Fourth Generation Watershed Management Plan 2025-2034

D R A F T 2
April 2025

elm creek
Watershed Management Commission

Table of Contents

Tables

Figures

List of Appendices

Abbreviations

BMP	Best Management Practice
BWSR	Board of Water and Soil Resources
cfs	cubic feet per second
cfu	colony-forming unit
Chl-a	Chlorophyll-a
Commission	Elm Creek Watershed Management Commission
DNR	Department of Natural Resources
DO	Dissolved oxygen
EC WMC	Elm Creek Watershed Management Commission
EPA	Environmental Protection Agency
F-IBI	Index of Biotic Integrity for Fish
ft^3	Cubic feet
HCEE	Hennepin County Environment and Energy
IBI	Index of Biotic Integrity
JPA	Joint Powers Agreement
LGU	Local Government Unit
MDH	Minnesota Department of Health
MDNR	Minnesota Department of Natural Resources
M-IBI	Index of Biotic Integrity for Macroinvertebrates
MPCA	Minnesota Pollution Control Agency
MS4	Municipal Separate Storm Sewer Systems
NPDES	National Pollutant Discharge Elimination System
NWI	National Wetland Inventory
NWS	National Weather Service
SWPPP	Storm Water Pollution Prevention Program
TKN	Total Kjeldahl Nitrogen
TMDL	Total Maximum Daily Load
TN	Total Nitrogen
TP	Total Phosphorus
TSS	Total Suspended Solids
µg/L	microgram per liter
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
WCA	Wetland Conservation Act
WHEP	Wetland Health Evaluation Program
WLA	Wasteload Allocation
WMWA	West Metro Water Alliance
WMC	Watershed Management Commission
WMO	Watershed Management Organization

Executive Summary

This watershed management plan describes how the Elm Creek Watershed Management Commission (EC WMC) will manage activities in the watershed in the ten year period 2025-2034.

The Elm Creek Watershed Management Commission is a Watershed Management Organization (WMO) formed in 1973 using a Joint Powers Agreement (JPA) developed under authority conferred to the member communities by Minnesota Statutes Sections 471.59 and 103B.201 through 103B.251. The watershed is located in the northwest portion of the Minneapolis-St. Paul seven county Metropolitan Area and is comprised of all or part of the following cities in Hennepin County:

Cities	Area (sq mi)
Champlin	3.68
Corcoran	36.07
Dayton	25.08
Maple Grove	26.06
Medina	9.37
Plymouth	4.51
Rogers	26.20
Total	**130.97**

The WMO is governed by a Board of Commissioners that is comprised of one member appointed from each community by their respective City Councils. The Commission's purpose is set forth in the JPA and Minnesota Statutes 103B.210, Metropolitan Surface Water Planning, which codified the Metropolitan Surface Water Management Act of 1982:

(1) protecting, preserving, and using natural surface and groundwater storage and retention systems.
(2) minimizing public capital expenditures needed to correct flooding and water quality problems.
(3) identifying and planning for means to effectively protect and improve surface and groundwater quality.
(4) establishing more uniform local policies and official controls for surface and groundwater management.
(5) preventing erosion of soil into surface water systems.
(6) promoting groundwater recharge.
(7) protecting and enhancing fish and wildlife habitat and water recreational facilities.
(8) securing the other benefits associated with the proper management of surface and ground water.

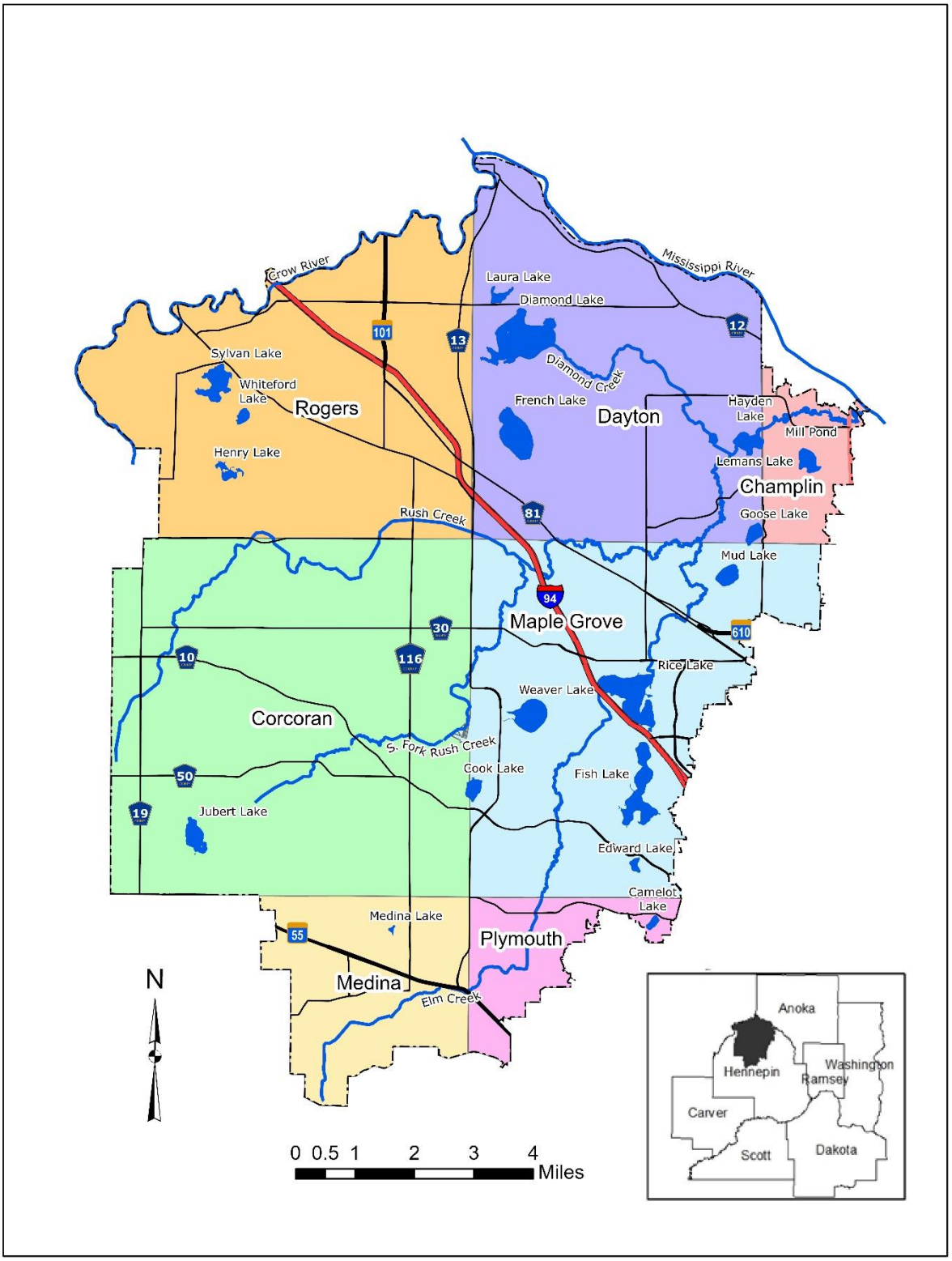

Figure E. 1. Cities in the Elm Creek watershed.
Source: Elm Creek Watershed Commission.

Fourth Generation Watershed Management Plan

The Elm Creek Watershed Management Commission initiated work on the Fourth Generation Plan in June 2024. The Plan includes information required in Minnesota Administrative Rules Chapter 8410, Local Water Management: an updated land and water resources inventory, goals and policies; an assessment of problems and identification of corrective actions; an implementation program; and a process for amending the Plan. This Plan also incorporates information and actions identified in the Elm Creek Watershed Total Maximum Daily Load study (TMDL) and Watershed Restoration and Protection Strategy study (WRAPS) completed between 2009 and 2015.

The Commission and Technical Advisory Committee identified priority problems and issues during the planning process:

1. Numerous impairments on the primary streams and several lakes with completed TMDLs.
2. New impairments have been identified, including chloride on Elm Creek and South Fork Rush Creek.
3. Land is transitioning from lightly developed and agriculture to more densely developed land uses at higher imperviousness.
4. Need to expand activities for education and outreach to increase knowledge about water resources issues and create behavioral change.
5. Need for a climate vulnerability assessment

Management Plan Priorities and Goals

Through the identification of issues in the watershed, the ECWMC developed priorities and goals to guide water resources planning and management functions.

Priorities:

1. Protect, maintain, and improve the water quality and ecological integrity of the water and natural resources within the watersheds and the downstream receiving waters.
2. Reduce stormwater runoff rates and volumes to limit flood risk, protect conveyance systems, protect surficial groundwater, and reduce or mitigate impacts that have already occurred.
3. Educate and engage all stakeholders in the watersheds on surface water issues and opportunities.
4. Anticipate and proactively work to withstand adverse impacts from changing land use/cover and environmental and climate conditions.

Priority 1: Protect, maintain, and improve the water quality and ecological integrity of the water and natural resources within the watersheds and the downstream receiving waters.

Goals:

1. Make measurable progress in achieving state water quality and ecological standards in the Impaired Waters and protect those that are not Impaired.
2. Achieve state water quality standards in these lakes[TBD]… and document progress toward removal from the Impaired Waters List.
3. Achieve stable or improving water quality trends where there is no designated Impairment.

Strategies:

1. Administer rules and standards requiring new development and redevelopment to maintain or reduce the loading of pollutants from their sites.
2. Foster implementation of priority TMDL and other implementation projects by sharing in their cost and proactively seeking grant funds
3. Monitor lakes and streams to document measurable improvement in lake water clarity and in-stream nutrient and sediment concentrations in the Impaired Waters
4. Periodically review progress and revise the Implementation Plan as needed

Priority 2: Reduce stormwater runoff rates and volumes to limit flood risk, protect conveyance systems to limit erosion, protect surficial groundwater, and reduce or mitigate impacts that have already occurred.

Goals:

1. Maintain the current flood profile of Elm Creek and tributaries.
2. Limit new volumes and rates of runoff to reduce potential for flooding, erosive velocities and streambank erosion.
3. Foster groundwater recharge.

Strategies:

1. Maintain rules and standards requiring new development and redevelopment to maintain or reduce the rates and volumes of runoff from their sites.
2. Require the post-development 2-year, 10-year, and 100-year peak rate of runoff to match or be less than at pre-development level for the critical duration precipitation event.
3. Require abstraction of runoff where technically feasible to limit new annual runoff volumes.
4. Require compensatory floodplain storage below the established 100-year elevation.
5. Identify opportunities for additional storage and abstraction in the watershed.

Priority 3: Educate and engage all stakeholders in the watersheds on surface water issues and opportunities.

Goals:

1. Increase awareness of water resources in the watershed and create and support advocates willing to protect and preserve those resources.
2. Provide opportunities for youth, family and adult education and participation.

Strategies:

1. Operate a public education and outreach program that helps member cities meet their NPDES Phase II MS4 education requirements, with special emphasis on topics such as chloride, bacteria/pet waste, and nutrient management.
2. Provide supplemental education and outreach engagement on TMDL and other topics of interest to various stakeholders, including ongoing outreach to lake associations and homeowners' associations.
3. Continue to work cooperatively with other WMOs and agencies in the West Metro Water Alliance (WMWA) to provide joint education and outreach.
4. Work towards a WMWA full-time dedicated shared staff member.

Priority 4: Anticipate and proactively work to withstand adverse impacts from changing land use/cover and environmental and climate conditions.

Goals:

1. Assist member cities in understanding and implementing options for enhancing watershed resiliency.

Strategies:

1. Model and periodically re-assess the potential impacts of land use/cover change and a non-static climate on water resources with the best available predictive data.
2. Quantify and qualitatively assess risk and evaluate and implement responses for mitigation.
3. Collaborate with other agencies and organizations on joint efforts to manage impacts both locally and regionally.
4. Develop and implement strategies to appropriately manage future impacts.

Implementation

This Fourth Generation Watershed Management Plan continues activities that have been successful in the past.

Rules and Standards	In developing this Plan the Commission reviewed its Rules and Standards and made minor housekeeping changes.
Monitoring Program	The monitoring program continues with annual flow and water quality monitoring on Elm Creek, Rush Creek, and Diamond Creeks with other sites on a rotating or as-needed basis. Four lakes – Weaver, Fish, Rice, and Diamond Lakes – have been classified as "Sentinel Lakes," and will be monitored every year. Other lakes will be monitored on a rotating basis. The Plan continues the partnership with the USGS for routine flow and water quality monitoring on Elm Creek in Elm Creek Park Reserve.
Education and Outreach	This Plan includes education and outreach goals and activities and continues collaborative partnerships such as the West Metro Water Alliance (WMWA) and Hennepin County.
Implementation	The Implementation Plan includes capital projects; funding to assist cities and private entities to undertake cost-share BMPs; subwatershed assessments, hydrologic and hydraulic modeling, feasibility studies, and periodic targeted special monitoring to assess progress toward the TMDLs.

Local and Watershed Plan Amendments

Cities are expected to update their Local Stormwater Management Plan (LWMP) as part of their next Comprehensive Plan updates. These Local Plans must be consistent with this Watershed Plan and will be expected to include:

- Updated land use, hydrologic, and hydraulic data, and existing or potential water resource related problems that may have changed since the last LWMP.
- An explanation of how the member city will help to implement the goals, strategies, and actions set forth in the Commission's Plan, including a focus on the Fourth Generation priorities.
- A detailed explanation of how the member city will take action to achieve the load reductions and other actions identified in and agreed to in TMDL Implementation Plans.
- An updated Implementation Plan identifying specific structural, nonstructural, and programmatic solutions to the problems and issues identified in the LWMP; their costs; and funding.
- An implementation program including a description of adoption or amendment of official controls and local policies necessary to implement the Rules and Standards; programs; policies; a capital improvement plan; and estimates of cost and funding mechanisms.

This Plan provides direction for EC WMC activities through the year 2034. The Commissioners intend the Plan to be a flexible framework and, as such, may initiate amendments to this plan at any time. The Commission will annually review the Capital Improvement Program and may adopt major or minor plan amendments adding or revising proposed capital improvement projects

1.0 INTRODUCTION

1.1 INTRODUCTION AND PURPOSE

The Elm Creek Watershed Management Commission (ECWMC) was formed on February 1, 1973, under a Joint Powers Agreement (JPA) developed under authority conferred to the member communities by Minnesota Statutes 471.59. The parties to that JPA were Champlin, Corcoran, Dayton, Maple Grove, Medina, Plymouth, and the Hennepin Conservation District. In 1980 Hassen Township joined, followed by Rogers in 1983. Greenfield was also a party to the JPA but left in 2001. Hassen was fully annexed by Rogers in 2012. The Joint Powers Agreement governing the WMO is included in Appendix A.

The watershed is in the northwest part of the Minneapolis-St. Paul seven county metropolitan area (Figure 1.1) in the Crow River and Twin Cities Mississippi River basins of the Upper Mississippi River watershed. The Commission's purpose is set forth in Minnesota Statutes 103B.210, Metropolitan Surface Water Planning, which codified the Metropolitan Surface Water Management Act of 1982:

- 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 ground water.

1.2 FIRST, SECOND, AND THIRD GENERATION PLANS

The Commission adopted its initial Management Plan in 1983; a Second Generation Plan in 2004; and its Third Generation Plan in 2015. The Third Generation Plan was amended several times between 2015 and 2024 (Table 1.1**Error! Reference source not found.**). In 2022 the Commission amended the Rules and Standards to adopt revised requirements for low floor elevations adjacent to natural and artificial waters, and to conform the Rules to the most recent version of the State of Minnesota General Stormwater Permit.

Table 1.1. Elm Creek Third Generation Plan record of plan revisions.

Number	Adoption	Summary of Revisions
	9/23/15	Plan approved by BWSR
	8/14/15	Plan adopted
1	05/11/16	Add 5 projects: revise costs
2	05/10/17	Add 2 projects
3	05/09/18	Add 8 projects
4	05/08/19	Add 3 projects
5	06/10/20	Add 3 projects
6	06/09/21	Clarify low floor standards; conform to new stormwater permit
7	5/11/22	Add 1 project

Number	Adoption	Summary of Revisions
8	6/12/24	Add 2 projects; revise one project

The Metropolitan Surface Water Management Act (Chapter 509, Laws of 1982, Minnesota Statute Section 473.875 to 473.883 as amended) establishes requirements for preparing watershed management plans within the Twin Cities Metropolitan Area. The law requires the plan to focus on preserving and using natural water storage and retention systems to:

- Improve water quality.
- Prevent flooding and erosion from surface flows.
- Promote groundwater recharge.
- Protect and enhance fish and wildlife habitat and water recreation facilities.
- Reduce, to the greatest practical extent, the public capital expenditures necessary to control excessive volumes and rate of runoff and to improve water quality.
- Secure other benefits associated with proper management of surface water.

To ensure these objectives are realized the Metropolitan Surface Water Management Act further specified the basic content of the watershed management plan. The plan must:

- Describe the existing physical environment and land use in the area, as well as the proposed environment, land use, and development outlined in existing local and metropolitan comprehensive plans.
- Present information on the hydrologic system and its components and potential problems related thereto.
- State objectives and policies including management principles, alternatives and modifications, water quality, and protection of natural characteristics.
- Set forth a management plan including the desired hydrologic and water quality conditions and significant opportunities for improvement.
- Describe the effect of the plan on existing drainage systems.
- Identify high priority areas for wetland preservation, enhancement, restoration, and establishment and describe conflicts with wetlands and land use in those areas.
- Describe conflicts between the watershed plan and existing plans of Local Governmental Units (LGUs).
- Set forth an implementation program consistent with the management plan that includes a capital improvement program, standards, and schedules for amending the comprehensive plan and official controls of LGUs in the watershed to bring conformance with the plan.
- Set out procedures and timelines for amending the plan.

1.3 PLAN ORGANIZATION

This plan is divided into four sections:

1 **Introduction and Purpose:** Describes the authority and composition of the WMO, the purpose of the Surface Water Management Act and the components of this watershed management plan.

2 **Inventory and Condition Assessment:** A physical inventory for the watershed, it includes a summary profile of the watershed's existing environmental conditions. The full profile can be found in Appendix B and contains descriptions of the area's geology, topography, soils, biological and human environment, and current land use and projected land use to the year 2040. This section also contains information on the lakes, streams, and wetlands in the watersheds. Inventory and condition data presented on a subwatershed basis can be referenced in the Third Generation Plan.

3 **Watershed Organization and Operations:** This section provides information about the Commission, how it is organized, its history and responsibilities, and discusses ongoing operations. This section also provides an evaluation of the successes of the Third Generation Plan and the areas where the Commission may have fallen short of its goals for the period 2015-2024. A full Self-Assessment is found in Appendix F.

4 **Implementation Plan:** This section sets forth the goals the Commission will work to achieve in the ten-year period covered by this Plan, and descriptions of the Commission's proposed operating programs, the Capital Implementation Program, and a discussion of implementation costs and financing. It also discusses the methods by which the Commission will evaluate progress towards achieving the goals set forth in the Plan, the process that will be followed should this Plan need to be Amended, and the requirements for Local Surface Water Management Plans prepared by the member cities in the watershed.

2.0 INVENTORY & CONDITION ASSESSMENT SUMMARY

The Elm Creek watershed is in the northwest portion of the Minneapolis-St. Paul seven county Metropolitan Area (Figure 1.1) and is comprised of all or part of the following cities in Hennepin County (Table 2.1):

Table 2.1. Cities in the Elm Creek watershed.

Cities	Area (sq mi)
Champlin	3.68
Corcoran	36.07
Dayton	25.08
Maple Grove	26.06
Medina	9.37
Plymouth	4.51
Rogers	26.20
Total	**130.97**

The watershed is drained by four primary streams: Elm Creek, Diamond Creek, Rush Creek, and the South Fork Rush Creek, all of which are tributary to the Mississippi River. Parts of the watershed drain to the Crow River, which forms the northwest boundary of the watershed, and some areas drain directly to the Mississippi River. There are 22 lakes in the Elm Creek watershed; two - French and Medina - are considered by the MPCA to be wetlands. Diamond, Fish, French, Rice, and Weaver Lakes are the largest, and most of the water-based recreation is on those lakes.

Prior to European settlement, much of the watershed was Big Woods. While the eastern third of the watershed is developed, the largest land uses are agriculture and "undeveloped," which also includes lands unsuitable for development such as wetlands. Except along the Crow and Mississippi corridors, soils tend to be loamy or clayey with poor infiltration capacity.

Appendix B Inventory and Condition Assessment contains a more detailed description of the watershed physical, environmental, and human environments and current conditions on individual lakes and streams in the watersheds. The sections below provide a broad overview of the primary water resources in the watershed.

2.1.1 Lakes

There are 22 lakes in the Elm Creek watershed; two - French and Medina - are considered by the MPCA to be wetlands. The lakes in the watershed are shown on Figure 2.2. Minnesota's standards for lake water quality vary depending on the depth classification of the lake. Shallow lakes are less than 15 feet deep, or 80% or more of the lake area supports rooted aquatic plants. The DNR lake number and shoreland classification, lake morphometry, and water quality data are shown in Table 2.2. Lake water quality trends are shown in Appendix B. More information can be found at the DNR's LakeFinder website: www.dnr.state.mn.us/lakefind/index.html.

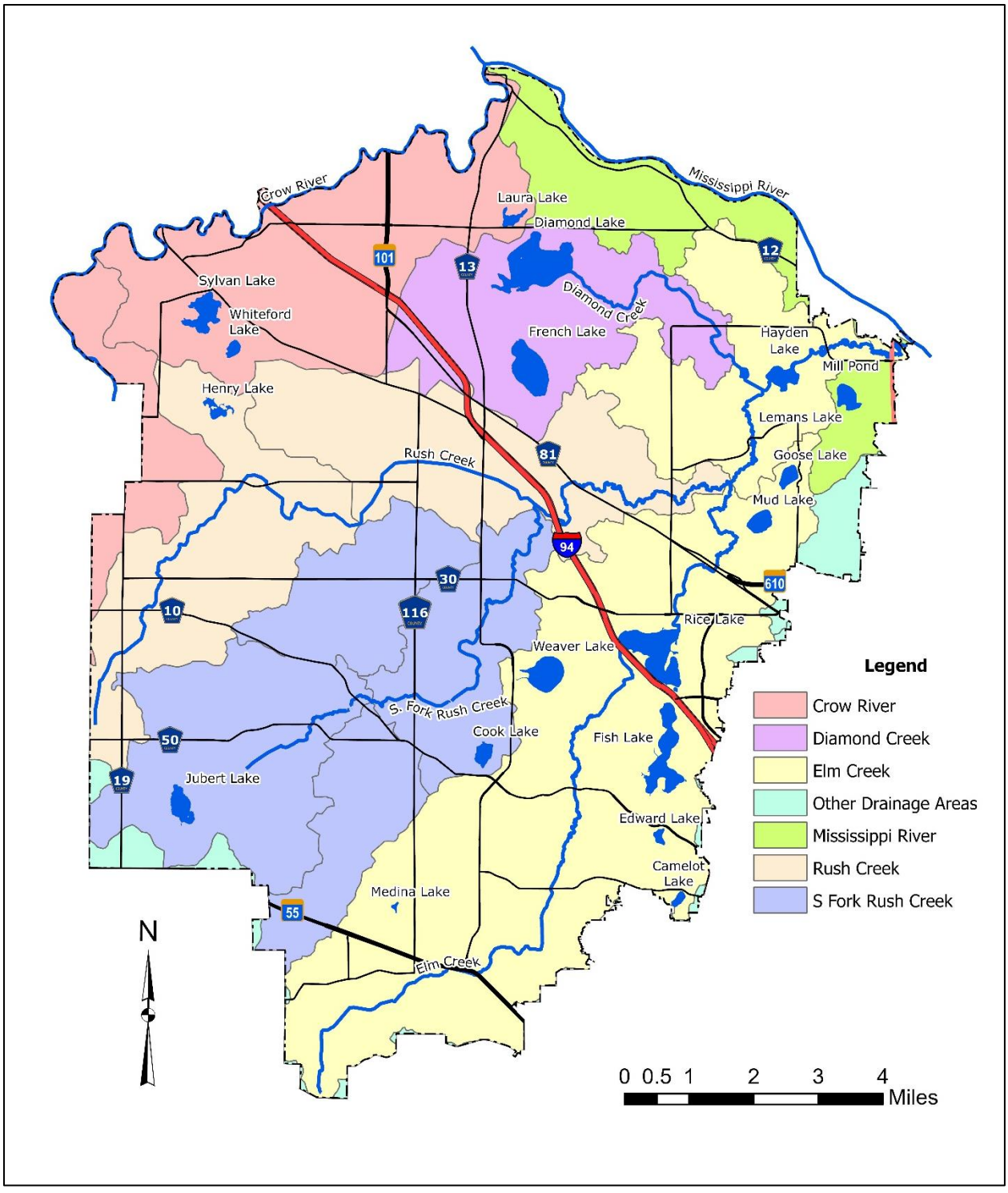

Figure 2.1. Drainage areas in the Elm Creek watershed.
Source: Elm Creek Watershed Commission.

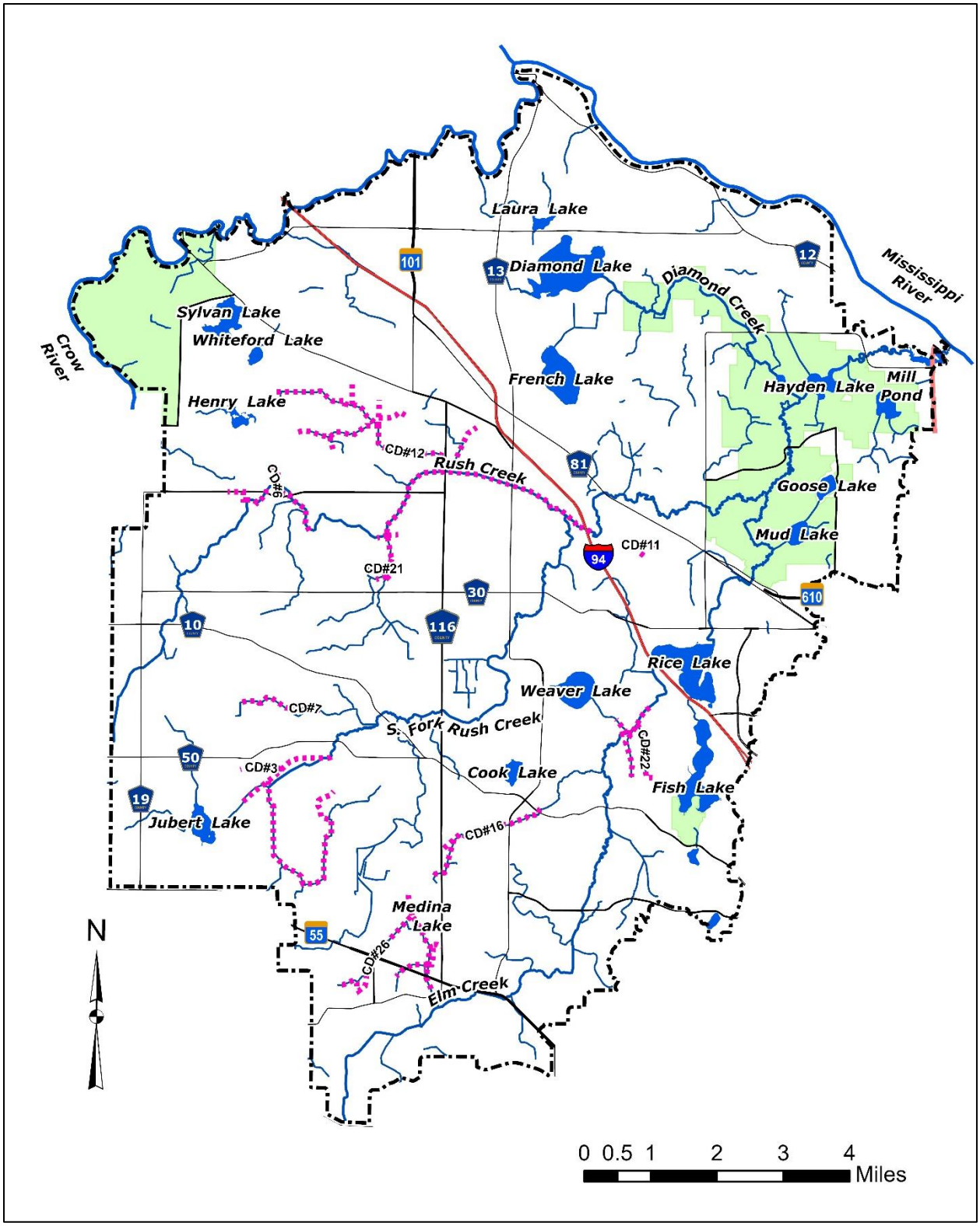

Figure 2.2. Major lakes, streams and ditches in the Elm Creek watershed.
Source: Minnesota DNR. Ditches: Hennepin County Environment and Energy

Table 2.2. Characteristics of lakes in the Elm Creek watershed, 2015-2024.

Lake	Location	DNR ID#	Surface Area (ac)	Max Depth (ft)	Depth Class	DNR Class	Summer Average			Years of Data
							TP (µg/L)	Chl-a (µg/L)	SD (m)	
Camelot	Plymouth	27-0099-00	22	n/a	n/a	NE	85	20	1	5
Cook	Maple Grove	27-0120-00	13	n/a	Shallow	NE	n/a	n/a	n/a	0
Cowley	Rogers	27-0169-00	47	7	Shallow	NE*	553	234	<1	2
Diamond	Dayton	27-0125-00	406	8	Shallow	RD	144	66	<1	10
Dubay	Dayton	27-0129-00	15	n/a	Shallow	NE	28	3	2	3
Edward	Maple Grove	27-0121-00	28	n/a	n/a	RD	n/a	n/a	n/a	0
Fish	Maple Grove	27-0118-00	238	48	Deep	RD	33	16	2	10
French	Maple Grove	27-0127-00	217	6	Shallow	RD	n/a	n/a	n/a	n/a
Goose	Dayton	27-0122-00	59	6	Shallow	NE	116	103	0.25	2
Hayden	Dayton	27-0128-00	93	n/a	Shallow	NE	n/a	n/a	n/a	0
Henry	Rogers	27-0175-00	44	5	Shallow	RD*	95	23	0.7	1
Jubert	Corcoran	27-0165-00	64	41	Deep	NE	121	23	<1	2
Laura	Dayton	27-0123-00	35	n/a	Shallow	NE	170	77	<1	1
Lemans	Champlin	27-0066-00	60	n/a	Shallow	NE	n/a	n/a	n/a	0
Medina	Medina	27-0146-00	8	n/a	Shallow	NE	156	94	<1	1
Mill Pond	Champlin	27-0061-00	34	11	Shallow	NE	187	14	1.5	1
Mud	Maple Grove	27-0112-00	73	n/a	n/a	NE	197	18	<1	2
Powers	Dayton	27-0130-00	15	n/a	Shallow	NE	n/a	n/a	n/a	0
Rice	Maple Grove	27-0116-01	314	11.5	Deep	RD	209	68	1	10
West Rice	Maple Grove	27-0116-02	32	11	Shallow		n/a	n/a	1	
Sylvan	Rogers	27-0171-00	110	10	Shallow	NE*	252	67	0.25	1
Weaver	Maple Grove	27-0117-00	152	57	Deep	RD	33	13	2	10
Whiteford	Rogers	27-0172-00	30	n/a	n/a	NE*	n/a	n/a	n/a	0

Sources: Minnesota DNR, MPCA EQuIS, Elm Creek WRAPS. *City's Shoreland Classification
NE = Natural Environment; RD = Recreational Development (Shoreland Management Classification)

Impaired Lakes. Six lakes do not meet state nutrient standards and have been designated by the MPCA and USEPA as Impaired Waters. A TMDL and Watershed Restoration and Protection Strategies (WRAPS) study were approved in 2017. Two lakes are impaired for mercury in fish tissue, and TMDLs for those impairments were included in the statewide 2007 mercury TMDL. An additional lake (Fish) was included in the TMDL and WRAPS but has since been delisted.

Table 2.3. 2024 303(d) List impaired lakes in the Elm Creek watershed.

Lake	DNR Lake #	Affected Use	Pollutant	TMDL Approved
Fish Lake	27-0118-00	Aquatic consumption Aquatic recreation Aquatic life	Mercury FT[1] Nutrients Fish IBI[2]	Approved 2007 Delisted Listed 2024 – no TMDL yet
Weaver Lake	27-0117-00	Aquatic consumption	Mercury FT	Approved 2007
Diamond Lake	27-0125-00	Aquatic recreation	Nutrients	Approved 2017
Cowley Lake	27-0169-00	Aquatic recreation	Nutrients	Approved 2017
Rice Lake	27-0116-01	Aquatic recreation	Nutrients	Approved 2017
Lake Henry	27-0175-00	Aquatic recreation	Nutrients	Approved 2017
Sylvan Lake	27-0171-00	Aquatic recreation	Nutrients	Approved 2017
Goose Lake	27-0122-00	Aquatic recreation	Nutrients	Approved 2017

[1] "FT" means fish tissue. [2] Index of Biotic Integrity. A measure of the quantity and quality of aquatic life. F-IBI denotes fish impairment. Source: MPCA.

2.1.2 Streams

Elm Creek drains the eastern portion of the watershed, flowing northeast from its headwaters in Medina to its confluence with the Mississippi River in Champlin, and through Rice Lake in Maple Grove (Figures 2.1 and 2.2). South Fork Rush Creek and Rush Creek drain the center of the watershed. The South Fork joins the main stem just upstream of I-94, and the main stem joins Elm Creek in the Elm Creek Park Reserve. Diamond Creek flows out of Diamond Lake, joining Elm Creek just upstream of Hayden Lake. In the northwest, several small channels drain directly to the Crow River, and a small area in Dayton flows directly to the Mississippi River.

Table 2.4. Stream characteristics in the Elm Creek watershed.

Stream	Length (mi)
Elm Creek	21.08
Diamond Creek	5.69
South Fork Rush Creek	9.10
Rush Creek	16.92

Stream Conditions. Water quality data at the USGS monitoring site in Elm Creek Park is available from 2008-2024. Additional monitoring at other sites along Elm Creek and the other major streams in the watershed has been completed as part of the Commission's annual monitoring program and as part of special projects. As noted in below, the four major streams exceed state water quality standards for *E. coli* bacteria. Other impairments include low dissolved oxygen and excess chloride.

Impaired Streams. Diamond, South Fork Rush, Rush, and Elm Creeks and the Crow River have been designated by the Minnesota Pollution Control Agency (MPCA) and Environmental Protection Agency (EPA) as Impaired Waters and are listed on the state's 2024 303(d) list for not meeting water quality standards as shown in Table 2.5. More information about these impairments can be found in the Elm Creek Watershed TMDL (MPCA 2017). A TMDL for two of the impairments on the Crow was completed in 2013, with the other impairments addressed in the Crow River WRAPS completed in 2015.

Table 2.5. 2024 303(d) List impaired streams in the Elm Creek watershed drainage area.

Stream	Stream AUID #	Affected Use	Pollutant	TMDL Approval
Diamond Cr	07010206-525	Aquatic life/ Aquatic recreation	*E. coli,* DO, F-IBI[1]	2017
S Fork Rush Creek	07010206-732	Aquatic life/ Aquatic recreation	*E. coli,* M-IBI, F-IBI Chloride	2017 2016
S Fork Rush Creek	07010206-760	Aquatic life	M-IBI, F-IBI	2017
Rush Creek	07010206-528	Aquatic life/ Aquatic recreation	*E. coli,* DO, M-IBI, F-IBI	2017
Elm Creek	07010206-508	Aquatic life/ Aquatic recreation	*E. coli,* DO, M-IBI, F-IBI, TSS Chloride	2017 2016
Crow River	07010204-502	Aquatic life/ Aquatic recreation	TMDL: Fecal coliform, turbidity WRAPS: DO, F-IBI, M-IBI	TMDL Approved 2013 WRAPS Approved 2015
Mississippi R	09010206-567	Aquatic life	Mercury FT[2], PCB FT[2]	Approved

[1] Index of Biotic Integrity. A measure of the quantity and quality of aquatic life. M-IBI denotes macroinvertebrate impairment and F-IBI denotes fish impairment.
[2] "FT" means fish tissue.
Source: MPCA.

The member cities will be impacted by several regional TMDLs. The Elm Creek watershed is excluded from the Upper Mississippi Bacteria TMDL because the WRAPS study was completed as a stand-alone project. The watershed is included in the South Metro Mississippi Turbidity TMDL and the Twin Cities Metro Chloride Management Plan which is a metro-wide TMDL for all chloride-impaired waters.

2.1.3 Ditches

There are several county ditches in the watershed (Figure 2.2). Parts of Rush Creek are under the ditch authority of Hennepin County as County Ditch (CD) #21 and CD #6. CD #12 is an extensive system with multiple branches tributary to Rush Creek. Part of the upper reaches of South Fork Rush Creek and several laterals are CD #3, and a short segment of Elm Creek is CD #22. CD #7, CD #16, CD #26, and CD #11 are other ditch systems on channels in the watershed.

3.0 WATERSHED ORGANIZATION AND OPERATIONS

This section describes how the Elm Creek Watershed Management Commission is organized, its purpose and authorities, and its various operating programs under its current Watershed Management Plan. The section concludes with an assessment of progress towards meeting the goals in the current watershed management plan.

3.1 PURPOSE AND AUTHORITY

The Elm Creek Watershed Management Commission (EC WMC) was formed on February 1, 1973, under a Joint Powers Agreement developed under authority conferred to the member communities by Minnesota Statutes 471.59. The parties to that JPA were Champlin, Corcoran, Dayton, Maple Grove, Medina, Plymouth, and Hennepin Conservation District. In 1981 Hassan Township entered the agreement. The cities of Greenfield and Rogers became non-voting, non-paying members of the Commission in 1982. In 2000 Rogers became a full member of the Commission and the City of Corcoran withdrew from the Pioneer-Sarah Creek Commission to include all of its area under the Elm Creek Commission. The following year the City of Greenfield voted to withdraw from the Elm Creek Commission and to include all its area in the Pioneer-Sarah Creek Watershed Management Commission. Hassen was fully annexed by Rogers in 2012.

The Commission's purpose is set forth in Minnesota Statutes 103B.210, Metropolitan Surface Water Planning, which codified the Metropolitan Surface Water Management Act of 1982. Minnesota Statutes 103B.231 and Minnesota Rules 8410 establish requirements for watershed management plans within the Twin Cities Metro Area. The law requires the plan to focus on:

(1) protecting, preserving, and using natural surface and groundwater storage and retention systems;
(2) minimizing public capital expenditures needed to correct flooding and water quality problems;
(3) identifying and planning for means to effectively protect and improve surface and groundwater quality;
(4) establishing more uniform local policies and official controls for surface and groundwater management;
(5) preventing erosion of soil into surface water systems;
(6) promoting groundwater recharge;
(7) protecting and enhancing fish and wildlife habitat and water recreational facilities; and
(8) securing the other benefits associated with the proper management of surface and ground water.

3.2 RESPONSIBILITIES

3.2.1 Commission

The Elm Creek Watershed Management Commission is governed by a seven-member board comprised of representatives who are appointed by each City Council for a term determined by the city. The Commission currently meets monthly, holding a meeting on the second Wednesday of each month. Meetings are open to the public. The Joint Powers Agreement setting forth the authorities granted to the Commission is included in Appendix A.

A Board of Commissioners has been established as the governing body of the Commission. A Technical Advisory Committee (TAC) comprised of member city staff designees meets as requested by the Commission, typically every other month. There is no standing Citizens Advisory Committee.

Operating expenses are funded through an annual apportionment to each city based on their proportionate share of taxable market value of real property within the watershed. These expenses include the cost of technical, administrative, and legal services; programs such as water quality monitoring, public information and education, and special studies; and matching funds for grant-funded projects and studies. The Commission's mechanisms for funding capital improvements are identified in the current Joint Powers Agreement and policies adopted by the Commission.

The Commission cannot directly levy taxes or special assessments but has the ability to assess members who subsequently decide how they want to generate the funds. Options available to the members include ad valorem tax, creation of a watershed management tax district, special assessments, or Chapter 444 storm sewer utility financing. The Commission may also request bonding from Hennepin County. In 2012 the Commission adopted an amendment to the Second Generation Plan that revised the Capital Improvement Program (CIP) and adopted a policy to contribute up to 25 percent of the cost of a qualifying project. Subsequent amendments to the Third Generation Plan created the City Cost Share and Partnership Cost Share programs, which are also funded by the county levy.

3.2.2 Relationship to Other Agencies

Cities. Member cities all have approved stormwater management plans that assist the Commission in implementing the Watershed Management Plan. The cities have in place ordinances codifying the Commission's development rules and standards, including stormwater management, erosion control, and wetland and floodplain management. City stormwater management programs vary by community, depending on fiscal capacity, degree of development, and water resources.

All the member cities are National Pollutant Discharge Elimination System (NPDES) Municipal Separate Small Storm Sewer Systems (MS4s) and have approved NPDES permits and Stormwater Pollution Prevention Programs (SWPPPs) that include numerous activities to manage stormwater and prevent water resource degradation. Those SWPPPs also contain TMDL implementation actions to reduce pollutant loading and manage the rate and volume of stormwater runoff.

The Joint Powers Agreement does not authorize the Commission to directly contract for capital improvement projects. The Commission may order capital projects for construction by one or more member cities, often as regional projects which several cities may agree to cooperatively construct and fund. In addition to Commission projects member cities may undertake projects, such as including BMPs in routine street reconstruction projects.

Member cities also engage in various water management-related activities such as implementing their Stormwater Pollution Prevention Programs, Adopt-A-Park programs, urban forestry and Arbor Day activities, promotion of recycling and composting, and environmental education published in the city newsletter and website. In many cities the Park Commission or some other Commission is charged with providing advice to the City Council on environmental matters, including watershed related matters.

Hennepin County. The Hennepin County Environment and Energy Department (HCEED) operates several programs to conserve natural and water resources in the county. Educational and outreach services are

focused on proper lawn and garden care, proper use of herbicides and pesticides, and composting; assistance to communities in identifying and conserving high-value natural resources; promotion of and assistance with agricultural best management practices; and managing public accesses to water resources. HCEED technical staff provide technical services to the Commission under a contract between the Commission and the County.

The County also participates in the education and outreach programming with the West Metro Water Alliance (WMWA) consortium of watershed management organizations in west Hennepin County. In 2023 Elm Creek and four other WMOs in the county allocated a share of their BWSR Watershed-Based Implementation Funding grants to help fund an education and outreach conservation specialist shared with Hennepin County. Additional funding was allocated in 2024 to fund the half time position through 2027.

The Commission and HCEED work in partnership to fund and implement cost-share conservation programs that financially assist landowners with the protection of their land, with a focus on BMPs in key subwatersheds to reduce sediment, nutrient, and bacterial pollution of impaired waterbodies.

In addition, HCEED operates volunteer education and monitoring programs, including Watershed Connections (formerly RiverWatch), a stream macroinvertebrate monitoring program for elementary and secondary school students, and the Stream Health Evaluation Program (SHEP) for adult volunteers. The County had previously operated the Wetland Health Program (WHEP), also for adult volunteers but discontinued it In May 2022.

The HCEED is responsible for administration and implementation of the Minnesota Wetlands Conservation Act and the state Buffer Law. and administers conservation easements. The Hennepin County Public Health Department administers permitting and inspection of residential and commercial Subsurface Sewage Treatment Systems in most of the member cities.

Metropolitan Council. The Metropolitan Council's Water Resources Management Policy Plan spells out a wide range of programs and activities undertaken by a variety of governmental and private agencies for management of water resources in the Metro area. Among the many programs and activities are several of particular interest to the Commission: the development of targeted watershed pollutant loads; review of watershed and local water plans and comprehensive plans for consistency with Metro goals and objectives; grant programs; the Citizens' Assisted Lake Monitoring Program (CAMP); and the Environmental Information Management System. The Elm Creek Commission has regularly partnered with the Metropolitan Council's CAMP program of citizen volunteer lake water quality monitoring since 2005, although a few lakes were occasionally monitored back to 1998. The Met Council identifies Priority Waters in the Metro Area as part of its policy planning. Priority Waters in Elm Creek include Fish, French, and Weaver Lakes

Minnesota Pollution Control Agency. The MPCA operates several programs applicable to watershed planning. The MPCA monitors water quality, sets standards, and implements various controls. Of particular interest are the National Pollutant Discharge Elimination System (NPDES) program and implementation of the Clean Water Act. The MPCA manages the NPDES Phase I construction and industrial stormwater discharge permitting. MPCA also manages the NPDES Phases I and II permitting for municipal separate storm sewer systems (MS4s). Hennepin County and MnDOT are also MS4s with conveyances in the Elm Creek watershed.

The MPCA implements the Clean Water Act's requirement that states adopt water quality standards to protect the nation's waters. The Environmental Protection Agency (EPA) and MPCA assists managers of water resources that have lakes and streams that fail to meet these established standards to prepare a Total Maximum Daily Load (TMDL) study identifying the source of the pollutant and a plan for bringing the water resource into compliance.

The Elm Creek Commission worked closely with the MPCA and received funding from that agency to complete TMDL and Watershed Restoration and Protection Strategy (WRAPS) studies for several lake and stream impairments in the watershed that were approved in 2016.

Board of Water and Soil Resources. The board is the state's administrative agency for 90 soil and water conservation districts, 46 watershed districts, 23 metropolitan watershed management organizations, and 80 county water managers. BWSR's core functions include implementing the state's soil and water conservation policy, comprehensive local water management, and the Wetland Conservation Act (WCA). BWSR periodically assesses watershed organizations as part of its Performance Review and Assistance Program (PRAP). Elm Creek underwent a PRAP review in 2021.

BWSR wetland specialists participate in Technical Evaluation Panels in the watersheds to assess potential wetland impacts and mitigation strategies. BWSR also periodically audits the Commissions to assure that WCA is being administered properly. Finally, BWSR is the implementation agency for the Clean Water Funds grant program funded by the Clean Water, Land, and Legacy Amendment.

Minnesota Department of Agriculture. The MDA is statutorily responsible for the management of pesticides and fertilizer other than manure to protect water resources. The MDA implements a wide range of protection and regulatory activities to ensure that pesticides and fertilizer are stored, handled, applied and disposed of in a manner that will protect human health, water resources and the environment. The MDA works with the University of Minnesota to develop pesticide and fertilizer BMPs to protect water resources, and with farmers, crop advisors, farm organizations, other agencies and many other groups to educate, promote, demonstrate and evaluate BMPs, to test and license applicators, and to enforce rules and statutes. The MDA has broad regulatory authority for pesticides and has authority to regulate the use of fertilizer to protect groundwater.

Minnesota Department of Health. The Environmental Health Division of the MDH operates many programs of interest to the Commissions. Programs include Drinking Water Protection, Wellhead Protection, Lake and Fish Monitoring (in partnership with DNR/MPCA), Environmental Health Services, Health Risk Assessment, Site Assessment, and Consultation and Well Management.

Minnesota Department of Natural Resources. The DNR manages and protects the state's natural resources and operates numerous programs. The department provides technical assistance and information regarding best management practices, natural resource management, incorporating natural resource conservation in land use planning, and lakescaping.

The Fisheries Division monitors and improves fisheries within the state including many of the lakes within the watershed. It also promotes fishing opportunities and provides grants to assist in the construction of fishing piers. The Ecological and Water Resources (EWR) Division focuses on an overarching vision of "Healthy Watersheds throughout Minnesota." "Healthy Watersheds" include: 1) sustainable quantities and qualities of water; 2) sustainable levels of biodiversity; 3) well-functioning

ecosystem services; and 4) sustainable and vibrant natural resource economies and recreational opportunities.

The EWR Division also provides the following services:

- It maintains an inventory of public waters and operates permit programs for working in public waters or for appropriating public waters;
- Oversees the state's floodplain management program;
- Provides local stewardship by coordinating the Mississippi River Critical Area and MNRAA programs and the Shoreland Management program;
- Collects, analyzes, and provides ecological information, including:
    - Location and management of rare resources (endangered and threatened species, critical habitats, high quality natural communities);
    - Management of harmful exotic species, fish and wildlife diseases, and negative environmental impacts of human development;
    - Management and restoration of important ecological processes in river systems and key natural areas; and
    - Development of information about Minnesota's ecosystems and their significance to a sustainable quality of life.

The DNR's webpage at dnr.state.mn.us/lakefind/index.html is LakeFinder, a DNR supported tool that combines information from various DNR Divisions, as well as other state agencies, such as Minnesota Pollution Control Agency (water quality) and Minnesota Department of Health (fish consumption). This tool contains data for more than 4,500 lakes and rivers throughout Minnesota.

The DNR also provides a variety of specialized programs oriented to property owners or neighborhood groups, such as the Aquatic Plant Management, Urban Fisheries and Fishing in the Neighborhood, Neighborhood Wilds, and Metro Greenways programs.

3.3 OPERATIONS

This section describes the current programs operated by the Elm Creek Watershed Management Commission.

3.3.1 Monitoring Program

The Commission contracts with Three Rivers Park District to conduct a monitoring program that tracks conditions in the lakes and major streams of the watersheds. The monitoring data is published in its Annual Report which presents data from the current year as well as water quality and quantity trends. That trend data is included in this Plan in Appendix B. The following are short descriptions of the current monitoring program.

Lakes. The Third Generation Plan established four sentinel lakes – Fish, Weaver, Diamond, and Rice – which are monitored annually. Each year two other lakes are monitored on a rotating basis. Most years one additional lake is monitored by volunteers through the Met Council's Citizen-Assisted Monitoring Program (CAMP). Table 3.1 details the lake monitoring history.

Streams. The Commission collaborates with the USGS, which operates a monitoring station on Elm Creek in Elm Creek Park Preserve in Champlin. In addition to the partnership with the USGS to monitor flow and water quality on Elm Creek, the Commission currently routinely monitors flow and water quality at three sites on Elm, Rush, and Diamond Creeks. Students collect biological data at 3-4 sites per year though the Hennepin County RiverWatch program, which was paused for a few years due to COVID restrictions but resumed in 2023.

Wetlands. Prior to 2020, the Commission collaborated with Hennepin County and adult volunteers to assess 3-4 wetland sites per year though the Wetland Health Evaluation Program (WHEP). That program was paused starting in 2020 due to COVID restrictions and ultimately was discontinued by the County.

Table 3.1. Lake monitoring history since 2009.

Year	*Cook*	*Cowley*	*Diamond*	*Dubay*	*Fish*	*French*	*Goose*	*Henry*	*Jubert*	*Laura*	*Medina*	*Mill Pond*	*Mud*	*Rice*	*Sylvan*	*Teal*	*Weaver*
2025			T	T	T	T		T	C	T				T			T
2024		T	T		T	T		T						T	T	C	T
2023		T	T		T									T	T		T
2022			T		T		T						T	T			T
2021			T		T		T					T	T	T			T
2020			T		T									T		C	T
2019			T		T									T			T
2018			T		T				C					T			T
2017			T		T				C					T			T
2016		C	T		T				C					T			T
2015			T		T				C	C				T			T
2014			T	C	T					C		T		T	C		T
2013			T	C		T				C		T		T	C		T
2012			T	C	T	T					C	T			C		T
2011			T	C	T	T		C				T		C			T
2010		C	T		T	T		C				T	T	C/T			T
2009		C	T		T	T		C				T		C			T

C = CAMP; T = Three Rivers; Shaded = Impaired Waters; Sentinel Lakes: Diamond, Fish, Rice, Weaver

3.3.2 Regulatory Program

The Commission does not issue permits but does require development and redevelopment to meet requirements for runoff rate control, treatment, and volume management. Those requirements and others relating to wetlands, floodplains, erosion control, buffers, and stream crossings are set forth in Rules and Standards. As part of the Third Generation Plan development the Rules were reviewed and revised and reissued just prior to adoption of that Management Plan. The Commission had previously acted as the Local Government Unit (LGU) for Wetland Conservation Act (WCA) administration for some member cities, but in 2019 relinquished that authority to the member cities.

Development and redevelopment projects that meet certain size and other criteria are required by city ordinances to incorporate into their developments Best Management Practices (BMPs) sufficient to

meet the Commission's Rules and Standards. Engineering plans, hydrologic calculations, wetland delineations, and other supporting material is submitted to the Commission's Engineer, who conducts a Project Review and makes findings to the Commission and cities.

In 2020 the Commission adopted a revised project review fee policy to require applicants to pay the full amount of the project review. In 2023 review fee schedule was revised to modify the amounts of the initial escrow deposited with the application and the administrative and technical services fees.

Table 3.2 summarizes the reviews that have been completed during 2015-2024, including private development and redevelopment as well as public projects such as street and highway projects.

Table 3.2. Project review history 2015-2024.

Year	Project Reviews	Wetland Actions	TEP panels
2015	39	22	14
2016	52	17	17
2017	53	40	12
2018	54	66	12
2019	32	8	*
2020	42	*	*
2021	55	*	*
2022	49	*	*
2023	30	*	*
2024	33	*	*
TOTAL	439		

*Discontinued role of LGU for WCA in 2019

3.3.3 Education and Outreach Program

The goal of the Education and Outreach Program as "to educate and engage everyone in the watershed by increasing awareness of water resources and creating and supporting advocates willing to protect and preserve the resources in the watershed." The Commission provides most of its education and outreach though the West Metro Water Alliance (WMWA), a collaborative formed by the Commission along with Shingle Creek, West Mississippi, and Bassett Creek WMOs. While the Commissions do continue to provide local education and outreach, the four WMOs pool resources to take on larger, more visible initiatives. The most significant and far-reaching program is Watershed PREP, in which contracted educators present water resource-based classes to fourth grade students. Since the program's inception in 2013, over 22,700 students have participated in the watershed introduction lesson, and 9,700 in the water cycle lesson.

In 2023 the Commission and the other three WMOs in WMWA, the Richfield-Bloomington WMO and Hennepin County pooled funding to hire an education and outreach specialist for two years to develop and deliver messaging and coordinate implementation projects. This specialist is dedicated half time to the WMWA+ collaborative and half time to general County work. In 2024 the same entities renewed that funding through 2027, with a long-term strategy of contracting a full time specialist.

Other education and outreach activities include:

- In partnership with Hennepin County, student and adult volunteer monitoring of selected steam and wetland sites in the watershed.

- In partnership with the Metropolitan Council, volunteer lake water quality monitoring on one lake per year.
- In coordination with Hennepin County, helped promote outreach to and field days focused on aspects of land and animal management for water quality.
- Reference material and news posted on the Commission's website.
- In partnership with WMWA, workshops on rain gardens, shoreline restoration and sustainable turf management.
- Education and outreach materials highlighting proper use of road salt for snow and ice control.
- Outreach to local print and cable television for news coverage of commission and city projects.

3.3.4 Administration

Administration includes preparing for and attending routine and special meetings; taking minutes and record keeping; grant writing; correspondence; maintaining the web site; providing bookkeeping services; filing; and annual and financial reporting. Administrative and technical consulting staff also administers grants on behalf of the Commission: completing work plans, preparing interim and final reports, and preparing invoices.

3.4 ASSESSMENT OF THIRD GENERATION PLAN PERFORMANCE

In preparation for the Fourth Generation Management Plan, the Commission conducted a self-assessment to identify achievements and areas for improvement. The Commissions have completed or will have completed by 2024 nearly all the work plan activities and strategies identified in the Third Generation Plan. The most successful achievements of the Third Generation Plan were:

<u>Water Quality</u>

- Provided cost share assistance to member cities to undertake significant pollutant loading capital projects, including several stream restoration and lake management projects to reduce sediment and nutrient loading and improve habitat.
- Partnered with the City of Maple Grove, the Three Rivers Park District, the Fish Lake Improvement Association, and other stakeholders to undertake various actions to restore water quality in Fish Lake and achieve delisting from the Impaired Waters list.
- Created the new City and Partnership Cost Share programs to provide financial assistance for smaller projects, and amending the Cost Share Policy to provide costs share of capital equipment such as high efficiency sweepers. This increases the range of type of BMPs being implemented in the watershed.
- Expanded the partnership with HCEED to provide outreach and technical and financial assistance to rural and agricultural landowners to achieve voluntary management practices. The Commission also dedicated both levy and grant funding to expand these efforts in key subwatersheds.
- Completed three subwatershed assessment in areas where modeling for the TMDL/WRAPS indicated had higher potential for pollutant loading (Rush Creek Headwaters, Diamond Creek, and South Fork Rush Creek). Provided financial assistance to Maple Grove to complete subwatershed assessments in high priority urban areas (Rice Lake and Fish Lake areas).

Education and Outreach

- Expanded education and outreach efforts though the West Metro Water Alliance (WMWA) watershed PREP program to provide classroom offerings. Over 22,000 students served in the last 10 years in schools across the four participating watersheds, including several in Elm Creek.
- Dedicated grant funding in partnership with four other WMOs and Hennepin County to employ a half time education and outreach coordinator dedicated to increasing information delivery and engagement and BMP implementation in the five watersheds.
- Partnered with Hennepin Conty conservationists to deliver targeted education and outreach opportunities to agricultural and rural landowners and operators.

Operations

- Updated the Rules and Standards to be consistent with latest NPDES permitting, including rules specifically for linear projects.
- Worked to make financial reporting more accessible and adopted an Adequate Fund Balance Policy.
- Revised the project review fees so that applicants pay the actual cost to complete the review.

Areas that fell short of Third Generation expectations or which could be improved include:

Water Quality

- TMDL Implementation has focused on TP and TSS and to a much lesser extent on biotic impairments except for some incidental habitat improvement with steam stabilization projects.
- The Commission has relied on citizen volunteers to supplement the monitoring program, and it is becoming more difficult to find volunteers willing to commit the time.
- Need to do more to foster “nonstructural” agricultural practices such as soil health, cover crops.
- Need to provide more incentives for thinking “outside the box” on BMPs such as reuse and newer technologies.

Education and Outreach

- Need to do more general education and outreach, as well as targeted E &O to lake association, HOAs, large lot rural homeowners, etc.
- Need a more focused approach on chloride management.
- Need more formal Commissioner education to get up to speed on technical issues.

Operations

- The runoff volume management requirements in the Rules and Standards assumed that most development and redevelopment would be able to provide infiltration of 1.1” of runoff. However, many large developments have only been able to provide filtration, creating new runoff volumes that need to be assessed for impacts and potential mitigation strategies.
- Worked with the DNR to update the Commission’s Special Flood Hazard model to incorporate Atlas 14. It is a usable model but has stalled in its formal review and is not yet enforceable nor have the official flood maps been updated.

4.0 IMPLEMENTATION PLAN

This Plan section discusses the problems and issues that were identified during the Plan development process, and the goals and actions the Commission will pursue to address them. Each of the operating programs were reviewed during the planning process, and modifications to the monitoring plan, education program, and development rules and standards are described in this section and presented in more detail in appendices. This section includes a cost estimate for operations over the coming ten-year period and the estimated member assessments, and a Capital Improvement Program of potential capital projects and special studies. Finally, this section concludes by summarizing the requirements for member city local water management plans and procedures for amending this Plan.

4.1 ASSESSMENT OF PROBLEMS AND ISSUES

The Commission performed a Gaps Analysis and visioning exercise to identify problems and issues confronting water resources management in the watershed. Table 4.1 shows the problems/issues in four general categories, in no order of priority.

Table 4.1. Problems and issues identified during Plan development.

#	Problem or Issue	Discussion
1	Numerous impairments on the primary streams and several lakes.	Meeting state water quality and biotic integrity standards will require significant and likely costly load reductions from both urban and rural sources as well as internal lake and stream actions.
2	Land is transitioning from lightly-developed and agriculture to more densely developed land uses at higher imperviousness.	Land use change can create new pollutant loading and increase the volume and rate of stormwater runoff.
3	Erosion and sedimentation issues continue on Elm Creek and the other streams and conveyances in the watershed.	Stream instability can exacerbate other water quality issues in the streams and receiving waters.
4	New impairments have been identified, including chloride on Elm Creek and South Fork Rush Creek.	The new impairments raise the priority for education and outreach regarding chloride.
5	Need to increase the number and distribution of agricultural BMPs in the watershed.	Modeling completed for the WRAPS indicates that agricultural land uses are a source of nutrient, sediment, and bacteria loading in lakes and streams in the watershed.
6	Need to develop an effective mechanism to achieve voluntary adoption of BMPs	Pursue options such as identifying key persons to model best practices, providing financial incentives, and partnering with other agencies such as Hennepin County and Extension.
7	Need to expand activities for education and outreach to increase knowledge about water resources issues and create behavioral change.	Need to improve the visibility of the Commission, its responsibilities and achievements. Build a reputation as a leader in water quality.
8	Need for a climate vulnerability assessment.	Climate data in Minnesota shows an increase in intensity and depth of precipitation events.

4.1.1 Priority Issues

Following the assessment of issues, the Commission and Technical Advisory Committee identified four areas of highest priority for the Fourth Generation Management Plan:

FOURTH GENERATION PLAN PRIORITY ISSUES

1. Numerous impairments on the primary streams and several lakes with completed TMDLs.
2. New impairments have been identified, including chloride on Elm Creek and South Fork Rush Creek.
3. Land is transitioning from lightly developed and agriculture to more densely developed land uses at higher imperviousness.
4. Need to expand activities for education and outreach to increase knowledge about water resources issues and create behavioral change.

4.1.2 Management Plan 2025-2034 Goals

To address the identified priority issues, the Commission has established the following 2025-2034 Goals:

FOURTH GENERATION PLAN 2025-2034 GOALS

1. Protect, maintain, and improve the water quality and ecological integrity of the water and natural resources within the watersheds and the downstream receiving waters.
2. Reduce stormwater runoff rates and volumes to limit flood risk, protect conveyance systems, protect surficial groundwater, and reduce or mitigate impacts that have already occurred.
3. Educate and engage all stakeholders in the watersheds on surface water issues and opportunities.
4. Anticipate and proactively work to withstand adverse impacts from changing land use/cover and environmental and climate conditions.

4.2 FOURTH GENERATION MANAGEMENT GOALS AND ACTIONS

Through the identification and prioritization of issues in the watershed, the Commission developed goals for each priority area that will guide activities over the coming decade. These goals were derived from the self-assessment and unfinished business from the Third Generation Plan; discussions with Commissioners, Technical Advisory Committee members, state agency staff, other city staff; and the prioritization process. This section provides background for each of the goal areas, and general strategies. The Implementation Plan in Section 4.3 provides more specific actions for 2025-2034.

4.2.1 Water Quality and Ecological Integrity

The Elm Creek Watershed TMDL report and the Elm Creek Watershed WRAPS plan establish water quality improvement and protection goals for several lakes and the major streams in the watershed. The Third Generation Plan enacted immediately following the TMDL and WRAPS included many actions and projects to begin reducing pollutant loading and restore ecological integrity. That work has included stabilization and restoration of over 30,600 feet of stream and achieving removal or "de-listing" of Fish Lake due to improved water quality. The Fourth Generation goals for water quality are focused on continuing to make progress to improve the lakes and streams in the watershed as well as protect those that are not impaired waters. Public input received for this Plan, the WRAPS, and other sources show that achieving a high standard of water quality is a priority for the public as well as required by state statute, and the Implementation Plan includes actions to help meet these goals

The Fourth Generation Plan will continue to focus on improving the lakes and streams in the watersheds to meet state water quality and ecological integrity standards and protecting those that meet those standards. The primary implementation strategies will be to:

- Limit further lake, stream, and wetland impacts from development and redevelopment.
- Identify and undertake protection and improvement actions such as subwatershed assessments, feasibility studies, and non-structural and capital improvement projects.
- Achieve state water quality standards in lakes [TBD] and if possible, achieve de-listing from the Impaired Waters list.

The Commission will continue to operate a robust monitoring program to track water quality trends and assess progress.

Priority 1: Protect, maintain, and improve the water quality and ecological integrity of the water and natural resources within the watersheds and the downstream receiving waters.

Goals:

1. Make measurable progress in achieving state water quality and ecological standards in the Impaired Waters and protect those that are not Impaired.
2. Achieve state water quality standards in Lakes {TBD] and document progress toward removal from the Impaired Waters List.
3. Achieve stable or improving water quality trends where there is no designated Impairment.

Strategies:

1. Administer rules and standards requiring new development and redevelopment to maintain or reduce the loading of pollutants from their sites.
2. Foster implementation of priority TMDL and other implementation projects by sharing in their cost and proactively seeking grant funds
3. Monitor lakes and streams to document measurable improvement in lake water clarity and in-stream nutrient and sediment concentrations in the Impaired Waters
4. Periodically review progress and revise the Implementation Plan as needed

4.2.2 Water Quantity and Groundwater

A statutory responsibility of watershed management organizations is to prevent and mitigate flooding. This Plan accomplishes this by ensuring that development and redevelopment does not create excessive new volumes and rates of runoff that may cause downstream flooding. A second responsibility is promoting groundwater recharge, which impacts stream baseflow and lake levels, and maintaining adequate hydrology to wetlands.

The Fourth Generation management goals for water quantity are focused on reducing, or at minimum achieving no increase in, the rate of runoff discharging to the streams in the watershed, to reduce potential for erosive velocities and minimize further streambank erosion and mass wasting. An additional management goal is to maintain the current flood profile of Elm Creek and tributaries.

Priority 2: Reduce stormwater runoff rates and volumes to limit flood risk, protect conveyance systems to limit erosion, protect surficial groundwater, and reduce or mitigate impacts that have already occurred.

Goals:

1. Maintain the current flood profile of Elm Creek and tributaries.
2. Limit new volumes and rates of runoff to reduce potential for flooding, erosive velocities and streambank erosion.
3. Foster groundwater recharge.

Strategies:

1. Maintain rules and standards requiring new development and redevelopment to maintain or reduce the rates and volumes of runoff from their sites.
2. Require the post-development 2-year, 10-year, and 100-year peak rate of runoff to match or be less than at pre-development level for the critical duration precipitation event.
3. Require abstraction of runoff where technically feasible to limit new annual runoff volumes.
4. Require compensatory floodplain storage below the established 100-year elevation.
5. Identify opportunities for additional storage and abstraction in the watershed.

4.2.3 Education and Outreach

The Fourth Generation Plan will continue to expand the education and outreach program to offer programming on key topics and to help meet the needs of the member cities' stormwater permits and will continue to partner with WMWA to expand joint offerings, including realizing a vision of a shared education and outreach coordinator. This expanded effort will also include renewed focus on developing more opportunities to engage all communities in the watersheds.

Priority 3: Educate and engage all stakeholders in the watersheds on surface water issues and opportunities.

Goals:

1. Increase awareness of water resources in the watershed and create and support advocates willing to protect and preserve those resources.

2. Provide opportunities for youth, family and adult education and participation.

Strategies:

1. Operate a public education and outreach program that helps member cities meet their NPDES Phase II MS4 education requirements, with special emphasis on topics such as chloride, bacteria/pet waste, and nutrient management.
2. Provide supplemental education and outreach engagement on TMDL and other topics of interest to various stakeholders, including ongoing outreach to lake associations and homeowners' associations.
3. Continue to work cooperatively with other WMOs and agencies in the West Metro Water Alliance (WMWA) to provide joint education and outreach.
4. Work towards a shared WMWA full-time dedicated shared staff member.

4.2.4 Resilience and Adaptation

Water and natural resources are directly influenced by climate – precipitation, temperature, and other actors. Our climate is non-static: the Minnesota State Climatology Office has observed and documented changes in our climate since the late 1800's. Research suggests that the state will continue to get warmer and wetter, with more extreme rainfall events. Winters are warming, summers are more humid, and the growing season is expanding.

As the landscape is altered and developed, options become more limited to prevent or mitigate impacts and increases vulnerability to changing conditions. The cumulative impact of development – paving over surfaces that previously could infiltrate precipitation and prevent flooding, loss of woods and grasslands and wetlands – is a loss of resiliency to adapt to the increasing variability in climate.

The types of changes observed in Minnesota also have the potential to more directly and negatively affect water resources. Increased daily temperatures and a longer growing season may cause shifts in lake aquatic vegetation and result in more frequent algal blooms. Runoff from more frequent, higher intensity rain events increases flows, velocities, and shear forces instreams, increasing erosion and stream instability. Biotic integrity is diminished as lake and stream aquatic species select toward those that are more tolerant to pollution or to highly variable flows.

The Fourth Generation Plan will focus on better understanding the magnitude of those impacts both locally and regionally and identifying appropriate responses. The Commission's hydrologic and hydraulic models will be used to evaluate how future precipitation patterns may affect the extent and duration of flood events, and to identify infrastructure that may be at long-term risk of flooding. The Commission will also stay abreast of work completed by others to incorporate new data and new requirements into the annual work plans.

Priority 4: Anticipate and proactively work to withstand adverse impacts to water and natural resources from changing land use/cover and environmental and climate conditions.

Goals:

1. Assist member cities in understanding and implementing options for enhancing watershed resiliency.

Strategies:

1. Model and periodically re-assess the potential impacts of land use/cover change and a non-static climate on water resources with the best available predictive data.
2. Quantify and qualitatively assess risk and evaluate and implement responses for mitigation.
3. Collaborate with other agencies and organizations on joint efforts to manage impacts both locally and regionally.
4. Develop and implement strategies to appropriately manage future impacts.

4.3 IMPLEMENTATION PLAN AND CAPITAL IMPROVEMENT PROGRAM

The Commission has successfully met nearly all its goals set forth in the Third Generation Plan and is making progress toward protecting and improving the water and natural resources in the watershed. The Fourth Generation Implementation Plan is for the most part simply a continuation of those projects and practices. To achieve the Fourth Generation goals set forth above the Commissions will continue to conduct a regulatory program, implement monitoring, and education and outreach, and operating programs, and undertake capital improvement projects. The following sections summarize these programs, which are described in more detail in attached appendices. Following the descriptions, Table 4.2 and Table 4.3 detail the Implementation Program and its estimated cost, and Table 4.4 describes how the programs and projects in this Implementation Program address the Problems and Issues identified in the Problem Assessment and subsequent public review and input.

4.3.1 Regulatory Program

The Commission will continue to enforce its Rules and Standards for land disturbing activities in the watersheds. In May 2022 the Commissions adopted a Minor Plan Amendment that included several revisions to the Rules and Standards to conform the Rules to the most recent Minnesota General Stormwater Permit and the Minnesota Stormwater Manual, including adopting new standards for linear projects, and to make other housekeeping revisions. The revised Rules and Standards are set forth in Appendix C. In general, the Commissions' Rules require development and redevelopment that met the following thresholds to submit a project review application and conform to Rules and Standards. conform to the following, unless otherwise required:

a. Plans of any land development or site development that disturbs more than 1 acre of land.
b. Plans of any land development or individual site development adjacent to or containing a lake, wetland, or a natural or altered watercourse.
c. Any culvert installation or replacement, bridge construction, stream cross-section alteration, or activity requiring a DNR Waters Permit.
d. Plans for any land development or site development within the 1% chance (100 year) floodplain.
e. Linear projects creating one or more acres of new impervious surface.
f. Plans of any land development or site development, regardless of size, if such review is requested by a member city.

Key requirements of the Rules and Standards are:

- Peak runoff rates may not exceed existing rates for the 2-year, 10-year, and 100-year, 24-hour, and 100-year, 10-day critical storm events.
- For non-linear projects, 1.1 inch of impervious surface runoff must be abstracted on site within 48 hours. For linear projects the requirement is the greater of 1.1 inch from new impervious or 0.55 inches from new and/or fully reconstructed impervious.
- An erosion control plan using BMPs designed to the Minnesota Stormwater Manual and consistent with the NPDES General Construction Permit is required.
- Compensating storage is required to mitigate floodplain fill.
- The water quality requirement is met if the project meets the volume management requirement. If not, additional BMPs should be provided so there is no net increase in TP or TSS from pre-development land cover to post-development land cover.
- Vegetated buffer strips averaging 50 feet, minimum 25 feet wide must be provided adjacent to Elm, Diamond, Rush, and South Fork Rush Creeks. Buffers adjacent to lakes, wetlands and other watercourses must be at least as average 25 feet, minimum 10 feet wide.
- Wetlands may not be drained, filled, excavated, or otherwise altered without an approved wetland replacement plan from the local government unit (LGU) with jurisdiction
- New or modified crossings of streams must retain adequate hydraulic capacity based on the relevant hydraulic model.

4.3.2 Monitoring Program

This Fourth Generation Plan monitoring framework is generally unchanged from the Third Generation Plan. Each year the Commission will review the proposed annual monitoring program detailed bellow and in Appendix D and any other proposed monitoring for the coming year. Data are annually summarized and presented to the Commission for review and incorporation into the annual report. Results are also posted on the Commission's website.

The Fourth Generation Monitoring Program has two organizing principles:

1. Continue to obtain detailed flow and water quality data annually at sites on Elm, Diamond and Rush Creeks and on sentinel lakes, and collect data on other lakes and streams on a rotating basis.
2. Collect other data as needed to document water quality trends and assess progress and guide management decisions.

The objectives guiding the Elm Creek watershed monitoring program and the assessment of data are:

- To quantify the current status of streams and lakes compared to state water quality standards.
- To quantify changes over time, or trends, in stream and lake water quality in the watersheds.
- To enhance the value of previous monitoring data by extending the period of record.
- To track and quantify the effectiveness of implemented BMPs.
- To evaluate progress toward meeting TMDL load reduction and other goals.

Monitoring data will be used:

- To guide management decisions to support healthy aquatic ecosystems through the improvements in water quality.

- To quantify any changes to receiving waters as land use conversion and development occurs.
- To convey information about the water resources in the watershed and their condition.
- To target implementation and resource protection actions based on cost-effectiveness.
- To perform TMDL/WRAPS progress reviews.
- To accumulate information to support de-listing impaired waters that have improved to meet state water quality standards.
- To assist member cities who have Municipal Separate Storm Sewer Systems (MS4s) with their annual reporting requirements.
- To support applications for grant funding.
- To calibrate and validate hydrologic, hydraulic, and water quality models

STREAM MONITORING

The framework for stream monitoring in the Elm Creek watershed for 2025-2034 is detailed in Appendix D. The Commission will monitor flow and water quality at designated sites in the watershed per year: a station on Elm Creek upstream of the USGS site in Elm Creek Park; Rush Creek at Territorial Road; and Diamond Creek in Elm Creek Park. In addition, the Commission may from time to time undertake special stream monitoring on other tributaries, to add to the period of record, calibrate models or refine source assessments. This monitoring will continue under the Fourth Generation Plan.

The Commission currently partners with the USGS to operate a flow monitoring station on Elm Creek in the Elm Creek Park Reserve. This station has a long-term period of record, and gauges about 81 percent of the watershed. The Commission will continue to partner with the USGS to obtain routine flow and water quality information at this site. Some of the member cities also undertake lake and stream monitoring, especially at sites where restoration actions have been completed. This Commission is aware of these efforts and the data supplements that which the Commission collects.

Additional special stream monitoring that may be completed is longitudinal dissolved oxygen (DO) monitoring. Longitudinal monitoring assesses stream DO along the entire length of the stream from upstream to downstream prior to 9 am, when DO levels are the lowest. This data is used to better understand stream dynamics and how management actions are impacting DO in the streams.

There is limited biologic data on the resources in the watershed. The Commission may elect to undertake fish and/or macroinvertebrate sampling to supplement the data collected by the DNR or other parties at a few representative locations.

The Hennepin County Environment and Energy Department had in the past sponsored various stream and wetland water quality and biota volunteer monitoring opportunities, which had been implemented at various locations in the watershed. These programs – RiverWatch, Wetland Health Evaluation Program (WHEP), and Stream Health Evaluation Program (SHEP) were discontinued during the COVID pandemic. A new program called Watershed Connections has been developed for students in grades 6-12 and includes modules on aquatic invasive species (AIS), macroinvertebrates, and stewardship projects. This is a new program in its early stages, and over the course of the Plan the Commission may elect to assist in or sponsor some sites in the watershed.

Finally, the Commission may periodically undertake desktop (GIS and aerial photos) and field studies of stream conditions, including buffer assessments, streambank conditions, etc. Hennepin County currently completes these assessments on ditches that are under its ditch authority.

LAKE MONITORING

There are numerous basins in the Elm Creek watershed, with 22 primary lakes. The Commission contracts with Three River Park District to undertake water quality and aquatic vegetation monitoring on lakes in the watershed. The Commission has also participated in the Metropolitan Council's Citizen Assisted Lake Monitoring Program (CAMP) since 2005, although some lakes were occasionally monitored through that program as far back as 1994.

The Third Generation Plan established four "Sentinel Lakes" that are monitored every year by the Three Rivers Park District for the Commission: Diamond, Fish, Rice, and Weaver Lakes. These lakes represent both deep and shallow lakes, urban and semi-urban. Other lakes are monitored on a rotating basis either by Three Rivers Park District or through CAMP. Some lakes are difficult to access; no data is available and there are no plans for monitoring unless access can be gained. More detail can be found in Appendix D.

4.3.3 Education and Outreach Program

The goal of the Elm Creek Watershed Management Commission's Education and Outreach Program is to educate and engage everyone in the watershed by increasing awareness of water resources and creating and supporting advocates willing to protect and preserve the resources in the watershed. The Commission will continue to focus on key watershed issues as identified in this Plan and helping the member cities meet their NPDES Permit Public Education and Outreach Minimum Measure. In particular, the E & O program will emphasize, but not be limited to, topics such as chloride, nutrient, and bacteria/pet waste management.

WEST METRO WATER ALLIANCE (WMWA)

Since 2006 the Commission has collaborated with three other WMOs in Hennepin County to pool resources and jointly provide education and outreach (E & O) as the West Metro Water Alliance (WMWA). The Commission will continue to partner with WMWA on broader E & O initiatives of joint interest, including the Watershed PREP program of outreach to elementary school age children and their families. In addition, the Commission will develop and deliver additional programming, either stand-alone or through WMWA, directed specifically toward adults, such as lake or homeowners' associations and small business owners.

In 2022-2024 WMWA joined with the Richfield-Bloomington WMO and Hennepin County to support a shared two-year, limited duration E & O coordinator position by dedicating a portion of Watershed-Based Implementation Funding (WBIF) and other funds budgeted for general WMWA activities. The five WMOs and county have since extended their shared funding through the end of 2027. This coordinator works on specific programming needs but also is available on a limited basis to provide more general E & O programming. The Commission will continue to work with WMWA, the County and other interested parties to help develop, fund and implement their long-term vision of a shared, full-time E & O coordinator delivering a broad array of programming similar to the East Metro Water Resource Education Program (EMWREP).

JOINT CHLORIDE MANAGEMENT PLAN

In 2024 the Commission partnered with Shingle Creek and West Mississippi WMOs to obtain grant funding to prepare a joint Chloride Management Plan. This Plan includes a data analysis component to better identify areas within the watersheds where chloride loading to receiving waters is occurring. It will also include a significant stakeholder outreach effort culminating in a "roles and responsibilities" plan, a matrix specifying chloride management activities that each party agrees to undertake and associated goals and measures of progress. Finally, it will include an education and outreach program of clear, consistent messaging to various stakeholders. This work will be complete by 2027.

ENVIRONMENTAL JUSTICE

The state of Minnesota has identified areas of the state where low-income communities, communities of color, and Indigenous people, might bear disproportionate impacts of pollution and climate change. These are defined as "Environmental Justice" areas where special efforts may be needed to assure fair treatment and meaningful involvement of all people. There is one area so designated in the watershed. The Commission will continue to work with its partners to determine any special outreach needs for their residents, to expand those efforts to help meet the needs of all the communities in the watersheds.

4.3.4 TMDL Implementation

The TMDL report and WRAPS study identified very significant TP, TSS, and *E. coli* annual load reductions from watershed runoff. Implementation in the coming years will continue to rely on three key strategies: regulation, targeted load reductions, and agricultural outreach.

REGULATION

A key TMDL/WRAPS implementation strategy to reduce nutrient and sediment loading to the lakes and streams in the watershed is to maximize load and volume reductions at the time of land use change. Following completion of the TMDL and WRAPS the Commission implemented more rigorous development and redevelopment standards, including an infiltration requirement, with the understanding that over time this would reduce watershed loads, improving water quality in impaired waters and preventing degradation in waters that currently meet water quality standards. An analysis completed for the TMDL 10-Year Review estimates that these rules have reduced watershed loading of TP by 1,365 pounds per year and TSS by 526,300 pounds per year since the TMDL baseline year of 2010.

TARGETED LOAD REDUCTIONS

The Commission will partner with member cities and to undertake subwatershed assessments to identify potential retrofit BMPs. The Commission has completed three SWAs in high-priority areas (Rush Creek Headwaters, South Fork Rush Creek, and Diamond Creek) and provided cost share to Maple Grove to complete SWAs for two priority lakesheds (Fish and Rice Lakes).

AGRICULTURAL OUTREACH

There are significant agricultural operations in the watershed, ranging from row crop production to horse hobby farms. The TMDL/WRAPS identified sources of agricultural loading, not only nutrients and

sediment but also sources of bacteria. Over the course of the Third Generation Plan the Commission has provided funding and assistance to Hennepin County as its conservationists reach out to landowners and operators in the SWA focal areas. This partnership has resulted in implementation of xxx voluntary BMPs such as manure bunkers, water control structures, improved nutrient management, grassed waterways, and wetland and prairie restorations. The Commission has committed an additional $175,000 from its 2025-2027 Watershed-Based Implementation funding to undertake additional BMPs.

SUBWATERSHED ASSESSMENTS AND FEASIBILITY STUDIES

A subwatershed assessment (SWA) is a detailed evaluation of how much stormwater and pollutants such as sediment and nutrients run off the land within an area of interest. A SWA uses a fine-scale model that can predict runoff down to the field level. Specialized software tools and field assessments then can help identify the best pollutant-reducing practices to implement and where they will have the most impact. The end result is one or more detailed maps showing the recommended practices, and a set of actions, costs, and pollutant reductions expected. The Commission has collaborated with member cities and Hennepin County to complete three SWAs in priority developing areas, and contributed cost share for two completed in urban areas tributary to impaired lakes.

The Commission has also undertaken feasibility studies to explore options for future capital projects and will continue to partner as requested by member cities.

4.3.5 Climate Resiliency and Sustainability

Because "Climate and resilience planning" is very broad and encompasses a wide range of potential issues, for the purposes of this Plan the Commission's role is narrowly defined as focusing on stormwater runoff rates and volumes and how those might be impacted by non-static climate trends and changes in land use and land cover.

Over the period 2025-2034 the Commission will proceed in four phases:

1. Resiliency Planning Framework
2. Climate Vulnerability and Assessment
3. Adaptation Strategy and Identification
4. Adaptation Strategy Implementation

Phase 1: Resiliency Framework Planning: 2025-2028

- Stay abreast of resiliency planning issues and requirements for watershed and comprehensive plans as they are completed and rolled out as part of the Imagine 2050 Met Council planning process
- Continue to discuss with the TAC how the Commission can assist the cities in developing their Local Water Management Plans and Comprehensive Plans. Reconvene the working group if desired to continue this discussion as the planning process proceeds.
- Identify key stream locations in the upper watershed and obtain continuous flow monitoring data to better calibrate the HUC-8 model in advance of undertaking modeling for the climate vulnerability assessment expected to start around 2028.

- Include in the requirements for Local Water Management Plans a provision that climate resilience guidance from the Met Council for Imagine 2050 may require further and more specific analysis in the LWMP based on land-use decisions made in the Comp Plan.
- Add a resiliency analysis to projects submitted to the CIP to track and report progress on enhancing resilience, or to look for opportunities to enhance the CIP projects to include more resilient components.

Phase 2: Climate Vulnerability and Assessment: 2028-2030

The Climate Vulnerability Assessment modeling would use the Commission's HUC-8 model and the upcoming Atlas 15 precipitation data and proposed 2050 land use information developed by cities in their next Comprehensive Plans to identify future flood-prone areas and areas where more storage and/or abstraction would be beneficial. The Commission may elect to share in the cost of projects that add upstream runoff storage and flood resilience and may undertake subwatershed assessments (SWAs) specifically looking at practices to reduce runoff volumes.

Exposure & Sensitivity: Identify the benefits and services/uses of selected key natural resources: Lakes, streams, wetlands, groundwater, natural aquifers and Drinking Water Supply Management Areas (DWSMAs).

Quantify Impacts & Risk: Identify how the changing landscape and climate affect the natural resources and critical infrastructure (streams, roads, homes, buildings).

Flood modeling: Model hydrologic impacts:

- Incorporate critical or high-risk areas from City Comprehensive plans that are identified as likely to develop by 2050.
- Incorporate Atlas 15 and future 2050-2080 Precipitation Scenarios (GCMs, U of M, CliMAT)
    - The NOAA will later this decade establish new Atlas 15 standards that will incorporate estimates of future precipitation probabilities. These data may be available to assist in this assessment.
- Quantify future volume increases with current yearly runoff volumes from:
    - project reviews,
    - USGS data (Elm Creek), and
    - additional continuous monitoring in the upper watershed.
- Identify new and existing infrastructure (streams, bridges, roads, and buildings) impacted by future flooding scenarios.
- Identify potential projects to add resiliency, such as adding flood storage in key locations and enhancing infiltration where soils are most conducive.

Phase 3: Adaptation Strategy Development and Identification (2030-2032)

Adapting watersheds to climate change involves a variety of strategies to manage water resources sustainably and protect ecosystems.

Possible strategies that will be evaluated and prioritized:

- **Monitoring and Adaptive Management**: Continuous monitoring of watershed conditions and adaptive management practices can help respond to changing climate conditions effectively
- **Restoring Wetlands**: Wetlands act as natural water filters and buffers against floods. Restoring and protecting these areas can enhance their ability to absorb and store water

Assisting cities with understanding the impacts to water and natural resources that might result from land use planning strategies, such as:

- **Implementing Sustainable Land Management Practices**: Practices such as contour farming, terracing, and maintaining ground cover can reduce runoff and improve water infiltration.
- **Enhancing Vegetation Cover**: Planting trees and maintaining vegetation in riparian zones can help stabilize soil, reduce erosion, and improve water quality.
- **Upgrading Infrastructure**: Modernizing stormwater systems and other infrastructure to handle increased variability in precipitation can reduce the risk of flooding and water contamination.
- **Improving Water Storage**: Building or upgrading reservoirs and other water storage infrastructure can help manage water supply during periods of drought and heavy rainfall.

Phase 4: Adaptation Strategy Implementation (2030-2035)

- **Projects:** Identify Climate Resilient Projects with Cities, Hennepin County, and MnDOT, and TRPD
- **Update Rules and Policies**: One implementation strategy may be updates to policy and technical guidance for development or redevelopment in high risk areas, including the potential for revisions to the Commissions' development Rules and Standards.
- **Communicate strategies and benefits** to community groups, business owners, farmers, and other stakeholders

4.3.6 Capital Improvement Program

The Commission operates a Capital Improvement Program (CIP), sharing in the cost of significant capital projects in accordance with a Cost Share Policy. That CIP is reviewed annually, which often requires adoption of Minor Plan Amendments to revise or add to the Program. In addition, the Commissions operate two other programs to assist cities and private property owners with smaller BMPs: City Cost-Share and Partnership Cost-Shared.

CAPITAL IMPROVEMENTS PROGRAM

The Commission shares the cost of watershed-priority capital improvements and demonstration projects through the Capital Improvements Program (CIP). High-priority watershed capital improvements are those activities that go above and beyond general or routine city management activities to provide a significant improvement to the water resources in the watershed. The CIP is guided by a Cost Share Policy that establishes the basis for and amount of Commission contribution to qualifying projects. These might be stream restoration projects, BMPs installed as part of street projects that provide additional treatment beyond what is required by the rules, voluntary BMPs completed as part of improvements where no treatment would otherwise be required, etc.

High priority activities that result in Wasteload Allocation reductions toward a TMDL, help solve a regional flooding problem or are otherwise determined by the Technical Advisory Committee (TAC) and Commissions to be high priority are eligible to receive up to 25 percent of the final improvement cost in Commission cost-share, funded by the county ad valorem tax levied on all property in the watershed. The balance of the improvement cost, less any grant or other funds received, must be funded by the local government(s) participating in or benefiting from the improvement. The Commission's minimum share is $50,000. The Cost Share Policy establishes a maximum annual levy of $750,000 as a working guideline.

Eligible improvements under the CIP Cost-Share Policy include both structural and nonstructural activities that reduce pollutant loading, manage runoff volume, or address non-localized flooding. Routine maintenance or localized improvements are not eligible for cost share. Capital equipment that has been demonstrated to reduce loading of TMDL pollutants may be eligible under certain conditions as set forth in the Policy.

CITY AND PARTNERSHIP COST-SHARE PROGRAMS

The Commission operates two programs to help fund the cost of smaller BMP projects, typically costing less than $100,000. The Commission annually levies $50,000 – 100,000 to fund these types of projects. The City Cost Share Program will provide 50% cost share up to $50,000 per project for voluntary BMPs installed with City projects, and up to 100% cost share up to $50,000 for voluntary BMP projects on private property. In both cases, the BMPs must provide for improvements above and beyond those required by any permit.

4.3.7 Costs and Funding Sources

Table 4.2 below summarizes the estimated annual operating expenses for the watershed. The primary source of funding for these programs is the annual member assessment as described above. The Commissions charge project review applicants the actual cost to review the plans, but there are certain project review expenses that are not recovered though those application fees. (For example, initial consultations on potential projects that never come to fruition.)

Table 4.3 sets forth the Implementation Plan of capital projects, cost-share programs, special studies, and project maintenance activities. More information regarding the proposed actions in the Implementation Plan can be found in Appendix E, which describes the proposed lake and stream management plans in more detail.

Table 4.2. Fourth Generation Plan estimated budget and revenues.

Elm Creek Operating Budget and Revenues	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Budget										
General Operations	142,700	145,550	148,460	151,430	154,460	157,550	160,700	163,910	167,190	170,530
Technical Support	103,000	105,060	107,160	109,300	111,490	113,720	115,990	118,310	120,680	123,090
Project Reviews	182,000	185,000	185,000	185,000	185,000	185,000	185,000	185,000	185,000	185,000
Education	17,000	18,000	18,000	23,000	23,000	25,000	25,000	26,000	27,000	28,000
Management Plan	500	500	600	600	700	700	800	800	900	900
Monitoring	50,695	52,220	52,220	53,790	53,790	55400	55,400	57,060	57,060	58,770
Total	**$495,895**	**$506,330**	**$511,440**	**$523,120**	**$528,440**	**$537,370**	**$542,890**	**$551,080**	**$557,830**	**$566290**
Revenues										
Application Fees	182,000	185,000	185,000	185,000	185,000	185,000	185,000	185,000	185,000	185,000
Member Assessments	257,000	281,330	301,440	313,120	318,440	327,370	332,890	341,080	347,830	356,290
Interest/Reserves/Other	56,895	40,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000
Total	**$495,895**	**$506,330**	**$511,440**	**$523,120**	**$528,440**	**$537,370**	**$542,890**	**$551,080**	**$557,830**	**$566,290**
Assessment Increase		9.5%	7.1%	3.9%	1.7%	2.8%	1.7%	2.5%	2.0%	2.4%

Table 4.3. Fourth Generation Plan implementation plan.

IMPLEMENTATION PROGRAM	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Watershed-wide Programs										
City Cost Share Program										
Commission Contribution-Capital Levy			100,000			100,000		100,000		100,000
Local Contribution			100,000			100,000		100,000		100,000
Partnership Cost Share Program										
Commission Contribution-Capital Levy			50,000			50,000		50,000		50,000
Local Contribution										
Rush Creek Subwatershed (Rush Creek, South Fork Rush Creek, Jubert Lake, Henry Lake)										
Capital Projects										
Lake Internal Load Improvement										
Commission Contribution-Capital Levy						100,000				
Local Contribution						0				
Storage/Infiltration Project										
Commission Contribution-Capital Levy							400,000			400,000
Local Contribution							0			0
Rush Creek Hollow to Fernbrook Ln										
Commission Contribution-Capital Levy	200,000									
Local Contribution	600,000									
South Fork Rush, south of 101st										
Commission Contribution-Capital Levy				750,000						
Local Contribution				2,250,000						
Stream Project										
Commission Contribution-Capital Levy								125,000		
Local Contribution								375,000		

IMPLEMENTATION PROGRAM	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Special Studies										
Subwatershed Storage and Infiltration SWA										
Commission Contribution-Other				50,000						
Other				0						
Diamond Creek Subwatershed (Diamond Creek, Diamond Lake, French Lake)										
Capital Projects										
Diamond Lake Internal Load Improvement										
Commission Contribution-Capital Levy	660,000									
Local Contribution	0									
Lake Internal Load Improvement Project-										
Commission Contribution-Capital Levy					300,000					
Local Contribution					0					
Stream Project										
Commission Contribution-Capital Levy									125,000	
Local Contribution									375,000	
Special Studies										
Diamond Lake Neighborhood BMPs										
Commission Contribution-Other	108,000									
Local Contribution	12,000									
Elm Creek Subwatershed (Elm Creek, Weaver Lake, Rice Lake, Fish Lake, Hayden Lake, Mill Pond, Other Lakes)										
Capital Projects										
Lake Internal Load Project										
Commission Contribution-Capital Levy			300,000					300,000		
Local Contribution			0					0		
Rice Lake Trail and Shoreline Restoration										
Commission Contribution-Capital Levy					200,000					
Local Contribution					600,000					

IMPLEMENTATION PROGRAM	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Storage/ Infiltration Project										
Commission Contribution-Capital Levy					400,000					
Local Contribution					0					
Elm Creek Stream Project										
Commission Contribution-Capital Levy							125,000			
Local Contribution							375,000			
Reconstruct Bridge at Cartway and Elm Creek										
Commission Contribution-Capital Levy		250,000								
Local Contribution		1,910,000								
Brockton Ln WQ Improvements										
Commission Contribution-Capital Levy						50,000				
Local Contribution						150,000				
Special Studies										
Fish and Rice Lakes Carp Management										
Commission Contribution-Other	50,000	100,000								
Other	0	0								
Subwatershed Storage and Infiltration SWA										
Commission Contribution-Other					50,000					
Other					0					
Crow River Subwatershed (Cowley Lake, Sylvan Lake, Lake Laura)										
Capital Projects										
New Project										
Commission Contribution-Capital Levy										
Local Contribution										
Special Studies										
Study										
Commission Contribution-Other										

IMPLEMENTATION PROGRAM	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Local Contribution										

IMPLEMENTATION PROGRAM	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Stormwater BMP Projects										
Capital Projects										
Corcoran Street Sweeper										
Commission Contribution-Capital Levy	100,000									
Local Contribution	300,000									
Maple Grove Street Sweeper										
Commission Contribution-Capital Levy		100,000								
Local Contribution		300,000								
Agricultural BMPs										
Commission Contribution-Capital Levy			150,000			150,000			100,000	
Commission Contribution-Other	175,000									
Local Contribution										
Other Watershed-Wide										
Special Study-Flood Resiliency Modeling										
Commission Contribution-Other			100,000							
Local Contribution										
5th Generation Plan										
Commission Contribution-Other		10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
Local Contribution										
TOTAL IMPLEMENTATION PLAN	**2,205,000**	**2,670,000**	**810,000**	**3,060,000**	**1,560,000**	**710,000**	**910,000**	**1,060,000**	**660,000**	**660,000**
Commission Contribution-Capital Levy	960,000	350,000	600,000	750,000	900,000	450,000	525,000	575,000	275,000	550,000
Commission Contribution-Other	333,000	110,000	110,000	60,000	60,000	10,000	10,000	10,000	10,000	10,000
Local/Other Contribution	912,000	2,210,000	100,000	2,250,000	600,000	250,000	375,000	475,000	375,000	100,000

4.3.8 Addressing Identified Problems & Issues

As noted above, this planning process revealed a few problems and issues to be considered in this Fourth Generation Watershed Management Plan. Table 4.4 below repeats the problems and issues set forth in Table 4.1 at the beginning of this report section and describes how each were addressed in this Implementation Plan.

Table 4.4. Actions in this Plan addressing the identified problems and issues.

Problem	Actions in 4th Generation Plan
Numerous impairments on the primary streams and several lakes.	The CIP includes several capital projects to reduce watershed and internal load to impaired lakes and streams. The monitoring program is designed to more intensively evaluate progress toward meeting those and documenting improvement. For those waterbodies now meeting goals, the less intensive monitoring program is designed to show continued maintenance.
Land is transitioning from lightly-developed and agriculture to more densely developed land uses at higher imperviousness.	The Commission requires infiltration of new runoff but allows filtration where soils make that infeasible. The new volumes created are tracked. The Plan sets forth a four phase process by which the Commission will model potential flooding and other risks resulting from changing precipitation patterns and proposed land cover change as the watershed develops.
Erosion and sedimentation issues continue on Elm Creek and the other streams and conveyances in the watershed.	The monitoring program is designed to dovetail with and complement the DNR and MPCA monitoring program. The recent Bass Lake Vegetation Transplant Project was done in coordination and with assistance from the DNR. The Commission will continue to actively involve the DNR and PCA in watershed activities.
New impairments have been identified, including chloride on Elm Creek and South Fork Rush Creek.	Continued focus on education and outreach regarding chloride reductions and work with WMWA and cities to implement programming
Need to increase the number and distribution of agricultural BMPs in the watershed.	Continue to work with Hennepin County and cities to complete and refine subwatershed assessments in high-loading areas
Need to develop an effective mechanism to achieve voluntary adoption of BMPs	Continue to work with Hennepin County to facilitate voluntary agricultural BMPs in key subwatersheds using financial incentives and education and outreach programming
Need to expand activities for education and outreach to increase knowledge about water resources issues and create behavioral change.	The Commission will continue to work with WMWA and other partners to expand that outreach, including working toward a vision of a full-time shared Education and Outreach Coordinator.
Need for a climate vulnerability assessment.	The Plan sets forth a four phase process by which the Commission will model various scenarios based on the latest precipitation predictions and will complete a vulnerability risk assessment.

4.3.9 Progress Reviews

A periodic robust and frank self-assessment is necessary to ensure that organizations stay on track to achieve goals. Each year for its annual report the Commission reviews activities over the previous year and sets a work plan for the coming year. During this Fourth Generation Plan, the Commission will annually review progress towards goals. This self-assessment will use a matrix such as Table 4.5 below to systematically review and evaluate progress towards goals. This matrix will also be used to set each

year's work plan as well as provide a "heads up" to member cities about future years' needs. This self-assessment will become part of the Commission's Annual Report.

Table 4.5. Conceptual self-assessment matrix.

Goal	Actions Taken this Past Year	Actions Taken to Date	Additional Actions to Achieve Goal	Schedule, Responsible Party(ies), Cost and Funding
1.a.	*To be completed annually*	*To be completed annually*	*To be completed annually*	*To be completed annually*
1.a.	*To be completed annually*	*To be completed annually*	*To be completed annually*	*To be completed annually*
…	…	…	…	…

4.4 REQUIREMENTS FOR LOCAL PLANS

Local water management plans adopted by member cities pursuant to Minnesota Statutes, Section 103B.235 shall be consistent with the Fourth Generation Watershed Management Plan (WMP). Local plans must comply with Minnesota Statutes, Section 103B.235 and Minnesota Rules 8410 regarding local plan content. The Commissions strongly encourage communities to develop the scope of their local plan with assistance from the Commissions. At a minimum, local water management plans are required to do the following:

- Update the existing and proposed physical environment and land use. Information from previous plans that has not changed may be referenced and summarized but does not have to be repeated. Local plans may adopt relevant sections of this Plan by reference unless the member city has more recent information, such as revised land use figures and data.
- Update the existing and proposed hydrology, subwatersheds, and storm drainage system.
- Explain how the goals and policies, and rules and standards established in the WMP will be implemented at the local level.
- Show how the member city will take action to achieve the load reductions and other actions identified in and agreed to in TMDL Implementation Plans, including identifying known upcoming projects including street reconstruction projects that will provide opportunities to include load and volume reduction BMPs.
- Explain how the City will implement the City Review project review requirements of the revised Rules and Standards.
- Update existing or potential water resource related problems and identify nonstructural, programmatic, and structural solutions, including those program elements detailed in Minnesota Rules 8410.0100, Subp. 1 through 6.
- Set forth an implementation program including a description of adoption or amendment of official controls and local policies necessary to implement the Rules and Standards; programs; policies; and a capital improvement plan.

4.5 UPDATES AND AMENDMENTS TO THIS PLAN

This Watershed Management Plan provides direction for Elm Creek Watershed Management Commission activities through the year 2034. The Commission may initiate amendments to the Plan at any time. The Commission intends that the Plan provides a flexible framework for managing the watershed.

The Commission annually reviews the Implementation Plan and Capital Improvements Program (CIP), and revisions to the CIP may require future minor or major plan amendments. The Implementation Plan sets forth activities and costs for the next 10 years, and a future plan amendment will likely be necessary to describe activities in more detail as projects and plans develop.

4.5.1 Amendment Procedures

All amendments to the Plan except minor amendments shall adhere to the full review and process set forth in Minnesota Statutes 103B.231, and this section. The Commission shall adopt proposed major plan amendments upon their approval by the Board of Water and Soil Resources (BWSR) in accordance with Minnesota Statutes 103B.231.

Most amendments are expected to be revisions to the Implementation Plan or minor adjustments to the development Rules and Standards and will likely be considered Minor Plan Amendments. The amendment procedure for minor plan amendments shall be in accordance with Minnesota Rules 8410.0140 as such rules now exist or as subsequently amended.

Neither a minor nor a major plan amendment will be required for the following situations:

1. If projects included in the approved CIP are implemented in a different year than shown.
2. When a capital project is included in the approved Capital Improvement Program and the Commission's share of an updated cost estimate does not exceed 150 percent of the Commission's share shown on the CIP, as adjusted by the Construction Cost Index as published by the Engineering News Record.
3. When a capital project is included in the approved Capital Improvement Program and the Commission's share of an updated cost estimate is less than the Commission's share shown on the CIP, as adjusted by the Construction Cost Index as published by the Engineering News Record. However, the Commission will review such projects to evaluate the extent to which the original project objectives are being met.

4.5.2 Form of the Amendments

Unless the entire document is reprinted, all amendments adopted by the Commissions must be printed in the form of replacement pages for the Plan, each page of which must conform to the following:

1. On draft amendments being considered, show deleted text as stricken and new text underlined.
2. Be renumbered as appropriate.
3. Include the effective date of the amendment.

5.0 REFERENCES