vertical feet throughout the watershed with generally the highest areas along the north and east portions of the watershed and lowest areas along the drainage outlets to the Mississippi River to the southwest. The black line below represents the approximate median elevation and transition between the relatively steep Mississippi River Terrace and relatively flat Anoka Sand Plain. The disproportionate distribution of elevation over the watershed causes relatively slow drainage and a higher risk of prolonged flooding in the Anoka Sand Plain and relatively fast drainage and a higher risk of flash flooding in the Mississippi River Terrace portions of the watershed.

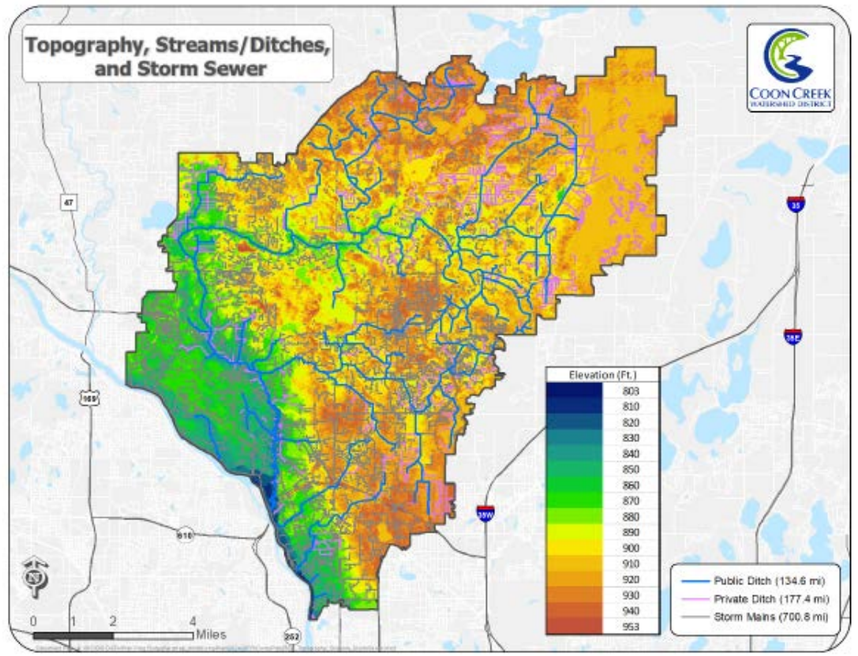


Figure 3.28. CCWD topography summary

Weather

Precipitation is seasonally affected with the largest quantities occurring in the spring and summer months while winter precipitation is relatively low despite snowfall due to a general 10:1 snow to water equivalency ratio. Figure 3.29 and 3.30 show trend analyses of precipitation in the watershed. This data was compiled from rain gages at our CCWD office, Anoka County weather stations (Andover, Blaine, Ham Lake, and Coon Rapids), and the Coon Rapids City Hall weather station.

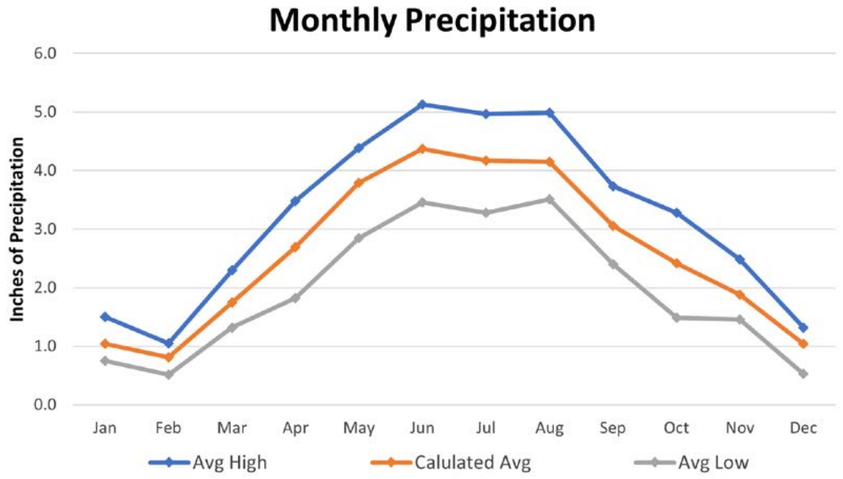


Figure 3.29. Monthly CCWD precipitation

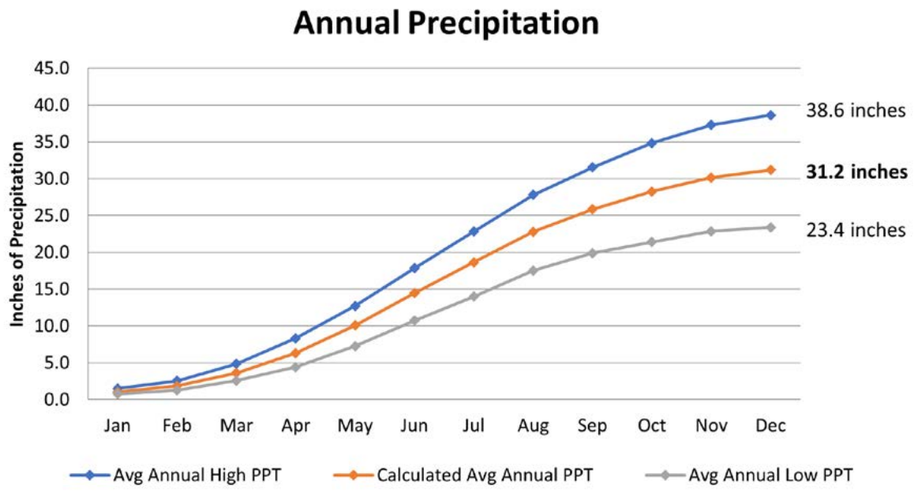


Figure 3.30. Annual CCWD precipitation

Precipitation frequency

High intensity and/or volume precipitation events that are capable of exceeding drainage infrastructure capacity and cause damage tend to occur between May-September (highlighted red below). Over the previous decade the CCWD trended towards more frequent, isolated short duration high volume precipitation events. The 1969 State Floodplain Management Act minimum state standard 1% chance flood is outlined in black below.

PDS-based precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.358 (0.277-0.463)	0.421 (0.325-0.544)	0.526 (0.405-0.681)	0.616 (0.472-0.799)	0.741 (0.555-0.987)	0.841 (0.618-1.13)	0.942 (0.675-1.29)	1.05 (0.727-1.46)	1.19 (0.802-1.68)	1.30 (0.858-1.86)
10-min	0.525 (0.406-0.677)	0.617 (0.476-0.797)	0.771 (0.594-0.998)	0.901 (0.691-1.17)	1.09 (0.813-1.44)	1.23 (0.906-1.65)	1.38 (0.989-1.88)	1.53 (1.06-2.13)	1.74 (1.17-2.47)	1.90 (1.26-2.72)
15-min	0.640 (0.495-0.826)	0.752 (0.581-0.972)	0.940 (0.724-1.22)	1.10 (0.843-1.43)	1.32 (0.992-1.76)	1.50 (1.10-2.02)	1.68 (1.21-2.30)	1.87 (1.30-2.60)	2.12 (1.43-3.01)	2.32 (1.53-3.32)
30-min	0.908 (0.702-1.17)	1.07 (0.829-1.39)	1.35 (1.04-1.74)	1.58 (1.21-2.05)	1.90 (1.42-2.53)	2.16 (1.58-2.89)	2.41 (1.73-3.29)	2.68 (1.86-3.72)	3.03 (2.04-4.29)	3.31 (2.18-4.73)
60-min	1.18 (0.912-1.52)	1.39 (1.07-1.79)	1.75 (1.35-2.26)	2.06 (1.58-2.68)	2.53 (1.91-3.39)	2.91 (2.15-3.93)	3.32 (2.38-4.54)	3.74 (2.61-5.22)	4.34 (2.93-6.17)	4.82 (3.18-6.88)
2-hr	1.45 (1.13-1.86)	1.70 (1.33-2.18)	2.14 (1.67-2.75)	2.55 (1.97-3.28)	3.16 (2.41-4.22)	3.67 (2.74-4.93)	4.22 (3.06-5.76)	4.81 (3.38-6.68)	5.65 (3.85-7.99)	6.33 (4.21-8.98)
3-hr	1.61 (1.26-2.05)	1.88 (1.47-2.40)	2.37 (1.86-3.03)	2.84 (2.21-3.64)	3.56 (2.74-4.76)	4.18 (3.14-5.61)	4.86 (3.55-6.63)	5.60 (3.96-7.78)	6.67 (4.58-9.43)	7.54 (5.04-10.7)
6-hr	1.88 (1.48-2.37)	2.19 (1.73-2.76)	2.78 (2.19-3.51)	3.34 (2.62-4.24)	4.23 (3.29-5.63)	5.00 (3.80-6.69)	5.86 (4.33-7.95)	6.80 (4.86-9.40)	8.18 (5.66-11.5)	9.31 (6.26-13.1)
12-hr	2.14 (1.71-2.68)	2.50 (2.00-3.14)	3.18 (2.53-4.00)	3.83 (3.03-4.82)	4.83 (3.78-6.36)	5.69 (4.35-7.52)	6.63 (4.93-8.92)	7.66 (5.51-10.5)	9.16 (6.38-12.8)	10.4 (7.03-14.5)
24-hr	2.46 (1.98-3.05)	2.84 (2.29-3.53)	3.56 (2.86-4.43)	4.24 (3.38-5.29)	5.28 (4.17-6.89)	6.18 (4.76-8.10)	7.16 (5.37-9.55)	8.24 (5.97-11.2)	9.79 (6.87-13.6)	11.1 (7.55-15.3)
2-day	2.88 (2.34-3.55)	3.23 (2.62-3.98)	3.91 (3.16-4.82)	4.56 (3.68-5.64)	5.61 (4.48-7.27)	6.53 (5.08-8.51)	7.55 (5.71-10.0)	8.68 (6.35-11.7)	10.3 (7.32-14.2)	11.7 (8.05-16.1)
3-day	3.17 (2.59-3.88)	3.52 (2.87-4.31)	4.19 (3.41-5.14)	4.84 (3.92-5.96)	5.90 (4.73-7.60)	6.82 (5.34-8.84)	7.85 (5.97-10.4)	9.00 (6.62-12.1)	10.7 (7.60-14.6)	12.1 (8.34-16.6)
4-day	3.39 (2.78-4.13)	3.76 (3.08-4.59)	4.47 (3.65-5.46)	5.14 (4.18-6.31)	6.21 (4.99-7.96)	7.14 (5.61-9.21)	8.17 (6.23-10.7)	9.31 (6.88-12.5)	11.0 (7.82-15.0)	12.3 (8.55-16.9)
7-day	3.90 (3.22-4.72)	4.39 (3.62-5.32)	5.26 (4.32-6.38)	6.03 (4.94-7.34)	7.18 (5.77-9.05)	8.14 (6.40-10.3)	9.16 (7.00-11.9)	10.2 (7.57-13.6)	11.8 (8.43-15.9)	13.0 (9.08-17.7)
10-day	4.39 (3.64-5.28)	4.97 (4.12-5.98)	5.95 (4.92-7.18)	6.80 (5.59-8.23)	8.01 (6.44-10.0)	8.99 (7.08-11.3)	10.0 (7.66-12.9)	11.1 (8.19-14.5)	12.5 (8.98-16.8)	13.7 (9.58-18.6)
20-day	5.96 (4.99-7.11)	6.68 (5.59-7.98)	7.86 (6.56-9.41)	8.84 (7.34-10.6)	10.2 (8.24-12.5)	11.3 (8.92-14.0)	12.3 (9.48-15.6)	13.4 (9.96-17.4)	14.8 (10.7-19.7)	15.9 (11.2-21.4)
30-day	7.37 (6.20-8.74)	8.21 (6.91-9.75)	9.57 (8.03-11.4)	10.7 (8.92-12.8)	12.2 (9.87-14.8)	13.3 (10.6-16.4)	14.4 (11.1-18.2)	15.5 (11.6-20.0)	16.9 (12.3-22.4)	18.0 (12.8-24.2)
45-day	9.20 (7.79-10.9)	10.3 (8.67-12.1)	11.9 (10.0-14.1)	13.2 (11.1-15.7)	15.0 (12.1-18.1)	16.2 (12.9-19.9)	17.4 (13.5-21.8)	18.5 (13.9-23.7)	20.0 (14.5-26.2)	20.9 (14.9-28.0)
60-day	10.8 (9.17-12.7)	12.1 (10.2-14.2)	14.1 (11.9-16.6)	15.6 (13.1-18.4)	17.5 (14.3-21.1)	18.9 (15.1-23.0)	20.2 (15.7-25.1)	21.4 (16.0-27.2)	22.7 (16.5-29.6)	23.6 (16.9-31.5)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

Figure 3.31. Atlas 14 precipitation frequency in the CCWD

*Data varies +/- 5% throughout watershed. Source: 2023 NOAA Atlas 14 Point Precipitation Frequency at 13632 Van Buren St NE Ham Lake, MN.

Surface water resources

Within the watershed there are approximately 180 miles of open channel comprising approximately 7,700 acres. Approximately 134 (74%) miles were improved between 1890 and 1920 and are maintained as part of the public drainage system. There are 10 natural and manmade lakes within the watershed. The natural lakes are shallow lakes usually associated with type 4 & 5 wetland. Groundwater occurs under the entire CCWD. It is within five to ten feet of the land surface over approximately 75% of the watershed.

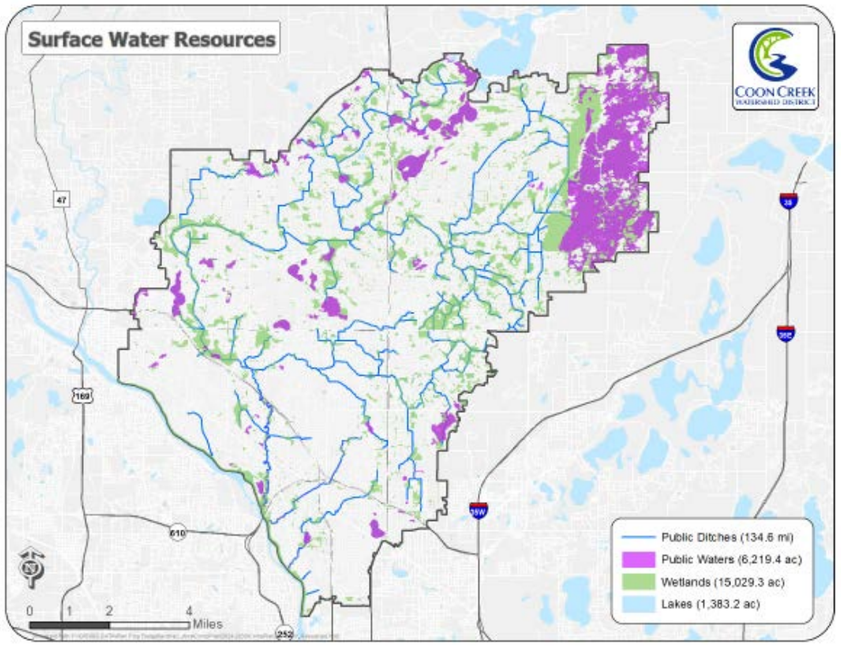


Figure 3.32. Surface water resources of the District

Hydrologic and hydraulic modeling

Hydrologic and hydraulic modeling and mapping within the CCWD has developed over time. In the 1950s flooding had become a severe problem throughout the watershed to which the public petitioned to establish the Coon Creek Watershed District in 1959 in part to control or alleviate damage from floodwater. Major floods across Minnesota in 1965 and 1969 raised awareness of the impacts of flooding on families, businesses, and local economies. In 1968, Congress passed the National Flood Insurance Act, which allowed communities to participate in the National Flood Insurance Program (NFIP) and made flood insurance available to citizens. These events led Minnesota to pass the Floodplain Management Act of 1969, which established a framework for communities to reduce their flood risk.

Since the 1980's FEMA has generated hydrologic and hydraulic modeling for the Mississippi River and major watercourses within the watershed and published effective flood insurance rate maps (FIRM) for the one-Percent (1%) Chance Flood (also known as: 100-Year Flood, Base Flood Elevation, or BFE (FEMA), Regional Flood (MN DNR), Special Flood Hazard Area, or SFHA (FEMA), or High Flood Risk Area). The FEMA modeling utilized precipitation frequency estimates from a 1961 technical paper No. 40 (TP40) which was considered the best available information at the time. The FEMA FIRM mapping is a fair tool for assessing flood risk for general purposes near major watercourses and includes a fair process to maintain the maps as changes in land use occurred. However, the FEMA FIRM mapping was a poor tool for accuracy at smaller neighborhood or parcel scales and did not provide any functionality to analyze for optimal land use changes to address water quantity issues.

Since the late 1980s the CCWD, in collaboration with partner cities and Anoka county, has developed local hydrologic and hydraulic models for lands within the watershed (except for the Mississippi River) starting with a TR-20 model, then a HydroCAD model, and in 2006 moved to an XP-SWMM model. The local hydrologic and hydraulic modeling has been a critical foundational management tool to organize, analyze, advise, and report on various water resource issues. The XP-SWMM model is a one-dimensional model that enabled the ability to more accurately predict reverse flow situations, model all stormwater infrastructure, land use, and topography data, maintain updated infrastructure data with as-built and survey data, model various precipitation events beyond the one-percent chance flood event, analyze scenarios to optimize management and regulatory decisions, delineate drainage boundaries, map anticipated flooding locations based on forecasted storms and snowmelt for emergency management assistance, and various other uses.

In 2013 NOAA published the Atlas 14 Precipitation-Frequency Atlas of the United States Volume 8 Version 2.0: Midwestern States (Atlas 14) effectively replacing the TP40 precipitation frequency estimates used by previous hydrologic and hydraulic models. FEMA did not update their model or associated maps but the CCWD did update the XP-SWMM model to use Atlas 14 precipitation frequency estimates.

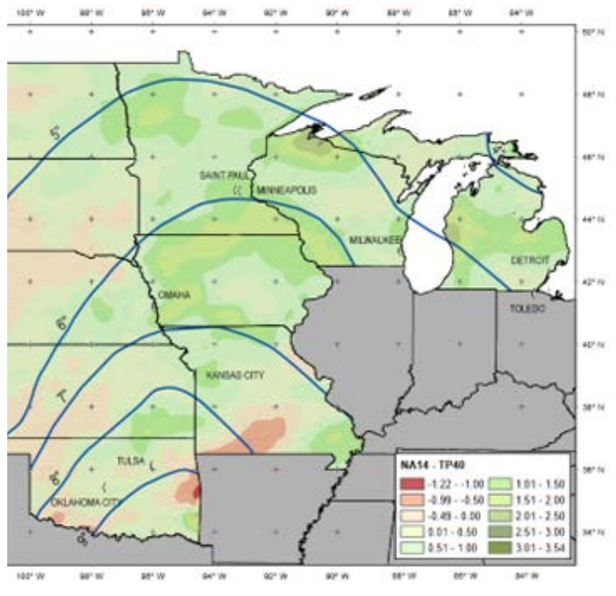


Figure 3.33. Differences in 100-year 24-hr estimates between NOAA Atlas 14 Volume 8 and TP40 (NOAA Atlas 14, Volume 8, 2013)

Over time it became apparent that the XP-SWMM model represented the best available information for the area and succeeded the FEMA FIRM. The XP-SWMM model provided higher resolution and greater accuracy to better determine flood risk related to habitable structures and critical infrastructure. The CCWD and participating cities began to consider both the FEMA FIRM and XP-SWMM model for permitting new and redeveloped structures and infrastructure eventually finding the XP-SWMM model to be more effective. Most communities in the CCWD adopted ordinances that require a 2-foot vertical free board separation between habitable structures and the one-percent chance flood elevation despite the state minimum requirement of 1-foot freeboard in order to provide resiliency for future precipitation changes.

In 2016-18, the CCWD contracted with the MN DNR (HUC-8 Study) to prepare the XP-SWMM model in accordance with FEMA regulations for the XP-SWMM model to replace the effective FIRM for the portions of Anoka County within the CCWD. The XP-SWMM model was calibrated using the best available information and submitted to the MN DNR for third party review. Initially, the plan was to finalize the FIRM update in 2021-2023 however was delayed due to staffing, workload, and pandemic conflicts.

Flooding

The watershed contains approximately 17,287 acres of floodplain (25% of the watershed). The 100-year event (1% annual probability) varies across this watershed from 6.9-7.3 inches in 24 hours. That event would adversely affect an estimated 41,334 people, 9,458 parcels of land and result in an estimated $5.1 billion in damages. There are also approximately 4,228 parcels that can be adversely affected by flooding from high ground water at an estimated damage of $1.6 billion.

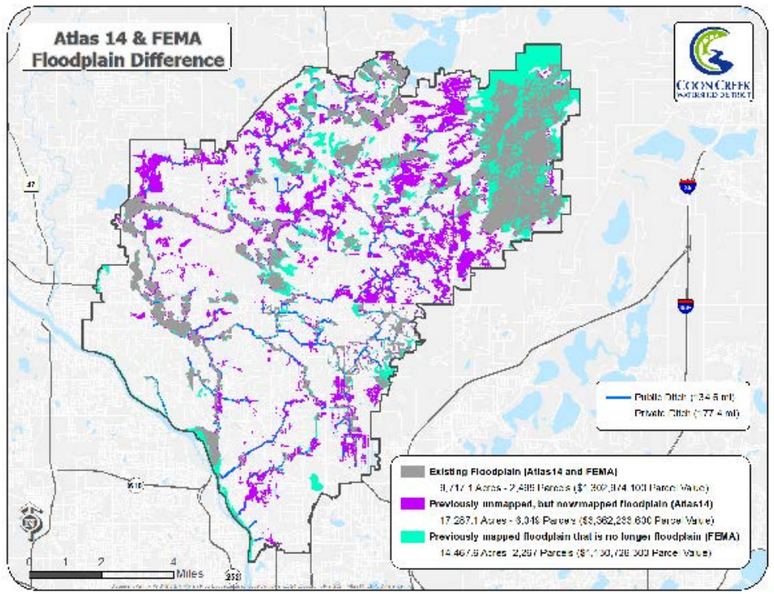


Figure 3.34. Floodplain differences between FEMA and CCWD Atlas-14 data

Overwinter snowpack accumulation occasionally exceeds 2 inches of water equivalency which in combination with a <10-day snowmelt, frozen soils, and frozen drainage ways can significantly increase the risk of snowmelt related flooding.

The Upper Mississippi River watershed is much larger in scale than the Coon Creek watershed and has more miles of converging watercourses and a longer time of concentration. Therefore, even large individual precipitation events that cause major local flooding tend to only impact portions of the Upper Mississippi River watershed and not cause significant downstream flooding issues. Mississippi River flooding in this region tends to be caused by rapid snowmelt which is an accumulation of precipitation events over the entire watershed that drain simultaneously, converge at the same time, and can be compounded by ice and debris jams. Typically, snowmelt-related peak flows in the Mississippi River occur days to weeks after the snowmelt-related peak flows in Coon Creek however occasionally occur close enough together to cause compounding impacts.

Drought

Drought conditions occur when there is a prolonged period of below average precipitation. Drought conditions tend to increase demands for irrigation to support vegetation growth. Irrigation water sources typically come from deep groundwater wells and surface waters. State and federal agencies monitor drought conditions and implement the state drought plan to minimize conflicts and negative impacts on Minnesota's natural resources and economy.

Minimum flows

Water flow varies within watercourses from high 'flood' flow to average 'base' flow and to low 'minimum' flows. Flow is largely related to precipitation, slope, drainage area, and imperviousness but is also affected by drainage efficiency, surficial groundwater interactions, and surface water discharge rates. Maintaining flow within watercourses is critical for supporting aquatic life and beneficial uses. Most of the headwater ditches in the watershed are highly susceptible to reaching minimum flows or being completely dry for periods of time. Most streams impaired for aquatic life within the watershed are less susceptible to being dry but do experience minimum flows.

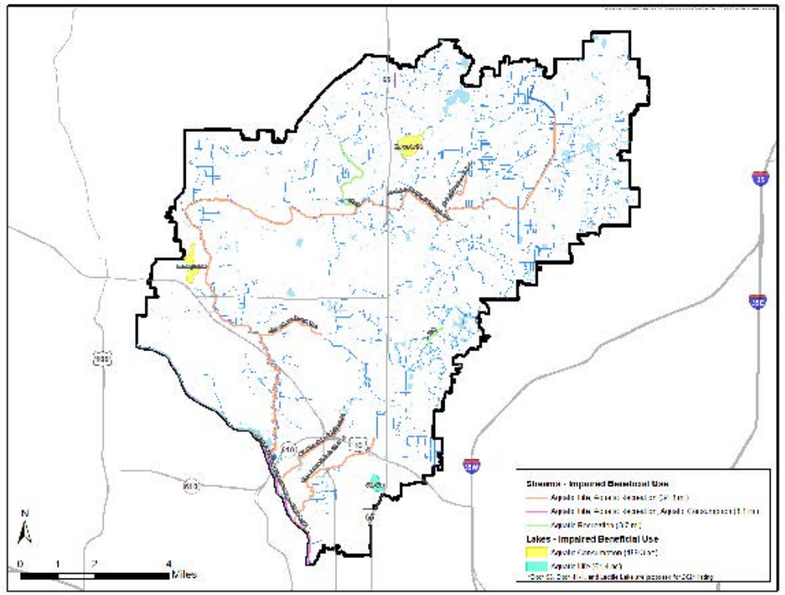


Figure 3.35. Impaired waters of the CCWD

Mississippi River

The Mississippi River along the CCWD boundary is described by ACOE navigation river mile markers from 862.6-869.8. The Mississippi River hydrologic and hydraulic modeling has historically been managed by federal and state agencies with some local agency input. In addition to flooding the Mississippi River modeling serves to assist with dam operation, boat navigation, adjacent land use and development, and critical corridor management. There is a HEC-2 effective model for the Mississippi River downstream of the Coon Rapids Dam. State and federal agencies have indicated a desire to update the Mississippi River effective model but have not communicated any specific plans to do so.

In 2021, the ACOE initiated an upper Mississippi River system hydraulic model update for 320 miles of the Mississippi River missing the CCWD by just 3 river miles. The CCWD was not directly informed of this effort as it was outside the update area and the effort was already well underway when the CCWD learned of the update.

3.5.1 Problems, Issues and Concerns:

Detailed description of composition, disposition, location, and trends of problems, issues, and concerns can be found in the 2023 scoping and prioritization exercise for water quantity.

In addition to the ongoing quantitative management of water resources, the CCWD will address the following issues in the 2024 to 2033 comprehensive watershed management plan:

Adapting to increased volatility in precipitation, temperatures, and flow regimes

Extreme weather within the District includes, but not limited to:

- Too much rain (heavy downpours), causing severe flooding and landslides, often in localized areas.
- Too much heat and no rain (heatwave) causing droughts, low flow water, and wildfires.
- Strong winds, such as straight line winds, derechos, microbursts and tornadoes, causing damage to man-made structures and animal habitats.

Key factors:

- Improving District and municipal resilience
- Assessing how hydrology will change
- Weather-related risk management
- Taking steps to better cope with these risks
- Balance volume, peak rate, and base flow

Aging and resiliency of infrastructure

The five most common indicators of potential infrastructure impairment are:

1. Evidence of physical damage to the capital asset that requires repair efforts to restore the asset's service utility.
2. Enactment or approval of laws or regulations, or other changes in environmental factors, that limit or curtail the use of the capital asset because the asset does not meet and cannot be modified to meet the requirements of the new laws or regulations.
3. Technological development or evidence of obsolescence resulting in the capital asset being used much less frequently, or not at all.
4. A change in the way an asset is used or in the length of time it was expected to be used.
5. A permanent construction stoppage prior to the completion of an asset

Key factors:

- Asset inventory and condition inspection
- Maintenance and replacement of aged infrastructure
- Resiliency planning and design
- Funding

Altered Hydrology

Hydrologic alteration involves and addresses significant changes in the magnitude, duration, timing, frequency, or rate-of-change of natural stream flows.

Stressors or consequences of altered hydrology include:

- Widespread land-cover change
- Urbanization
- Industrialization
- Engineering intervention
- Loss of aquatic habitat
- Increased streambank erosion and bank failure
- Increased sediment levels

Key factors:

- Modified watercourses and drainageways
- Imperviousness
- Stormwater storage, infiltration, and detention (discharge rate control)
- Changes in storm frequency, duration, intensity, and type
- Future development and regulatory framework

Status and condition of floodplain information

Floodplain information is currently based on the best available information and is anticipated to require future updates as land use changes and development continues in the CCWD and as new data becomes available.

Floodplain information needs:

- Topography, soils, imperviousness
- Natural assets (wetlands, lakes…)
- Hard assets (stormwater infrastructure, ditches, ponds…)
- Drainage areas, watershed boundaries
- Precipitation frequencies, storm types
- As-builts, survey data, design plans

Key factors:

- Time-floodplain does not have a hard deadline like water quality TMDL does
- Effort-many competing tasks
- Data acquisition- not all information is controlled by the District
- Funding

Collaborators & Cooperators

Table 3.36. Federal and state agencies collaborating on water quantity

Agency	Mission/Goal	Intent
Federal		
Environmental Protection Agency	Clean Water Act: To restore and maintain the chemical, physical and biological integrity of the Nation's waters	• Monitors USACOE administration of Section 404 of CWA
U.S. Army Corps of Engineers	To regulate the discharge of dredged or fill material into waters of the United States, including wetlands	• Implementation of Section 404 of the CWA
U.S. Geologic Survey	To collect analyze and provide reliable scientific information to describe and understand the Earth; minimize loss of life and property from natural disasters; manage water, biological, energy, and mineral resources; and enhance and protect our quality of life	• Develop rating curves • Monitors select streams in the watershed
National Oceanic and Atmospheric Administration	To understand and predict changes in climate, weather, ocean, coasts and to share that knowledge and information with others.	• Forecasting • Precipitation data • Snow-water equivalency data
Federal Emergency Management Agency	Helping people before, during, and after disasters	• Flood mapping • Emergency management
Homeland Security	Responding decisively to natural and man-made disasters	• Emergency management • Training

Agency	Mission/Goal	Intent
State		
Board of Water & Soil Resources	To improve and protect Minnesota's water and soil resources by working in partnership with local organizations and private landowners	Administers • Metropolitan Water Management Act » MR 8410 » Plan review » Plan approval • Wetland Conservation Act » MR 8420 » Technical Evaluation Panel » Delineation review » Sequencing evaluation » Training
Department of Natural Resources	To work with Minnesotans to conserve and manage the state's natural resources, to provide outdoor recreation opportunities, and to provide for commercial uses of natural resources in a way that creates a sustainable quality of life.	Administers • Floodplain program • Works in the bed of public waters permits • Ground water appropriation permits • Endangered and Threatened species Takings permits • State Critical Areas program and rules • Fire danger management
Climatology office	gather, archive, manage, and disseminate historical climate data in order to address questions involving the impact of climate on Minnesota and its citizens	• Present and past climate data
Metropolitan Council	To foster efficient economic growth for a prosperous metropolitan region.	• Management of Metropolitan Systems • Review of Watershed Plans • Review and approval of City Comprehensive Plans including stormwater

Agency	Mission/Goal	Intent
Local		
Anoka County	To serve citizens in a respectful, innovative, and fiscally responsible manner.	• Hazard mitigation • Emergency management
Anoka Conservation District	To holistically conserve and enhance Anoka County's natural resources for the benefit of current and future generations through partnerships and innovation.	• Outreach and Public Engagement • Select wetland hydrology monitoring, • Select Subwatershed Inventory and Assessments » Wetland hydrology monitoring network » water quality monitoring » Subwatershed assessments • Wetland Evaluation and Restoration » Technical Evaluation Panel • Projects » Raingardens • Financial, Technical and Grant Assistance
Cities • Andover • Blaine • Columbus • Coon Rapids • Fridley • Ham Lake • Spring Lake Park	To serve as administrative, commercial, religious, and cultural hubs for their surrounding areas, provide essential public services and protect and provide for the public health, safety and welfare.	• Flood prevention through storm water management • Provide drinking water where demanded

Table 3.37. Adjacent watershed management organizations

Agency	Mission/Goal	Intent
Adjacent watershed management organizations		
Rice Creek Watershed District	to manage, protect, and improve the water resources of the District through flood control and water quality projects and programs.	• manage the peak rate and volume of runoff from the landscape because of the influence on floodplains • water quality and flow monitoring • investigative studies of problems • coordinating improvement projects • education campaigns • permitting process • Partner with regional entities on a case-by-case basis • Coordinate with communities to update ordinances to minimally meet federal, state, and local flood requirements
Lower Rum River WMO	To provide for conservation of water and natural resources; alleviation of flood damage through proper design and maintenance of storm sewer and drainage systems; and protection and management of creeks, lakes, water courses for recreational and public use.	
Upper Rum River WMO	to maintain the quality of area lakes, rivers, streams, groundwater, and other water resources across municipal boundaries.	
Sunrise River WMO	planning and regulation, water quality, flooding, shoreland management, recreation, wildlife, and erosion control.	

Table 3.38. Interagency, intergovernmental, and nongovernmental collaborators on water quantity

Agency	Mission/Goal	Activities
Interagency, Intergovernmental and Nongovernmental Organizations		
Technical Evaluation Panel	To pursue • No net loss in the quantity, quality, and biological diversity of existing wetlands. • Increases in the quantity, quality, and biological diversity of wetlands by restoring or enhancing diminished or drained wetlands. • Avoidance of direct or indirect impacts from activities that destroy or diminish the quantity, quality, and biological diversity of wetlands • Replacement of wetland values where avoidance of activity is not feasible and prudent.	make technical findings and recommendations regarding • Wetland applications, • The scope of MR 8420 • The applicability of exemption and no-loss standards, • Wetland functions and the resulting public value, • Direct and indirect impacts • Possible violations of MR 8420 • Enforcement » Preparation of replacement/restoration plans • Review of replacement applications for » public road projects » banking projects
Crooked Lake Area Association	To protect and enhance the long-term health of Crooked Lake	• Comprehensive Lake Management planning • Public involvement and engagement • Lake monitoring for select pollutants and AIS • Treatments, Studies, Plant Surveys • Regular inspections for AIS
Ham Lake Lake Association	To preserve and maintain the health of the lake.	• Cost sharing on inventories & treatments

Civil and Public Infrastructure Considerations

- The value of functioning stormwater infrastructure is often taken for granted as it mostly remains out of sight and out of mind. Only when infrastructure fails is the value to public health and safety and an inspection and maintenance program fully realized.
- Stormwater BMPs provide their design functions but also contribute to the collective stormwater infrastructure system impacting downstream resources.
- Existing stormwater infrastructure varies throughout the CCWD by age, ownership, condition, function, and maintenance. Historically, infrastructure was designed to meet minimum water quantity and quality standard practices and regulations at the time to minimize cost and maximize land use. The industry realized over time that the infrastructure that was constructed could not accommodate hydrologic changes within the infrastructure's lifetime resulting in costly damage and/or corrections. It is a relatively recent trend to include design considerations for resiliency and additional uses throughout the infrastructure's lifetime. This has created a backlog of existing infrastructure that no longer meets the current demands.
- Land use development and redevelopment provide opportunities to apply lessons learned and correct and/or prevent infrastructure issues.
- Cost and effort of inspection, maintenance, repair, replacement, and improvements.
- Owners of stormwater infrastructure often have competing interests for funding and attention making it difficult to prioritize infrastructure.
- Knowledge of the location, function, design, and purpose of infrastructure often gets lost over time as most stormwater infrastructures' life expectancy extends beyond the career of the designer and/or installer.
- Stormwater management is a specialized and complicated field that is similar but different from civil engineering and public works management. Finding and retaining qualified stormwater managers to manage stormwater infrastructure efficiently and effectively can be difficult.
- Most owners of stormwater infrastructure have more immediate issues to attend to. This often leads to reactive management rather than preventative or predictive management.

Attachments

- State drought task force

3.5.2 Goals and Objectives

Goal

To closely monitor and model the watershed's response and behavior to various hydrologic events, develop and regulate land use and infrastructure, and operate and maintain watershed components and functions that benefit the public health, safety, and welfare and reduce adverse effects.

Objectives

- To restore and preserve desirable watershed conditions that will prevent or minimize flooding and minimum flows.
- To prevent property damage from flooding, erosion, or degraded water quality
- To ensure balance between inflow, outflow, and the storage of water
- To encourage a productive landscape
- promote the retention and conservation of all water precipitated from the atmosphere in the areas where it falls, as far as practicable.
- reduce flood damages through floodplain management, stressing nonstructural measures such as floodplain zoning and floodproofing, and flood warning practices.
- protect, preserve, and use natural surface water storage and retention systems
- minimize public capital expenditures needed to correct flooding problems
- establish more uniform local policies and official controls for surface water management
- secure the other benefits associated with the proper management of surface water
- provide a water supply for irrigation
- regulate the flow of streams and conserve stream water
- coordinate and collaborate with local and state agencies
- facilitate risk mitigation efforts
- maintain updated models, regulations, and design standards as new information becomes available
- adjust to new trends as they develop

3.5.3 Implementation

Intent

To improve the water quantity situation will require the CCWD to focus on:

- Adapting to increased volatility in precipitation, temperatures, and flow regimes
- Aging and resiliency of infrastructure
- Altered hydrology
- Status and condition of floodplain information

By 2033, significant progress should be made to maintain hydrologic balance to prevent property damage and protect water quality.

Approach/Strategy/Concept of Operations

To manage water quantity so that it is sustainable, the CCWD will focus on eight essential task groups:

1. Organization & Intervention
2. Operational Intelligence: Inspection, Monitoring and Data Collection
3. Hydrologic and hydraulic modeling
4. Capital improvements and projects
5. Operations and maintenance of the system
6. Planning
7. Public Relations and Engagement
8. Review and regulation of changes to the system

Organization and Intervention

Involves arranging the roles and goals of the CCWD and the other collaborators and cooperators in managing water resources within the watershed on an operational level. The purpose is to conduct programs, projects and activities by either preventing problems and issues from occurring or by capitalizing on the knowledge, authorities and/or abilities to achieve operational or strategic results. This activity includes applying money and authority for operational advantage within the watershed and conducting both repair and restoration work as well as prevention and protection efforts. It also involves enhancing the capacity and capability of collaborators and remaining intimately involved in all water and related resource management. Operational efforts are composed of program, division or section staff and activities working to achieve the goals of the Comprehensive Plan and state and federal goals.

Operational Intelligence: Inspection, Monitoring and Data Collection

This task group produces the intelligence required to accomplish the objectives within the watershed. They include planning and conducting subordinate efforts and major research undertakings. Operational intelligence includes determining size, nature and significance of problems, issues and concerns as well as the rate of degradation and urgency. Operational intelligence addresses problems, issues and concerns across the range of organizations and activities involved in water management within the watershed. Operational inspection and monitoring are included in this task group. It also includes intelligence support to cooperators and collaborators and groups.

Hydrologic and hydraulic modeling

The CCWD will continue to maintain and develop the hydrologic and hydraulic model and mapping efforts to the best available data and align with multi-domain management framework.

Capital Improvement Projects

Involves direct and indirect means to address and resolve water resource problems, issues and concerns, and to maintain the ability to continue to respond and intervene. Water quantity related capital projects are typically multiagency and collaborative projects. Capital projects include, construction, repair, restoration, enhancement as well as studies, assessments and plans that support operational efforts and addressing water quantity issues.

Operation & Maintenance

Operation and maintenance provide a systematic process to manage the stormwater system efficiently and effectively. The operations and maintenance system sets priorities, plans, budgets and schedules, performs, inspects, and monitors and evaluates the watershed stormwater system. It will do this by segmenting and differentiating both operation and maintenance such that both operation and maintenance will be consistent with select maintenance levels that are consistent with ditch operation and maintenance criteria. The objectives of operation and maintenance are:

1. To ensure safe and efficient drainage.
2. To ensure access for the administration, utilization, and protection of water resources.
3. To protect the environment, adjacent water resources, and public investment.

It is imperative that implementation is informed by results of annual ditch and asset inspections and condition assessments. The primary vehicles for synching these efforts are the Districtwide asset inventory which generates annual lists of maintenance and repair needs and subwatershed planning efforts which outline implementation schedules for this work and other targeted projects.

Planning

Planning will focus on the development of subwatershed plans throughout the watershed and the continual analysis and planning of water quantity, water quality, drainage and conveyance needs and issues; determine the minimum improved system needed to address flooding and minimum flow issues and for protecting the public health and safety. The objectives of subwatershed planning are to:

1. Provide floodplain and risk management which ensures public health, safety and welfare.
2. Provide for orderly changes to and management in the watershed and the decisions affecting the system.
3. Determine the minimum management needed to sustain resource function and address public and private needs; address public safety and ensure efficiency of operations in an environmentally sensitive manner within current and anticipated funding levels.
4. Determine appropriate use and classification of affected waters

The CCWD will actively participate in the municipal local water plan and the Anoka County hazard mitigation planning efforts led by partners or cooperators. Participation will focus on ensuring stormwater management is consistent throughout the watershed, minimizing duplication of efforts, encouraging corporative and collaborative relationships, synchronizing tasks and timelines, aligning capital improvement plans, and establishing eligibility for external grant funding.

Public Relations and Engagement

This task group works with the public and primarily the cities and other watershed organizations in the accomplishment of the CCWD's mission. These tasks provide information and guidance to stakeholder consistent with the strategy and links the programmatic and applied action. The CCWD relies on single programs to multiagency efforts to accomplish goals and objectives. This task group is applicable across the range of water management operations and includes acquiring and communicating operational level information, assessing the operational situation, preparing plans, operate and maintain the citizen and technical advisory committees as forums for collaborative management, coordinating information operations, coordinating and integrating collaborative and multiagency support, and providing public relation and engagement services.

The District conducts public involvement activities in order to:

1. Accommodate the public's desire to know about District plans and proposals and to obtain the public's views.
2. Encourage public involvement in planning and decision making.
3. Become aware of and respond to the values expressed by the public.
4. Reach all affected and interested publics.

Review and regulation of changes to the system

This task group conserves the functional capacity of the landscape, natural, and hard assets so that they can continue to function and or contribute to the restoration of the watercourses or the mitigation of potential adverse impact to the water and related resources. This activity involves regulatory and enforcement actions to counter and/or mitigate the effects of landscape or hydrologic changes by avoiding, modifying, or mitigating these changes through design. construction, operation and/or maintenance practices. This task set includes protecting groundwater, conveyance and stormwater infrastructure, water quality treatment, flood protection and prevention and wetland conservation. This task also pertains to protection of collaborator staff, equipment, and infrastructure as well as protecting the public health, safety, and welfare.

Review and development focus is on the policies and requirements for preconstruction, permitting and construction associated with the development of facilities which may affect the floodplain and water quantity discharge to wetlands and the drainage conveyance systems of the watershed.

The objectives of review and development is to:

1. Locate and construct facilities that provide the function, stability and durability appropriate for their intended service life and use.
2. To develop and use standards that permit the maximum economy while meeting the management direction for resource and environmental protection, development and management of tributary lands and utilization of the resource.
3. To follow the policies and standards throughout MS 103 in the review and development of additional drainage and conveyance facilities.
4. When standards are higher, or irreconcilable with the provision of MS 103 in its entirety, use standards developed by other drainage and stormwater organizations to the extent they comply with laws applicable to the watershed district system and that are compatible with management direction.

The Watershed Development program administers and enforces the CCWD Rules which establish standards for managing stormwater runoff, construction best practices, and impacts to floodplains and wetlands. Ensuring that development, redevelopment, and other activities are carried out in a manner that is protective of water resources is essential to water quantity and quality protection and restoration. Past unregulated development which converted natural land cover to impervious surfaces, reduced depressional storage, and created new conveyances has significantly altered the natural hydrology of the area, increasing the volume and rate of runoff and degrading the conditions of receiving waters. Future development activities have the potential to undo some of the past impacts, but only if water storage and treatment objectives go beyond non-degradation. One mechanism for achieving these reductions is to encourage and/or incentivize practices that reduce or offset imperviousness such as oversized BMPs, impervious conversion/disconnection, or stormwater reuse. Another mechanism would be the development and implementation of site-specific standards, such as more stringent water quantity requirements for projects in drainage areas with known water quantity issues.

In addition to pre-construction review and permitting activities, inspection and enforcement actions during and after construction are also critical for addressing water quantity issues. It is imperative that the CCWD maintains its robust construction site inspection program to ensure best management practices are constructed as designed and permitted. Over the next 10 years, it will also become increasingly important to develop a formal process for enforcing Operations and Maintenance agreements to ensure permitted post construction controls continue to function as they were designed.

3.5.4 Essential Tasks

Organization and Intervention

- The CCWD will provide technical assistance and facilitate efforts to mitigate water quantity issues.
- CCWD programs involved in water quantity management will be:
  - » Administration
  - » Engagement
  - » Engineering
  - » Information
  - » Operations and Maintenance
  - » Planning
  - » Water Quality
- Watershed Development Interventions will occur under the CCWD's authorities as a drainage authority, watershed district, and MS4.

- Operationally significant areas for CCWD involvement include:
  - » Technical assistance
  - » Hydrologic and hydraulic modeling
  - » Risk management mitigation and communication
  - » Drought response to maintain minimum flows for irrigation and aquatic life
  - » Lessen impacts of altered hydrology
  - » Volume and rate control
  - » Incentives to reduce imperviousness
- Coordinate software resources and when possible establish application programming interfaces to enable communication between software platforms.

Intelligence: Inspection, Monitoring, and Data Collection

- Annually Organize & Plan Inspection and Information Collection Activities-The District Administrator, Director of Operations, Field Operations Manager, Engagement Coordinator, Public Relations Coordinator, Planning Coordinator, Water Quality Coordinator, and Watershed Development Coordinator will meet annually to determine changes to the information to be collected and to identify priority information requirements prior to work planning for the following field season. Data collection activities conducted by other agencies will be evaluated prior to undertaking new efforts to avoid duplication.
- Collect and Share Operational Information and Data
- Processing and Dissemination of Collected Data and Information
- Integrate Operational Information

The CCWD will continue to collect, acquire, and maintain the best available data as a foundation to support critical analytical exercises and studies to inform management decisions. The CCWD will make ready the necessary knowledge and resources for targeted implementation and to seize opportunities as they arise to make progress and address water quantity goals.

The current information collected and anticipated future intelligence needs are:

Table 3.39. Current and future intelligence needed for water quantity

Data	Location	Collection Frequency
Precipitation	District office	Continuous via all-season Davis Weather Station; Storm totals
Precipitation	Districtwide	Continuous/archival via existing monitoring networks including Anoka Co Emergency Services, CoCoRaHS, volunteers, and doppler estimated raster dataset
Water Levels- Wetlands and lakes	7 long term wetland reference sites; Crooked, Ham, Laddie, Netta, & Sunrise Lakes	Continuous, Ice-free season
Water levels- Streams	Core stream and municipal outlets; rotating subwatershed outlets	Continuous, Ice-free season
Water levels, Peak-Floodplain	6 stream sites as detailed in Flood Response Plan; additional sites as needed for model calibration	Crest gages deployed each spring
Soil moisture	District wide	Continuous or as available by NOAA and UMN
Stream Discharge	All stream sites	Continuous at core outlets; paired with grabs at other sites; portable equipment available for large event response
Surficial groundwater interactions with surface waters	Districtwide	To be developed
Public Ditch and watercourses inspection	Public drainage system	20% of system per year
Private Ditch inspection	Blaine and Coon Rapids or upon request or contract.	Aligns with public ditch inspection cycle or as requested
Windshield tour inspection	Districtwide	Monthly
Storm patrol inspections	Where water quantity issues occur	As needed
Asset inventory	District, municipalities, Anoka County	Annually
Asset inventory condition inspection	Aligned with subwatershed planning	1-3 subwatersheds per year
BMP, stormwater infrastructure, habitable structures and critical public infrastructure as-builts and plans	Development permitting records, municipalities, Anoka County, survey and inspection records	Ongoing with annual collection updates
GNSS Surveys	District, municipalities, Anoka County, and private surveyors	Ongoing with annual collection updates
GIS Data updates	Respective agencies	Annually

Hydrologic and Hydraulic Analysis and Modeling

The CCWD Engineer will meet with CCWD staff annually to evaluate the status and condition of floodplain information to generate a plan to coordinate budget and workplan tasks.

Anticipated essential tasks include:

- Map flood risk relative to parcels, habitable dwellings, and critical infrastructure.
- Assess the critical assets of the drainage and hydrologic system.
- Complete HUC-8 study for the XP-SWMM model to replace the effective FEMA FIRM for the portions of Anoka County within the watershed.
- Develop and implement a flood monitoring plan to monitor precipitation-based events to continue to calibrate the hydrologic and hydraulic model.
- Calibrate the hydrologic and hydraulic model to the best available data; especially for high intensity and/or volume precipitation events that are capable of exceeding drainage infrastructure capacity and cause damage.
- Maintain and update the hydrologic and hydraulic model with the best available data.
- Atlas 15 volumes 1 and 2 anticipated to be published in 2026 to stakeholders with precipitation frequency estimates, documentation, and supplementary products. Will need to evaluate changes to all intensities, durations, and frequencies throughout the watershed and update the H&H model, GIS files, and action plans accordingly.
- Replace or upgrade the hydrologic and hydraulic modeling software as needed. The XP-SWMM software is rumored to be obsolete by 2033 which may require moving to an alternative modeling software. The XP-SWMM model is a one-dimensional software where other modeling software provides two or three-dimensional modeling enabling faster processing and improved functionality.
- Connect hydrologic and hydraulic modeling with water quality modeling.
- Coordinate with state and federal agencies to update the Mississippi River effective model for at least portions of the Mississippi River along the CCWD boundary.
- Evaluate cost-benefits of flood mitigation and protection of existing infrastructure by modifying flood conveyance, timing, and storage versus flood proofing or flood restoration.
- Develop and maintain inventory of watercourse crossings and evaluate impacts to hydraulics, flooding, drainage, and aquatic organism passage. Prioritize crossings and advise on recommended designs for replacement or enhancements to alleviate impacts.

Capital Improvements and Projects

The District will annually meet and coordinate with collaborators to identify and select targets that impact comprehensive water management, flood control and water quantity and match targets to appropriate joint or multiagency funding and implementation systems. Every two years the capital improvement plan will be reviewed with the intent of updating and amending the plan.

Proposed 2024-2033 capital projects for water quantity protection and restoration are:

Table 3.40. Anticipated projects and studies for water quantity plan

Year	Program	Project	Objective	Est. Cost
Ongoing	Planning	Routine Model Updates	Districtwide hydrology modeling refinements and improvements	$659,040
2026-33	Planning	Hydraulic and hydrologic model upgrade	Upgrade hydraulic and hydrologic modeling software from 1D to 2D	$241,570
Ongoing	Planning	Special studies	Studies and modeling exercises to evaluate current, proposed, and alternative conditions to optimize implementation efforts	$329,520
Ongoing	Public and government relations	HUC 8 Public engagement	Stakeholder risk management communication	$65,904
Ongoing	Operations and maintenance	Springbrook Creek Subwatershed Plan Implementation	Maintenance and flood mitigation efforts identified in subwatershed plan	$1,165,370
Ongoing	Operations and maintenance	Non-Routine Maintenance	To respond to and address problems and issues identified through complaint, routine inspection to protect the public health, safety, and welfare by addressing those unanticipated and random occurrences that may obstruct or deflect flow.	$1,265,356
Ongoing	Operations and maintenance	Routine Ditch and Channel Repair	To improve asset lifespan. It decreases the chance of unexpected failures, ensures that assets remain in good working order. Specifically, to address sediment accumulation, excess in-channel vegetation, excess stream bank vegetation, trees downed and in channel of leaning that are or would obstruct or divert flows in areas that could create of compound flood damage or present a clear danger to the public health and safety	$1,318,079

Year	Program	Project	Objective	Est. Cost
Ongoing	Operations and maintenance	Pleasure Creek Subwatershed Plan Implementation	Maintenance and flood mitigation efforts identified in subwatershed plan	$1,635,365
Ongoing	Operations and maintenance	Coon Creek Subwatershed Plan Implementation	Maintenance and flood mitigation efforts identified in subwatershed plan	$13,255,952
2027	Operations and maintenance	Flood Mitigation	Provide flood mitigation targeted to remove habitable dwellings and/or critical infrastructure impacted by the Atlas 14 XPSWMM model version of the 100-year floodplain and preferably were not previously impacted by the FEMA 100-year flood map inundation.	$297,754
Ongoing	Operations and maintenance	Oak Glen Creek Subwatershed Plan Implementation	Maintenance and flood mitigation efforts identified in subwatershed plan	$280,590
Ongoing	Operations and maintenance	Stonybrook Creek Subwatershed Plan Implementation	Maintenance and flood mitigation efforts identified in subwatershed plan	$388,708

Operations and Maintenance of the System

System operations and maintenance rely heavily on data collection and capital improvement elements but additionally planning and logistics are necessary to effectively and efficiently complete operations and maintenance tasks. Essential tasks include:

- Develop and maintain relationships with landowners.
- Foster landowner stewardship of water resources on their property.
- Remain familiar with most recent changes or improvements to the resource and resource management.
- Anticipate and respond to flood and drought conditions.
- Develop action plans in coordination with local governments.
- Familiarity and knowledge of the system and its components
- Project and effort identification, prioritization, and recommendation
- Annual budgeting
- Annual program and work planning
- Project plan, design, contract, construction, completion, and follow-up
- Reporting

Planning

The CCWD will develop subwatershed plans for all principal subwatersheds within the watershed. The objectives are to jointly assess each subwatersheds with the other MS4s and stormwater authorities involved to:

- Identify flooding/drainage and water quality problems, issues and concerns
- Assesses the benefits, problems, and risks to inform decisions related to identification of the optimal drainage system per and designation and management of streams, ditches, lakes, wetlands and shallow ground water.
- Develop a structured set of actions aimed at improving management of storm water and the infrastructure that supports its management.
- Protect public health, safety, and welfare.
- Provide for the wise use of natural resources.
- Minimize capital costs associated with repair, replacement, or restoration of property and/or water resources.

Public Relations and Engagement

Anticipated essential tasks include:

- Development and implementation of public involvement plans
- Produce informational content relative to stormwater management
- Facilitate an issue reporter system that enables the public to report water resource related issues (flooding, obstructions, maintenance needs, violations…)
- Promote awareness campaigns (adopt-a-drain, trash clean-ups, storm drain stenciling, creek signage…) to illustrate the value of stormwater infrastructure and expand awareness of the CCWD, stormwater management, and stormwater issues
- Participate in outreach events to provide stormwater information to the public and learn of local water resources issues from the public
- Communicating technical information with various stakeholders audiences (general public, political leaders, industry professionals)
- Working with communities to identify local demands, issues, or needs that can be incorporated into stormwater management capital projects
- Work with the MN DNR to communicate flood mapping updates related to flood insurance and flood risk
- Work with private stormwater infrastructure owners (businesses, home owners associations…) to evaluate and assist with resolving stormwater management needs
- Conduct audience analysis to better understand the publics knowledge of stormwater management

Regulation & Protection

Anticipated essential tasks include:

- Use design standards and a portfolio of treatments and practices that permit the maximum economy while meeting management direction for development, resource and environmental protection and management of tributary lands and utilization of water and related land resources.
- Follow the policies and standards set forth in the PCA storm water manual, EPA National BMP Menu, supporting storm water and erosion control manuals and best professional practice.
- Prepare and update CCWD construction specifications for conveyance and treatment facilities and the policy for their use
- Establish and maintain engineering activity evaluation standards to serve as a tool for reviewing the effectiveness, efficiency and adherence to Federal and state laws, regulations, and policies.
- Update CCWD rules to meet minimum state and federal requirements and align with specific actions outlined in subwatershed plans.

Stability Tasks

To ensure the successful management of water quantity issues requires ongoing participation, review, and/or update of:

- Local water plans
- Comprehensive plan
- Capital improvement plan
- District rules
- Federal and state requirements
- Funding options
- Watershed condition assessment
- State climatology office forecasts

3.5.5 Assessment

Table 3.41. Water quantity goals, objectives, and measures

Resource	Goal	Objectives	Measures
Water Quantity	(WQT) To closely monitor and model the CCWD's response and behavior to various hydrologic events, develop and regulate land use and infrastructure, and operate and maintain watershed components and functions that benefit the public health, safety, and welfare and reduce adverse effects.	(WQT-1) Refine CCWD floodplain model for the entire District through subwatershed planning process by 2033.	(WQT-1.1) % of watershed with refined floodplain model.
		(WQT-2) Maintain or reduce the % of District stormwater infrastructure in "poor" condition relative to 2023 baseline.	(WQT-2.1) % of watershed's stormwater infrastructure in "poor" condition.
		(WQT-3) Increase the % of land in the District developed under current stormwater regulations (2023 baseline).	(WQT-3.1) % of watershed developed under current stormwater regulations.
		(WQT-4) Reduce # of habitable structures at risk of flooding in the 1% storm (2023 baseline).	(WQT-4.1) # of habitable structures at risk of flooding in the 1% rain event.

Adapting to increased volatility in precipitation, temperatures, and flow regimes

Measures of Performance		
P1	Number	Of flow measurements during base flow
P2	Number	Of flow measurements during peak flow
P3	Number	Of precipitation measurements
Measures of Effectiveness		
E1	Percent	Of average change in hydrograph peak at monitoring locations.
E2	Percent	Of activities permitted by the District that exceeded the minimum volume reduction requirements of the rules
E3	Percent	Of change in the 2-year channel forming flow

Aging and resiliency of infrastructure

Measures of Performance		
P1	Number	Of infrastructure condition inspections
P2	Number	Of infrastructure repairs completed
Measures of Effectiveness		
E1	Percent	Of infrastructure in poor condition
E2	Percent	Of infrastructure meeting design specifications
E3	Percent	Of infrastructure designed for resiliency

Altered Hydrology

Measures of Performance		
P1	Number	Of acres of imperviousness surface
P2	Number	Of acres mitigated by constructed volume control best management practices
Measures of Effectiveness		
E1	Percent	Of land meeting current stormwater regulations
E2	Percent	Of land urbanization
E3	Percent	Of change in runoff

Status and condition of floodplain information

Measures of Performance		
P1	Number	Of acres of effectively mapped floodplain
P2	Number	Of available data include in hydrologic and hydraulic model
Measures of Effectiveness		
E1	Percent	Of model calibration confidence interval
E2	Percent	Of land within floodplain
E3	Percent	Of habitable structures within floodplain

Tasks to Collaborating Programs (Local Water Planning)

Refer to the Intergovernmental Coordination and Local Water Planning chapter.

Coordinating Instructions

Table 3.42. Water quantity plan coordinating instructions

Agency	Action	Time Due	Location or Condition	Purpose
All cities	Adopt ordinance in full compliance with the National Flood Insurance Program (NFIP)	2026	Cities have been adopting and/or updating existing ordinances to achieve compliance with NFIP	Required for flood insurance and certain types of disaster assistance.
All Cities	Recommend implementation of water conservation strategies in administration and permitting uses	2026	operating plans for new and reissued special use authorizations involving groundwater withdrawals and reissued special use authorizations for public drinking water systems.	To ensure water conservation strategies.
MS4s (cities and road authorities)	Capital Improvement Plan Coordination	Annually		

3.5.6 Sustainment

Funding

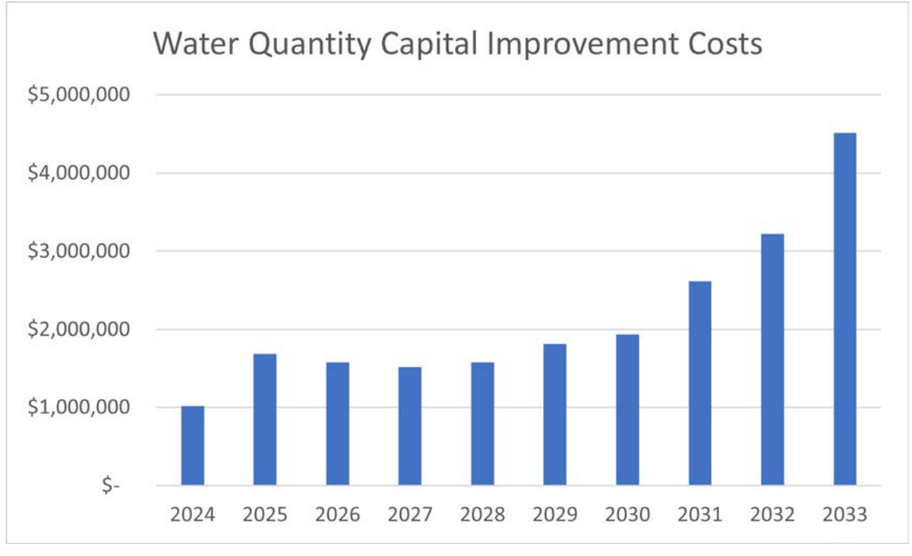


Figure 3.36. Water quantity plan capital improvement costs 2024-2033 (w/6% annual inflation)

District Levy will fund ongoing operation costs, some capital project costs, and some capital project cost-sharing.

Intergovernmental Select capital projects will be jointly funded by other governmental agencies. Exact costs will be determined through subwatershed planning and/or annual budgeting processes.

Grants The CCWD will seek to supplement local funding with external grants for eligible capital projects. Because most grants are competitive in nature, it is difficult to reliably forecast revenue. In 2023, there was a trend towards increasing grant funding availability for resiliency planning, design, and implementation. The CCWD will coordinate with Anoka County to include the CCWD capital projects in the county hazard mitigation plan to enable eligibility for some of the substantial federal funding sources. Possible sources of funding that will be pursued include, but are not limited to:

- Agriculture BMP Loan Program (Minnesota Department of Agriculture)
- Building Resilient Infrastructure and Communities grants (FEMA)
- Clean Water Fund Competitive Grants (BWSR)
- Clean Water Partnership Grants and Loans (MPCA)
- Clean Water Revolving Fund Loans (MPCA)
- Community Planning grants for stormwater, wastewater, and community resilience (MPCA)
- Conservation Partners Legacy Grant Program (MN DNR)
- Conservation Reserve Program (USDA)

- Environment and Natural Resources Trust Fund Grants (Legislative-Citizen Commission on Minnesota Resources)
- Environmental Assistance Grants Program (MPCA)
- Environmental Quality Incentives Program (NRCS)
- Flood Mitigation Assistance (FEMA)
- Habitat Enhancement Landscape Pilot (BWSR)
- Hazard Mitigation Grant Program (FEMA)
- Hazard Mitigation Advance Assistance Grant Program (HSEM)
- Groundwater Protection Initiative Accelerated Implementation Grant (MDH)
- Lawns to legumes Demonstration Grants (BWSR)
- Minnesota Stormwater Research Council (UMN WRC)
- Point Source Implementation Grants (MPCA)
- Pre-disaster Mitigation (FEMA)
- Promoting Resilient Operations for Transformative, Efficient, and Cost-Saving Transportation (PROTECT) Formula Program
- Source Water Protection Grant Program (MDH)
- Stormwater Research and Technology Transfer Program Grants (UMN)
- Surface Water Assessment Grants (MPCA)
- TMDL Grant Program (Minnesota Public Facilities Authority)
- Water Infrastructure Fund Grants and Loans (MPCA)
- Water Resources Research Act Program Grants (USGS)
- Water Quality and Storage Pilot Program Grants (BWSR)
- Water Quality grants (Met Council)
- Wellhead Protection Partner Grants (BWSR)

Other Revenue options are available to the District through statute authority or external funding sources. Some other revenue options include, but are not limited to:

- Special assessment
- Bonding
- Loans
- Safeguarding Tomorrow Revolving Loan Fund
- Clean Water Partnership Loan
- Disaster Recovery Loan

Authority/Legislative

Clarify watershed district authorities on water quantity management. Most water quantity-related statute language requires state, county, or municipal government to manage water quantity issues and includes reference to Watershed Districts as a technical resource and/or optional participant. The lack of direct statute authorities or requirements for watershed districts to manage water quantity issues creates challenges with securing funding, effectively managing for water quantity issues, and prioritizing water quantity management against other competing interests.

Equipment/Material

The CCWD has acquired and will maintain necessary equipment and materials necessary to complete monitoring, inspection, and maintenance activities. Any equipment or materials needs beyond what the CCWD can provide will be purchased, rented, or outsourced as needed to accomplish the necessary task. General equipment and materials used for water quantity-related management:

- GNSS Survey equipment
- Precipitation and watercourse flow monitoring equipment
- Confined space entry equipment
- Vehicle with agency identification and safety markings
- Miscellaneous field supplies (safety vest, waders, camera…)

Staff ability

The CCWD has acquired and retained key personnel over the years to develop, maintain, and improve water resource management in the watershed relative to water quantity:

- District Administrator, Fulltime
- District Engineer, Fulltime
- Planning Coordinator, Fulltime
- Director of Operations, Fulltime
- Engagement Coordinator, Fulltime
- Operations and Maintenance Field Operations Manager, Fulltime
- Operations and Maintenance Inspector, Fulltime
- Public Relations Coordinator, Fulltime
- Water Quality Coordinator, Fulltime
- Water Quality Monitoring Specialist, Fulltime
- Watershed Development Coordinator, Fulltime
- Watershed Development Specialist, Fulltime
- 1-2 Seasonal Technician or Intern, Parttime

Partnering cites and Anoka County employ civil engineers, public works managers, and some specialized stormwater managers who all are members of the Technical Advisory Committee or

work directly with CCWD staff to manage stormwater.

The Anoka Conservation District employs various technical staff that the CCWD routinely consults and/or hires to provide technical assistance, assist with monitoring, and participate in special studies.

State agency contacts vary but primarily involve the MN DNR area hydrologist, permitting staff, and flood management team related to water quantity management.

Training

Training needs vary by topic and personnel but need to be tailored commensurate with each individual's role in water quantity and stormwater management. In general priority training will include:

Table 3.43. Water quantity plan required training

Audience	Subject	Reason
General field staff	Basic orientation to geology and hydrogeology of the watershed	Basic familiarization and appreciation for total hydrologic function of the watershed
	Land use	Familiarity with demands beyond water resources and opportunities to address water resource issues through land use management
	Shoreline and floodplain	Provide technical assistance and floodplain administration
Hydrogeologist & Regulatory Staff	Condition and trends in surface and ground water quantity and quality	Development of a common working framework & operational paradigm
General Staff	Groundwater: Public Outreach Messages	Consistency in messaging
Technical staff	Floodplain manager	General knowledge and potential certification
Field and technical staff	Illicit Discharge Detection and Elimination	Water quality protection and permit requirement compliance
Field and technical staff	MN Stormwater Manual	Familiarity with stormwater BMP design functions and options
Field and technical staff	Inspection and Maintenance of Stormwater Practices	What to look for, checklists, program improvements
Field staff	Confined space entry	Inspection safety
Field staff	Emergency management	General knowledge and potential certification

3.5.7 Collaboration and Communication

Collaboration

Collaboration will be essential for the CCWD to accomplish the water quantity goals. The CCWD will collaborate with all groups and agencies associated with water quantity management including:

- Citizens
  - Land owners/operators
  - Single family homeowners
  - Agriculture land owners
  - Commercial/industrial land owners and operators
  - Educators
- Anoka Conservation District
- Anoka County
- Churches
- Cities
- Citizens Advisory Committee
- District Board of Managers
- Federal agencies
- Homeowners' associations
- Media
- Public officials
- School Districts
- State agencies
- Subwatershed planning subcommittees
- Technical Advisory Committee
- Water resource professionals

Control

- Management responsibility
  - District Administrator
  - Director of Operations
  - Planning Coordinator
- Control
  - Floodplain management-Drainage authority

    - Emergency management-Anoka County Hazard Mitigation Plan
    - Minimum flows-Water appropriation permit
    - Local water plans-Watershed District
    - Minimum control measures-Municipal Separate Storm Sewer System (MS4)
- Reports
    - District annual plan
    - Subwatershed plans
    - Capital improvement plan

Communication

Water quantity related communication will need to be structured, effective, consistent, and tailored to target audiences and adaptable to accommodate unanticipated water resource issues as they arise.

The District will draft communication plans in the early stages of all major projects and planning efforts. Communication plans include:

- Project name and description
- Project purpose and need
- Identify Public Involvement Goals and Objectives
- Plan/Project Timeline
- Project Messages
- Identify Stakeholders and Target Audiences
- Identify Process/Tactics/Tools

General communication tactics and tools:

- District
    - Comprehensive management plan
    - Capital improvement plan
    - Subwatershed plans
    - Board meeting agendas and minutes
    - Annual budget
    - Annual report
- Internal
    - After action reports
    - Issue log
    - Staff meeting
    - Coordinators meeting
- Websites
    - District
    - Project
    - Collaborating agencies
- Phone, email, and mailings
- News releases
- Print advertisements
- Newsletters
- Factsheets and brochures
- Social media
- Public, informational, involvement, and neighborhood meetings
- Public hearings
- Subwatershed planning and annual progress meetings
- Advisory committee meetings
- District Board meetings
- District annual tour
- Small group or focus meetings
- Impromptu meetings

3.6 Wetland Management Plan

Authority

A number of state statutes authorize direct the Coon Creek Watershed District to manage wetlands.

- MS 103A.202
- MS 103B
- MS 103D
- MS 103E
- MS 103G.2242
- MR 8410.
- MR 8420

References

Time Period

2024 - 2033

Task Organization

Table 3.44. Wetlands plan task organization

Required Tasks
Identify priority issues (MR 8410.0045 Subp. 1)
Assess issues identified by stakeholders in comments to the NOI (MR 8410.0045 Subp 7
Identify high priority areas for wetland preservation, enhancement, restoration, and establishment and describe any conflicts with wetlands and land use in these areas (MS 103B.231 Subd. 6)
Present information on the hydrologic system (MS 103B.231 Subd 6 (2))
Determine the effects of drainage projects on wetlands (MS 103E.015)
Implied Tasks
Develop a statement of the current and desired 2033 condition of the resource
Define the problem set
Facilitate consensus on the broad collaborative operational approach
Assess centers of gravity catalyzing both problems and response capacity
Articulate assumptions and limitations
Identify critical information requirements
Essential Tasks
Identify high priority areas for wetland preservation, enhancement, restoration, and establishment
Identify conflicts with wetlands and land use in these areas
Present information on the hydrologic system
Determine the effects of drainage projects on wetlands
To promote opportunities for wetland restoration, enhancement, and banking in order to capitalize on the opportunities of available land with hydric soils and a sustainable water source.
To inform landowners and developers of the presence of threatened and endangered species and rare plant communities in order to forward those landowners to DNR and make informed decisions
To conduct general calculations of the retention and detention volumes of existing wetlands to determine their value as a margin of safety for flood prevention and base flows
To make regulatory findings on the significance of groundwater recharge during permit reviews to maximize the amount of infiltration occurring
To investigate and approach state agencies on why enforcement is not occurring consistently in order to adjust CCWD response in operational and strategic management of wetlands
Stakeholder Issues and Concerns
There were no comments received on wetland conservation or management during the NOI process
Technical Evaluation Panel
Concern was expressed about the adverse effect of drainage ditches on wetlands and their sustainability

Situation

In Winter 2023 the CCWD published its priorities and scope for the 2024-2033 Comprehensive Plan.

Area of Interest

The Coon Creek Watershed contains approximately 15,508 acres of wetland (NWI, 2019). An additional 6,500 acres of wetland may be farmed. Wetlands comprise approximately 31% of the watershed.

Historic estimates, based on hydric soil mapping, are that approximately 47% of the watershed was wetland, as we define them today, prior to settlement (USDA, 1977).

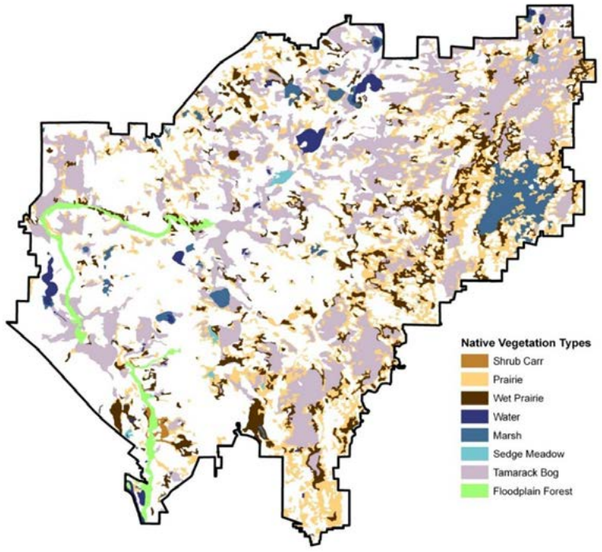


Figure 3.37. Native vegetation types of the CCWD

Area of Operations

Wetland Landscape

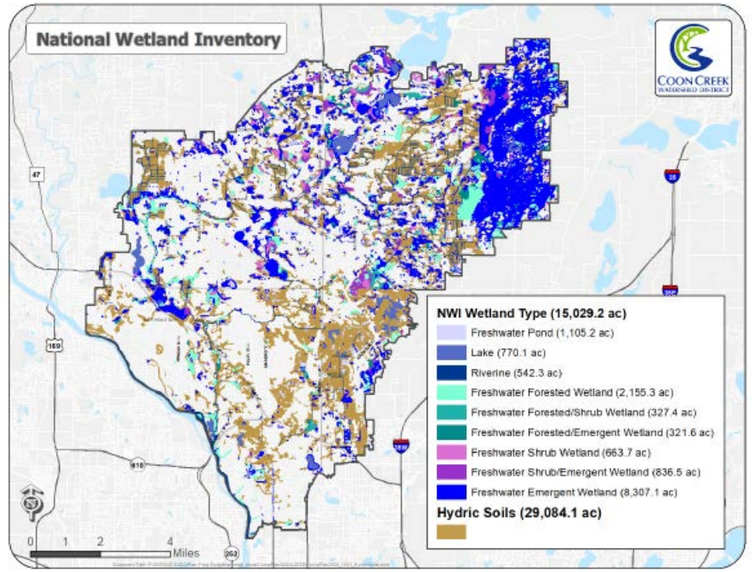


Figure 3.38. NWI wetlands map

Hydrology

According to the NWI, approximately 70% of the wetlands within the watershed are temporarily or seasonally flooded or saturated. This finding is consistent with the watershed's location in the Anoka Sand Plain and reinforces that under normal circumstances, the wetland hydrology in the watershed is groundwater related.

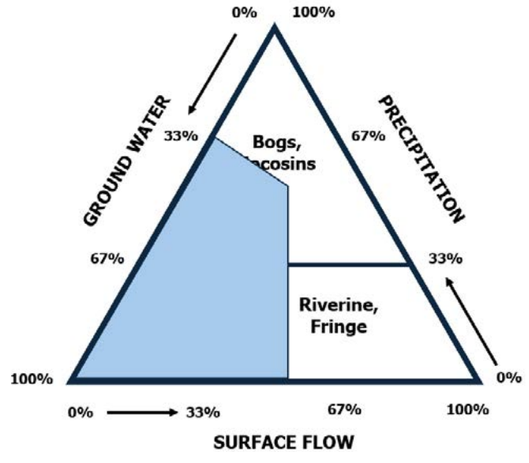


Figure 3.39. Approximation of the hydrologic influence on wetlands in the District

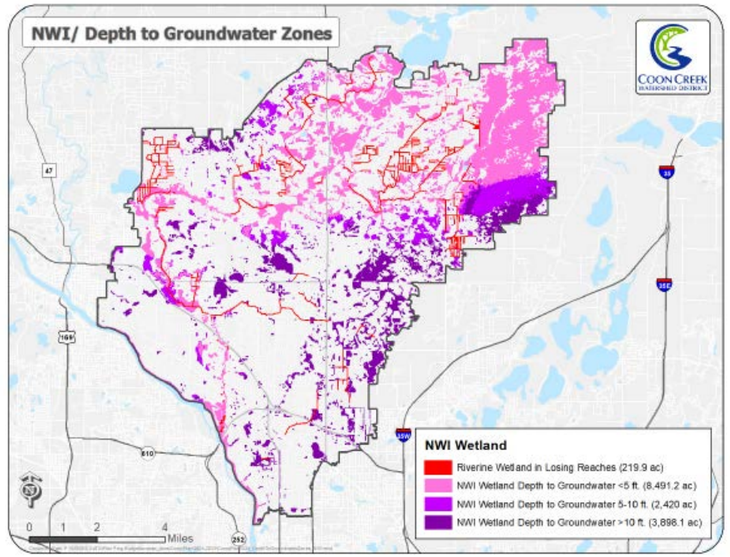


Figure 3.40. NWI wetlands to groundwater depth

Topography and Direction of Flow

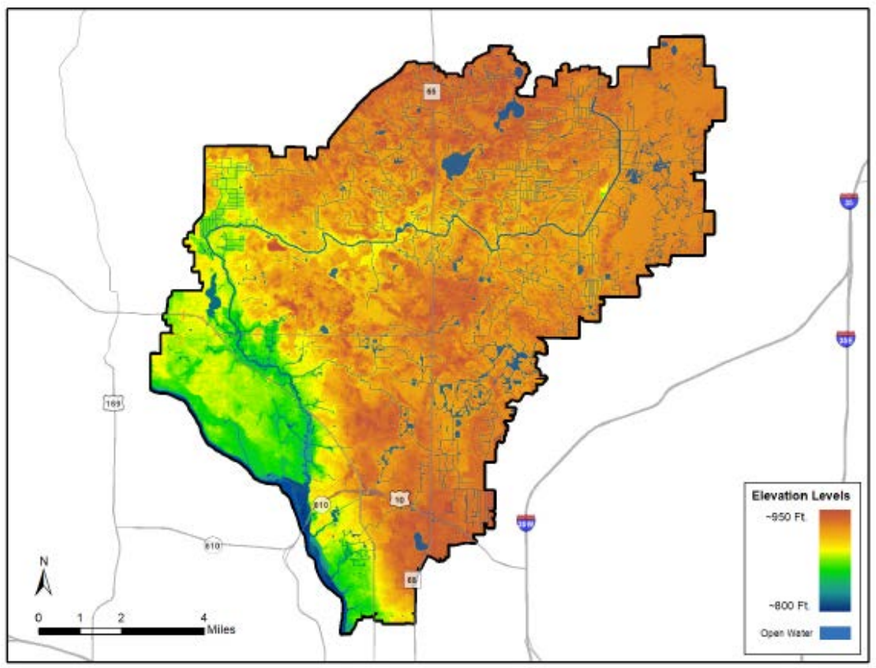


Figure 3.41. CCWD topography

Depth to Ground Water

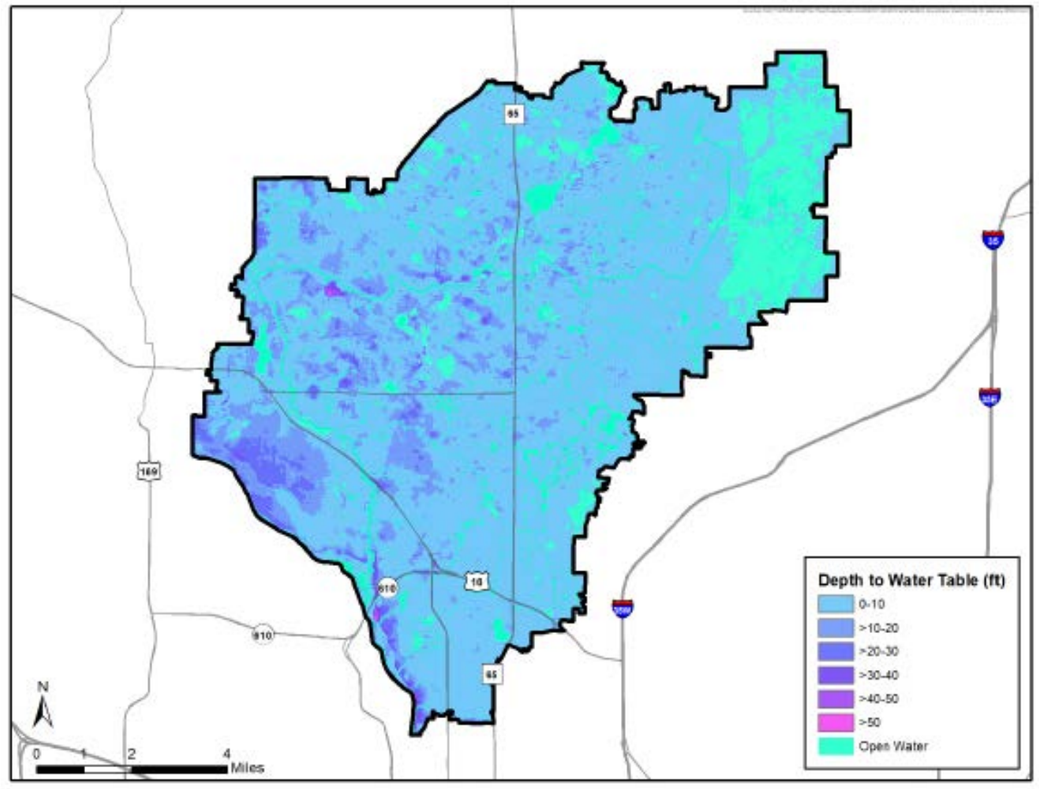


Figure 3.42. District groundwater depth

3.6.1 Problems, Issues, and Concerns

There are three priority problems, issues, and concerns facing wetlands within the watershed:

1. Effects of drainage on jurisdictional wetland
2. Long-term sustainability of wetland hydrology
3. Areas with the capability and capacity to restore and sustain wetlands.

Effects Of Drainage On Wetlands

Concern

The general concern is the loss of wetland acreage due to drainage and the removal of part or all the water that sustains this landscape feature and the landscape function it provides. Water-level drawdown or drainage of wetlands can produce major changes in the physical, chemical, and biological properties of soil. Organic soils in wetlands developed under flooded conditions where organic matter accumulation exceeded its decomposition.

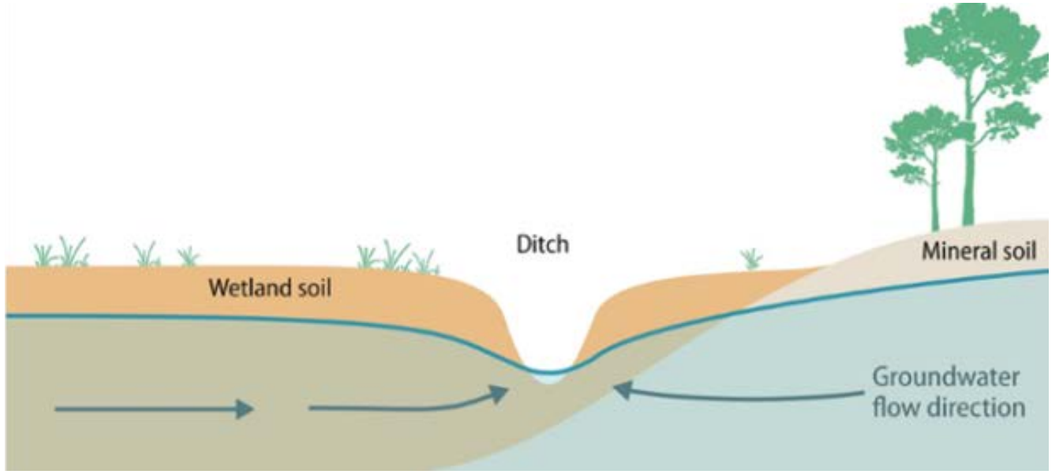


Figure 3.43. Drainage effects of ditches

Composition of the Concern

This concern is composed of two dimensions:

- The physical composition of the concern
- The social composition of the concern

Physical Composition

Drainage affects wetland hydrology through alteration or elimination of:

- Hydroperiod: The length of time/duration of inundation or saturation, which in turn strongly influences plant species and richness.
- Water Source: The elimination, or reduction of the source(s) of water sustaining the wetland system hydrology through a permanent or long-term drop in water table elevation and/or a complete or partial rerouting of overland flow.
- Social Composition: Approximately 9,500 people within the watershed have established drainage rights within their land. Approximately 4,700 of those people live adjacent to and are largely economically dependent on drainage of approximately 13,618 acres of land. Their livelihood is dependent on subsurface drainage that allows their land to continue in its current land use.

Disposition of the Concern

This concern is often introduced or discussed exclusive of the broader considerations and harmonious management of the watershed or affected area and often appears to present a single perspective to justify or advocate the abandonment of the drainage ditch.

Location of the Concern

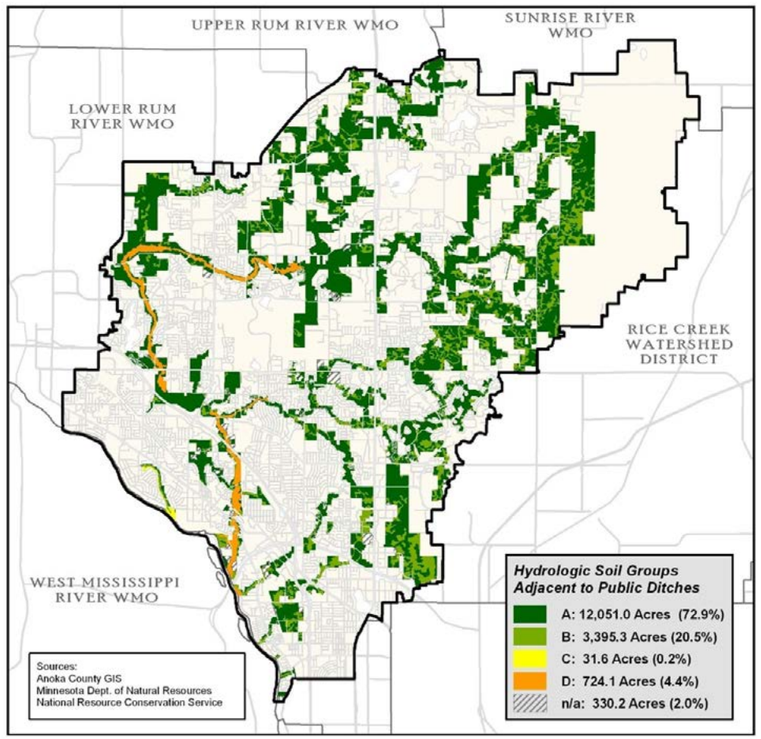


Figure 3.44. Soil types adjacent to ditches in the District

Size of the Concern

The scope of the concern is between 13,628 and 15,446 acres of type A & B soils which are dominated by peats and mucks.

- Trends Relating to this Concern: The amount of drainage-dependent land has decreased by almost 20% since 2010 and is expected to continue to decrease over the next 10 years, although the amount is uncertain.

Long-Term Sustainability of Wetland Hydrology

Concern

This issue/Concern addresses the dynamic nature of wetland hydrology and the general trends of that portion of the surficial aquifer that breaches the surface of the land and provides between 50% to 100% of the hydrology that sustains most of the wetlands within the watershed. This issue is intimately connected to two issues cited in the Groundwater Resource plan.

- Ground Water Dependent Surface Water Resources
- Ground Water Surface Water Interactions

Composition of the Issue

Shallow ground water is a significant source of resource hydrology

- Contributes ~50% - 100% of the water sustaining those resources.
- Effects 57% to 94% of all water resources within the watershed.
- There are approximately 10,000 to 16,500 acres of ground water dependent surface water resources.

The surficial aquifer in the is about 50 feet below the surface. That aquifer is composed of two zones1

- The upper surficial sand exist for 0-50 feet is comprised of Fine sand discontinuous and complex bodies of silt, sand, and gravel.
- The buried sand & gravel, composed of an unsorted mix of clay, silt, sand, and gravel. Exists from 50 to 280 feet
    - » Select areas were sorted by:
        - Streams (primarily sand and gravel)
        - Lakes (Primarily silt and clay)1

Disposition of the Issue

Not a lot has been quantified in this concern and potential issue. Wells monitoring the surficial aquifer are generally too deep to measure fluctuations and trends in the zone of saturation fully. They also do not measure or track transmissivity. Wells monitoring wetlands have been excellent in monitoring and tracking soil saturation to a depth of 24 inches, but too shallow to follow the extent of seasonal fluctuations of the water table or compounded depressions from multi-year droughts.

Size

This concern/issues involves approximately 11,131 acres of wetland.

Trends

There is no hard data to discern trends or probable developments of the water table over the next ten years.

It appears that the water table has been steadily dropping for at least the last 20 years as evidenced by the loss of wetlands as evidenced through comparative analysis of the 1989 National Wetland Inventory and the 2019 wetland inventory particularly in areas beyond the scope and effect of public or private drainage systems. The other apparent trend is that loss and decrease in acres disproportionately affected seasonally saturated and seasonally flooded wetlands.

Areas capable of sustaining wetland restoration work

Problem

This is a requirement of MR 8410. It is intended to facilitate and make plain opportunities for wetland enhancement and restoration for wetland banks and mitigation.

Character of Issue:

Successful restoration and enhancement as well as creation related to mitigation involves both risk and uncertainty for the project sponsor.

- Risk in the Anoka Sand Plain stems from two sources
    - » Investing in varying degrees of land work and then not meeting the predetermine/specified objectives for plant community composition or hydrology and then not earning the expected return in the time period needed by investor(s).
    - » The natural complex dynamic nature of both the hydrology and plant ecology measured against the fixed outcomes and steady-state climax standards of the state regulations.
- Uncertainty comes from
    - » The increasing volatility of precipitation patterns.
    - » Predicting and maintaining the exact condition of plant communities and sustainable hydrology.
    - » The Sand Plain is a highly volatile disturbance-driven ecosystem accustomed to a continuous fluctuation between fire and flood.

Composition of Issue

Locating areas functionally capable of sustaining wetlands and reducing risk and uncertainty requires assessing three things: Landscape position, water source, and hydroperiod.

1. Landscape Position

Existing depression or organic flat that represents a discharge zone for groundwater.

2. Water Source

The greatest certainty is to be achieved in

- Areas where ground water is within 5 feet of the land surface. Hydrology is continuously present and seasonal and annual variations in amount and hydroperiod foster different plant community types.
- Areas where ground water is deeper than five feet, provided sufficient water can be harvested from direct precipitation or runoff from adjacent upland to augment critical seasonal saturation or inundated to support the desired plant community. This "water harvesting/yield" calculation is currently not required for wetland mitigation sites.

3. Hydroperiod

- Where ground water is within five feet of the surface, permanent inundation or saturation can be almost guaranteed.
- Where ground water is greater than five feet, inundation or saturation of the site is often seasonal and soil saturation can significantly decrease once plant transpiration begins in the spring.
- Where ground water is greater than 10 feet, the period during which soil is saturated or inundated appears to be largely driven by antecedent moisture conditions carried over from fall precipitation, water content of the soil pack and the hygroscopy of the soil. These conditions often appear to be sufficient to support a predominance of hydrophytic vegetation.

Trends

- These sites tend to be in headwaters whose outlets are 1st and 2nd order streams and ditches.
- Most are private land served by a public ditch and subject to conversion to sod or vegetable production during dry periods.

Decisions to restore these and enroll them as bank credits are determined by the size of the initial investment, the time it will take to earn a return on the investment and the size of that return, and the hassles involved in obtaining qualification and enrollment as an eligible banking site.

Complementary Efforts

Six other wetland management efforts compliment or support the CCWD's wetland management efforts.

Table 3.45. Other efforts in wetland resource plan

Agency	Mission/Goal	Activities
Federal		
Environmental Protection Agency	Clean Water Act: To restore and maintain the chemical, physical and biological integrity of the Nation's waters.	• Issuance of Section 401 of CWA addressing violations of state water quality standards set under the Clean Water Act in Waters of the United States (WOTUS). • Monitors USACOE administration of Section 404 of CWA
U.S. Army Corps of Engineers	To regulate the discharge of dredged or fill material into waters of the United States, including wetlands.	• Implementation of Section 404 of the CWA. • Evaluate » The accuracy of wetland delineations » Potential adverse impact from proposals » Adequacy of sequencing for proposed impacts » Probable success of wetland mitigation
State		
Board of Water & Soil Resources	To improve and protect Minnesota's water and soil resources by working in partnership with local organizations and private landowners.	Administers • Grant programs including » Clean Water Fund » Local Capacity Grants » Wetland Conservation Act Administration Grants • Wetland Conservation Act » MR 8420 » Technical Evaluation Panel » Delineation review » Sequencing evaluation » Training
Department of Natural Resources	To work with Minnesotans to conserve and manage the state's natural resources, to provide outdoor recreation opportunities, and to provide for commercial uses of natural resources in a way that creates a sustainable quality of life.	Administers • Works in the bed of public waters permits. • Ground water appropriation permits. • Endangered and Threatened species Takings permits.

Agency	Mission/Goal	Activities
Local		
Anoka Conservation District	To holistically conserve and enhance Anoka County's natural resources for the benefit of current and future generations through partnerships and innovation.	• Wetland Evaluation and Restoration » Technical Evaluation Panel • Monitoring » Monitors network of wetlands for hydrologic indicators • Financial, Technical and Grant Assistance » Distributes state grant for Administering Wetland Conservation Act
Interagency, Intergovernmental and Nongovernmental Organizations		
Technical Evaluation Panel	To pursue • No net loss in the quantity, quality, and biological diversity of existing wetlands. • Increases in the quantity, quality, and biological diversity of wetlands by restoring or enhancing diminished or drained wetlands. • Avoidance of direct or indirect impacts from activities that destroy or diminish the quantity, quality, and biological diversity of wetlands. • Replacement of wetland values where avoidance of activity is not feasible and prudent.	• Make technical findings and recommendations regarding. • Wetland applications, • The scope of MR 8420 • The applicability of exemption and no-loss standards, • Wetland functions and the resulting public value, • Direct and indirect impacts • Possible violations of MR 8420 • Enforcement » Preparation of replacement/restoration plans • Review of replacement applications for » public road projects » banking projects

3.6.2 Wetland Management Goal

To pursue the no net loss of the quantity, quality, and biological integrity of the CCWD wetlands.

3.6.3 Implementation

District Intent

To apply the Wetland Conservation Act to land-disturbing activities within the watershed will require the District to:

- Administer the state rules implementing the Wetland Conservation Act (MR 8410)
- Accurately assess landscape and hydrologic processes integral to wetland conservation
- Facilitate wetland mitigation, replacement, and banking.
- Remain acutely aware of changes in water sources, landscape, and the hydrodynamics of wetland resources within our jurisdiction.
- Monitoring of hydrologic conditions and trends
- Notifying the state and take steps to prevent or mitigate major landscape, hydrologic or climate trends if possible.

Success will also depend on the CCWD's administration of the Wetland Conservation Act Rules. It will be measured through acreage comparisons between recent and future wetland inventories conducted by the state or Federal government.

Approach

Wetland conservation within the watershed is governed by the rules and requirements of the Wetland Conservation Act and influenced by the Federal 404 program. The WCA governs the draining, filling or alteration of jurisdictional wetland. The wetland conservation act is typically initiated by the wetland delineation process. The CCWD will continue to act as the Local Government Unit (LGU) that administers the Wetland Conservation Act.

The CCWD will ground its efforts in the jurisdictional definition of wetlands provided in MR 8410. The CCWD will also rely on the paradigm forwarded by the Hydrogeomorphic method and focus concerns on the water source, landscape position, and hydrodynamics of the wetland for both regulatory and mitigation work. Primary activities conducted by the CCWD will be regulatory (permit application review, field verification of delineation accuracy, review and facilitation of wetland replacement). CCWD jurisdiction over wetland fill, drainage or alteration will be confined to the jurisdictional boundaries of the Coon Creek Watershed District. Evaluation of the presence and extent of jurisdictional wetlands will only be done during the growing season, as defined in the 1987 Manual for delineation of jurisdictional wetlands. In addition to the functions and values cited in the Wetland Conservation Act, wetlands within the Coon Creek watershed provide and perform several hydrologic functions that are beneficial to the public health, safety and welfare and help in reducing infrastructure costs to the public.

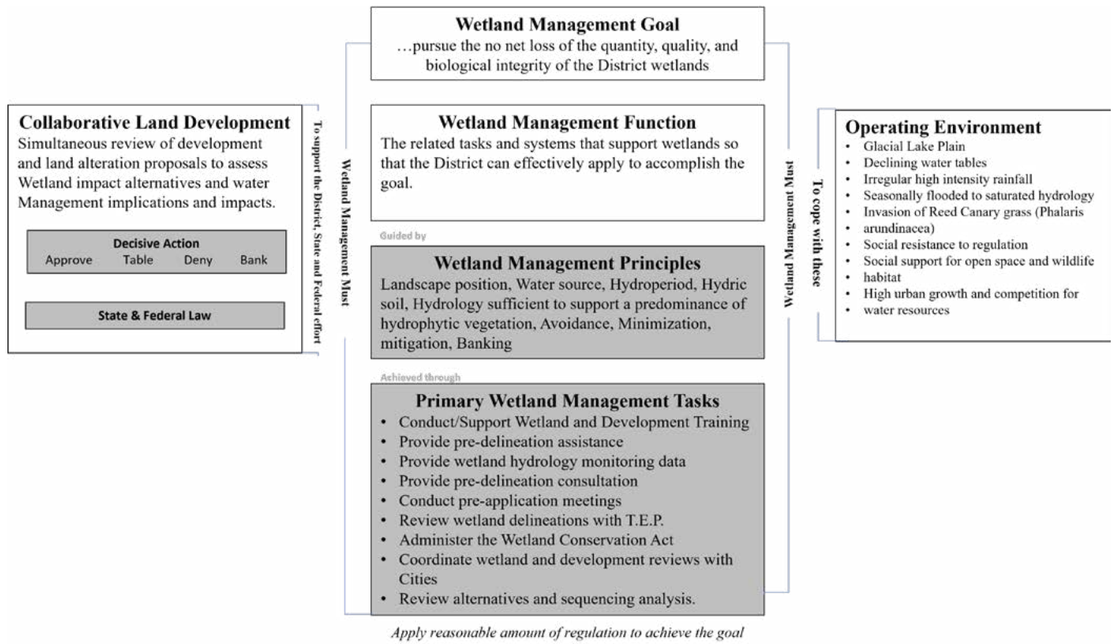


Figure 3.45. Wetland management framework

3.6.4 Essential Tasks

Organization and Intervention

The following are the priority issues to be addressed in the 2024 to 2033 comprehensive watershed management plan.

1. To promote opportunities for wetland restoration, enhancement, and banking to capitalize on the opportunities of available land with hydric soils and a sustainable water source.
2. To inform landowners and developers of the presence of threatened and endangered species and rare plant communities to forward those landowners to DNR and make informed decisions.
3. To conduct general calculations of the retention and detention volumes of existing wetlands to determine their value as a margin of safety for flood prevention and base flows.
4. To make regulatory findings on the significance of groundwater recharge during permit reviews to maximize the amount of infiltration occurring.
5. To investigate and approach state agencies on why enforcement is not occurring consistently in order to adjust District response in operational and strategic management of wetlands.

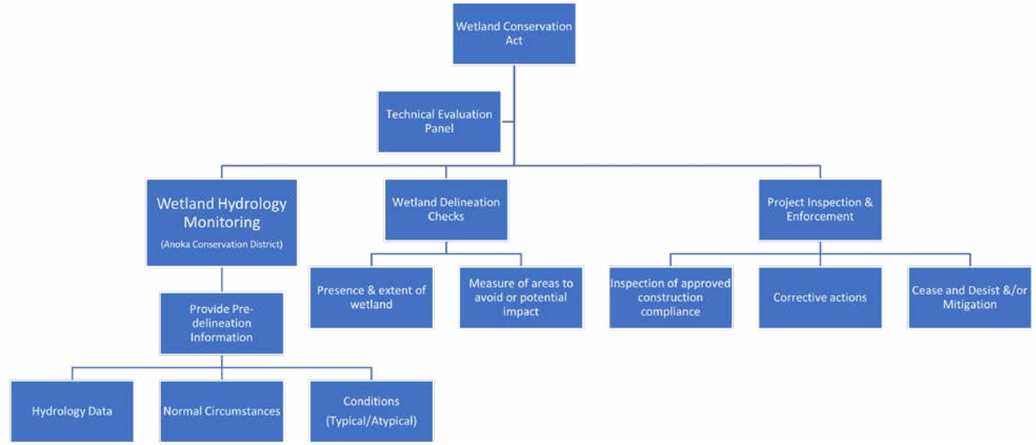


Figure 3.46. CCWD wetlands management approach

The approach is organized around the Watershed Development program.

Data Collection: Research Monitoring and Inspections

7 Wetland Hydrology Monitoring sites funded by CCWD, monitored by Anoka Conservation District

Table 3.46. Data collection efforts for wetland plan

Primary Interventions	Purpose	Locations	Frequency
Monitoring			
Wetland Hydrology Monitoring	To measure the depth and duration of inundation and saturation relative to the growing season	7 wetlands within the watershed	Monthly Apr-Oct. continuous monitoring
Soil Temperature Measures	To determine soil temperature within the root zone relative to growing season	Wetland Monitoring sites Random locations within the watershed	February - May
Direct Observation			
Field Feedback	To assess general condition of soil and soil-water relationships and/or degree of wet/dry hydrologic conditions.	District wide	Once a week or as needed
Wetland Delineation Notes	To assess the presence and extent of the 3 Mandatory Technical Criteria	Sites that have submitted wetland delineations	As needed
Quality Assurance Quality Control			
Wetland Delineation Notes	To assess the accuracy of submitted wetland delineation data relative to available monitored data such as precipitation or water levels.	Sites that have submitted wetland delineations	As needed
Imagery			
Air Photos	To determine setting and potential presence and extent of jurisdictional wetland.	District wide	Prior to all field work and review of any permit application
National Wetland Inventory	To determine the presence and potential extent of hydrophytic plant community.		
Soil Survey	To determine the likelihood, presence, and extent of hydric soils.		

Capital Projects

Table 3.47. Anticipated capital projects and studies for the wetland plan

Year	Program	Project	Objective	Cost
2025	Water Quality	Barrow Pit Impacts	To assess the hydrologic effects of excavation near or adjacent to wetlands	$15,000
2026	Water Quality	Margin of Safety Retention	To conduct general calculations of the retention and detention volumes of existing wetlands.	
2026	Water Quality	Relative Value of Wetlands as Water Retention Features	To determine their value as a margin of safety for flood prevention and base flows.	
2028	Water Quality	Wetland Restoration for water storage	To convert marginal agricultural land to water storage, treatment and/or wetland restoration	$94,686
2029	Water Quality	Wetland Restoration for water storage		$669,113

Service Provision

Wetlands generally provide 6-7 ecological functions or services. The 2007 wetland assessment of the ecological functioning of the CCWD's wetlands showed that essentially all of the wetlands within the watershed exhibit poor hydrogeomorphic functioning. However, the following ecological services remain.

Table 3.48. Functions and values of wetlands

Service: Function or Value	Tasks
Function	
Contribution to abundance and diversity of wetland fauna	• Protect/Encourage existing habitat diversity. • Preserve rare natural communities.
Contribution to abundance and diversity of wetland flora	• Ensure a landscape position that contains water. • Ensure adequate and sustainable water source to achieve hydrologic objectives. • Work soils to ensure appropriate hydroperiod and/ or sufficient residence time to support and sustain hydrophytic plan community.
Modification of ground water discharge	• Occurs seasonally and/or during high surficial groundwater conditions
Modification of ground water recharge	• To enhance ground water recharge either remove or encourage shallow-rooted plants with low evapotranspiration rates. • To discourage recharge encourage forest and other deep-rooted plants with high PET.
Modification of stream flow	• Encourage ponding. • Increase roughness coefficient of wetland vegetation to reduce the hydraulic gradient within the basin.
Modification of water quality	• Encourage plant communities with high potential bio-uptake. • Encourage increased roughness and interception within flow through systems. • Periodically harvest dead plants to remove nutrients and metals from being recycled within the basin and to reduce fire danger.
Value	
Flood storage	• Conduct study to assess and measure: » Contribution and value as a margin of safety for flood prevention and base flows. » The retention and detention volumes of existing wetlands.

Wetland Protection and Growth Management

Maintaining critical wildlife habitat, help meet state watershed goals and contribute to economic well-being. The CCWD will:

- Administer and enforce the Wetland Conservation Act
- Coordinate wetland and development reviews with Cities
- Coordinate and collaborate with the Minnesota DNR and U.S. Army Corps of Engineers to simplify the regulatory impact on properties and individuals

Operations and Maintenance

O&M activities and tasks largely revolve around:

- Administration of the Wetland Conservation Act
- Providing guidance and site information on proposed restorations and banks

Public and Governmental Affairs

Information:

- To promote opportunities for wetland restoration, enhancement, and banking to capitalize on the opportunities of available land with hydric soils and a sustainable water source.
- To inform landowners and developers of the presence of threatened and endangered species and rare plant communities to forward those landowners to DNR and make informed decisions.

Restoration of Impaired Waters

Wetland impacts are regulated by Section 404 of the clean Water act at the Federal Level and the Protected Waters and Wetland Conservation Acts at the State level. Management decisions boil down to three questions:

6. Is there wetland impacted or proposed to be impacted?
7. Is or was the impact avoidable?
8. Is or does the impact require mitigation?

Everything else in the laws, rules and manuals provide guidance and methodologies to determine the answers to those questions.

- Partially drained wetland where water is not removed from the soil profile quick enough or long enough that the site continues to be able to support a predominance of hydrophytic vegetation, albeit a different set and/or, in the case of organic soils, there remain insufficient oxygen to induce decomposition a probable change in vegetative composition and habitat type.
- Effectively Drained Wetland where sufficient water is removed from the soil profile in sufficient time to prevent or discourage the growth of hydrophytes and over time changes soils to nonhydric through oxidation.

4. Sustainment & Administration

Context Reminder: Central Water Management Problem

How do local water management authorities sufficiently fund, and staff the needed water management efforts in the next ten years and beyond while continuing to effectively deal with today's problems?

4.1 Sustainment

4.1.1 Background

The CCWD's Legislative Mandates, Comprehensive Plan, and Planning, Programming, Budgeting and Execution (PPBE) process, are CCWD's primary decision support processes that authorize, organize, and provide the money, authority and staff know-how to pursue the CCWD's mission and implement the Comprehensive plan. Collectively, they govern most if not all CCWD's activities.

4.1.2 Situation

At present, The Coon Creek Watershed District obtains most of its funding for water resource programs and projects from property taxes through a watershed-wide ad valorem levy. Other sources of funding include grants or cost share from other governmental bodies, expenditures by program/project partners, and permit fees. The direct financial burden on watershed residents has been moderated by the CCWD's success in securing grant or cost-share funds through programs administered by the Anoka Conservation District, Minnesota Board of Water and Soil Resources, the Minnesota Pollution Control Agency, and the Minnesota Department of Natural Resources. The participation of volunteers in the CCWD's programs and projects also helps to reduce the levied costs. The Implementation section of this Plan outlines potential funding partners, grant sources, and other funding mechanisms that are likely to be used for the programs and projects of the CCWD.

From 2013 to the present, the scope of CCWD responsibilities and programs has continued to grow. Most significantly the water quality era has fully come of age. Since 2013, five additional waters have been listed as impaired, which represents an 83% increase in impaired water bodies in the CCWD. At the same time, the costs associated with general operation and protection of the resource, and public health and safety have increased by approximately 59% over that period.

In contrast, tax capacity rates have increased by 17.7% while the local taxable value has increased by approximately 84%. The increase in local taxable value is a reflection of the amount of development that has occurred over the past 10 years.

In addition, the 2045 deadline placed by EPA to resolve the water quality impairments involves a direct cost to install, construct, enhance and restore water resources over $100 million dollars, based on current experience and costs of production.

At present, the grant monies made available by the State of Minnesota and the Federal Government cover less than 5% of the estimated cost to address the TMDLs. Using special assessments is significantly hindered or impractical because they involve identifying and quantifying integrated benefits which has become more time consuming and expensive, difficult to articulate and defend in court and the cost of calculation and assigning benefits and costs involving thousands of properties can easily exceed the quantifiable benefits derived. Hence the uses and sources of revenue have become more generalized to keep costs down. While dedicated or special revenues may continue to be used for special purposes, there is a trend toward more general levies for broader and more integrated public ends and goals. However, there is a place for both approaches in the CCWD's overall revenue structure.

Within this framework, the programs and purposes of the CCWD must be viewed as being essentially watershed-wide activities with watershed-wide benefits yet causing substantial impact or benefit in some areas.

The revenues to cover the costs of implementing the comprehensive plan should be derived from own source revenues, and supplemented with state and federal resources, often in the form of grants. This should be done in a manner that is true to the principles of administrative efficiency, equity, and fiscal balance.

4.1.3 The Planning, Programming, Budgeting and Execution Process

The CCWD's version of the PPBE process takes direction from, and provides input to, the annual budget process. It is cyclical and adaptive. PPBE and the other two decision support systems, covered below, provide an integrated approach to strategic planning, identification of needs for natural resource management capabilities, systems acquisition, and program and budget development for the CCWD.

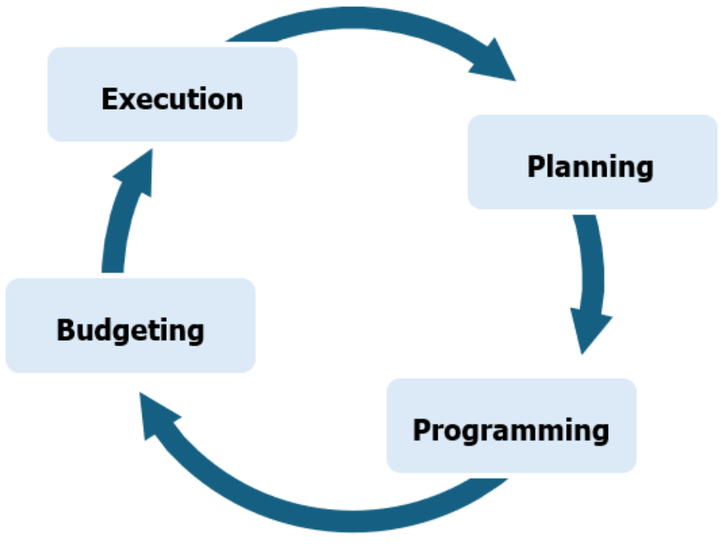


Figure 4.01. PPBE cycle

Goal

The goal of the PPBE approach is to administer a coordinated, comprehensive, and adaptive system that identifies, develops, funds, and schedules the best mix of staff, equipment, and support attainable to provide the programs, projects and activities required, with the financial and human resources available, to implement the comprehensive plan and adapt operations to the current and evolving physical, social, political and economic circumstances.

Intent

The intent is to use the PPBE process is to establish, justify, and acquire the fiscal and staff resources needed to accomplish the CCWD's missions, and address state and federal requirements by means of:

- A synchronized process constrained and restrained by rules, grant requirements, prior commitments, and political and economic conditions and forecasts
- Programs, projects, and activities
- Actions by the Board of Managers

To accomplish this the CCWD must:

- Annually frame the primary problem set(s) facing the CCWD by understanding of the operating environment and the nature of the problem set and providing strategic guidance that translates requirements into field operating system capabilities.
- Develop one or more options for accomplishing water management goals and objectives in accordance with the CCWD strategy and operational approach,
- Select and fund the actions that best accomplish and or support the CCWD's mission.
- Translate the Board approved actions to guide staff planning, execution, and initiative.

The result is a constrained annual budget used to conduct activities based on the multi-year Comprehensive plan and that meets the long-term state and federal water management goals.

Approach

The CCWD PPBE process ties strategy, program, budget, and execution performance together. It helps build a comprehensive plan in which budgets flow from programs, programs from requirements, requirements from missions, and missions from legislative objectives. The patterned flow from end purpose to resource cost defines requirements in progressively greater detail.

Within the CCWD, planning creates a vision of 10 years into the future and beyond. Macro estimates yield a specified size, composition, and quality of program and support efforts. Derived from joint strategic and comprehensive planning and intermediate objectives to achieve stated goals, this program and support force provides the planning foundation for program requirements.

In the 2- to 5-year midterm, the integration of programming and budgeting translates planning decisions and comprehensive plan and legislative guidance into a comprehensive allocation of staff, authority, and funds. The integrated process seeks to support priorities and policies of the Board and Administrator while achieving balance among CCWD programs, systems, and functions.

For the 1-year near term, the process converts program requirements into budget requests for salaries and professional services and dollars. The budget requests are integrated into the CCWD budget submitted to the Board or agencies as grant requests.

Objectives

The main objective of the CCWD PPBE process is to establish, justify, and acquire the fiscal and staff resources needed to accomplish the CCWD's missions. Phase-by-phase objectives follow:

- Through planning, to size, structure, man, equip, train, and sustain the CCWD force to support the CCWD's management strategy.
- Through cost-benefit analyses, analyses of alternatives, economic analyses, and/or business case analyses, enable the CCWD to assess the value proposition of each requirement through its life cycle (concept, testing, production, operations and support, and disposal) to fulfill the CCWD's strategic goals and support resource-informed decision-making processes.
- Through programming, to set CCWD priorities for requirements and resources and to distribute projected staffing, dollars, and materiel among competing requirements according to CCWD resource allocation policy and priorities, making sure that the Board assigns resources to requirements at defensible, executable levels.
- Through budgeting, to convert resource allocation decisions into requests for funds and appropriations.
- Through execution, to manage and account for funds to carry out approved programs and, through reviews of program performance, to:
    - » Measure effectiveness to make sure that program objectives were accomplished on time and within the allocated resources.
    - » Measure efficiency to assess whether actual performance or outputs attained the levels expected from the resources invested.
    - » Identify courses of action to adjust resources or to restructure programs to achieve desired performance goals

Timescale

Each of the PPBE phases has its own focus in time.

- The planning phase provides strategic guidance to translate requirements into field operating system capabilities and covers 10 to 25 years, including the program years.
- The programming phase focuses on the program years, that is, 3 to 5 years into the future.
- The budgeting phase focuses on the budget year, that is, 1 year in the future and the first of the 5 program years.
- The execution phase focuses on the current year and prior years, depending on the life cycle of the appropriations.

Life Cycle of Budgeted Funds

Budgeted funds are available for new obligations for a set period, ranging from 1 to 5 years, as shown in the following table. Once funds are no longer available for new obligations, they are placed in an expired status for 5 years, during which time obligation adjustments and disbursements can still be made. At the end of the expired period, the appropriation is closed (canceled) and no longer available for any obligation adjustments or disbursements.

Table 4.01. Life cycle of budgeted funds

Program/Activity	Useful Life of Funds (Years)	Extension Period (Years)	Closed/Cancel Project (Years)
Construction	3	2	5
Research & Monitoring	2	1	3
Salaries	1	0	1
Professional Services	1	0	1
Operating Costs	1	0	1
Capital Acquisition	1	1	2

CCWD Resource-Informed Decisions

Education, discipline, and experience foster an understanding of the importance of making resource-informed decisions. Resource-informed decisions support making effective trade-offs to achieve the best possible use of limited resources and holding people accountable for understanding and being able to explain the costs of their organizations, products, services, and customers; these decisions result in improving the efficiency and effectiveness of operations.

Four elements critical to success are:

1. Effective leadership engagement (linked to CCWD's strategic goals).
2. A high-quality staff given the training, education, and development to foster the cost expertise to produce clear value propositions to adequately make resource-informed decisions.
3. Learning-oriented cost control processes (after action reviews).
4. Relevant cost intelligence (measurement).

The CCWD's PPBE process will:

- Use various analytical tools to estimate life-cycle costs and benefits of programs and different options in resource-informed decision making to fulfill the CCWD's strategic goals and priorities.
- Generate expected and actual costs to foster continuous improvement actions.
- Support the goal of auditable financial statements through a well-defined system architecture, system controls, and manual controls. These elements are key to effectively managing the risk involved within the PPBE business process and providing public confidence in the CCWD's financial information.
- Support audit readiness goals

Table 4.02. Annual PPBE Cycle

Phase: Planning												
Month	J	F	M	A	M	J	J	A	S	O	N	D
Assessment of prior year & operating environment												
Identification of needs & priorities												
Planning Guidance												
Annual plan & preparation												
Statement of resource & capital condition and needs												
Phase: Programming												
Month	J	F	M	A	M	J	J	A	S	O	N	D
Development of POPs												
POP risk assessment												
Review of Proposed program changes												
Phase: Budgeting												
Month	J	F	M	A	M	J	J	A	S	O	N	D
Budget Calendar												
Fiscal guidance												
Statement of salaries, benefits, professional services & operating costs												
Conduct Targeting Analysis												
Statement of proposed costs, proposed projects, and studies												
Capital Equipment Requests												
Develop detailed budget estimates												
Rough Draft Budget Review												
Draft Budget Review												
Budget Adoption												
Review unresolved issues												
Monitor and survey program issues												
Phase: Execution												
Month	J	F	M	A	M	J	J	A	S	O	N	D
Finalize annual plan & preparations.												
Refine Target and Project Packages												
Organize required actions												
Implement required actions												
Report progress and priority Tasks and Priorities (TaPs); reason for changes in priority	*	*	*	*	*	*	*	*	*	*	*	*
Coordinator review of TaPs			*			*			*			*
Report & Coordinator Review of quarterly & annual goals progress			*			*			*			*
Report & Review progress and synchronization with Comp Plan												

4.1.4 Funding

Funding the implementation of this Comprehensive Plan will require multiple sources. The CCWD will rely on the following sources of revenue, property taxes, special assessments, fees, intergovernmental revenue, grants, emergency projects, and financing.

General Property Tax

Property taxes are a tax based on the assessed value of an item, such as real estate or personal property. This revenue source is for the General, Special Revenue, Debt Service, and Capital Projects Funds. This revenue source is primarily used in the General Fund and Water Management Fund and is determined on the basis of the availability of other revenue sources and the expenditure level necessary to conduct CCWD business in accordance with Board policy and directives.

Special Assessment

A special assessment is a charge that public authorities can assess against real estate parcels for certain public projects. This charge is levied in a specific geographic area known as a special assessment district.

Fees

The CCWD implements its Rules through the Watershed Development program. To cover the costs associated with the review and inspection of activities permitted by the CCWD, permittees pay a non-refundable application fee, a review and inspection fee, and a performance escrow. The application fee covers the cost of processing permit applications. The review and inspection fee covers the actual cost of review and inspection work performed by CCWD staff and its consultants on permits. Performance escrows are collected to ensure the performance of permit requirements. Any unused review and inspection fees and performance escrows are returned upon permit closeout.

Intergovernmental Revenue

Intergovernmental revenue is a cost-share source of revenue used to fund projects that are implemented to make progress toward the TMDLs in the CCWD, that go above permitting requirements. Cost-sharing is conducted between the LGUs in the CCWD that are part of the categorical Coon Creek TMDL.

Grants

The CCWD intends to continue to aggressively pursue funding through available grant sources. The CCWD has already secured non-competitive grants through Watershed-Based Implementation Funding (WBIF) and federal Nine-Key Elements (NKE) plan programs. The estimated revenue from these sources during this Comprehensive plan is approximately $2.2 million. The CCWD has also successfully secured funding from competitive grants over the last few years averaging about $500,000 per year. The CCWD and its LGU partners will continue seeking grant revenue to fund capital improvement projects. Some potential grant programs the CCWD will pursue or continue pursuing include:

- Agriculture BMP Loan Program (Minnesota Department of Agriculture)
- Board of Water and Soil Resources (BWSR): Clean Water Fund, Performance Review and Assistance Program (PRAP), Watershed-Based Implementation Funding
- Building Resilient Infrastructure and Communities grants (FEMA)
- Clean Water Fund Competitive Grants (BWSR)
- Clean Water Partnership Grants and Loans (MPCA)
- Clean Water Revolving Fund Loans (MPCA)
- Community Planning grants for stormwater, wastewater, and community resilience (MPCA)
- Conservation Partners Legacy Grant Program (MN DNR)
- Conservation Reserve Program (USDA)
- Environment and Natural Resources Trust Fund Grants (Legislative-Citizen Commission on Minnesota Resources)
- Environmental Assistance Grants Program (MPCA)
- Environmental Quality Incentives Program (NRCS)
- Groundwater Protection Initiative Accelerated Implementation Grant (MDH)
- Habitat Enhancement Landscape Pilot (BWSR)
- Lawns to legumes Demonstration Grants (BWSR)
- Legislative-Citizen Commission on Minnesota Resources (LCCMR): Environment and Natural Resources Trust Fund (ENRTF)
- Minnesota Stormwater Research Council (UMN WRC)
- MN Department of Agriculture (MDA): Agricultural Growth, Research, and Innovation (AGRI) Sustainable Agriculture Demonstration Grant
- MN Department of Health (MDH): Contaminants of Emerging Concern (CEC) Initiative
- MN Department of Natural Resources (DNR): Conservation Partners Legacy (CPL) Program, Invasive Species Control Projects, Aquatic Habitat Restoration Grant Program, Outdoor Recreation, Flood Hazard Mitigation
- MN Pollution Control Agency (PCA): Section 319 Small Watersheds Focus, Section 319 Traditional Grant Program, Environmental Assistance Grants

- Point Source Implementation Grants (MPCA)
- Public Facilities Authority: Clean Water Revolving Fund
- Source Water Protection Grant Program (MDH)
- Stormwater Research and Technology Transfer Program Grants (UMN)
- Surface Water Assessment Grants (MPCA)
- TMDL Grant Program (Minnesota Public Facilities Authority)
- United States Department of Agriculture (USDA) Farm Service Agency (FSA): Conservation Reserve Enhancement Program (CREP)
- USDA Natural Resources Conservation Service (NRCS): Environmental Quality Incentives Program (EQIP)
- Water Infrastructure Fund Grants and Loans (MPCA)
- Water Quality and Storage Pilot Program Grants (BWSR)
- Water Quality grants (Met Council)
- Water Resources Research Act Program Grants (USGS)
- Wellhead Protection Partner Grants (BWSR)

Emergency Projects

Watershed district managers may declare an emergency and order work to be done without a contract. The cost of work can be paid for by either a special assessment or an ad valorem tax levy if the cost is not more than 25% of the most recent administrative ad valorem levy (Minnesota Statutes 103D.615).

Financing

The CCWD may finance its implementation plan through borrowing or bonding as well. If the CCWD requires funds outside of the levy cycle, it may obtain loans from the MPCA Clean Water Partnership loan program, Anoka County, a commercial lender, or another lender on negotiated terms. The CCWD may also use bonding if necessary. Minnesota Statute 103D.905, subdivision 9, provides watershed districts with the authority to exercise an ad valorem levy to pay the principal of, and premium or administrative surcharge, if any, and interest on bonds or notes issued by the watershed district. At this time, the CCWD does not have specific plans to utilize these funding sources in the 2022-2033 Plan. However, borrowing and bonding remains an option should the CCWD require it in order to finance an important project or program.

4.1.5 Personnel

To achieve the goals and objectives of this Comprehensive Plan, the District requires highly skilled and trained staff, a Board of Managers, and advisory committees that work collaboratively to manage the watershed and its resources.

Board of Managers

The Board of Managers involved in the preparation of this Comprehensive Plan were:

Jim Hafner, President

- Term Expires: 2026
- Phone: 612-508-3703
- Email: stormh2o@hotmail.com

Erin Lind, Vice President

- Term Expires: 2026
- Phone: 612-418-3570
- Email: elind@cooncreekwd.org

Mary Campbell, Treasurer

- Term Expires: 2025
- Phone: 763-742-5360
- Email: mcampbell@cooncreekwd.org

Dwight McCullough, CAC Liaison

- Term Expires: 2024
- Phone: 763-464-8363
- Email: dwight@bmcautos.com

Jason Lund, Secretary

- Term Expires: 2025
- Phone: 612-310-0467
- Email: jlund@cooncreekwd.org

Advisory Committees

The CCWD has two committees that meet regularly to advise the CCWD: a Citizen Advisory Committee (CAC) and a Technical Advisory Committee (TAC).

The purpose of the Citizen Advisory Committee (CAC) is to advise and assist the Managers on all matters affecting the interests of the Watershed District and make recommendations to the Managers on all contemplated projects and improvements within the CCWD. The Citizen Advisory Committee (CAC) is directed by M.S. 103D.331, Subd. 2, to have at least five members including, if possible, a Supervisor of the Anoka Conservation District, a member of the County Board, a member of a local conservation organization, a member of city council, and a member of a farm organization. A full description of the CAC policy can be found on the CCWD's website Coon Creek Watershed District (cooncreekwd.org).

The purpose of the Technical Advisory Committee (TAC) is to bring focus to important program outcomes, and training expertise through operational experience, and to share best practices. The TAC is composed of members of LGUs and regional agencies that have technical expertise in water and land resource management. A complete list of the members can be found on the CCWD's website Coon Creek Watershed District (cooncreekwd.org).

District Staff

CCWD staff will refine their skills and professional knowledge through an annual employee training and development program. This program will help staff improve upon existing skills and knowledge, fill knowledge gaps, gain confidence, and contribute to the growth of the CCWD as a whole. The CCWD will also focus on staff retention to retain highly skilled and knowledgeable staff and a high level of service. Staff retention strategies will be implemented based on the most effective and up-to-date practices.

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4.1.6 Materials and Services

To accomplish the goals and objectives in this Comprehensive Plan, materials and services are required. These will be managed primarily by the administrative program. Table 4.03 details the anticipated materials and services that will be required to accomplish the goals and objectives of this Comprehensive Plan.

Table 4.03.Administrative Materials and Services Expenditures 2024-2033

Administrative Expenditures	2024	2025	2026	2027		2028	2029	2030	2031	2032	2033	Total
Website	$15,000	$5,300	$5,618	$5,955		$6,312	$6,691	$7,093	$7,518	$7,969	$8,447	$75,904
Software (Abdo, MS4 Front, LaserFiche…)	$34,600	$20,352	$21,573	$22,868		$24,240	$25,694	$27,236	$28,870	$30,602	$32,438	$268,471
MN Stormwater research Council-Partner Funding	$10,000	$10,600	$11,236	$11,910		$12,625	$13,382	$14,185	$15,036	$15,938	$16,895	$131,808
Conference Room Furniture	$16,000										$0	$16,000
Vehicles				$78,607		$83,323		$93,622				$255,553
Facilities Repairs & Improvements	$10,000	$10,600	$11,236	$11,910		$12,625	$13,382	$14,185	$15,036	$15,938	$16,895	$131,808
Parking Lot Netting	$9,350											$9,350
H/C ADA Compliant Doors	$11,100											$11,100
Keyless Entry-Rekey	$20,900											$20,900
Hex Pave Additional Parking	$21,000											$21,000
Rear Paving & drain tank move	$35,000											$35,000
Mill/overlay/drainage main parking		$113,420										$113,420
Landscape Design & Phase 1, 2, 3, 4			$9,551			$6,817		$8,298		$10,081		$34,747
Window Well Covers			$10,112									$10,112
Roofs, Vents, and Solar						$126,248						$126,248
Septic System Replacement								$28,370				$28,370
Windows								$106,389	$112,772			$219,161
Garage Doors & Openers									$15,036			$15,036
Flooring, carpet replacement										$47,815		$47,815
Cisterns											$21,963	$21,963
Rain Garden Demos											$48,573	$48,573
Van Buren Repaving											$33,790	$33,790
Totals:	**$182,950**	**$160,272**	**$69,326**	**$131,250**		**$272,190**	**$59,150**	**$299,378**	**$194,269**	**$128,345**	**$179,000**	**$1,676,130**

4.2 Annual Reporting

The CCWD will annually prepare reports;

- within 120 days of the end of the calendar year submit to the board an activity report for the previous calendar year; and
- within 180 days of the end of the organization's fiscal year, submit to the board and the state auditor's office an audit report for the preceding fiscal year if the organization has expended or accrued funds during this time, except as provided in Minnesota Statutes, section 6.756. When a county or city audit report contains the financial statements for an organization, the organization must submit to the board excerpts from the audit report concerning the organization within 30 days of completion of the audit report. The audit report must be prepared by a certified public accountant or the state auditor in the format required by the Government Accounting Standards Board.

The annual reports will include the following information;

- a list of the organization's board members, names of designated officers, and the governmental organization that each board member represents for joint powers organizations and the county that each member is appointed by for watershed districts;
- identification of a contact person capable of answering questions about the organization including a postal and electronic mailing address and telephone number;
- an assessment of the previous year's annual work plan that indicates whether the stated activities were completed including the expenditures of each activity with respect to the approved budget unless included in the audit report;
- a work plan and budget for the current year specifying which activities will be undertaken;
- at a minimum of every two years, an evaluation of progress on goals and the implementation actions, including the capital improvement program, to determine if amendments to the implementation actions are necessary according to part 8410.0140, subpart 1, item C, using the procedures established in the goals and implementation sections of the plan under parts 8410.0080, subpart 1, and 8410.0105, subpart 1;
- a summary of significant trends of monitoring data required by part 8410.0105, subpart 5;
- a copy of the annual communication required by part 8410.0105, subpart 4;
- the organization's activities related to the biennial solicitations for interest proposals for legal, professional, or technical consultant services under Minnesota Statutes, section 103B.227, subdivision 5;
- an evaluation of the status of local water plan adoption and local implementation of activities required by the watershed management organization according to part 8410.0105, subpart 1, items B and C, during the previous year;
- the status of any locally adopted ordinances or rules required by the organization including their enforcement; and
- a summary of the permits and variances issued or denied and violations under rule or ordinance requirements of the organization or local water plan.

4.3 Plan Amendments

This Comprehensive Plan will extend through the calendar year 2033, and further until such time as the CCWD Board adopts a new Comprehensive Plan to supersede it. The CCWD may need to revise the Comprehensive Plan through amendments prior to the next Comprehensive Plan update if changes are appropriate, or if problems arise that are not addressed in the Comprehensive Plan. Plan amendments will be needed if significant changes are required involving goals, policies, administrative procedures, funding, or if problems arise that are not addressed in the Plan. Plan amendments may be proposed by any agency, person, city, township, or county to the CCWD Board, but only the CCWD Board may initiate the amendment process. All recommended plan amendments must be submitted to the Board in writing, along with a statement of the problem and need, the rationale for the amendment, and an estimated cost. All plan amendments and minor changes will follow the procedures set forth in this section, or as required by MS 103B.231 and Rule 8410.0140 Subp. 5.

According to Rule 8410.0140, the following minor changes will not require a plan amendment:

- Formatting or reorganization of the plan;
- Revision of a procedure meant to streamline administration of the plan;
- Clarification of existing plan goals or policies;
- Inclusion of additional data not requiring interpretation;
- Expansion of public process; or
- Adjustments to how an organization will carry out program activities within its discretion.

All changes not requiring an amendment will be distributed in accordance with Rule 8410.0140 Subp. 5. The revised Comprehensive Plan will show deleted text as stricken and new text as underlined. The CCWD will maintain a distribution list of agencies and individuals who have received copies of the plan and will distribute copies of the changes to all on the distribution list and post the changes on the CCWD website within 30 days of adoption.

All amendments to a plan must adhere to the review process provided in MS 103B.231, subdivision 11, except when the proposed amendments are determined to be minor amendments according to the following provisions:

- The CCWD has sent copies of the amendments to the plan review authorities (defined in Rule 8410.0020, Subp. 16) for review and comment, has identified that the minor amendment procedure is being followed, has directed that comments be sent to the District and the Board, and has allowed at least 30 days for receipt of comments;
- No county Board has filed an objection to the amendments with the CCWD and the Board within the comment period, or within such longer period as is mutually agreed on by the county and the CCWD;
- The Board of Water and Soil Resources has either agreed that the amendments are minor or failed to act within five working days of the end of the comment period, or within such longer period as is mutually agreed to with the CCWD;
- The CCWD 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
- The amendments are not necessary to make the plan consistent with an approved and adopted county groundwater plan.

The CCWD will prepare a plan amendment in a format consistent with Rule 8410.0140 (as revised). Draft and final amendments may be sent electronically. A receiving entity may request to receive an amendment in paper format. Draft amendments must show the deleted text as stricken and the new text as underlined. Unless the entire document is redone, all final amendments adopted by the organization must be in the form of replacement pages for the plan with each page renumbered as appropriate and each page including the effective date of the amendment.

The CCWD will maintain a distribution list for copies of the plan. Within 30 days of adopting an amendment, it will distribute copies of the amendment to the distribution list. Generally, the CCWD will provide electronic copies of the amendment or will post the amendment documents on the CCWD's website. Printed copies will be made available on written request. The above plan amendment procedures are intended to conform to Rule 8410.0140.

If the Board of Water and Soil Resources should amend those rules while this plan is in effect, the above procedures will be adjusted accordingly to conform to the rules

5. Collaboration and Controls

5.1 Interagency Coordination and Local Water Planning

Context Reminder: Central Water Management Problem

How do local water management authorities sufficiently fund, and staff the needed water management efforts in the next ten years and beyond while continuing to effectively deal with today's problems?

5.1.1 Background

There are 16 local, state and federal agencies active in water management within the watershed. Interorganizational coordination is the connective tissue that allows local water managers to develop a comprehensive approach to achieve unified action. Individual relationships are the cornerstone of sustained trust-oriented collaboration, yet people come and go, especially in the public service sector. Therefore, a legacy of cooperation at an institutional level (water managers to water managers) serves as a foundation for sustained engagement. Mirroring the benefits of ongoing relationships at an individual level, enhanced interagency engagement improves the understanding of "other" agencies, their organizational cultures, and their strengths and weaknesses.

Undertaking a Whole of Government (WoG) approach is an ambitious interagency coordination and collaboration effort and will occupy a significant portion of the organizational development and growth over the next 10 years. However, it is a very natural next step to the existing collaborative management occurring within the watershed. As the next 10 to 20 years unfolds, WoG will be seen as a necessary mechanism for addressing water management problems, issues and concerns, and delivering coherent and integrated policies and actions in an efficient and effective manner, including effective alignment with Federal and state policies. The eventual tool to accomplish this is collaborative teams.

Fusion teams are collaborative cross-functional teams made up of people with various knowledge, skills and abilities. They use data-driven processes to reach their goals. The team is also able to drive decisions that differ from agency recommendations. Fusion teams are usually temporary, meaning they only facilitate and implement a specific change.

5.1.2 Scheme of Interagency Coordination.

Goal

To promote and facilitate a comprehensive approach in the pursuit of the public good and the continued provision of beneficial uses from the watershed.

Intent

To maximize available resources, prevent wasted effort, and foster trust in local water management institutions will require all public and private water management organizations to:

1. Develop, and implement the Local Water Management strategies that are consistent with the Comprehensive Watershed Management Plan (Including Local Water Plans prepared under MR 8410, Storm Water Pollution Protection Plans required under the state NPDES Program, lake management plans prepared by Lake Associations and Homeowner Associations in collaboration with the Coon Creek Watershed District).
2. Prepares Local Water joint strategies plans, documents, and studies.
3. Initiate and maintain intergovernmental/interagency coordination through membership and participation in the Watershed District's Citizen Advisory Committee or Technical Advisory Committee.
4. Provide administrative and operations support to all local water management efforts that pursue the water management goals presented in the Comprehensive Watershed Management Plan.

End State

Successful interagency cooperation depends on the ability of the Local Water Managers, the Boards and Councils to promote and facilitate a comprehensive approach in the pursuit of water management objectives.

Success will be indicated by improved decision making, increased efficiency, better coordination between departments, and improved alignment with organizational goals. It can also help organizations to anticipate market trends and respond quickly to changing conditions.

5.1.3 Approach

Interagency coordination and collaboration refer to local water management government and non-government agencies working across boundaries to achieve shared goals and an integrated government response.

Below are actions the CCWD and collaborators will take to ensure better coordination between different organizations during future water management projects and activities:

Develop, and implement subwatershed plans or other focal area plans:

The subwatershed planning process provides for common understanding of specific program and project level actions for flood mitigation and addressing water quality impairments. Focal area plans could be large developments or redevelopments such as Northtown Mall, the Rural Reserve, or the National Sports Center. These plans serve as key references for and annex to both the Comprehensive Watershed Plan and Local Water Plans. The proposed schedule for subwatershed plan development is as follows:

Table 5.01. Subwatershed planning schedule

Subwatershed	Estimated Completion of Subwatershed Plan	Andover	ACHD	Blaine	CCWD	Columbus	Coon Rapids	Fridley	Ham Lake	SLP	State Highway
Oak Glen	*completed*	x	x		x			x			x
Pleasure	*completed*		x	x	x		x				x
Springbrook	*completed*		x	x	x		x	x		x	x
D37	2024	x	x		x						
D39	2024			x	x		x				x
D60	2024		x	x	x		x		x		x
D41	2024-2025		x	x	x		x				x
Stonybrook	2024-2025		x	x	x			x		x	x
D52	2025		x		x		x				
Lower CC	2026		x	x	x		x				x
D58	2027	x	x		x				x		x
D57	2028-2030	x	x	x	x		x		x		x
D11	2028		x		x				x		
D54	2029-2030	x	x		x		x				x
D20	2031	x			x						
D59	2031		x		x				x		x
D23	2032		x	x			x		x		
D44	2032		x	x	x	x			x		
D39 (Update)	2033			x	x		x				x
Oak Glen (update)	2033	x	x		x			x			x
Pleasure (update)	2033		x	x	x		x				x
Springbrook (update)	2033		x	x	x		x	x		x	x

Establish a clear chain of coordination and communication

This will help to ensure that everyone knows who is responsible for what and how to communicate with each other.

Table 5.02. Intergovernmental coordination and communication matrix

Agency	Responsibilities	Communications
Cities	• City owned infrastructure. » Streets » Storm Sewer » Sanitary Sewer • Flood plain management. • Land Use • Public Water Supply • Shoreland Ordinances • Source Water Protection • Well Head Protection	• City Council • City staff • Permit Applications • Web site
Lake Associations • Crooked Lake • Ham Lake • Sunrise Lake	• Care for the Area and/ or reason of their being: » AIS Control & Management » Lake Management	• Board members • Web sites • Newsletters
Municipal Separate Storm Sewer Systems (MS4s)	• To pursue non-degradation of suface and ground water quality • To restore beneficial uses to impaired waters	• Select Cities • Watershed District
Anoka County	• SSTS • Groundwater planning • Well testing • AIS prevention programming • Highways	• Staff
Watershed District	• Ground Water • Flood Prevention • Sensitive Lands management • Geologic Hazard Areas management • Resource Regulation • Public Ditches	• District Board • District staff • Permit Applications • Web site

Create a shared understanding of the mission and goals

This will help to ensure that everyone is working towards the same objectives.

- Primary focus of shaping activities through Citizen and Technical Advisory Committees and Public Information and Engagement activities

Develop standard operating procedures (SOPs)

This will help to ensure that everyone is following the same protocols and practices.

- Budgeting: All annual governmental budgeting begins in March and April
  - » Succeeding year joint-projects are identified by subwatershed by June of each year.
- Regulatory Review: Application and review time tables are coordinated through weekly city review committees, joint reviews and coordinated approval, when appropriate.
- Project Bidding: Projects requiring bids are administered under the uniform contracting law and coordinated through joint-task force.

Use technology to facilitate communication and collaboration

There are several tools and platforms that can be used to help government departments collaborate more effectively.

- This is being developed as an evolution of the CCWD's current MS4 Front permit coordination and review software.

Hold regular meetings and exercises

This will help to keep everyone up-to-date on the latest developments and to practice working together.

- Citizen Advisory and Technical Advisory Committee meetings are held once per month.
- Subwatershed Task Force Meetings held regularly during plan development and annually thereafter.
- The Wetland Technical Evaluation Panel meets twice per month.

Build trust and relationships between participants

This will help to create a more collaborative environment and to resolve any issues that may arise. To achieve this the CCWD will pursue the following factors of successful inter-agency collaboration:

- Commitment to the balance between restoring and protecting the capacity of the watershed to provide beneficial uses and protecting public health, safety, and welfare.
- Communication: This is implicit in collaborative operations involving planning, maintenance, regulation and monitoring. It is augmented by CCWD staff dedicated to information and engagement.
- Strong leadership provided by key decision-makers: Water Managers and their Boards and Councils must recognize the need and urgency, and consequences as the sources of

their strength.

- Seek First to Understand: Seek to continue to understand the perceptions, cultures and priorities of collaborating agencies.
- Engage in serious preplanning: Continuously monitor the operating environment of collaborators and seek a common understanding of the management situation before establishing priorities and projects.
- Provision of adequate resources for collaboration: Coordinated budgeting beginning in April through budget adoption will help ensure, but not guarantee adequate funding.
- Turf issues: All parties must understand that the subject is complex enough that there is almost always other stakeholders involved.

In addition to these general steps, the CCWD will also adopt the following to improve coordination between different agency programs in the context of water management operations:

1. **Maintain a clear understanding of the legal and policy framework** that governs these operations, and a plan for how to deal with any unexpected events or challenges.
2. **Appoint a single point of contact for each program and project.** This will help to ensure that there is a single person who can be responsible for communicating with the other departments.
3. **Use common terminology and framework.** This will help to avoid confusion and misunderstandings.
4. **Create a culture of transparency and accountability.** This will help to build trust and cooperation between the departments.
5. **Regularly evaluate the effectiveness of the coordination mechanisms.** This will help to identify any areas where improvement is needed.

5.1.4 Local Water Plans

Content Requirements for a Local Water Management Plan

When required under Minnesota Rule 8410.0160, municipalities that have land use planning and regulatory responsibilities shall amend an existing Local Water Management Plan (Local Plan) to conform to the requirements of the 2024-2033 Comprehensive Plan or prepare a new Local Plan which is in conformance with the 2024-2033 Comprehensive Plan. The Local Plan must include:

1. The legal requirements of Minnesota Rule (MR) 8410.0160 and Minnesota Statute (MS) 103B.235.
2. A list of the priority problems, issues and concerns that occur within the city's jurisdiction addressed within this Comprehensive Plan (see section 1.3).
3. The following objectives, tasks and effects are essential to successfully implementing this plan and achieving the 2033 objectives. In each Local Water Plan, cities must show how the following joint objectives will be pursued:

   a. Strengthen Resource Protection: Modernize and integrate to protect the public health, safety and welfare and those beneficial uses provided by the watershed.

   b. Enhance Collaboration: Develop joint capabilities that address problems, issues, and concerns that negatively affect progress towards state and federal goals, using organizational water management strengths.

   c. Manage With The End In Mind: Ensure a properly trained and resourced work force capable of knowing the resource problems and understanding the future resource requirements.

   d. Integrate Staff And Combined Efforts: Coordinate projects and actions with collaborators, cooperators, and interagency interests to address watershed, regional and statewide, all-domain, and multi-functional challenges and continuously advance state and federal water resource goals.

   e. Leverage Opportunities In Program Management: Proactively identify and leverage opportunities to assist public and private interests, capitalize on opportunities, and expand partnerships.

   f. Reinforce Intergovernmental Relations: Support efforts to preserve a rules-based water management approach and provide credible management options that enable leaders to interact from a position of strength.

   g. Strengthen Relationships With Collaborators And Cooperators: Seek opportunities to collaborate and improve interoperability with collaborators and cooperators to address enduring and emerging challenges. Foster strong relationships now.

   h. Prioritize Concepts and Resources: Refocus our current water management ideas, systems, and practices to improve effectiveness.

   i. Cultivate A Resilient Combined Effort: Harness robust and effective field management capabilities that can resist financial and staff degradation and quickly reconstitute for future management.

   j. Integrate Capabilities Rapidly: Timely integrate advanced capabilities to amplify existing water management advantages.

4. The expanded list of requirements of the "Thrive MSP 2040 Water Resources Policy Plan" by the Metropolitan Council.
5. The following CCWD requirements for Local Plan content are intended to supplement Minnesota statutes and rules.
    a. Does the plan follow the intent of MS 103B and the Coon Creek Watershed Comprehensive Watershed Management Plan? The general standards for the Local Plan meet the requirements of MR 8410.0160 Subp. 3 and MS 103B.235 Subd. 2
    b. Does the Plan develop courses of action that are consistent with the guidance provided by the Coon Creek Comprehensive Watershed Management Plan and state and Federal statute?
    c. Are the actions provided in the plan feasible? Do they accomplish or support the mission, goals and objectives set for the Coon Creek Watershed?
    d. Are the actions proposed acceptable to the watershed District and the effected stakeholders? Are those actions worth the cost?
    e. Are the actions proposed suitable? Do the actions proposed accomplish the task and purpose for which they are designed?
    f. Are the actions proposed within the local water plan distinguishable from each other?
    g. Is the plan complete? Does the plan address all of the tasks identified in the Coon Creek Watershed Comprehensive Plan?
    h. Do the projects and actions proposed within the local water plan adhere to the principles of sound water management (ie social equity, economic efficiency and environmental sustainability)?
    i. Address water problems within the context of surface and groundwater systems present within the city.
    j. Is the plan supportable? Does the plan account for compatibility, transportability; reliability; maintainability; manpower; human factors; safety; natural environmental effects.

Comprehensive Plan Adoption Requirements

All sections of the 2024-2033 CCWD Comprehensive Plan may be adopted by reference to satisfy all of the requirements of MR 8410.0160 and MS 103B.235 for a city's Local Plan.

Cities are required to adopt all subwatershed plans that are currently completed and the proposed schedule for the remaining subwatershed plans (Table 2.11). Subwatershed plans for Oak Glen Creek, Springbrook Creek, and Pleasure Creek have been completed to date.

Table 5.03 lists the status and schedule of member community Local Plans at the time of plan writing.

Table 5.03. Local Water Plan schedule within the District

Municipality	Plan Status	Year Approved
City of Andover	Approved by CCWD Board	2018
City of Blaine	Approved by CCWD Board	2018
City of Columbus	Approved by CCWD Board	2019
City of Coon Rapids	Approved by CCWD Board	2018
City of Fridley	Approved by CCWD Board	2019
City of Ham Lake	Approved by CCWD Board	2021
City of Spring Lake Park	Approved by CCWD Board	2019

Administrative Requirements

1. Local Plans addressing the above requirements must be adopted by the City not more than two years before the local comprehensive plan is due (MR 8410.0160 subp. 6).
2. The Local Plan must be submitted to CCWD for approval, with consideration of deadlines for Comprehensive Plan approval as identified in Minnesota statute and rule.
3. Member communities are encouraged to engage in early dialogue and coordination with the CCWD during the development of their Local Plan, and to submit a draft plan to the CCWD at least six months prior to the date formal adoption is required.
4. The CCWD recognizes that MS 103B and MR 8410 were written with the intent that each community would prepare and adopt a Local Plan.

5.2 Collaborative Management Efforts

The following agencies and groups directly or indirectly impact or influence water resource management within the Coon Creek Watershed.

Table 5.04. Summary of agencies and groups impacting water resource management

Agency/ Group	Mission/Goal	Activities
Federal		
Environmental Protection Agency	Clean Water Act: To restore and maintain the chemical, physical and biological integrity of the Nation's waters.	• Evaluate and approves action under Section 303(d) of the Clean Water Act (CWA) including Impairments and Toal Maximum Daily Loads (TMDLs) • Provides funding for nonpoint source pollution mitigation via the 319 programs. • Issuance of State Non-Point Discharge Elimination System (NPDES) Permit • Evaluates TMDL reduction plans. • Issuance of Section 401 of CWA addressing violations of state water quality standards set under the Clean Water Act in Waters of the United States. • Monitors COE administration of Section 404 of CWA.
U.S. Army Corps of Engineers	To regulate the discharge of dredged or fill material into waters of the United States, including wetlands.	Implementation of Section 404 of the CWA Evaluates: • The accuracy of wetland delineations • Potential adverse impact from proposals • Adequacy of sequencing for proposed impacts • Probable success of wetland mitigation
U.S. Geologic Survey	To collect analyze and provide reliable scientific information to describe and understand the Earth; minimize loss of life and property from natural disasters; manage water, biological, energy, and mineral resources; and enhance and protect our quality of life.	• Develop rating curves. • Monitors select streams
State		
Board of Water & Soil Resources	To improve and protect Minnesota's water and soil resources by working in partnership with local organizations and private landowners.	• Buffer Law » Buffer establishment guidelines » Buffer Enforcement • Grant programs including » Clean Water Fund » Local Capacity Grants • Metropolitan Water Management Act » M.R. 8410 » Plan review » Plan approval • Wetland Conservation Act » M.R. 8420 » Technical Evaluation Panel » Delineation review » Sequencing evaluation » Training
Department of Natural Resources	To work with Minnesotans to conserve and manage the state's natural resources, to provide outdoor recreation opportunities, and to provide for commercial uses of natural resources in a way that creates a sustainable quality of life.	• Aquatic Invasive Species Program • Aquatic Plant Management Program • Floodplain program • Works in the bed of public waters permits. • Ground water appropriation permits. • Endangered and Threatened species Takings permits. • State Critical Areas program and rules
Pollution Control Agency	• To protect and improve the environment and human health. • To protect, conserve and improve our environment and enhance our quality of life.	• Section 303d Water Quality Impairment designation • Section 319 program • Section 401 of the Clean Water Act • State water quality standards • National Non-Point Pollution Discharge Elimination System (NPDES) requirements • Training

Agency/ Group	Mission/Goal	Activities
Regional		
Metropolitan Council	To foster efficient economic growth for a prosperous metropolitan region.	• Management of Metropolitan Systems • Review of Watershed Plans • Review and approval of City Comprehensive Plans including stormwater
Watershed Management Organizations		
Lower Rum River Watershed Management Organization	To provide for conservation of water and natural resources; alleviation of flood damage through proper design and maintenance of storm sewer and drainage systems; and protection and management of creeks, lakes, water courses for recreational and public use.	• Water quality and flow monitoring • Investigative studies of problems • Coordinating improvement projects • Education campaigns • A permitting process • Others at the WMO's discretion
Rice Creek Watershed District	To conserve and restore water resources of the District for the beneficial use of current and future generations.	• Communication & Outreach • Information management • Restoration projects • Regulatory actions • Ditch and creek maintenance • Lake and stream management • Project anticipation

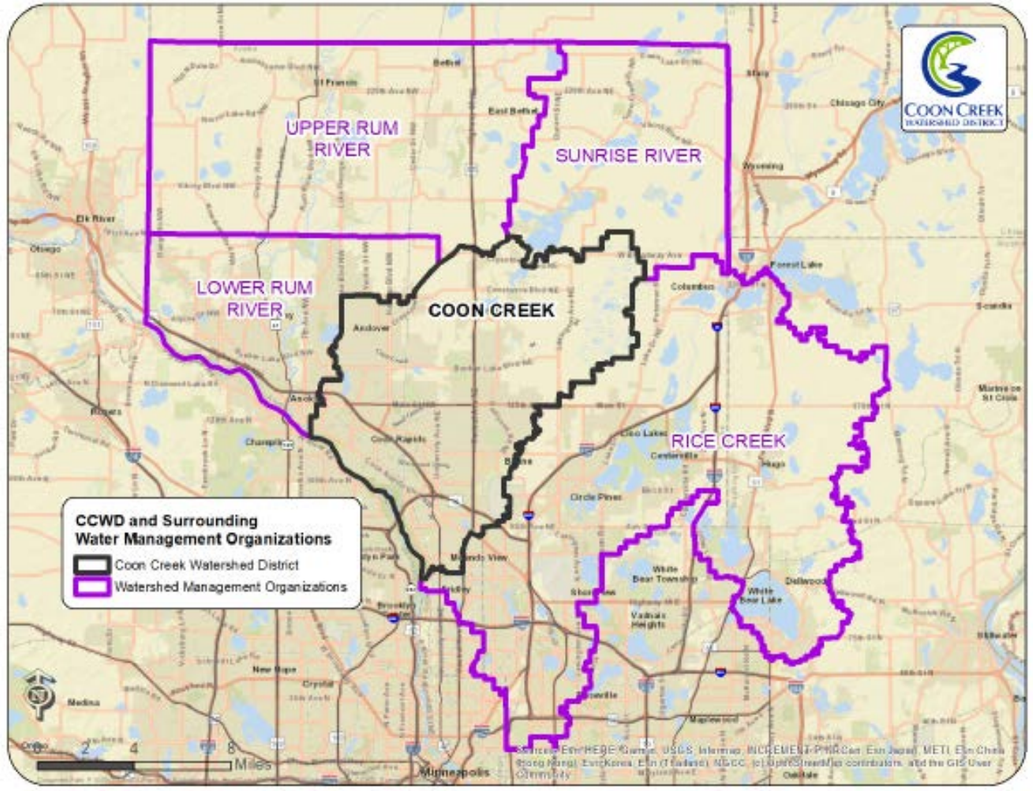

Figure 5.01. Adjacent WMOs to the CCWD

Table 5.05. Summary of completed subwatershed plans in the CCWD

Subwatershed Plan	Agency Membership	Mission/Goal	Activities
Oak Glen Creek	• City of Fridley • Coon creek WD	The city of Fridley and CCWD will assess the Oak Glen creek subwatershed to assess flooding and water quality problems.	• Problem review and shaping • Infrastructure condition • H&H modeling
Pleasure Creek	• City of Blaine • City of Coon Rapids • Coon Creek WD	To assess the flooding and water quality impairments of the subwatershed and develop programs and standards for flood prevention and the restoration of water quality.	• Problem review and shaping • Infrastructure condition • Monitoring & Inspection • H&H modeling • Capital Improvement planning • Annual coordinated budgeting
Springbrook Creek	• City of Blaine • City of Coon Rapids • City of Fridley • City of Spring Lake Park • Coon Creek WD		
Knoll Creek (Ditch 39)	• City of Blaine • City of Coon Rapids • Coon Creek WD		
Ditch 37	• City of Andover • Coon Creek WD		
Ditch 60	• City of Blaine • City of Coon Rapids • Coon Creek WD		

5.2.1 Attachments and Detachments

Table 5.06. Summary of advisory groups

Agency	Membership	Mission/Goal	Activities
Citizen Advisory Committee	• Citizens • Anoka Conservation District Supervisor • Anoka County • Lake Association Representative	To advise and assist the managers on all matters affecting the interests of the watershed district and make recommendations to the managers on all contemplated projects and improvements in the watershed district.	• Share their opinions and perspectives. • study issues. • Develop recommendations in a focused, small group structure.
Technical Advisory Committee	• Anoka Conservation District • Anoka County Highway Department • City of Andover • City of Blaine • City of Columbus • City of Coon Rapids • City of Fridley • City of Ham Lake • City of Spring Lake Park • Coon Creek WD	To bring focus to important program outcomes. Bring training expertise to the table through operational experience, and to share best practices. Secure resources for your program – equipment, manpower, expertise.	• Situational understanding • Problem shaping • Ongoing joint capability assessment • Project and program operation coordination. • Joint capital improvement planning • Review and evaluation
Technical Evaluation Panel	• Anoka Conservation District • Board of Water and Soil Resources • City planning or Engineering • Department of Natural Resources • US Army Corps of Engineers	To provide a forum to discuss site-specific interpretations of laws, rules, and technical data. They also provide an opportunity for gaining consensus on several primarily technical issues in order to make a recommendation to the decision-maker. WCA and/ or reduce the likelihood of appeal.	Make technical findings and recommendations regarding. • Wetland applications, • The scope of MR 8420 • The applicability of exemption and no-loss standards, • Wetland functions and the resulting public value, • Direct and indirect impacts • Possible violations of MR 8420 • Enforcement » Preparation of replacement/ restoration plans • Review of replacement applications for » public road projects » banking projects

Appendix

A. Oak Glen Creek Subwatershed Plan

B. Pleasure Creek Subwatershed Plan

C. Springbrook Creek Subwatershed Plan

D. CCWD Rules

E. Notice of Intent Public Comments & Responses

F. Public Engagement Plan

G. Plain Language Audit Summary

All appendicies are available on the District website and are linked above. If you have any trouble accessing the documents, or would like printed copies, please contact the District at info@cooncreekwd.org or call (763) 755-0975.